

1976-77

VICTORIA

REPORT

OF THE

BOARD OF INQUIRY

INTO

THE OCCURRENCE OF BUSH AND GRASS FIRES IN VICTORIA

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Report of the Board of Inquiry to the
Honourable Vance Oakley Dickie, Her Majesty's
Chief Secretary for the State of Victoria:

Sir:

By virtue of an Order in Council made the first day of March, 1977, His Excellency the Governor of the State of Victoria of the Commonwealth of Australia, by and with the advice of the Executive Council of the said State, constituted and appointed Sir Edward Hamilton Esler Barber, Q.C., former Judge of the Supreme Court of Victoria to be a Board for the purposes of inquiring into, reporting upon, and making recommendations concerning the occurrence of bush and grass fires in Victoria and, in particular, and without limiting the generality of the foregoing, to examine the questions of:

- 1 The causes and origins of major bush and grass fires which occurred in Victoria during the months of January and February, 1977.
- 2 The adequacy and effectiveness of present measures taken by Government, private agencies, and by individuals, to guard against the outbreak of bush and grass fires in the rural areas of Victoria.
- 3 The adequacy and effectiveness of present practices adopted in the fighting of major bush and grass fires occurring in the rural areas of Victoria.

4 Whether developments which have occurred in the rural areas of Victoria during recent years indicate a need for Government and private agencies and individuals:

(a) to take different or additional steps to assist in the prevention of bush and grass fires; and

(b) to adopt different or additional practices in the fighting of bush and grass fires

AND IT IS HEREBY DIRECTED that the said Sir Edward Hamilton Esler Barber shall with as little delay as possible report under his hand to the Chief Secretary his opinions resulting from this Inquiry.

WHEREOF the said Sir Edward Hamilton Esler Barber and all other persons whom it may concern are to take notice and govern themselves accordingly.

I, the undersigned Edward Hamilton Esler Barber, having duly inquired into the several matters aforesaid have the honour to report as follows.

1 PUBLICATION OF NOTIFICATION OF SITTINGS
OF THE BOARD OF INQUIRY

Pursuant to the direction of the Board, notices of the date of the preliminary sitting were published in the "Herald", "Age", "Sun" and "Australian" newspapers on the ninth day of March, 1977. The same notice was published in the Ararat "Advertiser", Ballarat "Courier", Geelong "Advertiser", Colac "Herald" and Hamilton "Spectator". Notices of subsequent sittings were published in the Melbourne and major country newspapers circulating throughout Victoria on later dates, and in "The Fireman" each month during hearings.

2 SITTINGS OF THE BOARD

The Board held a preliminary hearing on the 11th March, 1977 and thereafter between the 23rd day of March, 1977 and the 29th day of June, 1977, sitting upon 52 days.

The Board heard evidence viva voce of 227 witnesses and received in evidence 332 exhibits. It was not thought necessary to set out a list of witnesses and exhibits - however, complete lists of witnesses and exhibits appear as Appendix 'A' and Appendix 'B' respectively as the last pages of the transcript of evidence.

The proceedings were recorded and the transcript of evidence and final submissions is respectively submitted with this Report.

The Board inspected all areas of major fires, from the air on March 7th and a more detailed inspection on subsequent days from ground level, particularly in regard to the point of origin of each major fire.

REPRESENTATION OF PARTIES

- MR. J. K. NIXON (instructed by the Crown Solicitor)
was present to assist the Board
Counsel and Solicitors were granted leave to appear
as follows:
- MR. K. MARKS, Q.C., with MR. A. W. McDONALD,*
(instructed by D. R. Dooley) on behalf of
the State Electricity Commission of Victoria.
- MR. E. D. LLOYD, Q.C., with MR. D. M. BYRNE,
(instructed by Moule Hamilton and Derham) on
behalf of the Country Fire Authority.
- MR. J. E. BARNARD, Q.C., with MR. A. R. CASTAN,
(instructed by Melville Orton and Lewis) on
behalf of the Strathmore Fire Committee.
- MR. J. E. BARNARD, Q.C., with MR. R. J. STANLEY,
(instructed by Melville Orton and Lewis) for
landowners in the Streatham/Tatyoon area.
- MR. F. G. BEAUMONT, (instructed by Cameron and
Lowenstein) on behalf of Messrs. R. Northcott
and T. Fletcher.
- MR. I. S. GODDARD (Whiting and Byrne) on behalf of
the Graziers' Association of Victoria

* Mr. Marks, Q.C., withdrew on his appointment to
the Supreme Court on June 14th, 1977.

- MR. T. F. CHETTLE (Wighton & McDonald) on behalf
of the Forests Commission, Victoria.
- MR. M. J. DUNN (Byrne Jones & Torney) for a
Committee representing all victims of the
Beeac fire; Messrs. E. Hinchliffe, S. Dean
and F. B. Gallagher; Gala Pty. Ltd. and
F. C. Harkin; and the victims of the Cressy
fire.
- MR. R. J. STANLEY (instructed by Hedderwick Fookes
and Alston) for farmers concerned in the
Pura Pura fire.
- MR. M. SHANNON (instructed by Frederick Owen &
Associates) for the Victoria State Emergency
Service.

A number of departments, statutory authorities, boards and associations are, of necessity, referred to with great frequency in this report. The general practice has been adopted of using the full name where first mentioned, and thereafter using initials or a short form of the name, unless there is some particular reason for using the full name. The abbreviations adopted are as follows:

The Forests Commission, Victoria	FCV
The National Parks Service, Victoria	NPS
The State Electricity Commission of Victoria	SEC
The Country Fire Authority	CFA
The Country Roads Board	CRB
The Victorian Railways Department	VicRail
Victoria State Emergency Service	SES
The Country Fire Authority Officers' Association	CFAOA
The Rural Fire Brigades' Association	VRFBA

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According to historians of the subject, there is evidence establishing the existence of wild fire in Australia, particularly the Blue Mountains of New South Wales, at least seventeen thousand years ago. The early discoverers, explorers and settlers observed and encountered such fire in the very first contact by Europeans with this continent. Victoria is peculiarly susceptible to the occurrence of fires and is one of the worst areas for wild fire in the world, sharing that doubtful distinction with the west coast of North America.

In Victoria, there are some fires every summer - the worst outbreaks recurring at what appears to be roughly eleven year intervals. The disastrous fires of February 6th, 1851 (Black Thursday) were followed by similar outbreaks at intervals to 1939, when the worst fires in living memory occurred. Since then, some of the most damaging and tragic outbreaks occurred in 1944 and 1969.

The summer of 1976-77 had been dry with high temperatures, following a spring in which there had been heavy growth. The month of January, 1977 had been hot and dry, and by the end of January, the country was dangerous and inflammable. There had been below average rainfall during the year 1976 and in January of 1977, 32.7 mm of rain had fallen, which was slightly below the average of 33 mm. There had been 7.6 mm of rain for February between the first and twelfth days. February 12th was, of course, the critical day. Temperatures on that day, at about the time the various fires started,

were in the vicinity of 36°C and the humidity varied between different localities and times from 26% to as low as 12%. Initially, the wind was from the north, but this changed to the south-west at approximately 1855 hours. While February 12th was a very bad day in anybody's view and was dangerous by any standards, it must be kept in mind that it was not unique. It was not as bad a day as that once in a lifetime day such as February 6th, 1851 or January 14th, 1939. It was indeed, the kind of bad day which may be likely to occur in the western district at least with some frequency. In short, it cannot be regarded as so unique as to be relied upon as any excuse for inadequate preparation for fire prevention, by saying that our prevention preparations were adequate except on such an unexpectedly ferocious day.

Another important factor is that the community had ample warning that February 12th would be the kind of day it turned out to be. The Bureau of Meteorology had accurately predicted the conditions which, in fact occurred, hence the declaration of total fire ban for Friday the 11th and Saturday the 12th. On a day like Saturday the 12th with high temperatures, low humidity and a very strong north wind, once a fire obtained a real hold it was virtually impossible to stop. Even substantial firebreaks, as roads or railway lines or along the banks of creeks, failed to halt the fire, the high wind causing "spotting" on the southern side of the break to an extent often impossible to completely control. The most that the firefighters could do was to confine the fire as much as possible by operating on the flanks of it - letting the head run, and being able to contain the fire and ultimately control it when the wind changed, or the fire met some natural object which formed a sufficient break. It should be also noted, that on February 12th, there were sixty-eight fires reported and attended by the Country Fire Authority. When one considers that fifty-seven of these were rapidly controlled and did little damage, one must

give great credit to the firefighters who were able, on that day, to control so many fires. The occurrence of so many major fires at relatively the same time, and in adjacent districts, meant that the strain on the volunteer firefighters on that day was enormous, and a great deal of credit is due to them and to those whose duty it was to marshall the troops at the command of the CFA.

1.2 Events of February 12th

The critical day, February 12th, 1977, could literally be described as "Black Saturday". Five people lost their lives in circumstances directly attributable to a number of major fires. More than thirty persons suffered injuries as a result of the fires, either fighting the fires themselves, or attempting to evade the fires. Catastrophic damage was caused to property and the damage is estimated at something over \$30 million. Almost 135,000 hectares of farmland and almost 10,000 kilometres of fencing were burnt. 123 houses were destroyed together with a large number of outbuildings, haysheds, shearing sheds and the like. Almost a quarter of a million sheep were destroyed and for some weeks following the fires, sheep continued to die from the effects of these fires. 4,500 cattle were destroyed as a result of the fires. With the searing heat whipped by very high winds, years of toil on the part of the landowners went to waste in a matter of hours.

In describing the occurrences of January and February, 1977, it has been thought desirable to adhere to the established facts from which the conclusion as to causes and origins are to be deduced and not to attempt any account of the many incidents of, in particular, the dreadful Saturday, February 12th. However, it must not be thought that the Board was unaware

of, or insensitive to the tragedy of that day. The people of the western district, as they and their predecessors have done for over 100 years, displayed remarkable courage and fortitude. Witness after witness told us, in matter of fact terms, of acts of heroism and sacrifice as well as tragedy. Many people, in a few hours, lost everything they had spent a lifetime in building, and apart from the gigantic material losses many have suffered grievously in body and mind and will carry with them for the rest of their lives the memory of that day. This report is not the place to record the details of the suffering, the heroism and heartbreak, the terror and tragedy. It is however, proper to record both sympathy and sincere admiration for those involved in these events.

1.3 Scope of the Inquiry

It will be noted that the Terms of Reference commence with the instruction to inquire in respect of the occurrences of bush and grass fires in Victoria, and in particular, without limiting the generality of the foregoing, to examine certain specific matters referred for investigation. It follows that this Board has, under term 1, directed attention upon the major fires occurring in January and February. The overall terms permitted and required an investigation to be made of fires occurring during the specific period of the summer of 1977, including some which were contained before they became major fires. Furthermore, in considering the causes and origins of fires, it was necessary to look at causes of a number of fires in other years.

It is necessary to state briefly the approach adopted in coming to conclusions in respect of the causes and origins of the fires investigated. Clearly, the Board's first task is to ascertain the facts as to each fire. Next, it is the Board's duty to fix responsibility for the causes or origins of the fire where the evidence enables this to be

done, on a basis of preponderance of probability. It is however, clear that the Board is not required to go further. Indeed, having regard to litigation already commenced and foreshadowed, it would be improper to attempt to find legal liability, and in no instance has this been done. It is emphasised that when the Board has found responsibility in some individual or organisation, this does not necessarily imply legal liability.

It is perhaps desirable to add, that although a Board is not confined to accepting only evidence which would be admissible in a court of law, and although at times hearsay or otherwise inadmissible evidence was tendered and not rejected, in no instance has a positive finding of responsibility been made in respect of any individual or organisation, except on cogent and admissible evidence.

PART IICAUSES ORIGINS AND CONSEQUENCES OF THE
FIRES INVESTIGATED BY THE BOARDCHAPTER 22.1 General

Throughout the fire season of 1976-77 some 5,000 fires were reported including the 68 on February 12th. A fire is regarded as being a major fire according to the size in terms of the area burnt, the potential for damage, the number of casualties, the amount of loss in property and the number of firefighting vehicles and personnel involved. On this test, 16 fires were noted as major. The fires are:

The fires of February 12th, 1977:

- 1 The Creswick fire
- 2 The Glenthompson fire
- 3 The Merino fire
- 4 The North Byaduk fire
- 5 The Penshurst fire
- 6 The Tatyoon/Streatham fire
- 7 The Pura Pura fire
- 8 The Beeac fire
- 9 The Cressy fire
- 10 The Lismore fire
- 11 The Waubra fire
- 12 The Balliang East/Little River fire

Fires on other dates:

- 13 The Ross Creek fire
- 14 The Lerderderg Gorge fire
- 15 The Beechworth fire
- 16 The Little Desert fire

The fires of February 12th were all basically grass fires, although the Creswick fire involved considerable forest area. The fires number 13 and 14 were forest fires. 15 was mainly grassland and 16 was mainly confined to mallee woodland.

2.2 Assisting organisations

It should be noted that fires in the settled country areas of Victoria are specifically the responsibility of the Country Fire Authority which alone has jurisdiction to control the activities necessary for suppression. Fires occurring in State Forests, National Parks and "protected public lands" are the responsibility of the Forests Commission, Victoria, as well as fires within an area of about a mile in country surrounding many of these lands. The two organisations have cooperated very well, as the evidence from each of them asserts. Each assists the other where and when possible. All the above fires were the concern of the CFA except fires 13, 14 and 16 which were the responsibility of the FCV, though in many of the 16 fires, the other organisation provided a significant part of total attack.

On February 12th, nearly all the outbreaks occurred in the area controlled by the CFA. Other services gave valuable and indeed, essential assistance. These included the Victoria Police, Ambulance Service, the Forests Commission, Victoria, the State Electricity Commission of Victoria, Red Cross, Salvation Army and other voluntary aid welfare groups, St. John's Ambulance Brigade, the Department of Agriculture, State Emergency Service, Telecom Australia, Country Roads Board, Transport Regulation Board and the relevant shire and other municipal authorities, as well as many private firms and organisations. It should also be recorded that women living in the affected districts provided valuable and at times, courageous service in providing food and drink for the firefighters. Many women, of course, displayed great fortitude and bravery in actually fighting fires in defence of their homes.

2.3 The major fires

It is proposed now to discuss each of the 16 major fires dealing first with the fires of February 12, 1977.

2.3.01 The Creswick fire

The fire originated at 1320 hours on February 12th near the intersection of Weatherson's Road and the Campbelltown/Clunes road some little distance south-west of Glengower. Hot north winds sent the fire in a general southerly direction through the Ullina and Lawrence districts, crossing the Creswick/Lawrence Road at a point near Wheelers Bridge and continuing south towards the township of Creswick. At this point it had travelled a distance of approximately 10 kilometres on a front of about 100 metres. The strength of the winds was estimated at approximately 60 kilometres per hour which made it impossible for firefighters to keep pace with the leading fire edge, and the fire front spread to a width of 1 kilometre.

The fire passed through the outskirts of Creswick and travelled a further 10 kilometres south through forest country until 1855 hours when the wind changed to the south-west. The live flank of the fire then swept away to the north-east along 3 kilometres of the leading edge, and was eventually stopped in forest near the township of Dean at about 2130 hours. Shortly after midnight about 10 mm of rain fell and assisted the task of mopping up.

Very great damage was caused as a result of this fire. Although there was no loss of life or serious injury, there were a number of remarkable escapes. The fire burnt approximately 2,850 hectares of farmland and 1,670 hectares of State Forest. Fourteen houses were destroyed, 6 of them unoccupied, together with 33 sheds and outbuildings. Damage to the forest, which included 270 hectares of softwood plantations is estimated as being in the vicinity of \$430,000. The losses included a vital part of a long term tree breeding programme.

Between 170-180 kilometres of fencing was destroyed. Stock losses are estimated at approximately 2,800 sheep and 1 bull. 22,500 bales of hay were destroyed. The centre of the township of Creswick itself was threatened and houses on the outskirts destroyed.

There was ample evidence from an eye witness, Mr. F. G. Rinaldi, and from Det.Sen.Sgt. J. F. Terry as to the cause of this fire. The person concerned has admitted to police that he had ignited the fire by dropping a lighted cigarette into the long grass by the roadside and in the conditions of that day, the fire spread rapidly. It is unnecessary and undesirable to make a specific finding as to whether this was caused deliberately or by accident. It is sufficient to say that at best, the individual concerned was grossly negligent. As he was to be charged with offences relating to ignition of the fire on a day of total fire ban, the Board communicated to him an invitation to appear and give evidence if he so desired, but no subpoena was issued. Through his solicitors, he declined to appear or give evidence.

The evidence discloses that the forces involved, both the CFA and the FCV (under the CFA command), performed splendidly in fighting and ultimately controlling this fire. The success of their efforts is shown in the narrow strip to which they confined the fire and to the saving of property and life in the threatened communities. Some difficulties occurred in communications and in regulating the efforts of some volunteers. The CFA units involved were 35 tankers from regions 1 and 15 and 1 "mobile", 14 tankers and 6 "mobiles" came from the northern zone and the FCV committed 130 men, 11 tankers, 4 bulldozers, a helicopter and a fixed wing aircraft and service staff and equipment. Other authorities and services provided a valuable support service, including the CRB and private firms. The SES had no direct involvement in firefighting, but assisted

with relief and rehabilitation. There was evidence of a controversy that arose in relation to the conduct of some individuals who volunteered to assist at the fire and who happened to be members of the SES. This matter is dealt with in paragraph 4.4.11.

2.3.02 The Glenthompson fire

This fire, also known as the "Strathmore fire", was a fire of considerable magnitude which caused damage to a number of properties to the south of Glenthompson. The fire occurred at approximately 1215 hours on February 12th and the alarm was given at 1225 hours. It started at a property known as "Roanoke" in Lovatdale Lane occupied by the Lloyd family.

The past weather had been hot and dry. The fire danger rating for that day was extreme. Only 30 mm of rain had been recorded in Hamilton since the start of the year, the last being 1.2 mm on February 1st.

At the time of the outbreak, the temperature was 37^oC, the wind was blowing strongly from the nor/nor-west. The fire burnt rapidly in these conditions and extended 20 kilometres towards Chatsworth. A strong south-west wind change arrived at 1615 hours, and much of the eastern flank broke away. Most of the breakaways were held at the Glenthompson/Caramut road.

The fire had serious consequences, burning over 6,000 hectares of grazing land. Approximately 272 kilometres of fencing and some 46,000 bales of hay were destroyed. In addition, numerous haysheds, machinery sheds and stockyards were burnt and destroyed.

The fire was attended by 40 CFA units from three regions and 70 private units, with supporting pumpers.

There was evidence that one week before the outbreak on February 12th, a fire had occurred on a nearby property, that of Mr. R. A. Burger. The cause of this earlier fire was believed to be due to an SEC fault. A pole cap became dislodged and a conductor was apparently brought to the ground. This fire was contained with great difficulty after it had burnt 125 hectares of pasture. It was attended by 7 CFA units and 21 private units with supporting equipment.

On the Lloyds' property at "Roanoke", there are two families. Mr. E. L. Lloyd (senior) occupied the main homestead and his son, Mr. Fred Lloyd had a home some 500 yards to the north-east. In a small holding paddock between these two houses, there were several SEC poles including pole 11 of the Glenfraser spur line (12.8kV). Pole 11 carried a 10kVA SWER (single wire earth return) transformer and three private service lines started at this pole.

A "clamp-on" expulsion type fuse was attached on the north-eastern side of the pole fitted with a 2 amp fuse link.

The three service lines led to each of the houses and to a woolshed. The line to Mr. Fred Lloyd's house was a dual conductor service (one active and one neutral). The other lines had three conductors (two active).

Mr. Fred Lloyd has claimed from the outset that the fire started at pole 11. He stated that at about quarter past twelve on the day in question, he was in the kitchen of his house with his wife, and was about to have lunch. In evidence he said

"I sort of knew straight away what it was that caused this fire and the power going off, so I ran outside the house round to

the back where the SEC pole is situated with the transformer attached. This pole is between my house and my parents' house in a southerly direction from my place. I saw smoke coming up from the ground at the base of this pole in the grass. I took off and went to get the fire truck".

Mr. Lloyd has support for his statement from an eye witness, Mr. P. A. Roll, whose house is in a direct line with pole 11, although about a mile south-east of "Roanoke". This witness observed the fire commence adjacent to pole 11, some 10 to 15 feet to the south of it. He deposed that if the fire had started to the north of pole 11, he would not have been able to observe the smoke because of trees between his property and Lloyds, which completely obstructed his view to the north of the pole.

The SEC claims that the low voltage (L.V.) conductors on the service line to the homestead and woolshed had been in contact with trees and with each other, and submitted that a likely cause of the fire was clashing in the first span north of pole 11 towards the woolshed, dropping incandescent particles to the grass below.

The Lloyds however, claim that the fire started slightly to the south of pole 11, due to a defect in the SEC installation - the operation of the high voltage (H.V.) fuse. At the outset Lloyd senior was insistent that the fault was a defective transformer on pole 11, and that SEC personnel had replaced this transformer with a new one. However, by the time the Inquiry started, Lloyd was far less sure of his position and ultimately the Board understands that this contention was abandoned. In fairness to the employees concerned, the Board is satisfied beyond any doubt that this allegation was entirely groundless.

In arriving at the cause of the fire, certain observations are relevant:

- 1 Firstly there was evidence of clashing on all three private service lines originating at pole 11:
 - (a) Knoop, an electrician with Moon Electrics, saw marks on the line to Fred Lloyd's home.
 - (b) Knoop also gave evidence of severe clashing on the line south from pole 11 towards Lloyd senior's home in the span nearest the homestead. Each of the conductors had broken strands, and there was evidence of tree interference. Knoop replaced the central (active) conductor on this line and repaired the other two on March 23rd after the fire. According to Knoop there was no evidence of clashing in the first span of the homestead line immediately south of pole 11. Ridgway, an SEC linesman, concluded on an earlier occasion that a L.V. fuse at pole 11 was blown by a clash of wires and trees at this point.
 - (c) Burn marks were visible on the first span north from pole 11 toward the woolshed and on the second span. Two conductors were actually overgrown by a branch of a poplar tree. Holdsworth, an SEC linesman, said of burns at 12.7m north of pole 11 that there were marks on each conductor, not necessarily fresh, but that he would expect more damage if clashing were to cause a fuse to blow. The SEC also cited burns at 17.1m.

- (d) There was no evidence of clashing in the H.V. line, though trees are close to this line in the vicinity
- 2 The 2 amp H.V. fuse at pole 11 had operated and the three L.V. fuses were intact. Expert evidence by officers of the SEC explained that the H.V. fuse always operates in an active to active clash, but only occasionally in an active to neutral clash, where the L.V. fuse usually operates first. There was evidence that the operation of a H.V. expulsion type fuse can cause fire, including a quote from the Australian Standards Association to this effect. On the two spans with two actives, these were the two lower conductors. The lines are the woolshed and homestead lines.
- 3 The flash observed by Mr. Fred Lloyd was likely to have been caused by the clashing of the L.V. conductors, based on a field demonstration of such a clash. It was unlikely to have been associated with any of the other electrical installations in the area.
- 4 Three witnesses, (Roll, F. Lloyd and Guinea) placed the origin at or to the south of pole 11. Three other witnesses considered that the burning to the north of the pole was likely to be backburning.
- 5 There was evidence that the sheltering effect of nearby trees would reduce the velocity of the wind in the vicinity of the woolshed line and pole 11, so that molten particles would fall more directly to the ground, and backburning would be favoured.

It is therefore concluded that the most probable sequence of events is the clashing of two active L.V. conductors in the southermost homestead span, leading to the operation of the H.V. expulsion fuse. This, in turn, ignited dry grass at or near the base of pole 11. The fire spread rapidly past the homestead and burnt backwards to the north of pole 11 in the somewhat sheltered conditions afforded by the adjacent windbreak. The clashing of conductors was the direct result of tree interference.

The issue of maintenance of trees along private service lines is vitally involved in this fire. Trees were permitted to actually occlude electrical conductors on the woolshed line and to cause severe clashing apparently on many occasions on the homestead line. On the evidence given, the owners were aware of the situation several years prior to the fire and did not take sufficient or reasonable steps to correct the situation. Indeed, it was suggested that the landowner was resistant to "interference" with the trees.

The Board is left in some doubt as to the wisdom of fitting a 2 amp link rather than a 3.15 amp link to the H.V. line, despite the expert evidence of Mr. A. Wilson of the SEC. However, the operation of this fuse should not have been the cause of a fire. The design of these fuses must be modified or they should be replaced with a less dangerous design. The SEC must share responsibility on this ground, as there was ample evidence that such fuses have caused fires and are likely to do so.

Considerable enthusiasm was displayed by the Lloyd's advisors in collecting from the holding paddock (more or less in the vicinity of pole 11) a number of pieces of wire which were produced to the Inquiry and made exhibits. None of these wires were ever satisfactorily identified or their origins explained, and the Board received no assistance from this line of evidence.

The cause of this fire, in summary was the operation of the H.V. expulsion fuse, caused by inefficient maintenance of a private service line by the owners and by unsafe fuse design or operation. Thus while the primary responsibility is that of the SEC, the owners of the property also share substantial responsibility.

2.3.03 The Merino fire

This fire was reported on February 12th at about 1030 hours. The fire started on a property owned by a Mr. R. Northcott, which is situated on the Coleraine Road some 3 kilometres east of the township of Merino. The damage caused by this fire was not particularly great having regard to other far more serious fires occurring on that day. About 20 hectares of pasture ground were burned, 2,300 bales of hay were destroyed, some 2 kilometres of fencing and a hayshed. There was some damage to cattle yards. The origin of this fire is clear beyond doubt. It was caused by the parting of a high tension conductor. The SEC main line ran parallel with Northcott's boundary fence. The poles were approximately 11 feet from the fence line. There were three H.V. conductors on the power line and it was apparent that the most southerly conductor had come into contact with a limb of a large old elm tree, the trunk of which was situated just inside Northcott's property. The high temperature had undoubtedly caused the conductors to expand and sag and the high wind had blown them some considerable distance, at least 5 feet in a southerly direction so that the most southerly conductor came into contact with the tree limb. This resulted in the conductor annealing and eventually breaking and falling to the ground with sparks being emitted from the ends of the conductors. This ignited dry grass at a point

slightly to the east of a haystack which, of course caught fire and in the circumstances, burnt fiercely. The fire then spread to the adjoining paddock.

The controversy relates to the responsibility of the SEC. On Thursday, February 10th, a witness, Mr. E. H. Enscoe, a CFA Group Officer, had observed a char mark on a branch of the elm tree at the level of the high tension lines. It was apparent to him that the wind had blown the lines against the tree and that burning and charring in the limb of the tree had resulted. The time at which Enscoe made this discovery was about midday. Enscoe did not report the matter there and then to the SEC. His explanation for not having done so was that "it had slipped his mind" as he was pre-occupied for the rest of the day and the next morning with his own farming activities and his obligations to the CFA on other matters. About midday on Friday the 11th, Mr. S. H. Nolte who was the Deputy Group Officer in the Tahara Group, called to discuss CFA matters with Enscoe. Something in the conversation reminded Enscoe to ring the SEC about the elm tree situation and Nolte agreed that he should immediately do so. In the presence of Nolte, Enscoe telephoned the SEC in Casterton. Both Enscoe and Nolte claim that the call was made somewhere about 12.30 p.m. on Friday the 11th and gave some circumstantial details in support of their claim. They further stated that in the course of the call, Enscoe pointed out to the SEC officer to whom he spoke, a Mr. Reg Speed, the danger of the situation and that Speed said there would be a lopping gang in the area in the following week but that the matter would be investigated before that. As against this evidence, Speed claimed that the call from Enscoe was not received at about 12.30 p.m. as claimed, but somewhere between 3.30 and 3.45 p.m. on that day. Generally, Speed agreed with the conversation as outlined by Enscoe, save as to one important matter. Speed denies that Enscoe

said that there was any danger or any urgency conveyed to Speed or any need for immediate action by the SEC. Mr. W. C. Landy, who is the District Manager of the SEC at Casterton, deposed that he had been out of the office on the afternoon of the 11th, but on returning there at about 4.00 p.m., received a report from Speed as to the call from Enscoe. Landy decided that there was no great urgency because whatever the message conveyed to Speed, Speed certainly did not convey any note of urgency to Landy. In explanation as to why nothing was done that night, Landy said that it was too late to take effective action that day, that the clearing party could not have been contacted. He went on to say in his statement

"also, and most importantly, we have recently had necessity to patrol the line and travel a number of times along the Coleraine/Merino Road".

This, it seems, could only mean that Landy was satisfied from previous inspection of the area that no dangerous situation was probable. Enscoe and Nolte were both positive in their evidence that the call was made at about 12.30 p.m. Speed is equally positive that it was not received until 3.30 or 3.45 p.m. There is, thus, a headlong conflict of evidence.

There was some circumstantial detail to support Speed's evidence as to the time of Enscoe's call. Enscoe claimed that his call was answered by Miss Lynette Smith, the telephonist, and that she had put the call through to Speed. The evidence of Miss Smith, Speed and Landy was that the office was closed between 12.15 and 1.00 p.m. - the telephone being switched through to Speed's home. There

is no reason to doubt this evidence and consequently, the call could not have been made via the telephonist until after 1.00 p.m. Speed is also corroborated by a Linesman's Assistant, C. J. Womball, who deposed to being with Speed in his office at about 3.30 p.m. when Enscoe's call came through. Speed's evidence is all the more credible because Enscoe's delay of 24 hours in reporting the matter and his explanation that the matter "slipped his mind" appears inconsistent with any realisation of the urgency of the problem. A further factor of some significance is that neither he nor Nolte troubled to inform Northcott, the owner of the endangered property. On the whole, it appears reasonable to accept that no sense of urgency or imminent danger was conveyed by Enscoe to Speed nor subsequently, by Speed to Landy.

However, the fact remains that Enscoe did report to Speed a situation which should have been recognised as potentially dangerous. The 11th was itself a day of total fire ban and the 12th was expected to be one, and whether or not Enscoe conveyed a sense of danger, both Speed and Landy should have recognised the situation as potentially dangerous. It follows that some action of an urgent nature should have been taken that day, not necessarily the cutting or lopping of the elm tree if that was impracticable.

An equally important allegation against the SEC management is that the power conductors had quite obviously been in contact with the tree branch whenever conditions of wind and temperature were such as to cause the conductor to expand, sag and sway against the tree limb and that this situation had existed for some time. The actual limb of the elm tree, a very large and heavy object, was obtained from the tree with the consent of the owner and in the presence of Constable Ballenger, and ultimately presented as an exhibit - exhibit 66, in

this Inquiry and was sawn up and examined. There was expert evidence called by the SEC that the charring was of relatively recent origin. This evidence was called before the limb was cut up and examined. The evidence of the regional officer, C. R. Busse, supports the Board's own opinion that examination of the exhibit demonstrated that the charring was so deep as to establish that the charring and contact had occurred on a number of occasions over at least a period of some weeks. This situation should have been observed by the SEC linesmen and remedied, as patrols for the very purpose of checking the safety of the power lines had been made shortly prior to the fire. That the condition of the wire and the tree were not observed and remedied constitutes a failure in efficiency and should not have been allowed to occur. The cause and origin of the fire is therefore established as a matter of fact as stated above, and is plainly the responsibility of the SEC.

2.3.04 The North Byaduk fire

In the case of this fire the alarm was given at approximately 1150 hours on February 12th. The fire started on a property known as "Karri" in Archer's Road, Byaduk, occupied by a Mr. Knight.

Mr. Knight had been working at the Byaduk Oval. At approximately 1145 hours, he drove to his parents' house at Black Hill, which was about 4 miles from his own property. There he smelt smoke and drove to "Karri" and at about a mile from his property, he could see smoke and flames at the rear of his homestead. He drove into the property and found that the fire had already burnt about 3 acres and was burning away to the south. His hayshed was engulfed in flames. After assisting to fight

the fire, he attempted to ascertain the cause, and at that stage, believed that the probable cause was a "fuse box" as he described it, on the electric power pole some 45 feet or thereabouts to the northern side of the haystack.

The fire was attended by 23 CFA units from regions 4 and 5. There were also present 45 private units, 2 water trucks supplied by the Shire of Minhamite and there was an aircraft used for the purposes of observation.

The cause of this fire remains something of a mystery. One suggested cause was that the hay in the hayshed had burst into flames by reason of spontaneous combustion. The Board accepts Knight's evidence that the hay had been cut on November 14th, 1976 and that it was perfectly dry when it was stacked in the shed in mid January, 1977. As a result, the theory of spontaneous combustion is rejected.

At the property there is, in fact, an SEC pole with a sub-station on it - the "Karri" No.2 pole. From that pole, there were L.V. conductors leading to the private service pole situated about 45 feet north-west of the hayshed at a point beside a galvanised iron shed. From that private service pole, there were two L.V. conductors leading to what was the shearing shed and a further two L.V. conductors leading to the tank stand.

Two SEC linesmen, Mr. Littlechild and Mr. Lane, were working to a late hour on February 12th restoring power to various lines that had been affected by the fires. At about 2000 hours they arrived at Mr. Knight's property to check the "Karri" spur line prior to restoring supply. The "Karri" spur is a SWER line. They found that the H.V. fuses on the sub-station pole "Karri"

No.2 were intact but the 55 amp L.V. fuse on the private line pole had blown. The first of the private service line poles is approximately 20 paces in a north-westerly direction from the "Karri" No. 2 sub-station. The SEC men also observed that the base of this private line pole was charred. From this pole, the private service lines proceeded to a woolshed and also to a tank stand. These lines were checked by torchlight but appeared to be intact and the fuses intact. The L.V. fuse that had blown was replaced and supply was restored for a time but went off again because of a blown fuse at the Brisbane Hill Isolating Sub-station some distance away down the SWER line. This appeared to have been a normal operation and the fuse was replaced the next day. Subsequent daylight checking by the SEC personnel around the base of "Karri" No.2 pole showed that there was no evidence of any grass burning in the vicinity of that pole. The fuses were again checked at the Isolating Sub-station. On the following day Sunday, February 13th, Mr. Knight found that the conductor had come away from the first of the poles on his private line and this was subsequently remedied by the SEC. On the night of February 12th, this conductor had not come away from the pole and whatever happened to it must have happened after the fire, so that this could not have been in any way a cause of the fire. Although Mr. Knight was of the opinion, naturally enough, that some electrical fault had caused the fire, this seems on the evidence, to be very doubtful if not impossible. The pole that was burnt was not the pole at which the fuse had blown. The "Karri" No. 2 pole was so situated that it could not have been the possible origin of the fire even if some fault had occurred there. The L.V. fuses that were examined both on the "Karri" No. 2 pole and on the private poles were small cartridge type fuses and were of such construction that the whole operation remained

inside the fuse and no spark or molten material could in any way have escaped to have caused the fire. There was evidence that the air conditioning unit which had recently been installed in the homestead ceased to operate just before the fire started, but as all other appliances and lights in the houses were operating, this must have been something peculiar to the unit itself. All these matters were fully examined and ultimately, all three questions, that is the failure of the air conditioning unit, the blowing of the 55 amp fuse and the trouble with the wire coming away from the first private line pole, were satisfactorily demonstrated to have been irrelevant and, indeed impossible to be regarded as causes of the ignition of the fire.

The Board is satisfied that the fire did not commence by spontaneous combustion in the hayshed and that it could not have been commenced by reason of any established fault on any of the electrical installations. There is no other evidence to suggest what the cause could be. On a day of the nature of February 12th, conditions were such that some very minor spark or flame of whatever origin could very easily have caused the fire. However, the evidence does not enable any positive finding to be made as to the origin of this fire.

2.3.05 The Penshurst fire

This fire ignited at about 1305 hours on February 12th at a point on the Macarthur Road, Penshurst where the properties of a Mr. A. L. King and Mr. M. P. Page have a common boundary, almost opposite an old slaughter yard. This point is about 2 kilometres from the Penshurst township. There was considerable damage to property caused as a result of this fire. Three houses, together with machinery, hay, woolsheds, 106 kilometres of

fencing were destroyed, about 1,700 sheep, 113 cattle and 4 horses and 1,370 bales of hay were also destroyed and 2,440 hectares of pasture and stony grassland were burnt out. The fire burnt for $5\frac{1}{2}$ hours before being contained and 24 units from the CFA and 170 private units - altogether some 400 men were needed to control the fire. The Macarthur road is wide with a bitumen strip more or less in the centre of the road reserve. On the south side, nearest the properties described is a low lying area between the edge of the bitumen and an unmortared stone wall which is the boundary fence of King's property. To the east, the road rises to a slight cutting. The relevant roadside area is slightly lower than the bitumen surface of the road and the base of the boundary wall. It would appear to be a very wet area after rain and was covered with tussocks of coarse grass. It has been described by some witnesses as a "peat swamp", but this description is misleading. It is true, however, that the earth has a high content of organic material as described below in more detail.

The Gazette Fire Brigade, after obtaining the necessary permit from the Proper Officer at Penshurst, notifying the CFA Regional Headquarters and informing the adjoining landowners, had carried out a burn-off operation on Thursday, February 10th. The brigade burnt the southern verge of the roadside from about 2.00 p.m. until 7.00 p.m. They burnt altogether about five miles of roadway. The evidence from the Officer in Charge, Mr. C. D. Burger, is that the proper procedure for burning and for controlling the fire was followed and there is no reason to doubt this. The Officer in Charge realised the danger of fire continuing to burn beneath the grass tussocks and, for this reason, caused the 200 metre stretch of the "peat" area to be properly hosed with water at high pressure. He estimated

that about 1,500 gallons of water were poured or forced into the area. It was thought that the fire had been completely extinguished. On the next day, the 11th, the area was patrolled by the Officer in Charge three times and some smoke was seen at a point some distance from King's property which was dealt with and extinguished. Local residents going in and out to Penshurst also passed the area. No smoke was seen for the rest of the 11th or in the early part of February 12th. About midday on the 12th, Mr. Desmond Kelly of Penshurst passed along the road and saw

"a swirl of smoke rising from a tussock of rough grass. It was sort of like smoke coming out of a chimney".

He saw no flame. Kelly was in a motor car, he had no water and no instrument with which to tackle this smoking tussock. Moreover, he is unhappily a diabetic and in poor physical condition. Because of his diabetic condition, he necessarily took insulin daily by injection and required food at regular intervals and was at the time overdue for a midday meal. Kelly went to the nearby home of Mr. Page and warned him of the presence of smoke in the burnt out area. Page was at first sceptical that any fire was present because of the lapse of time since the burn-off and the absence of any indication of smoke since the Friday morning. This scepticism may account for the fact that without undue haste, he eventually went to the scene, taking with him a shovel and a wet bag. By the time Page reached the burning tussock, the wind had fanned the hot ashes into flame and grass in the adjacent paddock was alight. The substance of this account is corroborated by Mr. Albert King and his son-in-law who had observed the smoke themselves and drove to the fire. The alarm was given and various brigades and firefighting forces arrived promptly but it was too late. The fire had by this time got beyond

immediate control and had moved into the paddock resulting in the damage that has been described. In fairness to Kelly, whose failure to deal immediately with the hazard might well have been criticised, the Board ultimately concluded that in the circumstances, he had done all that he could be expected to do and should not be in any way subject to censure. It is unfortunate that the person to observe the fire in its initial stages did not happen to be capable of dealing with it.

The Regional Officer of the relevant region - No. 5 and the Captain of the Gazette Fire Brigade refused to admit at this Inquiry that the fire had started, or could probably have started as a result of the burning off on February 10th by the local brigade. In support of the CFA denial of responsibility, two specific matters were put forward. The first suggestion was that the overhead SEC line which crossed the road near the point of ignition could have caused the fire by reason of the conductors clashing and resultant sparks falling into inflammable material. This theory was not supported by any evidence - nevertheless, the matter was considered by the SEC and a metallurgist expert, Mr. J. C. Ellis, employed in the Material Technology Section of the SEC examined the conductors and gave evidence to the effect that careful scrutiny of both the H.V. and L.V. conductors, showed no marks whatever which would indubitably have been there had the conductors clashed. The second matter that was canvassed by the CFA was an attempt to show that the fire could not have remained in a quiescent state in the area for the time lapsing between February 10th and 12th. To this end, they obtained a sample of soil from the relevant area and submitted it for analysis to a chartered analytical chemist. The certificate of the chemist was produced (exhibit 273). The analyst certified that the sample of the

soil was not peat, but that it had some combustible character. The report continues:

"It is hard to describe it as an adequate secondary source of ignition. For this to be so, it would require the tertiary fuel to be more flammable than the soil sample. In the tests performed, only smouldering, not free flame, was experienced together with ready self-extinguishing characteristics which were repeatedly demonstrated".

Adopting the opinion that the soil itself is only very slightly flammable, there remains the matter of the grass tussocks and the physical situation of the ground. It is a reasonable inference that fire can remain alive in the coarse roots of dry tussocks and be fanned into flame when strong winds occur even after several days. It is the base of the tussock itself, rather than the soil which can retain fire. In the Board's opinion, the cause of the fire is established beyond doubt. However careful the Gazette Brigade had been, there was in fact, some subterranean fire lying dormant from Thursday night and Friday until in the extraordinarily high winds and extreme temperatures of February 12th, the dormant fire was fanned into life and reignited. In the absence of any other possible cause being established, there is no conceivable reason why the evidence of the eye witness Kelly, supported to an extent by Page and the Kings, should not receive unqualified acceptance.

It remains for the CFA to explain first:

why the burning off was undertaken at the particular time of the year, having regard to the prevailing weather conditions.

The Board is well aware of the difficulties of country fire brigades arranging for burning off

and this matter will be the subject of examination in a later paragraph. However, it is fair enough to say that on February 10th, the CFA officers should have known that days of total fire ban were imminent and that it was a risk to burn country of this nature at this time.

Secondly:

were adequate steps taken to inspect the area on February 11th and the morning of the 12th having regard to the fact that both of those days were days of total fire ban.

Although some fairly casual patrolling was done on February 11th, the brigade can be criticised for over confidence in relying on their activities on the evening of the 10th as having totally extinguished this fire. A very experienced firefighter, Mr. L. W. Peters, Captain of the Balliang Brigade, gave evidence that even in ordinary country, let alone in dangerous peaty country, it is good practice to patrol the area after a burn-off for at least five days. It seems that something less than adequate precautions were taken in this regard by the Gazette Brigade, and, consequently, the cause and origin of this fire becomes quite clear, namely, that the burning off operation of the 10th was not completely extinguished and that further patrolling of the area should have been undertaken by the Brigade.

2.3.06 The Tatyoon/Streatham fire

This fire began at about 1320 hours on February 12th on a property owned by Mr. Joshua Charles Hamilton, Buangor Road, Tatyoon North. As everywhere else in the western district on that day, the fire rating danger was extreme and

conditions explosive. At 1300 hours, the temperature was 35°C, rising later in the afternoon to 37°C. A north by north-west wind was blowing at a force of 7 to 8. The fire burnt into a hayshed on the property and soon spread to the south and in minutes, became out of control. Fanned by the strong wind, the fire headed in a general southerly direction towards the township of Streatham which is approximately 22 kilometres from the point of origin. The fire reached Streatham somewhere between 1350 and 1420 hours. Eye witnesses estimated the speed of the fire as it approached the township as being in excess of 50 kilometres per hour. The fire subsequently burnt out the township of Streatham and continued on south to a point which was within a few miles of Vite Vite. There was then a change of wind to the west, whereupon, the fire burnt to the east and then to the north-east into the Carramballac area. The fire was brought under control towards nightfall. At its furthest point, it passed close to the point of origin of the Pura Pura fire.

This fire was particularly serious. One man, Mr. Graham Donald Dunn, died as a result of the fire. He received severe burns when he was trapped in the fire near his homestead. He died whilst his wife was heroically acting to save people in the township of Streatham. The overall damage of this fire was disastrous. As well as Mr. Dunn who died from the effects of burns, approximately 30 other persons suffered injury to greater or lesser degree in the fire. Approximately 2,000 hectares of pasture were burnt out, 16 farm houses were destroyed and 67 other outbuildings. 19,000 kilometres of fencing was burnt, 262,000 bales of hay destroyed, more than 80,000 sheep and 1,200 cattle killed. In Streatham itself, the township was virtually wiped out. Twenty houses, 5 shops, 2 garages, 2 classrooms of the Streatham school and the old bluestone Presbyterian Church were destroyed in the fire. Although there were other major

fires in the immediate vicinity and the situation on the whole was desperate, the Tatyoon/Streatham situation called for, and received, massive response from the firefighting services. Forty-one CFA units and approximately 200 private units attended and fought the fire. The Shire of Ararat provided 2 water carriers of 2,000 and 2,500 gallon capacity, 3 graders and various quick-fill pumps.

The Buangor Road where the fire started, runs generally east and west. Hamilton, or members of his family, own land on both sides of this road. A 12.6kV SWER line runs from the property on the south side of the road from pole number 11, continues across the road at a slight angle to a pole number 12 in a paddock on the north side. The line passed a plantation of rough timber beside the south side of the road inside the boundary fence of Hamilton's property. The trees in the main were sugar gums which in some cases were 80 feet high. They were mainly in rather poor condition and had what is called "coppice" growth, that is branches which are grown after the trunk had been cut down to a stump. Sugar gums are notoriously inclined to lose branches in the high wind and particularly where there is coppice growth they are liable to break and fall.

The origin of this fire is beyond dispute. The single line conductor between poles 11 and 12 was found to have broken and live wires in the dry grass had started a fire, which by the time Hamilton reached it, had got beyond one man's capacity to stop. The narrow issue that was the subject of much debate was simply whether the conductor had broken in the wind by reason of its own inherent weakness or whether because of a branch of a

sugar gum falling upon it. Hamilton was convinced that before the fire, the conductor had a "sleeve" or a join at a position some 21 feet inside the fence line and that the "sleeve" was defective and broke in the wind. He denied that any branch had fallen on to the line and said positively that when he came to the scene he drove his tractor over the piece of ground where the branch alleged to have caused the breaking was said to be lying. The SEC officers were equally adamant that no such "sleeve" or join existed before the fire or at any time. The only evidence in support of Hamilton therefore, is his own. No-one else saw the "sleeve" at any time.

As against this, there was substantial evidence to the contrary. The negative evidence was that the SEC records disclosed no join on this line at any time anywhere near this point. Perhaps, more importantly, no "sleeve" was found after the fire, although it was searched for by a number of people. A "sleeve" is a cylindrical metal object at least six inches long and despite the fire and the debris lying about after it, one would expect such an object to have been found if it had existed. The police gave evidence regarding the position of the conductors at the time of their arrival. This was to the effect that at a point about 3 metres west of the estimated position in which the power line had been before it was broken, there was a sugar gum tree with a diameter at the base of about ten inches. The tree had broken off at a point approximately 25 feet from ground level. The top portion of the tree was not observed by the police at that stage. However, some days later on February 17th, the officers returned to the scene and observed what is plainly the other portion of the sugar gum tree. The upper portion was approximately 16 paces in length and weighed approximately 500 lb. From an examination of the tree stump and of the branch and of photographs, it is plain that this branch has a burn indentation

mark consistent with it having been against the conductor for some period of time. That portion of the branch was cut out and exhibited (exhibit 95). It might be added that the branch survived the fire because it had fallen to a point not burnt by the fire in the first place. It was later dragged to the already burnt ground by some volunteers. This narrow issue was hotly and lengthily debated, presumably because it is regarded as relevant in some other proceedings, but is not of vital importance to the issues for this Board to determine. Whether the conductor broke from its own inherent weakness, or from the contact with the broken branch does not shift the responsibility. The 12.7kV line was not a private line, but a spur line under the control of the SEC. It passed through a plantation via a gap in the trees and this gap was insufficient for safety purposes. It was claimed by the SEC that there was a clearing to permit the passage of the conductor of approximately 13 metres in width between the tree trunks on either side of the position of the conductor. However, at a point above the conductor, one limb of the sugar gum tree referred to sloped across and above the conductor. The clearance between this limb and the conductor was between 2 and $2\frac{1}{4}$ metres. As this tree, among others, was something like 80 feet in height, the conductor was obviously in a position of danger. The SEC permitted these trees to overhang the line and in the conditions of February 12th, the probability of the branch falling on to the conductor was very high. The Board is satisfied, on the evidence of the police, the volunteers who arrived at the commencement of the fire, by photographs which were highly significant, and by a careful inspection of the site by the Board on two occasions, that the cause as alleged by

the SEC is certainly the correct one. That cause is that a branch from the sugar gum tree fell on to and remained in contact with the line. The contact between the tree limb and the line created a short circuit in consequence of which the conductor became heated to a degree where it finally parted and the live end falling to the ground ignited the fire. That such an occurrence is a practical possibility was amply demonstrated by rather dramatic experiments carried out by the SEC and recorded in a colour film which was shown to this Inquiry. It follows that the cause and origin of this fire is quite clear.

This is a classic case of multiple responsibility. The primary responsibility for this fire is that of the SEC. In erecting the line in the first place, the engineer responsible should have chosen a different route, or if that was impracticable, should have ensured that the clearing through the sugar gum plantation was wide enough for the conductor to pass through safely, free from potential contact with the trees. The site was last inspected by the SEC in July, 1975. A more frequent inspection was necessary. On the other hand, Hamilton himself should have observed the dangerous situation and reported it to the SEC. Furthermore, any regular inspection by the CFA would have revealed this potential hazard. To have found and remedied this dangerous situation was everybody's business. Consequently, it was not regarded as anybody's business. It follows that the SEC is not alone in its responsibility.

2.3.07 The Pura Pura fire

This fire occurred also on February 12th, the alarm being given at approximately 1245 hours. The fire commenced on the property of a Mr. Petrass, a farmer of Pura Pura, in a sugar gum plantation. The last rainfall of any significance in this district had occurred in mid January, 1977 and from

that time till the day of the fire, the temperatures had ranged from warm to hot. On the 12th, the temperature was 37°C, later increasing to 39°C and this temperature continued until approximately 1615 hours when a cool south-westerly change arrived.

The wind was a strong northerly prior to the change. After the fire started at Petrass' property it was fanned by the northerly wind which was extremely strong and the fire spread on a wide front through grazing properties to the south-east. The fire proceeded to the Mt. Elephant-Derrinallum area and burnt to the edge of the township of Derrinallum itself. On the change of wind the fire burnt in a north-easterly direction along 11 kilometres of its eastern flank. One breakaway actually joined up with the Tatyoon/Streatham fire. The spread of the eastern flank was stopped around 1715 hours. The damages in this fire were devastating and extreme. There was one person, Mr. Richard Hirst who was burned to death. He was attempting to plough a firebreak on his property at Vite Vite, was caught in the fire and received severe burns which caused his death in the Alfred Hospital on the following day. Eight other persons sustained injuries - four of them quite serious. There were destroyed in this fire 9 occupied houses and 2 unoccupied houses, 116 bales of hay, 41,950 bushels of grain, 2 small pine plantations, 33,515 sheep, 1,279 cattle, 1 horse, 122 pigs and 3 dogs. 79 properties were involved in this fire which burned in area, 18,700 hectares.

There was a plantation running along one side of Mr. Petrass' property consisting of sugar gums in the main, and across this plantation ran an SEC line, a spur line known as the Thewlis Spur which terminated on the adjoining property of Mr. Thewlis. It is apparent that the gap in

the plantation through which the SEC line ran was insufficient for safety purposes. The day following the fire, February 13th, SEC officials inspected the scene and they observed that the tops of a couple of trees under the Thewlis line had been in contact with the conductor. The top section of one tree had lost its leaves and the branches were brown and dry, indicating that the conductor had been in contact with the branches for some time. Other branches also showed signs of having been in contact with the conductor at some time. It seems plain enough that a branch of a sugar gum tree either fell from its tree and came in contact with the line, or caught fire and then fell. In any event, a burning branch had fallen to the ground, ignited the grass and in the high wind, the fire had very rapidly become uncontrollable.

The fire was attended by over 100 units, some CFA units and others privately owned. These included 23 CFA tankers, 1 quick-fill pump and a number of separate mobile units. The local shire also provided tankers.

Some question arises as to whether the state of the plantation adjacent to the spur line was within the knowledge of the SEC local office. It appears that in December, 1974, Petrass had asked SEC linesmen to come and take appropriate action when a tree had blown across one of his private lines. He was informed that the line was a private line and it was therefore his own responsibility and not that of the Commission. However, he mentioned to the linesmen that the trees in the plantation near the SEC line were too close to the line and he requested that these trees be cut back. He was told by the linesmen that they would report his request to the local office, and would let him know when something was to be done about it. Nothing was done. There is no record of Petrass' complaint at the SEC office and there was no cutting back performed

between Christmas, 1974 and the date of the fire. It is also fair to state that while the SEC took no action, neither did Mr. Petrass and he made no further request to the SEC to take steps to safeguard his property by cutting a pathway through the plantation to a suitable extent.

The evidence of the witnesses called in relation to this fire and the reports of the CFA indicate that the brigades in this area are particularly live and efficient and that a good deal of prevention work is done in the area. However, on this particular day, once the fire had started and got out of control, there was very little that any firefighters could do to stop it and the most that they could do was try and fight it from the flanks until the cool change enabled ultimate control of the fire.

Again, this is a case where the primary responsibility must be at the door of the SEC. Obviously, the trees in the plantation should have been cut back to such a distance as to keep the line free of interference from sugar gum branches. Either this danger was not known to the SEC when it should have been, or if it was known, then there was a grave failure to protect the line. Again, however, the entire responsibility does not rest with the SEC. There is surely some duty upon a landowner who has known for over two years that the line was being interfered with by trees to have realised the danger and taken much firmer steps to alert the SEC and ensure that appropriate cutting, lopping or clearing of the plantation was effected.

2.3.08 The Beeac fire

The alarm for this fire was given at approximately 1400 hours on February 12th. The fire originated at a point on Pearce's Road approximately 2 kilometres east of the main Colac to Ballarat Road and approximately 7 kilometres north of the township of Beeac. Once again, it was fanned by a strong north wind, the fire spread to the south and to the east through grazing and farming land to the south-east of the Beeac township. As a result of this fire 16 properties were burnt to a greater or lesser extent, 2 occupied houses and 2 unoccupied houses were destroyed, together with 2 haysheds and a number of other outbuildings and some 80 kilometres of fencing. Stock destroyed was 16 cattle and 210 sheep. There were also burnt in this fire, 2,000 bags of barley, 4,000 bales of hay and some motor vehicles. The fire was attended and ultimately controlled by approximately 14 CFA units and a number of private units from 15 brigades, some of whom came from the adjoining region 7.

The allegation as to the origin of this fire is that it was started by an SEC installation. On the north side of the road there is an electrical line, consisting both of H.V. and L.V. conductors. The L.V. conductors are three in number - the centre of the three being the neutral line. There is substantial evidence that the most southerly conductor came into contact with the neutral conductor, because the lines were slack and "out of sag" and owing to the high wind, were swinging towards the south - almost to the surfaced strip in the centre of the road. As a result, the conductors touched and arced. It is then alleged that sparks or other hot material from the arcing conductors fell toward the roadway, but were driven by the high wind in a southerly direction into the paddock on the south side of the road.

The evidence in support of the SEC responsibility is first that at a stage after the fire had started, a witness, David Ian Hirth, deposed to seeing the

conductors clashing and sparks being emitted, although he did not observe where the sparks were going. Furthermore, an SEC linesman, a Mr. Gregory McFadden, stated that he travelled down Pearce's Road some time shortly after 1620 hours on February 12th. The weather at that time was very hot and there was a strong northerly wind. He did not take any specific notice of the conductors or the movement of the conductors at that time. He returned to the Pearce's Road area on the following day and he found that a fuse had blown. Later, he was shown marks on the centre conductor and the most southerly or the roadside conductor in Pearce's Road and he formed the opinion that the marks were consistent with the clashing of the conductors. These marks were also observed on a later date by Mr. Lyons of the SEC.

Secondly, there is evidence that in 1969 at a very similar, if not the same place, a fire was caused in this same way.

Thirdly, that in 1973 at a nearby site, a fire was similarly caused and subsequently, in the presence of SEC personnel, the wires were observed to clash and sparks produced.

It may be significant that since the fire, the SEC have installed spreaders. These spreaders have been fitted to the L.V. conductors in each span on the spur line in Pearce's Road. The purpose of these spreaders is to keep the conductors apart so that they cannot come into contact with each other. There was evidence that since 1969, complaints about the conductors in Pearce's Road had been made to the SEC and a request made that some action be taken to prevent excessive swing and touching of the conductors and that this complaint was made by more than one person on more than one occasion.

The case against the SEC was strongly contested by counsel and the considerable difficulties in the way of accepting it pointed out.

In the first place it was argued the conductors that clashed were L.V. (ie: 240 volts), and thus one would expect the amount of hot metallic material produced to be a lot less than in the case of H.V. conductors. This view is supported by the fact that the marks left by the arcing were relatively slight indicating that little metal was exuded.

Furthermore, the evidence is that the fire started, not as one might expect on the north side or even the south side of the road, although there was plenty of inflammable material there in the form of phalaris grass, but 30 feet, or as one witness said, 40 feet in a southerly direction into the paddock. Measurements made by Sen.Con. J. M. Grover show that from the presumed point of ignition back to the point of marks on the conductors, the distance is 43 feet.

Witnesses who described the incident in 1973 described the conductors swinging out till they were over the north edge of the road formation and that the hot material produced fell on to the road and skidded or ricocheted from the surface of the road into the grass on the south side of the road, which became ignited by the hot metallic material. Such an occurrence is readily understandable. It is not so easy to accept that, even in a strong wind, hot metallic material would be driven over 40 feet into a paddock and still have sufficient substance to start a fire and all this without starting any fire in the grass by the side of the road, or the northern edge of the grass in the paddock.

Another rather mysterious aspect of this incident is that when the appropriate fuses were examined by Mr. McFadden on Monday, February 14th, it was found that the fuse which had blown was the "blue phase" fuse, that is the fuse on the most northerly conductor,

not the "red Phase" fuse which was on the most southerly conductor and which was the one which clashed with the neutral centre conductor.

At the end of the evidence called specifically in respect of the Beeac fire, the Board was left with a very difficult decision. On the one hand it was clear that the conductors had clashed and that sparks were emitted, and that a similar incident on previous occasions had led to the ignition of a fire. As against this, the distance from the L.V. conductors to the point of ignition was difficult to accept as a possibility, even having regard to the force of the wind. However, the SEC subsequently conducted a number of experiments and these experiments were repeated in the presence of the Board and those appearing at the Inquiry. Somewhat surprisingly, these experiments established that even L.V. conductors clashing can produce a modest amount of hot molten material, sufficient to ignite a fire in extremely dry combustible fuel. Moreover, tests to show how far such combustible material could travel in a high wind, and still retain sufficient substance and heat to ignite suitable material, demonstrated that the distance was much greater than one would expect. Without taking space to record these experiments in detail, it is sufficient to say that the result was quite clearly established that the clashing lines in Pearce's Road could have produced enough molten material and that this material could have travelled the 43 feet measured by Sen.Con. Grover, and in the extremely dry fuel and the high temperature and severe conditions of February 12th, have ignited the fire. The Board therefore finds that this was the cause of the fire.

There is, of course, reason to criticise the SEC for erecting the line originally with conductors not sufficiently taut and separated as to avoid clashing, or permitting the line to reach

such a condition and to continue in a dangerous state. This would be fair criticism, even if no-one had lodged complaints. The fact is that the Commission was warned by a number of people and took no action to remedy the situation.

The local SEC office knew, or should have known of the earlier incidents of 1969 and 1973 and taken appropriate action at some time since at least 1973, by installing spreaders to eliminate the clashing of the conductors, if indeed, it was not felt desirable to reinstall the whole of the line.

In the ultimate result, the Board finds that the responsibility for this particular fire is wholly that of the SEC.

2.3.09 The Cressy fire

This fire also occurred on February 12th of this year and the alarm was given at about 1130 hours. The temperature during the time of the fire varies according to different estimates from 35°C up to 40°C and the wind was blowing generally from a northerly direction and nor/nor-westerly direction. The fire danger rating in the area was extreme.

The fire originated at a point 4½ metres south of the base of an SEC pole known as pole 66 situated on a property owned by a Mr. Featherston at Wallinduc, some 23 kilometres north-east of the township of Rokewood. It was the largest, perhaps the most serious fire of all in February, comparable to the Tatyoon fire. This fire had tragic and devastating consequences. Three persons were burnt to death as a result of that fire, a man aged 65, Ian George Bath, was found burnt to death in the ruins of his burnt out house. Two brothers, Neville and Graham Kirk, were also found burnt to death in their farmhouse at Werneth.

In the course of fighting the fire, one firefighter in particular suffered quite severe burns which became infected and he required hospitalization.

The material damage is said to have been calculated in excess of \$9 million. Nearly 42,000 hectares were burnt out, 39 houses were destroyed and a number of public buildings, including the Scout Hall at Cressy, the Memorial Hall, the Werneth State School and the tennis complex at Werneth.

More than 100,000 sheep and in excess of 2,000 cattle were destroyed, together with several horses and pigs. There were huge losses of machinery, farm implements, caravans and motor cars, 2,030 kilometres of fencing destroyed and 460,170 bales of hay were burnt. The machinery destroyed in that area was 118 headers, slashers etc. Fanned by a strong hot wind, it quickly covered the 121 metres to the Lismore-Cape Clear Road and with devastating speed spread in a general south-easterly direction. Extensive areas of grazing country in the Wallinduc and Werneth areas were burnt out. The fire jumped the Hamilton Highway and engulfed the township of Cressy. As a result of a powerful wind change the whole fire broke away in an almost continuous eastern flank, threatening the township of Rokewood. The fire was ultimately brought under control at about 2000 hours.

The fire was attended by over 210 units, including 62 CFA units which came from six regions, including units from as far away as Montrose and Mooroolbark, Mount Eliza, Dandenong and Mount Macedon. Shire, CRB and private equipment included graders, cement trucks and milk tankers. Through the Police Coordinator, necessary generators were supplied and first aid equipment and personnel were arranged.

Pole 66, where the fire started is in an isolated position in a large paddock and there are no surrounding trees. An examination of the area in the vicinity of pole 66 by the police revealed lying within the burnt area, a fuse wire and spring similar to that which was likely to have been fitted to the pole. It was plain that the fuse had operated and ejected the wire and spring on to the grass below the pole.

The first question to be answered is what caused the fuse to blow at pole 66.

One of the lines which led from pole 66 was a 3/12th steel single conductor SWER line which passed across a plantation of sugar gum trees on the property of Mr. Ian White situated some 7 kilometres away from pole 66. It is established that at approximately 1330 hours on February 12th, a limb of a gum tree fell on to the conductor described above. The conductor did not break, but was forced down to the point where it fell across a barbed wire boundary fence at the entrance to Mr. White's property. Immediately, all consumers between White's property and pole 66 lost power, whereas consumers on other lines leading from pole 66 still had power. It follows that the incident on White's property caused the fuse to blow.

Mr. White deposed that some eight months or thereabouts before February 12th, he had called at the office of the SEC at Ballarat and asked them to clear limbs from the line. This was not done, with the result that one of the limbs came down on to the line as described.

The fuse having blown for this reason, there remains the question as to what caused the fire to occur in the vicinity of pole 66 on Featherston's property.

There is no doubt that human error on the part of an SEC employee had occurred some time before February 12th when the fuse was replaced. That is the fuse controlling the Wallinduc line leading to White's property.

Mr. Cooper, an SEC employee, who it is not suggested had anything to do with replacing the fuse on the previous occasion, came to this pole after the fire in company with another linesman, Mr. R. Irwin, and he said this:

"We placed a ladder against the pole and I ascended it to within 5 feet of the two EDO fuses. I was standing on the pole dogs and I noticed that the EDO fuse controlling the Wallinduc line did not have a cap on it, and the top of the fuse was gone from the fuse holder. I removed both the fuse holders with a lifeline stick and lowered them to Irwin on the ground. The cap was intact on the fuse holder controlling the Everett and Glenevan line".

The employee of the SEC who last replaced the fuse controlling the Wallinduc line had failed to place a cap on the fuse. The effect of such a failure has been considered by Mr. A. T. Wilson, Development Engineer, Distribution, for the SEC. This witness described the likely effect of the absence of the fuse cap when the fuse operates. His evidence was as follows:

"particles of the fuse element are likely to be vented from the top of the fuse tube and will therefore not be caught by the fire choke; the hot top of the fuse link with the 'button' attached is likely to be ejected during fuse operation or will be dropped from the fuse body as the drop-out link operates".

What happened was that the particles have gone up rather than down to be caught by the fire choke underneath the EDO fuse, and that the portion of the fuse link landed on the ground and the fire has started from that point.

This situation raises the question of whether or not proper instructions were given by senior

executives of the SEC to linesmen and other employees as to the dangers of not fitting the cap on the fuse, or the consequences which might arise if the fuse cap is not attached to the fuse. The evidence of Cooper, Irwin and Wilson himself leave it open to doubt whether this matter was ever the subject of instruction to linesmen at all. Certainly, there was never adequate instruction given.

There is no doubt that as a result of the tree coming down on Mr. White's property, the fuse controlling the power to the Wallinduc line blew and due to error on the part of an SEC employee in the past, at some stage before February 12th, the hot material came out of the top of the fuse and landed on the ground, causing this particular fire.

The responsibility for this fire is clearly that of the SEC and is in respect of three separate omissions. First of all, there was a failure to ensure that the line passing through the plantation on White's property was safe from interference by tree limbs. This is a serious error in the light of White's specific request to render the situation safe. Secondly, the failure by an employee to replace the fuse cap, in consequence of which the fuse operated in the manner described and was the immediate cause of the fire. Thirdly, it is apparent that there was a failure on the part of the central control of the SEC to instruct, adequately, or at all, the linesmen engaged by the Commission to ensure that caps were always firmly attached to the top of EDO fuses. Once again, this is a case in which responsibility for this fire is solely that of the SEC.

2.3.10 The Lismore fire

This was another fire which occurred on February 12th - the alarm being given at approximately 1500 hours. The fire occurred on the Camperdown to

Ballarat Road, a little to the south of a cross road known as Bucholz Lane at Mingay. The fire occurred in the immediate vicinity of an SEC installation - that is a power pole with a number of instruments on it, known as the Bucholz sub-station.

The fire occurred on the roadside immediately outside the boundary of an extensive grazing property owned by Gala Pty. Ltd. In the immediate vicinity, was a house on the company's property - that house being occupied by a Mr. Graham P. Eddy as a tenant. Mr. Eddy is an electrician, having a business in the area. The fire started in very long phalaris grass. It burnt extensively on the roadside into a plantation on the Gala property, through that plantation into open country and spread extensively to the south. There was of course, here as everywhere-else in the western district on that day, a very strong wind originally from the north, later changing to west-north-west and later in the afternoon at approximately 1645 hours, there was a further change to the south-west. The fire was contained at approximately 1800 hours. Rain commenced to fall later that night to the order of 16 mm.

In this fire fortunately, there were no reported injuries and no houses were burnt, although there was considerable destruction of property. The total area burnt in the fire was 2,073 hectares, 7 outbuildings were burnt, 162 kilometres of fencing, 1979 sheep were destroyed, 21,500 bales of hay and 750 bushels of grain. Eight individual properties were affected by the fire.

The fire was attended by 14 CFA units with 1 quick-fill pump. There were a considerable number of private units - the precise number not having been recorded.

The fire was first noticed by Mr. Eddy. The electric supply having failed in his house, he went outside, observed the fire and smoke at the foot of the pole and rushed towards it and attempted to put it out. At that stage, he was clad only in a pair of shorts and was barefooted and any attempt to do anything about the fire with a bucket and a wet bag was quite hopeless. He was indeed in considerable danger of being burnt. He returned to his house and put on more suitable clothing, but by that time of course, the fire was beyond his control. A Mr. W. J. Featherston who was passing the area on his way to another fire, observed this fire at the foot of the pole. He stopped and spoke to Mr. Eddy and then proceeded on his way. By the time CFA units arrived, the fire was well under way. There is no doubt that it burnt through the plantation into the country on the other side of it and there was also extensive backburning towards Mr. Eddy's house. He was fully engaged for the rest of the day protecting his own property against the backburn.

The origin of the fire was undoubtedly the SEC installation at the Bucholz sub-station, but the precise reason for what happened to that pole is still something of a mystery. On February 4th, a linesman employed by the SEC visited the pole because of extensive lightning and electrical storm trouble in the district. The SEC pole had on it two 22kV fuses and a 12.7kV fuse, all being of the EDO type H.V. fuse. In addition, there was a surge arrester situated on the pole as well as the usual transformer. When the linesman visited the pole on February 4th, it was noticed that both the two 22kV and the 12.7kV expulsion fuses had blown, but all other electrical apparatus located on the sub-station appeared to be intact and ready for service.

After the fire, the Bucholz sub-station was again inspected - that is on Sunday, February 13th at about

0615 hours. On this inspection it was seen that both the two 22kV and the 12.7kV fuses had blown, the earth cover strips on the sub-station were burnt off from ground level to a height of about 54 feet and the copper earth wires were annealed from heat due to fire in the vicinity of the sub-station pole. The valve type lightning arrester on the 12.7kV side of the transformer was still in its bracket and attached to the earth wire, but it had blown up, or at any rate disintegrated, and shattered pieces of the lightning arrester were on the ground around the foot of the pole. Now it is true that no adequate explanation has been given as to why the fuses on the pole should have blown in the way they did and certainly no adequate explanation of why the lightning arrester should have exploded or shattered as it did, throwing hot portions of the porcelain cover on to the grass at the foot of the pole. The line was subsequently patrolled and there was no basis discoverable for the occurrence at the pole. The SEC was obviously required to give some explanation of the behaviour of the instruments on this sub-station pole. Mr. A. T. Wilson, Development Engineer, Distribution with the SEC gave evidence on this matter. He conceded that the particular type of surge diverter which was under consideration had been a problem to the SEC. He stated that the particular model of surge diverter was fitted with seals which were not as efficient as they should be in that they allowed moisture to get into the device, that once moisture entered it was possible to have corrosion and that the particular diverter at the Bucholz-substation did have signs of corrosion. Corrosion has two effects in that it alters the characteristic of the device and secondly:

"with the arcs that pass through the thing it could enable internal flash-over and build up an extremely high pressure and the device can and does, in some cases, disintegrate".

He estimated that the SEC lost about 1% of surge diverters through that mechanism of failure following a surge and agreed that if the diverter does explode the shattered pieces are sufficiently hot to cause a fire given the right conditions at the base of the pole. However, Wilson's evidence was that the failure of the surge diverter would not cause the 12.7kV fuse to operate and as this fuse had in fact operated, there must have been a fault along the Bucholz spur line which

"blew the fuse and caused the surge diverter to operate".

The 22kV fuse then operated. A possible explanation put forward by Wilson was that there must have been a fault somewhere on the 12.7kV spur line on the load side of the fuse as there was no evidence of any tree or limb in contact with the line. It was further suggested that a fire had started in the vicinity of the pole from some unknown cause and that subsequently the hot ionized gases from the fire reduced the normally adequate electrical strength of the air between the overhead conductors, resulting in a flash-over between one of the 22kV conductors and caused the 12.7kV fuse to operate. With all due respect, this seems an unlikely possibility and involves the coincidence of a fire starting precisely at this point from some cause other than electrical. When it is remembered that the surge diverter disintegrated at the stage where the fire was still relatively small, this coincidence is too much to accept and must be rejected. The plain fact is that the electrical installation on the Bucholz sub-station completely failed and the responsibility for the cause of this fire must rest with the SEC.

It may be that what happened to the apparatus on the pole was not due to any mistake or error or inefficiency on the part of the various portions of the apparatus or of any SEC operator, but the fact remains that the apparatus on the pole did act in a way that has been stated and did cause the fire.

That however, is not the end of the matter. It appears from a great deal of evidence that this area, as indeed the whole area of the Lismore group of the CFA is particularly efficient, and a great deal of prevention work has been done, in marked contrast to some other areas. Unhappily, this particular road, the Camperdown-Ballarat Road, has not been the subject of any attention at all by way of clearing the sides of the road. When the Board inspected this area on March 29th, the unburned portions of the roadside were still in the same state. There was extremely high dry phalaris grass and the slightest ignition would have created a fire, even at that stage. The manager of Gala Pty. Ltd., Mr. T. C. Dennis, deposed that he had intended on behalf of his company to take steps to safeguard his boundaries by attending to the roadside adjacent to his fences, but for various reasons, financial and otherwise, that intention was never in fact carried out. The brigades in the area apparently found that this road was difficult to manage - the area between the bitumen and the fences on each side being narrow, making it extremely difficult to either burn off the grass or to plough it, but there is no question but that something should have been done by the local shire, the CFA or even the local landowners to make some effort to dispose of what was obviously a high fire danger, so that again, the responsibility for the fire in this case is a joint one of the SEC and others.

2.3.11 The Waubra fire

In the case of this fire the alarm was raised at 1445 hours. The fire started on a road known as the Addington/Kal Kal Road or the Waubra/Beaufort Road at Waubra on the property of Mr. J. J. Moran. It burned in a general

southerly direction until brought under control on the "Ercildoune" property at about 2045 hours. The damage was 15 head of stock, 18 kilometres of fencing, 1 unoccupied house and contents and about 1,400 hectares of grassland burned.

A number of firefighters were involved in the suppression of this fire. There were 7 units from the Ballarat Shire group and 10 from the Pyrenees Group of region 16, together with one "carter chief". As to private units involved, there were 12 from the Ballarat Shire group plus 2 mobiles and Learmonth and Waubra Brigades attended with quick-fill units. The Ballarat City supplied pumps, 2 tankers and 1 grader. The Pyrenees Group was released at about 1800 hours to attend the Streatham fire.

The cause of this fire is clearly established. An SEC line from Ballarat to Learmonth runs past the point where the fire started between poles 13 and 14. At the relevant point the line is a single phase two conductor 22kV line through Glenbrae to Lexton. The line passed beside two pine trees at the gateway to Moran's paddock, the nearest conductor being 3 metres north from the tree trunks. The conductors were approximately 8 metres from the ground. These pine trees had grown to a stage where some of the branches were overhanging the power line, although well above the line. The trees were approximately 25 metres high and about 7 metres apart. There can be little doubt that the nearest conductor came into contact with a branch or branches of one of the trees. Subsequent to the fire, Mr. Lawler, SEC officer, observed that some branches had broken from the tree and that there were burn marks on limbs some 5 metres above the line. It appears that a 4 metre long branch had broken off in the wind and fallen upon the conductor. The conductor was broken and fell to the ground where long dry grass under the power line was set alight. The fire burned to the east for approximately 150 metres along the

roadside, being prevented from going south by a potato crop. However, once the fire passed the potato paddock, the fire followed dry grass round the crop and continued to the south.

In the opinion of the CFA any type of firebreak could have stopped the fire at its commencement, but no such break had been made.

Mr. R. M. McCreadie, a tree lopping contractor employed by the SEC had been working along this line on February 10th. McCreadie had looked at the trees, decided they did not need lopping because no branches were close to the line, but that at some time the tops should be lopped. At the time, McCreadie's available equipment was not capable of cutting the tops of the trees. Some branches which he had lopped some two years before, he stacked close to the fence and the base of the pine tree nearer to Ballarat. Needless to say, this neatly stacked pile of firewood burnt fiercely during the fire. Immediately after the fire, both trees were cut down completely before any inspection by the Board was possible.

The question of the SEC tree lopping policy and practice will be discussed later when the difficulties of keeping a programme adequate to the needs of the situation are examined. Lawler says this SEC district to be covered is some "60 square miles". However, the existing situation immediately before the fire was plainly one of danger, although it did not appear a great or urgent danger as compared to other tree situations. It was a matter of priorities. The high wind of February 12th broke one of the limbs which fell upon and broke the power line - a result which might have been anticipated.

While the proximate cause of the fire is the responsibility of the SEC, other persons are not blameless. The potato crop proved a first class firebreak, but the sides of the road and the edges of the paddock were a fire hazard which nobody thought of. Another local witness said that he did not give any thought to the danger, although the conditions were obvious to him.

It is another instance of the combined responsibility of more than one person or organisation for the occurrence of a serious fire. Had the SEC by its officers or contractors, observed and properly assessed the danger of the H.V. lines passing close beside these high pine trees and taken proper steps to remedy the situation, the fire would not have started. It is equally true that if adequate preventive measures had been taken by the Shire Council or adjoining landowners to clear the high phalaris grass from the roadside, the fire would have been minor and easily controlled. It is true that the nature of the roadside was difficult to burn and impossible to plough, but it was conceded that it could have been cleared by a bulldozer. Those who gave evidence on this matter left the Board with the distinct impression that the fire hazard created by the grass was well known but not appreciated and the idea of removing the hazard never entered their heads. For these reasons, the responsibility for the damage caused by this fire is a joint responsibility of others with the SEC.

2.3.12 The Balliang East (Little River) fire

This fire occurred on February 12th at about 1600 hours, the alarm being given at 1602 hours. Mr. Victor Davis who was watering the garden on his own property, observed smoke coming from the property of Mr. Michael Cock, and he telephoned the fire brigade.

The origin of the fire was on Mr. Cock's property which is situated at Sharkey's Road, Balliang East. Sharkey's Road runs generally east and west. The temperature was estimated at approximately 40°C and the wind was blowing from the north-west. The fire burnt in a general southerly direction on a front varying up to 2 kilometres in width. It burnt for a distance of some 12 kilometres, covering an area of approximately 2,100 hectares. The fire was finally brought under control on the north-west outskirts of the township of Little River.

There was considerable damage as the result of this fire which burnt in grassland. 48 kilometres of fencing were destroyed, 4 poles were burnt out, 1,500 bales of hay were destroyed and approximately 1,600 sheep were burned. In order to control this fire, there were called in and used 21 CFA units with 4 quick-filler tankers, 40 private fire units and FCV units.

Running parallel with the boundary of Cock's property is an SEC L.V. line. Its poles - numbers 113 and 114, and consequently the lines between them, were some few feet from the fence line. The fire started in Cock's paddock either 4 or 8 metres to the south of the SEC line and south of the fence line. The allegation is that the conductor of the SEC line expanded as a result of the great heat of the day and sagged. With the fierce northerly wind these lines came into contact with each other and there was an arc created when they touched. The fact that these lines touched and arced is irrefutable and is confirmed by the evidence of the SEC personnel who observed the marks on the conductors made by the arcing. The only

acceptable theory to account for this fire starting up when and where it did is that molten particles from clashing and arcing of the conductors were blown by the very high wind far enough to the south to light the grass at the point of ignition. It is possible that some spark or hot metal came into contact with a large wattle tree on the north side of the fence and that this being ignited, some burning leaves from this tree were blown into the paddock.

Although the distance between the arcing conductors and the point of ignition is a long way for molten particles to be blown, it must be remembered that the wind velocity and force was extreme. As in the case of the fire at Beeac, expert evidence was called as to the possibility of the fire being ignited in the way suggested. This evidence demonstrates the possibility of the clashing of L.V. conductors producing sufficient hot molten material to start a fire when any such particles were blown by the very high wind for the distance noted in this fire. There was no other possible cause of the fire suggested. For what it is worth, there was evidence of a somewhat negative nature that Sharkey's Road is not a much used road and that no vehicle had passed the point of the fire outbreak for a very considerable time before it ignited. In all the circumstances it appears that the cause of the fire was the arcing of the conductors as described above.

It was put against the SEC that the span of the conductors between poles 113 and 114 was too long - being in fact, 103.7 metres - particularly it was too long for conductors situated in a position very exposed to winds. Further that "spreaders" between the conductors to keep them apart such as were put up immediately after the fire should have been installed earlier to ensure

the conductors would not clash in high winds. It was further suggested that the most northerly conductor and the centre conductor were both on the northern side of the cross arm and that this was bad practice as bringing the wires too close together.

The Board feels that the SEC should have realised the danger of these conductors meeting in circumstances where heat caused expansion and the high winds caused swaying. This should have been anticipated and guarded against at least by providing spreaders. Had that been done, the fire would not have occurred.

Thus, the responsibility for this fire is that of the SEC.

Major fires on other days

2.3.13 The Ross Creek fire

This fire occurred on December 22nd, 1976. It is within the terms of reference of this Inquiry by virtue of the general direction to inquire into bush and grass fires, rather than coming within the first term of reference. The 22nd was a day of total fire ban. The fire was detected in very heavily timbered country at about 1330 hours at a point 5 kilometres east of Smythesdale, close to a road known as Gram's Road. The fire burned in forest areas - it jumped the Ross Creek-Sebastopol Road and burnt into very heavy bushland which was not easily accessible.

The fire burnt out approximately 2,000 hectares of forest, a good deal of damage was done to the forest area, mainly to land controlled by the FCV. Towards the end of the fire it did burn into private property at the

eastern and southern edges of the fire. The only significant damage to private property was the destruction of a privately owned pine plantation.

The fire was attended and ultimately controlled by approximately 100 employees of the FCV brought to the fire from various other areas. Several un-named units of the CFA also attended and rendered valuable assistance. The fire started at a point in forest near two houses owned by Mr. and Mrs. Gram. Statements were taken from Mrs. Kirsten Gram her son Hans Gram and a Mrs. Judith Metcalfe. The evidence indicates and an inspection disclosed, that Mr. and Mrs. Gram senior occupied a substantial dwelling and that a short distance away, there is a bungalow occupied by their son, Hans Gram. At the relevant time, Mr. and Mrs. Metcalfe were also staying at the bungalow. The fire certainly started a short distance to the east of the bungalow and slightly to the south of it. Neither the Metcalfes nor Hans Gram were present when the fire started.

Hans Gram stated that a domestic fire used for heating water was left burning and he expressed the belief that a spark from the chimney may have ignited the fire.

The forestry officers who examined the scene subsequent to the fire and a police officer who investigated the matter were of the opinion that the fire could not have been started by a spark from the chimney. There was a high north wind and it was most unlikely that a spark would have been blown to the east of the chimney pot which was properly constructed.

A large heap of tree boughs and other material which was not involved in the fire was observed near the bungalow and the fire had apparently started in a similar heap which had

burnt. It is accepted by the expert witnesses that the more likely cause was the tipping of briquette ash on to this burning heap, although there is no direct evidence to support this theory.

In any event, it is clear that the fire was started accidentally coming in some way or other from the vicinity of the bungalow.

There are two important aspects of this fire. On inspection of the scene the Board drove in to the point of origin of the fire by one road and out of the forest area by following another road for some miles. On the one side of this road, the area controlled by the FCV had been subjected to fuel reduction burning. The other side of the road had not. The difference in the effect of the fire which went through both areas was quite dramatic. It is plain that the fuel reduction burning had greatly reduced the destructive effect of the fire.

The second matter to be observed is that the FCV used an aeroplane with great effect - both for observing the perimeter of the fire and its progress and for directing personnel fighting the fire to appropriate places. The origin of the fire is, as stated above, uncertain.

2.3.14 The Lerderderg fire

This fire commenced on January 29th, 1977 at about 1250 hours. It was a very difficult fire and was not completely extinguished until February 7th.

The fire was first noticed by an FCV lookout tower at Mt. Blackwood. The Blackwood tower alerted another observation tower at Blue Mount and between the two observations it was decided that the fire started in very heavily timbered country on a ridge near a spot known as O'Brien's Crossing. Subsequent investigation makes it clear enough that the fire originated in a position adjoining Gentle Annie's Pool on the north bank of the Lerderderg River.

Gentle Annie's Pool is only a 45 minute walk from O'Brien's Crossing - the latter being a very popular camping spot for bush walkers and others.

As January 29th was the Saturday of the long weekend, it could be expected that a number of bush walkers were in the vicinity and it is rather assumed that carelessness on the part of one of these people started the fire, although there is no direct evidence. It was a very hot day, the temperature being about 32^o C and there was a fairly strong westerly breeze. Two FCV workmen, Brian Robson and Ken Baddack were operating a bulldozer some little distance from the starting point of this fire. On their radio they overheard the conversation between the two observation towers and immediately moved their vehicle towards where the fire was. When near enough to observe it, they could see that it was already burning fiercely and, with considerable courage, made every attempt to control the fire. It was soon apparent that their task was hopeless and they were in imminent peril of their own lives, at which point they very sensibly withdrew. Owing to the steep sides of the mountain ridges rising from deep gullies to quite high points, the fire burnt with amazing rapidity going from gully to ridge top, and a considerable quantity of timber mainly of a rough nature was burnt out. Altogether some 1,700 hectares were burnt and tragically, a large number of native fauna perished in this blaze. The timber burnt was generally of a poor quality foothill forest consisting of a number of species of scrubby undergrowth and medium sized native gums. The fire was fought by forestry personnel and assisted by a number of CFA units and as stated above, was not completely controlled for over a week.

The origin of the fire, as appears above, is impossible to determine on the evidence.

2.3.15 The Beechworth fire

This fire differs in a number of respects from most of the other fires investigated. It took place earlier than most of the others and occurred in a different part of Victoria and in a different type of country. It qualifies as a major fire mainly by reason of the number of units involved in its suppression and the difficulties associated with its control.

The alarm was given at approximately 1830 hours on January 29th. The temperature for about a fortnight before the fire had been in the high twenties or low thirties. There had been no useful rain recorded - the last rain prior to the fire had occurred some 14 days before when approximately 16 mm was recorded. The temperature at the time of the fire was 34°C. The wind strength was estimated at between 40 and 50 kilometres per hour.

The fire was contained in just under 4 hours and was under control after a further short period. The fire originated in bush and grass country on the south side of the Wangaratta Road, Everton Upper at a point about 9 kilometres to the south-west of Beechworth. The ignition point was in a relatively remote area away from any kind of activity likely to cause the fire. There was no machinery, electrical lines or traffic in the vicinity, nor was there any suggestion that weather conditions were such as to make a lightning strike possible. The fire spread rapidly towards Beechworth reaching a point about 1 kilometre from the township. The fire was first noticed and reported by a man called Michael Nido who was shooting rabbits in the area about the relevant time. He was interviewed by the police who are satisfied that there is no evidence to connect this man with the ignition of this fire. There was another man

in the area who was later charged by the Wodonga CIB with lighting other fires in the area, but again there is no evidence to connect this man with this fire.

The damage caused by this fire was 26 kilometres of fencing burnt out, 3,000 bales of hay destroyed in a hayshed and a total of some 800 hectares of pasture burnt.

The fire was attended by 3 brigades and by FCV units working with some 42 appliances, bulldozers, a grader and supported by milk and other water vehicles. The rapid involvement of personnel from the United Shire of Beechworth and the FCV, both of whom supplied important equipment, was extremely valuable in the containment of the fire. The fire was also attended by approximately 6 private units, but many of these left during the fire to cover areas left unprotected.

It is necessary to comment upon the fire prevention activities, or lack of them, in this district. A witness, Mr. R. A. Voigt, a local farmer who was involved in fighting this fire was himself very fire conscious and had taken steps to safeguard his own property. Unfortunately, his good example was not followed by others.

The CFA report contains criticism of local attitudes, only one firebreak had been burnt in the area of the fire and there were no ploughed breaks in the area. Generally, the CFA reported very little work carried out apart from some work in the "gorge" area of Beechworth. Subsequently, no real steps had been taken by the local people to prevent outbreaks of fire in the region of the area where the fire in fact occurred. The cause of this fire must remain undetermined. Of the three possibilities, namely; that it was

deliberately lit or that it was caused accidentally by a cigarette butt, or natural causes, it appears most likely that it was caused by accident, but the evidence is not sufficient to make any firm determination.

2.3.16 The Little Desert fire

This fire commenced on February 4th, 1977 and continued in an aggravated form on the 5th and 6th of that month. This fire burnt out an area of approximately 16,000 hectares, mainly rough scrub and timber in the Little Desert area and a considerable amount of grass and stubble in the vicinity of the township of Dimboola. No loss of buildings was reported nor were there any injuries to people. The fire was seen by the FCV observer in the Mount Arapiles tower. On Friday, February 4th, this observer saw and reported much thunder storm activity accompanied by lightning strikes in a northerly direction from Mount Arapiles. He reported eight separate lightning strikes - a number of which started fires which were all put out by rain, or attacked and controlled by the FCV personnel together with CFA units and private units. The eighth strike started the fire which continued during Saturday, February 5th and created the damage set out above. Circumstances of this fire are instructive in two aspects - first, they illustrate the limitations on the use of aircraft for survey purposes. Owing to the very heavy smoke, the personnel in the aircraft were frustrated in making accurate observations. The second matter of significance is the need for adequate access roads into and surrounding the Little Desert area, which raises the controversy between people who are primarily concerned with firefighting and fire prevention on the one hand, and others whose main concern is conservation, a conflict referred to in a subsequent section.

The Victoria Police were very much involved in this fire, not only in the control of normal traffic on main roads in the vicinity which were affected particularly by heavy smoke, but also in the control of sightseers.

The fire was attended and fought by 89 forestry personnel using bulldozers and water units, together with 30 CFA units and 30 private units.

The cause of the fire is quite plainly a lightning strike and weather conditions which ensured a bad fire situation.

2.4 Summary of the causes and origins of the fires

Of the twelve fires occurring on February 12th, nine were caused primarily by a fault or failure of electrical equipment controlled by the SEC. Of the other three, the cause of the Creswick fire was human carelessness or worse, the cause of the Penshurst fire was the recurrence of fire from a previous burning off operation and the cause of the North Byaduk fire is not established. Of the remaining fires, three almost certainly originated from human carelessness in some form and the fourth, the Little Desert fire, was caused by lightning.

Of the nine fires in which electrical fault was the primary cause, five of them also involve the responsibility of other individuals or organisations - that is to say, the Glenthompson, Tatyoon/Streatham, Lismore, Waubra and Pura Pura fires. In regard to the fires at Merino, Beeac, Cressy and Balliang East, it is difficult to see that there is any responsibility other than that of of the SEC.

PART IIITHE ADEQUACY AND EFFECTIVENESS OF PRESENT
MEASURES TO GUARD AGAINST THE OUTBREAK OF FIRESCHAPTER 3GENERAL INTRODUCTION3.1 Community Responsibility

In Victoria, bush and grass fires occur wherever there is the necessary combination of fuel, weather and ignition source. Even with the greatest care on the part of all concerned on hot summer days, fires will occur from lightning strikes, unavoidable accidents to power lines or to machinery, to say nothing of carelessness by campers and travellers, or by deliberate ignition by pyromaniacs. The prevention of fire should be uppermost in the minds of all country people and of all organisations operating in the country areas.

The main factor militating against adequate fire prevention work is a general failure to recognise the importance of such work and of what is actually needed for effective prevention. As a result there is general reluctance to allocate the necessary time and money to fire prevention. In far too many cases, sheer apathy is to blame. The landowner is not alone in this. All sections of the community not directly involved in firefighting are also concerned - indeed, insofar as brigades are made up of local residents, then brigades themselves are also guilty.

There is no doubt that an extraordinary amount of apathy exists - a feeling that "it won't happen to me" or even, incredibly, "it

won't happen to me again". After most disastrous fires such as those which occurred on January 8th 1969, there was considerable improvement in fire prevention. However, memories are short and generally speaking such activity is short lived. It was said during the course of this Inquiry that it is necessary for people to experience a major fire in their district before they will take steps to prevent further outbreaks and that the memory soon fades. Too many people leave fire protection to their neighbours or to their local brigade and take no precautions themselves.

The Board is well aware that the rural community has been, in general, at a low point financially. It is becoming harder to justify the employment of labour on farms and the man on the land has little time to spare from the endless demands of his normal work. As a result, time, effort and money are all hard to come by, but in some way they must be provided.

Responsibility for fire prevention lies with the whole community however, and not just the farmer. This includes all organisations and individuals with an interest in country areas. Public authorities especially must be aware of their role in fire prevention and in hazard removal - not just the firefighting authorities, but all public authorities operating in the country. They each share in the joint community responsibility, but most importantly, they can set a standard for the rest of the community to follow. Their own attitude to fire prevention is crucial if they are to set a standard, not only in the works they conduct or the way they conduct them, but in their own formal and informal contacts with others in the community.

Time and again, authorities have given as an excuse, or perhaps more fairly as a reason for the non-performance of necessary fire prevention work,

a lack of trained personnel which they trace to a lack of money. Whether the restricted finance complained of by most authorities is due in part to a failure to attach sufficient priority to the task or a failure to press claims and present them with appropriate persuasiveness or whether requests for funds have simply been refused, is a question to which there is no ready answer. It may be that the cost of fire prevention has not received its proper priority among the many claims on the limited financial resources of the state. However, such bodies must provide a lead.

The lesson of 1977 is that the financing of fire prevention should be among the very highest priorities. To save money on fire prevention is, of course, being penny wise and pound foolish. One day of bad fires costs millions measured only in money, to say nothing of death, injury and heartbreak and the cost of adequate prevention, though heavy, is small in comparison.

There was disturbing evidence of a disinclination on the part of the CFA, the SEC and many municipalities to attract unpopularity. It is a fair inference from the evidence that each authority much preferred to leave to one of the others any task which was likely to annoy the general public. Thus, cutting trees, enforcing adequate clearing of hazards or the burning of firebreaks, all of which tended to cause resentment, were frequently left undone. There was also, as between these authorities, an unfortunate lack of liaison.

A different, but equally difficult problem is the conflict of interests between authorities and various groups and individuals - the principal difficulty being that the interests in conflict are all legitimate and even praiseworthy.

People want the benefits of electricity brought to their homes, but often resent and oppose cutting adequate cleared spaces so that the electric lines can pass safely through the trees. In country towns where ornamental trees need to be sacrificed, the cutting of them is often regarded as vandalism. The CRB, rightly seeking to preserve the environment by planting and maintaining trees along roadsides, has the statutory authority to control the cutting of such trees and not infrequently, refuses permission to the SEC or anybody else to cut them. The CRB also, in very proper regard for the safety of the travelling public and in the interest of ecology, prohibits burning off grass and vegetation on many of its roadsides. In this, the CRB has the support of conservationists who have a perfectly laudable desire to preserve and enhance the environment. There are disputes between landowners, the CFA and the NPS and between those two organisations. Examples of conflict could be extensively multiplied.

One thing is plain beyond doubt, that however difficult is the resolution of these conflicts, they must be resolved in some way, and soon, if the holocaust of 1977 is not to be repeated.

3.2 Removal of Hazards

While fires occurring on normal summer days can as a rule be controlled with reasonable speed and minimal damage, the evidence before this Inquiry discloses that the western district of Victoria has an average of three or four extreme days each summer period, similar to that of February 12th, and on such a day, once a fire gets away from an early attempt at suppression, no firefighting organisation on earth can prevent the fire spreading and causing immense loss.

It is therefore essential to ensure an immediate sighting of the first ignition and swift alarm to alert the firefighters, followed by immediate attendance at the fire in as much force as is available in order to stifle the fire at its source.

Unfortunately, this cannot always be achieved, so it is vitally important to remove possible causes of fire and fire hazards before the fire season starts.

This demands an awareness of potential causes, an effective plan to prepare breaks and reduce fuel to limit the spread of fire while it may be contained, and the resources and persistence to carry out such plans efficiently. It is a regrettable conclusion, inescapable on the evidence, that in the summer of 1977 precautionary measures were far from adequate.

Personal observations made during last December and January in the very districts that were later devastated by the February fires, as well as travelling through the same districts after the fires on inspections for the purposes of this Inquiry, made it evident that more should have been done to clear roadsides of obvious fire hazards. Mile after mile of roadside were feet high with phalaris and other grasses, which of course burnt fiercely when the fires came.

The difficulty of creating firebreaks as well as their limitations in stopping a running fire are well appreciated and were emphasised during evidence. Burning of breaks in grassland can only take place when the grass is sufficiently cured and only when there is sufficient warmth in the atmosphere and the

weather is dry. Days must be chosen with care, and those days on which burning can be safely and efficiently undertaken without careful preparation are relatively few. It is accordingly, difficult to arrange the mobilisation of brigades on such days. Moreover, volunteers are giving their own time to the exercise, meaning lost time for the pursuit of their own work. Other forms of making firebreaks, such as ploughing, slashing and spraying are expensive and the terrain at times makes one or other of these methods difficult or even impossible. There was evidence that the activity of making firebreaks had been reduced in recent years for various reasons, particularly lack of manpower. All this is true, but the fact remains that far more breaks should be made.

Even on February 12th, fires were held at roads (e.g: the Glenthompson fire) or in areas where fuel had been reduced (e.g: the Creswick fire). High phalaris grass along the Glenthompson/Caramut Road would have reduced its usefulness as a holding point, and the Creswick fire would probably have threatened more serious damage without an area of fuel reduction burn in its path. Breaks have a role in any plan, and must be pursued despite the difficulties.

The burning of the roadside vegetation is a major subject of controversy and requires some intelligent survey of the nature of the country. Different considerations apply in different regions of the state. In some areas, notably on and near the Great Dividing Range and the Grampians, native woodland survives along the sides of minor roads, and should be preserved because it adds charm and interest to the roads and because of its inherent worth as a survivor of the original environment. Indeed, well maintained native vegetation will, in certain cases, serve to keep fuel at a lower level by restricting the invasion of introduced grasses. On the other hand, on roads on the western plains

the native grasses and plants have long since disappeared and it is unlikely that the most ardent conservationist would suffer much distress at the destruction of phalaris and other exotic vegetation on the roadsides of that part of the country.

The Board has much evidence from the fire prevention authorities and the SEC that their efforts to clear firebreaks or to cut trees were continually frustrated by groups of local conservationists, the more extreme of whom were said to oppose any tree cutting or any firebreak burning. If this is so, it is in marked contrast to the attitude of a body of interested conservationists called the Roadside Conservation Committee. On this committee's behalf, Mr. G. B. Edwards presented a submission and gave evidence which revealed a very reasonable approach to the problem, recognizing the need for compromise between the necessity for fire protection and the desirable preservation of the environment.

The responsibility for planning and construction of breaks lies primarily with the CFA in the settled rural areas. More planning should be effected and more work is needed through its advisory committees and brigades. Responsibility does not end here however. As well as the CFA (and the FCV - with parallel responsibilities in most forested lands), the municipalities, the CRB and the local landowners all have a similar duty. Fire prevention serves the whole community and all sections should play their part in seeing that it is carried out effectively and in providing the labour and expense.

CHAPTER 4THE COUNTRY FIRE AUTHORITY4.1 Background

The CFA as the authority responsible for fire prevention and suppression in two thirds of the state was naturally closely investigated in the Inquiry. So that the observations that follow may be fully understood, it is necessary to describe as briefly as possible, the background and structure of the authority.

In the report by His Honour, Judge L.E.B. Stretton on the fires of 1939, the learned Commissioner advised and recommended the institution of a "State Fire Authority". Curiously, he strongly recommended that

"no public department or possible combination of public departments interested in forests should be permitted to gain control of this authority".

It was recommended that the state authority should consist of nominees of the Bushfire Brigades, Forests Commission and the municipalities to be affected by the recommendations which followed in his report and that the functions of this authority should be primarily those of defining a general policy of prevention and suppression of bushfires and protection of life and property, organising and recruiting local brigades, of maintaining discipline of local brigades and over local fire authorities and of

"acting independently with or without such advice as it may care to take".

Although the Stretton Report was dated 16th May, 1939, it was not until 1944 that the government of the day, no doubt spurred into activity by some very disastrous fires which occurred early in that year, decided to legislate to carry out the recommendations of the report and establish the Authority and the Country Fire Authority Act 1944 was passed. The Authority as it ultimately came to be created, consists of a full time chairman, a full time deputy chairman, two representatives of the FCV, two representatives of the rural brigades, two representatives of the urban brigades and two representatives of the underwriters, together with two representatives of municipalities - one rural and one urban (Country Fire Authority Act 1958, s.7).

The state of Victoria is divided by the Authority into seven zones which are in turn divided into 25 regions, which for some curious reason are numbered 1 - 24 and 26, omitting number 25. Each region contains within its boundaries a number of groups - the groups being based on districts and each group consists of a varying number of brigades. The brigades in turn, are made up of a number of units. Many, but not all brigades, have attached to them a CFA tanker truck equipped with a pump and other gear and the balance of the brigade equipment is private units.

4.2 Structure of the CFA

The hierarchy of the structure is as follows. Immediately below the authority itself is the Chief Officer (CFA Act 1958, s.27) who is by statutory authority, in control of all groups and brigades. There is a Deputy Chief Officer (s.28 (1)) and in the next rank a number of Assistant Chief Officers (s.28 (2)) of whom seven are Zone Officers. Below the Assistant Chief Officers are the Regional Officers. There are 53 of these officers at present in the service and all are, of course, trained professionals. Not all of these are in the field and many have duties

at the headquarters staff or at Fiskville. Those in the field are charged with the duty to supervise, encourage and organise the various volunteer brigades in the region.

All ranks under the regional officer are volunteers. Each group is under the control of a Group Officer and a Deputy Group Officer. Each brigade has a Captain and one or more Lieutenants. All these volunteer officers are elected to their office by the votes of brigade members (s.25).

There are 1,060 brigades in Victoria. The actual number of brigade members is not easy to state from the evidence as three different figures are given, but the figure of 112,500 is fairly close. The number of inactive members contained in this figure is unavailable.

4.3 Regional and Local Advisory Committees

The Act provides (s.52) that the Authority may appoint a Regional Advisory Committee for each region - not being a region consisting wholly of urban districts. Such committees shall consist of the regional officer, who shall be the executive officer of the committee, two representatives of each group of brigades operating within the region and not more than four representatives appointed by the Authority upon nomination by the FCV, not more than two representatives of the municipalities whose municipal districts are wholly or partly within the region. There is provision in section 52 A for the appointment of a representative of any public statutory corporation at the request of the committee. The functions of the Regional Advisory Committee are set out under section 53 - in substance they are to submit to the appropriate authorities recommendations and plans for the burning or clearing of a coordinated

system of major firebreaks for the protection of the region and the carrying out of works, including firebreaks, for the prevention of the outbreak of spread of fire from dangerous areas. Further, the committee is required to coordinate operational planning within the region and to carry out such other functions as are conferred or imposed upon the regional advisory committees by regulations made by the Authority.

Local Advisory Committees

Under section 54 (1), the authority may appoint a Local Advisory Committee in respect of any area being within the country area of Victoria and being the whole or part of a municipal district. Each Local Advisory Committee shall consist of the Proper Officer of the Municipality who shall be chairman and executive officer of the committee, one representative of each urban or rural brigade operating within the area, one representative of each group of brigades operating within the area and a representative of the council of the municipality of the area. Where there is adjacent to the area any part of a forest or Crown land reserve, a representative of the FCV will also be a member. Section 55 sets out the functions of such local committees which are to plan the burning or clearing of firebreaks, to advise the appropriate authorities as to the existence of and steps to be taken for the removal of fire hazards within the area; to recommend to the appropriate authorities the allowance or disallowance of application for permits for burning off made pursuant to section 37 and section 38. The regional officer has no vote on these local committees and speaks only by invitation.

4.4 Member Associations

Under section 100 of the Act, there is created a body known as the Urban Fire Brigades' Association and a similar body known as the Rural Fire Brigades'

Association. The purpose of these associations is set out in the Act as being to enable members of brigades to consider and bring to the notice of the authority all matters affecting their welfare and efficiency, other than questions of discipline and promotion.

All this seems rather a complex system and there is a risk of over complexity, resulting in overlapping of effort and some confusion.

4.5 Comments on the Organisation

At its inception, the CFA was faced with some difficult problems in creating an appropriate structure and particularly, in welding an organisation of trained professionals on to another which was entirely voluntary and which had been in existence long before the CFA was created. Its statutory mandate required the previously existing separate rural fire brigades and urban fire brigades to be brought under one control and each organisation was resistant to such fusion. The authority was also charged with the duty of controlling the burning activities of landowners and the removal of fire hazards. Such interference with what had heretofore been left to the individual's discretion was resented and resisted. The rural brigades consisted of members with experience of firefighting, men of courage and initiative but they were untrained, unorganised and ill equipped. The CFA was required to train and coordinate these brigades - to aid in the provision of proper equipment and to set up a command structure which would ensure a cohesive tactical efficient attack on fires. A certain amount of militarism was necessary, but was restrained by the fact that the brigade members were all volunteers - the Act stopping far short of any kind of conscription of service. The most essential qualification of

the first rural regional officers was, therefore, tact and diplomacy.

It appears that these original difficulties have been successfully overcome because there was very little in the evidence to suggest any friction or anything other than complete cooperation between the professional officers of the CFA and the volunteers. Some criticism still exists, as the evidence shows, both from brigade members and the farming community, but this was relatively limited, and concerned largely with the priorities which the Authority has accorded the various requirements it must fulfill. The country community appears to have acquired confidence in the Authority and certainly relies upon it very heavily in times of fire crisis.

The competence and efficiency of the CFA were very properly and intensively probed at this Inquiry. It is fair to say at the outset that regional officers in particular and the whole professional body of CFA officers in general, created a very favourable impression. Those officers who gave evidence, or whom the Board met in the course of inspections, without exception, were a particularly fine body of men. They are well trained, intelligent and dedicated - prepared to work long hours, far beyond normal hours of duty. This dedication is observable throughout the whole CFA structure, including the staff at the headquarters. Some criticism can be, and was, advanced against individual officers. For example, the Regional Advisory Committee in Region 6 did not meet for some four and a half years after November, 1971. The evidence discloses that in that particular region there were very active local advisory committees and the officer concerned believed that adequate steps had been taken in the region during the period that the committee did not meet. On the part of the officer concerned, this may be treated as an error of judgment demonstrating

no lack of enthusiasm or neglect of duty. However, the incident is a serious reflection on the Chief Officer or his immediate subordinate who should have been aware of the situation and taken appropriate action. If the circumstances were known and allowed to continue there was an even more serious failure to ensure compliance with the terms of the Act. It is regrettable that a similar situation may well have occurred in other regions.

4.6 Fire suppression by the CFA

It is now proposed to discuss a number of specific matters relating to the suppression functions of the CFA.

4.6.01 Regional Officers

It is clear that the regional officers in a number of regions which the Board investigated, failed to make a regular inspection as required by section 44 of the Act. That section provides that it shall be the duty of every regional officer to make regular inspections within his region to ascertain whether the provisions of the Act are being properly and efficiently carried out and administered and to report to the Authority at such times as are directed by the Authority and for the purpose of any such inspection, the regional officer is empowered to enter into and upon any land or premises whatever within his region.

This inspection has not been carried out on any systematic basis. As the officers moved about on their normal duties, they automatically observed fire hazards which happened to become

visible to them and no doubt, from time to time, inspected particular hazards brought to their attention by brigade captains or private individuals. This however, was the limit of inspection. Not even the roads in the region were systematically inspected and this led to the existence of hazards which were dangerous as possible ignition points and made the roads useless as firebreaks. The evidence of all the officers concerned was that this failure to carry out regular inspections on a systematic basis was due to lack of available time because of the pressure of other duties. For example, the regional officer of region 16 deposed that his residence was at the regional office, that he was available by telephone 24 hours a day and that he normally worked a 72 hour working week, for which no overtime is paid. There is no reason to doubt that this is correct or to feel that it is atypical of the usual situation in other regions. Another officer in evidence said that to carry out the inspection required by the Act was "physically impossible". Accepting this, it nevertheless remains that such an inspection, specifically required by section 44, is essential so that fire hazards may be detected and dealt with. There can be no doubt that the failure must have been known to the CFA command and to permit this state of affairs to continue constitutes a serious error. The answer that lack of finance precludes additional staff and that there are insufficient trained personnel available may be an excuse for the past, but must be the subject of energetic reform for the future.

The CFA Act, sections 37, 38 and 41, refer to an officer to be appointed by municipal councils called "the Proper Officer" whose duties are generally to oversee the fire precautions in the municipality and to enforce the provisions of the above Act.

As will appear from Chapter 7 in which municipal councils are discussed, the fire prevention work of these proper officers has been far from satisfactory and in this regard there has been a failure on the part of the CFA generally to ensure that the proper officers perform tasks allotted to them under the CFA Act. Some regional officers have been well aware that the proper officers have not been carrying out their duties in a proper and efficient manner, yet there has never been any report to the Governor-in-Council from the CFA pursuant to the provisions of section 45 (1) of the CFA Act - which section provides, inter-alia, for the transfer in the circumstances provided in the sub-section, of the powers and duties of the proper officer to any regional officer or assistant nominated by the Authority. A number of submissions have been made to this Inquiry with regard to the future of proper officers. The CFA Officers' Association submitted that the CFA should appoint a Fire Prevention Officer to take over the duties of the proper officer of municipalities as they relate to the CFA Act, in respect of each municipality or combination of municipalities where deemed necessary. This suggestion was strongly resisted by the CFA. The main argument against the suggestion was that a full time Fire Prevention Officer for each municipality or even for one hundred such municipalities, would require expenditure on salary, car allowance, accommodation and the like which would run into an astronomical figure. This argument is on a rather false premise, as the suggestion was one officer for each rural region - which in total is 21 regions. However, even on this basis, the cost would be considerable. Several witnesses of experience deposed that such a Fire Prevention Officer suggestion was good "if you can afford it". A further factor motivating the CFA objection to this suggestion was that the duties of the proper officer, if

transferred to the CFA would tend to create friction between the CFA and the local landowners who, after all, make up almost the total of rural brigade members. Having regard to the fact that section 20 of the CFA Act lays upon the CFA similar duties to those that it is reluctant to undertake, this becomes a rather curious objection. It may well be a reaction engendered by the early experience of the necessity to create harmonious relations with the brigades and with the landowners at all costs. The Board does not propose to recommend the abolition of the Proper Officers but does propose a modified version of the plan of creating the position of Fire Prevention Officer. In the event that such plan is not adopted, it is essential that the regional officers make these regular inspections in future. This must be made possible even if to do so requires a re-arrangement of the officers' duties or the provision of some further assistance in each region.

It is further of the utmost importance that the regional officers make the regular and comprehensive reports to the CFA headquarters as required by section 44. These reports should set out the adequacy and standard of fire protection in the region and recommendations for additional steps to be taken. The reports that are at present being made on a fortnightly basis do not appear to emphasise these important matters, and in future should do so, so that the Chief Officer or his deputy is at all times aware of the situation in each region.

The Country Fire Authority Act viewed as a whole, sets out a scheme to create fire protection. When the Chief Officer has no adequate knowledge as to what brigades have done in the way of fire prevention work, he is naturally unaware of whether the requirements of the Act are being fulfilled, and if not fulfilled in complete detail, the purposes of the fire protection scheme will fail.

4.6.02 The Regional and Local Advisory Committees

Adverting again to the apparent complexity of the regional structure, some doubt has been expressed of the value of retaining the Regional Advisory Committees. If it is true that in region 6 the fire prevention work was carried out effectively without the Regional Advisory Committee meeting for $4\frac{1}{2}$ years, one possible inference is that such a committee is not necessary.

The Board does not accept this as correct. The committee is given a specific and necessary function and is an integral part of the overall prevention scheme of the Act. The evidence before this Board, including an inspection of the Regional Advisory Committee minutes, leads to an impression that these committees adopt a somewhat negative attitude. For example, the SEC local representative is not a member of the Regional Advisory Committee, but may be and often is, invited to attend meetings. It appears that when SEC officers do attend, they merely report very generally that all is well with the electrical installations and no further investigation is made. When suggestions from brigade level are made to the committee, they appear to be merely noted and there is very little evidence of any follow up action.

It may be that these suggestions are passed on to the Chief Officer, but if this is so, they appear to get lost somewhere in the machinery of communication. Any such suggestions should be discussed with the committee and if endorsed, passed to the Chief Officer when careful consideration should be given to them. Whether accepted or not, the ultimate fate of the proposal should be communicated back to the originators, committee and brigade together with an explanation. It

is recommended that these committees be enlarged to include as a member, a representative of the SEC and one from the CRB - a change which may require amending legislation, unless this can be done under section 52 (2A). The Regional Advisory Committees must take more active steps to produce overall fire prevention plans, including provision for firebreaks, access roads, improved water facilities and the like. It is imperative that this be done and that valuable suggestions made from time to time by brigades are followed up and not allowed to lapse. In short, the idea of the Regional Advisory Committee is sound and useful, provided that its function be fully and effectively carried out.

As to Local Advisory Committees, the evidence does not indicate that these have been particularly effective. They have quite important functions to perform under section 55 of the Act, as set out earlier (4.3). While some, but not enough breaks have been prepared, the recognition of hazards, let alone the tendering of advice to the appropriate authorities on the existence of the hazards and the steps to be taken for their removal, has been noticeably lacking. The regional officer should be, although he is not, a voting member of these local committees, which might make a difference to their efficiency.

As the committee members of both Regional and Local Advisory Committees are volunteers, their attendance at meetings cannot be compelled. It is desirable in the case of both committees that more frequent meetings be held than once a year, or twice at most, as is the present practice. Members would be more likely to attend regularly and frequently if they are made to feel that their work is important, effective and appreciated. It would encourage participation if ideas put forward by brigades are treated with more respect, as suggested earlier.

The whole intra-regional structure should be examined again by the CFA. If the recommendation of the appointment of a Fire Prevention Officer is adopted, the whole structure will, in any event, have to be reconsidered in the light of change of relationship with municipalities. This is an opportunity for the authority itself to carefully re-examine the intra-regional structure.

4.6.03 The Rural Fire Brigades' Association

This body was set up by the Country Fire Authority Act, section 100, as already mentioned. The evidence indicates that the association has carried out its function as defined in the Act with considerable success. The association provides a most useful forum in which suggestions from brigade level can be thoroughly examined and if approved, submitted through channels to the CFA.

It may well be that more use could be made of this association and its work should receive encouragement.

4.6.04 SEC Participation

Although the SEC officers attend Regional Advisory Committee meetings by invitation, there is a distinct lack of liaison between the two authorities and this had very unhappy results in 1977. That SEC installations could be the cause of fires, while perhaps not fully understood or appreciated by everybody before 1969, became very obvious in the disastrous fires of that summer. From 1969, both the SEC and the CFA were well aware that on days of extreme danger such as occurred on February 12th, the SEC installations were a potential source of ignition of fires.

This danger should have been obvious to the CFA and continual liaison maintained with the SEC at local level. Hazards such as created by trees in close proximity to power lines should have been but were not, a prime preoccupation of officers of both organisations. Immediately after the 1969 fires, on January 22nd, 1969, the then chairman of the SEC, Sir Willis Connolly and Brigadier Eason, the chairman then and now, of the CFA, met in conference and an agreement was reached as is set out in a letter from Dr. Connolly, as he then was, as follows:

"Referring to our discussion on 22nd January, 1969, I confirm that the Commission would welcome advice from local representatives of the Country Fire Authority concerning any situation where -

- (a) the proximity of trees and branches to overhead conductors appeared to invoke hazards;
- (b) trees and branches had been observed to make contact with overhead conductors;
- (c) conductors had been observed to have clashed together or appear to be in danger of so doing.

The Commission will immediately investigate reported cases of (a) and (b) above and will take such action as is practicable having regard to all circumstances. In the case of (c) the Commission will insert spreaders or spacers when requested by your Authority.

As promised, I have enclosed a list of the locations of Commission district offices and the names of a responsible officer at each address, who will be the first line of contact for officers of your Authority. Also listed is the name of a responsible officer at each location in the State where there is a concentration of Commission activities."

This letter was circulated to all Zone and Regional Officers of the CFA by Mr. Pitfield, the then Chief Officer. The circular added to the Connolly letter, instructions that Regional Officers will advise the volunteers to contact the local SEC district office or if there is difficulty, to advise the Regional Officer.

Officers were further instructed to report immediately to CFA headquarters any fires caused by SEC lines. Attached to Mr. Pitfield's letter was the list of SEC officers who could be contacted by the CFA. So far so good. Unfortunately, the evidence is quite clear that this letter was never followed up by the Chief Officer to ensure that the instructions contained in it were being carried out. In fact, they were not. There is very little evidence, if any, to suggest that since 1969 to the present time, CFA officers made the necessary observations of SEC lines or, if they did, communicated with the local offices of the SEC seeking to have hazards removed. Having regard to the fact that the SEC and the CFA were rightly subjected to criticism after the 1969 fires and that both organisations were well aware from that time of the danger, this omission is inexplicable and is something for which, in the first place, the CFA is to be censured.

4.6.05 Lack of Fire Research

While considerable research has occurred into the causes and behaviour of forest fires by the FCV and the CSIRO and others, similar research relating to rural grassland fires has been lacking. Such knowledgeable and experienced witnesses as Mr. A. G. McArthur, Division of Forest Research, CSIRO - a world wide authority on fire behaviour and prevention, and Mr. J. M. C. Mackinnon who has 20 years in

the fire service and is presently Deputy Group Officer of the South West Border Group, among others, both urged the necessity for research of this nature. As far as it appears from the evidence, no such research has been undertaken by the CFA although the Authority has had the advantage of helpful consultations with experts, including McArthur himself. The fire problem of Victorian rural grassland is, at least to some extent peculiar to the area, and research into the behaviour of fires in this area is absolutely necessary.

Subjects for research have been suggested by Mr. Mackinnon. He pointed out that very little research has been done on what he calls:

"basic factors involved in fighting burning grass, namely:

- 1 How much water is required to extinguish one square metre of fire?
- 2 The most effective way of applying water to a grass fire.
- 3 What is the width of backburn required to stop a running fire?
- 4 What is the most effective way to make a wet firebreak? - and:
- 5 What is required to ensure crew safety?"

He suggests that this research should be done by the CFA at Fiskville in conjunction with the CSIRO. He observes that to stop a running fire needs special equipment handled by specially trained crews and that equipment design will be greatly helped by answering the above questions. The potential for special crews is already available from the urban brigades in regions where this type of fire is probable. He suggests a

specially equipped unit which could be used by a special force to control a running grass fire. That special equipment would be a six hundred gallon tanker fitted with suitable heat shielding, Dean high pressure pumping unit, two live hose reels, Dean fogging guns, L.P. gas wet burning device, crew communication and V.H.F. radio. This unit could be maintained and used by urban brigades - high pressure fog being very suitable for house fires, inflammable liquids etc. The Board feels that Mr. Mackinnon's suggestions should be given the most careful attention by the CFA. Since 1966 there has been provision in the establishment of the CFA for a Research Officer, a position left vacant to date. It is essential that the CFA should immediately appoint a properly qualified officer to this position, and then gradually build up a Research Section which can provide information of vital assistance to officers and volunteers in the field.

4.6.06 Financial aspects

There were two separate and distinct criticisms made relating to the CFA finances. First, it was said that the Authority failed to expend each financial year the funds provided. This allegation arises from a misunderstanding of the published accounts which do show credits remaining at the end of the financial year. However, these amounts are in respect of undertakings for which finance was been committed, but not actually expended, and the suggestion that its funds are not used each year is quite incorrect.

The second criticism has more substance. It is that too much of the available funds have been expended on some projects, notably on the

acquisition, maintenance and operation of the Fiskville Training Centre, and that this has used up finance which could have been better employed in providing necessary equipment for the rural brigades. It is true that these brigades are in need of better equipment, some of them in dire need. Some brigades have no CFA vehicle, depending entirely on private trucks. Many of the CFA vehicles are out of date and no longer efficient. Far more and better radios should be provided. The allocation of the available funds between the various claims is a matter of judgment and the Board is not convinced that this judgment has been exercised capriciously or unreasonably. Training and organisation are as much an essential part of the Authority's overall task as the equipping of brigades. An inspection of Fiskville showed that this is an efficient establishment and very important for training purposes. The CFA is concerned with urban fires as well as grass and bush fires, and some specially constructed buildings are doubtless of immense value for training of urban brigades. Perhaps because of this, there is an impression that the emphasis is on urban firefighting rather more than the training of the purely rural brigades. The Fiskville property was originally acquired at a very reasonable cost and on favourable terms. It is well conducted and the facilities are comfortable, but by no means luxurious. It is not apparent that the establishment has required any undue or unreasonable expenditure. The training that CFA officers and volunteers receive at Fiskville is of very great benefit to them - the problem being at present that the accommodation is insufficient to receive into training sessions more than a very limited number of personnel each year. The lectures and demonstrations by experts in fire suppression methods are extremely valuable and it is hoped that in the future it will be able to make this training more widely available. The Board observed at Fiskville that apart from CFA personnel and volunteers, police coordinators were also able to

take advantage of the facilities at Fiskville for the purpose of training them in their highly responsible job.

The question of whether the Authority's ultimate allocation of funds between the several categories of expenditure was the best possible leaves room for honest difference of opinion. However, the Board finds that the way the funds were apportioned was not unreasonable and was arguably correct. It is however, recommended that in the immediate future the need for re-equipping brigades be given priority.

4.6.07 Difficulties with communication

The Authority has set up a system of radio communication from the Command Headquarters, be it Group, Region or Zone, according to the extent of the fire, to Brigades and also between brigades in the field. In theory, this system should work well, and on February 12th it was admittedly subject to unprecedented and enormous demands. There was however, evidence that its efficiency varied considerably from one fire to another. For example, communication was said to be reasonably good at Glenthompson, but at Cressy it was described by the police as virtually non-existent. There were also serious difficulties at Creswick where the assistance of CitizenBand Radio amateurs was accepted and much needed. There are two apparent sources of trouble disclosed by the evidence. First the fact that some brigades have high frequency radio sets (H.F.) and others, very high frequency (V.H.F.) sets. This makes communication between brigades almost impossible and on occasions when more than one brigade is engaged in fighting a fire at opposite sides of the

fire or at some distance from each other, communication between them is absolutely essential and the system should, but does not, guarantee that such communication is always satisfactory. The second difficulty is caused by too many operators using the same radio channel or endeavouring to do so. It is not necessary to go into technical details which were fully explored during this Inquiry. It is sufficient to say that the existing radio equipment is in urgent need of being brought up to date and many more sets made available to brigades. Also, better training of operators is desirable. Of course, as and when more sets are available, more trained operators will also be required. Again, this is a matter of finance if it is to be tackled within the CFA. The Board was assured that as finance becomes available the very necessary process of improving the communications system will continue.

A recent development which received indirect attention was the "citizens band" radio concept. It appears that this is more than a passing phase and that there is every reason to believe that these mobile sets will be readily available in country areas, together with experienced and no doubt, enthusiastic operators. It is vital, in view of the Creswick incident (described in Chapter 11.4) that the CFA, FCV, Police and SES, in particular, evaluate the possible worth of this communication resource so that it may be used to best advantage, and more importantly so that confusing and potentially dangerous situations cannot be allowed to arise.

4.6.08 Equipment generally

A typical rural brigade should consist of at least one CFA self propelled tanker and a number of privately owned units which are trucks

owned as well as manned by volunteers. Some 116 rural and urban brigades have no CFA unit attached to them. Mr. Pollard, on behalf of the CFA Officers' Association, presented a very thoughtful and useful submission. In a superb understatement, he pointed out that

"obviously a fire brigade without a firefighting appliance suffers from low efficiency and a lack of morale".

Mr. Robin Jackson, the captain and radio operator for the Strathmore Rural Brigade agreed that all brigades should have a CFA unit, but stated that the Strathmore and one other in the area did not have one. The evidence was that for various reasons, the number of privately owned vehicles had been reduced in recent years. This factor alone makes it all the more necessary, indeed desperately urgent, that all brigades should have a CFA unit attached to them. Some of the CFA units are very old and far from efficient. These are doubtless better than nothing, but badly need updating. There was also evidence that private units had deteriorated, especially the larger units. Mr. Mackinnon thought that many of the privately owned vehicles were no longer efficient and had deteriorated over the years. Mr. Ian Laidlaw, a member of the Authority, the captain of the Tatyoon Brigade and First Acting Group Officer of the Westmere Group, agreed that the larger units had deteriorated but thought that the farmers kept up the standard of the privately owned smaller units pretty well. The importance of an efficient CFA unit in each brigade cannot be over estimated as no brigade can perform its necessary functions unless properly equipped with such a truck.

It is however, also necessary that the volunteer units are kept up to a proper standard of efficiency. The rapid first attack, so very necessary in fighting grass fires will in many cases be the task of the locally situated private unit, because it will often be the nearest to the ignition point and be first on the scene in cases where the CFA unit is stationed some distance away.

Again, this is a matter of finance, but the provision of suitable vehicles is a fundamental necessity and should be at the top of any scale of priorities considered by the Authority. The vehicles should be, if not the very latest model, at least not classified as "vintage".

4.6.09 The use of aircraft

A good deal of discussion took place on the relative importance of aircraft in firefighting and it was apparent that no great use had been made of them on February 12th, although at Creswick, FCV aircraft were used successfully. The CFA owns no planes, but has arrangements for hiring planes from private citizens and organisations when they are required. There is a general belief that there should be more extensive use of planes for patrolling on days of extreme danger for the purpose of "spotting" fires at an early stage of the fires development. On the face of it this seems a sensible idea, however several witnesses were far from enthusiastic. It was said that whereas in forest or remote rural areas this is a useful exercise, it is not successful in settled country because on days such as February 12th, there is a great deal of dust and smoke haze which makes observation so difficult that a fire will not be seen from the air until it is large enough to be observed and reported from the ground. This opinion is entitled to respect and may well be correct insofar as the observer in the air is relying

on visual detection. However, other firefighting forces have developed more sophisticated methods of aerial detection of fires, and this is another field to which urgent research should be directed.

It is agreed that planes are extremely useful in the course of directing the battle against an ongoing fire. This is most effective when the plane carries an observer who knows the country and who is equipped with maps coordinated with the maps in the possession of the officer commanding the ground forces - thus enabling the observer to pinpoint for the commanding officer, the extent and course of the fire. It is recommended that the increased use of aircraft is a matter for immediate consideration by the CFA.

4.6.10 Suggested Fire Protection Authority

At a very early stage of this Inquiry, Counsel for the SEC produced a general statement of policy on behalf of that Commission (exhibit 14). One matter put forward was a suggestion that in order to have efficient firefighting systems set up and operating in Victoria, there was need for a coordinating State Authority for the purpose of making effective uniform policies on suppression. Such Authority should provide a common meeting place for the various agencies and organisations with an interest in fire protection. It was envisaged as having the complete overall direction of fire prevention and suppression. At that stage of the Inquiry, this suggestion appeared to have a great deal of merit, particularly as it was already evident that between the various authorities that had the duty of removing fire hazards and of creating

fire prevention works, there was a lack of liaison and indeed, a considerable degree of conflict. The objection to such a proposal, was that it involved a further proliferation of statutory authorities, of which there were already too many in the field. By the end of the evidence and in final submission, counsel for the SEC was disposed to withdraw the suggestion of setting up a Fire Protection Authority as had been suggested. In the long run, it was felt that the CFA itself is such a body, except that its present statutory powers limit its authority in regard to other corporate bodies such as the SEC and the CRB. The Board's view is that a Fire Prevention Authority is desirable, but that that Authority is, in fact, the CFA and that the CFA, armed with further powers and having further duties imposed upon it, would effectively carry out most of the functions of the proposed Fire Protection Authority. This could not include any arbitral function as the CFA could not be a judge in its own cause. The solution to this problem is discussed subsequently.

4.6.11 A total professional firefighting force

No party appearing before this Inquiry proposed that the firefighting services of Victoria, including the Metropolitan Fire Brigade, should be combined in one body and that those charged with the duty of suppressing and fighting fires should all be permanent paid professional firefighters. However, the suggestion was mentioned and discussed during the course of the Inquiry and it was claimed that such a suggestion has been recently urged very forcibly and publicly. The Board's considered view is that such a proposal has only to be examined with any care to be rejected. It is not only quite impracticable, but is thoroughly undesirable. In order to have a sufficient force to meet a fire situation of even a normal summer, let alone a day

of extreme emergency, it would be necessary to keep and pay an army of men who would be idle for a substantial part of the year. The cost would, of course, be enormous and out of the question. Moreover, it would be the greatest pity in the Board's view, to destroy the volunteer system which has worked well in the past, and with better equipment, facilities and training, will work even better in the future. The volunteer firefighters are in this day and age, an example to all other citizens. They are a unique body of men, prepared without any reward to sacrifice time and effort and to imperil themselves in defence of the State of Victoria against the ever recurring danger of fire. Apart from the fact that the scheme outlined is financially and otherwise quite impracticable, it would be a retrograde step to abolish the volunteer fire brigades.

4.6.12 Relations with the State Emergency Service

One of the more curious features of this Inquiry was the antagonism and suspicion displayed by the CFA towards the SES. The basis of this attitude was clearly established during the evidence, particularly in the cross examination of Mr. D. Currey, the SES officer who gave evidence on behalf of that service. It was further made unequivocally clear in the CFA final submission when it was claimed that the SES had:

"an ambition to assume a command role in firefighting".

Any such ambition on the part of the SES has been categorically denied by the responsible officers of that service, both in conversation with CFA officers as deposed in the evidence and directly and quite specifically to this Inquiry.

As the law now stands, the role of the CFA as the command organisation in fighting rural fires is beyond dispute. The CFA Act s.30 in the clearest terms gives the Chief Officer complete

"control and direction" in any case "where a fire is burning".

Entirely consistent with the terms of the Act, are the terms of the State Disaster Plan 1968 which specifically recognise the CFA, the FCV and, for that matter, the Metropolitan Fire Brigade, as having the command role in firefighting within their respective areas of authority. Despite this seemingly unequivocal position, a good deal of time was occupied with this question. The Board sees no reason to doubt the genuineness of the SES denial of any desire or intention to usurp the role of the CFA or to seek domination of it, or control of any firefighting activity - a denial which was categorically stated to this Inquiry by Counsel for the SES in his final submission. It should be added that any such intention on the part of the SES, if it did exist and if it ever came to fruition, would be undesirable to the point of being disastrous, a situation which should be plain enough to both parties.

Because a good deal was made of two incidents, much canvassed at the hearing, it is necessary to discuss them as briefly as possible. The first was an incident during the firefighting at Creswick. It appears that three young men who happened to be members of the SES were at the fire at Creswick quite fortuitously. They offered their services to the CFA officer in charge and these services were accepted. They had with them a transmitter and a C.B. radio and this was used under the directions of the CFA to assist. It was unfortunate and against SES regulations, that at least two of these men wore their

SES uniforms which they happened to have with them. Two of the young men were simply employed assisting the firefighters on firefighting vehicles and otherwise. One man called Hose, took his radio to a point to which he was directed outside the town, and from there proceeded to relay messages back to the headquarters of the firefighting command as directed and instructed, for the most part by CFA officers. The evidence does suggest that Hose took it upon himself to make some radio calls which were not authorized and apparently, indicated in some of his calls, that he was acting on behalf of the SES. The main complaint about him however, was that he had diverted certain trucks out of a convoy which was regarded, and rightly so, as a very serious interference. The fact that ultimately emerged however, was that he had been directed by a former CFA officer and a present brigade member, A. B. Godfrey, to radio asking for trucks to be sent to a particular place and had been further instructed by Godfrey, who moved to a point nearer the actual fire, that if Hose saw trucks coming up the hill to "grab them" and direct any four wheel drives to the point where Godfrey had gone. In fact, a convoy came up the road - Hose, misunderstanding the situation, diverted four trucks out of this convoy as he believed he had been requested to do. The officer in command of the convoy soon discovered what had happened and ordered his trucks back again. This was of course, a matter of some importance and could have led to confusion and possibly serious consequences, although it does not appear that any great harm was done. Hose was at fault in several ways - in wearing his SES uniform and in purporting to speak for the SES over the radio, if he did that, but his action in diverting the trucks

seems to have been a mere misunderstanding and done at the direction of a person he believed to be an officer with authority. In any event, whatever Hose did, he was quite plainly on " a frolic of his own". The SES as such, was not involved in this incident in any way and the CFA cannot use this incident as any evidence suggesting that the SES is seeking to involve itself in firefighting activities.

The second incident was at the Beechworth fire. There, the Beechworth and Wangaratta SES Search and Rescue Squad had been involved in the operation in its correct role in "back-up" services. The unit had been assisting the Red Cross in the transport of food and other materials and, at one stage, the Wangaratta squad was asked to provide a chain saw for the purpose of cutting down burning trees. This was provided, although apparently the saw didn't work at first and there was some radio communication about this matter. Mr. Diffey, the Deputy Chairman of the CFA was present at the scene and he took it upon himself to question the officer in charge of the SES unit as to what he was doing on the scene and after some argument, Diffey ordered the SES officers to remove the unit altogether from the fire area, which was done. The Board accepts the submission by Counsel for the SES that Mr. Diffey had used this occasion to raise the question of command, but that it was not an appropriate occasion to have done so.

The position of the SES in relation to the current revision of the State Disaster Plan and the apprehension held by both the CFA and FCV of encroachment by the SES into their areas of responsibility is discussed in Chapter 11, para.4. At this point, it is sufficient to say that neither of the two incidents described above affords any basis of support of any such fear on the part of these Authorities.

4.6.13 Organisational changes for the CFA

The Board does not wish to be over censorious of the CFA which, overall, has built up a firefighting service comparable more than favourably with similar interstate and overseas organisations as was made clear by the evidence of experts who were in a position to make the comparison. Nevertheless, some improvements in the structure appear desirable.

There seems a need for the creation of a senior position for an officer with managerial experience, preferably one who is versed in the technique of practical firefighting.

Such an individual will be very hard to find, but a skilled administrator is required and if such an appointee has insufficient practical firefighting experience, an assistant with this qualification would, in all probability, result in a satisfactory combination of qualities.

The scheme envisages the Chairman and the Authority members as constituting a "Board of Directors". The new administrative officer could well be the Deputy Chairman and act, in effect, as general manager. This would need some amendment to the CFA Act.

One duty of the "general manager" would be to ensure better and more continuous communication between the top echelon and the volunteer field officers.

One other perhaps minor criticism is that there does appear to be an over emphasis on military style trappings of rank in the professional structure which compares unfavourably with a distinct lack of such things among the volunteer officers where something more in the way of

distinguishing badges of rank is highly desirable. The suggestion from brigade level that Captains should be provided with a distinctive indication of rank beyond a different coloured hat deserves consideration, as does also the further suggestion that the vehicles of volunteer officers be given some indicator, perhaps a police type light on the roof, which would make it easy to recognise the vehicle of the officer in command.

CHAPTER 55.1 The Forests Commission, Victoria

The Forests Commission was criticised somewhat severely in the report of His Honour, Judge Stretton in 1939. Whatever may have been the faults and failings of the Commission in the years before that date, there can be no doubt that the lessons of the fires of 1939 and the stimulating effect of criticism by the learned Royal Commissioner has had a marked effect. No organisation with responsibility for fire prevention work received less criticism, or more commendation in this Inquiry than the Forests Commission. It has clearly learned its lesson and set about the task of putting its house in order - a task which has been very successfully undertaken. Most of the Stretton recommendations have been adopted. In particular, virtually all saw mills have been removed from remote forest areas, regulatory control of the activities of the forests and new restrictions on the use of fire in forests have been promulgated and policed. That the methods of the Commission have been effective is best illustrated by the statistics of forest fires over recent years which establish that the number of fires occurring and the total area burnt per annum is by no means increasing. This is most satisfactory in the light of an expansion in population and increased access availability to forest areas, which, because of the increased mobility of the population and the city dwellers new desire to visit the forests, resulted in substantially greater use of forest areas with consequent greater risk of fire. As with all statutory bodies and organisations concerned with fire prevention, the provision of sufficient finance is a major problem.

Dr. Moulds expressed concern that the FCV fire protection organisation might well be found wanting should there be another extreme fire danger season, which unlike the season of 1977, found fires raging in the forest areas, and he considered that the Commission's protection capability would be substantially improved

"by a modest injection of funds for additional men and equipment".

Of course, the Commission was fortunate in the recent summer season in that the more devastating fires did not occur in areas for which the Commission is responsible. It is to be remembered that the Dandenongs area is very largely under the forestry control and this is an area in which major fires of a very dangerous and devastating nature are likely to occur in all summer seasons. After the severe 1968 fires in the Dandenong Ranges, a joint report was prepared following consultation between representatives of the local shires, the NPS, the FCV and the CFA and these recommendations were set out in a document tendered to the Inquiry "Fire Prevention and Suppression in the Dandenong Ranges" (part of exhibit 316). That document gives an extensive list of the problems found to be associated with the actual operation involved in fire prevention and suppression works in the Dandenong Ranges. Like the CFA and the SEC, the FCV has its problems with objections by other people to its activities. There is very strong opposition to smoke pollution necessarily associated with fuel reduction burning which is also resented as it is said to affect aesthetics. Furthermore, there is objection to any increase of roads and tracks in wilderness type forest areas, but access tracks are quite essential so that fires may be attacked early when they start in remote country. Within the limitations imposed by these

considerations and the finance available, it does appear that so far as fire protection is concerned, the FCV has done all that could be expected of it.

5.2 Fuel prevention burning

One method of protection which is strongly advocated by the Commission is the fuel reduction burning which is a process taking place every few seasons, so that the fuel on the forest floor does not accumulate to the point where a fire which does occur becomes particularly hot and dangerous and eventually kills the forest trees. The fuel reduction burning programme was illustrated graphically in the Ross Creek area as has already been mentioned, the effect of the fuel reduction as compared to that part of the forest where no such process had taken place, was quite dramatic.

5.3 Fire research

The Forests Commission has for a great many years been very active in fire research and the work of the Fire Research Branch of the Commission was explained to this Inquiry in the evidence of Mr. V. P. Cleary, the Chief of the Division of Forest Protection. Mr. Cleary is also a member of the CFA and it is quite clear from his evidence that fire research has been of great and effective value in prevention of fire in forests.

5.4 Cooperation with the CFA

As has been pointed out, the whole country area of Victoria is divided between the FCV and the CFA for the purposes of fire prevention and firefighting. At first glance, such a division

of responsibility might be considered to have its dangers, because of course, there are many fires that start in the one area and move into the other as for instance, the fire at Creswick which was basically a grass fire, but burnt into the forest area. Fortunately the evidence makes it quite clear, and this Board has no doubt, that the CFA and the FCV have a high degree of cooperation. Each is in full command of fires in their own areas and in cases where they assist each other, as they do, a very workable and well understood system of command and liaison operates with a high degree of efficiency. Of the fires on February 12th, the Creswick fire is, on the evidence, a clear example of this cooperation leading to a very efficient effort in a serious situation.

CHAPTER 6OTHER GOVERNMENT DEPARTMENTS6.1 The Victorian Railways Department

The fire prevention activities of VicRail are of vital importance in rural areas, both because of the obvious need to prevent fires starting from defective trains and because railway reserves which have a wide burnt off or cleared area on the sides of the line provide useful firebreaks.

By way of criticism, it was said by the VRFBA that while VicRail was cooperative in fire prevention, there had been in recent years, a change in policy from burning the whole railway reserve to one of spraying the track only, leaving the rest of the easement untouched. From the evidence of Mr. D. D. Wade, the Chief Civil Engineer of VicRail, the allegation is not admitted in those terms. It does however, appear that there has been a change of policy. In the days when all locomotives were steam, it was the practice to burn all the vegetation on all the railway reserves and indeed, some four thousand miles of track was thus burned each year. This burning off was of necessity continued into the summer period with consequent danger of starting fires. Since all locomotives are now diesel traction and have been fitted, it is said, with modern effective spark arrestors, it was decided that the extensive burning off was no longer necessary and was, itself, a source of danger if it had to be carried into the summer. Consequently, the present practice was adopted of total burning off in higher priority risk areas only and using chemicals sprayed from a train which desiccated six metres on each side of the track. The desiccated vegetation can then be

burnt while the rest of the vegetation on the reserve is still green. Some 2,240 kilometres were thus treated in the summer of 1976-77. The change of policy was also due, in some measure, to mechanisation of track maintenance and the consequent relocation of staff previously employed on the lines, and this was said to make extensive burning off impracticable.

With the passing of the steam locomotive, the urgent fire danger from railway engines has no doubt been substantially reduced, but there is still the risk of fire from sparks caused by braking and other causes. It may be that the present limited clearing is sufficient from the railways point of view to give a high degree of safety from the fires originating from trains. However, this does create a great loss from the point of view of the general fire protection of the community as the advantages of a fully cleared railway easement as a firebreak is lost. The Commissioners should give some further consideration to this matter and confer with the CFA in an attempt to make suitable arrangements for more extensive clearing of railway track easements - not necessarily to be carried out by the employees of VicRail, and not necessarily by burning if other suitable methods are available.

It should be added that while none of the fires of February 12th investigated by this Board originated on railway property, at least one outbreak was associated with railway activity - a fire started near Cressy at about 1030 hours on the 12th and was apparently caused by defective brakes on a train. Quick action by the Cressy brigade stopped this outbreak - only three hours before Cressy was engulfed by the fire from Wallinduc.

6.2 The Country Roads Board

In some respects the CRB is in a similar position to VicRail. The lengthy road system under its control has a two-fold aspect, that is as a source of fire from passing traffic and as providing firebreaks. For each purpose it is highly desirable that the wide roadside should be cleared of inflammable vegetation. There have been problems and conflict between the CRB and both the CFA and the SEC.

Throughout this Inquiry, there was frequent criticism from the CFA, the CFA Officers' Association and various rural fire brigade officers, as well as local landowners, that the CRB did not burn, slash or otherwise clear its roadsides to anything like a sufficient extent and moreover, very frequently refused permission for local brigades to do so. The CRB has the complete control of tree cutting on its roadsides and, for that matter, burning; (see the Country Roads Act 1958 (section 65). so that no prevention work can be carried out on roads under the CRB control without that Board's permission. The CRB "Instructions to Patrolmen" (exhibit 302) sets out in detail how the employees are to clear roadsides of fire hazards and this book makes it clear that burning is to be the last resort. Mr. E. F. Oppy, Divisional Engineer, Ballarat District of the CRB explained that the reluctance to burn was primarily because of danger to traffic from smoke, but it was also intended to preserve trees and shrubs and road signs which might otherwise be destroyed or damaged during burning off operations. This concern for the road users and the environment is admirable, but once again, it is a matter of priorities. If the CRB is prepared to employ its manpower and resources in clearing its roadsides, well and good. If it is not, then permission to others,

namely the CFA brigades should be granted far more readily, and the serious consideration of traffic safety should be provided for accordingly. The impression was left that the availability of burning permits depended on the attitude of the local divisional officer, although Mr. Oppy denied this. It is however, essential that by its own employees, or by permission to others, the roadsides controlled by the CRB must in future years be rendered safe as a fire hazard and available as a firebreak. The SEC also apparently is in frequent conflict with the CRB. Many miles of SEC transmission lines run along roads and while there is said to be a code worked out between the two organisations for consultation on tree cutting and lopping, where trees and lines are in close proximity, this has not apparently worked at all satisfactorily. This is another hazard that must be eliminated and there must be, in future, far more cooperation from the CRB with other organisations with responsibility for fire prevention.

6.3 National Parks Service

6.3.1 Because of the vast areas under its control, the NPS has an important responsibility in fire prevention and suppression. Changes in legislation have significantly altered its role in this regard. Prior to recent legislation, the FCV alone was responsible for fire suppression in National Parks, but under the present legislation, there is now dual responsibility of the FCV and the NPS. The Director of National Parks is now responsible for ensuring that appropriate and sufficient measures are taken to protect all the parks under its control, that is National Parks and "other parks" included in the expression "protected land" (see National Parks Act s. 17 (2B) and 18 (2b)). By an amendment to the Forests Act 1958, now Section 62 (2) appearing in the 1976 reprint, the FCV is responsible as follows:

"62 (2) Notwithstanding anything to the contrary in any other Act or law it shall be the duty of the Commission to carry out proper and sufficient work for the prevention and suppression of fire in every State forest and National Park and on all protected public land but in any National Park or protected public land proper and sufficient work for prevention of fire shall be undertaken only by agreement with the person or body having the management and control thereof and in case of failure to reach any such agreement as determined by the Governor in Council whose determination shall be final and conclusive."

This dual control of suppression and prevention of fires in what may be loosely called "National Parks" to cover all land under the jurisdiction of the NPS is probably the only practicable way of ensuring adequate protection for these areas. It does however, involve some difficulties arising mainly from the differing but not necessarily opposing viewpoints of the two organisations. The FCV is apt to want different protection measures in the way of fuel reduction burning, access roads, firebreaks and the like.

6.3.2 Mr. J. D. Brookes, the Director of National Parks since January, 1975, gave evidence and made an important submission to the Inquiry. In the course of that submission, he described the operations of a Joint Fire Protection Committee set up between the two organisations. He was not prepared to concede that the popular view of the National Parks as being possible sources of fire danger was in any way correct. He said that the dual responsibilities of the two organisations and the existence of the special Joint Committee has tended to produce more intensive fire planning and protection work in parks than occurs in most

of the other public land in Victoria. He went on to say that this was regrettably not always clear to the public. To quote him:

"there are those in the community who see all public land, particularly parks, as danger points to be heavily burnt to keep them safe, and others who see them as places to be kept as sacrosanct habitat only to be burned by natural wildfire. Neither extreme is acceptable to the community at large and it is the task of the Joint Fire Protection Committee to find a sensible practical course to steer. Progress has been made but there is still much to be done".

This policy is, of course impeccable, and is clearly the appropriate course to be pursued, that is effecting a reasonable compromise between the extremes of no fire protection at all and an over emphasis on fire protection with unnecessary destruction of the environment.

There have been some specific criticisms made of the NPS. Mr. D. R. Mutton, by profession a private Forest Manager and a Group Officer of the Dartmoor RFB Group, maintained that the FCV, when in control of fire suppression work in the Glenelg National Park, controlled the situation by extensive low intensity control burning programmes which protected the area from wildfire and, of course, gave protection to neighbours who did their share of protection work themselves. He claimed that the NPS on the other hand, had failed in this regard and while they expected their neighbours on the northern boundary to carry out protection for the park, they themselves are reluctant to do anything inside the park. He added that the conditions under which the NPS was willing to carry out their control programme are such that very little is done, and that access tracks are being closed by placing logs across them and fire control lines destroyed.

Mr. Brookes denied these allegations. He said that one of the first jobs the Joint Fire Protection Committee did in early 1975 was to start the preparation of a fire protection plan for the park and that such a plan was worked out and followed with considerable expenditure being applied to it. He regretted that the burning programme had not gone as well as expected in 1976, principally because of unsuitable weather, but assured this Board that control lines for future burning were being constructed and about 1,600 hectares are planned for controlled burning. He was emphatic that the NPS did use the fuel reduction burning standards of the FCV. He specifically denied that fire access roads in the park had been blocked. Indeed, he declared that a considerable sum has been spent in maintaining these roads; the only ones having been closed were ones that had been duplicated. He pointed out that the NPS has brought equipment and personnel into the district, additional to and not in place of the FCV establishment. He pointed out that the NPS employees are on duty at the park seven days a week and particularly at weekends and holidays when most people visit the area and strict surveillance is maintained. Apart from the Lower Glenelg Park, Mr. Brookes stated that fuel reduction burning has been undertaken by the service as part of their general policy in about twenty other parks in the last few years.

6.3.3 Mr. Brookes also refuted criticism in respect of the Little Desert National Park. This park of 35,300 hectares is in the eastern portion of the Little Desert, having been declared in December, 1969. A fire protection plan was prepared by the FCV and approved by the Fire Protection Committee in 1973. Over 60

kilometres of firebreaks have been created along the west and northern boundaries, 56 kilometres of fire access tracks have been improved and several areas to be burnt to reduce fuel were surrounded by 15 kilometres of fire control lines last spring, although the lack of suitable weather prevented burning. Bores to provide water for firefighting have also been repaired and some dams improved. The firebreak on the Crown Lands to the south of the park has been constructed by the FCV. The NPS is apparently well aware of the great importance of being able to provide a "first attack" on fires. It has concentrated on light four wheel drive vehicles which have reasonable performance in sand and has purchased a four wheel drive tractor which has proved to have excellent sand performance. The service has in fact, established a substantial force of personnel and equipment in an endeavour to be able to mount very early attacks on fires which inevitably occur in this remote and unsettled country.

6.3.4 Criticism was also levelled at the NPS in respect of the Ferntree Gully National Park - in particular, criticism was from Mr. Diffey of the CFA to the effect that fire prevention in this park was inadequate. Mr. Brookes deposed that after the 1968 fires a report was prepared jointly by Local Advisory Committees of a number of shires in the area and this, after amendment by the Parks Service, was accepted and is being acted upon. More than a third of the park's 450 hectares is fuel reduced by periodic burning or annual slashing. A burnt or slashed fire buffer zone of about 200 hectares is maintained along both the park boundary and main ridge lines. 14 kilometres of fire protection roads and tracks are maintained within the park, in addition to public roads passing through the south-east corner and public roads giving access to the One Tree Hill area. Five water storage tanks and three water storage dams are maintained. The park has a permanent staff of nine, plus seven workers

employed under various Government employment schemes and has substantial equipment, including two tractors and a number of other vehicles suitable for firefighting. In common with most large parks, it has a V.H.F. radio network linked to the FCV radio network. It is said that since 1972 the combined efforts of the FCV, the CFA and the parks staff have prevented the spread of at least thirty fires from within the park. The remaining seven fires within the park during this period were not controlled immediately but were stopped at the fire buffer zones. There is apparently good collaboration with the local CFA brigades. The Chairman of the Parks Advisory Committee is a senior CFA officer.

Without prolonged investigation and inspection which this Inquiry cannot undertake, it is impossible to make a firm finding on the allegations by the Deputy Chairman. Mr. Brookes' evidence was clear, concise and supported by documents and the Board has no doubt that the figures and facts which he has quoted should be accepted. If this is so, then the NPS is approaching the fire prevention problem in a sensible manner and is doing all that its duty requires in the way of protecting its own controlled areas and the lands of other organisations and persons which abut upon the Park's property. The Service faces difficult decisions in the existing circumstances, as it has to delicately balance the problems of fire prevention on the one hand and the protection of the environment on the other. Like all other bodies involved in fire prevention, it has a limited budget and within the confines of its finances, it appears that the performance of the NPS is satisfactory.

CHAPTER 7THE MUNICIPAL COUNCILS

7.1 The basic responsibility for fire prevention at local level rests with the municipal councils. It is a responsibility imposed by the Country Fire Authority Act 1958, Sections 37, 38 and 41. These sections are concerned with the granting of permits for burning off or burning charcoal in the summer period. Section 41 gives the council power to direct an owner or occupier of land to remove fire hazards or clear firebreaks. There are also provisions in the Local Government Act, 1958, Sections 695 (6) and 933 (1) and 934 (2)(d). These sections empower the council to enforce proper fire precautions in respect of persons residing in the municipality. There seems to be very little legislation imposing on the shire itself any responsibility to maintain its own buildings, property and its roads in a safe situation as regards fire. This may be because the legislature has assumed that the local councils would, in fact, take such precautions themselves, to set an example to others. The work of ensuring that the ratepayers in the municipalities carry out their duty in regard to fire prevention is in the hands of a council officer called the "Proper Officer". This office is defined in Section 3 of the Country Fire Authority Act and its duties set out in the sections mentioned, 37, 38 and 41. It is the duty of each Proper Officer to inspect the area within his jurisdiction and to see that proper prevention methods are carried out and it is his duty to enforce the terms of the legislation. The evidence in this Inquiry established beyond doubt that in many cases the Proper Officers appointed by various

municipalities failed to carry out their responsibilities in a satisfactory manner. In many municipalities the Proper Officer is the Shire Secretary or the Shire Engineer and he has thrust upon him the duties of Proper Officer in addition to his normal duties. In this context, the comment made in the submission put forward by the CFAOA is significant -

"this creates a situation where an administrative municipal officer, probably with neither fire experience nor training finds himself carrying out the duties of a fire prevention specialist and because of the extent of his normal duties, usually in his spare time. It is little wonder that the fire prevention activities in the average municipality leave something to be desired."

Similar views were expressed by the Secretary of the VRFBA, Mr. Rooke, in the course of the Association's submission said -

"some Proper Officers display a lack of knowledge of their duties relative to fire prevention. It is considered that their role and duties should be made clear to them and that these instructions should be kept up to date as to amendments to the CFA Act and regulations affecting the performance of their duties".

7.2 In the background of general dissatisfaction with the work of Proper Officers, a number of submissions were made to this Inquiry with regard to the future of such office. The CFAOA submitted that the CFA should appoint a Fire Prevention Officer to take over the duties of the Proper Officer of the municipalities as they relate to the CFA Act in respect of each municipality or combination of municipalities where deemed necessary, thus effectively abolishing the office

of Proper Officer. After careful consideration, the Board concludes that it would not be in the best interests of fire prevention and protection generally for the office of Proper Officer to be abolished.

Under the relevant legislation, municipalities are rightly given an important share in the work of fire protection which they should neither be compelled nor permitted to abandon. This function is necessarily executed by the Proper Officer who is required to play an important and effective role in fire prevention. As noted above, most Proper Officers had other duties to perform as their primary employment and for this reason, they did not have time within normal working hours to carry out the duties of Proper Officer. In some municipalities, the Proper Officer combined that function with that of By-laws Officer, and it appeared that these two offices could be combined with reasonable efficiency in both areas of responsibility. Generally speaking however, the few municipalities which employed an officer full time as the Proper Officer and nothing else, were the more efficient municipalities in relation to fire prevention.

Mr. Brian Learmonth of Tarrayoukyan via Hamilton, captain of the local brigade, produced a very interesting and informative submission on a number of matters. Relevant to the present discussion was a suggestion in relation to the Fire Prevention Officer. In substance, what Mr. Learmonth suggested was that one Fire Prevention Officer should be appointed by the CFA in each region to act as an extension officer to educate and stimulate the highest standard of fire prevention in both individual properties and townships. His duties would include liaison with property owners to explain the operation of the scheme, to discuss and advise on fire

prevention programmes and to work through the existing Regional and Local Advisory Committees. The officer envisaged by Mr. Learmonth should be responsible to the regional officer in each region and should be a -

"prevention officer totally committed to prevention".

This would leave the Proper Officer still to be appointed by each municipality - the difference being that he would have the support and encouragement of the Fire Prevention Officer. The Proper Officer of course, remains the servant of and responsible to, the council.

In the Board's view, the suggestion made by Mr. Learmonth provides the best solution to the problem and should be adopted.

The Board's recommendation is therefore as follows:

- 1 The CFA to create the office of Fire Prevention Officer who will give much needed assistance to the regional officer. The Fire Prevention Officer would be required in the words of Mr. Learmonth to be "totally committed to fire prevention" and included in this duty would be the supervision, encouragement and assistance to the Proper Officer.
- 2 The Proper Officer to be appointed full time for that duty and nothing else. If this is impossible, then his primary function should be that of Proper Officer and any further duties required of him must be compatible with the efficient performance of his main function.

- 3 The Proper Officer should seek and accept supervision, advice and assistance from the Fire Prevention Officer, or if no such office is created by the CFA, from the regional officer.

7.3 So far we have been mainly concerned with the duties of the municipal council through its Proper Officer to enforce compliance with the Act by others. It is equally important that councils, in fact, attend to a proper fire prevention scheme in regard to their own property and, in particular, the roads for which they are responsible. A far more extensive programme of clearing the sides of roads by whatever method is found most suitable must be carried out so that these obvious fire hazards are reduced from the situation existing prior to the fires of 1977.

It is desired to add one further matter and that is that it might well be considered by the legislature whether the title "Proper Officer" is a suitable one to describe the duties of the office. "Proper Officer" is a phrase familiar enough to lawyers and those interested in Local Government generally, but it is not a name that means much to the general public and some name more descriptive of the nature of the office, such as Shire Fire Prevention Officer or something of the sort, would, it is felt be a far more suitable title.

CHAPTER 8THE STATE ELECTRICITY COMMISSION8.1 The danger from electrical installations

The SEC bore the brunt of attack by almost all other parties appearing before this Inquiry - in particular a detailed and determined criticism by those representing landowners whose property had been damaged in the fire.

Statistics show that fires resulting from some failure of SEC conductors or apparatus were in the over-all fire figures, quite minimal, and the fact that SEC installations could be the origin of fires to any great extent was not fully appreciated by anyone outside the SEC and not even by most of the Commission's officers. However, after the fires of 1944 and certainly after the severe fires of the summer of 1969, it became quite evident that this was the case. Following the 1969 fires, the SEC was severely criticised because it had been established that clashing conductors, conductors in contact with trees, and inefficient fuses, had been the originating factor in a number of serious fires. It is all the more regrettable that in 1977 this situation should have been repeated.

Shortly after the 1969 fires, the SEC realising that it was under pressure to improve its standard of maintenance generally and in particular, tree clearing, did pursue a more active policy with regard to fire prevention as it had been brought home forcibly that on days of extreme fire danger, the SEC installations were specially vulnerable. However, the improvement in maintenance and tree clearing was short lived and deteriorated within a relatively

short time. The evidence shows that it deteriorated significantly during the year 1976. The District Manager of the SEC at Hamilton agreed in evidence that 1976 was -

"a bit of a disaster year in the Glenthompson area for tree lopping" and that it could be described as - "virtually the year of neglect for tree lopping".

There is no doubt that the failure to pursue a vigorous policy of tree cutting and lopping was the cause of the fires which started at Waubra, Tatyoon (the Tatyoon/Streatham fire), Wallinduc (the Cressy fire), Pura Pura and Merino on February 12th, 1977. It should be noted that in normal circumstances, even on days of relatively high temperature and strong winds, the electrical installations, as a cause of fire, occupy a very low place in the list of causes. Statistics provided by the Forests Commission show that of the 4,011 fires attended by the FCV over the past ten years, only $1\frac{1}{2}\%$ have been associated with electrical installations. In some years the rate has been as high as $4\frac{1}{3}\%$ and the mean rate of occurrence is approximately 1.6%. This overall picture is in sharp contrast to what happens on days of extreme conditions, such as January 8th, 1969, or February 12th, 1977. On such days the incidence of SEC caused fires rises dramatically. The reason for the steep rise in number on extreme days is that in such conditions the conductors expand in the heat and are blown by the wind so that they clash or come into contact with trees, or tree branches fall by reason of the wind, and break the conductors. When this latter event happens, the fire is either caused at the point of such incident as at Tatyoon, or by blowing a fuse which causes fire some distance away as at Wallinduc. The alarming aspect of these fires is that they tend to occur in widely separated places at

approximately the same time and at the time of day when conditions are such that the rate of spread of a fire is likely to be at its peak.

It may be that the relatively small number of fires in normal years for which the SEC installations are responsible has lulled the Commission into a sense of false security, but this should not have been so, having regard to the experience of January, 1969. In fairness, it should be said that some of the fires that originated from electrical installations started in circumstances where the occurrence of fire would be unlikely. The fires commenced as a result of clashing conductors at Beeac and at Balliang East were examples of this situation. In each case, L.V. conductors had clashed and a very moderate amount of hot metal was thrown off as a result of the arcing of the conductors. So small were these particles that it seems improbable that they would still have sufficient substance and heat to cause a fire. However, a number of experiments were conducted by SEC technical experts and the results fully and frankly disclosed to the Inquiry. These experiments demonstrated that fires could be caused by the clashing of L V. conductors given the extreme conditions of days like February 12th.

One of the essential conditions for the ignition of fire is that fuel must be highly inflammable and, in effect, tinder dry. It is only the coincidence of extraordinary conditions that enable a fire to be started from such an unlikely source. To quote from Mr John Hart, the head of the Fluid Mechanics Section of the Herman Research Laboratory in the SEC establishment -

"only a few of the particles, 1 to 2 percent produced by clashes are large enough (greater than 1 mm) to retain sufficient temperature whilst being blown more than a few metres from a distribution line to ignite fires even in exceptionally dry grass".

It is a fair inference that it was only the experiments conducted during the course of this Inquiry by the SEC that finally convinced everybody that fires could be caused by the clashing of L.V. conductors in the extreme circumstances prevailing.

8.2 Responsibility for maintenance

8.2.1 The SEC has at this point of time an enormous length of power lines under its control, in excess of 100,000 kilometres of overhead line and 2,900 kilometres of underground cable. It is beyond any reasonable expectation that the whole length of line should be patrolled and inspected with any great frequency, but far more patrolling than has been carried out in recent years is both necessary and possible. That some inspection is carried out appears from the evidence. Mr. W. C. Landy, District Manager at Casterton, spoke of an inspection of the Merino line of January 17th, 1977 and a linesman, Owen, had in July, 1975, inspected the line running through Hamilton's plantation at Tatyoon. Neither of these inspections as it turned out were sufficient or satisfactory. Mr. Howard, the Assistant District Manager of the Ararat district admitted that there was no organised routine patrol or systematic inspection for danger caused by trees, but there was he said, a regular routine inspection of poles for their soundness. There was a substantial body of evidence in the course of this Inquiry on wooden poles being unsound, of lines coming away from poles, of fuses and other apparatus being in poor working order. The most obvious of the hazards was, of course, that of lines in contact with trees or near enough to make contact in a strong wind, or of

branches overhanging lines. This sort of hazard should be discovered and would be on a regular and efficient inspection and the hazard should of course, be remedied. This applies to the Commission's own lines. In this connection it should be recalled that the regulations promulgated by the SEC forbid the cutting of trees near their power lines by anybody other than their own employees or contractors within certain defined distances from the lines which, in effect, prevents the consumer or anyone else cutting or lopping a tree likely to interfere with the line (see SEC Works Protection Regulations No. 227/1965 - Regulations 14 and 16a (exhibit 75). As far as the private lines are concerned, these are the responsibility of the consumer, but it is not good enough for the Commission to leave the condition of these lines entirely to the good sense and activity of the consumer. These private lines should also be inspected at regular intervals and the consumer compelled to correct any fault. The ultimate sanction to compel compliance is the cutting off of supply, as can be done in the case of non-payment of an account. A document which used to be handed to consumers, but is no longer in use is "Conditions for Supply of Electricity" (exhibit 55). This document includes the following -

"2b. (The Commission) may at any time remove any tree limb or other thing on the customers' premises which endanger the safety or efficiency of any service lines or apparatus".

Further conditions give the Commission's authorised officers the right of access to a consumer's premises and also give the right to cut off supply if the customer does not comply

with the Commission's regulations. Of course, the consumers should also regularly check their private lines and, if necessary, call on the SEC to arrange the turning off of power to enable tree lopping to be effected. There seems to be nothing to prevent customers cutting trees which interfere with their own private lines - the only inhibition being the need to avoid electrocuting themselves.

8.2.2 In the opinion of the Board, it is the duty of the customer, corresponding to the duty of the Commission, to observe any hazards, particularly hazards resulting from trees on any part of the main line belonging to the Commission or on the consumers' own private lines. A situation which he is unable to deal with himself should be reported to the local office of the SEC in order to have the situation remedied. A matter of some surprise was the number of landowners giving evidence before this Inquiry who denied that there was any obligation upon them to do anything of the sort - their view being that the Commission "put the lines there" and was entirely responsible for their maintenance. This may or may not be a nice point of argument, but as a matter of practical common sense, if the customer observes something wrong with any of the lines, in the interests of his own safety, he should report the matter to the SEC, or in the case of private lines, arrange for his electrical contractor to do the work.

8.2.3 Complementary to this obligation of the consumer, there is plainly an obligation on the SEC to receive reports of any hazards and to promptly act upon those reports. This has not been the situation to date. There was far too much evidence from various people regarding reports made of dangerous situations when no action was taken by the SEC to remedy the position - nor indeed, was there any record of any such complaints having been

made. Some of these complaints were extremely casual - a mention to some linesman who happened to be encountered in the course of his ordinary duties, or somebody walking into the SEC office making a verbal report to any employee who happened to be there. This sort of reporting is not satisfactory. The consumer should report officially and correctly to a responsible officer but once that is done, then the complaint should be recorded and should be very promptly acted upon. This question of recording complaints is important in the first place so that such a record may protect the SEC from allegations of complaints having been made when they were not, or were not made in any way to draw official attention to the matter. A record of the complaints and of the action taken to remedy them should be kept over a lengthy period in proper form, and at regular intervals reported to the central control of the SEC. From these reports, which amount to statistics, it should be possible to pinpoint any place on the SEC installations where trouble is recurring so that particular attention can be paid to the area and the source of the trouble removed. This is not the case up to this present time. For example, there was evidence of a transformer which was continually giving trouble at one property, and several complaints of continual operation of fuses on a particular pole. Had these complaints, which occurred of course, over a number of months, been recorded and noted it would have been far more likely that such recurrence would have been noticed and the cause eliminated.

8.2.4 One thing emerged very clearly from the evidence and that is that few consumers, if any, knew what their responsibility was in regard to the SEC's main line or their own lines. Some thought that the SEC was entirely responsible for

all lines. Many had no idea whether they should report hazards on either line, let alone whether they had any responsibility for maintaining their private lines. It is absolutely essential that the SEC inform consumers precisely where their responsibility begins and ends. Also, many consumers, while acknowledging that they understood that a tree coming in contact with the conductor might cause failure of supply, claimed to have no notion that this could be dangerous as a possible fire hazard. While this is hard to believe, it was said so often with every appearance of genuineness, that it must be accepted as a fact. It is therefore highly desirable, indeed essential, that the SEC should periodically send customers, presumably with their periodic accounts, a plain unmistakable notice warning them of the danger of conductors being in contact with, or likely to come in contact with trees.

8.3 Tree hazards

8.3.1 Bound up with the failure of the SEC to inspect its lines is the fact that there has been a failure to have any effective programme of tree clearance, or to carry out any sufficient tree clearing, with or without a programme.

That the Commission has a tree cutting policy and has had it since January 6th, 1958, is disclosed by the production of a number of documents on the subject of tree cutting (exhibits 92, 93, 106, 154 and 203). One of these called "Tree Cutting Guide", sets out elaborate instructions to employees as to how to deal with various types of trees, what to cut, when to cut and gives directions as to the distance between trees and conductors that should be maintained. This policy is unexceptionable - the regrettable feature is that it has not been adequately carried out.

It could not be realistically denied that the tree clearing in most, if not all of the regions of the western district, was totally inadequate. A drive through even the main roads of the western district was all that was necessary to demonstrate this, as lines were found passing through or beside plantations quite obviously so close to trees that the limbs and lines were very likely to come into contact. It is true that the trees and lines in contact do not necessarily result in fire, but there is always a possibility, and on days of high fire danger it becomes a high probability. It is true also that the SEC has been inhibited in its tree cutting activities by various factors. These include the limitation of manpower and the opposition by some landowners to having their trees cut. Also, of course, the strident voice of the ultra conservationists has had its effect. There has also been difficulty in obtaining the necessary permit from the CRB or local council to lop trees on main roads or in country towns. These factors all tend to discourage the necessary work of clearing lines, but they do not afford any real excuse for the failure to do so. The danger should have been known and appreciated and a policy of tree clearing vigorously pursued. The SEC was also too ready to accept refusal of permits or to give way to protests. A comprehensive plan for tree clearing must be formulated and energetically implemented.

8.3.2 This, of course, is one of the examples of conflict of interest which was referred to earlier in this report and in some way this conflict must be resolved. One way of achieving this was suggested by the SEC. It was proposed that there should be set up a Committee or Council on which the SEC, CFA, FCV, CRB and the Ministry of Conservation

should be represented and that this Committee should have the duty and power to determine and lay down principles and standards for the maintenance of trees and their foliage clear from power lines so as to eliminate the ignition source of fires. The Board accepts this suggestion as desirable, despite the fact that it does add one more to the multitude of authorities already involved in fire prevention. It is thought that there should be added to the members of the Committee, representatives from the municipal authorities. The Committee is envisaged as having State wide jurisdiction. It is appropriate that a high level SEC officer - equivalent in rank to Mr. K. W. Pocknee - Field Practices Engineer, should be its chairman and convenor. The Committee should meet as required and its primary task would be to formulate a policy for dealing with the problems of power lines passing through or near trees. The Committee's decisions should be promulgated to all district or regional officers of each agency represented on the Committee. In addition to the primary function of formulating general principles, the Committee could be a useful appeal tribunal where local officers of the various organisations are unable to agree as to how trees and conductors are to be separated at any specific place.

8.3.3 Ultimately, the SEC must undertake a further important task and that is a review of all its lines and, in consultation with the suggested Committee, or with other bodies and authorities concerned in the area under review, decide what will be the future route of the lines. In some cases it may be necessary to remove trees, in others to re-route the lines to a safer position, in yet others, in extreme cases to put the line underground for a short distance. To put all lines underground would seem a desirable ultimate solution but this is not as clearly

satisfactory as might at first appear. In any event, the cost of running all lines underground is so astronomical as to be quite beyond the financial capacity of the SEC or indeed, the State of Victoria. This review is of course, a long term plan that cannot be effected overnight, but will take a matter of years. Nevertheless, it should be vigorously pursued so that, ultimately, the lines and the trees are completely and finally divorced. The Committee that has been envisaged could also act in a slightly different capacity, in effect, as an appeal tribunal. It would be hoped that in the course of this reappraisal of the Commission's lines, in most areas a reasonable and satisfactory re-routing or otherwise clearing of the lines from trees could be accomplished at a local level by discussions between the engineer in charge of the enterprise and local councils, landowners, the CRB, or whoever was the other interested party. In the event that no agreement satisfactory to all interests involved could be worked out at a local level, then there could well be an appeal in that particular instance to the Committee as suggested in the previous paragraph.

8.4 Clashing of conductors

The contact of trees with conductors is only one of the potential dangers associated with electrical lines. Another source of ignition of fires, as is now established, is the clashing of conductors with each other. This rarely, if ever, occurs with H.V. conductors which are installed with sufficient width apart and with sufficient span as to ensure that they do not come into contact with each other whatever the weather conditions.

However, in many instances, L.V. conductors are so installed as to be subject to clashing whenever the temperature is high enough to cause expansion and sag and the wind strong enough to cause sway. The danger from this situation can be readily enough eliminated by the placing of spreaders or spacers on the lines. These are a simple piece of rod of non-conducting material affixed to the conductors to keep them apart. There were many places, for example Beeac and Balliang East, where the L.V. lines were exposed to high winds and where clashing occurred in consequence and this could have been avoided by the installation of spacers. That this was not done in so many instances when it should have been may be due to failure on the part of engineers to realise that such clashing could cause sufficient arcing to result in ignition of a fire, although they should have been warned by the events of 1969 and 1973. While this may explain the absence of spreaders in the past, the danger is now well known and one hopes, appreciated. In future, the engineer responsible for the erection of L.V. conductors must ensure that the length of span between poles and the width of the cross-arms supporting the conductors is such as to eliminate this risk. In the case of lines already erected where the danger exists, it is essential that an appropriate number of spreaders be installed. This Board is assured by the SEC that steps to comply with the above suggestions have already been taken and that in future, this danger will be eliminated.

8.5 Fuses

A good deal of criticism was directed to the efficiency of the fuses installed by the SEC on rural lines. This criticism was directed to the type of fuses employed and to the efficiency of operation. There are three main types of fuse used in rural areas. These are the Single Wire

Earth Return (SWER) clamp-on fuse and the Expulsion Drop Out fuse (EDO) and the low voltage (L.V.) fuse.

The basic construction of all fuses, is of course, a fusible element contained within a fuse case. The SWER clamp-on fuse is attached directly to the overhead H.V. line by a small clamp arrangement at the top and the bottom of the fuse is connected to the H.V. bushing of the SWER distribution transformer. When this type of fuse operates, the fuse holder remains clamped to the overhead line "dee" connection and the bottom tail drops away from the fuse holder and hangs down but remains attached to the transformer bushing.

The EDO fuse is mounted to a single porcelain insulator to the cross-arm or pole. The insulator carries the top and bottom connections for the fuse itself. The fuse tube has within it a metallic element, not unlike that in the porcelain fuses on a customer's switchboard. When this fuse operates the bottom hinge releases and the fuse tube rotates around that hinge and hangs down so that it is clearly evident that the fuse has operated. The modern type of EDO fuse has mounted beneath the tube a fire prevention device, or fire choke - the object of this device is to catch the particles and cool the gases associated with fuse operations. The L.V. porcelain enclosed fuse is enclosed in a porcelain fuse box and is a cartridge type fuse which is fully enclosed within the porcelain barrel.

The clamp-on type of fuse and the EDO fuse without a fire choke were both plainly dangerous, as upon operation it is possible that the contents of the container, being hot material likely to cause fire in a suitable fuel,

was ejected on to the ground and on days when the grass was dry under or near a pole, fire was very likely to result. That expulsion fuses can cause a fire was the subject of direct evidence from Mr. Russell Chirnside, who deposed that four or five years ago, he saw an expulsion fuse eject and start a fire at the base of a transformer bearing pole. After the fire had been put out, the witness found portion of the blown fuse on the ground. The older type of fuses are gradually being replaced with the EDO type fuse fitted with a fire choke. These EDO fuses appear to work well provided of course, they are properly assembled and fitted, unlike the one at pole 66 at Wallinduc which had no screw-on top attached to it. However, there are still very many of the clamp-on fuses in use and many of the EDO type not fitted with fire chokes. The programme of replacing all these with safe EDO fuses should proceed at a much greater rate than it has so far done, and the programme speeded up till all the dangerous old style fuses are eliminated. The evidence suggests that the programme of replacing the older type fuse has not been as effective as it might be. For example, the fuse on pole 11 on Mr. Lloyd's Strathmore property had operated and the fuse element replaced on more than one occasion prior to February 12th, but the opportunity had not been taken of removing the whole fuse container and replacing it with an EDO fuse with a fire choke.

One problem that presented itself was why fuses which are designed to operate so as to protect the lines failed to operate as soon as the line was interfered with by trees or animals or some other factor. If the fuse operates, the line becomes dead so that no fire could be caused, or other danger continued. Why, for instance, did not the fuse operate at Tatyoon so that the line became dead when the tree branch fouled the line, as happened at White's property at Wallinduc when

the line was brought down on to a fence and the fuse at pole 66 immediately operated?

Without attempting to record the highly technical explanation, but endeavouring to explain the matter in layman's language, it appears that any fuse sensitive enough to operate on the occurrence of such an interference as occurred at Tatyoon, would be so sensitive that any sudden increase of load would cause the fuse to operate. Such a sudden increase might be caused by a number of consumers all turning on appliances at the one time as, for instance, at times when everybody was preparing meals. There is no evidence to suggest that this explanation is erroneous, although the sceptical might think that even at this present stage of knowledge, the problem could be overcome by the provision of a different, perhaps more expensive type of fuse. However, assuming the explanation correct, it behoves the SEC to press on with experiments in its very large and well fitted experimental laboratory at Fishermens Bend and to continue its inquiries with local and overseas manufacturers to develop a fuse which would solve this problem.

8.6 After hours emergencies

One matter that was a constant subject of complaint was the arrangements that have been in force since November, 1975 for calling the SEC in emergencies after hours, or at weekends. Prior to that date, it was possible to call the local office which was organised in such a way that a duty officer was available at all hours - the phone from the office being switched through to the officer's private house. In 1975, as a result of industrial action on the part of the Officers' Association, this system

had to be changed. As a result, a customer wanting to contact the SEC in an emergency, if he rings the local office, gets a recorded message which directs him to ring a number in Ballarat or Geelong. The officer thus contacted then alerts the appropriate local employee to deal with the situation. There were endless complaints from such people as Regional Officer Penna of the CFA and from Mr. Rooke on behalf of the VRFBA as well as up to a dozen private individuals. Most complaints were from consumers in the area of the Willaura SEC office - an office which it might be added, received nothing but praise from all witnesses for efficiency and agreeable cooperation with the consumers. Instead of ringing Willaura, the consumer now has to go through the Geelong office. The complaint is that this, in any event, takes time and costs more than a local call but the main thrust of the complaint is that the Geelong office is slow to answer and sometimes cannot be raised at all. This has been the subject of so many complaints from so many different people that it appears to be a very serious matter. It is recommended that some other system be devised. It is appreciated that the SEC has its problems in this regard and a return to the earlier system, while it would please the customers, may be impossible for industrial reasons, but some system better than the one now operating must be devised, even if merely the primary step is taken of arranging matters at the Geelong office so as to ensure that the consumer can always at least speak to somebody there. Of course, it may be that in certain times and circumstances, the Geelong office is swamped with calls. If that is so, then more than one such central office to receive complaints must be set up or appropriate arrangements should be made with Telecom for a possible solution.

8.7 Cooperation with other organisations

It is essential that in future the SEC cooperates more with the CFA, the CRB and other organisations concerned with fire prevention. The situation discussed in Chapter 4 under the heading of "CFA" is referred to again. After the 1969 fires the respective chairmen of the two organisations arranged for reports of hazards on SEC lines to be observed by CFA personnel and to be referred to the SEC when action to remedy the fault would be taken, but this arrangement was never carried out. It is of course, true that it takes two to cooperate, and the lack of cooperation on the part of the CFA has already been noted. However, it is also plain that the SEC should be more effective in its relationship with the CFA. It is recommended that the local district manager of the SEC should be a member of the Regional Advisory Committee and, if this is so, he should report fairly and completely on SEC problems. The Regional Advisory Committee minutes disclose that when an SEC officer has been invited to the meeting he has contented himself with a bland statement that "all is well with SEC installations" which was palpably not so. In the future, the SEC district officer should be an active member of the Regional Advisory Committee reporting on the state of electrical installations fully, frankly and accurately and drawing attention to any problem related to fire prevention.

CHAPTER 9THE RURAL COMMUNITY

In his evidence, Mr. R. J. Chapman, Assistant General Manager, Marketing and Distribution of the SEC stated -

"the risk of fires can never be totally eliminated from an electricity supply system as elaborate and extensive as that in Victoria and some safety responsibilities also need to be placed on other persons and organisations. The SEC does not intend to shirk its responsibility in any way, but it wishes to emphasise that in its view there is a need to recognise that responsibility for the prevention and spread of bushfires is totally dependent on the combined efforts of all sections of the community, not the SEC alone. The supply system in Victoria is now so extensive and elaborate that the SEC does not have the resources to shoulder the total responsibility of reducing risks from such sources as falling trees or falling limbs of trees or contact between trees and lines".

Mr. Chapman's plea is not unreasonable.

In relation to lines passing near trees, many landowners took the attitude that they could not be expected to waste their time inspecting either the SEC lines or their own private lines on their property - that this was entirely a matter for the SEC. This attitude is quite unreasonable and in the name of common sense, any landowner moving about his property in the ordinary course of his occupation, should at reasonable intervals be able to spend the relatively short time necessary to inspect electrical installations and lines on his property so as to notice and report any obvious hazards.

It is very true that the elimination of the destruction caused by extensive fires, such as those in February, 1977, can only be brought about by the combined efforts of all members of the community, not only organisations concerned with fire prevention, but also all individuals. Of course, many members of the local community are enthusiastic supporters of fire prevention and through the local brigades and in other ways, do their part fairly and reasonably to make the countryside as safe as possible. While this is so, there are many who are apathetic and who do not trouble even to protect their own properties, let alone assist in the protection of the general community.

There are various things that landowners should do in their own interests as well as in the general public interest. One is that their own houses and buildings should be made safe. There is plenty of literature available from the CFA, the FCV and other organisations detailing the necessary precautions that should be taken to keep homesteads and houses generally as safe as possible in the event of fire. These precautions should be studied and carried out by all rural dwellers.

This is a vitally important matter, not only for the protection of the people themselves and their property, but also in the efficiency of actual firefighting. If all the members are aware that their own house has been protected to the greatest possible extent, then they can concentrate on fighting the fire generally and not have to break off the battle in order to go and protect their own properties. Similarly, units are not employed in defending houses but in fighting the fire. This has been pointed out by various firefighting authorities on several occasions and is most important.

Apart from inspection of any electrical installations by individual landowners and the prompt reporting to the SEC, there are many other precautions that can be taken in the way of protecting properties and stock as well as themselves, such as the planting of suitable crops in strategic positions to the north and west of homesteads; the creation by burning, or otherwise, of suitable firebreaks and the elimination from the immediate vicinity of houses and outbuildings of dangerous material which, in the event of fire, can almost ensure that the building is razed to the ground. People should not, for instance, store petrol or other inflammable liquid or material near other buildings. They should not allow rubbish, firewood or other inflammable matter to be in close proximity to buildings.

Other matters are less clear, such as the siting of heating oil tanks, petrol stores, L P. gas bottles and even windbreaks and garden plots. Information is set out in literature published by different Government Departments and advice can be readily obtained from the CFA or forestry officers. The relatively simple precautions which are necessary should and must be followed by country dwellers. It is also highly desirable that the individuals give greatest possible cooperation to the CFA and to any other organisation concerned with fire prevention in their vicinity.

PART IVTHE ADEQUACY AND EFFECTIVENESS OF PRESENT
PRACTICES ADOPTED IN THE FIGHTING OF BUSH
AND GRASS FIRESCHAPTER 10THE COUNTRY FIRE AUTHORITY10.1 The performance of the CFA on February
12th, 1977

A matter of basic importance that must be borne in mind in any consideration of the firefighting operations of February 12th was the fact that all 12 fires originated at a time between 1030 hours (Merino) and 1600 hours (Balliang East).

Indeed, the five largest fires, Glenthompson, Pura Pura, Tatyoon/Streatham, Creswick and Cressy, started within ninety minutes of each other. At the same time, the North Byaduk fire had already started, and serious fires escaped at Penshurst, Beeac, Waubra, Lismore and Balliang East.

In the $3\frac{1}{2}$ hours between 1230 and 1600 hours, fires were occurring at a rate of one every six minutes in the State, with outbreaks every twelve minutes in the western district alone. At one point in time, the largest of these were burning and being fought. Moreover, a feature of these fires was the unusual rate of spread. McArthur has recorded that the rate of spread of the Tatyoon/Streatham and the Cressy fires was the fastest ever recorded in Australia, and presumably, this means in the world. In the circumstances, it was indeed an amazing result that all these major fires were under control by some time late on February 12th, which is in marked contrast to the result in earlier times when fires starting in similar extreme conditions often remained out

of control for several days. The effort of those engaged in the suppression of these fires was valiant indeed and their skill, devotion and courage calls for the highest commendation. Experts in the field regard their performance as admirable. While all those who fought these fires are to be congratulated on the overall result, this is not to say that there is no room for improved technique, strategy and organisation and a number of suggestions for such improvements were submitted to this Inquiry and these will be examined in due course.

10.2 Mr. A. G. McArthur is possibly Australia's best known expert in the field of firefighting. He has carried out extensive research into fire behaviour and has published many papers on the subject. He made an investigation of the fires of February 12th and his very full report was of great value (exhibit 226). His report was made after extensive inspections of the areas burnt and a detailed compilation of all the relevant data. McArthur criticises the performance of those directing suppression forces in respect of several fires in that the suppression action along the eastern flank of the fire was ineffective.

Mr. Pitfield, the former Chief Officer of the CFA, in a letter to this Board, also drew attention to this problem. He stated that the dreaded westerly wind change has always been associated with the damage caused by Victoria's "killer fires" and that wind is the main factor which governs tactics when deploying forces to fight grass fire on the western plains. It is also the main factor when making an appreciation to evacuate persons from farms or towns.

The problem of the eastern flank is well known and discussed in the Australian literature on firefighting. The need to mop up along the

eastern flank is emphasised as essential. In reality, the eastern flank may be regarded as the source of a large set of fires of which advance notice is available. If this flank is not controlled, the westerly change, which can be accurately predicted through the existing CFA network, will break away. Knowing the fury of the fire before the change, the intensity of the fires after the change can be well predicted and in the circumstances of February 12th, it was apparent that fires would be almost as vigorous after the change as before. On many of the fires, the eastern flank was not adequately controlled before the wind change. This is demonstrated by the following figures which set out in respect of each fire the percentage of the total burnt area that was burnt after the wind changed from a general north-easterly to a general south-westerly direction. In the case of most fires, a substantial area was burnt after the wind changed.

FIRE	TOTAL AREA BURNT ha.	AREA BURNT AFTER CHANGE ha	
CRESSY	41,760	23,500	56%
PENSHURST	3,430	1,640	48%
PURA PURA	18,750	8,200	44%
TATYOON/ STREATHAM	22,060	4,310	20%
GLENTHOMPSON	6,060	1,100	18%
NTH.BYADUK	900	180	20%
BALLIANG EAST	3,050	250	8%
WAUBRA	1,700	800	47%
CRESWICK	5,500	600	9%
BEEAC	500		16%
MERINO	20	nil	-
LISMORE	1,600	820	51%
	105,330	41,840	39%

The figures in this table were based on McArthur's report and other evidence. At a very late stage during the preparation of this report, the Forests Commission supplied the Board amended figures calculated by careful measurements of the satellite photographs. The Board is grateful for this information, but these figures were not available to interested parties who had no opportunity to test them in any way.

It is however, interesting to note, that assuming the accuracy of the calculations, they reveal that in most cases the percentage of area burnt after the wind change was greater than the evidence disclosed. For example, the percentages of areas burnt after the change was estimated at 31% at Beeac, 52% at Pura Pura and 65% at Lismore.

These figures are even more demonstrative of the fact that while the western flank of all fires was held and mopped up, the eastern flank was not dealt with satisfactorily. A study of the satellite photographs, Appendix 'A' to this report, shows the significant pattern repeated over and over again - the fire spreading generally in a southerly direction or south-easterly direction until it turns to the east, and in some cases, to the north-east.

Mr. Pitfield's suggestion is that qualified people in aircraft are readily able to locate and advise the passage of cold fronts hours before they reach the fire and this information, continually passed on to central control and from there to all regional control centres, would enable the field control to allow the safe and calculated redeployment of forces in readiness for the wind change. This is one of the main purposes of the CFA border network, a system of observers along the South Australian border who transmit information on the arrival of cool changes and conditions after

the change. This information is relayed throughout the CFA system and up to date information is available on the progress of the change at any time. Mr. Pitfield's letter emphasises that the problem has been appreciated for many years and the network is evidence of the Authority's awareness of the situation, and of its attempts to allow time for forces to be adequately prepared. Indeed, McArthur stated that the CFA had been "hammering" the need to concentrate on the eastern flank for ten years.

There may be many exculpatory reasons for this failure to prevent the break-out from the eastern edge in one or two fires. No doubt the number of fires burning simultaneously meant that manpower which might have been employed in this task, was unavailable because of the demand from other fronts. As against this, the emergence of the same pattern in so many fires does create the impression that such manpower as was available could have been directed more effectively to the problem of preventing the spread from the eastern front, perhaps in some cases at the expense of the western edge.

It does appear from the overall picture of these fires and from the criticism by McArthur and others, that the technique of firefighting and, in particular, of controlling the dangerous eastern side of the fire, was not appreciated by those in control of the suppression effort or was not properly employed. The literature produced at this Inquiry shows that with present day technology, modern equipment and techniques and with a properly prepared and trained work force, it should have been possible to contain the majority of the fires after the change and reduce the damage to something very much less

than in fact occurred. This is one part of the disaster of February 12th which could conceivably have been prevented.

The eastern flank could have been hit with water or retardant, either by tanker or by aerial application. This exercise should have been supplemented by strong follow-up patrol units for the purpose of consolidating the edge in readiness for the change. Adequate resources should have then been redeployed in readiness to contain possible breakaways. It is reasonable to expect that in 1977 there would be sufficient "know-how", equipment and application to minimise the damage that in fact was caused by burning after a strong wind change. The Board appreciates that a 100% safe edge cannot be guaranteed under realistic conditions. Nevertheless, containment was possible as is illustrated by the successful operation in some of the fires. It is apparent that a good deal more could have been done to minimise the danger than was in fact done on February 12th.

10.3 Counsel for the Strathmore and Streatham Fire Committees submitted some interesting observations on the role of the CFA. It was suggested that the CFA does little to assist, inform or train their volunteer forces and do not spend enough on equipment in the areas that these Committees represented. It was urged that the CFA should engage in more training at the grass roots level. A further suggestion is that there should be more geographical details on the fire maps so that the points where stands are to be made on days like February 12th can be located easily. Further, it is felt that there should be more listening radios, particularly in households and trucks to warn people of the occurrence and movement of a fire. It was also submitted that it is essential for an aircraft to be in the air immediately a fire starts and these aircraft

should be manned by personnel who have been trained by the CFA and subsidized to do this type of work. It is believed that those in the CFA aircraft used at present merely advise by map grid references only, because they do not have the local knowledge to enable them to refer to properties by name and other geographical identification marks. Further, the Committees press for more Government assistance through the CFA in equipping the areas with large sophisticated water tankers.

All of this seems very pertinent and important and the Board strongly recommends to the CFA that all of these suggestions be examined with great care and indeed, most if not all of them should be acted upon at the earliest possible date.

10.4 The events of February 12th make plain, beyond doubt, some considerations which should have been quite obvious to the CFA before that time. There must be far more research into the behaviour of fires, particularly those occurring in the western district. Moreover, the CFA must in future, concentrate its resources on providing more CFA owned trucks of a modern type, properly equipped, and improve the communications, especially by providing all units with V.H.F. radios so that proper communication can be maintained at all times from command to units and between units.

There were occasions during some of these fires when brigades were quite out of touch with the command post and their efforts were, in consequence, either misdirected or entirely suspended at vital times during the firefighting. For example, the Westmere Group at the Tatyoon/Streatham fire was at one stage out of radio

contact and was idle at a stage where the units that were standing by could have been usefully employed in essential suppression work.

All this suggests that while the overall firefighting organisation of the CFA is, on paper, perfectly satisfactory and would probably be efficient on occasions where there were few fires, that on the day when tested by many fires occurring at the same time, the organisation was unable to withstand the strain. No doubt, the CFA will take this lesson to heart and review the whole pattern of organisation so that, if tested again in the same way, a more efficient fighting force can be deployed to suppress a number of fires more quickly and effectively.

10.5 The importance of the fire danger index or chart must not be underestimated because it allows a rapid assessment of the likely degree of danger at any particular time in the region, using the weather forecast as a basis. The Commanding Officer is therefore able to plan an appropriate degree of readiness for the suppression of fires which may occur, by alerting volunteers and warning those who should be informed of the urgent situation. There is no evidence to suggest that the CFA is not fully aware of the importance of this matter or that the fire danger index is not used and it is, in fact, mentioned in the Operations Manual - Tactics and Administration in the Field - Vol.1 (exhibit 224), but does not appear to be emphasised in that publication.

CHAPTER 11THE FORESTS COMMISSION, VICTORIA

11.1 The FCV is responsible for prevention and suppression in approximately one third of the State. Happily, it was not tested on February 12th to anything like the extent as was the CFA. This is conceded by Dr. Moulds who has already been quoted as saying -

"that the Forestry personnel and equipment are adequate to cope with what might be described as a normal fire situation"

but he fears that if tested in the same way as the CFA was on February 12th, the Forestry firefighting resources might be overtaxed and prove inadequate.

Insofar as the FCV was involved in fires during the summer period of 1976-77, it appears that the fires were dealt with speedily and efficiently, as instanced the fires at Ross Creek, Lerderderg and the Little Desert. The fire on February 12th which mainly affected the FCV was the fire at Creswick and here again, no criticism has been directed to the firefighting expertise of the Commission's forces. In addition to fighting fires in their own areas, the FCV gave extremely valuable assistance from time to time to the CFA. It would appear that the research conducted in relation to forest fires by the FCV has borne fruit and that far more is known about the behaviour of such fires than has yet been discovered as to the behaviour of grass fires which again serves to point up the necessity for further research in that direction.

11.2 The Municipal Councils

Whatever may be the criticism of the municipal authorities in relation to their lack of fire prevention, when the fires in fact started, it appears that all the shires and other municipalities involved were very ready to assist in the fighting. Essential heavy equipment in the way of bulldozers, graders and other heavy vehicles, as well as tankers of all descriptions were called for and readily and speedily supplied by the shires. In this regard there is no criticism directed to municipal authorities which appear to have cooperated to the greatest possible extent with the firefighting units.

One matter which concerns municipal councils is the provision of water supply. Even the larger tankers, to say nothing of smaller units, can carry only a limited quantity of water. Indeed, Mr. Mackinnon points out that the effective actions of a unit is only about ten minutes before it runs out of water. It is therefore enormously important that units should be able to refill in the quickest possible time and in order to do this it is entirely necessary that there be adequate filling points. An example of inadequacy was in the township of Cressy where there was only one filling point and at the height of the fire in that area, units were lined up waiting to fill from the only available tap. Obviously in a town like Cressy there should be far more filling points and this is something which the shires must look at as a matter of urgency.

Through the local water supply authority many more filling points should be arranged at suitable locations. It is also vital that these should be easily discoverable by the fire units, particularly those from other areas unfamiliar with the local scene. Adequate signposts should be provided and the exact location clearly marked on maps. All new hydrants should be advised to the CFA.

It is also essential that filling points be readily and easily usable. The Board observed one overhead pipe with the tap so high in the air that a six foot firefighter standing on the top of the cabin of a normal truck could not reach it. It is understood that this particular situation has been remedied by the responsible shire, but the same sort of thing occurred in other districts.

11.3 Victoria Police

All major fires are attended by Police Officers in the district and all the fires investigated by this Board were attended by the police in the area. There is no doubt that the officers who attended the fire gave quite vital assistance to those combating the fire. In addition of course, they carried out efficiently the duties of control of sightseers and traffic, of protecting the general public and of rehabilitation in the way of rehousing and all the necessary acts that must be done by somebody in the wake of disasters such as these fires.

Under the provisions of the State Disaster Plan (Displan), the Chief Commissioner of Police is the coordinator of all measures necessary to combat a major peace-time disaster anywhere in Victoria (Displan 1968, para.1). The Authority responsible for dealing with the particular type of disaster shall take command - (para.23). Coordination between the various instrumentalities shall be affected by the Police Officer at the site and where appropriate by D.24 Operator at Police Headquarters (para.23).

The rank of the responsible Police Officer will depend upon the magnitude of the disaster (para.38). If required, a radio vehicle will

be supplied by Police and an operational headquarters established (para.71). In a fire situation, the Police recognise the command role of the particular fire service and without in any way interfering with that command, perform the duties appropriate to their function of coordinator of other services.

These terms of Displan, in effect, merely give formal recognition to what has always been the practical situation. In all types of disaster ranging from the serious traffic accident up to and including major disasters, the Police are on the scene at the earliest possible time and have always, in fact, coordinated the activities of other services. In the extensive fires of February 12th, senior Police Officers acted as coordinators. The function of the coordinator is to arrange for equipment not directly under the control of the combating Authority to be made available for assistance in the suppression of the fire or any rehabilitation after the fire has passed. It included such matters as providing tankers, milk trucks, concrete trucks and any vehicle capable of carrying a large quantity of water from shires or private companies and firms. The supply of generators and other electrical equipment was also arranged by the coordinator where necessary. The evidence establishes that the work of the Police Coordinator was very satisfactorily and efficiently performed.

Apart from the Police coordination function, Police Officers from each area in attendance at the fires were able, by use of their own radios, to keep their headquarters in touch with what was happening at the fire and through their headquarters, this information could be, and was, relayed as necessary to other organisations. A number of Police Officers drew attention to the fact that in their particular case the communication system was inadequate. Some of the smaller stations lacked

a radio transmitter - some even had no radio listening device. This is somewhat surprising in a force which relies so much on radio communication in its everyday work. Adequate radio facilities should be provided for all stations as finance becomes available and this should be regarded as a matter of urgency.

11.4 The State Emergency Service

The SES is an organisation created under the State Disaster Plan. It is a branch of the Chief Secretary's Department and is the successor to the Victorian Civil Defence Organisation. It has no statutory backing as it is not a creature of any Act. Indeed, the only reference to the SES in the Victorian Statutes that has been discovered in this Inquiry is a reference in the Victorian Civil Defence Workers' Compensation Act 1972.

It is a little difficult to discover authoritative explanation of this organisation's role and responsibilities. However, in the submission put before this Board by Mr. M. D. Currie, the Deputy Director of the SES, there is set out the substance of a letter written by the Chief Secretary dated 16th August, 1976 advising the Chief Commissioner of Police on the role and responsibilities of the Service. The role of the Service is said to be to plan, organise, coordinate and implement the measures that are necessary or desirable in respect of the safety of the public and are designed to guard against, prevent, reduce or overcome the effects or possible effects of emergencies inimical to life, health or property within the State of Victoria. The responsibilities of the SES are also set out in the same document. Included are the responsibility to -

"prepare and implement plans to meet emergencies, occurrences and accidents, to raise and train municipal units of the SES throughout Victoria, to train volunteers from the public, and to carry out operations to combat emergencies, occurrences and accidents".

The relevant section of the responsibilities set out is as follows -

"to provide support to disaster combating authorities under the provisions of the Victoria State Disaster Plan".

The SES has under its control, some substantial resources including elaborate communication equipment, both of H.V. and V.H.F. radio, teleprinter facilities and of course, telephonic facilities. It also has by way of mobile field headquarters, two prime movers - radio equipped, an operations caravan, communications caravan equipped with appropriate radio and telex and a reconnaissance vehicle. It also has a search and rescue vehicle and trailer. Unit equipment include a search and rescue kit, vehicles and trailers, generators and lighting sets, flood rescue boats, radio transceivers, first aid equipment such as stretchers and bulk welfare sets for feeding, as well as aqualung and air breathing equipment.

To date, the role of the SES in relation to fire suppression has been to act as a back-up force to assist firefighting organisations who have the combat role. The relevant matter for this Inquiry is that in firefighting the command of the units actually fighting the fire rests with the CFA or the FCV according to the place in which the fire occurs and so far as this Board could ascertain, as indeed has been adverted to in an earlier paragraph, the SES has never claimed any combat role in relation to firefighting. The role assigned to it of acting in aid of the combating authorities appears to have been effected quite satisfactorily and the Service to have been a very great assistance in relation to the fires of 1977.

Both the CFA and the FCV expressed concern lest the SES takes upon itself, or is given a role which interferes with the combat role of the firefighting organisations. To quote from the submission put forward by the FCV

"as there are already more than enough factors inherent in fire emergency with the potential for causing confusion and panic, it is very necessary that everyone in a fire area clearly understands who has the responsibility and authority for directing operations. Over a long period of years people in the rural areas of Victoria have come to know which organisation has authority for firefighting in their locality. It is considered unwise to allow a situation to develop where another organisation can, even with the highest motives, unwittingly cause some misunderstanding."

The submission continues that is considered that there is no role

"as of right in a fire situation for the State Emergency Service. However, SES personnel would be very welcome in a fire area where they intend to carry out specific tasks in accordance with a formal request from the CFA or the Forest Officer in charge. In such cases, the authority of the leader of the SES group would be limited to service personnel only. Persons who are members of the SES who attend a fire when that organisation has not been specifically requested to attend to carry out certain tasks should be regarded as individual volunteers under the control and direction of the CFA or the FCV as appropriate".

Having carefully considered the evidence and the SES submission, the Board can only

repeat what has been said in an earlier paragraph, that there is no evidence to suggest that the SES has any ambition to acquire a combat role in relation to firefighting. This has been specifically denied and the denial should be accepted.

It appears however, that both the CFA and the FCV are gravely concerned about another possible change in the responsibilities of the SES. The State Disaster Plan (Displan) is in the process of being revised and it is claimed that some of the suggested revisions would substitute the SES for the Victoria Police as coordinator in a fire disaster situation. Such a radical change is strongly resisted by both the Commission and the Authority. The Board is not in a position to know how much serious consideration has been given to this matter. There is nothing in the draft of the revised Displan to suggest any such alteration. It is desirable to record that the evidence so far from indicating any criticism of the efficiency of the Police as coordinators, established that the task had been performed to the general satisfaction of all organisations involved in fire suppression and rehabilitation after the fires had passed. An important factor is the natural reaction of law abiding citizens to obey Police directions without any great hesitation, whereas the same orders given by some less familiar authority would not be readily accepted or followed. An example of the type of situation envisaged is the necessary evacuation of buildings and other locations in circumstances of danger from fires.

It would seem to be an unjustified risk to change from a familiar traditional system which has worked well, to one which at best, is uncertain of success and at worst, might be calamitous.

Under Displan, the SES has important functions in two categories. It is required to act in support

of the combating authority and is also charged with the formulation of disaster plans on a regional basis - thus, it has vital responsibilities under the plan.

If however, there was to be a change to make SES the coordinator, this Board would share the apprehension expressed by the CFA and the FCV that any such development would be detrimental to effective fire suppression. The system whereby the Police are coordinators is one of the "present practices" which is adequate and effective and should not be changed.

11.5 The State Electricity Commission

The SEC has, of course, no role to play in the combat of fires, but in the light of the criticism made of that organisation, so far as its fire prevention activities are concerned, it is only fair to add that in the aftermath of the fires, when a great number of SEC poles were destroyed and almost all the lines in the areas of the fires put out of action, the SEC personnel did magnificent work in restoring supply as rapidly as was humanly possible. They worked long hours in difficult and sometimes dangerous conditions in an endeavour to restore the much needed power to the public.

PART VTHE ADDITIONAL STEPS NECESSARY FOR PREVENTION
AND SUPPRESSION OF FIRES IN THE LIGHT OF RECENT
DEVELOPMENTS IN RURAL AREASCHAPTER 1212.1 General examination of developments

Since questions of fire prevention and suppression were last independently examined by His Honour Judge Stretton in 1939, the rural scene has been the subject of quite considerable change as might be expected in a community where change and development are continuous. Some of the developments which have taken place need to be discussed. The first and most important of them is that, at least since the early part of this century, what has been called the "drift to the city" has almost come to be regarded as permanent and inevitable. The rural population has steadily declined and that of cities, especially Melbourne, has increased. Mr. R. P. Shea of the Victorian Farmers' Union adverted to this matter and supported his case with figures from the Ararat area. He said that the manpower in the country had decreased over the last ten years and that this tendency had accelerated, particularly in the last two or three years, due to the economic conditions of the rural industries. Smaller farmers, including some soldier settlers, have found it uneconomic to continue and have sold out, with the result that there has been an amalgamation of properties with an overall reduction in rural dwellers. He also pointed out that there were far fewer employees in rural districts than used to be the case because for economic reasons, the farmer was doing his own work instead of employing hands on the property. Mr. A. N. Rooke of the VRFBA supported this view. He said that the economic position of rural

dwellers had gradually deteriorated in recent years, which has resulted in movement away from the country districts to more populous urban centres and that this applied particularly to the young men who are the most eligible for service in the active aspects of rural fire brigade work. Mr. Rooke said that it had been observed that on some occasions, brigades were not able to provide sufficient manpower to employ all of the equipment which they had available. This was not an observation made by other brigade officers in other areas. The only witness to depose to any trend other than the drift away from the rural areas was Mr. M. B. Lamshed of the Brimpaen Rural Fire Brigade. He gave evidence to the effect that in his area more people have been moving into the farming community and the population had consequently increased in recent years. This appeared to have been due to the breaking up of large estates into smaller units. This tendency in the Brimpaen area, which is an area to the west of Horsham, may not be unique. Some statistics which have been published recently suggest that at long last the trend for people to leave the country in favour of the city is showing some signs of abatement, if not positive reversal.

Another factor that tends to reduce the number of men in country areas is the development over recent years of increasing use of machinery and mechanical assistance generally, so that fewer hands are needed to do the work of the farm. Another development relevant to the question of fire prevention and suppression is the fact that over the years, pastures have been improved, resulting in heavier growth and consequently, in a different type and quantity of fuel, resulting in fires of increased intensity. It was also said by some witnesses that myxomatosis, having reduced the rabbit population, had a similar effect in that areas that had previously

been eaten down, now tended to have increased growth of pasture with consequent increases in the amount of fuel. As a result, fires tend to become more difficult to control.

One very significant change over the last twenty years or so has been the rapid spread of electrical power lines into the country. These lines have now extended to quite remote areas and where-ever one goes in the country the ubiquitous power poles and lines are observable. Having regard to the fact as demonstrated in recent fires that the electrical installations can be, and on days of extreme danger, are sources of ignition of fires, this is a factor which has had a great influence on the totality of fires in the recent season. The greater mobility of the population and the increased tendency of city dwellers to ramble in the countryside, has also been notably a source of risk of fire. This increase in potential danger and in intensity of the fires which occur is a serious matter in the light of limitation both of manpower and financial resources.

As against these factors suggestive of deterioration in the situation from a fire control viewpoint, there are also some improvements. Although more access roads are required, particularly in areas where there is at present a great difficulty of access in getting at the source of fires, taking it over-all, the road system of the country has improved and in many remote areas, access is now more readily obtained. Also the water supply has, over-all, improved. More efficient fire fighting vehicles and better equipment have been developed. Far more scientific knowledge of fire suppression techniques, better and more accurate weather forecasts and far greater speed

of communication resulting in rapid warning of the onset of fires and immediate notification of change of weather are all now available. The basic problem is how to overcome the detrimental factors by exploiting to the full these advantageous factors.

12.2 Suggestions for improvements in fire prevention and suppression

The following suggestions mainly arise out of the matters discussed in previous chapters.

In the old days the ample manpower available tended to be used somewhat indiscriminately. The smaller number still available must be trained, organised, equipped and directed to obtain the maximum effectiveness. This is primarily the task of the CFA, training at grass roots level in the brigades must be stepped up and improved in quality. Obviously, very few of the hundred thousand odd volunteers will ever see Fiskville and training in the technique of firefighting needs to be brought to them. Indeed, Fiskville may be considered the training school for trainers and those who have had the benefit of the Fiskville training must be employed in transmitting their knowledge and their expertise to the volunteers in the field. Secondly, because of the reduced number of private fire units, it is necessary that each brigade must be supplied with an efficient modern CFA unit. The volunteers must be encouraged to provide their own units and to keep these units in good order and readiness for firefighting and to persuade the farmers to do this, some financial inducement should be provided to offset the cost of the vehicles used. Their effort is for the benefit of the whole community and the community must at least bear part of the expense. In a separate section this question of financial reimbursement will be discussed.

Enough has been said on the subject of the need for greater research. It is also true, that doubtless for financial reasons, there has been

insufficient new equipment provided by the CFA. Apart from new vehicles, the CFA needs to re-equip brigades with the latest in tanks, pumps and other fire suppression gear as funds become available. Especially, far more quick-fill pumps are required. When this is done, personnel must be adequately instructed in the use of the more modern equipment and in the latest methods and techniques.

The FCV makes far greater use of aircraft than does the CFA. These planes are used for detecting fires, for directing ground forces to them and are also used extensively in fighting fire, not merely as observing and reporting the fires progress, but in depositing chemical retardants at appropriate points in order to stem the progress of the fire. It is also the practice to use planes to deposit from the air, chemical material to ignite fires for the purpose of fuel reduction burning and this has been found very satisfactory in appropriate conditions. It is realised that the control of fire in forests is different in many significant respects from the same task in grass country, but a more extensive examination of the use of air-borne procedures must be undertaken in respect of fire control in settled rural areas.

Again, enough has been already written of the need for updating of communications equipment. It is sufficient to say that this must be added to the list of steps which must be taken in order to bring brigades to that point of efficiency which will enable them to cope with outbreaks of fire in a safer and more satisfactory manner. It is only by the CFA vigorously pursuing a policy of experiment and

investigation into modern methods and by allocating its funds to the re-equipment of its brigades in a modern manner, that the disabilities arising from lack of manpower and other factors which have been noted will be overcome.

12.3 Financial aspects

In accordance with its terms of reference, the Board has made a number of recommendations designed to improve the standard of fire prevention and suppression. Most, if not all of these, involve increased expenditure. The implementation of these recommendations thus involves an increase of funds for the organisations concerned. It is realised that the claims on the Victorian Treasury are multitudinous and that it is annually expected to perform on a grand scale the miracle of the loaves and fishes. The unenviable task of sifting the essential from the merely desirable, and the even more onerous exercise of arranging essential priorities in some order of urgency, is a matter of Government policy and it is not for this Board to urge the claims of fire prevention, save that it is permissible to respectfully submit that these claims should be at the top end of the scale of priorities. It is hoped that before the memory of January and February, 1977 is dimmed in the minds of the community, sufficient funds will be allocated for these purposes.

So much for the funds which must come from the public purse for the maintenance and equipment of the firefighting services and the organisations engaged in prevention work. The question of compensation for the damage inflicted by the fires is another matter. The Government very properly committed substantial sums for the relief of those who suffered loss. While nobody could reasonably

cavil at this decision, a number of witnesses at this Inquiry pointed out that the burden of the damage has fallen somewhat inequitably. Those prudent citizens who insured against such losses will be compensated by the underwriters to the extent of their policies. Those, who through improvidence or inability to find the necessary premiums, were uninsured look to the Government for relief. This means of course, the burden falls on the general taxpayer including those who had insured themselves, who thus to a certain extent, pay twice. There was evidence before this Inquiry that of the people affected by these fires, 35% were uninsured and of the remainder, the average cover was only to the extent of 60%.

Various suggestions were made to avoid this inequality. Mr. Brian Learmonth presented a suggestion in some detail. He suggests a compulsory levy based on municipal valuation and collected through the municipal rating machinery. All municipalities outside the metropolitan area would be required to collect a levy based on a graded percentage of the value of improvements from all owners of property. The value of improvements would be the value as assessed by the municipal valuer. The graded percentage of the rate would be determined by the CFA in each region and might vary according to the location of the property, the fire rating, the level of fire prevention and fire suppression carried out in each brigade area by both brigades and individuals. The objective of differential gradings for each brigade area is that it would offer an incentive to provide high level preventive works. The grading of any municipality would also be predetermined to ensure relativity throughout the State as a whole. Although the author of the scheme

was optimistic that it would be accepted readily by the rural community, it is felt that it is unlikely to prove a popular plan. Moreover, it obviously requires much study and the collection of complex statistics before its practicality can be assessed. It is however, recommended that the plan is worthy of some careful consideration by those competent to advise on its value.

It has been urged upon individual landowners that they should provide and keep in good running order, trucks which in the fire season would be available as firefighting units and it has been recorded that these private units are decreasing in number and that those still available are showing signs of reduced efficiency. Some encouragement is therefore needed to induce the property owners to acquire, keep in order, and make available such vehicles. Apart from a subsidy on pumps which should be reintroduced, some form of relief should be given, at least in the way of reduction of motor registration fees for vehicles which are not wholly kept as fire units but which are guaranteed to be available when required.

It may well be that some further encouragement is necessary to ensure the maximum effort in all forms of fire prevention and suppression by the rural community. It is therefore suggested that the organisations representing farming and pastoral interests, the Victorian Farmers' Union, the Graziers' Association and similar bodies, should jointly examine and work out a scheme of subsidy which could be presented to the Victorian Government, designed to give financial relief in respect of expenses incurred in fire prevention work.

CHAPTER 13THREE SPECIFIC MATTERS EFFECTING FIRE CONTROL13.1 Days of total fire ban

The question of whether days of total fire ban should be declared on a State wide basis or only for specified parts of the State was considered and was the subject of several submissions.

Total bans on the lighting of fires in the open may be declared under the Country Fire Authority Act (s.40) and under the Forests Act (s.64). Under the Country Fire Authority Act, the Authority or certain specified officers, can declare a day of total fire ban in the whole of Victoria or in any specified part or parts of the State. The Forests Act empowers the Minister of Forests to ban fires in the open air in any part or parts of the fire protected area, as defined in that Act.

Present practice is to declare bans over the whole of Victoria under the CFA Act. Evidence was received from the Shire of Mildura which suggests that the CFA has been unnecessarily negative to suggestions for declarations limited to specific parts of the State. At the Inquiry, the CFA expressed total opposition to anything less than State wide bans. The Board remains unconvinced that any alternatives to State wide bans have been seriously considered, other than on a trial basis for one region. The brigades of region 4, the region considered which covers the south-western corner of Victoria, submitted to the Board that they should be a "guinea pig" for such a system.

In the Board's view, the problem should be examined further at several possible levels of subdivision:

- (a) bisecting the State - a suitable boundary would be the Hume and Northern Highways between Melbourne and Echuca;
- (b) division into at least three large areas based on municipal boundaries or other appropriate feature such as the Great Divide;
- (c) declaration of smaller areas, probably based on municipal boundaries, with such declarations perhaps tied to the Fire Danger Index, and made under either Act.

If the public knows to expect that a local or municipal level declaration will be made and if the declarations are made under a well planned scheme of publicity, the Board cannot see any overriding difficulties with partial bans. Indeed, smaller zones are more likely to encompass similar climatic conditions, and would thereby be less likely to lead to accidental errors by citizens, as well as making the application of bans more obviously rational.

It could be argued that if a satisfactory system of communication cannot be devised, the State will be better served with the present "whole of State" declaration, because the problems arise most often in the extremities of the State, whose residents are more familiar with dealing with eccentricities of centralised decisions.

Because communities could conceivably be endangered if on an undeclared day their locality has high fire danger, the Board is not convinced that the present system gives adequate protection to isolated areas of high risk.

On the subject of boundaries, there is little merit in automatically adopting CFA regions and well known boundaries are better. Municipal boundaries seem the most logical for a system of smaller areas. Climatic or even tourism regions may serve the purpose better than CFA regions, and be better understood.

It is most important that criteria for declarations should be set down in advance as a guide to local declarations.

The easy compromise of a two-way split is tempting but should not be adopted lightly. It could set back the chances of a more localised system succeeding in the future and may not be at all satisfactory. Inevitably, conditions over either half of the State could differ just as much as at present, and the announcements would be more complex than the simplicity of the present blanket ban.

A consideration of some importance is that in both New South Wales and South Australia, the practice has been adopted of issuing these proclamations in respect of defined areas rather than on a whole State basis, and there is no evidence to suggest that this method is in any way unworkable. Although it is true that the total area of Victoria is smaller than either of the other two States, this does not create any difference in principle.

After careful consideration, the Board concludes that the only merits of a State wide ban are the convenience of administration and clarity of notification to the public. As against this, a ban extending over the whole State creates anomalies and is regarded by many

of the rural population as leading to inconvenient absurdities. Accordingly, it urges every possible effort to devise a workable scheme of multiple declarations and to devise an appropriate set of criteria and of procedures for communicating the ban. Until this is accomplished, the present practice of declaring the State wide ban should be continued.

13.2 The discontinuance of electric supply on days of fire danger

One matter extensively canvassed during this Inquiry is the question of whether electric power should be switched off on days of extreme fire danger. Among the witnesses there were enthusiastic advocates of each view and it is clear that there are considerations which make each view supportable. The suggestion is that on days of extreme fire danger a responsible CFA officer would exercise his discretion as to whether or not the electric power was turned off. It was expected that the period of cessation would be for 5 to 8 hours.

The community is clearly dependent on electric power and the farmer is no exception, relying on power not only for cooling, heating, cooking and light, but also for his water supply and his machinery and tools by which he earns his livelihood.

Those in favour of the suggestion maintained that power can be turned off with a minimum of hardship, that freezers would not be affected for up to 8 hours even in the heat, that power is occasionally turned off for such periods for routine maintenance in any case.

It is, of course, clear enough that if the power is turned off there will be no danger from electric installations during the acute period of

danger. Many of the farming community were in favour of the suggestion and some gave examples of incidents where the absence of power saved an unfortunate situation. Mr. Geoffrey King recalled that on January 8th, 1969, power was off when an electric line broke - consequently, no fire started whereas had the power been on, a difficult situation would have arisen.

As against this there are the needs of emergency services to be considered, such as hospitals as well as the daily town facilities of milk bars, supermarkets, hotels, meat and cool stores, factories, traffic control devices and radio transmitters. While it is possible to have standby power systems and the evidence was that some organisations have such systems, there are undoubtedly many people who, for various reasons, will remain dependent on SEC power, particularly for water supply, which is of course vital on the very day that under this suggestion, power would be cut off.

Mr. Chapman, an SEC officer, pointed out that the safest network is one that is alive, so that it is known at once when a fault or some interference with the system occurs. If power is restored after extremely windy conditions, many fires may start, although hopefully they would be easier to control. An excellent example of the dangers of the cessation of power is given by Mr. Thewlis from the Pura Pura area. When power was resumed on February 14th, a fire immediately commenced where a branch had fallen upon a conductor.

Some of those witnesses who advocated that the power be turned off suggested that

this should only be done on days of extreme danger, unless the SEC could ensure complete safety of their assets. It was pointed out by some SEC officers that while it was possible to turn off power in any selected area, that it would be both expensive and difficult to do so for a restricted region and that as a matter of practicality, the power could only be turned off in such a way as to remove the power from a very wide area.

There is no doubt that the cessation of power runs counter to the philosophy of any power supply system and it is greatly to the credit of the SEC and indeed typical of its constructive stance in this Inquiry, that it was submitted on its behalf that the feasibility of the scheme should be studied jointly by the CFA and the SEC. The Board accepts this proposal and hopes that careful examination of all the facts may result in some useful solution. At the present stage however, the Board can only come to the view that the cessation of power is not a good solution to the problem. It is obviously better that all concerned should absorb the experience of February 12th and that all those factors which caused the fires of that day, as well as any other potential causes, should be prevented from starting any fire in the future. One of the matters that is of some concern is the situation which could arise if extreme conditions were prolonged beyond the 5 to 8 hour period which has been envisaged. The CFA officer would be faced with a most difficult decision and be put in a most unenviable position. He would be subject to extreme pressure if the period extended as it could easily do for 30 hours or more.

Much depends on the adequacy of preventive measures. The Board's view is that the experiences of February 12th, as examined at this Inquiry, have highlighted grave deficiencies in prevention measures in most sections of the community. However, there

was also evidence that the experience of February had been literally burned into the consciousness of the SEC and hopefully, the impact has had an effect throughout that organisation, as well as upon other organisations and individuals with a duty to minimise the fire risk. There are hopeful signs in the evidence received to date that this is so.

The crucial factor is the response of all sections of the community, not only the SEC, to the task of fire prevention. If future prevention measures are adequate, the danger from electric power lines will become far less of a problem. If the future measures are not adequate; then almost as a policy of despair, resource may well have to be had to the turning off of all power on days of potential danger. This however, cannot be seen as a satisfactory long term measure. After weighing the conflicting factors and arguments, the Board ultimately concludes that the turning off of power on days of danger should not be recommended.

13.3 Electric fences

A less important question with some similarity to the problem of turning off power on days of extreme fire danger, is the question whether this Board should recommend the compulsory de-activation of electric fences on such days. Mr. Ian Laidlaw deposed that this matter had been of some concern to brigades and that representations had been made to the CFA on the subject. There are two types of such fence - the older being battery operated and apparently of no great danger, but there has been developed a type of fence which is powered from electric mains. It is said that

these fences must be fitted with what is called an "arcing limiter" to ensure safety and it is then claimed that any risk of fire is "insignificant". As against this, Mr. J. C. McCutchan, senior lecturer in Electrical Engineering at the University of Melbourne said -

" I know they are capable of initiating fires under laboratory conditions".

The Graziers' Association of Victoria, in its submission, referred to this matter and suggested some precautionary measures -

"all energizers should carry a warning label to either reduce power output on fire danger days or turn the energizer units off.

That an information pamphlet be provided with new units when sold detailing their correct usage.

On high fire danger days, the CFA should repeat warnings advising property owners to turn off power on their energizers."

The submission continues -

"in most cases the usage of electric fence energizers is for single wire offset from the top of existing fences well clear of the fire fuel zone and the presence of vegetation conducive to arcing"

This may be true enough if the fence is across an open paddock, but fences sometimes pass close to trees and shrubs. In the course of inspecting the fire areas, the Board was shown a young green pine tree which had in fact been burned by contact with an electric fence. The Graziers' Association recalls that, to their knowledge, there has only been one recorded incidence of a fire being attributed to an energized wire fence and that this occurred in

February, 1971 on a relatively cool day at Winchelsea. The comment may be made that even one fire from such a cause is one too many.

It is clear enough that the prudent farmer in the western district turns off these fences on days of extreme fire danger, just as he ceases to operate farm machinery which might be the cause of fire. In the present state of knowledge, it is impossible to say with certainty that electric fences operated from mains are entirely safe. However safe they may be if properly installed, fitted with the appropriate "arcing limiter" and maintained in accordance with the manufacturer's directions, it is by no means certain that every fence of this type will be correctly installed in the first place, nor is it unlikely that after being in use for some time, faults may appear which render the installation a danger. It was suggested in evidence that it would be harsh to compel all rural dwellers to turn off such fences on acute fire days and an example was given of a dairy farmer in Gippsland who might be relying on electric fences and to whom compulsion to switch off might be a very great and unnecessary inconvenience. The answer to this is that all such restrictions must impose some hardship on some individual.

The Board recommends that the CFA undertake considerable field research into the safety of these fences. It is further recommended that unless and until that research results in a finding that electric fences are entirely safe, they should be de-activated on days of high fire danger. If necessary, legislation should be introduced to enforce this prohibition.

PART VISUMMARY OF RECOMMENDATIONS AND CONCLUSIONSCHAPTER 1414.01 Range of investigation

It will have been observed that the report is concerned in the main with events occurring in, and with problems emanating from regions of the State west of Melbourne. As noted elsewhere, the Board advertised its terms and dates of hearings throughout the State as well as nationally and publicised invitations for communication with the Board, yet with very few exceptions, all submissions were from the western area of Victoria.

The Board itself investigated the causes and origins of four major fires which occurred before February 12th. These were the only other major fires of the summer season, and were representative of a different type of fire. The examination of these fires was most helpful, giving illustrations of joint effort by the CFA, FCV, NPS and others outside the western district. As a separate issue, the matter of protective burning in forest was canvassed by witnesses from East Gippsland and the far west.

With these exceptions, virtually all evidence came from those in the western district who had recently experienced fires. Perhaps this is another instance of community awareness just after a fire, and apathy or ignorance until the threat from fire is experienced. However, the Board is satisfied because of the nature of the submissions from organisations with State wide interests, that the opportunity to bring forward any real problems has been given and used.

Accordingly, the Board wishes to make it clear that in these circumstances, without prolonging this Inquiry to an undesirable length, it has not been possible to investigate in great depth the effectiveness of fire prevention or suppression in the whole State.

It is now proposed to submit, in summary form, the main recommendations that have been made in the foregoing chapters.

14.02 The Country Fire Authority

While the overall structure of the CFA is satisfactory and provides the basis for an efficient organisation, some weaknesses became apparent in the course of investigation. The more important recommendations to improve the efficiency and capability of the organisation are as follows;

Reorganisation at the highest level by the appointment of an Executive Officer with administrative experience in a position between the Authority and the Chief Officer. It is suggested that this is best effected by making such an officer the Deputy Chairman (4.6.13).

The Authority should, at the first opportunity, review the allocation of its funds so as to increase expenditure on the provision for volunteer brigades, more firefighting vehicles of a modern efficient type and more and better equipment generally (4.6.06, 4.6.07, 4.6.08).

That immediate reconsideration be undertaken of the intra-regional structure so that the work of the Regional Advisory Committees and the Local Advisory Committees be improved (4.6.02).

As part of this reconsideration, action to arrange that the local representative of the SEC and the CRB become full members of the Regional Advisory Committees. This may necessitate seeking appropriate legislative amendments (4.6.02).

The work load of Regional Officers should be reduced by the appointment in each region of a Fire Prevention Officer whose duty it would be to devote his full time to ensuring that adequate fire protection measures are maintained in the region and to oversee the work of the municipal Proper Officers (4.6.01 and 7.2).

The Fire Prevention Officer should make regular and systematic inspections of his region for fire hazards and should take action to eliminate them (4.6.01). In the case of hazards arising from electrical installations, whether due to contact with trees or other causes, to report to the SEC district officer and to ensure that the hazards are satisfactorily dealt with by the SEC.

Each Regional Officer, or the proposed Fire Prevention Officer, should be a voting member of the Local Advisory Committee (4.6.02).

It is essential that Regional Officers in making fortnightly reports to the Chief Officer, should give detailed information of the work of fire prevention, including the discovery and removal of fire hazards and the preparation and implementation of fire prevention plans. These reports should be given more careful consideration than appears to have been the practice (4.6.01). The

Regional Officer is the originator of fire prevention plans for the region and through the Advisory Committees and with the cooperation of municipal councils, the CRB and SEC and where appropriate, the FCV or the NPS, such planning should be improved so that a comprehensive and coordinated plan of firebreaks, access roads and water filling points is prepared. It is hardly necessary to add, it is the further duty of the Regional Officer to ensure the implementation of such plans by the brigades under his command and the cooperation of the other Authorities and local citizens. Any lack of response by other Authorities should be reported immediately to the Chief Officer so that the problem can be taken up and discussed with the other Authority at the highest administrative level.

For this purpose, as well as others, the maintenance of a close liaison between the CFA and other Authorities is imperative and the Regional Officer should make every effort to make the inter-authority relationship effective (4.3.03).

It is also desirable that the Advisory Committees, both Regional and Local, meet somewhat more frequently than is now the case. The members will be encouraged to do so if it is felt that each Committee fulfills a useful purpose and that its work is effective and appreciated. Suggestions for improvement in fire prevention or suppression emanating from brigades should be encouraged, should be discussed in the Committee and if approved, passed on to the Chief Officer with the Committee's endorsement. To date, too many valuable suggestions have been merely recorded and become lost in the pipeline to the Authority (4.6.02).

It of course follows that such suggestions must be examined by the Chief Officer or his Deputy and whether or not the idea is accepted, the Committee should be informed of its fate.

There emerged in evidence, particularly in submissions from volunteer brigade members, that training of volunteers is not receiving adequate attention. It is strongly urged that selected suitable volunteers should be intensively trained at Fiskville so that they may in turn pass on their acquired knowledge and expertise to the volunteers in their own group or brigade (10.3).

The system of radio communication during firefighting operations is not at present satisfactory and in accordance with the suggestions made in this report, should be updated to create a reliable and satisfactory system (4.6.07, 10.4).

As recommended in paragraph 4.6.05 and for the reasons there advanced, the position of Fire Research Officer should be filled immediately and a research section created under his supervision. Appropriate funds should be made available to this section and far more research into the causes, origins and behaviour of fires in settled rural areas should be undertaken with the cooperation of the CSIRO and the FCV.

Immediate consideration should be given to the much greater use of aircraft in detecting and suppressing grass fires as recommended in 4.6.09.

14.03 The State Electricity Commission

It is imperative in order to avoid the ignition of fires from contact with trees that the trees and the power lines be completely separated. It is accordingly recommended that the SEC should take the lead in establishing

a committee to determine principles and standards for the maintenance of trees completely clear from power lines so as to eliminate this potential fire danger as recommended in 8.3.2 and 14.7.1. It is further recommended that the SEC should immediately undertake, in cooperation with the CFA and CRB, local councils and involved citizens, a complete review of the routes of power lines so that ultimately, as a long term plan, hazards from the contact of trees with power lines will be completely eliminated (8.3.3).

Instructions should be issued and enforced requiring the rural officers of the SEC to carry out routine regular inspection of power lines and installations to the greatest extent possible. Such inspection to include all transformers and other equipment as well as poles and conductors. It is appreciated that with the vast extent of SEC lines, this inspection cannot be made very frequently, but more personnel should be employed so that far more inspection is carried out than is the present case. In addition to the inspection of the SEC's own lines, consumers' private lines should be inspected at regular intervals and where faults or encroachment of trees or the like are observed, that the proper maintenance of the private lines be enforced (8.2.1).

All new power lines consisting of L.V. conductors should be erected with appropriate lengths of span and with sufficient width between conductors to avoid clashing during days when there are strong winds. As to such lines as are presently in existence, where any danger of clashing of conductors is possible, consideration should be given as to whether or not the line should be reinstalled. Where this is impracticable, then spreaders to avoid contact between the wires must be installed immediately (8.4).

The SEC must undertake as a matter of urgency a planned and systematic replacement of all clamp-on fuses or EDO fuses without fire chokes and their replacement with fuses of a safer type. It is also highly desirable that more research be undertaken in order to obtain and install fuses which will operate more sensitively and more effectively when there is interference with conductors (8.5).

It is apparent that consumers in rural areas do not understand their rights and duties in regard to their private service lines and many of them seem unaware of the danger from such lines coming in contact with trees. The SEC should immediately issue to consumers the clearest advice and instruction as to their rights and duties in relation to their private lines and a clear warning as to the dangers of tree contact with lines (8.2.4).

The system of consumers making complaints or giving information as to hazards is quite unsatisfactory and there should be instituted forthwith a better system than presently operates for this purpose. Such complaints, when received, should be recorded and the records maintained. It is hardly necessary to add that upon receipt of such complaints they should be investigated immediately and the appropriate remedial action taken. It is also essential that a better system should be brought into use to enable consumers to report breakdowns or other problems during weekends and after hours - the present system being unsatisfactory (8.6).

District Officers should be directed to accept membership in, and regularly attend meetings of Regional Advisory Committees when

provision has been made by the CFA for such membership. Moreover, the Officer attending should make full and complete reports to the Committee of the situation of the electrical installations as regards fire hazards.

14.04 The Country Roads Board

The CRB should, by suitable instructions to officers, urge and enforce greater cooperation with the CFA, the SEC and other organisations and should make it clear that permits for road clearing, tree lopping or the like, should be granted after proper investigation by the CRB Officer and should not be unreasonably withheld from those seeking to carry out this work (6.2).

The Divisional Officer should be instructed to accept membership in the Regional Advisory Committee when this becomes possible by the action of the CFA and to report and discuss problems with other members (4.6.02).

Far more attention must be given to the clearing of fire hazards from roadsides by burning or such other method as is preferred and a policy in relation to the clearing of roadsides should be formulated after discussions with the CFA and any other organisation involved in a particular area (6.2).

14.05 Municipalities

The Country Fire Authority Act provides for the appointment of a Proper Officer in each municipality whose duty is to carry out fire prevention work in that area. The work of these Officers in the past in many municipalities has been unsatisfactory. It is firmly recommended that each council appoint a full time officer to act as Proper Officer and that the appointee

have some fire prevention experience if that is at all possible. Where, for financial reasons, the Council is not able to employ an officer solely for this duty, his terms of employment should be such that the duties of Proper Officer are his primary responsibility. Any other duties which he is also required to perform should be compatible with the efficient carrying out of his duties as Proper Officer and not, as is the case at present, result in those duties being very secondary to his other employment (7.1).

Proper Officers in future must accept instructions and advice from the Fire Prevention Officer of the CFA or the Regional Officer and, in any event, should keep a close liaison with the CFA and seek that organisation's assistance and advice in relation to fire prevention work in the municipality (7.2).

Just as the CRB is required to do, so the shires and other municipalities must at once set about the elimination of hazards on their roadsides by clearing the sides of roads using whatever method, burning or otherwise as is preferred. It is essential that roads under shire control should be free from unnecessary vegetation, both for the purposes of preventing the ignition of fires from passing traffic and that the roads may be useful as firebreaks (7.3).

In conjunction with relevant water supply authorities, more hydrants of an appropriate capacity situated in convenient locations should be installed and made available for the use of firefighting units. This applies specially to the smaller country towns. Adequate road signs should be provided which will enable such filling points to be speedily located (11.2).

14.06 Victorian Railways

There should be far more clearing of the whole width of the railway line easement to provide firebreaks as well as to prevent the ignition of fires from trains (6.1).

14.07 Private citizens

The Rural citizens must realise that it is their responsibility to inspect the private service lines on their properties and to observe contact between such lines and trees or any other faults and to arrange with a private contractor for the proper maintenance of such lines. It is also their duty from time to time, to inspect such lengths of the SEC lines as may be upon their land and while not required or permitted to take action in respect of such lines, to immediately report to the SEC any observed hazard.

Private citizens should, in their own interests, clear around homesteads and outbuildings, any rubbish or inflammable material so that their buildings are more likely to be safe in the event of fire.

Again, in their own interests as well as in that of the community, farmers and graziers are urged to create firebreaks on their properties, not only by ploughing or burning of appropriate areas, but by the planting of suitable crops in strategic positions and by planting trees in appropriate situations in relation to their homes and buildings. Advice on the type of trees to plant and the appropriate positions in which to plant them is readily available from literature obtainable from the CFA or the FCV.

14.08 General14.8.1 Interdepartmental Committee

It is strongly recommended that an inter-departmental committee be created for the purpose of formulating standards and principles for the maintenance of trees clear from power lines. The membership of such committee would consist of representatives of the SEC, CFA, CRB, the Ministry of Conservation and the municipal authorities. The committee should direct its attention to the elimination of fire hazards on or near public roads, highways or power lines. It is envisaged that the work of removing hazards in all these situations will be primarily undertaken by the engineers of the various Authorities upon the principles laid down by the committee. Reasonable agreement should not be too difficult to obtain, but situations will inevitably arise in which a particular hazard is the subject of disagreement. In those circumstances, the matter can be referred to the committee to act, in effect, as an appeals tribunal. An SEC officer of appropriate rank to be chairman-convenor of such committee (8.3.2).

14.8.2 Precautions on days of serious fire danger

As to whether the practice of declaring days of total fire ban on a State wide basis be discontinued in favour of declarations affecting specific limited areas only, the Board urges that the relevant Authorities give urgent consideration to this question in an endeavour to reach a workable plan for declarations effective on a regional basis.

Until this is accomplished, the present practice of total State wide bans should continue (13.1).

The Board is not convinced that power should be turned off on days of extreme fire danger and accordingly, recommends against the practice (13.2).

14.8.3 It is recommended that much further research into the safety of electric fences as potential causes of fires be considered by the CFA. Pending the result of such research and unless the finding is that such fences are completely safe, they should always be de-activated on days of high fire danger (13.3).

14.8.4 Landowners should be encouraged to purchase, equip, keep in order and make available suitable firefighting vehicles. To this end some financial assistance should be provided to them. Apart from relief from full motor registration fees, and a Government subsidy on quick-fill pumps, both of which are recommended, it is suggested that rural interests combine to formulate a workable scheme for further financial assistance for those prepared to undertake effective fire prevention and suppression, and to present such schemes to the Government (12.3).

14.09 Legislation

Some of the above recommendations, if implemented, will require amendments to statutes or regulations. It is not proposed to attempt to foreshadow each such amendment. However, certain submissions were made in respect of specific sections of Acts and these are considered hereunder:

Local Government Act 1958 Several minor amendments to this Act proposed by the City of Moe should be examined and if thought appropriate, the necessary action taken (see transcript p.1685-1688A).

CFA Act 1958 Section 41 (1) should be amended so that its provisions enabling municipal councils, through their Proper Officer, to order removal of fire hazards from private property, should be applicable to all properties, including those owned and occupied by statutory authorities, such as VicRail or CRB.

CFA Act, sections 3 and 52 If the proposed appointment of the Fire Prevention Officer is accepted, these sections of the Act will need amendment. Section 52, sub-section (2) should be amended by inserting after paragraph (b) a new sub-section providing for one representative of the SEC or other undertaker, within the meaning of the Electric Light and Power Act 1958 and one representative of the CRB to be members of the Regional Advisory Committee.

14.10 Conclusion

Throughout this report cooperation in fire protection has been urged upon every corporate body and organisation, as well as upon individual citizens. It is the responsibility of all, and is for the benefit of all, and can only be achieved by every agency and individual member of the rural community making a contribution to the total effort. This will involve some sacrifice of time, energy and money, but it is the only way to avoid a future repetition of the tragic losses from wild fire that have occurred so often in the past.

ACKNOWLEDGEMENTS

Many individuals and organisations gave great assistance to this Board in the conduct of this Inquiry by presenting very helpful submissions. It was neither necessary for the purposes of this Report, nor possible within the limits of reasonable length, to mention all of them but the Board wishes to record grateful thanks to all who prepared and presented such valuable material.

During the hearing of evidence and inspection of the scene of the fires, the Board was fortunate to have the services of Sergeant Ray Philpott of the Victoria Police. He gave very valuable assistance in marshalling witnesses and controlling exhibits as well as undertaking many other essential duties.

The clerical duties necessary for the work of the Inquiry were efficiently performed by Mrs. Valerie Petrie. The production of the Report involved long hours of arduous work on her part for which the Board is greatly indebted to her.

Mr. Garry Griffiths of the Crown Law Department who instructed Counsel assisting the Board, performed his duties with efficiency and remained to give very valuable assistance in the preparation of this Report.

Briefed to assist the Board was Mr. J. K. Nixon of Counsel, who manifested great skill in sifting the complex facts to be investigated. His examination of witnesses was admirable and his submissions a model of clarity. In addition, his advice was at all stages of the greatest assistance.

Mr. R. A. Sebire, M.B.A., B.Sc.(For).
Dip.For. was appointed as Secretary to the
Inquiry. As well as acting with great
efficiency in the necessary detailed
administration, his professional experience
enabled him to give much useful assistance to
the Board.

271 William Street,
MELBOURNE. 3000

September, 1977

E. H. E. BARBER

APPENDIX A
 SATELLITE PHOTOGRAPHS

WESTERN VICTORIA, MARCH 4th, 1977

Composite of two LANDSAT false colour photographs
 taken from an altitude of 100 kilometres

Scale - 1: 1 000 000

Guide to Colours:

Yellow/Green	=	grass, dry crops, bare land
White	=	cloud (associated with shadow)
Red	=	live vegetation
Pale Red	=	irrigated land (near Horsham)
Deep Blue	=	sea, lakes
Grey	=	burnt land (note similarity of cloud shadow)

Arrows indicate the points of origin of the fires.

The Creswick and Waubra fires are obscured by cloud,
 and the Ross Creek fire (December 1976) is barely
 visible, marked +

Photographs from infra red transparencies specially
 provided by NASA (USA) through State Rivers and
 Water Supply Commission, Victoria.



APPENDIX 'B'MAPS AND AERIAL PHOTOGRAPHS
OF FIVE OF THE
MAJOR FIRES INVESTIGATED BY THE BOARD

- 1 CRESWICK

- 2 GLENTHOMPSON

- 3 TATYOON/STREATHAM

- 4 PURA PURA

- 5 CRESSY

Special Note

Maps have been compiled with reference to aerial photographs, satellite photographs, and from boundary information (in certain cases only) supplied by SEC and FCV. The boundaries are only approximate, and have been drawn in many cases without the benefit of 'ground truth'.

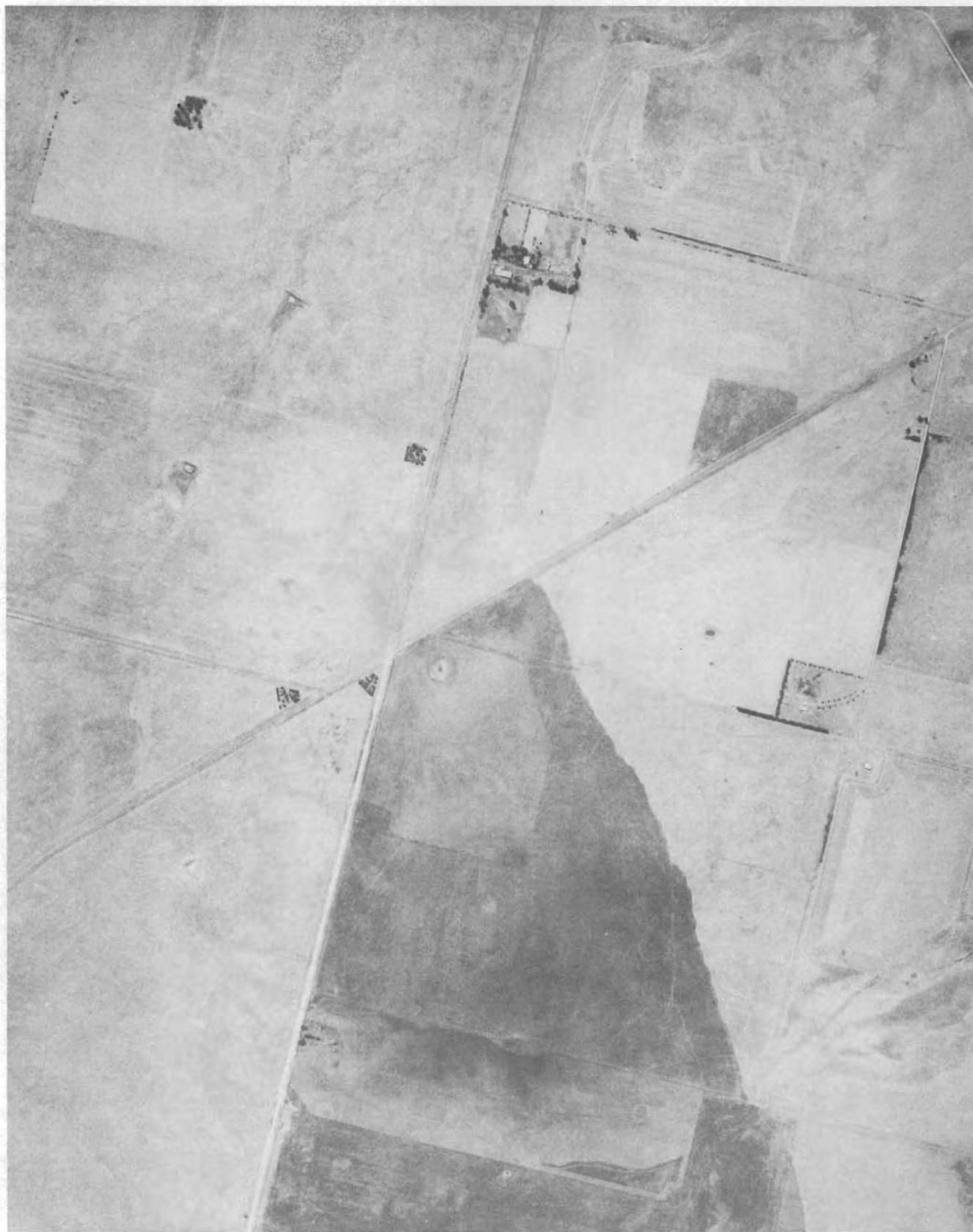
Aerial Photographs are reproduced from prints supplied by the department or organisation as acknowledged.

CRESWICK FIRE

AERIAL PHOTOGRAPH OF ORIGIN

Approximate scale 1:28 500

(35mm = 1km)



CRESWICK FIRE PROJECT No. 3 Flown 3.3.1977 70mm. f 3" 15,000' a.s.l. 4X Frame No. 22

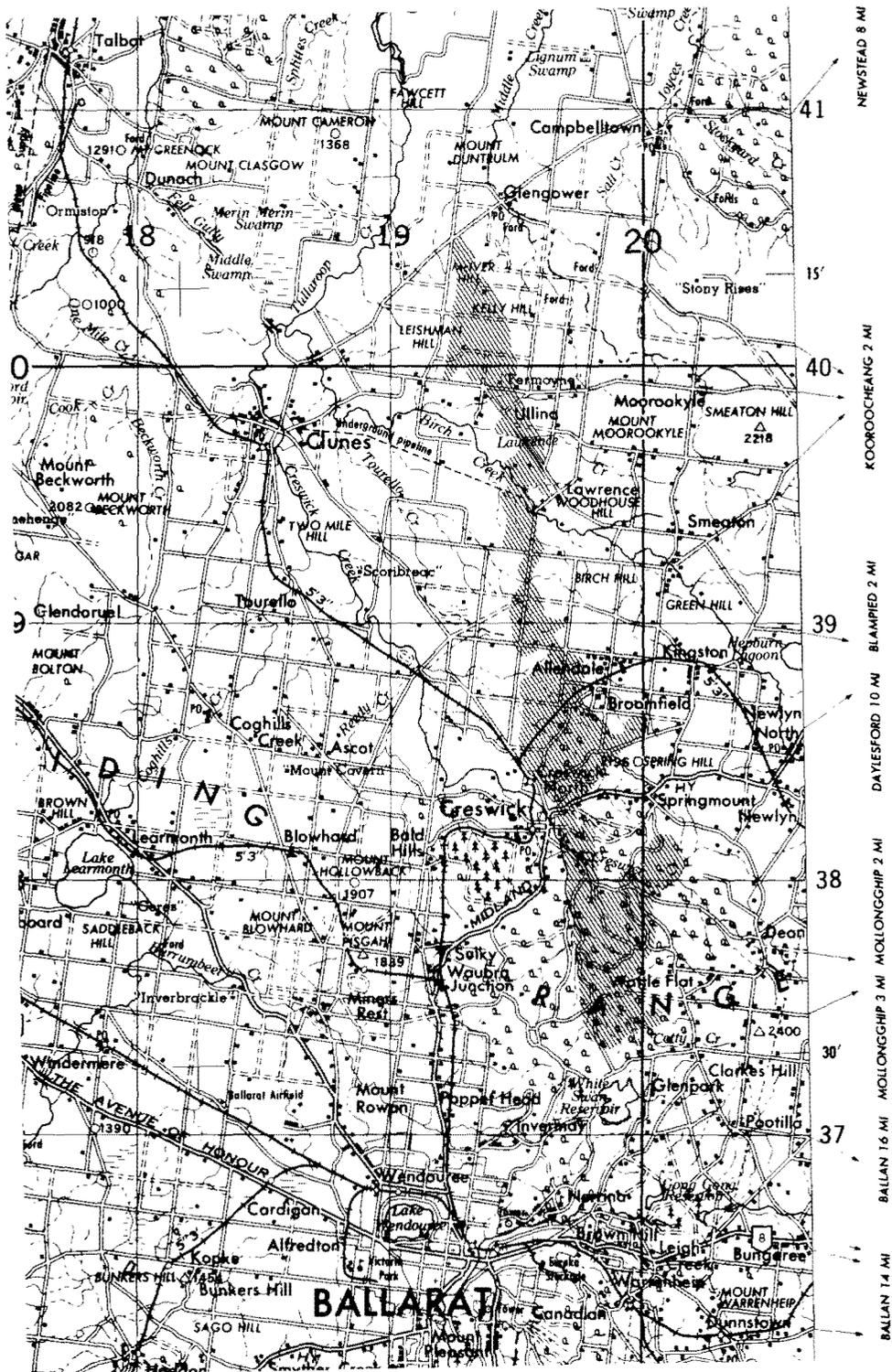
PHOTO BY COURTESY OF THE FORESTS COMMISSION - VICTORIA

CRESWICK FIRE
FEBRUARY 12th, 1977

MAP OF AREA BURNT

Scale 1: 250 000

(5mm = 1km)



GLENTHOMPSON FIRE

AERIAL PHOTOGRAPH OF ORIGIN

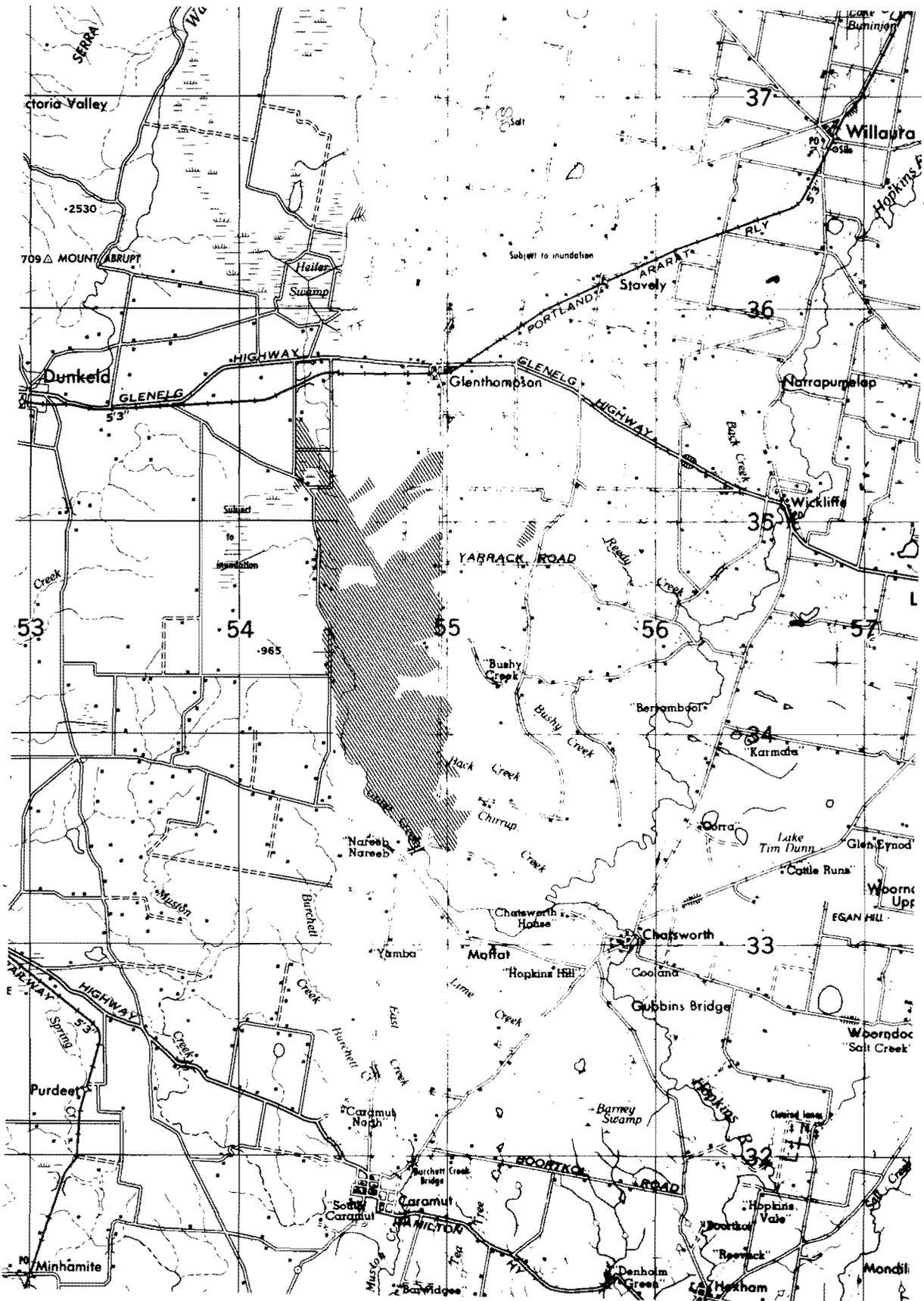
Approximate scale 1: 20 000

(50mm = 1km)



From aerial mosaic supplied by courtesy
the State Electricity Commission of
Victoria.

GLENTHOMPSON FIRE
FEBRUARY 12th, 1977
MAP OF AREA BURNT
Scale 1: 250 000
(5mm = 1km)



TATYOON-STREATHAM FIRE
AERIAL PHOTOGRAPH OF ORIGIN

Approximate scale 1: 20 000

(50mm = 1km)



From photograph supplied by Department
of Crown Lands and Survey, Victoria.
(c) Crown (State of Victoria) Copyright.

TATYOON-STREATHAM FIRE

FEBRUARY 12th, 1977

MAP OF AREA BURNT

ALSO SHOWING ORIGIN OF PURA PURA FIRE

Scale 1: 250 000

(5mm = 1km)



PURA PURA FIRE

AERIAL PHOTOGRAPH OF ORIGIN

Approximate scale 1: 20 000

(50mm = 1km)



From Photograph supplied by Department
of Crown Lands and Survey, Victoria
(c) Crown (State of Victoria) Copyright

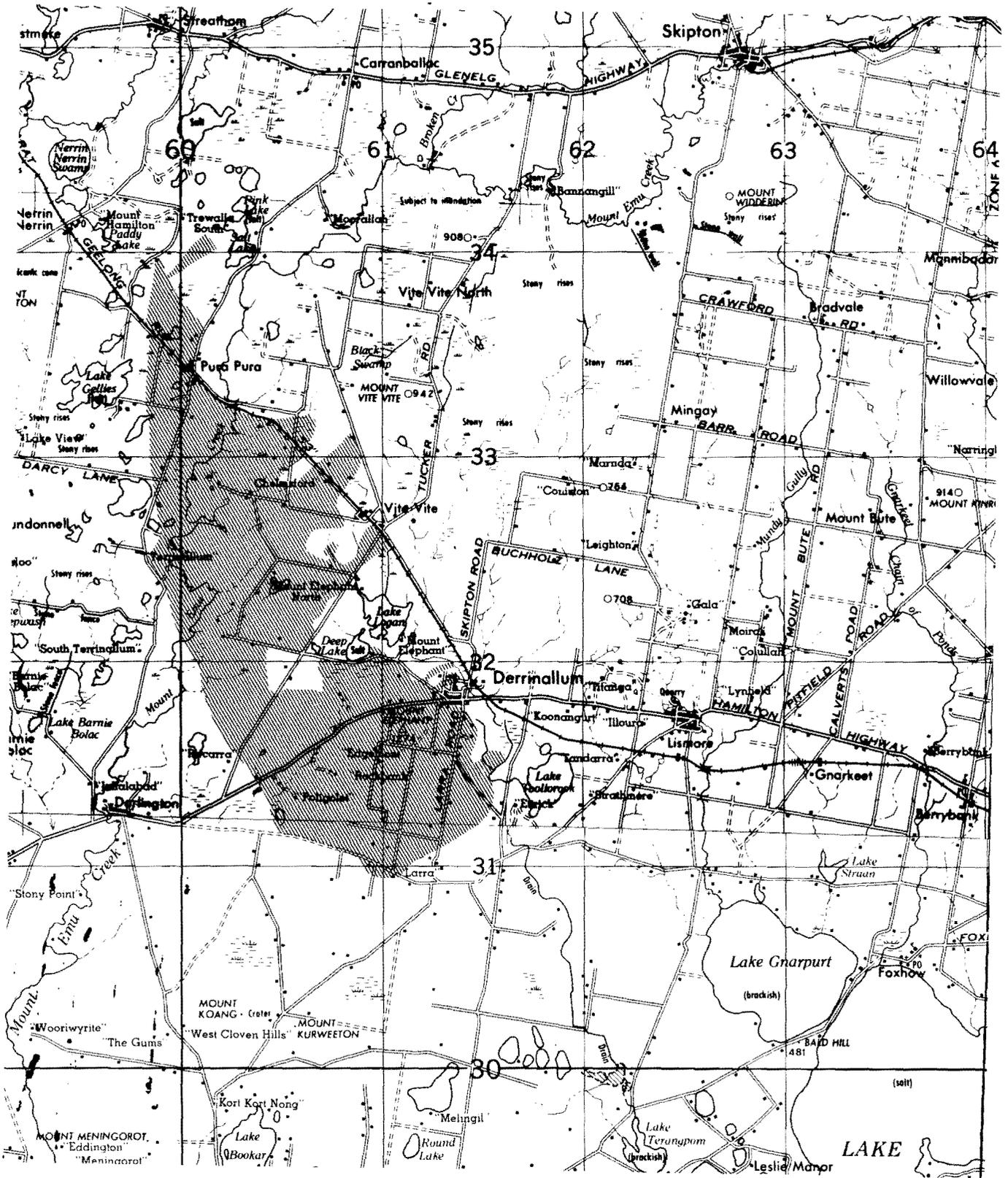
PURA PURA FIRE

FEBRUARY 12th, 1977

MAP OF AREA BURNT

Scale 1: 250 000

(5mm = 1km)

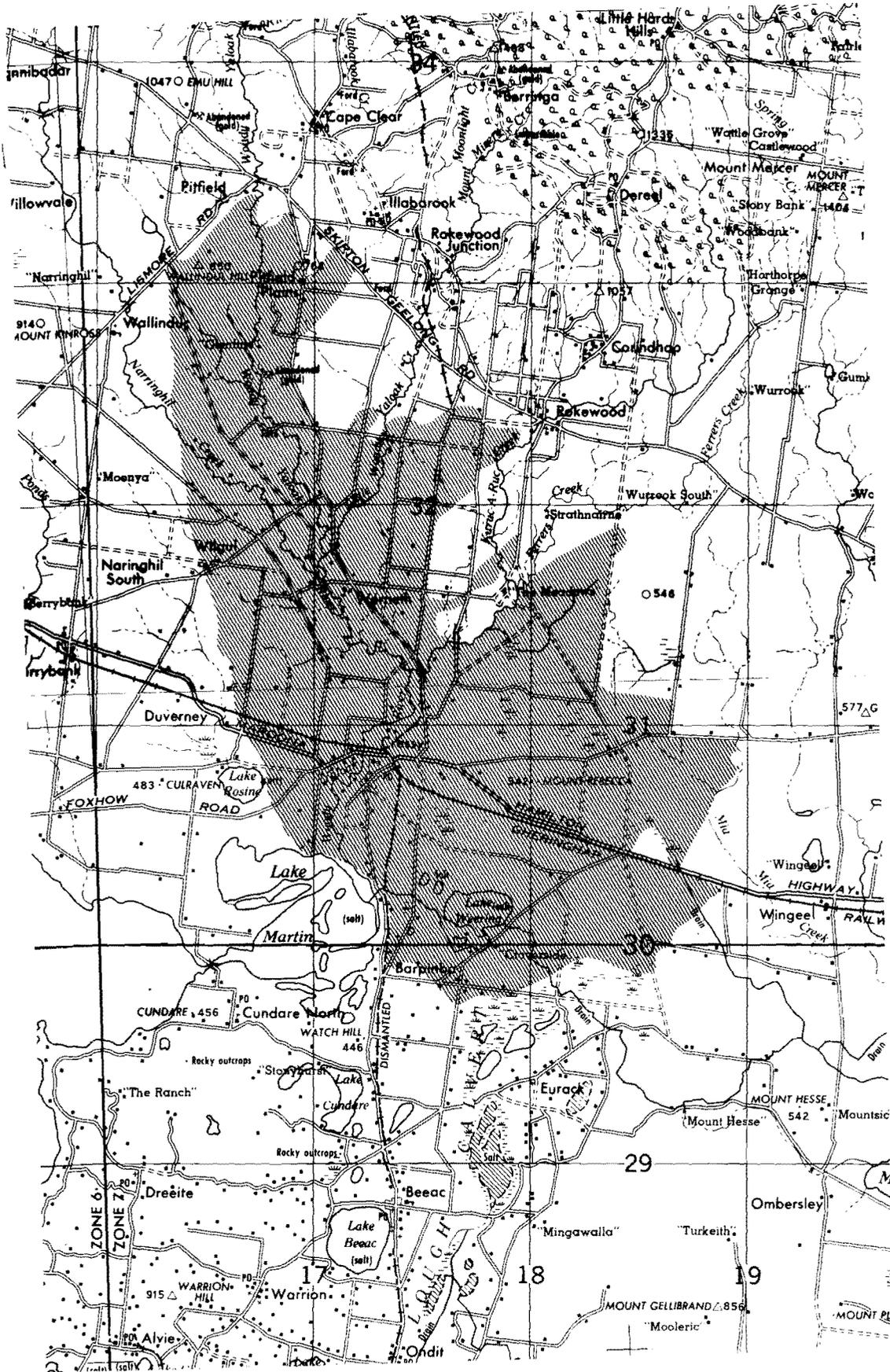


CRESSY FIRE
AERIAL PHOTOGRAPH OF ORIGIN
Approximate scale 1: 20 000
(50mm = 1km)



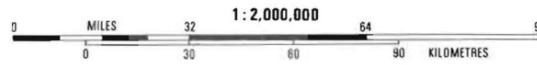
From photograph supplied by Department
of Crown Lands and Survey, Victoria.
(c) Crown (State of Victoria) Copyright.

CRESSY FIRE
FEBRUARY 12th, 1977
MAP OF AREA BURNT
Scale 1: 250 000
(5mm = 1km)



VICTORIA

POINTS OF ORIGIN OF RURAL FIRES REPORTED ON FEBRUARY 12, 1977,
AND OF OTHER FIRES INVESTIGATED BY THE BOARD OF INQUIRY



LEGEND

FIRES OF FEBRUARY 12, 1977:
 - INVESTIGATED BY THE BOARD (Red circle)
 - NOT INVESTIGATED (White circle)
OTHER FIRES INVESTIGATED
 MAIN TOWNS (Purple dot)
 HIGHWAYS (Red line)



NUMBER	LOCATION	TIME	NUMBER	LOCATION	TIME
1	YARRA JUNCTION	0655	41	MACEDON	1530
2	COLERAINE	0920	42	NARINGAL	1535
3	MEERING WEST	1000	43	WOORNDOO	1535
4	MERINO	1030	44	YARRAWONGA	1555
5	WOODHOUSE	1100	45	BALLIANG EAST	1600
6	COLERAINE	1110	46	KEYSBOROUGH	1605
7	CRESSY	1130	47	MALLACOOTA	1630
8	BYADUK NORTH	1150	48	SYDENHAM	1635
9	MEPUNGA EAST	1215	49	WANGARATTA SOUTH	1655
10	STRATHMORE	1225	50	MOOROOLBARK	1700
11	BAXTER	1230	51	EPHING	1705
12	PURA PURA	1245	52	PHILLIP ISLAND	1730
13	BUCHAN	1245	53	BAXTER	1735
14	CARISBROOK	1300	54	TAGGERTY	1750
15	WINDERMERE	1300	55	WARRANTYTE	1755
16	PENSHURST	1305	56	HAMPTON PARK	1810
17	CARISBROOK	1310	57	GREENDALE	1820
18	SCARSDALE	1310	58	SOMERVILLE	1820
19	MARNDO	1310	59	MT EVELYN	1825
20	MORTLAKE	1315	60	MORTLAKE	1830
21	TATYDOO	1320	61	MT EVELYN	1835
22	GLENGOWER	1320	62	ROWVILLE	1930
23	HAWKSDALE	1330	63	UPPER FERNTREE GULLY	1935
24	WALLINDUC	1350	64	MALLACOOTA	2045
25	AVOCA	1400	65	YARRA JUNCTION	2130
26	BEEAC	1400	66	FLINDERS	2150
27	COCKATOO	1400	67	PHILLIP ISLAND	2315
28	TRAFALGAR	1415	68	INGLEWOOD	2330
29	WEERITE	1430			
30	SPRING HILL	1445			
31	WAUBRA	1445			
32	GREENVALE	1450			
33	STAWELL	1455			
34	BOORCAN	1500			
35	LISMORE	1500			
36	VALENCIA CREEK	1500			
37	ROMSEY	1500			
38	BENDIGO	1515			
39	WOODSTOCK WEST	1520			
40	CANN RIVER	1520			

Other fires investigated by the Board

- A LITTLE DESERT (Feb 4, 1977)
- B ROSS CREEK (Dec 22, 1976)
- C LERDERBERG GORGE (Jan 29, 1977)
- D BEECHWORTH (Jan 29, 1977)

