

REPORT OF THE

# AUDIT OFFICE

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NEW ZEALAND  
FIRE SERVICE COMMISSION:  
EFFECTIVENESS OF MANAGEMENT  
OF THE FIRE SERVICE

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THE  
AUDIT  
OFFICE

OFFICE OF THE CONTROLLER AND AUDITOR-GENERAL,  
WELLINGTON, NEW ZEALAND



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**NEW ZEALAND  
FIRE SERVICE COMMISSION:  
EFFECTIVENESS OF MANAGEMENT  
OF THE FIRE SERVICE**

NOVEMBER 1988

## **EFFECTIVENESS OF MANAGEMENT OF THE NEW ZEALAND FIRE SERVICE**

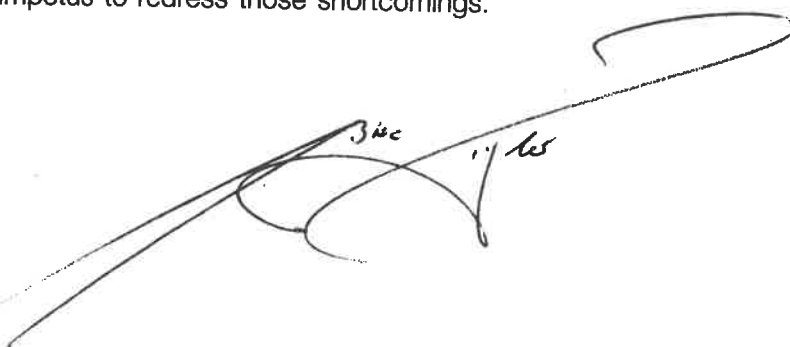
This report is the third to be published this year as a result of major value for money studies undertaken by the Audit Office. The audit leading to the report was carried out in terms of the Office's mandate to assess the effectiveness and efficiency of resource use by public sector organisations.

The New Zealand Fire Service is both an important public service and a substantial business undertaking. It is one of those services which most people expect to be available when needed—an attitude that is reflected in the results of opinion surveys of people's perceptions of the Fire Service. It is unlikely, however, that many people give more than a passing thought to questions of how the Fire Service is paid for, whether it will indeed be there when they want it, and whether it is doing a good job in exchange for the resources provided to it.

The quality of performance of the Fire Service, as is the case with any organisation, is directly related to the quality of its management. Since the formation of a unified national service in 1976, that function has been the responsibility of the New Zealand Fire Service Commission and is the principal focus of the report.

By most standards, the Fire Service is a large and far-flung organisation. Spread over 426 fire stations, it employs 2,600 full-time staff and can call on the services of 7,900 volunteer fire-fighters. In the year to 31 March 1988, the Commission spent nearly \$150 million on operating costs and at that date the book value of its fixed assets was \$145 million.

One of the conclusions reached is that there is uncertainty as to whom the Commission is accountable. The information currently provided by the Commission on the results of its activities also fails to meet minimum accountability requirements. I hope the results of our audit set out in this report will provide an impetus to redress those shortcomings.

A large, stylized handwritten signature in black ink, likely belonging to B. H. C. Tyler. The signature is fluid and cursive, with a long horizontal stroke extending to the right.

B. H. C. Tyler  
Controller and Auditor-General  
9 December 1988

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## EXECUTIVE SUMMARY

The New Zealand Fire Service exists to address all facets of fire control and related emergencies.

We were impressed with the commitment, enthusiasm and expertise of the men and women of the Fire Service.

The Fire Service Commission is responsible for the management of the Fire Service. Its task is to ensure that, wherever possible, fires are prevented and, when they occur, lives are protected and the fires quickly suppressed. The effectiveness of the Fire Service should be judged on the basis of loss of life and property damage.

Ninety-six percent of operational resources are dedicated to fire suppression and emergency calls and 4 percent to fire safety. The cost and size of the Fire Service have remained relatively constant during the last decade, while the number of fires has declined and the demands of other emergencies (such as car accidents and chemical spillages) have increased.

The time taken to respond to calls and the weight of attack on fires are consistent with the overseas brigades we looked at. The number of deaths from fire in New Zealand is also consistent with comparable countries. Beyond that, however, the Commission generally lacks the information to demonstrate its effectiveness. It should identify its management information requirements, set measurable performance targets, and report its success in meeting those targets.

The Commission has not provided adequate resources for its Fire Safety Division to carry out the tasks required of it. This may have resulted in greater fire losses than would otherwise have been the case. More resources should be provided to the Fire Safety Division, particularly from a greater integration of operational and fire safety staff.

The Commission has not done all in its power to minimise false alarms. It should be prepared to charge persistent offenders.

Financial budgets have not been submitted or approved until well into the financial year. This practice should be changed so that the Commission knows early in the financial year the funds available to it.

The Commission has been successful in a number of operational areas, particularly welding the previously independent fire authorities into a unified service, and the integration of the volunteer forces into the service. There is a need for a review of the structure of the Commission with the aim of strengthening its financial and general management skills. Such a review should be followed by an assessment by the Commission of its National Headquarters support needs and management information requirements.

The Commission has still to complete the development of its corporate plan and its management information systems. We are critical of the delays in these areas.

The Commission lacks the means to ensure that it receives all the contributions to the costs of the Fire Service which it is entitled to under the Fire Service Act 1975.

The Commission should investigate apparent inequities in the existing funding system. Changes to methods of funding in Australia should be kept under review with the aim of assessing their suitability for use in New Zealand.

It is not clear to whom the Commission is accountable and the information currently provided does not, in our view, meet minimum requirements.

# 1

## INTRODUCTION

- 101 This audit was carried out under the authority of section 25 of the Public Finance Act 1977. Its objective was to review the effectiveness of the management of the New Zealand Fire Service. The Fire Service is an important public activity which was established in its present form 12 years ago. An independent examination is thus both appropriate and timely.
- 102 This report starts with a brief description of the structure and activities of the Fire Service. It then reviews the operational effectiveness of the organisation in preventing and fighting fires. An assessment of efficiency, and the effectiveness of the management of the Fire Service, follows, with comments on its funding, accountability and wider issues affecting it.
- 103 Addressing the question of the effectiveness of the Fire Service required an examination of how well it discharges its various responsibilities. These are, principally, fire prevention, fire safety, fire-fighting, and related rescue functions.
- 104 The intent behind the creation of the present Fire Service was to establish a unified service through the control of policy, finance, establishments, supply, training and inspections. The new regime was to involve decentralised operations, but remove what was claimed by the promoters of the Act to be the Fire Service's greatest problem, that of divided control.
- 105 We were impressed with the commitment, enthusiasm and expertise of the men and women of the Fire Service. We are appreciative of the patience and willing co-operation shown to us during the audit.



## 2 THE FIRE SERVICE

201 The New Zealand Fire Service was formed as a single service in 1976 as a result of the Fire Service Act 1975, replacing 277 independent local fire authorities.

202 The New Zealand Fire Service Commission (the Commission) is responsible for the management and control of the Fire Service. The Commission is required to ensure that the Fire Service "is maintained in a state of operational efficiency", and it is expected "as a matter of prime importance" to take an active and co-ordinating role in the promotion of fire safety.

The Commission is responsible for determining the ability of the Fire Service to respond to the threat of fire in terms of both directly fighting fires (fire suppression), and policing statutory fire safety requirements and influencing building designers and the authors and enforcers of building codes (fire safety).

203 Opinion surveys show that most people associate the Fire Service with the role of co-ordinating fire services throughout the country, operating each local brigade, and promoting fire safety. People are also aware that the Fire Service is involved in rescue work, and that it assists at the scene of vehicle accidents and chemical spillage incidents.

204 To carry out its duties the Commission manages the planning and operations of the Fire Service containing just over 2,600 full-time uniformed and civilian staff and 7,900 volunteers. On 31 March 1988, the establishment of full-time staff comprised the following:

Operational	2,186
Operational Support	182
Administrative/Wage Workers	234
	<hr/> 2,602

Ninety-six percent of the Commission's operational resources are dedicated to fire suppression and emergency calls and 4 percent to fire safety.

205 The Commission maintains 426 fire stations in 269 districts. Forty-two stations are staffed by full-time fire-fighters, 360 are staffed by volunteers, and 24 are staffed by a combination of full-time and volunteer staff. The 269 districts are grouped in 20 areas within 6 geographical regions whose commanders are responsible to the Commission. National Headquarters in Wellington, which includes the Fire Service Training College at Island Bay, is designated for financial reporting as the seventh region. The organisation is depicted in the diagram on the next page.

206 In major urban areas, 24-hour cover is provided by a shift system of permanent fire-fighters. Each fire-fighter works two 10-hour days, followed by two 14-hour nights, followed by four days off. This averages out over time to 42 hours a week and requires 4.6 fire-fighters for each operational position.

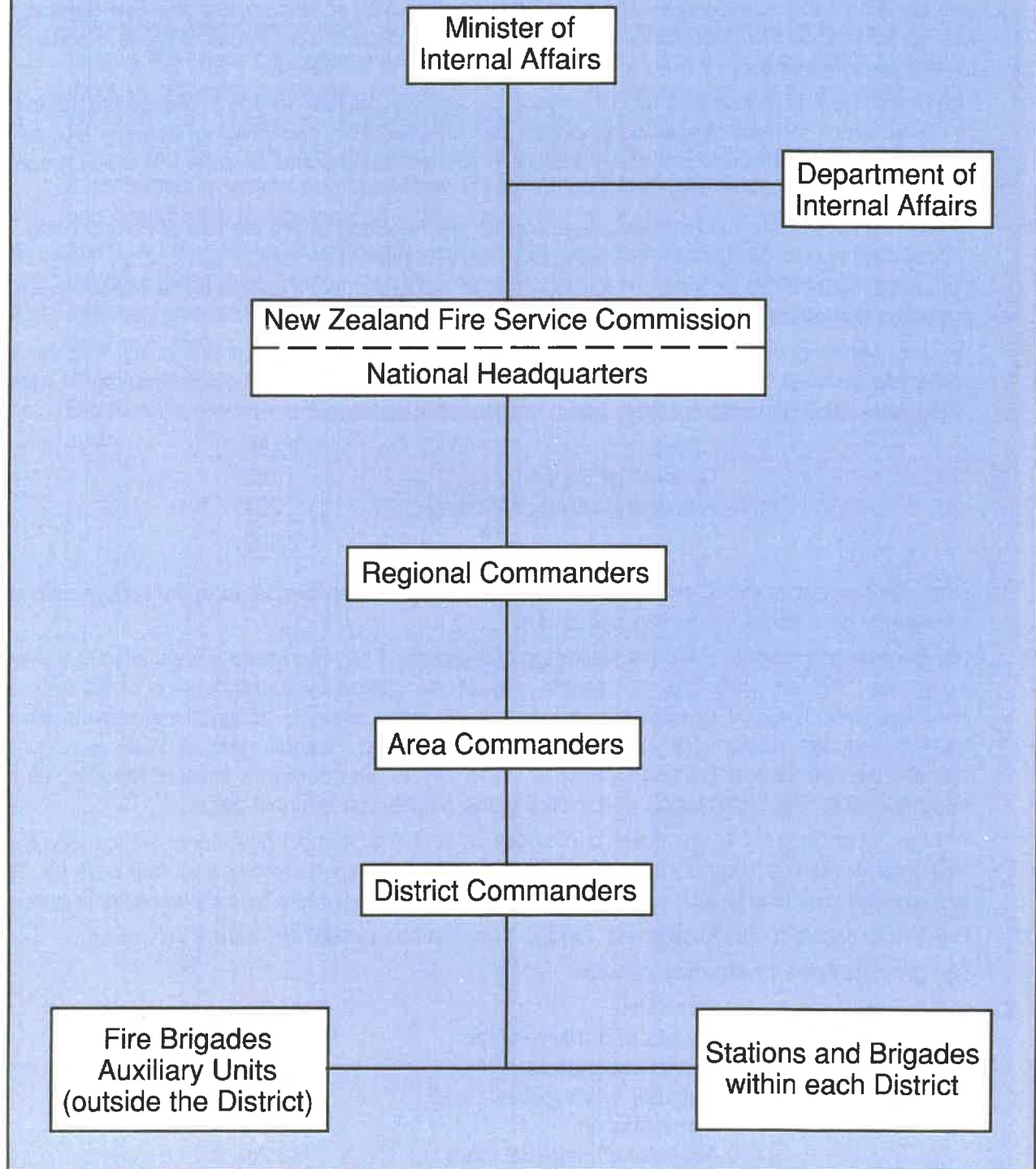
207 The Fire Service's 'operational costs' funded from revenue in 1987/88 were \$147 million.

The principal items of expenditure were:

Personnel	\$115.1m
Repairs and maintenance	\$8.5m
Capital expenditure	\$6.4m
Materials and supplies	\$3.7m
Administration	\$3.5m
Allocations to special funds	\$3.2m
Accommodation	\$3.1m
Loan repayments	\$2.4m
Travel	\$1.1m

Additional capital expenditure of \$15.7 million was funded from loan finance and reserves.

## ORGANISATIONAL STRUCTURE OF THE FIRE SERVICE



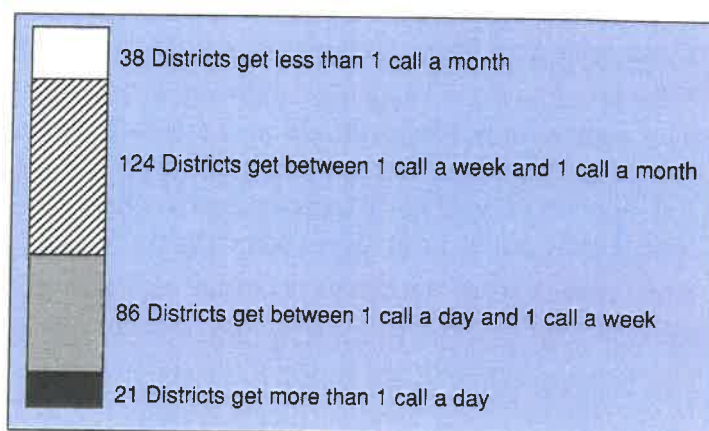
- 208 The principal source of funding for the Fire Service is from property-owners who in recent years have paid over 80 percent of the costs as a levy on their insurance cover. The Crown has contributed the balance, both as a payment for its property and as a contribution on behalf of the uninsured and the under-insured.
- 209 Fire Service personnel respond to all emergency calls for assistance. During the year to 31 December 1987 they attended over 45,700 calls, classified as follows:

	<i>Percent</i>
False Alarms	26
Non-fire incidents*	20
Property Fires	18
Rubbish and scrub fires	18
"Good intent calls"***	10
Vehicle fires	6
Unclassified	2

\* For example, vehicle accidents, chemical spillages and civil emergencies.

\*\* Calls where no action was required by the brigade when it arrived at the incident.

The number of calls received by districts varies considerably:



- 210 The Commission's reports show that between 1981 and 1987 the number of fires decreased slightly, and fire calls decreased as a proportion of all calls from 48 percent to 42 percent. The total of all calls during that time increased from 43,400 to 45,700, reflecting the increasing demand on the Fire Service to assist with emergencies such as car accidents or chemical spillages. False alarms (including "good intent calls") have also increased from 15,700 to 16,700. Between 1980 and 1987 the number of fire deaths varied between 36 and 53, but no specific trend is discernible within that range. The numbers of fire deaths in 1987 was 37.

- 211 In 30 percent of property fires, more than one-fifth of the property is structurally damaged. This damage figure is a subjective estimate by fire-fighters at the fire scene for the purposes of their incident reports. Because there is no information on the value of the property, the loss cannot be expressed in financial terms.

Estimates of fire losses do not include all the consequential or indirect costs of fire, such as loss of production and medical costs. This overall uncertainty means that any estimate of loss must be treated with caution. The latest figure available (1985/86) for fire losses covered by insurance claims is \$250 million.

### 3

## OPERATIONAL EFFECTIVENESS

### *Primary Mission and Effectiveness Assessment*

301 The primary mission of a fire service is to reduce the loss of life and property resulting from fire. The New Zealand Fire Service places the higher priority on minimising the loss of life.

302 To achieve this mission, a range of methods can be pursued:

- Preventing the occurrence of fires.
- Providing for the safety of people and property when fire has occurred.
- The quick suppression of fire.

These methods can be applied through education; involvement in helping to specify standards of design and construction of buildings; and through inspection of in-built protection systems and/or fire-fighting facilities.

In providing a trained force for fire-fighting, a pool of trained resources is also available to perform non-fire-fighting emergency services.

The Fire Service is active in all these facets. Greater resources are applied to fire suppression, rather than fire safety, activities.

303 The ultimate effectiveness of the Fire Service should be assessed on the basis of loss of life and fire loss, adjusted by factors outside the control of the fire-fighters. United Nations' statistics<sup>1</sup> show that the proportion of loss of life from fire to population in New Zealand is approximately the same as that in similar countries.

The average annual number of building fires is around 8,000. The damage reported is less than 10 percent in 60 percent of cases and less than 20 percent in 70 percent of cases. Damage of 90 percent or more is reported in less than 10 percent of fires attended. Different national practices in assessing fire losses hinder useful international comparison.

These are only broad assessments and cannot at present be linked in other than an indicative way to the various activities of the Fire Service. It is therefore necessary to examine each of the activities undertaken.

### *Fire Safety*

304 The Commission has a Fire Safety Division which is responsible for carrying out its obligations to promote fire safety and to carry out prevention activities. The Fire Service Act says these are a matter of prime importance.

The conventional wisdom that prevention is better than cure has been demonstrated in the United States of America where fire authorities report significant reductions in losses after fire safety and public education programmes.

305 Notwithstanding the importance of fire safety and prevention activities, the Commission has not provided the Fire Safety Division with the resources that it needs to do its work. In this respect, the Commission has not, in our view, fulfilled its obligations in terms of the Act.

306 A considerable proportion of the efforts of the Fire Safety Division is at present directed to regulatory activities such as inspection of licensed premises as required under the Sale Of Liquor Act. These inspections and their associated administrative work leave little time for advisory and educational work.

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<sup>1</sup>United Nations Economic and Social Council—Pilot Study On Fire Statistics (1986).



Despite a dedicated staff, the Fire Safety Division has not completed its statutory annual inspection requirements since before 1983 and its completion rate has dropped from 78 percent to 69 percent.

307 The Division suffers from:

- A decreasing proportion of experienced staff.
- Never having had a full complement of staff. The current staff level is 84 percent of establishment.
- Difficulties in the recruitment and retention of staff because of a reduced scope for promotion and the loss of opportunity to obtain extended working hours.

308 We believe that this lack of commitment to fire safety programmes may have resulted in greater fire losses or higher suppression costs than would have otherwise been the case. Experiences in the United States of America show the benefits that can come from such programmes. For example, the San Francisco Fire Department stated that its "Learn Not To Burn" programme had been "a focal point" in the reductions of fire losses that occurred between 1980 and 1986—average annual fire deaths down from 36 to 19, average annual building fires down from 3400 to 2500.

309 The Commission has been trying to improve public fire safety by encouraging a greater use of sprinkler systems, particularly in high-rise buildings. Sprinkler systems provide effective fire protection but are rarely used unless specifically required by law. Following a recommendation by the Commission to the Minister of Internal Affairs the Building Industry Commission<sup>2</sup> has agreed that increased sprinkler protection will be specified for high-rise buildings in the proposed National Building Code due for introduction in 1990.

The Minister of Internal Affairs has recently authorised a study into the possibilities that may exist for a lower level of Fire Service expenditure arising from possible mandatory use of sprinklers in commercial, industrial and domestic property.

310 A significant increase in fire safety effort is needed. Greater resources are required, both in terms of more staff and more integration of fire-fighting and fire safety staff. We believe that fire-fighting staff could play a greater role in fire safety without compromising their essential fire-fighting and training tasks.

There is also a need for more public education programmes in fire safety. The aims of such programmes should be clearly identified before the programmes start, and the results should be assessed to ensure that the aims are met.

## *Fire Suppression*

311 The Fire Service's suppression activities revolve around an early and appropriate response to a fire. This requires:

- the right personnel
- who are correctly trained
- having the necessary equipment
- which is well maintained
- being located within reasonable proximity of the fire
- responding quickly to the initial call and
- reacting correctly once on site so as to bring the fire under control and extinguish it with a minimum of further damage.

<sup>2</sup>This is a body established by the Government to prepare a National Building Code.

## *Personnel*

- 312 We were impressed with the dedication and skill of the uniformed personnel. In the smaller centres, the 7,900 volunteer fire-fighters are an essential part of the Fire Service. Together with the full-time fire-fighters in the more populous areas, they form an integrated service.

## *Training*

- 313 Training is an essential part of a fire-fighter's preparedness. It is carried out in accordance with training manuals and is applied consistently throughout the country. It occupies a significant amount of time for both permanent and volunteer fire-fighters.

It appeared to us that the training of fire-fighters is carried out thoroughly and effectively.

## *Industrial Issues*

- 314 There are some conflicting views on the state of industrial relations in the Fire Service. To some extent these views are coloured by the fact that the first strike in the Commission's 12 year history had occurred in early 1987.

During the course of the audit, discussions took place between the several unions aimed at forming a single national organisation. This has now occurred and we found a consensus that it will be to the benefit of the Fire Service.

The existence of the volunteer force, effectively doing the same job but without concern for payment, is an obvious complication in industrial relations. It is a situation which is not unique to New Zealand and does not appear to us to be a major difficulty.

It is our view, shared by most of the people that we interviewed, that industrial relations in the Fire Service, while occasionally becoming heated, are no worse than in comparable organisations and, as such, pose no insuperable problems.

## *Crewing Levels and Standards*

- 315 There are anomalies in the levels of crewing, standards and types of existing stations, and appliances. These variations are the result of the differing standards that applied before the unification of the Fire Service rather than of differing current operational requirements.

Quite early in its existence, the Commission established consistent standards for new stations and appliances but, despite some attempts to rationalise crewing levels, an official statement of new Commission policy was not produced until late October 1987. The Commission contends that, given the changes in operational philosophy that were required before the new crewing policy could be developed, the time taken was necessary. Although we recognise the contentious nature of this issue we believe it has taken too long to resolve the matter.

- 316 The new policy will increase manpower by 0.6 percent and reduce the number of appliances (mainly in volunteer brigades) by 3 percent. It will also result in a shift of resources from south to north through reductions in Otago, Christchurch and Wellington and increases in Palmerston North, Tauranga, Auckland and Whangarei.

The policy, now being implemented, will provide a consistent level of crewing for appliances throughout the country. Until it is fully implemented, the size of crews attending similar fires in different parts of the country may vary.

## Equipment

- 317 Water is the principal suppression agent, and the fire crew and their appliance, via its pumping capabilities, are the means of delivery. There is thus an assumption that an adequate water supply is available.

Fire appliances carry a limited quantity of water in a tank (around 1,500 litres) which can be brought immediately to bear on a fire. However, sustained delivery relies on connecting the fire pump to a continuous source, such as the hydrants on the reticulated water supply. Where the latter is not available, or is not reliable, this has a significant impact on the Fire Service's ability to react effectively.

- 318 Appliance pumps are used in approximately 60 percent of property-fire calls and in around one-third of these they use a connection to the reticulated water supply. A further 10 percent of property fires are extinguished by using other means, such as extinguishers or equipment provided in the building. Of the remaining 30 percent of property fires, the majority are extinguished by the occupants of the building or passers-by before the arrival of the brigade. The general design and number of appliances and equipment used for fire-fighting are consistent with those used in comparable fire services overseas.

## Location

- 319 Fire stations provide the bases from which the crews and appliances operate. Their location affects the time to reach the scene of an incident. Planning to determine the optimum locations and the consequential appliance requirements was found to be thorough and effective in the Region we surveyed. Similar methods are used throughout the country.

## Response Times

- 320 Response times are measured from the time the alarm is received by the Fire Service. The number and types of appliance sent follow a predetermined plan based on an assessment of the likely requirement. The categories of response times have recently been rationalised from the former six to three.

The current response standards are now:

☆ **Class One (High Risk)—**

3 appliances arriving within 6, 8 and 10 minutes respectively

6 supporting appliances at the scene within 20 minutes of being called

☆ **Class Two (Normal Risk)—**

2 appliances arriving within 8 and 10 minutes respectively

2 supporting appliances at the scene within 20 minutes of being called

☆ **Class Three (Low Risk)—**

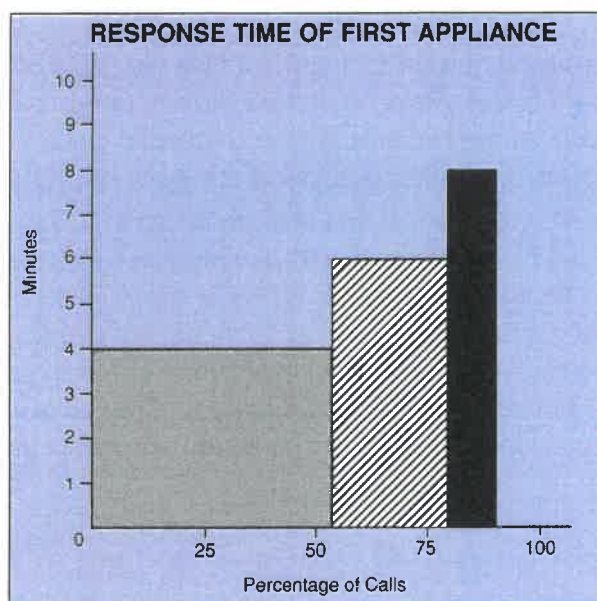
1 appliance arriving within 10 minutes

2 supporting appliances at the scene within 30 minutes of being called

- 321 Fire growth does not proceed at a steady rate. It commences quite slowly but at a given point it accelerates and burns rapidly. When most of the fuel has been consumed the fire starts to diminish. Most of the fire loss occurs in the relatively brief period between the acceleration point and the consumption of most of the fuel. The Fire Service must get to the fire as quickly as possible if lives and property are to be saved.

- 322 Statistics quoted in a report by the Melbourne Fire Brigades Board show that average fire loss trebles if the response time is delayed by one minute from 7.8 to 8.8 minutes. Any reduction in resources

which lengthened initial response times would therefore result in high increases in fire losses. Throughout New Zealand, regardless of whether it is a permanent, volunteer or composite brigade, the response time for the first appliance to arrive at the scene is as illustrated.



We believe that the standard response times now applied by the Commission are adequate to provide an effective level of fire protection.

### *On-Site Reaction*

323 The severity of a fire is a function of the total time it has been alight, its type, and the local conditions. The time includes the fire initiation to alarm time as well as the time to attend. The type and local conditions include such factors as the weather and the materials ignited.

The first priority, as a matter of policy, is to rescue people followed by containing, controlling and extinguishing the fire.

From our observations, we believe (and this was confirmed by the observations of experienced fire officers from Australia) that New Zealand has an able and efficient fire suppression force. However, in the final analysis, the Commission lacks the performance information to clearly confirm this.

### *Performance Information*

324 To judge performance requires details of loss through fire and other significant facts. At present, the only information available is the assessments done by fire-fighters on the scene of the percentage of the property damaged by fire. No financial estimate of the value of the loss is made.

325 The existing system to collect fire-related information is known as the Fire Incident Reporting System (FIRS). Although it is an internationally accepted system (and it was selected for that reason), it does not provide a readily accessible, comprehensive, and definitive statement on how well the Fire Service performed. The present information only gives clues as to how well the Fire Service does.

326 Performance or effectiveness measures would inform the Commission whether the Fire Service's performance, in those fields that it has said are important, is improving or deteriorating. The United States Urban Institute and International City Management Association has prepared a summary of effectiveness measures for a fire protection service. These are specific measures for assessing loss minimisation, fire suppression and fire prevention. The measures are listed in the appendix to this report.



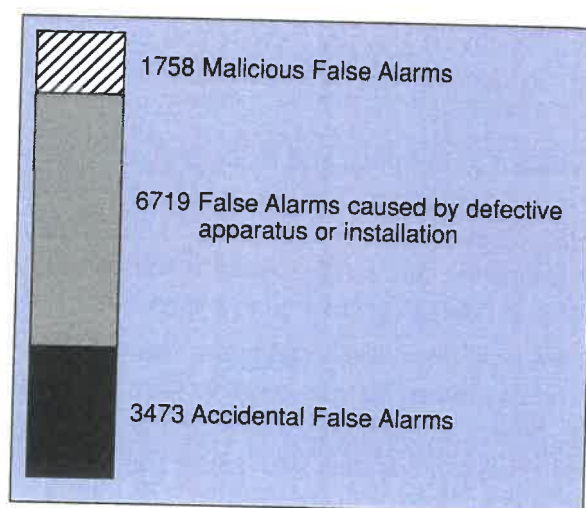
327 Sound performance information is an essential part of an effective management process. It would form an important part of a corporate management plan. Although the Commission has put some effort into producing such a plan it is not yet complete.

Until such information is available, it will be difficult for the management of the Fire Service, or indeed the public, to assess its performance.

Operational and management performance indicators should be developed.

### *False Alarms*

328 Of the calls received by the Fire Service, 26 percent turn out to be false alarms. In 1987, false alarms comprised:



329 In addition, the Fire Service received 4,752 "good intent calls" where no action was required when the fire-fighters arrived at the incident. False alarms and "good intent calls" have increased from 14,080 in 1977 to 16,702 in 1987. As a proportion of all calls, they have increased during that time from 33 percent to 37 percent.

330 The costs of these alarms include:

- Wear and tear to appliances, overtime worked when alarms occur at the end of shifts, and reduced availability of forces in the event of a genuine emergency.
- Loss of morale in the Fire Service and the danger of the loss of a sense of urgency in answering alarms that could be false.
- The loss of productive work-time as a result of occupants vacating a building unnecessarily.
- The decrease in attention paid by the public to what are seen as probable false alarms and reduced respect for fire threat.

331 Malicious calls, while constant in number, require deterrence in view of the costs identified above. Police statistics for 1987/88 show 128 "Fire service abuses". These are cases recorded when there is clear evidence of malicious intent, and there is some chance of identifying the person or persons concerned.

332 Faults can occur in the fire detectors, in the transmitters that send the signal to the station, the lines that carry the signal, and the equipment in the station. Poor housekeeping, faulty alarm maintenance, reluctance to replace old alarm systems, and failure to protect systems from damage all contribute to the incidence of false alarms.

- 333 At present there is little pressure on a building owner to minimise false alarms. The Fire Service does not identify persistent offenders. Its records do not readily provide this identification and its policy does not ensure that offenders are approached with the aim of getting them to remedy faults. The Commission should be prepared to use the powers available to it to charge such persistent offenders if persuasion does not succeed.
- 334 Accidental false alarms need to be dealt with by a combination of education and deterrent. First, a public education programme associated with the Commission's fire safety activities should be mounted emphasising to the public the importance of minimising false alarms. Second, accidental alarms need to also carry the possibility of incurring charges for Fire Service attendance as a deterrent to frequent careless accidental alarms.
- 335 To provide an incentive for installation of fire prevention systems, and to minimise the negative impact of deterrents, insurance premium rates are required which reflect the benefits of prevention systems. We were told by insurance industry representatives that the extent of differential rates had been largely eliminated because of the very competitive conditions existing in the industry at present.
- 336 Technical means are available to minimise and recognise some false alarms. The Commission has been holding discussions with Telecom Corporation and the Insurance Council about installing a new system which would provide more reliable lines, detect many false alarms and ensure that signals registering false alarms are directed to the alarm companies rather than to the Fire Service as at present. A pilot scheme is due to commence in March 1989.
- 337 In addition, economies are possible in the response to false alarms. Some experienced fire officers state that it is clear that some calls are almost certainly false alarms and they advocate sending only one or two vehicles with others on standby in case the call turns out to be genuine. We recognise that this is a contentious issue but it is one that needs continuing review by the Commission.
- 338 We believe that the Commission has not done all in its power to minimise false alarms, and that it must act to do so in future using both public education and the deterrent of charging persistent offenders.

### *Non Fire-fighting Emergency Activities*

- 339 A fifth of all calls to the Fire Service do not involve fire. Of those, 36 percent involve flammable liquid spillages and hazardous chemical incidents, 37 percent are for special services such as pumping out flooded premises and supporting other services, and 18 percent are for rescue services such as extricating people from crashed vehicles. Other calls include assisting agencies such as Civil Defence and the Ambulance Service.
- The Fire Service Act recognises involvement in this type of activity, but its extent and complexity has increased significantly since the passing of the Act.
- 340 The Fire Service has come to play a major role in civil emergencies. In the recent East Coast floods, fire-fighters assisted their communities with a range of activities, including pumping out flooded homes, providing communications for Civil Defence Headquarters, and helping to distribute supplies. The Civil Defence authorities stressed to us the reliance and importance that they place on the Fire Service. It is usually the only trained organisation with the size, capability and available personnel not already committed, able to respond immediately to an emergency.
- 341 Crewing levels, equipment, and funding are set by the Commission to meet the needs of fire-fighting. No significant reductions in the size or cost of the Fire Service would therefore be expected to eventuate if these non-fire-fighting activities were passed to another organisation.
- 342 The increase in non-fire-fighting activities raises the questions of the equity of the full burden of the costs falling on those who normally contribute and whether the Commission should charge for

assistance at such incidents. The Fire Service Act does not at present provide explicit authority for such charging. Changes to the Act to provide such authority are being drafted. If approved, the changes will give the Commission the ability to recover the full costs of involvement in hazardous substance and other emergencies.

This is a desirable move and the Commission should be prepared to use the powers that will be conferred by this new legislation.

## CONCLUSIONS

- 343 The Commission has not provided adequate resources to its Fire Safety Division to carry out the task required. Greater use should be made of operational staff in this area.
- 344 The times taken to respond to fire calls and the weight of attack on fires are consistent with the overseas brigades we looked at. The Commission, however, generally lacks the information to demonstrate its effectiveness in all operational matters.
- 345 There is a need for a more active programme to reduce false alarms and the Commission should be prepared to charge persistent offenders. In our view, the Commission has not done all in its power to minimise these calls.
- 346 The planning to determine the location of fire stations was found to be thorough and effective.

## RECOMMENDATIONS

### 347 *Fire Safety*

The Commission should:

- a Apply adequate resources to the Fire Safety Division (paragraph 305).
- b Ensure greater integration of suppression and safety activities and staff (paragraph 310).
- c Establish more public education programmes. These should have their aims identified before the programmes start and the results should be measured to ensure that the aims are met (paragraph 310).

### 348 *Operational Information*

The Commission should identify its operational information requirements, set quantifiable performance targets, and report on its success in meeting those targets (paragraph 327).

### 349 *False Alarms*

The Commission should:

- a Identify and approach persistent offenders and, if other means fail, charge them for attending false alarms (paragraph 333).
- b Develop a public education programme aimed at minimising false alarms (paragraph 334).

## 4

# *EFFICIENCY AND MANAGEMENT*

- 401 In determining the efficiency of the Fire Service, the cost of activities needs to be analysed and compared with the least practicable cost for the same scale of operation.

The achievement of optimum operational effectiveness requires:

- A soundly based organisational structure;
- Sound operational policies;
- Proper procedures for establishing and monitoring budgets; and
- Strong support systems.

### *Resource Efficiency*

- 402 As shown on page 9, in the year ended 31 March 1988 the Commission's principal items of expenditure were for personnel, maintenance and capital costs, accounting for 88 percent of the total operating costs of \$147 million. The 78 percent of operating costs spent on personnel, covering both permanent fire-fighters and civilian staff, has not varied significantly during the life of the Commission—in 1978 the comparable figure was 75 percent. The higher figure in 1987/88 was largely the result of increases in accident compensation levies, Fringe Benefit Tax and superannuation costs.

The Fire Service benefits from its ability to operate with only part of its fire-fighting force reflected in personnel costs because of the contribution made by the volunteer fire-fighters.

We have already noted opportunities to improve effectiveness, e.g. greater effort on fire safety, and fire prevention, and to improve utilisation, e.g. through consistency of crewing levels.

### *Expenditure*

- 403 Notwithstanding the increasing number of calls to the Fire Service, and the greater complexity of incidents attended, the Commission has contained the increase in overall costs to a level only slightly more than the rate of change in the Consumer Price Index. United Nations' statistics showing the comparative costs of fire-fighting organisations put New Zealand costs in the middle of a range of developed countries.

### *Budgeting*

- 404 With no finite limit on the resources consumed, and their cost, it is particularly important that the Fire Service has well-developed budgeting procedures, providing detailed estimates and demonstrating cost effectiveness. This requires continuing comparison against performance measures.
- 405 Effective financial management requires that budgets are submitted and approved in a timely manner. In the case of the Commission, this has not been happening in recent years. The inadequacy of the present budgeting procedures is acknowledged and improvements are currently being made.

The consequences of the deficiencies in the budgeting system are illustrated below. The estimates have not been submitted until relatively late in the year and then may have been subject to revision before being finally submitted for approval. On one occasion, that approval was not received until early in the next financial year.



## *Submission and Approval of Budgets*

### *For the Financial*

<i>Year Commencing</i>	<i>Original Submission by the Commission</i>	<i>Revised</i>	<i>Approval by the Minister</i>
01/04/85	10/05/85	—	17/04/86
01/04/86	08/07/86	—	22/12/86
01/04/87	25/06/87	06/11/87	16/02/88
01/04/88	29/06/88	06/09/88	06/10/88

Not having an approved budget until six months or more through the financial year makes a nonsense of good financial management. The Commission should know early in the financial year what funds are going to be available to it.

## *Revenue*

406 The Commission's funding arrangements are dealt with in section 5. At present the majority of its revenue requirement comes from a levy on fire insurance premiums. In addition to the concerns expressed in section 5, the Commission relies on insurance companies to apply the levy to all relevant policies, and to account for the sums collected. These are not independently checked by the Commission.

407 Spot checks of insurance company records are carried out by the Earthquake and War Damage Commission, but this is only a limited surveillance and does not confirm that the total of Fire Service levies collected on each policy are paid over. Thus the Commission has no way of knowing whether all of the money it is entitled to has been received.

In an example that recently came to light, Fire Service levies totalling \$714,000 had not been paid to the Commission. The levies related to only a portion of the company's business and should have been paid over a period of some months.

The Commission should develop methods to rectify this deficiency.

## *The Fire Service Commission*

408 It is relevant to examine the rationale behind the existence, functions, and structure of the Commission. The Fire Service Act provides for the Commission to comprise a Chairman, experienced in administration, two experienced fire officers as Fire Commissioners, and (since December 1979) the Secretary for Internal Affairs. All four people are classed as "members" of the Commission, but the Secretary for Internal Affairs has no voting rights at meetings of the Commission—a rather unusual situation and one which puts in question the worth of his membership.

409 We believe it is appropriate for the Fire Service to be managed by an independent Commission. It is for the Commission to develop policy, to advocate changes where this is seen as necessary, and to negotiate policies and priorities with the Government through the responsible Minister.

Having agreed key policies and priorities, it is for the Commission to provide direction to the Fire Service, and then to evaluate performance against the policies and the Commission's expectations.

410 We noted a number of major successes in which the Commission can take justifiable pride. These include the welding of the formerly independent fire authorities into a unified national service, and the integration of the volunteer fire-fighters into that service.

These successes, while notable, are in our view marred by some shortcomings, such as an apparent lack of commitment in the fire safety area (already referred to) and the following managerial issues. The difficulties with budgeting, the corporate plan and management information systems (discussed

below), and the time taken to implement some policies, such as the crewing policy, all give concern about aspects of the Commission's management of the Fire Service.

- 411 With the present organisational structure and responsibilities of Commission members there is considerable risk of confusion between the policy development and monitoring role on the one hand, and that of the management of the Fire Service on the other. Greater segregation of those roles is required to ensure credible evaluation. The performance of the Commission would be enhanced by splitting the roles of Chairman and Chief Executive.
- 412 The Fire Service is a major undertaking in terms of the funds involved as well as being an important public service. In our view the time is now right for a review of the structure of the Commission with the aim of strengthening its financial and general management skills.

The Commission would benefit from a broadening of the skills available to it. A body such as the Commission should have a wider membership composed with a view to drawing on individuals with a range of skills, in particular business management and finance as well as fire-fighting expertise.

### *National Headquarters*

- 413 National Headquarters (NHQ) was established with the creation of the Fire Service Commission in 1976. It exists to support the Commission and administer and co-ordinate national policy relating to the operational, financial and management aspects of the Fire Service.

Its nucleus was the approximately 25 support staff of the former Fire Service Council. Since establishment the NHQ structure has been augmented from time to time resulting in the present staffing level of around 90, including the staff of the National Training Centre.

It is sensible to operate centrally functions such as contracting and supply activities which have been successful. There is a corporate finance activity which, by its nature, must also be part of a headquarters establishment.

- 414 While we cannot say that the size of the NHQ is too large, we are concerned that it may be so because of the possible confusion between the Commission's roles in policy/monitoring and its management of the Fire Service. This confusion may have led to an absence of the discipline over the growth of the NHQ that would have existed if these two roles had been clearly separated. Apart from a 1982 management study, no external review of the structure has been carried out.

After the review suggested in paragraph 412, the Commission should consider the benefits flowing from the Headquarters activity and justify the existence of the various groups on the basis of the benefits they provide to the Fire Service.

### *Policy*

- 415 Given the size and importance of the organisation, it is critical that policies are formulated within the discipline of a formal planning process and that such policies are clear and understood by all. The Commission does have the means to communicate effectively with its staff and this is demonstrated in the manner in which operational instructions are conveyed. However, the Commission does not have a formal planning process in which both operational and management policies can be formulated. As stated earlier, some effort has been put into the development of a corporate plan. It is not complete but is planned for implementation in 1989.

We are critical of the delays in the production of that plan. When implemented, the plan will be valuable as the basis of clearer organisational direction, and monitoring.

## Management Information Systems

416 The critical information systems for the Fire Service are FIRS (discussed in paragraph 325) and the financial management information systems. The Commission has been engaged in the introduction of computerised management information systems for at least the last four years.

Difficulties in implementing sections of the new systems led to an internal review in 1987. This review highlighted many deficiencies, including:

- Overly complex software;
- Inability to analyse quickly key data; and
- General inflexibility.

We are critical of the time taken to develop the management information systems and the unsatisfactory nature of some of the work that was done.

417 The problems are now being addressed and the Commission is confident that, with the determination of its finance staff, it will get the systems operating to provide effective information. We believe that with the changes being made the system will be successful in providing sufficient information. However, they may not provide for the Fire Service's long term requirements and the Commission will need to start examining future options.

## CONCLUSIONS

- 418 Budgeting procedures are not adequate, and this has hindered effective financial management.
- 419 The Commission has no way of knowing whether all the money it is entitled to has been received.
- 420 A lack of financial and general management skills in the Commission has led to difficulties in a number of key aspects of management. There is a need to overcome that lack. In addition, we believe the Commission should further review the benefits of the National Headquarters groups.
- 421 The Commission has spent over four years trying to implement a management information system. It has not yet succeeded in doing so. The work done contained many deficiencies which are now being remedied. In our view, however, the resulting system, despite the effort put into it, may not provide for the Fire Service's long term requirements.

## RECOMMENDATIONS

### 422 *Expenditure Control, Budgeting and Revenue*

New budget procedures should be developed, with emphasis on demonstrating that expenditure by the Commission is cost-effective (paragraph 404). More comprehensive checks of revenue receivable should be undertaken by the Commission (paragraph 407).

### 423 *Fire Service Commission*

There should be a review of the organisational structure of the Commission (paragraph 412). Particular attention should be paid to separating the offices of Chairman and Chief Executive (paragraph 411).

### 424 *National Headquarters*

The Commission should review the activities of each National Headquarters group to ensure that it is making an adequate contribution with the resources employed (paragraph 414).

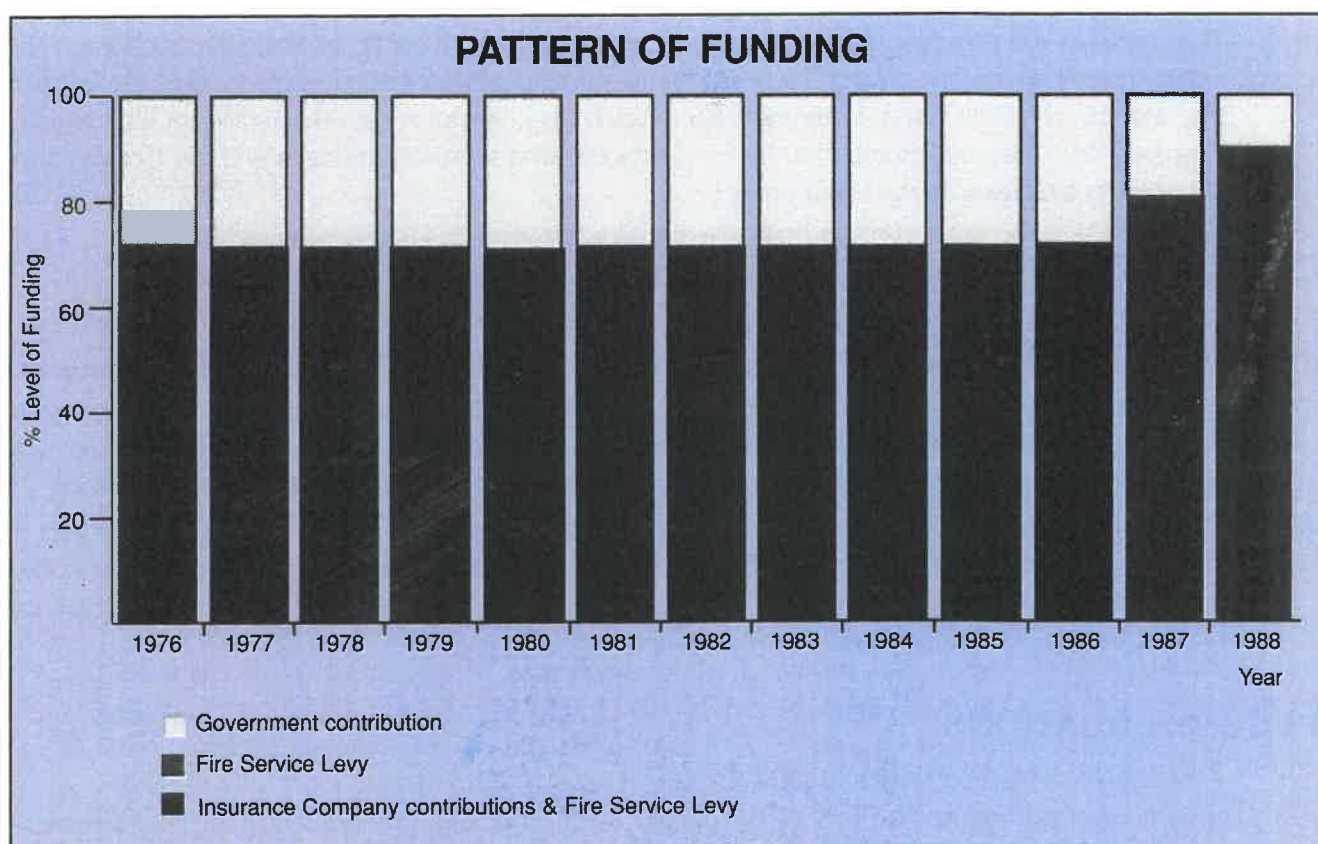
### 425 *Management Information Systems*

The Commission should successfully complete the new management information systems. It should also review its longer-term requirements and options for management information (paragraph 417).

## 5 FUNDING

501 The funding system determines who pays for the services that are provided by the Fire Service. Criteria for a funding system need to include simplicity, ease of administration and verification, equity of contribution, and ability to pay.

There have been changes in detail to the system, the most recent in 1986. However, it remains a tied-tax on insurance policy-holders at the rate of 6c per \$100 of insured value on property. This currently provides 90 percent of the Fire Service's funds, with the Government contributing the remaining 10 percent.



502 The present funding system is selective in that only those who choose to insure their property pay the costs. There is a lack of direct relationship between the probable beneficiaries of the Fire Service and those who pay for it.

The following issues need to be addressed:

- a Large organisations with widespread property holdings may insure only a portion of the value of the property (on the assumption that it will not all catch fire at the same time) and therefore avoid paying a fair share of the Fire Service's costs. The portion of the funding burden met by other contributors will be larger as a result. The extent of this problem is not clear, but it should be addressed by the Commission to ensure that everyone benefitting from the Fire Service meets their share of the service's costs.



- b Any organisation or person placing their insurance overseas is required to pay the Fire Service levy. However, the Commission lacks any effective mechanism to know whether those who insure overseas provide the statutory returns and payments required by the Fire Service Act.
- c We were unable to determine whether 10 percent was a fair estimate of the Crown's liability for cover of its property and that of those who do not carry insurance. If this figure is not correct, other members of the community are paying either more or less than their fair share of the Fire Service's costs. The appropriateness of the Crown's contributions to the Fire Service needs to be reviewed and reported upon by the Department of Internal Affairs.
- d People in rural areas do not get equivalent benefit from the levy paid. They pay a contribution at the same rate as those in urban areas but do not derive an equivalent level of service. The Minister of Internal Affairs recently approved a study being undertaken to determine the extent of this problem.
- e Certain services are provided by the Fire Service to specific groups the costs of which are borne by all contributors. It would be more equitable to make a separate charge for these activities. The services include:
  - Conducting inspections, which are required by statute and are a condition of operation, e.g. licensed premises.
  - Attending non-fire related incidents, e.g. chemical spillages.

As stated earlier, draft legislation is being prepared which, if enacted, will enable the Commission to charge users for some of these services.

- 503 One model for the future shape of Fire Service funding lies in recent developments in Australia. In Queensland, all property owners now pay what is, in effect, a Fire Service rate which is collected by the local authority. The amount of the rate is defined by:
- The type of the property;
  - The level of risk; and
  - The service provided by the Fire Brigade.

Thus, a small concrete house served by a country volunteer brigade would pay a lower rate and an oil refinery in a city a higher rate.

No property owner within the area of Fire Service coverage can avoid the rate and everyone bears a cost that reflects the service they receive. Such an approach is attractive to us and should be considered for introduction in New Zealand provided the system proves capable of effective and efficient administration.

The Queensland system and other overseas developments should be closely monitored by the Commission and the Department of Internal Affairs to determine their feasibility for introduction here.

## CONCLUSIONS

- 504 There are inequities in the present funding system. Some people do not meet their share of the costs of the Fire Service because they do not insure or they under-insure their property. The Commission has no means of identifying such people and as a result the rest of the community has to pay more. The Commission also lacks the means to be certain that people insuring overseas provide the information and make the payments to the Fire Service required by law.

## RECOMMENDATIONS

505 The Commission and the Department of Internal Affairs should:

- a Investigate the extent of partial insurance and its effect on the equitable funding of the Fire Service (paragraph 502(a)).
- b Review the ability to ensure compliance with legal obligations by people insuring overseas (paragraph 502(b)).
- c Better define the Crown's contribution to Fire Service funding (paragraph 502(c)).
- d Seek such administrative and legislative changes as are needed to remedy inefficiencies or inequities identified above.
- e Monitor changes to methods of Fire Service funding overseas, especially alternatives to insurance-based systems (paragraph 503).

## ACCOUNTABILITY AND WIDER ISSUES

- 601 It is important for all of those who have an interest in the Fire Service to have confidence that adequate accountability exists both within the organisation and by the organisation to external parties. There are some associated issues to consider.

### *Internal Accountability*

- 602 The organisational structure envisages the Regional Commanders being accountable to the Commission for the effectiveness of the staff and resources under their control. However, there is no formal reporting, against objectives, by regional staff to the Commission.

The only formal mechanism for the Commission to hold operational staff accountable for performance is by a series of exercises in which the brigades demonstrate their operational skills to headquarters staff. These are known as Operational and Efficiency Surveys. We found the effectiveness of these exercises unclear because they lack any measurable assessment of overall performance.

- 603 Executive Officers are the middle management of the Fire Service. In addition to their fire-fighting activities, they may at times in their careers have responsibility for administrative duties such as:

- Property management;
- Fleet management;
- Communications management; and
- Finance and budgeting.

There has until now been no regular performance appraisal carried out on Executive Officers. A system of such appraisals is being introduced in December 1988. The system must be monitored and developed by the Commission to ensure that it determines how well duties are being performed and provides feedback on operational performance and objectives achieved.

### *External Accountability*

- 604 It is not clear to whom the Commission is accountable, and the information provided does not in our opinion meet minimum accountability requirements.

An annual report is prepared for tabling in Parliament but is not subject to detailed scrutiny. As a semi-autonomous body, there is no formal and consistent evaluation procedure. Various Parliamentary Select Committees have been involved in addressing Fire Service related issues, but there is no history of regular and continuing scrutiny.

- 605 Because of the importance of the role the Fire Service performs, the contribution it makes, and the resources it consumes, the public has a very real interest in the performance of the Commission. The current format and content of information provided in the annual reports are not sufficient to form a view as to the effectiveness and efficiency of the Fire Service.

The newly-promulgated Public Sector Accounting Concepts provide a suitable framework for the preparation of an adequate annual report. The Commission has expressed an intention to implement the concepts progressively so as to improve its public reporting.

- 606 Meeting the external information requirements envisaged by the Public Sector Accounting Concepts would mean:

- Providing details on the policies, direction, and priorities of the Fire Service Commission.

- Showing each activity separately, with targets and measures against which performance can be assessed: for example, the type of measures set out in the appendix.
- Full costs, including allocation of support units, being shown for each activity.

### *Wider Issues*

- 607 The changes occurring in the Public Sector and in the community at large will inevitably affect the Fire Service.
- Both the Government's decision that a National Building Code binding on the Crown will be formulated and the dispersal of the former Ministry of Works and Development's Fire Protection Group will affect the Fire Safety Division of the Fire Service.
- 608 The recent move to identify the Fire Service levy on insurance premium statements is likely to generate greater public awareness of the cost of the Fire Service. There will be pressure from the Government and the community at large for the Fire Service to demonstrate that it is using scarce resources in a cost-effective manner.
- 609 The change from the New Zealand Forest Service to the New Zealand Forestry Corporation, and the reduction of the role of the corporation's subsidiary (the Timberlands Corporation) in rural fire-fighting, is also likely to have effects on the Fire Service in that it may be called on to redress a shortage of rural fire-fighters. This will cause difficulties for the volunteer brigades because rural fires tend to be at greater distances from the volunteers' homes and of longer duration. In these circumstances, employers may be less willing to release staff.
- 610 The Commission is also concerned at the increase in the number of hazardous chemical incidents, both in fires and in other incidents attended by the Fire Service. Dealing with these adds to the complexity and risk of the work.
- 611 In this changing environment it will be essential that both the Commission and the public have an understanding of the costs of the Fire Service, including its non fire-fighting activities, and that there are adequate and accurate measures of performance, so that it can be demonstrated that the Fire Service provides a service that provides value for money.

## APPENDIX

### SUMMARY OF PRINCIPAL EFFECTIVENESS MEASURES FOR FIRE PREVENTION SERVICE

<i>Objective</i>	<i>Quality Characteristic</i>	<i>Specific Measure</i>
Overall Loss Minimisation	Civilian casualties	1 Number and rate of civilian injuries and deaths per 100,000 population
	Firefighter casualties	2 Number of fire-fighter injuries and deaths per 100
	Property loss	3 Direct dollar loss from fires per \$1,000 property served
Suppression	Fire-fighting effectiveness—dollar loss	4 Average direct dollar loss per fire, for fires not out on arrival, by size on arrival and type of occupancy
	Fire-fighting effectiveness—spread	5 Percentage of fires (not out on arrival of first fire unit) in which spread after arrival is limited to "x" square feet (or "y" percent, or one step of the extent-of-flame scale), by size on arrival and type of occupancy
	Fire-fighting effectiveness—time	6 Time to control or confirm spread has stopped, by size on arrival and type of occupancy
	Speed of providing service	7 Percentage of response times that are less (or more) than "x" minutes
		8 Average response time, by type of fire
Prevention	Rescue effectiveness	9 Number of "saves" versus number of casualties
	Reported fire incidence rate	10 Number of reported fires per 1,000 population, total and by type of residential occupancy.
	Reported building fire incidence rate	11 Number of building fires per 1,000 occupancies, by selected occupancy types (e.g. single-family dwellings, duplexes, apartments, mobile homes, small stores) and by fire size.
	Reported plus unreported building fire incidence	12 Number of unreported plus reported building fires per 1,000 households (or businesses), by type of occupancy
	Preventability of fires	13 Percentage and rate of fires that are relatively preventable by inspection or education
	Pre-fire inspection effectiveness	14 Rate of fires in inspected versus uninspected (or frequently inspected versus infrequently inspected) occupancies, by type of occupancy and risk class
	Apprehension effectiveness for fire-related crimes	15 Clearance and conviction rates for arson, incendiarism, false alarms, and code violations
	Deterrence effectiveness for fire-related crimes	16 Number of (a) incendiary and suspicious origin fires per 1,000 population, (b) false alarms per 1,000 population
	Detection—response effectiveness	17 Distribution of sizes of fire at arrival
	Citizen satisfaction	18 Percentage of population rating fire protection service as satisfactory

Source : The United States Urban Institute and International City Management Association

