

1939.  
NEW ZEALAND.

## ACTUARY'S REPORT ON THE VALUATION OF THE NATIONAL PROVIDENT FUND

AS AT 31st DECEMBER, 1937.

*Laid before Parliament in pursuance of Section 73 of the National  
Provident Fund Act, 1926.*

1. In accordance with the provisions of section 73 of the National Provident Fund Act, 1926, as amended by section 31 of the Finance Act, 1938, I have the honour to submit the following report on the National Provident Fund as at 31st December, 1937.

2. The Fund consists broadly of two sections—the Main Fund, established to enable individuals to purchase pensions commencing at age sixty, and the Local Authorities' Section, which is in effect a pension fund for employees of local authorities. In the former, membership is voluntary, new members being enrolled by representatives of the Department appointed for the purpose, while in the latter membership as contributors on behalf of their employees is compulsory in respect of Hospital Boards and optional for other local authorities.

The principle of providing for old age is common to both sections, but their structure is in every way dissimilar. The published accounts of the Department, however, relate to the whole Fund, and in consequence the financial positions of the two sections cannot be viewed separately.

3. The receipts and expenditure of the Fund for the period 1st January, 1926, to 31st December, 1937, were as follows:—

CONSOLIDATED REVENUE ACCOUNT, 1ST JANUARY, 1926, TO 31ST DECEMBER, 1937.

<i>Income.</i>			<i>Outgo.</i>		
	£	s. d.		£	s. d.
Amount of Fund at 1st January, 1926 .. .. .	1,377,967	4 9	Maternity claims—		
Contributions .. .. .	2,831,369	3 0	National Provident Fund members .. .. .	72,712	0 0
Interest less investment expenses	1,758,370	16 4	Approved friendly-society members .. .. .	403,392	0 0
Fines .. .. .	8,878	11 6	Refund of contributions on lapse, withdrawal, &c. .. .. .	863,772	6 3
State subsidies .. .. .	665,040	3 3	Incapacity allowances .. .. .	71,868	1 10
Refund of maternity claims by State .. .. .	458,878	0 0	Death claims—		
Benefits refunded on exit .. .. .	417,508	13 10	Refund of contributions .. .. .	206,966	5 11
Miscellaneous receipts .. .. .	15	17 1	Widows' and children's allowances .. .. .	131,179	19 6
Refunds unclaimed .. .. .	17,043	17 6	Retirement allowances .. .. .	431,989	14 3
Premiums on conversion .. .. .	8,444	13 8	General expenses .. .. .	63,795	6 0
			Investment Fluctuation Account .. .. .	5,254	8 9
			Amount of Fund at 31st December, 1937 .. .. .	4,992,586	18 5
				£7,243,517	0 11
	£7,243,517	0 11		£7,243,517	0 11

4. All contributions paid by contributors—with minor exceptions noted in paragraphs 7 and 8—attract a 25-per-cent. State subsidy, and, in addition, expenses other than the charges by the Public Trustee for his administration of the assets of the Fund and legal

charges incurred in connection with investments are met by the State. The Public Trustee's charges and legal expenses have been regarded as investment expenses and deducted from interest in the Consolidated Revenue Account.

Subject to certain limitations as to income and duration of membership, members of the Fund receive a payment of £6 on the birth of a child or children. Members of approved friendly societies also attract a like benefit, the payments being made through the National Provident Fund. In both cases the sums so paid are recovered from the State.

Finally, the State guarantees the solvency of the Fund.

The scale of State assistance to the Fund has been as above throughout its history, save for a short time during the inter-valuation period under review, when the Fund paid its own expenses and maternity claims, and the State subsidy on members' contributions was at the rate of 20 per cent.

The maternity claims paid cannot affect the financial stability of the Fund and have therefore been ignored in the valuation; nor has any specific provision been made for future expenses, it being assumed that the rate of interest earned by the funds will show sufficient margin over the valuation rate to meet investment expenses.

5. The average annual rates of interest earned by the accumulated funds for each year since the Fund was last valued were as follows:—

Year ended 31st December,	Average Rate of Interest, per Cent.			Year ended 31st December,	Average Rate of Interest, per Cent.				
	£	s.	d.		£	s.	d.		
1926 ..	..	5	17	2	1932 ..	..	5	4	11
1927 ..	..	5	19	3	1933 ..	..	4	10	10
1928 ..	..	5	15	9	1934 ..	..	4	6	5
1929 ..	..	5	14	1	1935 ..	..	4	1	9
1930 ..	..	5	12	11	1936 ..	..	3	18	8
1931 ..	..	5	12	1	1937 ..	..	3	18	1

In calculating the above rates investment expenses have been deducted from interest, and allowance has been made for the fact that the State subsidy taken credit for in the accounts of any year is not received until some months later.

From the above rates and having regard to current investment conditions, it appears that 3½ per cent. is a suitable rate of interest to use in the valuation, and this has been adopted accordingly.

#### MAIN FUND.

6. Any resident of New Zealand who is over sixteen and under fifty years of age may become a contributor to the Main Fund, provided that his average annual income during the three years prior to his joining did not exceed £300. The benefits granted are:—

- (i) A pension commencing at age sixty of 10s., 20s., 30s., or 40s. per week.
- (ii) The first 10s. of any such pension carries with it the right to the following subsidiary benefits—

(a) An allowance of 7s. 6d. per week for each child under the age of fourteen years, and 7s. 6d. per week for the contributor's widow, payable from the date of his death should that occur after he has contributed to the Fund for five years. The widow's allowance is payable only so long as a child's allowance is payable.

(b) An allowance of 7s. 6d. per week for each child under the age of fourteen years, payable during the fourth and subsequent months of the contributor's total incapacity to work while he is under sixty years of age, and provided that he became incapacitated after contributing to the Fund for five years. The total weekly allowance so payable is not to exceed the contributor's pecuniary loss, and no allowance is payable if the contributor's income during incapacity exceeds £4 per week. Contributions cease while such allowances are payable.

- (iii) On the termination of the contract through any event, including the contributor's right to secede, a return to him or to his beneficiaries, of all contributions paid less any benefits received.

The contributions payable for the above benefits are shown in Table I of the attached Appendix.

7. An approved friendly society may become a contributor to the Main Fund on behalf of any of its members. The benefits granted are pensions of 10s., 20s., 30s., or 40s. per week commencing at age sixty, and a return of contributions paid, less benefits received (if any), on the death of the member, whether before or after attaining age sixty or on his withdrawal. Such members pay low rates of contribution, which their societies supplement by payments from their sick-benefit funds, the funds being reimbursed by release from liability of equal value in respect of the member's sickness after age sixty. These contributions—both members' and societies'—which are given fully in Table I of the Appendix, attract a 50-per-cent. State subsidy.

8. Special provisions enable employers to become contributors to the Main Fund on behalf of their employees. The benefits are as described in paragraph 6, but the scope is widened by admitting employees irrespective of their income or age at the date of joining, and by granting pensions up to 80s. (by 10s. intervals) per week. Where, however, a pension is contracted for when the employee is fifty years of age or over, and where the pension exceeds 40s. per week, the whole of the contribution payable in the former case and that portion of the contribution payable in respect of the excess of the pension over 40s. per week in the latter, does not attract a Government subsidy. The Fund receives all contributions from the employer, who may or may not pay the whole or part thereof, according to his arrangement with his employees. The contributions payable in these cases are shown in Table I of the Appendix.

9. Females are admitted to the Main Fund on practically the same terms as males. There are, however, minor modifications in the conditions precedent to the grant of the subsidiary benefits described in paragraph 6, and where advantage is taken of the widened provisions of entry in employer groups the rates of contribution payable are somewhat higher than the corresponding rates for males. There are comparatively few female contributors to the Main Fund.

10. At the valuation date there were 20,991 members of the Main Fund contributing £1,550 per week for prospective pensions amounting to £13,042 per week. Of these, only 77 were contributing through approved friendly societies and 370 through forty employer groups. Pensions amounting to £230 per week were being paid to 269 pensioned contributors, and 173 widows and 301 children were in receipt of allowances of 7s. 6d. per week, the total annual charge for pensions being £21,281.

11. Pension funds almost invariably exhibit features peculiar to themselves in the rates of mortality, discontinuance, &c., experienced by their members, and consequently it is desirable, if possible, to value a fund having regard to its own experience in the immediate past and to possible future trends. On this occasion the experience of the Main Fund has been analysed for the period elapsed since the last valuation, and the results, subject to modification where persistent trends are evident and where prudence is called for in estimating the future, have been adopted in the valuation.

The most outstanding feature of the experience is the high withdrawal rate which approaches 20 per cent. two years after entry and persists for many years. This appears to be a definite feature of the Fund, as the experience of the period covered by the economic depression differs little, if at all, from that of years of greater general prosperity. As, however, an overestimate of the future withdrawal rates might have a serious adverse effect on the finances of the Fund, considerably lower rates have been used in the valuation than were exhibited in the experience.

12. The rates of mortality experienced were much below comparable rates deduced from the experience of the general population of New Zealand and approximated closely to rates experienced for the years 1924 to 1929 by lives assured in English life offices experiencing noticeably light rates of mortality. The experience rates suitably adjusted have been used in the valuation.

The conditions governing the grant of subsidiary benefits are peculiar to the Fund. For incapacity benefit an income limit is involved and allowances made to widows are in fact but supplements of children's allowances. The Fund has no information of members' incomes or of their dependants, and rather than value the subsidiary benefits by using extraneous data of doubtful application it has been thought advisable to use rates of claim deduced from the inter-valuation experience.

13. The valuation of the Main Fund carried out on bases described above yields the following results:—

Present value of—					£
Existing pensions	..	..	..	..	129,187
Prospective pensions	..	..	..	..	2,222,801
Existing widows' and orphans' allowances	..	..	..	..	36,198
Prospective death benefits	..	..	..	..	271,732
Present and prospective incapacity allowance	..	..	..	..	113,339
Prospective refunds on withdrawal	..	..	..	..	227,961
Total benefits	..	..	..	..	£3,001,218
Present value of—					£
Future contributions	..	..	..	..	886,941
Future State subsidies	..	..	..	..	215,296
Total	..	..	..	..	£1,102,237

#### LOCAL AUTHORITIES' SECTION.

14. All Hospital Boards must, and other local authorities may, contribute to the Fund on behalf of their permanent employees. A local authority electing to become a contributor may exclude any of its employees at the time of its election, but it must contribute on behalf of all future entrants to its permanent staff.

The principal benefit is a pension based on length of service and modified final salary, granted on retirement through ill health or after attainment of normal pension age—i.e., after attainment of a specified age or after completion of a specified period of service. In nearly all cases service with a local authority prior to its adoption of the scheme ranks for pension purposes.

A full description of the benefits is given in Table II of the Appendix.

15. The method of assessing contributions payable to the Fund is unusual. When a local authority brings an employee into the Fund an assessment is made, on the basis for the time being in use, of the cost of his prospective widow's and orphans' benefits and of the pension which will accrue on his retirement, having regard to his present salary and to the years of service which he will have completed on attaining normal pension age. As and when his salary is increased, further assessments are made of the cost of the increases in pension which will become payable in virtue of the increases in salary. Increases in prospective pension bear the same proportion to increases in salary as the original prospective pension bears to the original salary.

16. The cost so calculated is divided among the contributing parties as follows:—

- (i) The State, as mentioned earlier in this report, pays an annual subsidy equal to 25 per cent. of the contributions paid by both the employee and the local authority.
- (ii) The employee contributes a percentage of his salary fixed by his age at entry into the Fund as follows:—

Age at Entry into Fund.						Employee's Contribution, per Cent.
Not over 30 .. .. .	..	..	..	..	..	4
Not over 35 .. .. .	..	..	..	..	..	5
Not over 40 .. .. .	..	..	..	..	..	6
Not over 45 .. .. .	..	..	..	..	..	7
Not over 50 .. .. .	..	..	..	..	..	8
Over age 50 .. .. .	..	..	..	..	..	9

These contributions cease on retirement and are usually reduced to a nominal amount during such period as the employee remains on the active staff after attaining normal pension age.

- (iii) The balance of the cost is met by the local authority's contribution, which is usually payable throughout the employee's future lifetime as an active or pensioned member of the staff, excepting for such period as the employee remains on the active staff after attaining normal pension age.

17. The principle of spreading the local authority's contribution over the future lifetime of the employee rather than over his future working-years appears to have been adopted, in the first place, to give relief in cases where employees were brought into the Fund at advanced ages and where their prior service with the local authority was allowed to rank for pension purposes. If in such cases the local authority's contributions were made payable during future working-years only, the annual charge to a local authority with a staff of average age-constitution would be exceedingly heavy for a comparatively short period immediately after its adoption of the scheme. The present system requires payment of smaller annual contributions over longer periods.

Whatever the reason for the adoption of the principle, it has become the standard practice and is applied in almost all cases, irrespective of whether prior service is involved or not.

18. At the valuation date 124 local authorities were contributing to the Fund on behalf of 4,929 male and 3,052 female employees for prospective pensions of £970,467 per annum accruing in respect of present salaries. Pensions amounting to £63,386 per annum were payable to 430 male and 117 female retired employees, and 152 widows and 89 children were in receipt of allowances amounting to £3,893 per annum. The contributions payable amounted to £191,406 per annum, £97,785 per annum being contributed by employees and £93,621 by local authorities.

19. As with the Main Fund, rates of mortality, withdrawal, retirement, &c., for each class of contributor have been deduced from the experience of the Local Authorities' Section for the period of twelve years prior to the valuation date, and these rates, suitably modified, have been adopted in the valuation. For widows' and orphans' benefits it has been necessary to use factors deduced from New Zealand population statistics, as no information of employees' marital status or of their dependants is available.

The only abnormal feature of the experience was the high rate of discontinuance experienced by nurses employed by Hospital Boards. It is to be expected that female members of any pension fund would exhibit heavier withdrawal rates than males, as females usually retire from their former occupation on marriage; but the rates of withdrawal disclosed by the experience of nurses are about three times as great as would be considered normal in a fund composed of females occupied in commercial pursuits. The reason appears to be that on completion of their training, which must be done in a public hospital, nurses seek employment either in private hospitals or as private nurses. It is not clear that this condition will persist, and much lower rates have been adopted in the valuation.

20. The results of the valuation of the Local Authorities' Section are as follows:—

Present value of—					£
Existing pensions .. .. .	..	..	..	..	600,311
Prospective pensions .. .. .	..	..	..	..	4,200,886
Existing widows' and orphans' allowances .. .. .	..	..	..	..	42,619
Prospective death benefits .. .. .	..	..	..	..	470,828
Prospective refunds on withdrawal .. .. .	..	..	..	..	193,590
Total benefits .. .. .	..	..	..	..	<u>£5,508,234</u>
Future contributions—					£
Employees .. .. .	..	..	..	1,223,844	
Local authorities .. .. .	..	..	..	954,723	
					<u>2,178,567</u>
Future State subsidies .. .. .	..	..	..	..	529,392
Total .. .. .	..	..	..	..	<u>£2,707,959</u>

### COMBINED VALUATION RESULTS.

21. The combined valuations disclose the following position for the Fund as a whole:—

#### VALUATION BALANCE-SHEET.

Present value of benefits—		£			£
Main Fund .. .. .	..	3,001,218		Funds at 31st December, 1937 ..	4,992,587
Local Authorities' Section .. .. .	..	5,508,234		Present value of—	
Surplus .. .. .	..	293,331		Future contributions	
				(i) Main Fund .. .. .	886,941
				(ii) Local Authorities' Section .. .. .	2,178,567
				Future State subsidies	
				(i) Main Fund .. .. .	215,296
				(ii) Local Authorities' Section .. .. .	529,392
					<u>£8,802,783</u>
		<u>£8,802,783</u>			<u>£8,802,783</u>

The above surplus has arisen chiefly from high interest yields on the invested funds in the early years of the period under review, and from heavy withdrawals in the Main Fund and among nurses in the Local Authorities' Section. In the Main Fund contributors receive a refund of their contributions on withdrawal, and in the Local Authorities' Section both local authority and employee receive a like benefit. In both cases, however, the State subsidy, together with all interest earned on the contributions, falls into the Fund.

22. At the valuation date about 24 per cent. of the funds were invested in mortgages on freehold property, 11 per cent. in local-authority debentures, and the balance in Government securities. Assets appear in the balance-sheet at their face value and no provision has been made to meet future depreciation, &c., losses of capital and interest being met as they occur.

I therefore recommend that £75,000 of the above surplus be applied to form an investment reserve fund.

23. It is inferred from section 73 (2) of the National Provident Fund Act, 1926, that, if a valuation discloses a deficiency, the Actuary is to report what additional sums are required by way of State subsidy during the three years following the valuation to prevent the financial position of the Fund deteriorating still further.

As this valuation discloses a surplus, I have to report that additional State subsidies are not required for the period ending 31st December, 1940.

S. BECKINGSALE, Fellow of the Institute of Actuaries,

Government Actuary.

National Provident Fund Board, Wellington.

## APPENDIX.

TABLE I. MAIN FUND: WEEKLY CONTRIBUTIONS.

Age Last Birthday.	Individual Contributors for each 10s. of Pension.	Employer Groups.		Approved Friendly Societies.			Age Last Birthday.
		Each 10s. of Pension up to 40s.	Each 10s. of Pension over 40s.	First 10s. of Pension. Member.	Society.*	Each 10s. of Pension after First.	
	s. d.	£ s. d.	£ s. d.	s. d.	s. d.	s. d.	
16	0 9	0 0 9	0 0 9	0 4	0 2	0 6	16
17	0 10	0 0 10	0 0 10	0 5	0 2	0 7	17
18	0 10	0 0 10	0 0 10	0 5	0 2	0 7	18
19	0 11	0 0 11	0 0 11	0 5	0 2	0 8	19
20	1 0	0 1 0	0 1 0	0 6	0 2	0 8	20
21	1 0	0 1 0	0 1 1	0 6	0 2	0 8	21
22	1 1	0 1 1	0 1 1	0 7	0 2	0 9	22
23	1 2	0 1 2	0 1 2	0 7	0 2	0 9	23
24	1 3	0 1 3	0 1 3	0 7	0 3	0 10	24
25	1 4	0 1 4	0 1 4	0 8	0 3	0 11	25
26	1 5	0 1 5	0 1 6	0 8	0 4	1 0	26
27	1 6	0 1 6	0 1 7	0 9	0 4	1 1	27
28	1 7	0 1 7	0 1 8	0 10	0 4	1 2	28
29	1 8	0 1 8	0 1 9	0 10	0 4	1 2	29
30	1 9	0 1 9	0 1 11	0 11	0 4	1 3	30
31	1 10	0 1 10	0 2 0	0 11	0 4	1 3	31
32	2 0	0 2 0	0 2 2	1 0	0 4	1 4	32
33	2 2	0 2 2	0 2 4	1 1	0 5	1 6	33
34	2 3	0 2 3	0 2 6	1 2	0 5	1 7	34
35	2 5	0 2 5	0 2 8	1 3	0 6	1 9	35
36	2 7	0 2 7	0 2 10	1 4	0 6	1 10	36
37	2 10	0 2 10	0 3 1	1 5	0 6	1 11	37
38	3 0	0 3 0	0 3 4	1 6	0 7	2 1	38
39	3 3	0 3 3	0 3 8	1 7	0 8	2 3	39
40	3 6	0 3 6	0 3 11	1 9	0 8	2 5	40
41	3 10	0 3 10	0 4 3	1 11	0 9	2 8	41
42	4 2	0 4 2	0 4 8	2 1	0 9	2 10	42
43	4 6	0 4 6	0 5 1	2 3	0 10	3 1	43
44	4 11	0 4 11	0 5 7	2 6	0 11	3 5	44
45	5 7	0 5 7	0 6 2	..	..	..	45
46	6 6	0 6 6	0 6 10	..	..	..	46
47	7 5	0 7 5	0 7 7	..	..	..	47
48	8 4	0 8 4	0 8 7	..	..	..	48
49	9 4	0 9 4	0 9 7	..	..	..	49
50	..	0 13 0	0 10 4	..	..	..	50
51	..	0 14 0	0 11 11	..	..	..	51
52	..	0 15 7	0 14 1	..	..	..	52
52½	..	0 16 7	0 15 4	..	..	..	52½
53	..	0 18 0	0 16 9	..	..	..	53
53½	..	0 19 8	0 18 5	..	..	..	53½
54	..	1 1 9	1 0 5	..	..	..	54
54½	..	1 4 1	1 2 9	..	..	..	54½
55	..	1 7 1	1 5 8	..	..	..	55
55½	..	1 10 9	1 9 3	..	..	..	55½
56	..	1 15 6	1 13 11	..	..	..	56
56½	..	2 1 9	2 0 0	..	..	..	56½
57	..	2 10 8	2 8 8	..	..	..	57
57½	..	3 4 2	3 1 11	..	..	..	57½
58	..	4 7 7	4 4 7	..	..	..	58
58½	..	6 14 9	6 10 9	..	..	..	58½

\* Alternatively, the society may pay to the Fund a single payment of £55 12s. when the member attains age sixty.

## TABLE II.—LOCAL AUTHORITIES' SECTION.

The benefits payable from the Fund are as follows:—

- I. On retirement after attaining age sixty-five (men) or age sixty (women), or after completion of forty years' service and fifteen years' membership of the Fund—
- (i) A pension calculated at the rate of one-sixtieth of final salary (excluding increases in salary granted within three years of retiring) for each year of service, with a limit of forty-sixtieths and subject to a maximum of £300 per annum;
  - (ii) Or a refund of all contributions paid, including the local authority's contributions, less benefits received.
- Where the conditions of service are such that earlier retirement is advisable, age sixty is adopted as normal retiring-age for men and fifty-five for women. In the latter case an employee may retire after completing thirty years' service and fifteen years' membership of the Fund.
- II. On earlier retirement through ill health a pension as in I.
- III. On death whether before or after retiring:—
- (i) *Leaving neither Widow nor Children.*—A refund of all contributions paid, including local authority's contributions, less benefits received.
  - (ii) *Leaving a Widow.*—An allowance of £18 per annum during widowhood or a refund of contributions as in (i).
  - (iii) *Leaving Children.*—An allowance of 5s. per week on account of each child under the age of fourteen years. Where no widow's benefit has accrued a refund of all contributions paid, including the local authority's contributions, less benefits received, is granted when the youngest child attains fourteen years of age.
- IV. On voluntary withdrawal or on dismissal from the service of the local authority both employee and local authority receive a refund of contributions, provided that—
- (i) If the employee enters the service of another local authority which contributes to the Fund on behalf of its employees he may secure continuity of service for pension purposes by electing not to receive a refund of his contributions. In this event the local authority's contributions also are not refunded.
  - (ii) If the employee is dismissed within five years of normal retiring-age his and the local authority's contributions on his behalf may be transferred to the Main Fund for his benefit.

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