1937–38.

NEW ZEALAND.

FIRE BRIGADES OF THE DOMINION

(REPORT ON THE) FOR THE YEAR ENDED 31ST MARCH, 1937, BY THE INSPECTOR OF FIRE BRIGADES.

Presented to both Houses of the General Assembly by Command of His Excellency.

THE INSPECTOR OF FIRE BRIGADES TO THE HON. MINISTER OF INTERNAL AFFAIRS.

Office of the Inspector of Fire Brigades,
Wellington, 6th December, 1937.

SIR,—

I have the honour to submit the twenty-ninth annual report for the year ended 31st March, 1937, on the working of the Fire Brigades Act, 1926.

FIRE DISTRICTS.

The Borough of Whakatane was declared a fire district during the year, and the Morrinsville Fire Board, which was gazetted last year, commenced operations. The number of fire districts in operation at the end of the year was fifty-five.

DOMINION FIRE WASTE.

The loss by fire in New Zealand during 1936 estimated on the usual basis—*i.e.*, the actual amount paid out by insurance companies plus 12½ per cent. for uninsured loss—was £524,029, being a decrease of £83,381, or 13·7 per cent. In view of the improvement in the method of collecting statistics which has taken place during recent years this almost certainly represents the lowest fire loss on record per head of population, which is the only satisfactory basis for comparison. The following table shows the fire losses in New Zealand, Great Britain, Canada, and United States of America for the past ten years :—

—	New Zealand Fire Loss.	Fire Loss per Head.			
		New Zealand.	Great Britain.	Canada.	United States of America.
	£	s. d.	s. d.	s. d.	s. d.
Average (1927–31)	1,332,032	18 1	5 0	17 5	16 0
1932	867,714	11 5	3 9	16 8	13 2
1933	644,781	8 4	4 7	12 11	8 10
1934	566,112	7 3	4 1	10 0	8 7
1935	607,410	7 9	4 0	8 9	8 1
1936	524,029	6 8	4 5	8 0	8 5

It is difficult to give a satisfactory explanation for the exceptionally low loss recorded for 1936. The view is largely held by insurance companies that high fire losses tend to come in cycles, and the above table would certainly indicate that the notably high-fire-loss countries, amongst which New Zealand for some time held pride of place, are experiencing a low-loss period. So far as New Zealand is concerned, the low losses for the year are in no way due to a lessening in the number of outbreaks of fire, since the Government Statistician's returns show that insurance was again paid on more than five thousand fires, the number reported during 1936 being the highest on record. Most of these outbreaks are, of course, small fires, only involving a loss of less than £10 and not requiring the services of the fire brigade.

There was undoubtedly a considerable increase during the year in replacement values, both of buildings and of goods, and a corresponding increase in the apparent fire loss was to have been expected, even if the number of fires had remained stationary. It is therefore evident that a considerable decrease has occurred not only in the average loss per fire, but in the actual wastage resulting from fires.

Fire-Brigade Efficiency.

While the reduced fire wastage for the year must be ascribed to a considerable extent, at any rate, to good fortune, particularly in respect of the losses in unprotected areas, there is ample evidence available not only from the returns supplied by insurance companies and fire brigades, but also from the inquiries into the handling of fires by the brigades made during inspection visits, that the improvements in equipment and general brigade efficiency have been largely responsible for the better fire-loss record of recent years.

This is illustrated by the returns for Fire Board areas, which show that, despite the fact that during the year 3,381 fires, or 64 per cent. of the outbreaks of fire, occurred in fire districts, and the property at risk represents probably an even higher percentage of the total, the actual fire losses in these areas were only 43 per cent. of the Dominion figures. It will be noted from the details given below that approximately 39 per cent. of the losses in fire districts were caused by six serious fires, and the investigations made showed that, except in the case of the wool-store at Napier, which was a wooden building and was alight practically from end to end when the brigade received the call, the losses represent a small proportion only of the property at risk in the fires, and the work carried out by all the brigades concerned evidenced a very high standard of efficiency.

In this connection it must also be noted that, with the more general supply to the fire service of salvage and smoke-protection equipment, a very considerable advance in fire-fighting technique is evident, even in the case of the small-town brigades. Not only is greater care taken in covering goods in the early stages of the fire to prevent damage by water, but there has been a considerable improvement in ventilation methods and a more intelligent use of water in the actual extinguishing-work.

Incendiarism.

Another factor tending to maintain the low-fire-loss position is the almost entire absence of incendiaristic fires of the insurance-fraud type. This has resulted partly from the economic conditions existing during recent years, but has also been largely affected by the publicity directed against this class of fire and the greater activity of the police in investigating all fires, particularly those of suspicious origin. The position has also been helped by the fact that with the improved Fire Brigade turnout it has been possible to determine the cause of a greater proportion of suspicious fires. During the year under review there were fifteen prosecutions for arson, and ten convictions were recorded, but it was only found necessary to hold one coronial inquiry as to the cause of fire. It should be noted that the tendency to incendiarism is less during a period of rising prices such as is at present being experienced, and the real test of the measures taken to prevent arson will not come until property values start to decline.

Fire Loss in Fire Districts.

It will be seen from Tables II and IV attached that the loss in fire districts during the year ending 31st March, 1937, was £199,592, and in areas protected by Fire Boards, £3,248, as compared with £181,296 and £2,940 respectively for the previous year. Six fires occurred in fire districts during the year in which the loss exceeded £5,000, details of which are as follows: Wool-store, Napier (5.50 a.m.), £30,565; Drapery store, Invercargill (4.59 p.m. Sunday), £16,070; Waterproofing factory, Wellington (5.31 a.m.), £8,876; Clothing-factory, Wellington (11.6 p.m.), £5,025; Clothing-factory, Christchurch (9.48 p.m.), £6,677; Printing-works, Dunedin (5.31 a.m.), £9,395. Despite the severe loss in these fires, which represents about 39 per cent. of the total loss in fire districts (as compared with 22 per cent. in serious fires last year), it will be seen from Table I attached that the average loss per fire attended by the brigades is only £242, as compared with £235 last year. The number of fires requiring brigade attendance increased from 765 last year to 812 during the year under review. The loss per head in fire districts for the year 1936 was 5s. 10d., as compared with 7s. 5d. for the remainder of the Dominion.

Future Development of Fire Brigade Administration.

In connection with the Government proposals for the amalgamation of local authorities alternative suggestions have been made by the local authorities and others concerned for the amalgamation of neighbouring Fire Boards, the formation of Fire Boards on a provincial basis, the absorption of the functions of the Fire Board by the local authority, and the retention of the existing system in its entirety. It will therefore probably be of some service to survey briefly the existing position.

The controlling legislation in New Zealand (Fire Brigades Act, 1926) is similar to that in operation in the Australian States, in that it provides for contribution by the insurance companies to the cost of fire-brigade operation. It differs from the Australian legislation in that the latter provides for control of all fire brigades in fire districts by a Board having State-wide powers, whereas in New Zealand it is necessary to set up an independent Fire Board in each local-authority district before any contributions can be obtained from the insurance companies. The proportion of the annual expenditure of the Boards in Australia contributed by the insurance companies is in some cases as low as one-third, and in New Zealand it varies with the population of the fire district, but for the current year averaged nearly 49 per cent.

In these reports in previous years the opinion has been expressed that the Australian system offers very definite advantages from the point of view of general organization, the saving of adminis-

trative costs, the arranging of finance, the standardization, cost, and interchange of plant and equipment, and the training, particularly of officers, but also of the personnel generally. In view of the long-continued operation of the existing system, however, it is unlikely that such a radical change would be acceptable to the interests concerned.

It will be noted from Table II attached that of the fifty-five Fire Boards, thirty-five have an annual expenditure of less than £1,000. It is very open to question whether the maintenance of an independent local authority is justified for the administration of an expenditure of this order if some satisfactory alternative system of control can be devised. It is, of course, essential that this alternative system should firstly be such as to ensure that the efficiency of the existing fire-brigade organization would not be prejudiced, and, secondly, should give to the insurance interests the voice in the control of the fire service which is justified by their contribution to its upkeep.

In addition to the fire-district brigades normally covered in these reports, fire brigades maintained or subsidized by the local authority exist in seventy-five towns. The Fire Brigades Act, 1926, provides that on application by the local authority, and subject to the taking of a poll of ratepayers, any local-authority district having a population exceeding 1,000 may be declared a fire district. It will be seen from the list below that of the seventy-five towns referred to forty are qualified on a population basis to become fire districts, and may at any time elect to do so. This point is emphasized by the fact that the local authorities for two of these towns—Upper Hutt and Patea—have already made the necessary application in accordance with the Act, but declaration of these districts as fire districts has been deferred pending further consideration of the local-body amalgamation proposals as they affect the fire service.

It will be apparent, however, that the problem cannot be confined to the elimination or amalgamation of the existing Fire Boards, but consideration must also be given to that section of the fire service at present controlled by the local authorities. In order that the importance of this section may be realized the following summary shows the populations served by the Fire Board and municipal brigades respectively.

Population.	Fire Districts.	Municipal Control.
0–1,000	1	35
1,000–3,000	27	27
3,000–6,000	7	9
Over 6,000	20	4
	55	75

It has been the experience of the Department, particularly in recent years, that in most cases the fire-protection organization taken over from the municipality by the Fire Board on formation of the latter is noticeably below the usual Fire Board standard of efficiency. It has usually been found necessary to replace or augment considerably the plant and equipment, and even the alarm system and the accommodation provided for the brigade. The reason for this is probably that the fire-protection service is ordinarily the least vocal of the municipal departments and its requirements are not fully recognized until either a serious fire, or agitation by brigade members, brings it more prominently under the notice of the public and the municipal authorities. On the other hand the Fire Boards have the sole duty of maintaining an efficient organization, and it may be taken for granted that, with some notable exceptions, the municipal brigades are less satisfactorily equipped for their work and to that extent are less efficient than those controlled by Fire Boards.

It must be made clear that the remarks with respect to the lower efficiency of the municipal brigades in no way apply to the personnel—on the contrary it is practically on the personnel alone that the existing standard of efficiency depends. Most of the municipal fire-brigadesmen receive no payment whatever, and where payment is received it is only a small allowance to cover damaged clothing, or in a few instances loss of wages whilst attending fires. Not only do they receive no payment, but in many cases the brigades have, by means of entertainments and public subscriptions, raised money to supplement the plant and equipment supplied by the local authority. A case recently came under notice where one small-town brigade has during the past four years purchased a fire-engine and later fitted it with a fire-pump almost entirely out of brigade funds. The Fire Board and municipal brigades are part of the one service and are all members of the United Fire Brigades Association. The two sections compete in both national and district competitions, and the results show that the municipal brigadesmen in no way suffer by comparison as regards personnel efficiency.

The interests of the volunteer fireman in brigade work is partly sporting—a keen interest usually being taken in brigade competitions, partly social—as the fire-station is the centre of many social activities, particularly in the smaller towns, and partly with the idea of service to his community. Both the Fire Board and municipal brigades are on the same volunteer footing, the only difference being that any allowance made to the former is usually on a more liberal basis. It is essential that any reorganization of the control of the fire service should maintain this volunteer spirit, since it would be beyond the financial resources of even the major cities to establish adequate brigades manned entirely on a professional basis.

The fact that such a large number of local authorities are prepared to shoulder the full cost of the fire-protection organization and have not taken advantage of the existing legislation to form a Fire Board, and thereby obtain the advantage of insurance contributions, indicates that there must be some serious objections to the existing legislation. So far as the local authorities are concerned, these objections appear to be, firstly, a disinclination to hand over the control of the fire brigade to another

body ; secondly, a fear that the cost of the fire-protection organization will be unduly increased ; and, thirdly, an objection to the principle under which the local authority is required to pay such levies as may be demanded by the Fire Board irrespective of the financial condition of the municipality at the time.

The first of these objections must receive due consideration in connection with any scheme for reorganization of fire-brigade control. The second objection is based on the fact that almost invariably there is a very considerable increase in costs after a Fire Board is formed, but, as explained above, this is usually due to the fact that the Board on commencing its administration is faced with expenditure on plant, equipment, and accommodation which should more properly have been spread by the municipality over the preceding years. The third objection is one which could probably be met by placing a maximum on the expenditure, which maximum could only be exceeded by the unanimous consent of the municipality, the insurance interests, and the Minister.

The basic requirements of a fire brigade — alarm system, fire-station, plant, equipment, and uniforms—are necessary irrespective of the size of the town, but as the population increases a higher standard is justified and can, of course, be supplied at a lower cost per head of population. The following list of municipal fire brigades shows the population of the town and the suggested maximum expenditure based for the purposes of consideration on an expenditure of 6s. per head for towns with a population up to 1,000, with a maximum of £200 ; 5s. per head with a population of 1,000 to 3,000, with a maximum of £500 ; 3s. per head in towns with a population of 3,000 to 6,000 ; and 2s. 6d. per head where the population exceeds 6,000. It would not, of course, be necessary to adopt this basis, but if considered more satisfactory an empirical standard adjusted to meet the views of the municipal authorities concerned could be adopted. The small Government contribution would not materially affect these figures, and for purposes of consideration the Brigade expenditure shown below can be regarded as being divided equally between local authorities and the insurance companies.

Town.	Population.	Suggested Maximum Annual Expenditure.	Town.	Population.	Suggested Maximum Annual Expenditure.
		£			£
Akaroa	510	153	Bluff	2,050	500
Alexandra	870	200	Carterton	1,940	485
Clyde	293	88	Eastbourne	2,340	500
Coromandel	844	200	Featherston	1,050	262
Cromwell	740	200	Greytown	1,190	298
Eketahuna	730	200	Havelock North ..	1,160	290
Fairlie	818	200	Henderson	1,150	288
Geraldine	950	200	Inglewood	1,270	318
Helensville	960	200	Matamata	1,370	342
Howick	780	200	Marton	2,760	500
Hunterville	390	117	Mataura	1,510	378
Kaikohe	690	200	Motueka	1,720	430
Kaikoura	703	200	Ngaruawahia	1,420	355
Kaponga	410	123	Northcote	2,370	500
Kawakawa	520	156	Paeroa	2,180	500
Kumara	480	144	Papakura	1,810	452
Leeston	560	168	Papatoetoe	2,480	500
Manaia	620	186	Patea	1,420	355
Manunui	780	200	Picton	1,380	345
Martinborough	960	200	Raetihi	1,180	295
Methven	897	200	Rangiora	2,250	500
Naseby	210	63	Reefton	1,444	361
Otorohanga	720	200	Richmond	1,140	285
Palmerston	800	200	Te Kuiti	2,520	500
Queenstown	930	200	Temuka	1,920	480
Ross	440	131	Waimate	2,310	500
Roxburgh	470	141	Waipawa	1,160	290
Shannon	950	200			
Southbrook	440	131	Ashburton	5,730	860
Tahunanui	860	200	Blenheim	5,040	756
Takaka	470	141	Gore	4,650	698
Tapanui	310	93	Lyttelton	3,230	485
Te Puke	970	200	New Brighton	5,270	791
Waiuku	850	200	Stratford	3,810	572
Waverley	680	200	Sumner	3,260	489
			Thames	4,260	639
			Upper Hutt	3,970	596
			Devonport	9,770	1,221
			Lower Hutt	16,500	2,062
			Otahuhu	9,780	1,222
			Takapuna	7,350	919

With regard to the insurance companies, the main objection is one of principle and applies even to the payments made to the existing Fire Boards. As explained in previous reports, it is claimed by many of the insurance interests that contributions to the cost of fire-brigade maintenance are not justified since insurance rates are based on the fire risk existing in individual towns and the comparative efficiency of the local fire-protection service. While this may be theoretically correct, there are so many tariff anomalies that it is far from being the case in practice.

In previous reports an endeavour has been made to show that, despite any principle involved, it is good business for the insurance companies to ensure by a reasonable contribution that the fire-brigade equipment, even in the small towns, is brought up to standard which will ensure a reasonably efficient service. To illustrate this point figures have been carefully prepared and checked by the returns made by insurance companies to the Government Statistician covering the fire loss and insurance companies' payments in fire districts. These show that, despite the fact that most of the serious fire risks are situated in these districts and the insurance tariff rates are in most cases on the lower scales, the fire losses for the past seven years, plus the insurance companies' contributions to Fire Boards, represent 36·11 per cent. of premium income as compared with fire losses alone in the remainder of the Dominion, which amount to 52·34 per cent. of premium income.

The period over which the figures have been taken—seven years—is sufficient to give a fair indication of the relative position and show that the insurance contributions to the Fire Boards are justified by the resulting reduction in fire losses. It has been explained above that the municipal brigades suffer by the comparison in respect of fire-fighting equipment, and it is evident that the existing expenditure by municipalities represents the maximum which they are prepared to face for this branch of municipal activities. There is little doubt that the insurance contribution necessary to improve the equipment of these brigades to the Fire Board standard would be equally justified by results.

It will be clear from the above that the problem of fire-brigade control is not by any means confined to the question of amalgamation of existing Fire Boards or the absorption of their functions by other local authorities. The solution will probably be found in some compromise between the Australian system of a central Fire Board and the extreme decentralization necessary under existing New Zealand legislation. It is evident from newspaper comments that considerable misunderstanding of the position exists, and the purpose of these comments is, firstly, to set out the facts, and, secondly, to suggest the factors which should be given special consideration when the problem is under review.

These may be briefly summarized as follows :—

(1) The controlling legislation should apply not only to the existing and potential fire districts, but preferably also to all towns where the water-supply conditions are suitable for fire-fighting purposes.

(2) The setting-up of separate local authorities should be avoided except where the expenditure involved, or the fact that a number of municipal areas are included, is deemed to justify an independent controlling authority.

(3) The administration and initiative should, wherever this is practicable, be left with the municipal authority for the district.

(4) The insurance interests should be represented directly on any independent controlling authorities, and in some supervisory capacity where the immediate administration is carried out by the municipality.

(5) In the case of all newly formed fire districts, the maximum expenditure should be prescribed—such maximum to be exceeded only with the unanimous consent of the municipality, the insurance interests, and the Minister.

(6) Provisions should be made to safeguard the existing standard of efficiency. It might be provided that in cases where the administration of either existing or future fire-district brigades was taken over by the municipality the onus should be placed on the latter of the maintenance of an efficient organization within the limits of maximum expenditure suggested under (5).

Service Conditions.

Considerable attention has been paid during the year to the service conditions of the professional firemen. All New Zealand brigades employing permanent staff are operating under what is known as the continuous-duty system, under which the firemen are required to remain on the station and available for fire calls at all times during their period of duty, which previously varied in different brigades from three to six days. This system is the most efficient where, as in New Zealand, the wide distribution of the urban population, and the consequent limitation of the size of the individual towns, makes it necessary for economic reasons that the permanent staff should be kept to a minimum.

Shortly after the introduction by the Government of the forty-hour-week legislation application was made to have this applied to the fire service. This application was declined by the Arbitration Court, but the matter was subsequently reviewed by the Government, with the object of giving the professional firemen an increase of leisure equivalent to that obtained by other workers under the legislation. It was recognized that the position in the fire service differed from ordinary trade-union conditions, in that the former was a disciplined force and that it was essential for efficiency that an adequate discipline should be maintained.

A conference of the Superintendents of the principal brigades employing permanent firemen was therefore called to consider the existing conditions in the service and the modifications which would be permissible within the requirements of discipline and efficiency. A conference was later called of representatives of the Fire Boards controlling these brigades to consider the recommendations made by the Superintendents' conference, and also the Government's view with regard to proposed improvements in the service conditions.

The Fire Board representatives at this conference agreed to recommend to their respective Boards the adoption of the Government proposals, both for an improved leave scale and a standardization of

other conditions of service. It was agreed that the same conditions should not apply for both the city and secondary town brigades, but that each should be standardized on a basis of the existing conditions most favourable to the men. These recommendations have since been given effect to as from 1st January, 1937, thus avoiding the necessity for special legislation. The following is briefly the effect of the alterations made :—

(1) An additional five weeks' leave annually has been granted to all permanent staff. The effect of this is that in the four main cities the firemen now receive one day's leave in four, and, in addition, eight weeks' annual leave. In the secondary towns, where the service conditions are less onerous, the day-leave is one day in five, with four weeks' annual leave.

(2) The Boards have agreed that as soon as practicable family quarters will be provided for all married men with not less than three years' service. Pending the provision of these quarters, a reasonable house allowance will be paid to these married men.

(3) In recognition of the fact that under the continuous-duty system married men are required to turn out to fire calls when on the station during leave periods, the allowance for lighting and firing, which previously applied to officers and a limited number of men only, is to be given to all married men provided with quarters.

During the course of the negotiations an application was made by some of the men's representatives for a change-over to the " platoon " system of working, which is in force in most large cities and under which the firemen are on duty alternately in day and night shifts and do not reside on the station. This was very strongly opposed by the Fire Boards. It was pointed out, firstly, that a considerable increase in cost would be involved, and it was probable that it would be uneconomic to maintain the same effective fire-fighting strength as under the existing system ; secondly, that a very large capital cost was involved in the existing fire stations, which had been built for operation under the continuous duty system and were provided with living and recreational facilities which would no longer be required if the platoon system was adopted ; thirdly, that heavy commitments for the erection of blocks of married quarters had recently been made ; and, fourthly, that the congested conditions in the business areas, which had forced the adoption of the platoon system in large cities abroad, had not been reached in New Zealand, and the accommodation provided for both married and single firemen was comparable with that available to any other class of the community.

This position was recognized by the Government, and at the Fire Board Conference the Hon. the Minister of Internal Affairs agreed that the existing continuous-duty system would be continued for a period which would justify the provision of married quarters in accordance with the undertaking given.

The effect of the adoption of the new service conditions is not yet fully apparent, but it is anticipated that at least fifty additional permanent men will be required to maintain the same effective brigade strength. This must, of course, be reflected in brigade costs, and it will be noted from Table II attached that the estimated expenditure for the current year is £181,885, as compared with £149,455 for the previous year.

Deaths and Injuries in Fires.

During the year sixteen deaths due to fires, including four children, were recorded as against fifteen for the previous year and an average of thirteen for the past five years. In addition, sixteen persons received injuries necessitating their removal to hospital for treatment, whilst minor injuries were sustained in a number of other cases both by firemen and the general public. Although no deaths resulted this year from home dry cleaning with petrol, several cases of serious injuries arose from this cause.

Causes of Fire.

In Table I attached the causes of all fires in fire districts are set out. There is very little variation from year to year in these tables, which emphasizes the fact that if carelessness with electrical equipment, heating fires, and smoking materials could be overcome more than half the fire wastage of the Dominion would be avoided. Most heavy losses arise from one of these causes occurring prior to the closing of premises for the night. It will be seen that all the serious fires during the year under review were of this type, and the returns for the past four years show that while only 46 per cent. of the fires occur during the night hours (6 p.m. to 6 a.m.) the actual fire loss is 80 per cent. of the total.

Inspections.

A number of special inspections were made during the year to discuss the application of the new service conditions with the individual Fire Boards and also with the representatives of the firemen. It has also been necessary to make special visits to discuss with the Boards and their architects the details of the new quarters which will be required to accommodate the additional personnel.

Most of the brigades were inspected during the year. Close touch was kept with the activities of all districts by means of newspaper cuttings, and, where necessary, several visits were made. The conditions found were generally satisfactory, and it is pleasing to report that most of the brigades are maintaining a high standard of training. Tests on the water-supply were made in a considerable number of towns, and recommendations made to the Boards concerned as to the development of the brigade organization and the purchase of new plant and equipment.

A number of reports were also made with regard to the fire protection of Government buildings and to the local Government Loans Board on loan proposals for fire-protection, water-supply, and water-reticulation services.

Attached are statistical tables covering both the year under review and also averages taken over a period of years.

I have, &c.,

R. Girling-Butcher,

Inspector of Fire Brigades.

Table I.—Causes of Fire.

—	Cities over 20,000 Population: Six-year Average, 1/4/31–31/3/37.						All Fire Districts: Year ending 31st March, 1937.					
	Dwellings.		Business Premises.		Total.		Dwellings.		Business Premises.		Total.	
	Number of Fires.	Loss.	Number of Fires.	Loss.	Number of Fires.	Loss.	Number of Fires.	Loss.	Number of Fires.	Loss.	Number of Fires.	Loss.
		£		£		£		£		£		£
Defective electrical installations	1·2	58	1·5	47	2·7	105	..	..	..	..	..	..
Electric irons and radiators left on	17·2	2,921	7·3	2,689	24·5	5,610	25	4,467	10	5,838	35	10,305
Short circuits and overheating	5·7	291	14·5	1,171	20·2	1,462	13	200	34	5,127	47	5,327
Other electrical faults	2·0	222	3·3	376	5·3	598	..	..	2	13	2	13
Gas-explosions	1·0	71	0·3	2	1·3	73	3	276	..	..	3	276
Gas rings, &c., left on or in contact with curtains, &c. ..	6·5	432	3·8	344	10·3	776	8	385	5	89	13	474
Defective gas-installations	3·0	89	1·0	112	4·0	201	4	263	..	..	4	263
Candles in contact with curtains, &c.	6·3	634	0·5	2	6·8	636	8	407	2	11	10	418
Lamps, stoves—overturned or exploded	2·3	101	1·2	12	3·5	113	4	352	2	43	6	395
Miscellaneous, due to naked lights	3·5	696	3·0	65	6·5	761	12	3,359	15	306	27	3,665
Defective chimneys and flues	17·8	1,480	4·5	282	22·3	1,762	20	697	14	1,536	34	2,233
Defective hearths, fireplaces, and furnaces	18·5	711	2·8	344	21·3	1,055	29	964	2	175	31	1,139
Defective hot-water systems	1·8	320	0·2	1	2·0	321	1	30	1	5	2	35
Lighted match dropped	18·0	2,898	10·3	4,784	28·3	7,682	10	699	3	722	13	1,421
Children playing with matches	7·5	230	2·3	143	9·8	373	17	197	3	280	20	477
Smoking in bed	3·7	70	..	..	3·7	70	7	321	..	..	7	321
Cigarette or cigar butts dropped	9·8	978	11·7	2,794	21·5	3,772	20	1,311	14	1,150	34	2,461
Ashes from pipes, sparks from cigarettes	2·3	108	0·5	60	2·8	168	3	87	1	18	4	105
Rats chewing matches	0·7	12	0·7	182	1·4	194	..	..	..	..	..	..
Miscellaneous causes—smoking and matches	3·3	308	1·7	319	5·0	627	9	598	8	4,012	17	4,610
Sparks from fireplaces, furnaces, &c.	33·8	3,350	11·7	1,103	45·5	4,453	54	4,630	23	1,159	77	5,789
Airing clothes before a fire	4·0	1,062	1·3	146	5·3	1,208	2	184	3	308	5	492
Ashes placed in wooden boxes, &c.	8·3	373	4·1	150	12·4	523	13	499	11	389	24	888
Heating tar, polishes, &c.	5·8	263	7·5	1,072	13·3	1,335	9	66	14	2,202	23	2,268
Spontaneous combustion	2·0	331	5·0	4,058	7·0	4,389	4	175	4	8,911	8	9,086
Allowing benzine, &c., near naked lights	7·2	382	4·8	513	12·0	895	7	265	10	834	17	1,099
Arson	4·3	462	1·8	747	6·1	1,209	3	171	..	..	3	171
Suspicious origin	8·5	3,097	5·8	8,008	14·3	11,105	4	1,869	2	254	6	2,123
Overheating of and sparks from machinery	..	..	5·3	1,532	5·3	1,532	..	..	4	283	4	283
Sparks from bush and gorse fires	3·7	146	1·2	38	4·9	184	1	1	..	..	1	1
Sparks from rubbish fires	6·3	178	3·2	167	9·5	345	5	78	10	864	15	942
Sparks from chimneys, locomotives, &c.	8·5	185	9·3	1,052	17·8	1,237	6	57	5	173	11	230
Blow-lamps used for burning off paint	15·5	597	1·7	29	17·2	626	26	1,406	4	69	30	1,475
Fires spread from other buildings	8·0	1,972	3·3	128	11·3	2,100	11	438	3	88	14	526
Miscellaneous known causes	12·0	595	19·2	1,950	31·2	2,545	25	1,218	33	8,103	58	9,321
Unknown causes	75·0	25,511	54·7	67,586	129·7	93,097	110	23,942	109	107,018	219	130,960
Total	335·0	51,134	211·0	102,008	546·0	153,142	473	49,612	351	149,980	824	199,592
Loss per fire—												
Known causes	..	98·5	..	220·2	..	144·2	..	70·7	..	177·5	..	113·4
Unknown causes	..	340·1	..	1,235·6	..	717·8	..	217·7	..	981·8	..	598·0
All causes	..	152·6	..	483·5	..	280·5	..	104·9	..	427·3	..	242·2
Unoccupied dwellings	..	381·1	..	..	..	..	..	186·4	..	..	..	..

TABLE II.—MISCELLANEOUS STATISTICS FOR FIRE DISTRICTS FOR YEAR ENDING 31ST MARCH, 1937.

District.	Population.	Rateable Capital Value.	Insurance Companies Premium Income.	Number of Fire Calls.	Fires involving Loss of Property.	Insurances on Property involved in Fires.	Insured Fire Loss, Buildings and Contents.	Uninsured Fire Loss, Buildings and Contents.	Total Fire Loss.	Authorized Expenditure for Year ending 31st March, 1937.
		£	£			£	£	£	£	£
Auckland Metropolitan	175,870	69,562,105	207,332	722	196	1,993,479	25,195	1,734	26,929	37,170
Balclutha ..	1,550	284,465	1,923	3	1	..	..	5	5	237
Birkenhead ..	3,430	764,501	3,576	10	2	700	5	15	20	590
Cambridge ..	2,230	735,290	2,953	11	3	1,700	256	45	301	487
Christchurch ..	92,700	29,669,477	101,137	326	95	472,271	17,754	838	18,592	21,960
Dannevirke ..	4,410	1,408,199	5,853	6	4	5,700	1,106	..	1,106	686
Dargaville ..	2,200	496,457	3,230	5	3	1,660	413	10	423	622
Dunedin ..	77,040	19,963,991	83,861	558	86	234,970	22,569	818	23,387	19,800
Eltham ..	1,890	371,788	1,727	..	..	..	..	..	..	537
Feilding ..	4,610	1,424,009	5,418	5	2	4,945	127	155	282	670
Foxton	1,600	256,181	1,431	9	3	1,530	440	500	940	382
Gisborne ..	13,700	4,575,783	20,174	34	16	35,965	6,515	341	6,856	3,017
Greymouth ..	8,220	1,376,423	7,944	12	6	11,325	1,185	2	1,187	1,065
Hamilton ..	19,900	5,246,345	17,138	52	14	50,665	301	18	319	4,156
Hastings ..	13,000	3,607,691	15,176	40	12	72,396	632	..	632	2,375
Hawera ..	4,700	1,356,361	6,874	17	6	6,120	201	55	256	1,800
Hikurangi ..	1,030	159,138	913	2	..	..	..	..	..	161
Hokitika ..	2,710	404,538	3,151	4	2	250	250	7	257	590
Invercargill ..	21,500	5,490,188	24,380	87	20	112,444	18,403	244	18,647	5,404
Kaiapoi ..	1,590	324,908	2,111	5	1	125	50	5	55	519
Kaitangata ..	1,360	102,192	1,168	4	2	2,210	375	75	450	126
Lawrence ..	670	57,840	680	..	..	..	..	..	..	100
Levin	2,690	769,318	3,356	4	3	1,680	663	25	688	541
Masterton ..	9,220	2,626,728	11,791	52	10	11,300	3,388	26	3,414	3,207
Milton	1,410	231,998	2,101	7	2	675	39	10	49	190
Morrinsville ..	1,850	466,401	2,395	4	..	..	..	..	..	540
Napier	15,500	4,201,927	24,450	38	16	46,781	31,294	867	32,161	4,703
Nelson	11,300	3,055,260	16,463	45	11	50,075	1,494	55	1,549	2,236
New Plymouth ..	16,900	5,128,949	17,120	35	11	25,375	1,411	130	1,541	2,526
Oamaru.. ..	7,510	1,540,513	7,636	9	5	1,780	186	281	467	1,275
Ohakune ..	1,390	98,226	1,156	4	3	1,250	665	50	715	288
Opotiki	1,460	335,919	1,927	4	2	1,207	48	..	48	450
Otaki	1,750	303,591	1,797	4	2	1,035	77	..	77	367
Pahiatua ..	1,680	369,862	3,350	6	4	5,110	1,467	..	1,467	529
Palmerston North	22,550	6,444,368	27,946	114	25	48,772	3,471	180	3,651	6,880
Petone	11,000	3,184,673	14,358	22	9	18,036	2,368	455	2,823	2,055
Port Chalmers ..	2,130	303,521	1,926	3	2	50	100	..	100	239
Pukekohe ..	2,560	815,064	2,721	11	3	4,250	20	15	35	790
Rotorua ..	6,300	1,423,128	7,528	20	4	2,605	51	55	106	1,088
Taihape.. ..	2,170	408,852	3,240	7	1	300	170	..	170	499
Taumarunui ..	2,680	673,589	2,839	16	9	8,545	3,705	1,633	5,338	520
Tauranga ..	3,540	935,158	4,336	19	4	4,075	75	65	140	654
Te Aroha ..	2,400	728,238	4,043	8	4	2,450	1,110	10	1,120	456
Te Awamutu ..	2,300	680,149	3,019	7	1	..	..	20	20	576
Timaru	17,500	4,827,650	17,069	41	13	7,320	541	509	1,050	3,306
Waihi	3,950	292,566	2,582	21	7	6,020	317	138	455	595
Waipukurau ..	2,070	462,129	2,730	5	2	20	3	2	5	400
Wairoa	2,530	546,662	3,613	11	5	6,585	1,662	200	1,862	716
Waitara ..	1,990	334,927	2,231	1	1	930	680	..	680	230
Wanganui ..	23,200	6,013,313	29,870	122	22	22,922	1,968	251	2,219	8,097
Wellington ..	116,700	44,059,010	170,814	839	144	700,134	33,425	832	34,257	33,400
Westport ..	4,250	546,720	4,167	9	6	7,410	2,116	10	2,126	700
Whangarei ..	7,230	2,360,615	7,942	15	5	2,740	320	70	390	980
Woodville ..	1,040	168,807	1,297	4	2	1,000	105	120	225	398
	766,660	241,975,701	925,963	3,419	812	3,998,887	188,716	10,876	199,592	181,885

Table IIIa.—Average Statistics for all Fire Districts which have been in Operation for the Fourteen Years 1924–37.

District.	Population.	Municipal Rates.	Rates per Head.	Insurance Premiums.	Insurance Premiums per Head.	Number of Fires.	Fires per 1,000 of Population.	Highest Fire Loss in any Individual Year.	Fire Loss.	Fire Loss per Head.	Loss per Fire.	Fire Brigade Expenditure.	Expenditure per Head.	District.
	£	£	£ s. d.	£	£ s. d.			£	£	£ s. d.	£	£	s. d.	
Auckland Metropolitan*	130,304	639,203	4 18 1	179,597	1 7 7	191	1·46	114,709	62,949	0 9 8	330	24,268	3 9	Auckland Mtrpltn.*
Balclutha	1,570	3,721	2 7 5	2,031	1 5 11	2	1·32	7,090	841	0 10 9	406	322	4 1	Balclutha.
Christchurch	88,417	234,638	2 13 1	112,031	1 5 4	131	1·48	95,575	41,329	0 9 4	316	12,596	2 10	Christchurch.
Dannevirke	4,406	11,300	2 11 3	7,535	1 14 2	6	1·39	8,680	1,055	0 4 9	172	692	3 2	Dannevirke.
Dargaville	2,061	12,455	6 0 10	3,573	1 14 8	5	2·29	4,655	2,107	1 10 5	447	549	5 4	Dargaville.
Dunedin Metropolitan	69,032	194,056	2 16 2	80,388	1 3 3	106	1·53	59,793	26,568	0 7 8	251	14,068	4 1	Dunedin Mtrpltn.
Feilding	4,447	16,219	3 12 11	6,630	1 9 10	6	1·30	5,044	1,672	0 7 6	289	720	3 3	Feilding.
Foxton	1,729	4,820	2 15 9	1,822	1 1 1	4	2·15	6,830	2,451	1 8 4	661	460	5 4	Foxton.
Gisborne	13,855	62,010	4 9 6	23,077	1 13 4	22	1·56	24,240	11,093	0 16 0	516	2,455	3 6	Gisborne.
Greymouth	6,337	17,301	2 14 7	7,510	1 3 8	9	1·41	32,174	8,524	1 6 11	951	1,022	3 3	Greymouth.
Hamilton	15,396	59,072	3 16 9	20,792	1 7 0	20	0·80	25,746	4,260	0 5 6	345	2,737	3 7	Hamilton.
Hastings	11,478	36,272	3 3 2	16,080	1 8 0	18	1·56	24,504	7,179	0 12 6	402	1,817	3 2	Hastings.
Hawera	4,676	15,576	3 6 7	7,781	1 13 3	8	1·66	11,876	1,808	0 7 9	232	1,189	5 1	Hawera.
Hokitika	2,523	3,907	1 11 0	2,921	1 3 2	5	1·96	8,591	2,465	0 19 6	498	591	4 8	Hokitika.
Invercargill	19,647	71,361	3 12 8	23,477	1 3 11	36	1·83	47,221	13,533	0 13 9	377	5,270	5 4	Invercargill.
Kaiapoi	1,708	2,238	1 6 2	2,393	1 8 0	4	2·30	25,984	3,567	2 1 9	910	649	7 7	Kaiapoi.
Kaitangata	1,467	1,690	1 3 0	1,115	0 15 2	2	1·22	4,343	883	0 12 0	493	159	2 1	Kaitangata.
Lawrence	663	1,297	1 19 1	714	1 1 7	1	1·93	3,770	421	0 12 8	329	92	2 9	Lawrence.
Levin	2,599	6,255	2 8 1	3,782	1 9 1	5	1·90	9,745	2,047	0 15 9	416	617	4 9	Levin.
Masterton	8,630	27,405	3 3 6	12,668	1 9 4	13	1·51	18,539	5,899	0 13 8	454	2,048	4 9	Masterton.
Milton	1,517	4,040	2 13 3	2,198	1 9 0	1	0·94	1,000	155	0 2 0	109	184	2 5	Milton.
Napier	15,868	57,666	3 12 8	27,146†	1 14 3‡	21	1·30	32,161	11,407‡	0 14 3	551	4,014	5 1	Napier.
New Plymouth ..	15,446	55,674	3 12 1	18,750	1 4 3	16	1·04	9,593	4,901	0 6 4	306	1,987	2 7	New Plymouth.
Oamaru	7,442	26,495	3 11 2	7,974	1 1 8	7	0·92	23,878	4,221	0 11 4	616	1,077	2 11	Oamaru.
Ohakune	1,470	2,353	1 12 0	1,374	0 18 9	5	3·54	11,825	3,191	2 3 5	612	413	5 7	Ohakune.
Palmerston North ..	20,268	71,659	3 10 9	30,633	1 10 3	35	1·73	31,637	12,759	0 12 7	365	4,039	4 0	Palmerston North.
Petone	10,396	26,383	2 10 9	13,385	1 5 9	9	0·88	5,070	1,794	0 3 6	196	1,689	3 3	Petone.
Port Chalmers ..	2,516	4,538	1 16 0	2,227	0 17 9	3	1·12	2,135	735	0 5 10	260	245	1 11	Port Chalmers.
Rotorua	5,143	9,358	1 16 5	7,026	1 7 4	9	1·71	7,416	2,519	0 9 10	287	1,065	4 2	Rotorua.
Taumarunui	2,494	8,274	3 6 4	3,235	1 5 11	6	2·61	7,942	2,249	0 18 0	345	520	4 2	Taumarunui.
Tauranga	2,915	7,926	2 14 3§	4,213§	1 8 11	4	1·49	11,457	2,506	0 17 2	576	647	4 5	Tauranga.
Te Aroha	2,427	6,347	2 12 4	3,823	1 11 5	4	1·74	4,426	1,774	0 14 7	419	596	4 11	Te Aroha.
Timaru	16,553	54,533	3 5 11	17,845	1 1 9	17	1·03	19,457	4,873	0 5 11	285	2,516	3 0	Timaru.
Waihi	3,476	4,796	1 7 7	2,795	0 16 1	10	2·85	5,909	2,761	0 15 11	278	688	4 0	Waihi.
Waitara	1,838	4,306	2 6 10	2,513	1 7 4	2	0·86	5,044	1,568	0 17 1	992	232	2 6	Waitara.
Wanganui	24,309	97,688	4 0 5	34,591	1 8 6	37	1·53	14,074	7,964	0 6 7	214	7,044	5 10	Wanganui.
Whangarei	6,987	25,413	3 12 9	8,052	1 3 0	8	1·11	36,569	5,683	0 16 3	723	1,009	2 11	Whangarei.
	532,010	1,888,245	3 11 0	703,697	1 6 7	787	1·48	..	271,711	0 10 2	346	100,286	3 9	
Thirteen years' average, whole Dominion	1,491,813	5,383,290	3 12 2	1,848,152	1 4 9	4,715	3·16	1,636,119	1,016,124	0 13 7	216	..	..	Thirteen years' average, whole Dominion.

* Includes statistics for Onehunga, Mount Roskill, and Newmarket Fire Boards from date of inception to date of incorporation in Auckland Metropolitan Fire Board. † Ten-year average. ‡ Thirteen-year average. § Eleven-year average.

Table IIIB.—Average Statistics for other Fire Districts.

District.	Period of Average. (Years.)	Population.	Municipal Rates.	Rates per Head.	Insurance Premiums.	Insurance Premiums per Head.	Number of Fires.	Fires per 1,000 of Population.	Highest Fire Loss in any Individual Year.	Fire Loss.	Fire Loss per Head.	Loss per Fire.	Fire Brigade Expenditure.	Expenditure per Head.	District.
			£	£ s. d.	£	£ s. d.			£	£	£ s. d.	£	£	s. d.	
Birkenhead ..	5	3,428	12,578	3 14 0	4,014	1 3 5	2	0·46	802	227	0 1 4	143	514	3 0	Birkenhead.
Cambridge ..	6	2,195	7,724	3 10 5	3,165	1 8 10	3	1·38	3,175	1,332	0 12 2	440	470	4 3	Cambridge.
Eltham	13	2,017	6,515	3 4 7	2,509	1 4 11	3	1·56	2,672	989	0 9 10	314	447	4 5	Eltham.
Hikurangi ..	9	1,190	2,279	1 18 4	1,120	0 18 10	1	1·11	1,204	377	0 6 4	286	214	3 6	Hikurangi.
Morrinsville ..	1	1,850	8,834	4 15 6	2,395	1 5 11	..	..	..	..	..	..	622	6 10	Morrinsville.
Nelson	4	11,252	36,495	3 4 10	16,362	1 9 1	11	1·02	3,924	2,084	0 3 8	182	2,152	3 10	Nelson.
Opotiki	8	1,347	3,964	2 18 10	2,031	1 10 2	3	2·23	3,609	800	0 11 11	267	530	7 10	Opotiki.
Otaki	12	1,634	4,629	2 16 8	1,872*	1 2 11	3	1·99	6,659	1,346	0 16 6	414	346	4 3	Otaki.
Pahiatua	11	1,552	4,131	2 13 3	3,366	2 3 5	3	1·81	11,775	2,532	1 12 7	901	394	5 1	Pahiatua.
Pukekohe	11	2,519	12,500	4 19 3	3,142	1 4 11	3	1·06	5,680	763	0 6 1	286	685	5 5	Pukekohe.
Taihape	7	2,379	9,208	3 17 5	3,657	1 10 9	1	0·60	856	199	0 1 8	139	525	4 5	Taihape.
Te Awamutu ..	10	1,928	9,974	5 3 6	3,319	1 14 5	3	1·56	4,510	1,047	0 10 10	349	494	5 1	Te Awamutu.
Waipukurau ..	11	1,976	6,324	3 4 0	3,065	1 11 0	4	1·84	7,167	1,596	0 16 2	438	345	3 6	Waipukurau.
Wairoa	11	2,475	10,264	4 2 11	4,082	1 13 0	5	2·02	101,707†	11,854†	4 15 10	2,371	557	4 6	Wairoa.
Wellington ..	11	110,682	470,390	4 5 0	186,669	1 13 9	180	1·63	294,070	82,900	0 15 0	454	28,370	5 1	Wellington.
Westport	13	3,994	9,273	2 6 6	4,262	1 1 4	5	1·35	11,989	3,238	0 16 3	604	643	3 3	Westport.
Woodville	6	1,093	2,742	2 10 2	1,401	1 5 8	3	2·59	4,116	1,228	1 2 6	434	364	6 8	Woodville.

* Seven-year average. † Fire-loss figures corrected in accordance with returns supplied subsequently.

Table IV.—Areas protected by Fire Boards.

District.	Population.	Rateable Capital Value.	Number of Fire Calls.	Fires involving Loss of Property.	Insured Fire Loss, Buildings and Contents.	Uninsured Fire Loss, Buildings and Contents.	Total Fire Loss.	Protected by	Remarks.
		£			£	£	£		
Belfast (works only) ..	..	..	..	..	..	..	..	Christchurch Fire Board ..	Payment for attendances.
Fairfield	..	..	2	1	8	..	8	Hamilton Fire Board ..	County pays £25 p.a. plus £5 for every call in excess of five.
Feilding (works only) ..	..	..	..	..	..	..	..	Feilding Fire Board ..	Payment for attendances.
Hamilton (hospital only) ..	..	..	..	..	..	..	..	Hamilton Fire Board ..	Nominal payment.
Hawera	605*	210,000*	..	..	..	..	..	Hawera Fire Board ..	County pays £75 p.a. to Fire Board.
Mangere	765*	522,000*	..	..	..	..	..	Auckland Metropolitan Fire Board ..	County pays £75 p.a. plus £5 for every call in excess of ten.
New Lynn	3,540	507,942	..	..	..	..	..	Auckland Metropolitan Fire Board ..	Borough pays £100 p.a. plus £5 for every call in excess of ten.
Cashmere ..									County pays £300 p.a. to Fire Board.
Fendalton ..	11,850*	3,824,638*	41	15	3,237	..	3,237	Christchurch Fire Board ..	County pays £450 p.a. to Fire Board.
Riccarton ..									Borough pays £450 p.a. to Fire Board.
West Harbour (works only)	..	..	1	..	..	..	..	Dunedin Metropolitan Fire Board ..	Payment for attendances.
	16,760	5,064,580	44	16	3,245	..	3,245		

* Estimated.

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