1945

NEW ZEALAND

FIRE BRIGADES OF THE DOMINION

(REPORT ON THE) 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. the MINISTER OF INTERNAL AFFAIRS.

Office of the Inspector of Fire Brigades,
Wellington, 18th September, 1945.

SIR,—

I have the honour to submit the thirty-fourth annual report on the working of the Fire Brigades Act, 1926. This report covers the period from 1st April, 1940, to 31st March, 1945. Annual reports have not been submitted in the intervening period because it was inadvisable for security reasons to comment on the activities of the fire service during the emergency period. It was considered that without this comment the reports would have been merely a collection of statistics of very limited value.

There is some difficulty in presenting a reasonably true perspective of the frequently changing events of the war years. It is considered that the best method of doing this is to set out the facts in narrative form and then discuss the individual aspects in more detail under appropriate headings. The paragraphs have been numbered to simplify cross-reference.

EMERGENCY ORGANIZATION

1. The conditions in New Zealand for the first year of the present war were similar to those of World War I. The only special fire-service activities necessary were the provision of fire-protection facilities for the Service camps and of crash-tenders and trained personnel for the R.N.Z.A.F. training stations. Soon after the collapse of France, however, it was known that enemy raiders had reached the Pacific and it was suspected that these were obtaining supplies, if not active support, from the Japanese. It therefore became necessary to consider the possibility of a nuisance raid being made with the object of immobilizing to some extent the main ports and generally impeding the war effort. The means of effective defence were lacking and could not then be obtained, since the development of the Battle of the Atlantic and the entry of Italy into the war made it necessary to concentrate the Empire Forces and war material in Britain and the Middle East.

2. The Pacific countries had therefore no option but to make whatever provision was possible against attack, and to hope for the best. It was thought at the time, and this view was held until the later months of 1941, that if an attack did come, it would at most be of cruiser strength, although it might be accompanied by incendiary attack from cruiser-borne aircraft. War Cabinet therefore directed that consideration should be given to the fire defence of the principal ports. A Technical Committee consisting of the six Senior Brigade Superintendents—Messrs. W. L. Wilson (Auckland), C. A. Woolley (Wellington), A. Morrison (Christchurch), R. H. Price (Dunedin), N. M. Ross (Wanganui), and F. H. Simpson (Invercargill)—was set up under the Chairmanship of the Inspector of Fire Brigades to go into the question. The Committee was directed to prepare three alternative proposals: Scheme A, to cover the requirements of a severe earthquake such as that at Napier in 1931; Scheme B, to cover an enemy attack on a cruiser or merchant-cruiser scale; and Scheme C, to cover a full-scale aircraft-carrier attack. The report, which was submitted at the end of October, 1940, formed the basis of the organization subsequently developed, and, although we did not know this at the time, its recommendations paralleled very closely, but on a smaller scale, the organization developed in Britain as the result of the first fire "blitz."

3. Fire defence against air attack presents an entirely different problem from peacetime fire-fighting. Major fires requiring the use of the full strength of the regular brigades are infrequent under ordinary conditions, and no fire brigade is organized to deal with more than one such fire at a time. The object of incendiary air attack is to cause simultaneously as many such fires as possible—nor is this the worst feature to be expected, since, in order to disorganize the defence, incendiaries are usually accompanied by high-explosive bombs. These are designed to put the water-supply out of commission, to do as much other damage to personnel and property as possible, and, by obstructing the streets, to make access to the fires difficult. The organization required for defence against this attack is a force of highly trained personnel many times the strength of the peacetime brigades, plus the plant and equipment necessary for pumping large volumes of water overland from static supplies (such as the sea-front, rivers, ponds, and special emergency tanks) and for delivering it at high pressure and in large streams on to the incendiary fires.

4. The Government accepted the recommendations of the Technical Committee, and orders were placed for the necessary equipment. Regulations were issued early in 1941 constituting an Emergency Fire Service and providing for co-ordination between this unit and the regular brigades. On the advice of the Chiefs of Staffs, the organization was developed on a modification of Scheme B and confined to the principal cities and larger ports, which were thought to be the only likely objects of a cruiser attack. Details are set out below, and it is sufficient to say here that by December, 1941, when Japan entered the war, the first order of 80 locally manufactured trailer pumps had been delivered and an emergency unit of 1,470 members had been recruited, equipped, and given the initial training. The standard of efficiency attained up to that time was limited by the supply of fire hose available. It will be seen below that we were unfortunately very short of hose when the war broke out, and during the fire "blitz" period in England in 1940 and 1941 we could not press our request for supplies. Pumps, transport, and most other equipment could have been improvised had the necessity arisen, but the shortage of hose was a definite bar to full efficiency. An ample hose-supply is essential for quick attack on incendiary fires which get beyond the "first-aid" stage, and until the later part of 1942 it was necessary to limit the training so that a proper balance was kept between training requirements and the conservation of hose for operational purposes.

5. The Technical Committee in preparing Scheme B, having in mind the problem of attack on a cruiser standard only, had recommended that the major fire-fighting provision be confined to the waterfront and business sections of the cities and towns, since these were considered the most likely objects of such an attack. It proposed that the fire defence of the residential areas should be left, so far as practicable, in the hands of mobile patrols equipped with bucket pumps and first-aid apparatus and supported by a limited number of detachments trained and equipped to operate from the mains. In the larger cities and most of the secondary ports the layout of the water-supply and reticulation is such that a complete breakdown in the suburban areas is not to be anticipated save under conditions of saturation attack, which could not be made by a cruiser force. Arrangements were made in all cases for men with special training to be available in case of attack to close down the water-supply valves as requisite.

6. The standard of efficiency reached by the 1941 organization must not be unduly discounted. The enthusiasm of the personnel, who were mostly young married men in the large-family classifications, compensated to some extent for the limitation of equipment. Both officers and men of the regular brigades co-operated to the full in the training of the Emergency Service, and it might fairly be said that by the end of 1941 it had reached a standard of efficiency reasonably adequate for the type of attack it was designed to meet. It had not been possible to develop the organization beyond the purely local stage and no provision had been made for reinforcement. It was nevertheless considered at the time, and subsequent events have not altered this opinion, that it would have been able to deal with the type of attack expected—say, a maximum of three or four major fires in Auckland and Wellington, and two in the other vulnerable centres.

JAPANESE WAR

7. Some consideration had been given during the later months of 1941 to the question of fire-defence requirements should Japan enter the war. The whole position was reviewed following the attack on Pearl Harbour. It was clear that there was increased danger of enemy attack and that even a nuisance raid might be on an aircraft-carrier scale. It must be remembered that at this stage New Zealand had neither the effective air-raid-warning devices, nor had we the ships and communications system to prevent or give early warning of the advance of enemy shipping into New Zealand waters. The paradox existed that, despite our isolation, and to some extent because of it, we might have no more notice of an air attack, should one be made, than the British cities, which were only a few miles from the enemy aerodromes. An air attack was not, as in Britain, to be regarded as certain or even probable, but there was a possibility of it too definite to be disregarded.

8. It was this uncertainty which constituted the principal difficulty in organizing the fire defence. It had been clearly shown in Britain that the initial attack on incendiary fires by the civilian population was the most important single factor in the defence. If the fires are allowed to get beyond the incipient stage, the fire-fighting crews, with all their equipment, can at most limit the effects of the fire to one building, block, or area. Even in 1942 it was clear—and this aspect has been emphasized by subsequent experience both in Europe and in the Pacific—that in modern warfare the first attack is invariably from the air and intended to destroy or disorganize the civilian manufacturing, transport, supply, and communication centres on which the armed Services depend. It seemed to those responsible that the civilian public quite failed to realize during the months of 1942 the implications on themselves of the defence measures—the creation of a large home-service Army, erection of fortifications and beach defences, the provision of operational air squadrons, the erection of road blocks, &c.—being made by the Armed Forces from one end of the country to the other. The opinion expressed by many people was: "There won't be an attack on New Zealand and, even if there is, it won't affect us." It was not until compulsion was applied by emergency regulations that a reasonably effective fire defence was developed even in the principal centres most liable to attack.

9. This attitude is in marked contrast to the energy and enthusiasm displayed not only in the fire service, but by the workers in Civil Defence organizations, which were rapidly established both in town and country. Following on the December discussions, a conference of senior Fire Brigade Superintendents and representatives of the controlling authorities was held at the beginning of January, 1942. The measures necessary to meet the new threat were fully discussed and decisions made as to the equipment and organization necessary and practicable. During the following months effect was given to the recommendations of this conference on the lines indicated below.

10. *First-aid Equipment.*—We had no definite information at the time as to the type of incendiary attack to be anticipated. The indications were that, in part at least, it would involve the use of magnesium incendiary bombs of similar type to those used in the European war. It was decided to standardize for civilian operation on the bucket pump. This is a modification of the stirrup pump, which had proved so effective in Britain, in which the same type of pump is permanently fitted in a 4-gallon water container. It was considered that, if an attack did not eventuate, this equipment would have definite value for post-war fire protection. The bucket pumps were purchased by the Government and supplied at cost price to the local authorities in the vulnerable centres for sale to the public.

Emergency regulations were issued requiring owners of business premises to install this equipment on requisition, and, in view of the limited quantity available, sale was limited to this purpose. The necessary materials for manufacture of the pumps could not be obtained from abroad immediately, and arrangements had to be made to cover the intervening period. The standard bucket pump is fitted with a 25 ft. length of ½ in. rubber hose. A large supply of this hose was imported from Australia, and lengths from 25 ft. upwards were made available for the interim protection of business premises. A tap adaptor which could be fitted to either threaded or plain water-taps up to ¾ in. was developed, and supplies of these were made available at the same time. Both adaptors and bucket pumps were fitted with a standard ½ in. hose connection, the intention being that when the bucket pumps were manufactured the hose could be used from either tap or pump as circumstances dictated. The adaptor also made possible the use of ordinary garden hose from kitchen or bathroom taps for the protection of residential property. In addition to this equipment, supplies of wooden shovels and sand containers were supplied on the same basis for the alternative method of dealing with magnesium incendiaries.

11. *Fire Patrols.*—In New Zealand cities the residential areas offered a different fire-defence problem from those in Britain or the Continental cities. The dwellings are mostly of wooden construction, but they are, with few exceptions, completely detached buildings. The conflagration risk is probably no higher, despite the more inflammable construction, while the greater dispersal makes them unprofitable targets in comparison with the shipping, business, and industrial sections of the city. It was therefore decided to rely for their defence on an extension of the patrol system previously organized, plus an educational campaign directed at the improvisation of domestic first-aid fire-fighting equipment.

12. *Fire-watching.*—The fact that the warning might be limited and that commercial and shipping areas would almost certainly be the objectives made it necessary to develop a positive defence for all commercial buildings on lines similar to those which had proved successful in Britain. It was considered that in the secondary cities and ports there were sufficient people resident within reasonable distance of the business area to provide civilian fire parties for commercial and industrial buildings at short notice. Arrangements in these centres were therefore confined to the maintenance of a fire patrol and to the allocation of duties to suitable personnel living adjacent to commercial buildings, and their exercise in assembly and operation by means of test alarms. The same factors also applied in the main to the principal South Island cities—Christchurch and Dunedin. Their geographical position and limited shipping facilities made them unsuitable for development as bases for the Pacific war, and it was thought unlikely that they would be the objectives of the initial attack. Their general fire defence was consequently established on the same basis as in the secondary centres. It was recognized, however, that the commercial areas in these cities were sufficiently large to offer serious fire problems, and the Civil Defence authorities were required to make all preliminary arrangements for a regular fire-watching scheme.

13. Auckland and Wellington are not only the principal ports and industrial and business centres, but at an early stage in the Japanese war it became evident that they would function as bases for the American Forces operating in the Pacific. It was therefore almost certain that, if an attack did come, they would be the No. 1 objectives. It was manifestly impracticable, in the absence of prolonged warning of attack and under black-out conditions, to mobilize effective fire defence of the commercial buildings from personnel in the scattered residential areas. It was realized that the organization of the necessary fire parties required a vast amount of detailed work, both in the provision of accommodation and equipment and in the allocation, rostering, and training of personnel. Circumstances in New Zealand did not justify the same standard of preparedness as in Britain or the impressment of women, but it was decided that in these two cities at least a skeleton fire-watching system should be developed on an active basis—at least to the stage of providing resident fire-watchers and training them on a practical basis with the wardens and other Civil Defence units.

14. Fire-watching is a monotonous and, except during an actual attack, purposeless job. It is by far the least interesting and most burdensome of the civilian's wartime duties. The organization of the service took time and a great deal of work. Many difficulties had to be overcome, and the Civil Defence authorities are entitled to every credit for proceeding with it in the face of much opposition, both active and passive, from the people concerned. They set out to establish a partial service only, but one which could be readily expanded should the necessity arise. The duty personnel were not required to do active watching excepting during exercises. It must be admitted that some mistakes were made and, since the whole organization was developmental and designed against possible attack and not one certain and imminent as in Britain, there were at any stage bound to be inconsistencies and even absurdities to which critics could point. It is safe to say that had a vote of the fire-watching personnel been taken, 90 per cent. would have classified it as a waste of time and money. It was not. Most of our commercial buildings are of wooden interior construction with inflammable contents. Even most fire-resisting buildings have no protection against lateral fire exposures. No fire service could, by itself, deal with the results of incendiary attack under such conditions. The only way to save the cities from destruction under incendiary attack was to have fire-watchers on duty to deal with incipient fires when the attack took place. If the warning period was insufficient to assemble the personnel, then there was no option but to have them resident in the area. The Civil Defence authorities simply recognized this fact and acted on it. They required the continuance of active duties no longer than was necessary. By the time the American successes in the Solomons and the Coral Sea had reduced within reasonable limits the threat of attack, an effective fire-watching system had been established. It could be brought into operation again at any time should the war position deteriorate, and a stand-down was therefore ordered at the earliest safe moment.

15. *Fire Service Equipment.*—The threat of attack on a major scale made it necessary to provide against the probability of the breakdown of the water-supply in the commercial areas and to give effect fully to Scheme C. Further orders were placed for both the standard and large trailer pumps and for ancillary equipment, hose-laying appliances, transport vehicles, and fire hose. Strong representations were made to the British authorities for the early delivery of the latter, which was now justified by the improved fire-protection position in Britain. Difficulty was experienced in obtaining motor-vehicles owing to the heavy impressment by the Armed Services. A reasonable degree of mobility of even the billeted section of the Emergency Fire Service was only achieved by recruiting into the E.F.S. drivers of taxis and commercial trucks. Their vehicles were fitted up with towing attachments and were used on the same roster system as the billeted personnel. It was not until a very late stage in the organization that permanent motor-vehicles were made available even for the more urgent requirements such as hose-laying.

16. *Mobilization of the Emergency Fire Service.*—It will be seen from the note below that the whole of this Service had been organized on a part-time basis. In the principal centres the same difficulties applied to the emergency firemen as to the assembly, after the alarm, of the fire-watchers (paragraph 13). It was therefore decided, both for this reason and to step up the standard of training, to effect a partial mobilization. Practically all the personnel were engaged in essential industry and were therefore not available for full-time duty unless the Fire Service was placed on the same man-power basis as the Army. The arrangement made was that the men were allowed to continue at their ordinary work, but were regarded as being on continuous duty and required to wear uniform at all times. Action stations were established both in the commercial and residential areas, at which pumps and equipment were stored. A sufficient number of these was provided with billeting arrangements, and a proportion of the personnel (one-third at Auckland and Wellington and one-fifth at Christchurch and Dunedin) were required to report direct to action stations after leaving their work throughout their week's tour of duty. During working-hours all personnel were required to report on alarm to the regular fire-station or emergency action station nearest to their place of occupation. The men not on billeted duty were rostered to the suburban action stations nearest to their homes under instructions to report there on the sounding of the siren. The billeted crews were required to do not less than fourteen hours' training—either lectures or practical work—during each week's tour of duty. In the secondary centres the Service was not mobilized, it being considered that an effective turnout could be obtained by the men reporting on the alarm to the action stations nearest to their homes or place of business.

CO-ORDINATION AND REINFORCEMENT

17. The regulations which constituted the Emergency Fire Service in 1941 provided for the appointment of Dominion Fire Controller and four District Fire Controllers (the positions were filled by the Inspector of Fire Brigades and Messrs. W. L. Wilson, C. A. Woolley, A. Morrison, and F. C. Laidlaw). It had been recognized that it would be impracticable, and for that matter unnecessary, to provide in each vulnerable centre sufficient equipment and trained personnel to give reasonable protection against incendiary attack on a major scale. The intention was that the Fire Services should be organized parallel with, rather than as an integral part of, the general Civil Defence services. Each local Fire Service unit, consisting of combined regular and emergency personnel, would thus operate with and under the control of the local Civil Defence officers in the event of local attack, but would be under the orders of the District Fire Controller for reinforcement if the attack occurred elsewhere or the tactical situation necessitated this. With the entry of Japan into the war the question of reinforcement became an urgent one. It was at this stage that the disadvantages from an emergency standpoint of the extremely decentralized control of our regular fire service became apparent. Most of the controlling authorities, both Fire Boards and municipalities, were insistent that their fire-service units would not be made available for service elsewhere until they were themselves satisfied that the attack would not extend to their district. The only concession that could be obtained was that during the extreme hose shortage of the early months of 1942 it was agreed that a limited proportion of the hose-supply, together with any regular or auxiliary brigadesmen surplus to immediate local requirements, were to be made available immediately on request from the centre attacked.

18. A conference of the District Fire Controllers and the District E.F.S. Commanders was therefore called to consider the position. The following recommendations were made to Government:—

(1) That the District (Regional) Fire Controllers should be relieved of regular fire-brigade duty and properly empowered to organize and enforce the necessary reinforcement system within their respective districts. It was proposed that these should correspond with the Civil Defence regional areas then being set up.

(2) That the Regional Fire Controllers so appointed should have complete operational control within their districts.

(3) That the Dominion Fire Controller should be responsible for administration, equipment supply, inter-regional communications, and general co-ordination, but not for operational control.

(4) That the necessary staff should be provided at both headquarters and regional levels.

19. Arrangements had been made early in 1942 for an officer to be seconded from the National Fire Service in Britain to advise on fire-defence matters. This officer, Assistant Fire Force Commander A. D. Wilson, arrived in New Zealand shortly after the above recommendations were made. His report confirmed them in general, but recommended the appointment of a headquarters technical officer for operational control in addition to the administrative headquarters, an increase in the supply of fire hose and large pumps, and the mobilization of 200 of the emergency personnel on a full-time basis with a corresponding reduction in the part-time emergency staff. He also recommended the concentration of equipment in multiple-unit stations and the adoption of the system of communications which had proved effective in Britain. He confirmed the recommendations previously made as to supply of transport and equipment.

20. No action was taken to give legislative effect to the recommendations from either source. This was due in the first instance to delays arising from the reversion from War Administration to War Cabinet control of defence activities and, after the end of 1942, to the improved position in the Pacific war area. This, and the installation of radar equipment, justified a more sanguine view of the fire-defence position. A memorandum setting out the principal recommendations made was, however, sent from Civil Defence Headquarters in August, 1942, to all brigade-controlling authorities and Civil Defence district headquarters. This stressed the importance of ensuring adequate and immediate reinforcement of the Fire Service in any centre attacked and solicited the sympathetic co-operation of both the Civil Defence and brigade-controlling authorities. Arrangements were made for each District Fire Controller to make a complete inspection of his district, and the general powers given by the 1941 regulations were utilized by the Dominion Fire Controller to give such preliminary effect to the recommendations as was practicable without specific legislative authority.

NATIONAL FIRE COUNCIL

21. It had been pointed out to Government in 1942 that the district control and reinforcement scheme would not be effective unless it obtained the full co-operation of the controlling authorities and both branches of the regular fire service. It was therefore recommended that the implementing regulations should provide for the setting-up of an administrative body containing representatives both of the Fire Boards and the local authorities and also of the Service organizations. It was

suggested that this body should act with the Minister of Civil Defence in giving effect to the proposals. For the reasons stated in paragraph 20 no regulations were in fact made. In the early months of 1943, however, the Government had to make decisions, firstly, to determine the emergency organization then required to meet the possibility—fast becoming more remote—that the Pacific war position might deteriorate; secondly, the special measures necessary for the fire protection of war storage areas, munition dumps, hospitals, and of manufacturing premises vital to the war effort; thirdly, regarding the change-over from emergency to post-war conditions; and fourthly, the utilization to best advantage of the equipment prepared for emergency purposes. It was therefore decided to set up a National Fire Council to advise the Minister on these matters. The constitution decided upon was three members representing the Fire Boards' Association and one representative each of the Municipal Association, the United Fire Brigades' Association, and the Fire Brigade Union Federation, with the Minister of Civil Defence as Chairman.

22. This Council worked under the handicaps that it had no legislative status, that its function was advisory and not administrative, that it was unable to bind the organizations it represented, that it was not concerned with the regular service except in its relation to the emergency organization, and that it was formed at too late a stage in the emergency. Despite this, it rendered really valuable service. Prior to its formation, all decisions regarding the Fire Service had been made by or issued through the Dominion Fire Controller. It will be noted that the recommendations made by the Fire Service officers in 1942 had not been given effect to and the man-power position (paragraphs 36 to 40) had been unsatisfactory to the Service throughout the emergency period. It was not possible for security reasons to broadcast the purpose and effect of the decisions made, and in a wholly decentralized service such as this there was under these conditions bound to be misunderstanding and resentment. The representative character of the National Fire Council made its recommendations reasonably acceptable both to the controlling authorities and, on the whole, to the regular service. This aspect apart, most of the members had had considerable experience of fire-service administration and their advice and assistance was of considerable practical value.

23. The Council functioned only between May and September, 1943. Its deliberations traversed the proposals submitted to Government by the Service officers in 1942 and also Mr. A. D. Wilson's recommendations. Although the improvement in the war situation during this period made any action unnecessary, it approved in principle an emergency organization something between the two proposals. The basis of district control was adopted, but instead of a headquarters officer with operational control it recommended the employment of a technical officer for inspection and liaison work. The difficulties of wartime operation with the multiplicity of brigade-controlling authorities were recognized, and the Council recommended that the necessary legislative provisions should be made both for its own constitution as an administrative controlling authority and for the necessary powers for the Regional Fire Controllers.

24. In its deliberations on technical matters the Council was assisted by a Fire Service Committee consisting of the four District Fire Controllers and one representative each of the Superintendents and Deputy Superintendents' Union and of the United Fire Brigades' Association. The questions traversed in connection with the emergency organization included the regular brigade strength, both normal and for war requirements, the allocation of man-power to the Service, the status, billeting, and gradual release of the Emergency Fire Service, systems of alarm, brigade auxiliary units in non-vulnerable centres, the position of the Fire Service in the Civil defence organization, type and quantity of fire-fighting equipment required, allocation of emergency equipment to country fire brigades, disposal of surplus fire-fighting equipment, standardization of hydrants, waterways, couplings, and fire-brigade equipment, and standardization of drills and training.

TRANSITIONAL PERIOD

25. During the latter part of 1942 this country had been established as an attacking base for the American Forces in the Solomons. In addition to taking over existing stores, offices, and other buildings for Service requirements, large wooden storage blocks and hospitals were erected in 1942–43 in the suburban areas of Auckland and Wellington. These constituted fire risks which were not only of first rank by reason of their importance to the war effort, but which also required special treatment because of the temporary construction and their location in districts in which the ordinary water-supply reticulation was inadequate for fire-protection purposes. It was therefore necessary to continue in these districts the arrangements for overland operation from static water-supplies which had been prepared against enemy attack, long after the emergency was over.

26. At the beginning of 1944 there was an urgent call from the Eastern Supply Council for fire-fighting equipment. Up to this time 150 of the 289 standard trailer pumps supplied to the New Zealand Service during the emergency period had been released to either the Pacific or Eastern war areas, together with a considerable quantity of hose. The question now arose as to whether the war situation justified the release of further equipment. Arrangements had been made early in 1943 to distribute about one-third of the standard trailer pumps to the country fire brigades. The intention was that these should not only be used for the improvement of the local service, but that they would also be available, together with the trained personnel, should the war situation deteriorate. This equipment had in the meantime established its value both within the towns and for rural fire-protection.

27. It is to be noted that, in approving the original recommendation for supply of emergency equipment, War Cabinet had also approved the recommendation that the equipment should, so far as this would fit in with emergency requirements, be designed so that it had positive value for post-war fire protection. The standard trailer pumps, in particular, are most suitable appliances for fire protection work in rural areas, where access to creeks, &c., is often difficult. It was therefore decided that 25 of the large pumps for which there was no market overseas and 96 of the standard pumps, including 16 which had been fitted up on hose-laying appliances, together with 450,000 ft. of hose, should be retained in the Service to form the basis of the post-war reorganization, and that the remainder of the emergency equipment would be released immediately for overseas requirements. A transfer of £32,000, representing approximately one-fourth the value of the equipment retained, was made from Consolidated Fund to War Expenses Account as a recovery of the cost of this equipment.

28. Proposals for the reorganization of the fire service, involving permanent allocation to the regular brigades of emergency equipment, reinforcement between brigades at earthquake or other serious fires, the development of a system of rural fire protection, the standardization of equipment

and training, and the payment of contributions by Government and underwriters towards the costs of municipal brigades, were subsequently developed in detail and were submitted to the Fire Boards' Association, to the Municipal and Underwriters' Associations as representing the contributors to Fire Board funds, and to the Service organizations. A number of discussions later took place with and between these interested parties, and the proposals were finally submitted to the parliamentary Committee on Local Government in 1945.

29. The various phases of the emergency organization and also the detailed proposals for post-war reorganization are discussed under appropriate headings below.

FIRE PROTECTION OF MILITARY CAMPS AND AIR FORCE STATIONS

30. It has been indicated above that the expansion in the Armed Forces which took place immediately after the war was for the first two years, so far as New Zealand was concerned, on a training basis. Some of the Air Force stations were intended for permanent occupation, and even where this did not apply the buildings were usually of a semi-permanent nature and in most cases a permanent water-supply was installed. The basis made standard for the latter was to provide a supply of 400 g.p.m. available for fire-fighting in addition to the normal domestic draw-off. Most of the Air Force stations were supplied for domestic purposes on a low-pressure system by pumping from river or well into a storage tank giving a static pressure of about 30 lb./sq. in. Provision for fire-fighting was made by installing an electrically driven high-pressure pump in the base of the tower, operating in most cases by distant control on alarm of fire. This increased the static pressure to 100–120 lb./sq. in., but to provide against possible breakdown of this arrangement all the stations were supplied with standard fire-engines or crash-tenders fitted with a 400 g.p.m. pump. In some cases where the property at risk did not justify a full reticulation, provision was made for protection of outlying buildings by operation with overland hose either from the mains or from some static water-supply. A further reserve was provided in many cases by the installation of swimming-pools from which overland supply could be taken. An interesting instance of ultra low-pressure operation was provided at Waiouru Military Camp, where supply from a convenient stream gave a static head of only 16–18 lb./sq. in. Large mains were installed, and these were fitted with above-ground hydrants for direct coupling with the 4 in. suction hose. The camp was equipped with a 400 g.p.m. fire-engine and a standard trailer pump. By operating these from adjoining hydrants it was possible to bring 600 g.p.m. to bear on any building in the camp.

31. The Air Force stations had, in addition to fire protection, to be provided with crash-tenders. When the war broke out there were only two stations in operation—Wigram and Hobsonville. These had been equipped in 1938 with a compromise fire-engine crash-tender fitted with carbon dioxide cylinders, a standard 400 g.p.m. turbine pump, and a 300-gallon water-tank for foam-production using a foam-making branch pipe. We had in New Zealand a fair stock of a German foam-making solution (Schaumgeist) which had been imported for dealing with oil-fires. There was no time to import standard equipment, and after some experimental work a branch pipe was produced which gave satisfactory results with this material. In addition to the combination unit, which was later used for fire-engine purposes only, crash-tenders were developed on a heavy truck chassis, on six-wheel units for heavy cross-country duty and on a light chassis for emergency-landing-strip and bombing-range work. These were all equipped with a 120 g.p.m. rotary pump which was specially designed for the purpose. The mechanical foam and carbon dioxide equipment was standard on all tenders, but the body design varied according to special requirements. It is satisfactory to note that these units uniformly proved effective in operation and also that, despite the initial difficulties, in no case did a New Zealand station commence flying without crash equipment.

32. In peacetime it is the practice to place the fire protection of military stations under the control of an N.C.O. firemaster, who usually has some fire-fighting experience with the civilian service. Fire crews are provided from the rank and file of station personnel, who in the course of a series of tours of duty on fire picket obtain a fair working knowledge of the handling of fire-fighting equipment. This method of working is not satisfactory in wartime, when the station personnel is changing rapidly. In the early stages of the war all three Services acted on a recommendation that special fire crews should be established. This was particularly important in the Air Force, where effective crash-tender work requires a fairly high standard of training. The civilian fire service was asked to supply firemasters to train the specialist personnel, and considerable credit is due to these officers for the standard of efficiency attained.

33. During 1942–43 a large number of operational camps was established, both for the home defence of this country and later as rest and training camps for the Allied Forces on service in the Pacific. These were mostly of the dispersed type, personnel being mainly accommodated under canvas or in small huts. The messing, store, ablution, and entertainment buildings were comparatively small and of limited value. The camps did not justify a major fire-protection organization, and emphasis was laid on first-aid operation. Ample supplies of bucket pumps and similar equipment were made available, and a memorandum of fire protection was prepared with particular reference to this type of camp. In addition, arrangements were made for the Fire Brigade Superintendents in the adjacent towns to make inspections and to advise the camp administrative staff on fire-protection matters generally.

FINANCE

34. It was considered by Government in 1940, when approving the modified Scheme B recommended by the Chiefs of Staff, that the provision of fire-protection requirements for earthquake was the responsibility of the local authorities. The latter were therefore asked to contribute £50,000—sufficient to implement Scheme A. This was agreed to, subject to the payment of one-fourth of the total cost by the underwriters. The latter pointed out that their ordinary policies did not cover either war or earthquake risks, but agreed to make the required contribution following representations from the Fire Service officers that the additional equipment to be made available would be of considerable value for dealing with ordinary fires. The insurance contribution was allocated as follows: Auckland, £12,700; Hamilton, £500; Gisborne, £1,250; Hastings, £800; New Plymouth, £1,174; Wanganui, £1,548; Palmerston North, £2,860; Wellington, £8,080; Hutt Valley, £2,738; Blenheim, £600; Nelson, £1,100; Christchurch, £7,600; Timaru, £1,250; Dunedin, £6,600; Invercargill, £1,200. The insurance contributions were paid through the Fire Boards and were collected on the same basis as the statutory levy.

35. The Government had undertaken in 1941 to pay the costs of the Emergency Fire Service and also to provide all fire-fighting equipment required either under the modified Scheme B approved by War Cabinet or as might be required at any later stage of the war. This arrangement was given effect to in 1942 when the full Scheme C was adopted. The Government further agreed at this time to subsidize all Civil Defence expenditure of the local authorities on a £2 for £1 basis. The previous arrangement was modified to provide that all accommodation and billeting costs of the Emergency Fire Service and the equipment and general costs both of all fire patrols and the brigade auxiliaries in the non-vulnerable centres should be paid by the local authorities under this subsidy scheme. The subsidy payments came to charge over a period of several years and it was not practicable to dissect the fire-protection costs from the other Civil Defence charges paid for under subsidy. The direct payments by Government for equipment and on the Emergency Fire Service exceeded £500,000, and on a conservative estimate the total cost of emergency fire protection was at least £800,000. Approximately one-third of this has been, or will be, recovered either by sale of surplus equipment for overseas requirements, transfer of equipment to the regular fire service, or sale of material still available for disposal.

MAN-POWER

36. The wartime man-power position as it affected the service can be conveniently divided into three periods. For the first two years the internal position was much as in 1914–18. Man-power withdrawals were limited to the requirements of the 2nd N.Z.E.F. plus a limited number for Navy and for R.N.Z.A.F. air crews and the New Zealand training establishments. Primary production was soft-pedalled owing to shortage of shipping, and secondary industry largely restricted to the production for local requirements of materials no longer available from overseas. Most of the Fire Boards had during this period carried resolutions that enlistment of fire-brigadesmen would not be opposed and no appeals would be made for men called up for military service. A request was made by the Minister of Internal Affairs that auxiliary units should be formed from which the regular firemen going overseas could be replaced. This proposal was approved by the United Fire Brigades' Association, and these auxiliaries were formed by practically all the volunteer fire brigades. It was recognized, however, that training by itself is insufficient to ensure efficiency or the safety of the men working at a fire and that it was desirable to retain at least a few experienced men in each brigade. The staffing position in the regular brigades had in some cases become serious towards the end of 1941, and a conference of senior Brigade Superintendents, together with representatives of the Fire Boards' Association, the United Fire Brigades' Association, and the Union Federation, was called in September to consider the whole man-power position. It was then recommended that appeals should be made for men with three years' or more service in all cases where the number of experienced personnel fell below one-third of the normal brigade strength.

37. The second stage began when Japan entered the war. It was then considered necessary to establish a home-defence Army of two divisions and to develop the R.N.Z.A.F. in New Zealand on an operational basis. This involved the call-up of all available man-power. The consequent drain on both the regular and Emergency Fire Services, which were not given any special exemption, was such as to threaten seriously the efficiency of the former and to prevent the expansion of the latter to the numbers necessary for an effective fire defence of the vulnerable centres. The position arose that experienced firemen and E.F.S. personnel who had been given a highly technical training in specialized duties were called up to commence training in the home-defence Army. There was therefore a partial turnover of personnel throughout this period. The fire service, which was expected to provide protection against initial air attack, was required to train a continuous succession of recruits—these in due course being called up for the Army, in many cases before their fire-service training had even been completed. Several conferences were held, and a series of memoranda were issued to the Man-power Tribunals by the Director of National Service without achieving anything but a partial solution. The difficulty appeared to be that the Appeal Boards had absolute power and could at their discretion either accept or disregard the instructions of the Department. Every credit is due to the officers of both Services for the high standard of training actually achieved under these conditions, but had the organization to face the trial of major enemy attack, the man-power handicaps would inevitably have resulted in its falling short of their aims and desires.

38. The third stage marks the clearing-up of the Pacific war position which took place fairly rapidly after the beginning of 1943. From April onwards all appeals against overseas service were withdrawn by the Emergency Fire Service, except for men transferred to the permanent staff for the protection of special war risks. The fire service generally had by the end of 1943 reverted to the man-power basis agreed upon in 1941. The release of the home-service Army personnel and the discharge of long-service overseas men made it possible in 1944 to release even a number of the Grade 1 men from the permanent staffs. There was, however, a definite limit to the extent to which this could be done, since a considerable expansion of the secondary industries had taken place in the meantime and a high standard of fire protection was essential in the cities and larger towns in order to safeguard munitions and supplies of major value to the war effort. Most of the regular brigades were, and still are, maintained above pre-war strength, the ranks having been filled up in most cases by men from the E.F.S. or brigade auxiliaries.

39. It is necessary to record the opinion, which was expressed to Government at that time on behalf of the senior brigade officers, that particularly during the first eighteen months of the Japanese war the facts justified much more consideration than was given to the needs of the fire service. The Armed Forces were, by common consent, accorded first priority call on man-power. If, however—and this is represented to be the case in modern warfare—the initial attack is against the centres which supply the Armed Forces and fire is the principal weapon, it follows logically that the fire service should be included with the primary man-power requirements of the Armed Forces. In support of this it is to be noted that a high degree of physical fitness is required to stand up to the constant wetting, the exposure to smoky atmospheres, and the heavy work of handling charged hose lines up ladders and through and over buildings. The standard required is that laid down by the Army for overseas service, with the exception that the age limits are wider and that certain minor disabilities, such as flat feet, varicose veins, certain eyesight defects, &c., do not disqualify.

40. Both the regular and Emergency Services very deeply resented comments made on several occasions before, and by members of, Appeal Tribunals. Strong exception was taken to the viewpoint, which appeared to be fairly common, that the wearing of the uniform of the Armed Forces necessarily indicated the undertaking of a greater personnel hazard or more meritorious war service than did the uniform of the fire service.

EMERGENCY FIRE SERVICE

41. The Technical Committee in 1940 had been directed to prepare proposals for an emergency organization which could, if necessary, be expanded to meet the requirements of a sustained attack on an aircraft-carrier scale. It was therefore recommended that the Emergency Fire Service should be organized in all centres regarded as specially vulnerable to enemy attack not as an integral part of, but parallel to, the regular fire service. The Committee decided that, while it would be practicable in the secondary cities and towns to recruit the necessary personnel for any stage of attack as an auxiliary unit under the control of the regular brigade officers, this was not practicable in the four principal centres. It was considered that the minimum number of men required (between 200 and 300) could not be organized as a brigade auxiliary without throwing an unreasonable burden on brigade administrative officers already overloaded with other phases of emergency work and in most cases short-staffed. It was therefore recommended that the Emergency Service should be organized on the same basis as a unit of the Territorial Army, with its own officers and with corresponding ranks, but under the control of the regular fire service officers for training and operational purposes. This arrangement had the following advantages :—

(1) It proposed a recognition of the fact that in modern warfare, fire-service work should be treated on an equal basis with that of the home-defence Army.

(2) It provided a recognized scale of pay adaptable to either the part-time operation then contemplated or to the full-time duty which might be necessary should an enemy attack eventuate or be imminent.

(3) Army forms and methods could be used for enrolment, pay, stores, and records.

(4) It was intended to avoid the difficulties arising from the variation in rates of pay and service conditions applying to the auxiliary staff of the city brigades, the volunteer brigades in the metropolitan areas, and the brigades in the secondary vulnerable centres.

(5) It made a clear distinction between the wartime emergency personnel and the regular service. It therefore avoided, or was intended to avoid, any conflict with the union as to either the respective pay of the regular personnel and any E.F.S. members who might be called up for full-time duty, or the effect of their employment on pay or conditions of the post-war regular service.

42. After the Technical Committee's recommendations had been approved in principle but before the necessary regulations were issued, the proposals were considered at a conference of Brigade Superintendents from all the vulnerable centres, together with representatives of the Fire Boards' Association and the United Fire Brigades' Association. There was a consensus of opinion that the proposed organization was on satisfactory lines. At that time the general public did not consider seriously the possibility that New Zealand might become a theatre of war. It was thought that, having regard to the standard of training laid down by the Technical Committee, there would be some difficulty in recruiting the Service in the metropolitan areas, where fire-brigade work is normally regarded as a professional rather than a community job. The proposal for payment for duty on the same basis as the Territorial Army was therefore approved, with the recommendation that compulsory direction to the Service should be resorted to if sufficient volunteers were not available. It was suggested that service might be made a condition of exemption from duty in the Armed Forces of men in essential industry. Some of the Superintendents from the secondary centres expressed the opinion that unpaid service would be preferred in their areas. It was agreed that a lower standard of training would be adequate in those towns owing to the lesser fire-defence problems to be met. It was therefore recommended that the question should be settled by vote of the emergency personnel. (The result was that in all but six centres payment was refused.)

43. Other recommendations made by the conference and subsequently incorporated in the organization were that the officer ranks in the Service below the Dominion Fire Controller, who was to be in general command, should be: District Commander (Major), Divisional Officer (Captain), Assistant Divisional Officer (Lieutenant), Senior Section Officer (Staff Sergeant), Section Officer (Sergeant), and Leading Fireman (Corporal); that the recruit training should be fifty-six hours spread over not more than three months; that the Wellington-Auckland pattern instantaneous coupling be adopted for all emergency equipment; that adaptors be provided, where necessary, to permit of interchangeability with regular brigade couplings; and that a district headquarters staff be established in each of the four Controllers' districts. The conditions of service proposed were approved subject to minor amendments, as also was the general relationship of the Emergency Fire Service to the regular brigades. It was also recommended that, in order to facilitate liaison between the local authorities and the Civil defence organization, the Fire Board should constitute the Fire Committee of the latter in each centre.

44. *Duty Arrangements.*—The decision in 1941 to establish the E.F.S. on a part-time basis was made partly because an attack on any major scale was at that time unlikely, and partly because the deficiencies of plant and equipment would have made it difficult to train or utilize effectively a full-time Service. It will be seen from the comments on supply of equipment elsewhere in this report that this latter condition continued until about the middle of 1942. The danger of attack on this country was then probably approaching its maximum, and the fire service officers had both facts in mind in advocating in July of that year the setting-up of a more efficient organization. Fire-defence requirements were overshadowed, however, by the demands of the Armed Forces this despite the fact that Mr. A. D. Wilson's report confirmed the view of the local experts that insufficient attention had been paid to administrative and operational staff requirements, and to the development from the regular and Emergency Services of a fire-defence system operating on a national basis. Had effect been given to their recommendations, it would have been necessary to place at least a portion of the E.F.S. personnel on a full-time basis, and had the war situation developed less favourably, the staff necessary would have reached at least the number recommended by Mr. Wilson.

45. *Recruitment.*—The regulations constituting the Service were issued on 28th February, 1941, and recruitment commenced immediately after that date. The Fire Brigade Superintendents in the vulnerable centres had previously been asked to obtain officers for the Service by giving publicity to its organization and by direct approach to suitable persons. Very excellent material was offering, and in the four main centres training classes were established from which the officers were selected. Married men with two or more children at that time in the last category for military service formed the backbone of the Service throughout. A medical examination was insisted upon, as also were Army age limits, except that men with fire-brigade experience were accepted up to age fifty. This standard

was maintained until 1942, when the heavy drain on man-power due to the formation of a home-defence Army, coupled with the inclusion of the Fire Service in the man-power pool for the Armed Forces, made it necessary to lower the standard. This applied particularly in respect of the owner-drivers of taxi and commercial vehicles. Inclusion of the latter with their vehicles was, in default of supply of permanent transport, necessary to ensure the mobility of pump crews billeted in the metropolitan areas.

46. *Establishment.*—The establishment under Scheme B was 1,470. It was increased to 3,000 in 1942 when Scheme C was put into force. The allocation of this personnel, which was in accordance with the direction of the Chiefs of Staffs, is shown in the Second Schedule attached. The organization provided for six divisions in Auckland, five in Wellington, and three in Christchurch and Dunedin. The units in the secondary centres where more than fifty men were involved were treated as divisions, but in the smaller centres they operated as a brigade auxiliary under the control of the regular brigade officers. Junior officers were appointed, so far as possible, in such ratio that a section officer or leading fireman would be in charge of each pump crew of four men. The senior section officers were utilized mostly in control of the discipline and training of night-duty crews. The positions of District Commander were held by Mr. L. S. Abbott in Auckland, Mr. S. M. Kinross in Wellington, Mr. K. W. Robinson in Christchurch and Mr. W. W. Callender in Dunedin. The two latter were members of the respective Fire Boards, Mr. Callender being Chairman at Dunedin. It is perhaps invidious to comment on individuals, but it must be acknowledged that very much of the success of the Service is due to the excellent work of these four officers.

47. *Uniforms.*—It was decided to equip the Service with standard fire-brigade uniforms, firstly because these were necessary for the health of the men in training (wet drills are essential), and secondly because it was recognized that, even as second-hand equipment, they would be of value to the volunteer brigades after the war. There was unfortunately considerable delay in manufacture, even the Home Guard being given priority in supplies of material. Pending their supply, the Defence Department made available the blue full-dress Army uniforms returned to store by the Territorial Forces on the outbreak of war. These were mostly of small sizes and only about 1,500 proved serviceable for our requirements. They were issued in the first instance to the E.F.S. in the principal centres, and when the Fire Service uniforms came to hand the surplus stock was handed over to the volunteer brigades for the equipment of the auxiliary personnel. By the time the E.F.S. went into reserve, only 2,600 uniforms had been received for 3,000 men, the remainder of the personnel being still equipped with the Army pattern. No overcoats were supplied, even to the mobilized personnel. When the stand-down took place, about 1,500 E.F.S. tunics and 1,000 pairs of trousers with 500 Army uniforms were fit for reissue. These were dry-cleaned and handed over to the United Fire Brigades' Association for distribution to the volunteer brigades.

48. *Training.*—Immediately on attestation, all personnel were put through a course of recruit training by the regular brigade officers or senior firemen, designed to familiarize them with equipment, working drills, and fire-service practices. They were then placed under the control of their own officers and trained in operational duties under the supervision of the brigade officers. Although the emergency personnel would be required to team in with the regular service in ordinary fire-fighting should an attack take place, the principal object of enrolling such a large reinforcement is to provide against the contingency—a 90-per-cent. probability in the case of major attack—that the ordinary water-supply reticulation will break down under high-explosive bombs or shell-fire. The training was therefore directed mainly to pumping water from static sources and relaying it overland for long distances. These are operations which are seldom or never required in peacetime fire-fighting. It is doubtful if there is any case on record in New Zealand where more than a two-pump relay has been required. A new technique therefore had to be developed, and this again varied from time to time as additional supplies of hose came to hand. Longer relays then became possible by using twin lines of hose. In the later stages we developed the "water units," referred to elsewhere, with which 400 gallons of water per minute could be pumped from static supply to a point half a mile away and delivered at high pressure. Only two pumps were used, and the complete operation took about ten minutes.

49. *Training Manual.*—It had been intended that each District Fire Controller should define the drills and training to be adopted within his own area. It was found, however, that there were such variations in brigade practice that some standardization of drills was necessary if the proposed reinforcement arrangements were to be effective. The conditions under which the E.F.S. was recruited differ considerably from those under which persons normally enter the fire service. In the latter case the recruit is immediately brought into close contact and association with the trained firemen and even during his recruit training has the opportunity of discussing training and general fire-brigade problems with the older hands. In this way he would pick up a lot of information which was not available to the E.F.S. recruit. He also gets an immediate introduction to actual fire-fighting work.

50. In an attempt to overcome these difficulties and to arouse interest in the technical side of the work, it was decided to prepare a training manual. Under the supply contract the manufacturers (the Colonial Motor Co., Ltd.) were required to provide instruction pamphlets with each pump, and following a discussion with the management the latter agreed to this information being expanded to fit in with the proposed instructional manual. This was finally developed as a booklet of eighty pages. It contained a full series of drills based on the four-man drill issued by the United Fire Brigades' Association and adapted to the trailer pump. It also included brief notes on the duties of E.F.S. personnel, the principal items of fire-brigade equipment, fire-fighting practice, and the technique of pump operation from the mains, from static supplies, and in relaying. The company published the manual and supplied each member of the E.F.S. with a copy. Acknowledgment is due for this courtesy and to the Superintendent and officers of the Wellington Fire Brigade for advice and criticism and for carrying out practical tests on the drills and to check the calculations in the tables.

51. *Training School.*—Advantage was taken of the visit to New Zealand of Mr. A. D. Wilson to arrange for a school of instruction in Wellington. The intention was that the first course given by Mr. Wilson to officers selected from both regular and emergency services should determine what adaptation of British methods was best suited to New Zealand requirements. It was also proposed that a central school should be established at Wellington to operate at intervals for the instruction of officers. These officers would then act as instructors in their own districts. The scheme fell through partly owing to the rapid improvement in the war situation, but the instructional course was of sufficient value to warrant consideration being given to the establishment of similar courses for officers in the post-war service.

52. *Mobilization and Billeting.*—When the E.F.S. was partially mobilized for night duty at the beginning of 1942 it became necessary to establish administrative office staffs. In Auckland the District Commander, Adjutant, and Quartermaster were brought on full-time duty, and at Wellington the District Commander and Adjutant. In Christchurch and Dunedin only the Adjutant was so employed. The billeting arrangements varied according to circumstances. In Auckland all the billeted personnel were supplied with sleeping-quarters only. They made their own arrangements for messing and were paid an allowance of 35s. per week to cover the messing-costs. In the other centres some of the billets were arranged on the same basis, and in others the crews were accommodated in hotels and boardinghouses. The cost of the latter accommodation ranged between 32s. 6d. and 55s. per week per man. In all cases the personnel were paid, in addition, for two hours' training duty per day at Army rates for corresponding ranks. The actual training period in most cases greatly exceeded the time paid for, the crews being engaged in exercises in fine weather throughout most week-ends. The effect of billeting on the morale of the Service was excellent not only because the extra training gave greater confidence to both officers and men, but also because the companionship of the billets welded the personnel into units with strong but friendly inter-divisional rivalry. In many cases, particularly where the individual billet had been in operation for some months, the condition of the equipment, standard of training, the improvised amenities of the station, and the general turnout would have done credit to any regular service.

53. *Stand-down.*—The direction for the final stand-down of the E.F.S. was issued in June, 1944. Early in 1943 the units in the secondary centres had been placed on a reserve basis, occasional parades being held for maintenance purposes at the discretion of the local controlling officer. The Christchurch unit continued on an active basis for brigade auxiliary duty until the stand-down, but Wellington went into reserve in May–September, 1943, and Dunedin in November, 1943 (paragraph 64). In Auckland the North Shore Division went into reserve in December, 1943, but the city divisions remained on active duty until the Fire Board took over full responsibility for the protection of the war storage areas on a subsidy basis in October, 1944. The keenness and public spirit of the men is evidenced by the fact that, even at this stage, about one hundred of them volunteered to carry on night duty as brigade auxiliaries until the regular auxiliary service could be re-established.

EMERGENCY FIRE PROTECTION OF COUNTRY TOWNS

54. The Emergency Fire Service was, on War Cabinet's instructions, concentrated in the centres considered vulnerable to enemy attack. With the southward advance of the Japanese in 1942 and the consequent possibility of invasion attack, it became necessary to give some attention to the secondary towns. In 1941 most of the volunteer brigades had formed auxiliary units to supply replacements for brigadesmen going on overseas service. These, with the regular brigades, were developed into the fire-protection section of the local Civil Defence organization. The United Fire Brigades' Associations, which had made all preliminary arrangements in 1941, accepted responsibility for the organization of this service and represented its views in discussions with the Civil Defence authorities. All surplus Army-type uniforms were made available for the auxiliary personnel, but it was impossible, owing to the priorities given to the Armed Services, to provide equipment in all cases. In 1943, when the Pacific war position had improved sufficiently to place the E.F.S. and the brigade auxiliaries on a reserve basis, the trailer pumps were distributed to the country towns, and at the same time the regular brigades were strengthened by the inclusion of the more efficient of the auxiliary personnel. This arrangement not only improved the fire-protection position in the country towns, but ensured that trained men and equipment would be available should any sudden deterioration take place in the war position. It will be seen below that it is proposed under the reorganization scheme to retain this equipment in the country towns.

PLANT AND EQUIPMENT

55. We were fortunate with respect to our fire-fighting requirements that in the early 1930's a New Zealand firm (the Colonial Motor Co., Ltd., then New Zealand distributors for the Ford Co. of Canada) had established a branch for the manufacture of fire-engines and fire-fighting equipment generally. The fire-engines were built by adapting the standard Ford V-8 chassis. The company at first experimented with a rotary pump which, while quite satisfactory in operation, was not acceptable to most of the brigades. They later standardized on two turbine pumps, one a 400 g.p.m. two-stage unit based on the English Gwynne pump. This was mounted either amidships or at the rear. The other unit is a single-stage high-speed 300 g.p.m. pump of a type used very largely in America for rural fire protection. It is front-mounted and coupled direct to the motor. In all, about 50 pumping-appliances had been manufactured by 1939.

56. Shortly before the outbreak of war an experimental trailer pump consisting of the 400 g.p.m. unit direct-coupled to a Ford V-8 engine had been produced for the Public Works Department for hydraulic operations in pile-driving. When War Cabinet accepted the recommendation that fire-fighting equipment should be provided against the possibility of air attack, it was decided to standardize, as in Britain, on the trailer pump, and an investigation was made to see whether the experimental trailer pump met the British Standard Specifications. The testing equipment prescribed by the British Standard Specification was set up, and it was found that by using a V-8 Mercury engine a power margin considerably greater than that specified in Britain could be obtained. The specification was, however, modified to provide for battery instead of magneto ignition. From a wartime operational point of view this was an advantage, since it is standard equipment on the commercial motor and testing equipment and replacement parts were available at all centres. It was also decided to dispense with brakes, both because of the extra cost and the delay in production. This decision was justified in operation, since there were only two cases of accident reported during the war years in which the absence of brakes might have been a factor.

57. The decision to standardize on this unit for emergency purposes was made firstly because of the saving in sterling funds, and secondly because our inquiries showed that there would be considerable delay in obtaining equipment from Britain, apart from the probability at that stage of the war of loss by enemy action in transit. It involved the importation of motors from Canada, but by keeping ahead with the rest of the local manufacture it would have been possible at any stage to complete the units by requisitioning the necessary motors from cars and trucks. There was also the fact to be considered that, since this type of motor was very largely used in New Zealand, ample stocks of spare parts were available in all centres. In the result, the unit has stood up to all requirements;

and the fact that very large numbers of these pumps have been used successfully in the Middle East and Pacific war areas fully justifies the decision. The unit is a general utility one. It was adapted as a sledge pump for direct coupling to the mains for water-supply requirements and for fire-fighting on ships. Sledge units were also fitted on heavy trucks which were adapted for laying twin lines of $3\frac{3}{4}$ in. hose. These towed a large-capacity trailer pump and together constituted the standard "water unit" developed for overland operation from static water-supplies. The capacity of the pump (400 g.p.m.) made tandem operation with most of the brigade appliances practicable. There were, however, certain purposes, such as waterfront operation, for which larger pumps were desirable. It was thought advisable not to experiment with the manufacture of these in New Zealand, but our requirements (twenty-nine in all) were obtained from Britain.

58. During 1942, fire-fighting equipment was urgently required in the Middle East and Pacific war areas. Samples of the New Zealand standard pump were sent overseas and large orders were placed by the Eastern Supply Council and for the American Forces in the Pacific. The New Zealand production was divided between these orders and our own requirements, which included, in addition to Civil Defence, the provision of trailer pumps for the protection of electricity supply installations, linen-flax factories, and large industrial buildings. Arrangements had been made in 1941 for the Colonial Motor Co. to take charge of production and to arrange for manufacture of components and ancillary equipment by subcontractors in the principal centres. Additional man-power was made available and the rate of production stepped-up to meet the new demands. When the war position cleared up so far as New Zealand was concerned in 1943, most of the Civil Defence trailer pumps (193 out of 289, including a reserve stock of 74 which had not been distributed to brigades) were released for overseas requirements. The large-scale production continued until the middle of 1945. In addition to trailer pumps, considerable numbers of fire-engines, both the standard type and light units with front-mounted pumps, as well as crash-tenders, were manufactured for military camps and Air Force stations both in New Zealand and in the Pacific. In 1944 and 1945 a few fire-engines were also supplied to the regular fire service. The total wartime production of fire-fighting appliances set out below must be recognized as a very creditable effort on the part of what was, before the war, only a minor industry :—

Standard trailer pumps—	
Armed Forces overseas (including Civil Defence releases)	1,589
Miscellaneous New Zealand requirements	173
Standard pumps fitted as stationary units	49
Standard (400 g.p.m.) fire-engines (Armed Forces, 33 ; Fire Service, 17) ..	50
Small (300 g.p.m.) fire-engines	8
Hose-laying appliances fitted with sledge pump	17
Crash-tenders	55
Total number of appliances	1,941

59. In addition to these fire-fighting appliances, a large quantity of ancillary fire-fighting equipment has been produced by the New Zealand industry. Each trailer pump carried 400 ft. of hose, together with the necessary branches, standpipes, breechings, &c., for operation as an independent appliance providing deliveries up to $1\frac{1}{4}$ in. The standard coupling adopted was the $2\frac{3}{4}$ in. instantaneous pattern fitted for either $2\frac{1}{2}$ in., $2\frac{3}{4}$ in., or $3\frac{3}{4}$ in. canvas hose as required. The type adopted was that in use in Auckland and Wellington. It was copied from the British Standard pattern, but unfortunately in pre-war days no Standard drawings were available and variations in dimensions had been introduced by different manufacturers. A Standard coupling was therefore designed which would fit most of the $2\frac{3}{4}$ in. couplings in use in New Zealand brigades but which is not interchangeable with the British Standard. This is unfortunate, but could not be helped under the circumstances. The essential thing at the time was to get the emergency appliances interchangeable with as much as possible of the equipment in use in the pre-war service. The quantities of principal items of minor equipment supplied in New Zealand and for overseas requirements during the war period were: couplings, 21,700; standpipes, 2,000; branches, 4,400; breechings (sets of one dividing and one collecting), 2,756; nozzles, 13,100; branch standards, 1,990.

60. One important item of equipment of which we were in short supply throughout the greater part of the emergency period and which could not be manufactured in New Zealand was canvas fire hose. It unfortunately occurred that in 1938 the importations were below normal. Delays occurred in 1939 in obtaining the necessary importation licenses and the year's indents had not been shipped when the war broke out. Large orders were placed by commercial firms in 1940 and by Government, but, owing to the urgent British requirements due to air attacks, only a limited quantity was shipped to New Zealand during 1940 and 1941. A considerable proportion of these shipments was lost by enemy action. Following the outbreak of war with Japan and the threat to this country, large shipments were made and supplies came to hand fairly rapidly from the middle of 1942 onwards. The limited supplies of hose available in the early stages made it necessary to modify the training methods to meet this shortage and to have available more pumps than would otherwise have been necessary. The orders placed by brigade-controlling authorities and the Government during the emergency period totalled approximately 250,000 ft. and 1,250,000 ft. respectively, of which one-third was $3\frac{3}{4}$ in. or $3\frac{1}{2}$ in. hose intended for overland operation. Approximately one-third of the Government stock was subsequently made available for overseas requirements, 200,000 ft. became unserviceable in training, 450,000 ft. has been handed over to the fire service under the reorganization scheme, and the remainder to the War Assets Realization Board for disposal.

61. It will be appreciated from what has been said that the real emergency was over before ever the major part of the equipment ordered was put into commission. This does not mean the programme could not have been accelerated if the war situation had made this necessary. It is estimated that by November, 1942, when the American landings in the Solomons put a definite period to the Japanese southward advance, we could, with some improvisation, have put all the pumps and about half the hose and most of the ancillary equipment into service. That we did not do so simply meant that the position justified the priorities given to the supply of equipment for overseas requirements. We did not even take delivery of 70 of the 300 standard trailer pumps ordered, but these could be considered an effective reserve because there were at all times during 1942 and 1943 at least this number either awaiting shipment or in an advanced stage of manufacture. The Chiefs of Staffs had in the early

stages issued an instruction as to the order of priority to be given to the fire defence of the country. This, as has been indicated, required the concentration of men and equipment in the larger cities and ports and, to a secondary extent, in certain other centres considered vulnerable to air attack for special reasons. The allocations and the actual deliveries of equipment are shown in the Second Schedule attached.

FIRE PROTECTION OF SPECIAL WAR RISKS

62. It has been noted that the lessened danger of attack on this country in 1943 was accompanied to a great extent by its development as a base for South Pacific operations. The American Forces which attacked Guadalcanal had been prepared in Auckland and Wellington, and during the succeeding months large numbers of men from all branches of the American Forces and an enormous quantity of munitions and general supplies passed through these ports. Peacetime facilities were totally inadequate, even after all suitable buildings had been requisitioned, and it was found necessary to erect large blocks of buildings for the storage, sorting, and reconditioning of war supplies. The building programme also involved the provision of camps for base personnel and the erection of five large Service hospitals four in Auckland and one in Wellington. These buildings were all of wooden construction and, having regard to their vital importance to the war effort, their protection required a major extension of the pre-war fire service. The principal storage areas had, for security and other reasons, been located in the outlying suburban areas (Tamaki, Sylvia Park, and Mangere in Auckland; Petone and Lower Hutt in Wellington). In all cases the water-supply reticulation was inadequate for fire-protection purposes, and provision was made for a static water-supply from tanks or wells. The method of operation necessary was similar to that required under air attack and the same equipment would be used. War conditions had made it impossible to maintain the auxiliary strength of the city brigades at the peacetime level, and the logical course was to utilize for this duty the Emergency Fire Service personnel, who had been specially trained at considerable cost for just this class of work.

63. The proposals were submitted to the National Fire Council, and the following recommendations were approved:—

(1) That, except in so far as might be necessary to bring the permanent staff up to the required strength, all E.F.S. members qualified for overseas service should be released.

(2) That the permanent staff at Auckland be increased from 96 to 125, and at Wellington from 97 to 118.

(3) That additional accommodation be provided for men and equipment at Avondale, Point Chevalier, Ellerslie, and Otahuhu in the Auckland area, and at Petone and Lower Hutt at Wellington.

(4) That the billeting of E.F.S. personnel be continued on a reduced scale so as to provide a night-duty strength of 54 at Auckland and 40 at Wellington. A proviso was added that, if and when this proved practicable, the billeted E.F.S. should be replaced by a non-resident auxiliary unit summoned when required by siren or other alarm system.

(5) That, in view of the importance of providing adequate fire protection for war industries and irreplaceable materials, the fire service in Christchurch and Dunedin be reinforced by a night-duty staff of 15 men drawn from E.F.S. personnel.

(6) That the cost of the special service be divided between War Expenses Account and reverse lease-lend in proportion of the respective New Zealand and American property involved in each centre.

64. The proposals for utilization of the E.F.S. for this special fire-service duty were discussed with the unions. No exception was taken at Auckland, where the most important areas were situated, or at Christchurch, and the arrangement remained in force until the final stand-down. In Wellington, however, trouble had been precipitated by a recommendation from the Superintendent at Lower Hutt, where most of the emergency stores were situated, that protection be afforded by increasing the permanent staff of the brigade. The man-power situation at that time was such that it was not possible to obtain suitable men, and the assumption was made by the union, quite wrongly, that the post-war conditions of the regular service would be affected. The E.F.S. members refused to be concerned in an industrial dispute, and first the Hutt Valley and then the Wellington Divisions were placed on reserve. In Petone a number of the E.F.S. personnel were absorbed into the brigade and night duty on a billeted basis was carried out by the combined unit. In Dunedin the E.F.S. asked to be placed on reserve following a conference with the brigade.

65. War Cabinet approval of these proposals was subject to a six-monthly review. The Government expenditure has since been gradually reduced and a portion of the cost has been absorbed by the brigade-controlling authorities. At the date of this report assistance is limited at Auckland to annual grants of £1,700 and the maintenance of a temporary station with 5 permanent men at Otahuhu, and at Wellington to an annual grant of £1,200 to the Lower Hutt Fire Board.

THE REGULAR FIRE SERVICE

66. The above section of the report covers the emergency period and is mainly concerned with emergency measures and emergency personnel. This does not indicate any want of appreciation of the excellent work done by the regular service. Their ordinary fire-protection work was of more than normal importance in wartime. They had on their shoulders, in addition to the training of the auxiliary services, the servicing and maintenance of the additional equipment and the direction of the emergency fire-defence organization. Both officers and men were in the best sense guide, philosopher, and friend to the emergency personnel. So general was the tact and consideration shown that only one case came under notice where the responsible officer did not obtain the full and free, not to say enthusiastic, support of the emergency personnel. The regular service had a real wartime job to do, and it rose to the occasion.

RETROSPECT

67. It would be merely wishful thinking to assume, and to base our future plans on the assumption that there will be no more wars. Some review of the virtues and defects of the fire-defence organization which we prepared, but fortunately did not have to use, is surely warranted for the consideration of those who may have to prepare next time—if there is a next time. We must first of all understand our problem. It would seem that this war has in both theatres established the success of strategic air attack. This—and to some extent tactical bombing also—relies to a major extent on fire as a weapon. Effective defence must surely include the reduction to the possible minimum of the loss or

damage caused by this weapon. Even the use of the atomic bomb does not affect this principle. It may alter fire-defence methods. It may, for instance, dictate the wider dispersal of the fire-fighting personnel and equipment, but unless the defence is prepared to throw up its hands, an attempt to save the area outside the blast is still necessary. We have in this war thought in terms of carrier-borne attack, but the range of even the present bombing planes—not to think of the future—makes a land-based attack by no means impossible.

68. These comments are directed to the suggestion that our line of thinking on fire defence has been wrong. The tacticians of the Armed Services appear to have considered this particular aspect of our defence a matter for the Civil authorities and entirely outside their orbit. Is that the case? It is assumed that the role of this country having regard to its size, location, and resources, is always likely to be a defensive one. Does defence of the supply and manufacturing centres, for instance, stop short at fighter planes and anti-aircraft batteries? Should not the tacticians be equally concerned with the service which limits the damage caused by that portion of the attacking Force which does get through the armed defence? The population can be sheltered or evacuated, but can the stores or factories? Should the requirements of a concrete road block at Lake Rotoiti, a R.N.Z.A.F. stores orderly at Te Rapa, or a Home Guard at Manunui be given preference over those of a fireman at Auckland—and why?

69. A study of our fire-defence organization at the end of the critical period (November, 1943) would show that our fire-fighting equipment was good in quality, suitable for its purpose, and, with the exception of hose and transport, reasonably sufficient in quantity. The hose shortage, incidentally, was probably the only deficiency which could not have been remedied unless we had started to prepare for war before the war started. Where we were deficient was in staff work, operational training, communications, and unified control of the service. We had, to use an Army simile, reached a good platoon standard of efficiency, but company or battalion training was for us a matter of the next war. Our defects resulted in the main not from any want of ability, technical knowledge, or enthusiasm on the part of the fire-service personnel, but rather from the wrong answers to the questions in the preceding paragraph.

70. Other causes are not far to seek. The staff of the Dominion Fire Controller consisted of three typistes and the part-time services of two clerks and one officer on equipment supply. His powers under the regulations were those of investigation and report. Consent of the local authorities was the condition precedent to any organization and had to be negotiated with each authority individually. The District Controllers were not relieved of their duties as city Superintendents except for one trip through their districts in 1943. Their "staff" was the spare-time work of the officers and men of their brigades, who could not leave the city except on leave, plus the seven E.F.S. officers referred to above, who were in control of over 2,000 emergency personnel. No transport was made available, even for such essential purposes as hose-laying, until 1943. As a concession, E.F.S. officers were allowed to use their own cars. Telephone and other communications services waited on other more urgent orders. Even full uniforms were not supplied because of priorities.

71. So long as fire remains a major weapon of attack, fire defence should be part of the general defence programme. It is necessary to take this opportunity of urging most strongly that if and when the Armed Services begin to prepare for war, and to the extent that they maintain preparation without immediate threat of war, the fire service should undertake corresponding preparation and maintenance. Organization should commence with the staff. There should firstly be continuous liaison both in peace and war with the staff of the Armed Services. At the stage where an active defence is being prepared as in 1942, specialist officers should be provided at headquarters level for equipment supply, personnel, training, mobilization, and liaison with Civil Defence. At district level, specialist officers are necessary for training, stores and equipment, transport, and mechanical maintenance.

72. The organization of the Emergency Fire Service on a Territorial Army basis was wholly successful so far as internal control was concerned. Where it failed was in its relationship with the regular fire service and with the Civil Defence organization. It is recommended that in the future planning, if the fire service cannot be independently constituted as the fourth arm of the Defence Forces, consideration should be given to its inclusion as a branch of the Army engineering services, rather than as a unit of Civil Defence. An organization analagous to that of the Army works section would appear to be appropriate. A precedent is available in the French regular establishment. Experience during the recent emergency suggests the following aspects favouring this inclusion:—

(1) Mobility is essential for a wartime fire service as contrasted with the static role of Civil Defence. It is both impracticable to provide for full fire-defence requirements at each centre and unnecessary so long as adequate arrangements are made for reinforcement.

(2) Inclusion in the Army would ensure the requisite transport and other priorities.

(3) Unity of control, which is essential, would be ensured. The reorganization proposals (paragraphs 75–82) contemplate the retention of local administration of the peacetime service. The establishment of a National Fire Council on the lines proposed would simplify the wartime co-ordination.

(4) The man-power difficulties (paragraphs 36–40) would be overcome. Provision could be made, as was done in Britain, to safeguard the pay and conditions of the regular firemen so that the wartime control should not reduce their numbers, status, or pay.

(5) Mobilization would be simplified. Experience in 1942 shows that the bulk of the emergency personnel could be adequately trained on a part-time basis. For this purpose the billeting arrangements then in force could hardly be improved upon. An increase in the full-time staff would be necessary, but, these being Army personnel, there would be no conflict in pay and allowances with the regular service.

(6) The wartime personnel have, in the main, the specialists function of providing water following the breakdown of the ordinary supply. The peacetime training would be directed mainly to this purpose. It could be conveniently confined to the principal cities and made the function of an engineering unit of the Territorial Army. This would ensure that the necessary equipment was maintained in adequate supply and in operating condition.

73. Whatever form of organization is decided upon for war, it should be adaptable for the control of earthquake fires. A comparison of photographs of Napier in 1931 with those of any of the bombed cities will show a marked similarity. The methods of fire control are similar, and operation from static

water-supplies is usually necessary, as are prior arrangements for mobilization of men and equipment, but on a lesser scale. The reinforcement proposals of the reorganization scheme (paragraph 79) are designed to provide against earthquake, and it will be seen from the Third Schedule that half the hose-laying appliances have been located in the Wellington district, where the earthquake risk is at its maximum. Brigade-controlling authorities have undertaken to maintain the appliances, together with sufficient overland hose for earthquake operations. In addition, a considerable number of trailer pumps stationed in the country towns will be available for relay work if necessary. This organization, if maintained on a permanent basis, could be readily expanded for wartime requirements, provided that adequate reserves of hose are maintained (see hose position in 1940—paragraph 60). It is recommended that any Army fire-defence units established should be co-ordinated with the regular fire service so that full advantage can be taken by both of the interchange of equipment, both in training and in operation.

74. In addition to its use for earthquake fires or war purposes, the emergency equipment retained by the fire service, and to some extent the emergency technique, has a very definite value for peacetime operation. In New Zealand we standardized for overland operation of 3¾ in. canvas hose of the grade normally used for Civil fire-fighting. This is much lighter than the rubber-lined hose used in Britain and is more adaptable for general fire-fighting purposes. It was used in Wellington prior to the war for local relay work. The pumping appliances were equipped with 600 ft., and brigade instructions required a feeder line to be laid from all backing-up machines from the nearest large main before report was made to the officer in charge at the fire. This technique not only reduced the lengths of delivery hose required, but simplified the hose layout and avoided undue robbing of the mains in the immediate vicinity of the fire. The technique has been further developed with the emergency equipment, and it is now standard practice for relay appliances to turn out to all fires in the business area and to any sections of the city where the existing water-supply is below standard or where special hazards exist.

POST-WAR REORGANIZATION OF THE FIRE SERVICE

75. This question has been discussed in these reports since 1933. In 1938 an agreement was reached between the interests concerned and it was intended to bring down the necessary legislation in 1939. The war made this impracticable, and both the experience of the wartime years and the availability of emergency plant and equipment has modified to some extent the proposals previously under consideration. The proposals submitted this year to the parliamentary Committee of inquiry into local government can be conveniently divided for consideration under the following headings.

76. *Supply of Emergency Equipment.*—It has been indicated above (paragraph 27) that the decision was made at the beginning of 1944 to retain for the post-war requirements of the service 102 trailer pumps and 19 appliances fitted up during the emergency period as "water units," together with a number of motor-vehicles and a large stock of hose and ancillary equipment, the total value being about £128,000. The Third Schedule to this report sets out the allocation of the major part of this equipment. A certain amount has been kept in reserve pending further discussions with brigade-controlling authorities. The hose and other expendable material is being handed over as a gift, subject to an undertaking by the controlling authority to maintain a supply of hose additional to ordinary district requirements of not less than 60 per cent. of the amount supplied by Government. It is proposed that the title to the trailer pumps and other appliances will be held in the meantime by Government, which will be responsible for licensing fees. They will, however, be on permanent loan and will be available for use as part of the ordinary brigade equipment.

77. *National Fire Council.*—The disadvantages of extreme decentralization of control of the fire service were emphasized during the war period. It is quite evident, however, that local administration is desired. It is proposed to provide some degree of central direction, while still retaining the local administration, by establishing a National Fire Council containing representatives of the underwriters, Fire Boards, administrative local bodies, and the fire-service Organizations. This Council will, in effect, control the administration of the Act under provisions extending the present powers of the Minister. It will approve estimates of expenditure, collect the contributions from the Government and the underwriters, and distribute these to the administrative authorities.

78. *Contributions.*—The municipal authorities controlling fire brigades at present receive no contributions from either Government or underwriters. Many of them are unable to provide from their own resources sufficient finance to maintain the brigade plant and equipment at a reasonable standard. It is therefore proposed to extend to these authorities the contributory system applying in fire districts, but on a modified basis, dependent on the population of the town and the water-supply and other facilities available. It is recognized that the present Government contribution, which for the year 1945 represents approximately 1·6 per cent. of the expenditure in fire districts, is inadequate. Proposals are under consideration for an increased contribution based on the relative value of Government housing and other property, the liability which has been undertaken in respect of earthquake fires, and, to some extent at least, on the national interest in the reduction of fire losses. For purposes of reference, the municipal brigades have been listed in the Fourth Schedule to this report.

79. *Reinforcement and Rural Fire Protection.*—It has not been possible hitherto to organize the service on a national basis and to make positive arrangements for rural fire protection and reinforcement between brigades at serious fires. The primary obligations of the local controlling authorities were, of course, in their own districts, and in most cases the equipment available was insufficient to provide both for this and for attendance at out-district calls. This difficulty has been largely overcome by the distribution of emergency equipment. It is now proposed that on call, either from adjoining brigades or from the occupiers of property in rural areas within working distance from the town (in general, about ten miles), a pumping appliance with a crew not exceeding six men will be made available. Three alternative conditions will operate:—

(1) Where a Government trailer pump is supplied, either this appliance with a towing vehicle carrying the necessary equipment or one of the brigade's own pumping appliances, as may be convenient, will attend the out-district call. Where "water units" are supplied, these will attend as required.

(2) Where a supply of hose only is provided by Government and the brigade is equipped with a pumping fire-engine, the latter will attend the call. To protect the town while the appliance is absent, sufficient hose, together with branches, standpipes, &c., will

be kept on a tray in the station. This will be placed on a car or truck during the absence of the appliance, and, at the discretion of the Superintendent, a duty crew will stand by at the station during the absence from the district of the regular appliance.

(3) Where the brigade has neither a Government trailer pump nor a pumping appliance, effective service cannot be given and the out-district arrangement will not apply.

80. It is proposed that the charges made for turnout of a crew under this scheme should be sufficient to cover all out-of-pocket expenses of the brigade-controlling authority. It is considered that, having regard to the proposed increase in Government subsidy and the extension of the subsidies to local authorities controlling brigades, as well as Fire Boards, the charge made for out-district service should not include any brigade overhead. It will in most cases be necessary to call the whole brigade by general alarm, and for this reason the following scale of charges is proposed:

(i) Turnout charges, £3; all non-permanent brigadesmen turning out to be paid 3s.; the men going outside the district to be paid under clause (ii) below; any balance left from the £3 to be available for contingencies.

(ii) All men turning out on the appliance outside the district to be paid at the rate of 3s. per hour or such higher rate as is regularly paid by the brigade; payment is to cover both travelling and working time.

(iii) In cases where the only or major brigade appliance attends an out-district call or where, owing to circumstances existing, the strength of the brigade remaining in the district is unduly reduced, the Superintendent may, at his discretion, order a crew of four men to stand by at the station during the period of attendance at the out-district call. In such case the costs of this stand-by at the rate regularly paid by the brigade shall be part of the out-district call charges.

(iv) Mileage allowance on appliance, 1s. 6d. per mile counting both ways, plus standing charge where towing vehicle is hired.

(v) Pumping costs, 5s. per quarter-hour for each pumping appliance.

(vi) Actual cost of recommissioning of brigade equipment used, including men's uniforms and clothes, change of oil for the pump, and replacement or repair of equipment damaged or destroyed.

81. *Contracts for Out-district Service.*—At the present time many Fire Boards have made contracts under section 19 of the Fire Brigades Amendment Act, 1932, providing for the protection of reticulated areas contiguous to the fire district, or of individual public or commercial buildings or other private property situated outside the district. It is not proposed to alter this provision where the service which can be given is comparable with that available within the district. The "retainer" charges for protection of contiguous urban areas has been based in general on the proportionate rateable capital value of the two areas. It is proposed to provide that such areas may, where satisfactory arrangements cannot be made by agreement, and subject to proper safeguards, be compulsorily brought into the fire district. Where the conditions involved in the protection of either small urban areas or industrial buildings or other private property in rural districts cannot, either by reason of distance or absence of satisfactory water-supply, be given protection comparable with that provided in the fire district, the general scheme should apply. Where, however, industrial property of very considerable value, such, for instance, as a large freezing works, is concerned, some regular supervision of the fire-protection arrangements by the brigade officers is desirable. The proposals would permit the continuance of contracts providing for a retainer to cover this supervision and a small allowance for general overhead, plus turnout charges at the standard rates set out in paragraph 80.

82. *Miscellaneous.*—The submissions to the parliamentary Committee also propose that provision should be made by the Central Council for standardization of equipment (couplings, &c.) and to a reasonable extent of training, for payment of subsidy to the United Fire Brigades' Association, for extension of the subsidy proposals to brigades in county areas, for extension of the existing provisions regarding Coronial inquiries, and the provision of superannuation for the permanent staff of the service the latter having special regard to the fact that the nature of the work makes early retirement necessary in most cases.

FIRE BOARDS

Five new Fire Boards (Upper Hutt, Lower Hutt, Patea, Stratford, and Carterton) have been formed during the war period. In addition, a united fire district has been formed consisting of the Wellington City and Johnsonville Town District. The total number of Boards in operation at the date of this report is sixty. Attached to this report (see First Schedule) is a table showing the general statistics normally published both in respect of the years 1944–45 and the average figures for the five-year period.

NATIONAL FIRE LOSS

The fire losses in New Zealand during the period under review, calculated on the usual basis of the insured loss plus a percentage addition for losses uninsured, were: calendar year 1940, £722,506; 1941, £803,959; 1942, £544,173; 1943, £479,700 (the last available). The losses in fire districts were: 1940–41, £242,689; 1941–42, £466,589; 1942–43, £309,128; 1943–44, £334,600; 1944–45, £548,354.

INSPECTION

It has not been possible to make regular inspections under the Fire Brigades Act during the war period. Inspections have, however, been made where necessary in connection with loan proposals and where investigation of special conditions was necessary. Mr. N. G. Buick, who had been for some years inspecting officer of the Wellington Fire Brigade, was appointed on 1st November, 1943, as Inspection and Liaison Officer under the emergency organization on the recommendation of the National Fire Council. He made a complete inspection of both Fire Board and municipal brigades during 1944 to report on the liaison between the regular fire service and the Civil defence organization. He was appointed Deputy Inspector of Fire Brigades at the same time, the intention being that he should take over the position on the retirement of the present Inspector. He retired from the service on 8th January, 1945, to take up the position of Superintendent at Palmerston North, and no further appointment has been made.

I have, &c.,

R. Girling-Butcher, Inspector of Fire Brigades.

FIRST SCHEDULE

Miscellaneous Statistics for Fire Districts

—	Population, 31st March, 1945.	Rateable Capital Value, 31st March, 1944.	Insurance Company's Premium Income, 1944–45.	Number of Fire Calls.		Fires involving Loss of Property.		Insured Fire Loss, Buildings and Contents.		Uninsured Fire Loss, Buildings and Contents.		Total Fire Loss.		Authorized Expenditure.	
				1944–45.	Average, 1940–45.	1944–45.	Average, 1940–45.	1944–45.	Average, 1940–45.	1944–45.	Average, 1940–45.	1944–45.	Average, 1940–45.	Twelve Months to 31st March, 1946.	Average, 1941–46.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
		£	£					£	£	£	£	£	£	£	£
Auckland Metropolitan ..	183,950	73,125,680	240,171	1,022	1,158	294	212	70,321	89,278	6,200	5,719	76,521	94,997	65,952	60,720
Balclutha	1,690	395,085	1,702	7	8	1	3	200	218	50	110	250	328	130	244
Birkenhead	3,450	829,772	5,836	5	16	2	3	200	262	155	129	355	391	836	778
Cambridge	2,330	747,395	3,219	10	9	7	5	4,273	1,988	900	386	5,173	2,374	985	736
Carterton†	1,940	537,944	..	..	..	..	..	..	..	..	..	..	..	670	..
Christchurch	105,400	31,971,773	115,693	622	511	189	131	25,055	20,650	2,302	2,112	27,357	22,762	26,750	24,918
Dannevirke	4,400	1,489,917	5,703	8	12	4	5	237	253	10	243	247	496	778	635
Dargaville	2,280	651,250	3,208	9	9	1	2	10	646	65	19	75	665	611	553
Dunedin Metropolitan ..	77,360	26,377,243	85,587	632	664	139	96	8,730	50,606	2,814	1,630	11,544	52,236	24,250	25,490
Eltham	1,880	415,170	1,826	2	2	2	1	160	56	..	14	160	70	344	551
Feilding	4,720	1,390,830	5,519	15	14	9	3	90	99	25	8	115	107	888	805
Foxton	1,510	307,422	1,836	9	15	1	2	6	261	..	210	6	471	343	333
Gisborne	13,900	4,351,057	20,898	40	35	12	12	3,346	2,908	763	1,965	4,109	4,873	3,942	3,499
Greymouth	8,460	1,819,158	8,626	7	15	4	7	10	1,178	..	90	10	1,268	1,310	1,310
Hamilton	17,950	6,619,098	21,041	91	119	32	20	5,109	4,964	1,151	1,451	6,260	6,415	6,884	5,601
Hastings	13,650	4,248,014	16,257	39	35	19	13	3,599	2,861	405	110	4,004	2,971	3,575	3,075
Hawera	4,790	1,562,734	7,287	21	21	13	7	321	3,099	98	66	419	3,165	2,320	2,313
Hikurangi	1,000	127,345	802	3	3	1	1	2,320	474	..	400	2,320	874	317	275
Hokitika	2,730	522,013	3,850	..	5	..	3	..	475	..	285	..	760	600	612
Invercargill	23,760	7,084,280	26,870	203	175	38	39	27,818	11,323	1,578	1,785	29,396	13,108	11,876	10,478
Kaiapoi	1,610	358,705	2,138	3	4	1	2	..	649	..	168	..	817	704	645
Kaitangata	1,280	145,945	1,055	4	5	..	1	..	14	..	..	..	14	260	244
Lawrence	630	58,430	521	1	2	..	1	..	52	..	21	..	73	120	112
Levin	2,820	901,444	3,626	7	10	1	1	12	387	..	..	12	387	435	495
Lower Hutt‡	22,900	8,344,205	21,197	178	169	53	35	18,981	9,835	1,403	3,865	20,384	13,700	7,606	6,963
Masterton	9,480	2,804,206	11,983	50	54	12	11	32,041	6,773	648	262	32,689	7,035	3,524	4,011
Milton	1,370	276,960	2,091	6	9	..	1	..	298	..	20	..	318	300	287

Morrinsville	2,000	620,038	2,894	12	13	4	2	1,100	253	30	7	1,130	260	630	584
Napier	16,650	5,001,975	25,524	159	84	35	15	12,705	3,807	1,818	940	14,523	4,747	6,630	5,726
Nelson	11,400	3,455,833	16,860	65	65	45	21	9,745	4,451	3	156	9,748	4,607	3,949	3,707
New Plymouth	17,550	5,674,397	18,559	78	76	30	13	1,848	2,118	95	152	1,943	2,270	5,052	4,457
Oamaru	7,610	2,114,621	8,464	7	12	6	3	652	365	315	127	967	492	1,035	997
Ohakune	1,390	110,847	1,107	8	5	6	1	1,200	278	..	..	1,200	278	321	314
Opotiki	1,510	393,246	2,244	5	7	3	2	225	191	98	72	323	263	517	514
Otaki	1,820	336,114	1 741	5	4	3	2	2,215	965	..	55	2,215	1,020	479	481
Pahiatua	1,740	465,111	3,435	13	12	2	1	79	680	..	..	79	680	550	577
Palmerston North ..	23,600	7,832,039	28,736	132	150	33	25	10,042	10,043	245,184	50,122	255,226	60,165	11,700	9,108
Patea§	1,680	207,070	3,407	5	7	4	2	510	195	..	..	510	195	1,052	886
Petone	11,050	3,385,950	16,504	26	38	7	11	3,580	12,029	170	1,997	3,750	14,026	4,725	3,987
Port Chalmers	2,020	346,655	1,913	4	6	3	3	95	694	..	3	95	697	300	305
Pukekohe	2,690	1,002,706	2,902	8	10	1	2	10	711	..	209	10	920	875	860
Rotorua	6,540	1,754,152	8,392	54	47	12	9	3,904	1,503	4,152	963	8,056	2,466	1,938	1,675
Stratford‖	3,900	1,068,178	..	..	..	..	..	..	..	..	..	..	..	1,250	..
Taihape	2,210	444,773	3,726	7	13	2	2	..	124	5	364	5	488	560	583
Taumarunui	2,760	661,762	3,131	5	8	4	3	168	611	40	33	208	644	868	839
Tauranga	3,910	1,685,372	5,787	12	19	..	2	..	194	50	48	50	242	814	662
Te Aroha	2,450	841,784	3,988	9	8	4	3	834	1,259	..	18	834	1,277	465	385
Te Awamutu	2,570	1,050,695	3,647	9	10	3	3	50	317	15	5	65	322	631	514
Timaru	17,800	5,371,555	17,660	91	75	21	12	157	5,191	45	25	202	5,216	5,500	5,284
Upper Hutt¶	4,390	1,052,306	3,004	20	33	4	5	1,137	777	230	147	1,367	920	780	828
Waihi	3,970	366,981	3,070	45	37	8	5	930	502	818	715	1,748	1,217	663	646
Waipukurau	2,110	534,091	2,832	2	5	1	1	5	181	5	173	10	354	450	450
Wairoa	2,630	717,650	3,483	13	9	7	4	800	787	538	117	1,338	904	884	701
Waitara	2,060	552,229	3,872	3	4	2	2	1,040	5,899	..	..	1,040	5,899	303	331
Wanganui	23,400	6,412,119	24,852	165	193	27	23	3,563	3,014	973	2,425	4,536	5,439	11,632	11,265
Wellington	122,680	49,238,908	194,312	1,113	1,198	258	182	10,085	25,940*	3,938	4,943*	14,023	38,902*	53,800	52,300
Westport	4,240	620,667	4,684	11	11	7	4	4	726	350	230	354	956	916	823
Whakatane	2,160	647,310	2,995	13	13	3	3	..	754	450	212	450	966	710	710
Whangarei	7,600	2,892,352	9,858	19	23	8	5	858	937	60	74	918	1,011	1,600	1,305
Woodville	1,050	204,889	1,220	5	2	3	1	25	10	..	..	25	10	410	426
Totals	838,380	284,527,450	1,053,347	5,117	5,276	1,391	989	270,405	295,113	277,949	85,400	548,354	388,528	288,299	267,913

* Figures incomplete. † 19th July, 1944. ‡ 11th March, 1942. § 18th June, 1941, to 11th March, 1943. 14th March, 1945. • 31st March, 1942.

SECOND SCHEDULE

SHOWING PLANT AND PERSONNEL AVAILABLE FOR EMERGENCY PURPOSES IN VULNERABLE CENTRES

	Brigade Pumps.*	Standard Trailer Pumps.		Heavy Trailer Pumps issued.	Hose-laying Vehicles (Water Units).	Hose-laying Vehicles, Small.		Deluge Sets issued.	Overland Hose issued.†	Delivery Hose issued†.	E.F.S. Personnel.	
		Allocated	Issued.			Allocated	Issued.				Authorized.	Maximum Strength.
Auckland ..	22	75	58	10	4	15	12	13	36,000	82,000	750	750
Wellington‡ ..	20	65	50	7	4	10	6	12	39,000	66,000	700	700
Christchurch§ ..	12	30	24	3	1	5	5	7	12,000	30,000	425	425
Dunedin ..	9	30	22	2	1	3	1	6	12,000	28,000	360	360
Napier ..	4	6	5	1	1	1	..	2	10,000	6,000	60	50
Gisborne ..	3	6	4	1	1	..	..	2	10,000	10,000	60	50
New Plymouth..	2	6	4	1	1	1	..	2	11,000	6,000	60	62
Wanganui ..	4	6	4	1	1	1	1	2	12,000	7,800	70	70
Timaru ..	3	6	4	1	1	..	..	2	10,000	6,000	60	50
Nelson ..	2	3	2	..	..	..	..	1	2,500	3,000	50	64
Whangarei ..	1	3	2	..	..	..	..	..	2,000	2,000	25	22
Hamilton ..	4	6	5	1	1	1	..	2	12,000	6,000	50	50
Hastings ..	1	4	2	..	..	1	..	1	3,000	3,000	50	50
Palmerston North	5	6	4	1	1	1	..	2	12,000	7,000	60	50
Hawera ..	1	1	1	..	..	..	..	..	3,000	1,400	30	26
Masterton ..	2	1	1	..	..	1	..	1	3,000	2,000	35	35
Blenheim ..	1	3	2	..	..	..	..	1	2,500	2,500	30	32
Greymouth ..	2	2	2	..	..	..	..	1	2,000	2,000	40	38
Westport ..	1	2	1	..	..	..	..	..	2,000	1,000	20	20
Oamaru ..	1	3	2	..	..	1	..	1	2,500	2,000	20	20
Invercargill ..	4	6	4	1	1	1	..	2	10,500	6,000	60	66
Bluff	..	2	2	..	..	..	..	..	1,000	2,000	15	12
Others ..	..	17	10	..	1	..	..	..	9,500	80,000	..	..

* Including emergency pumps purchased by local authority under underwriter's subsidy, and owing to lifting of emergency (see paragraph 60). ‡ Including Lower Hutt and Petone. † Not including large reserve not coupled § Including Lyttelton.

THIRD SCHEDULE

SHOWING POST-WAR ALLOCATION ON PERMANENT LOAN OF EMERGENCY APPLIANCES

Water Units, consisting of 500 g.p.m. Dennis trailer pump towed by motor appliance, equipped with Ford 400 g.p.m. sledge pump, and fitted to carry 5,000–6,000 ft. overland hose, 1,500 ft. delivery hose, and ancillary equipment: Auckland (2), Wellington (2), Rotorua, Gisborne, Napier, New Plymouth, Wanganui, Palmerston North, Lower Hutt (with Sulzer pump), Hanmer (without trailer pump), Christchurch, Timaru, Dunedin, Invercargill.

Heavy Hose-laying Appliances, equipped with Leyland 700 g.p.m. sledge pumps and fitted to carry 3,000 ft. of overland hose: Auckland (2), Wellington (1) (also one spare Leyland pump).

Sulzer 700 g.p.m. Trailer Pumps: Birkenhead, Wellington (2), Lower Hutt, Lyttelton, Dunedin.

Standard Ford Pumps, equipped, except as to hose, as specified in training manual: Balclutha, Cambridge, Dannevirke, Eltham, Feilding, Foxton, Greymouth, Hamilton, Hastings, Hawera, Hikurangi, Hokitiki, Masterton, Milton, Nelson, Oamaru, Pahiatua, Petone, Port Chalmers, Pukekohe, Taumarunui, Te Aroha, Te Awamutu, Waihi, Waipukurau, Wairoa, Westport, Whangarei, Alexandra, Ashburton, Bluff, Blenheim, Carterton, Cromwell, Eastbourne, Eketahuna, Featherston, Gore, Greytown, Havelock North, Howick, Huntly, Hunterville, Inglewood, Kaikohe, Kaikoura, Kaitaia, Kawakawa, Martinborough, Marton, Manaia, Manunui, Manurewa, Matamata, Mataura, Motueka, Mount Maunganui, Ngaruawahia, Otorohanga, Papatoetoe, Papakura, Rangiora, Reefton, Stratford, Takapuna, Temuka, Te Kuiti, Te Puke, Thames, Waimate, Waipawa, Waverley.

Small Hose-laying Vehicles without pumps: Auckland (2), Devonport Naval Base, Wellington (2), Wanganui, Hawera, Petone, Hokitika, Christchurch, Dunedin.

Hose.—Allocations have been made as follow:—

Water Units: Overland hose, 10,000–12,000 ft.; delivery hose, 3,000 ft.

Heavy Hose-laying Appliances: Overland hose, 6,000 ft.; delivery hose, 3,000 ft.

Standard Trailer Pumps: Delivery hose, 1,000 ft.

Other Brigades: Delivery hose, 500–1,000 ft.

FOURTH SCHEDULE

List of Fire Brigades not controlled by Fire Boards

Municipal Brigades (in Boroughs, Town Districts, and Road Districts)

Alexandra.	Inglewood.	Northcote.	Roxburgh.
Arrowtown.	Kaikohe.	Opunake.	Shannon.
Ashburton.	Kaitaia.	Otahuhu.	Southbridge.
Akaroa.	Kaponga.	Otorohanga.	Tahunanui.
Bluff.	Kawakawa.	Outram.	Takaka.
Blenheim.	Kumara.	Paeroa.	Takapuna.
Cromwell.	Leeston.	Palmerston (Otago).	Tapanui.
Devonport.	Lyttelton.	Papatoetoe.	Taupo.
Eastbourne.	Martinborough.	Papakura.	Temuka.
Eketahuna.	Marton.	Picton.	Te Kuiti.
Featherston.	Manaia.	Pleasant Point.	Te Puke.
Geraldine.	Manunui.	Putaruru.	Thames.
Gore.	Manurewa.	Queenstown.	Tuakau.
Greytown.	Matamata.	Rangiora.	Waimate.
Havelock North.	Mataura.	Raetihi.	Waipawa.
Helensville.	Motueka.	Ravensbourne.	Waiuku.
Henderson.	Mount Maunganui.	Runanga.	Warkworth.
Howick.	Naseby.	Richmond.	Waverley.
Huntly.	Ngaruawahia.	Ross.	Winton.
Hunterville.			

Brigades in County Areas

Belmont	Denniston.	Methven.	Ruatoria.	Tawa Flat.
Bulls	Fairlie.	Ngongotaha.	Reefton.	Waikino.
Clyde.	Granity.	Paekakariki.	Southbrook.	Wainuiomata.
Coromandel.	Hanmer Springs.	Plimmerton.	Stokes Valley.	Wellsford.
Days Bay.	Kaikoura.	Point Howard.	Takapau.	West Shore.

Independent Fire Brigades in Fire Districts

New Brighton (Christchurch).	Mount Albert (Auckland).	Onehunga (Auckland).
Johnsonville (Wellington).	Mount Eden (Auckland).	Spit (Napier).
Cobden (Greymouth).	Mount Roskill (Auckland).	Silverstream (Upper Hutt).
Mosgiel (Dunedin).	Mount Wellington (Auckland).	Sumner (Christchurch).

Industrial Fire Brigades

Belfast Freezing-works.	Patea Freezing-works.
Fairfield Freezing-works.	Rangitaiki Plains Dairy Co. (Edgecumbe).
Greymouth Railway Works.	State Forest Sawmill (Rotorua).
Horotiu Freezing-works.	Tomoana Freezing-works.
Islington Freezing-works.	Waitemata Brewery.
Moerewa Freezing-works.	Westfield Freezing-works.
Otahuhu Railway Works.	Whakatu Freezing-works (Hawke's Bay).
Otira Railway.	Woburn Railway Works.

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