

## Report on the



**GOVERNMENT SUPERANNUATION FUND**  
Te Pūtea Penihana Kāwanatanga

## ACTUARIAL VALUATION as at 30 June 2013



# 2013

Presented to the House of Representatives pursuant to section 94  
of the Government Superannuation Fund Act 1956



# Contents

<b>1. INTRODUCTION</b>	1
<b>2. THE FUND</b>	2
<b>3. MEMBERSHIP DATA</b>	3
<b>4. FUND ACCOUNTS AND ASSETS</b>	5
<b>5. FUND EXPERIENCE</b>	8
<b>6. VALUATION METHODOLOGY</b>	9
<b>7. ASSUMPTIONS</b>	11
<b>8. RESULTS</b>	13
<b>9. MATERIAL RISKS</b>	21
<b>10. STATEMENTS AND CERTIFICATION</b>	23
Appendix A. MEMBERSHIP DATA	27
Appendix B. ACTUARIAL ASSUMPTIONS	31
Appendix C. SUMMARY OF ENTITLEMENTS	39





# 1. INTRODUCTION

This Report has been prepared for the Government Superannuation Fund Authority (the Authority). Limitations relating to the use of this Report are set out in Section 10.

The previous actuarial valuation report, as at 30 June 2012, was prepared by me, Emma Brodie FNZSA, FIAA, dated 29 January 2013.

The requirement for actuarial valuations of the Government Superannuation Fund (the Fund) is set out under Section 94 of the Government Superannuation Fund Act 1956 (the Act). This states that the Authority must obtain an actuarial report that examines the financial position of the Fund as at dates determined by the Minister of Finance but no more than three years apart.

The report must show the financial position of the Fund as at the valuation date and the probable annual contributions required by the Fund to provide benefits falling due within the next three years without affecting or having recourse to the actuarial reserve in relation to the member contributions.

Under Section 95 of the Act the Authority must certify, after receiving advice from an actuary, as to the share of benefit payments to be met from the Fund assets. The Authority must also certify, after receiving advice from an actuary, the payments to be made to the Fund by employers whose employees are paid from money that is not public money ("funding employers").

Therefore, the purpose of this Report is to:

1. evaluate the unfunded liability of the Fund in respect of past service as at 30 June 2013;
2. calculate the proportion of benefits payable from the Fund that is to be met from the Fund assets;
3. calculate the probable annual contributions required by the Crown to cover a proportion of the benefits payable over the next five years; and
4. make recommendations in respect of contributions to the Fund to be made by employers of contributors to the Fund with effect from 1 July 2014.

Our report also provides a summary of the data used to calculate the above results, details of the assumptions and methodology adopted and a summary of the benefit design for each of the schemes within the Fund.

## 2. THE FUND

The Fund is established under the Government Superannuation Fund Act 1956, as amended from time to time, which governs a number of separate superannuation schemes. The schemes are registered under the Superannuation Schemes Act 1989 but are exempt from the provisions of sections 7 to 22 of the Superannuation Schemes Act 1989.

The Schemes established under the Act are;

<b>Scheme</b>	<b>Part of the Act</b>
Government Service Superannuation (Old General)	Part 2
New Government Service Superannuation (New General)	Part 2A
Armed Forces Scheme	Part 3A
Judges and Solicitor-General Scheme	Part 5A
Parliamentary Scheme	Part 6
Police Scheme	Part 6A
Prisons Scheme	Part 6B

Members under Part 2 or Part 2A of the Act who are or were employed by the Public Services of the Cook Islands, Niue or Tokelau are valued separately and described as "Islands" in this report.

The Judges and Solicitor-General Scheme and the Parliamentary Scheme are managed on a fully pay-as-you-go basis. The remainder of the schemes are managed on a partially funded basis. Contributions from members and funding employers (employers whose employees are paid from money which is not public money) are paid into the Fund and invested. For non-funding employers the employer contributions are paid to the Crown.

Benefits are paid partly from the assets of the Fund and partly by the Crown.

The level of employer contributions and the proportion of the benefits payable from the Fund assets are reviewed at each statutory valuation of the Fund.

The schemes have been closed to new members since 1 July 1992, apart from Islands members who were able to join up until 1995.

### 3. MEMBERSHIP DATA

The membership data required to produce our actuarial calculations was provided by the Fund Administrator, Datacom Employer Services Limited (Datacom), and is effective as at 30 June 2013. Key summary membership statistics are provided in Appendix A.

Where possible, we placed checks on the data to ensure internal consistency. Our checks identified a group of members from a particular employer where salaries were overstated and we received amended data from Datacom, which we used to update the original data. Apart from this change any other inconsistencies in the data were confined to small groups of members and updating the data to address these inconsistencies would not have a material impact on the results.

At 30 June 2013 there were 6,580 contributors with total salaries of \$612.0 million. There were 46,568 current pensioners with total pensions of \$826.8 million and 5,390 deferred pensioners.

We did not perform data checks in respect of the groups of members commonly known as Inactives(1) and Inactives(2). More information on these groups is set out in Appendix A. These are members who have ceased contributing to the Fund, but have not yet received an entitlement, and for whom insufficient data is available. The impact on the overall liabilities of the Fund from these two inactive groups is modest in relative terms and therefore we are comfortable to make an approximation in the 30 June 2013 valuation. There were 4,884 Inactives(1) and Inactives(2) members as at 30 June 2013. Movements in membership of the contributors and inactives groups of the Fund by scheme are shown below.

	30 June 2012	Retirements	Withdrawals	Transfers	Deaths	Ill health	30 June 2013
Armed Forces	145	5	0	0	0	0	140
General (ex Islands)	11,095	809	47	15	11	6	10,207
Islands	729	22	8	2	3	0	694
Police	379	35	1	0	2	0	341
Prisons Service	83	13	1	5	0	0	64
Judges	13	3	0	0	0	0	10
Parliamentary	9	1	0	0	0	0	8
<b>Total</b>	<b>12,453</b>	<b>888</b>	<b>57</b>	<b>22</b>	<b>16</b>	<b>6</b>	<b>11,464</b>

The movements in the contributor and inactives data for the 2012/13 year are summarised below.

	30 June 2012 category (From)	30 June 2013 category (To)			
		Contributor	Inactives(1)	Inactives(2)	Exits
Contributor	7,636	6,543	267	0	826
Inactives(1)	2,009	35	1,823	0	151
Inactives(2)	2,808	2	0	2,794	12
<b>Total</b>	<b>12,453</b>	<b>6,580</b>	<b>2,090</b>	<b>2,794</b>	<b>989</b>

The movements in the pensioner membership, including deferred pensioners, over the year were as follows.

Pensioners at 30 June 2012	52,315
<i>Less</i> pensioners ceasing to receive pensions	1,983
<i>Plus</i> new pensioners commencing	1,626
<b>Pensioners at 30 June 2013</b>	<b>51,958</b>

The data we received was sufficient to carry out this valuation of the Fund.



## 4. FUND ACCOUNTS AND ASSETS

### Assets

The net assets of the Fund had a market value of \$3,382 million at 30 June 2013. This figure was obtained from audited financial statements as at 30 June 2013 provided by the Authority. The information includes the market value of the Fund assets, contributions, benefit payments and expenses information over the period since 30 June 2012.

Asset values in respect of prior years have been taken from the audited accounts included in the Annual Report of the Fund.

The transactions of the Fund for the year ending 30 June 2013 together with the prior year's figures for comparative purposes are summarised in the following table.

<b>Year ending 30 June:</b>	<b>2012 \$M</b>	<b>2013 \$M</b>
Opening balances	3,159	3,017
<i>Plus:</i>		
Member contributions	50	47
Funding employers	23	19
Government Subsidies	699	658
Investment income	25	527
<i>Less:</i>		
Pensions paid	839	814
Commutations	48	32
Refunds and payments on death	10	7
Tax provision	42	33
<b>Closing balances</b>	<b>3,017</b>	<b>3,382</b>

The accuracy of our results is dependent upon the accuracy of the underlying data provided. We are confident of the sufficiency and reliability of the information provided for the purposes of this report. We consider that the use of the market value of assets is consistent with the assumptions used in determining the discount rate for valuing liabilities. There are no contingent liabilities.

### Investments

The Authority, under the Government Superannuation Fund Amendment Act 2001, is responsible for investing the assets in a prudent, commercial manner. The Authority has set an Investment Performance Measure of 2.5% above the New Zealand Government Stock Return Index (after tax) measured over rolling 10 year periods. In conjunction with the performance measure the Fund has a risk parameter of no more than a 10% chance in any one year of a loss after tax greater than 9% of assets.

The Authority has determined that the long term strategic asset allocation (also known as the Target Portfolio) for the investments of the Fund from 1 July 2013 is:

Asset Class	Proportion
New Zealand equities	9.3%
International equities	50.5%
Fixed interest	18.0%
Commodities*	4.2%
Global tactical asset allocation	3.0%
Catastrophe risk assets	6.0%
Life settlement assets	2.0%
Multi asset class	7.0%
<b>Total</b>	<b>100.0%</b>

\* From 1 October 2013 the allocation to commodities has been reallocated to international equities.

At 30 June 2013 the assets of the Fund were invested in accordance with the investment strategy as follows:

Asset Class	\$M	Proportion of total assets at 30 June 2013	Proportion of total assets at 30 June 2012
New Zealand equities	304	9.0%	8.8%
International equities (including property)	1,654	48.9%	43.6%
Fixed interest	569	16.8%	22.9%
Commodities	113	3.3%	3.6%
Multi asset and global tactical asset allocation	345	10.2%	10.6%
Insurance linked assets	242	7.2%	7.0%
Short term investments and cash	155	4.6%	3.6%
<b>Total</b>	<b>3,382</b>	<b>100%</b>	<b>100%</b>

The asset allocation at 30 June 2013 was within the allowable range for each asset class as specified in the investment policy which was current at that date.

Within these asset classes the Fund utilises a range of specialist investment managers. These are listed in the table below.

<b>New Zealand Equities</b>	Direct Capital IV GP Limited (NZ private equity) Harbour Asset Management Limited OnePath (NZ) Limited Pencarrow Private Equity Management Limited Pioneer Capital Management Limited
<b>International Equities</b>	Altrinsic Global Advisers, LLC Arrowstreet Capital Limited Partnership Genesis Emerging Markets Investment Company Lazard Asset Management LLC Makena Capital Management (Cayman) LLC Marathon Asset Management LLP PanAgora Asset Management, Inc Pzena Investment Management, LLC Willis Bond and Company Management Limited
<b>Fixed Interest</b>	Ashmore Management Company Limited Pacific Investment Management Company LLC Wellington Management Company LLP
<b>Commodities</b>	Gresham Investment Management LLC
<b>Global tactical asset allocation</b>	AQR Capital Management, LLC
<b>Multi assets</b>	Makena Capital Management (Cayman), LLC
<b>Insurance linked assets</b>	Credit Suisse Securities (Europe) Fermat Capital Management LLC Nephila Capital Limited
<b>Currency management</b>	ANZ National Bank Limited Ltd State Street Global Advisors, Australia, Ltd

In our opinion, given the circumstances of the Fund, in particular the long term nature of the benefits and the partially funded status, the assets and the investment strategy are within the range of what is suitable for the purposes of the Fund.

## Investment Return

The long term after tax investment return was assumed to be 5.5% p.a. for the purposes of the 30 June 2012 statutory valuation. The estimated return for the 2012/13 year was 16.7%. This has been estimated using the formula  $2I/(A + B - I)$ , where I is investment income less tax provisions, A is the opening balance and B is the closing balance.

Returns for prior years, as reported in the Fund's annual reports were:

Year ended 30 June 2012	-0.5%
Year ended 30 June 2011	11.6%
Year ended 30 June 2010	10.4%

## 5. FUND EXPERIENCE

### Salary Increases

The average salary increases for the year for contributors at 30 June 2013 are shown in the table below, segregated by scheme. The expected increase, based on last year's actuarial assumptions was 3% plus an assumed promotional salary increase based on a member's scheme and age. Therefore the majority of members had salary increases which were lower than expected, and this has the effect of reducing the value of the liabilities slightly.

Scheme	Actual salary increase
Armed Forces	3.9%
General (excluding Islands)	1.4%
Islands	2.8%
Police	1.7%
Prisons Service	2.7%
Judges and Solicitor-General	2.2%
Parliamentary	2.0%

### Pension Increases

Pensions were adjusted to reflect an increase in the Consumer Price Index of 0.95% over the year. This was lower than the assumed rate of 2.1% and has the effect of reducing the value of the liabilities.

### Demographic

The demographic experience of the Fund over the three year period to 30 June 2012 was reviewed as part of the 30 June 2012 statutory valuation. As such we have not reviewed the experience over the year to 30 June 2013 and, for this report, we have retained the current assumptions. The next review of the demographic experience will be carried out in respect of the three years to 30 June 2015, unless circumstances are such that an earlier review is required.

### Pensioner Mortality

In 2012 we carried out a review of the pensioner mortality over the five year period to 30 June 2011, with the recommendation that the assumptions should be reviewed again in three years' time. Therefore we have retained the same assumptions for pensioner mortality as used for the 30 June 2012 statutory valuation.

## 6. VALUATION METHODOLOGY

All members have been valued individually using Russell's proprietary software. Each member's age, gender, category of membership, salary, service, deferred pension, current pension, and/or contributions have been taken into consideration.

Valuing the Fund's liabilities involves projecting the benefits payable in future to members and their dependants. Benefits are payable on retirement, death, leaving service, ill health or on withdrawal from the Fund and are calculated using membership at the valuation date. The amount of the entitlement typically depends on the length of membership, the level of salary in the years leading up to the event and the pension increases subsequently given (in the case of the pension entitlements).

A summary of the main entitlements for each scheme is provided in Appendix C. This summary has been reviewed and agreed by the Authority.

### Past Service Liabilities

The Past Service Liabilities for the Fund are calculated by projecting these payments, using assumptions about the likelihood of an entitlement becoming payable at any future date (the demographic assumptions) and about members' future salary growth and pension increases (the financial assumptions). The projected payments are discounted back to the valuation date using the assumed expected discount rate.

### Unfunded Liabilities

The Unfunded Liabilities are then calculated as the difference between the Past Service Liabilities and the Fund assets.

### Crown Subsidy

The Crown makes contributions (known as the Crown subsidy) to the Fund which are equal to:

- the benefit payments arising from members of the Judges and Solicitor-General Scheme and the Parliamentary Scheme, which are both funded on a pay-as-you-go basis;
- a proportion of the benefit payments arising from other members. This is determined as the total benefit payments in respect of the relevant members less the amount received from funding employers and the Fund Share of Benefits; and
- a proportion of the Fund's expenses with the balance met by the funding employers.

### Fund Share of Benefits

The Fund Share of Benefits is the proportion of benefits arising, excluding benefit payments from the Judges and Solicitor-General Scheme and the Parliamentary Scheme, which are paid from the Fund.

This proportion is calculated as the ratio of the Fund assets plus expected future member contributions to the total Fund liabilities in respect of past and expected future service. It is calculated using the NZ IAS19 accounting basis, i.e. using the net of tax risk-free discount rates determined by Treasury.

The Fund Share calculation is not expected to result in the Crown funding exactly the employer component of relevant benefit payments each year (after allowing for the contributions paid by funding employers). However, over the life of the Fund it will result in the Crown paying all necessary contributions.

## Employer Contribution Rates

Funding employers (employers whose employees are paid from money which is not public money) make employer contributions to the Fund. Non-funding employers do not make employer contributions to the Fund, but the Government requires employer contributions to be made to the Crown.

The method used for determining the employer contribution rates is to use the Standard Contribution Rates calculated using the Attained Age Method. This method calculates the employer contributions required to fund benefits accruing over potential future service by:

- calculating the amount of all benefits expected to be paid in the future in respect of the current Fund members, based on potential future service, and allowing for all the contingencies under which benefits can be paid (retirement, death, ill health or resignation), the probabilities of these contingencies arising and for future salary increases;
- projecting future pension benefits allowing for increases arising from cost of living adjustments and for probabilities of survival;
- discounting the stream of expected future benefit and pension payments to determine the present value of future liabilities;
- similarly, discounting the projected stream of expected future member contributions to determine the present value of these contributions and then offsetting this amount from the present value of future liabilities above;
- dividing this net future liability by the present value of 1% of future members' salaries to derive the Standard Contribution Rate;
- adding an allowance for expenses for the funding employer contribution rates; and
- grossing up the calculated rate to allow for Employer Superannuation Contribution Tax for the schemes where the tax applies.

In fully funded superannuation schemes where this method is used, the Standard Contribution Rate is usually adjusted to allow for any difference between the scheme assets and past service liabilities. However, this would require notional assets to be kept for each funding employer within the Fund and for funding employer contributions to vary depending upon experience, including variable investment return experience. Following the global financial crisis, which would have resulted in a significant increase in employer subsidy rates, it was decided and agreed by relevant parties that this was not a practical approach and since 1 July 2010 (as applied by the statutory actuarial valuation report as at 30 June 2009) employer contributions have been calculated using the Standard Contribution Rates without adjustment. This means that the Standard Contribution Rates are only adjusted for emerging experience to the extent future assumptions are updated and as the Fund's membership changes. Over time this pragmatic approach means that funding employers' contributions may be higher or lower than they would be if they reflected all aspects of investment and demographic experience.

The exception to this is the Prisons Service Scheme, which continues to have a high surplus and for which no contributions are currently necessary.

# 7. ASSUMPTIONS

## Financial Assumptions

The key financial assumptions are the rate of return on assets, and the rates of salary growth and pension increases.

### Discount Rate – Statutory Basis

The valuation of the Fund on the statutory basis provides a picture of the financial condition of the Fund and a determination of the employer contribution rates on an ongoing basis. Therefore a discount rate based on a realistic best estimate assumption of the expected return on assets is required.

We have derived a discount rate from the expected return on assets based on modelling carried out by Russell Investments' in-house capital markets team. The modelling derives a set of expected real returns for each of the major asset classes in which the Fund invests and is combined with the price inflation assumption to develop nominal returns. The discount rate has allowed for the effects of taxation and is expressed net of New Zealand tax. No adjustments for investment expenses were made as they are met separately by the Crown and the funding employers. The discount rate is calculated based on the assumed long term strategic asset allocations and long term expectations of investment returns net of taxation at the valuation date. The long term strategic asset allocation for the Fund is set out in Section 4 of this report.

Based on this methodology the discount rate assumption for the Fund as at 30 June 2013 is 5.5% p.a., net of tax. The discount rate assumption for the statutory valuation as at 30 June 2012 was also 5.5% p.a., net of tax.

For the purpose of recommending the employer contribution rates to apply from 1 July 2014 we have used a discount rate of 5.75% p.a., net of tax, which is based on the expected return on assets for the Fund over the expected term of the liabilities in respect of contributors. The average term of the liabilities for contributors is significantly longer than that for the whole Fund membership and the resulting higher discount rate reflects that the Russell Investments modelling predicts slightly higher returns over the longer term.

The discount rate used to determine the employer contribution values for the year to 30 June 2014 was also 5.75% p.a., net of tax.

### Discount Rate – Fund Share basis

As requested by the Crown, for consistency with the valuation of actuarial liabilities reported in Crown Accounts the discount rates for the Fund Share basis are calculated by reference to market prices for Government stock as at the valuation date. The after tax discount rates for this valuation and the last statutory valuation are set out in Appendix B.

### Pension Increases

The pension increase assumption is linked to expected increases in the Consumer Price Index (CPI). For the purposes of certain accounting valuations Treasury publishes assumptions relating to CPI increases. In our opinion it is reasonable to also use these assumptions for this valuation. As at 30 June 2013, the assumed CPI increases as published by Treasury are 1.9% for the year to 30 June 2014, 2.3% p.a. for the two years to 30 June 2016, 2.4% p.a. for the two years to 30 June 2018 and 2.5% p.a. for all years thereafter. For the 30 June 2012 statutory valuation the CPI was assumed to be 2.1% p.a. for the first year, 2.4% p.a. for the second year and 2.5% p.a. thereafter.

The assumption of major significance in the valuation of the Fund's liabilities is the long term difference (or 'gap') between the assumed discount rate and the assumed rate of future pension increases. These two assumptions offset each other in their financial effect, hence the difference between the rates is important rather than the absolute values ascribed to them. The greater the assumed gap, the lower the value placed on the liabilities.

The assumed 'gap' for this valuation is 3.6% for the year ending 1 July 2014, gradually decreasing to 3.0% p.a. from 1 July 2018 onwards. The gap for the 30 June 2012 statutory valuation was 3.4% p.a. for the year ending 30 June 2013, gradually decreasing to 3.0% from 1 July 2015 onwards. In isolation, this means that overall the value of liabilities will be slightly lower than the liability disclosed as at 30 June 2012.

## **Salary Growth**

The salary inflation assumption is based on market expectations of price inflation and on consideration of Treasury's expected range for inflation, together with an allowance for the margin of salary inflation over price inflation. The salary assumption adopted is a flat salary increase of 3.0% p.a., which is the same as that used for the statutory valuation as at 30 June 2012. In addition, an age-based scale of promotional salary increases has been used, as set out in Appendix B, which is also the same as adopted for the 30 June 2012 statutory valuation.

## **Demographic Assumptions**

The demographic assumptions used are the same as used in the statutory valuation as at 30 June 2012.

## **Expenses**

The expenses of the management of the Fund (including investment management fees) are currently met in part by the funding employers, with the balance paid by the Crown as provided by Section 15E of the Act. An allowance for future expenses has been made in the calculations of the contribution rates for funding employers.

Recommendations on the apportionment of expenses between Crown and funding employers for the year ending 30 June 2014 were made in our report dated 28 November 2012. It was recommended that the Crown should meet 86% of the expenses of the Authority relating to management and administration, with the balance to be met by funding employers. In addition it was recommended that the expenses to be met by funding employers is achieved through a loading of 2.0% of salaries in the recommended contribution rates.

We have provided advice to the Authority on the apportionment of expenses for the year to 30 June 2015. Full details of our calculations and recommendations are set out in a separate report. In summary, our recommendations are that the share of expenses to be met by the Crown and by funding employers are 88% and 12% respectively and that the expenses to be met by funding employers is met by a loading of 2.2% of salaries in the recommended contribution rates.

Appendix B sets out a summary of the financial and demographic assumptions adopted.



## 8. RESULTS

### Total Liabilities

The valuation balance sheet under each basis is set out below.

	Statutory valuation \$M*	Fund Share valuation \$M*
<b>Total Service Liabilities</b>		
Armed Forces	8	12
General (excluding Islands)	3,213	4,503
Islands	75	110
Police	252	355
Prisons Service	22	28
Judges and Solicitor-General	21	27
Parliamentary	10	13
Current pensioners	9,983	12,412
Deferred pensioners	724	1,119
<b>Total Liabilities</b>	<b>14,310</b>	<b>18,581</b>
<b>Assets</b>		
Value of Fund Assets	3,382	3,382
Present value of future member contributions		
Armed Forces	0	0
General (excluding Islands)	185	208
Islands	4	5
Police	6	6
Prisons Service	0	0
Judges and Solicitor-General	0	0
Parliamentary	0	0
<b>Total Assets</b>	<b>3,577</b>	<b>3,601</b>
Present value of amounts to be funded by Government subsidies and funding employer contributions	10,733	14,979
<b>Fund share of benefits</b>		<b>19.7%</b>

\* Total may not add up due to rounding

The Fund Share of Benefits is calculated as the ratio of the value of assets plus the value of future member contributions to the value of total liabilities. For this calculation the liabilities and contributions in respect of the Judges and Solicitor-General Scheme and the Parliamentary Scheme are excluded. The liabilities for these two schemes (including pensioner liabilities) are \$320 million and the value of contributions is nil (when rounded to the nearest million).

The Fund Share of Benefits calculated at the 2012 valuation was 16.7%. The calculation above shows that the Fund Share of Benefits at 30 June 2013 has increased to 19.7%. This is primarily due to the strong investment returns over the year and the increase in the discount rates used to value the liabilities in the short and medium term as at 30 June 2013 compared with those used at 30 June 2012. The increase in discount rates reflects the increase in bond yields over the year and results in a lower value being placed on the Fund's liabilities.

## Past Service Liabilities

The valuation results at 30 June 2013 are:

	Statutory valuation \$M*	Fund Share valuation \$M*
<b>Past Service Liabilities</b>		
Armed Forces	8	11
General (excluding Islands)	2,789	3,873
Islands	63	91
Police	237	333
Prisons Service	21	28
Judges and Solicitor-General	21	27
Parliamentary	10	13
<b>Total Contributors</b>	<b>3,150</b>	<b>4,375</b>
Current pensioners	9,983	12,412
Deferred pensioners	724	1,119
<b>Total Pensioners</b>	<b>10,708</b>	<b>13,532</b>
All Past Service Liabilities	13,858	17,907
Assets	3,382	3,382
Unfunded Past Service Liabilities	10,476	14,525

\* Total may not add up due to rounding

The relationship between the past service liabilities and the assets is unlikely to change materially by the date of the next investigation, if the actuarial assumptions are borne out in practice.

## Financial Reconciliation

The change in the Past Service Liabilities (PSL) over the 2012/13 year is detailed below.

	<b>\$M*</b>	
PSL at 30 June 2012	14,061	
Expected change		
Service cost	93	
Interest cost	754	
Benefit payments	(913)	(66)
Experience (gains)/losses		(22)
Assumption changes		
Financial (CPI assumption change)	(114)	
Demographic	-	
		(114)
<b>PSL at 30 June 2013</b>	<b>13,858</b>	

The corresponding movement in the assets over the year was:

	<b>\$M*</b>	
Assets at 30 June 2012	3,017	
Expected change		
Return on assets	162	
Contributions	770	
Benefit payments	(913)	19
Experience gains/(losses)		
Investment	331	
Other	15	346
<b>Assets at 30 June 2013</b>	<b>3,382</b>	

The movement of the unfunded past service liability (actuarial deficit) over the year is, therefore:

	<b>\$M*</b>	
Unfunded PSL at 30 June 2012	11,044	
Expected change		
Service cost	93	
Interest cost	754	
Return on assets	(162)	
Contributions	(770)	(85)
Experience (gains)/losses		
Assets	(346)	
Liabilities	(22)	(368)
Change in basis		
Financial	(114)	
Demographic	-	(114)
<b>Unfunded PSL at 30 June 2013</b>	<b>10,476</b>	

\* Total may not add up due to rounding

## Vested Benefits

Vested benefits are calculated as the amount payable in the event that all contributors ceased membership as at the valuation date. For this purpose, I have assumed that:

- for all Schemes other than Armed Forces, contributors with at least 10 years contributory service will receive a deferred pension commencing at age 50 if they are currently under age 50, otherwise an immediate pension,
- for all Schemes other than Armed Forces, contributors with less than 10 years contributory service will receive an immediate withdrawal benefit (there are very few members in this situation),
- all contributors in the Armed Forces Scheme receive an immediate retirement pension, and
- the pension benefits have been valued using the same assumptions about commutation as were used to value the past service liabilities, as set out in Appendix B.

The vested benefit values are shown in the following table. The ratio of vested benefits to past service liabilities is also shown.

<b>Group</b>	<b>Vested Benefits \$M*</b>	<b>As a percentage of past service liability</b>
Contributors and Inactives:		
Armed Forces	8	101%
General (excluding Islands)	3,115	112%
Islands	69	110%
Police	190	80%
Prisons Service	22	102%
Judges and Solicitor-General	24	111%
Parliamentary	8	83%
<b>Total Contributors and Inactives</b>	<b>3,437</b>	<b>109%</b>
Pensioners:		
Current Pensioners	9,983	100%
Deferred Pensioners	724	100%
<b>Total Pensioners</b>	<b>10,708</b>	<b>100%</b>
Grand total	14,144	102%
Less Assets	3,382	
Shortfall	10,762	

\* Total may not add up due to rounding

The relationship between the total vested benefits and the assets is unlikely to change materially by the date of the next investigation.

The implications of the Fund winding up have not been considered in this report due to the nature of the Fund.

### Projected Subsidy

A projection of the amount of Government subsidy under the Fund Share basis, before any offset for contributions by funding employers and excluding expenses, has been made for the next five years assuming that experience will match the valuation assumptions. The results of the projection are shown below.

Year ending 30 June	Projected subsidy \$M
2014	772
2015	739
2016	749
2017	759
2018	768

### Employer Contributions - Funding Employers

Past legal advice in respect of section 95(2) of the Act led to contribution rates being specified by gender in five age groups in order that the specific membership characteristics of funding employers are recognised. This has been the practice since 1998 for members employed by funding employers, other than Islands members. These rates were then applied to the actual membership of each funding employer to derive an average contribution rate for that employer.

However, the information produced by our valuation software enables us to carry out calculations on an employer by employer basis and calculate a Standard Contribution Rate based solely on the members employed by each employer. We have investigated this method and consider that it would be appropriate to adopt this approach from 1 July 2014. The change of approach does not result in a significant change in contribution rate for any funding employer.

The contribution rates for each funding employer have been provided in separate advice to the Authority. The contribution rates are inclusive of expenses and ESCT. A summary of the recommended rates by age and gender is as follows:

Contribution group	Males	Females
Up to age 54	13.8%	14.7%
From age 55 to 59	14.0%	15.0%
From age 60 to 64	13.3%	14.2%
From age 65 to 69	11.6%	12.5%
Age 70 and over	0.0%	0.0%

Note that the contribution rates by employer may change from year to year, depending on the experience of the members employed by each employer.

The previous recommended contribution rates, inclusive of ESCT, which apply over the year to 30 June 2014, are as follows:

<b>Contribution group</b>	<b>Males</b>	<b>Females</b>
Up to age 54	13.6%	14.4%
From age 55 to 59	13.8%	14.7%
From age 60 to 64	13.1%	14.0%
From age 65 to 69	11.5%	12.4%
Age 70 and over	0.0%	0.0%

### **Employer Contributions – Islands**

The four employers of the Islands members are funding employers. For practical purposes, it is not unreasonable to continue the existing practice to treat the Islands members as a single group for the purposes of calculating the employer contribution rates.

The recommended contribution rate for the Islands group of members from 1 July 2014 is 12.1% (exclusive of Employer Superannuation Contribution Tax (ESCT)). This is the same rate as was recommended at the previous valuation. The actual rate is 12.3%, but the current rate has been maintained as the change is within the 0.3% threshold historically used to determine if a rate should change.

### **Employer Contributions – Non-funding Employers**

The recommended contribution rates for non-funding employers, inclusive of ESCT, for the different schemes from 1 July 2014 are:

<b>Scheme</b>	<b>Non-funding employer contribution rates</b>
Armed Forces	19.7%
General	11.8%
Police	15.6%
Prisons Service	0.0%

The recommended contribution rate for the Armed Forces is lower than the current rate of 25.1%. This reduction reflects that the small number of members remaining have all continued in service beyond the point at which they first qualified for a retirement entitlement (twenty years of service), and, as such, the cost of funding future benefits has reduced.

The recommended contribution rates for the other Schemes are the same as those which apply over the year to 30 June 2014.

The contribution rates may change from year to year depending on the emerging experience of each group of Fund members.

The Judges and Solicitor-General Scheme and the Parliamentary Scheme are both funded on a pay-as-you-go basis and therefore there are no recommended contribution rates for these schemes.

The notional fund in respect of the Prisons Service Scheme continues to have a large surplus and no contributions are currently necessary. The notional fund position for the Prisons Service Scheme at 30 June 2013 is as follows.

Notional fund:	\$76M
Past service liability:	\$21M

### Sensitivity of Results

As explained earlier in the report the value of the liabilities is highly influenced by the size of the gap between the discount rate and the assumed rate of future inflation, whether salary inflation or price inflation. To illustrate the impact of a change in the gap we have re-valued the past service liabilities using discount rates of 6.5% and 4.5%, whilst keeping all other assumptions unchanged.

The results are shown in the following table.

	Statutory basis \$M	6.5% discount rate \$M	4.5% discount rate \$M
Contributors and Inactives	3,150	2,724	3,685
Current pensioners	9,983	9,145	10,968
Deferred pensioners	724	589	903
Total past service liabilities	13,858	12,458	15,556
Assets	3,382	3,382	3,382
Unfunded liability	10,476	9,076	12,174

We have also carried out an analysis to show the impact of a 1% increase and a 1% decrease in the assumed CPI inflation rate, whilst keeping all other assumptions unchanged.

	Statutory basis \$M	1% increase in assumed CPI rate \$M	1% decrease in assumed CPI rate \$M
Contributors and Inactives	3,150	3,579	2,796
Current pensioners	9,983	10,935	9,160
Deferred pensioners	724	903	587
Total past service liabilities	13,858	15,417	12,543
Assets	3,382	3,382	3,382
Unfunded liability	10,476	12,035	9,161

These sensitivity analyses are not intended to show the full range of possible outcomes, but are intended to demonstrate that outcomes are highly dependent on future experience.



## 9. MATERIAL RISKS

The purpose of this section of this report is to identify the material risks for the Fund which are associated with the actuarial assumptions or actuarial management of the Fund, of which we are aware as Actuary. We also comment on the way in which the identified financial risks are being managed by the Authority.

The material risks are:

### **Increasing Life Expectancy**

The Fund's liabilities relate almost wholly to current or future pensioners. The assumptions regarding pensioner mortality that were used for this valuation allow for future improvements in mortality. However, a future breakthrough in medical diagnosis or treatment which leads to a significant increase in life expectancy could increase the Fund's liabilities and require increased employer and Crown contributions.

Mortality experience should continue to be monitored at least every three years, in conjunction with relevant population data, to assess whether the current assumptions remain valid.

### **Investment Risk**

The risk faced by the Fund is that the investment returns earned on the assets will not be as high as expected over the long term. This means that the Crown's share of benefit payments might need to increase.

The Authority's policy is for the Fund assets to be invested about 60% in equities, 20% in fixed interest and 20% in alternative strategies. The risk parameter associated with the Fund's investment objective is to have no more than a one in ten chance in any one year of a loss after tax greater than 9% of the total Fund.

The Fund has a strategy of using diversified investment vehicles, and requires investment managers to themselves invest in a range of underlying securities. Given the level of diversification in the underlying investments, the Fund is unlikely to suffer any significant loss from underperformance by the failure of an individual underlying security.

The Authority has a comprehensive Statement of Investment Policies Standards and Procedures in place for the governance and management of the assets held by the Fund.

### **Inflation**

The Fund's liabilities for active members are linked to salary and therefore a higher than expected rate of inflation could have a negative impact on the required contribution amounts. Salary increases should continue to be monitored at each valuation.

Similarly, pension liabilities are linked to the Consumer Price Index and increases above those assumed could lead to an increase in Crown contributions.

### **Liquidity Risk**

The majority of the Fund's liabilities relate to current and future pensions which we expect to be paid out over a very long time frame. As the benefit payments are largely covered by Crown and employer contributions the amount of assets required to be redeemed to meet benefits is relatively small and is quite stable over time. Therefore the Fund is unlikely to be faced with a need to redeem an unexpectedly large amount.

Furthermore, the Authority's Statement of Investment Policies Standards and Procedures includes a number of policies addressing liquidity risk.

In future, as the Fund begins to decline in size, we would expect the assets to move gradually to a predominantly liquid position.

### **Self Insurance**

By self insuring the death and ill health benefits, the Fund runs the risk of higher than expected claims occurring. However given the high average age of current active members the value of death or ill health benefits are not materially different from the value of retirement benefits.

Furthermore, in the event of a pandemic affecting the general population the effect of an increase in deaths amongst active members could be offset to some extent by deaths among the current pensioners.

### **Other**

The Fund faces a variety of operational and other risks which may in some circumstances lead to cost increases. We understand that the Authority monitors and takes action on such risks as part of the risk management framework.

# 10. STATEMENTS AND CERTIFICATION

## Fund Share of Benefits

The results in Section 8, carried out using valuation discount rates consistent with the approach taken to valuations for Crown Account purposes, shows a Fund Share proportion of 19.7%. The 2012 valuation resulted in a proportion of 16.7%. As the valuation result is sensitive to the level of actual investment returns received and the assumed discount rates used I consider the Fund Share of benefits proportion should be increased to 19.7%.

In terms of Section 95(1) of the Act I certify the proportion of benefits calculated as being provided by member contributions into the Fund is 19.7%.

## Funding Employer Contribution Rates

Past legal advice in respect of Section 95(2) of the Act led to rates being specified by gender in five age groups in order that specific membership characteristics of funding employers are recognised. I have recommended that contributions from 1 July 2014 be calculated on an employer by employer basis, based solely on the members employed by each employer.

In terms of Section 95(2) of the Act I certify that the rate of contributions, as from 1 July 2014, required from those employers of contributors whose salaries are payable out of money that is not public money is:

- for contributors who are members under Part 2 or Part 2A of the Act and employed by the Public Services of the Cook Islands, Niue or Tokelau, 12.1% of contributor salaries, exclusive of Employer Superannuation Contribution Tax (ESCT); and
- for contributors who are members under Part 2 or Part 2A of the Act, excluding those employed by the Public Services of the Cook Islands, Niue or Tokelau, contributions calculated on an employer by employer basis based only on the contributors employed by that employer. Contribution rates include ESCT and an allowance for expenses. A summary of the recommended rates by age and gender are as follows:

Contribution group	Males	Females
Up to age 54	13.8%	14.7%
From age 55 to 59	14.0%	15.0%
From age 60 to 64	13.3%	14.2%
From age 65 to 69	11.6%	12.5%
Age 70 and over	0.0%	0.0%

## Non-Funding Employer Contribution Rates

The non-funding employers are required to budget for the superannuation contributions as if such contributions were payable to the Fund. These employer contribution rates do not include an allowance for a share of expenses as this is paid directly.

I recommend that contributions for non-funding employers are based on the following employer contribution rates, inclusive of ESCT, from 1 July 2014.

<b>Scheme</b>	<b>Non-funding employer contribution rates</b>
Armed Forces	19.7%
General	11.8%
Police	15.6%
Prisons Service	0.0%

In accordance with my professional obligations as a Fellow of the New Zealand Society of Actuaries, I make the following statements:

- In carrying out this valuation as required by the Government Superannuation Fund Act 1956, in my view I have no conflict with any other of my professional activities.
- I am not aware of any material developments to the Fund or any external events that have had a material effect on the results of the investigation.
- I am not aware of any material events subsequent to the date of the current investigation other than the continuing volatility of financial markets.
- The Fund has no arrangements for external insurance of the benefits payable on death or disability. Having regard to the size of the Fund and the nature of the benefits payable on death or disability, it is my view that there is no need for the Fund to hold such insurance.
- In completing this report I have had regard to Professional Standard No. 2 - Actuarial Reporting for Superannuation Schemes - issued by the New Zealand Society of Actuaries. The valuation method and the financial, economic and demographic assumptions have been determined in accordance with the professional judgement of the actuary preparing the report.
- I am not aware of any discrepancy between the Act and subsequent Amendments and the practice of the GSF Authority which would have a material bearing on the results of this investigation.
- The next valuation will be carried out as at 30 June 2014.

## **Reliances and Limitations**

In preparing this report we have relied on information supplied by the Fund Administrator and the Authority. In particular we have relied on the accuracy of the net asset value for the year to 30 June 2013 and on membership data as at 30 June 2013.

The content and accuracy of this report are dependent on the completeness and accuracy of the information provided to us. Although independent verification of this information was not undertaken, we have reviewed the information for reasonableness and consistency with our knowledge of the Fund.

This report has been prepared for the purposes of determining the unfunded liabilities of the Fund and the Crown's and Employers' contribution requirements. The results may not be appropriate for other purposes.

*EBrodie*

Emma Brodie FNZSA, FIAA  
Actuary to the Fund  
Senior Consultant, Russell Actuarial

Level 29  
135 King Street  
Sydney NSW 2000  
Australia

This report has been peer reviewed in accordance with Russell Actuarial quality procedures.

*Matthew Burgess*

Matthew Burgess FNZSA, FIAA  
Director, Russell Actuarial



## Appendix A. MEMBERSHIP DATA

The following tables summarise the membership data as at 30 June 2013 received from the Fund Administrator.

### Contributors

A summary of the membership data in respect of contributors split by scheme is as follows:

Scheme	Sex	Age Group	Number of Members	Average Age	Average Membership	Average FTE <sup>1</sup> Salary (\$)
<b>Armed Forces</b>			<b>21</b>	<b>48.2</b>	<b>26.3</b>	<b>55,980</b>
	<b>F</b>		5	45.5	24.1	58,399
		35 to 44	2	42.4	22.1	62,819
		45 to 54	3	47.5	25.5	55,452
	<b>M</b>		16	49.1	27.0	55,224
		35 to 44	7	42.4	22.6	57,376
		45 to 54	6	49.6	29.9	71,968
		55 to 64	2	62.1	22.4	25,069
		65 and over	1	*	*	*
<b>General</b>			<b>5,885</b>	<b>58.4</b>	<b>28.7</b>	<b>96,934</b>
	<b>F</b>		2,152	58.4	25.5	85,759
		35 to 44	48	42.8	18.7	67,378
		45 to 54	571	51.3	23.7	84,015
		55 to 64	1,249	60.1	26.5	87,906
		65 and over	284	67.4	26.2	82,931
	<b>M</b>		3,733	58.5	30.5	103,377
		35 to 44	36	43.3	21.5	81,319
		45 to 54	951	51.7	27.6	96,739
		55 to 64	2,333	59.9	31.4	105,495
		65 and over	413	67.3	33.4	108,615
<b>Islands</b>			<b>401</b>	<b>49.0</b>	<b>26.2</b>	<b>27,051</b>
	<b>F</b>		195	48.5	26.2	25,563
		35 to 44	70	41.9	21.9	24,917
		45 to 54	90	49.7	26.8	25,973
		55 to 64	34	58.8	33.2	25,754
		65 and over	1	*	*	*

Scheme	Sex	Age Group	Number of Members	Average Age	Average Membership	Average FTE <sup>1</sup> Salary (\$)
	<b>M</b>		206	49.4	26.1	28,459
		35 to 44	52	41.8	21.2	28,642
		45 to 54	112	49.5	27.0	28,594
		55 to 64	42	58.4	30.0	27,872
<b>Police</b>			<b>203</b>	<b>50.1</b>	<b>26.8</b>	<b>103,998</b>
	<b>F</b>		28	48.7	24.9	92,169
		35 to 44	6	43.6	21.4	87,219
		45 to 54	20	49.3	25.1	96,959
		55 to 64	2	57.5	32.8	59,126
	<b>M</b>		175	50.3	27.1	105,890
		35 to 44	19	43.7	22.0	97,434
		45 to 54	130	49.8	27.1	105,312
		55 to 64	25	57.4	30.7	116,541
		65 and over	1	*	*	*
<b>Prison Services</b>			<b>52</b>	<b>59.7</b>	<b>27.9</b>	<b>65,449</b>
	<b>F</b>		5	55.8	23.8	70,078
		45 to 54	2	51.7	22.6	63,698
		55 to 64	3	58.5	24.6	74,331
	<b>M</b>		47	60.1	28.4	64,956
		45 to 54	6	50.9	22.2	63,107
		55 to 64	34	60.2	28.0	66,629
		65 and over	7	67.7	35.4	58,416
<b>Judges and Solicitor-General</b>			<b>10</b>	<b>65.3</b>	<b>23.6</b>	<b>339,950</b>
	<b>M</b>		10	65.3	23.6	339,950
		55 to 64	4	62.5	23.0	342,375
		65 and over	6	67.2	24.0	338,333
<b>Parliamentary</b>			<b>8</b>	<b>56.0</b>	<b>24.7</b>	<b>144,600</b>
	<b>F</b>		1	*	*	*
		45 to 54	1	*	*	*
	<b>M</b>		7	56.4	24.9	144,600
		45 to 54	3	49.5	22.7	144,600
		55 to 64	4	61.5	26.6	144,600
<b>All Schemes</b>			<b>6,580</b>	<b>57.6</b>	<b>28.5</b>	<b>95,011</b>

<sup>1</sup> Full-Time Equivalent

Note: In the above table, \* signifies that where there was only one member in the age band, the statistics are not shown for privacy reasons.



## Inactives

Inactives are members who have ceased contributing to the Fund, but have not yet received an entitlement, and members for whom insufficient data is available. These members are split into three groups according to the data available to calculate entitlements:

- Inactives(1A) are members with less than 10 years membership, or with a salary of nil or \$1.
- Inactives(1B) are members with at least 10 years membership and a salary
- Inactives(2) are members for whom neither salary nor contribution information was available in order to estimate entitlements.

A summary of the Inactives(1) membership data as at 30 June 2013 is as follows:

<b>Inactives(1A) (Withdrawal Benefit)</b>	<b>Number of Members</b>	<b>Average Age</b>	<b>Average Membership</b>	<b>Average Withdrawal Benefit (\$)</b>
Armed Forces	20	54.1	1.7	1,100
General	928	55.3	3.9	8,887
Islands	130	46.8	2.6	1,013
Police	6	59.3	3.6	19,465
Prison Services	2	59.6	4.6	49,848
<b>Grand Total</b>	<b>1,086</b>	<b>54.3</b>	<b>3.7</b>	<b>7,935</b>

<b>Inactives(1B) (Deferred Pension)</b>	<b>Number of Members</b>	<b>Average Age</b>	<b>Average Membership</b>	<b>Average Deferred Pension (\$p.a.)</b>
Armed Forces	1	41.1	19.5	23,013
General	836	55.6	19.3	13,699
Islands	31	49.5	17.7	5,062
Police	132	56.4	29.8	29,018
Prison Services	4	63.9	32.0	18,472
<b>Grand Total</b>	<b>1,004</b>	<b>55.5</b>	<b>20.7</b>	<b>15,475</b>

In addition, there were 2,794 Inactives(2) members as at 30 June 2013.

A summary of the pensioner membership data as at 30 June 2013 is as follows:

	Deferred pensions			Retirement pensions		
	Number	Average Age	Average Pension (\$p.a.)	Number	Average Age	Average Pension (\$p.a.)
<b>Females</b>	404	48.3	9,907	6,522	72.2	15,545
Under age 25						
Age 25 to 49	255	45.0	10,453	9	47.9	4,181
Age 50 to 59	149	54.1	8,971	504	56.5	14,491
Age 60 to 69				2,493	65.9	16,194
Age 70 to 79				2,103	74.3	15,335
Age 80 and over				1,413	86.2	15,163
<b>Males</b>	4,986	51.3	9,564	26,674	73.5	22,373
Under age 25						
Age 25 to 49	1,922	45.4	10,966	24	45.5	3,233
Age 50 to 59	3,064	55.0	8,686	1,129	56.8	20,304
Age 60 to 69				9,071	65.7	22,531
Age 70 to 79				9,796	74.6	22,599
Age 80 and over				6,654	85.5	22,245
<b>Grand Total</b>	<b>5,390</b>	<b>51.1</b>	<b>9,590</b>	<b>33,196</b>	<b>73.3</b>	<b>21,031</b>

# Appendix B. ACTUARIAL ASSUMPTIONS

## FINANCIAL ASSUMPTIONS

The financial assumptions which we have adopted are shown below:

### Discount Rates

Year ended 30 June	Discount rate p.a. Fund Share 2013	Discount rate p.a. Fund Share 2012
2014	1.95%	1.78%
2015	2.26%	1.99%
2016	2.57%	2.34%
2017	2.90%	2.64%
2018	3.21%	2.83%
2019	3.45%	2.93%
2020	3.59%	3.00%
2021	3.68%	3.06%
2022	3.73%	3.09%
2023	3.76%	3.11%
2024	3.77%	3.19%
2025	3.79%	3.30%
2026	3.81%	3.41%
2027	3.83%	3.51%
2028	3.85%	3.62%
2029	3.87%	3.73%
2030	3.89%	3.84%
2031	3.91%	3.95%
2032	3.93%	4.05%
2033	3.95%	4.16%
2034	3.96%	4.27%
2035 and later	3.96%	4.32%

**Discount rate (Statutory):** 5.5% p.a.

**Discount rate (contribution rates):** 5.75% p.a.

**CPI:** 1.9% for 2013/14, 2.3% p.a. for 2014/15 and 2015/16, 2.4% p.a. for 2016/17 and 2017/18, 2.5% p.a. thereafter

**Salary increases:** 3.0% p.a.

## DEMOGRAPHIC ASSUMPTIONS

### Promotional Salary Increases

In addition to salary increases from general salary inflation, age related promotional increases have been assumed. Specimen rates are as follows:

Salary increases at each age							
Age	General Schemes	Islands	Armed Forces	Judges	Parliamentary	Police	Prisons Service
30	1.50%	1.00%	1.500%	2.00%	2.00%	2.250%	3.50%
35	1.25%	1.00%	1.125%	1.40%	1.40%	2.188%	2.60%
40	1.00%	1.00%	0.750%	0.95%	0.95%	2.125%	2.00%
45	0.75%	1.00%	0.375%	0.70%	0.70%	2.063%	0.50%
50	0.50%	-	-	0.25%	0.25%	2.000%	-
55	-	-	-	-	-	-	-
60	-	-	-	-	-	-	-

### In-service Decrements

Specimen rates for the General Schemes are as follows:

Number out of 10,000 members aged X at the beginning of the year assumed to leave the Fund during the year for the following modes of exit					
Age	Male Death	Female Death	Resignation	Age Retirement	Ill-health Retirement
35	5	3	700	-	5
40	6	4	400	-	5
45	9	6	300	-	30
50	14	10	200	300	55
55	22	16	-	500	80
60	38	26	-	1,500	-

Specimen rates for the Islands are as follows:

<b>Number out of 10,000 members aged X at the beginning of the year assumed to leave the Fund during the year for the following modes of exit</b>					
<b>Age</b>	<b>Male Death</b>	<b>Female Death</b>	<b>Resignation</b>	<b>Age Retirement</b>	<b>Ill-health Retirement</b>
35	13	7	400	-	5
40	16	9	430	-	10
45	22	16	280	-	20
50	34	25	100	1,000	45
55	56	40	-	1,600	85
60	-	-	-	10,000	-

Specimen rates (which include age and membership based rates) for the Armed Forces Scheme are as follows:

<b>Number out of 10,000 members aged X at the beginning of the year assumed to leave the Fund during the year for the following modes of exit</b>			
<b>Age</b>	<b>Male Death</b>	<b>Female Death</b>	<b>Ill-health Retirement</b>
35	5	3	5
40	6	4	0
45	9	6	0
50	14	10	0
55	22	16	0
60	38	26	0

<b>Number out of 10,000 members with membership X at the beginning of the year assumed to leave the Fund during the year for the following modes of exit</b>		
<b>Membership</b>	<b>Resignation</b>	<b>Age Retirement</b>
15	100	-
20	-	6,000
25	-	5,125
30	-	4,250
35	-	3,375
40	-	2,500

Specimen rates for the Judges and Solicitor-General Scheme are as follows:

<b>Number out of 10,000 members aged X at the beginning of the year assumed to leave the Fund during the year for the following modes of exit</b>					
<b>Age</b>	<b>Male Death</b>	<b>Female Death</b>	<b>Resignation</b>	<b>Age Retirement</b>	<b>Ill-health Retirement</b>
35	5	3	-	-	-
40	6	4	-	-	-
45	9	6	-	-	-
50	14	10	-	-	-
55	22	16	-	-	-
60	38	26	-	-	-
65	64	41	-	2,000	-

Specimen rates for the Parliamentary Scheme are as follows:

<b>Number out of 10,000 members aged X at the beginning of the year assumed to leave the Fund during the year for the following modes of exit</b>					
<b>Age</b>	<b>Male Death</b>	<b>Female Death</b>	<b>Resignation<sup>1</sup></b>	<b>Age Retirement</b>	<b>Ill-health Retirement</b>
35	5	3	2,500	-	-
40	6	4	2,500	-	-
45	9	6	2,500	-	-
50	14	10	2,500	-	-
55	22	16	2,500	-	-
60	38	26	2,500	-	-

<sup>1</sup> Assumed 25% of Parliamentary members resign every three years coinciding with election years.

Specimen rates for the Police Scheme are as follows:

<b>Number out of 10,000 members aged X at the beginning of the year assumed to leave the Fund during the year for the following modes of exit</b>					
<b>Age</b>	<b>Male Death</b>	<b>Female Death</b>	<b>Resignation</b>	<b>Age Retirement</b>	<b>Ill-health Retirement</b>
35	5	3	20	-	600
40	6	4	-	-	600
45	9	6	-	-	600
50	14	10	-	250	300
55	-	-	-	10,000	-

Specimen rates for the Prisons Service Scheme are as follows:

<b>Number out of 10,000 members aged X at the beginning of the year assumed to leave the Fund during the year for the following modes of exit</b>					
<b>Age</b>	<b>Male Death</b>	<b>Female Death</b>	<b>Resignation</b>	<b>Age Retirement</b>	<b>Ill-health Retirement</b>
35	5	3	2,000	-	5
40	6	4	1,400	-	10
45	9	6	800	-	50
50	14	10	450	300	100
55	22	16	200	500	150
60	-	-	-	10,000	-

### **Pensioner Mortality**

The underlying mortality for pensioners is based on a Fund specific experience table completed in 2005.

Specimen rates are as follows:

<b>Number assumed to die out of 10,000 at each age</b>		
<b>Age</b>	<b>Males</b>	<b>Females</b>
65	106	74
70	181	108
75	312	190
80	578	354
85	950	681
90	1,525	1,229

In addition, we have made the following adjustments for mortality improvement:

- An allowance for past improvements (from September 2003 to June 2013) at the rate of 1.5% per annum.
- An allowance for future improvements (from July 2013 onwards) at the rate of 1.5% per annum.

We have commenced the mortality improvement allowance from 1 September 2003 as this is the mid-point of the data analysed for the last mortality investigation, upon which the above pensioner mortality rates are based.

As an illustration of the impact of the future mortality improvements, life expectancies at age 60 for sample members are shown below:

Sample Pensioner	Life expectancy at age 60
Male aged 60 at 30 June 2013	26.2 years
Female aged 60 at 30 June 2013	29.5 years
Male aged 50 at 30 June 2013	27.6 years
Female aged 50 at 30 June 2013	30.8 years

### Proportion Married

It was assumed that the percentage of members married gradually reduces as members age. Specimen rates are as follows:

Age	% of members married	
	Male	Female
35	68	69
40	72	71
45	75	72
50	76	72
55	78	71
60	77	68
65	76	63
70	74	54
75	71	42
80	63	27

### Expenses

The administration and investment expenses of the Fund are currently met in part by the funding employers, with the balance paid by the Crown as provided by Section 15E of the Act. The contribution rates calculated for funding employers from 1 July 2014 include an allowance of 2.2% of salaries in respect of their share of expenses, inclusive of ESCT.

### Employer Superannuation Contribution Tax (ESCT)

ESCT has been allowed for in the calculation of all contribution rates, with the exception of the Islands Scheme, where this tax does not apply. ESCT has been allowed for at a rate of 33%.

### Age Difference and Length of Relationship Between Pensioners and their Spouses

It has been assumed that male pensioners were three years older than their spouses while, for female pensioners, it was assumed they were three years younger than their spouses.



It was assumed the length of the relationship between pensioners and their spouses was such that 50% of the pension reverts to the spouse upon the pensioner's death.

### Assumed Mix of Lump Sums/Pensions

Members were assumed to take their entitlements as a combination of lump sum and pension as follows:

	Percentage of pension entitlements taken						
	General Schemes	Islands	Armed Forces	Judges	Parliamentary	Police	Prisons Service
Retirement	90%	75%	100%	75%	75%	90%	75%
Death (spouse pension)	100%	100%	100%	100%	100%	100%	100%
Invalidity	88%	75%	75%	n/a	n/a	88%	75%

Upon resignation, the percentage of members assumed to elect to receive a deferred pension is as follows:

Scheme	Percentage of resigned members assumed to elect to receive a deferred pension
General Schemes	60%
Islands	20%
Armed Forces <sup>1</sup>	100%
Judges	n/a
Parliamentary <sup>2</sup>	100%
Police	20%
Prisons Service	20%

<sup>1</sup> eligible after 20 years of service

<sup>2</sup> eligible after 9 years of service

It is assumed that Parliamentary members will commute 25% of their deferred pension entitlements. In all other cases, no commutation is assumed.

### Assumptions Used for Inactive Contributors

We have split the inactive contributors membership group into Inactives(1) and Inactives(2).

The Inactives(1) group is in respect of contributors who have ceased to be members and have not received an entitlement from the Fund, but for whom salary or contribution information is available. We have valued these members assuming they receive either an immediate refund of contributions (if less than 10 years membership, or with a salary of nil or \$1) or are entitled to a deferred pension (if more than 10 years membership and have a salary). The liability in respect of the members entitled to a deferred pension has been valued using the same method as that used for the 30 June 2012 statutory valuation, i.e. 25% of the value of the pension taken as a lump sum, commencement of pension from the later of current age and age 51 and no mortality in deferment.

The Inactives(2) group is in respect of contributors who ceased active membership prior to full computerisation of Fund membership records, but includes contributors for whom no reliable valuation data is available. We have taken an approach consistent with the 30 June 2012 statutory valuation and have not valued these members for this valuation, on the basis that these members appear to have very little service and so their liabilities are likely to be covered by the prudent assumptions used in valuing the Inactives(1) group, described above.

## Appendix C. SUMMARY OF ENTITLEMENTS

A summary of the entitlements of the seven schemes is set out below:

<b>Membership</b>	Part 2 / Old GS	Employees in Government service electing to join before 30 April 1985
	Part 2A / New GS	Employees in Government service electing to join before 30 June 1992 (1995 for Islands)
	Part 3A / AF	Members of the Armed Forces joining prior to 30 June 1992
	Part 5A and 5B / Judges	Judges and Associate Judges appointed prior to 30 June 1992
	Part 6 / MPs	Members of Parliament initially elected prior to 30 June 1992
	Part 6A / Police	Members of the Police joining prior to 30 June 1992
	Part 6B / PS	Members of the Prisons Service joining prior to 30 June 1992

<b>Member Contributions</b>	Old GS	<p>6% if &lt;30 at date of joining</p> <p>7% if 30-34</p> <p>8% if 35-39</p> <p>9% if 40-44</p> <p>10% if 45-49</p> <p>11% if &gt;50</p> <p>Some members may have elected, prior to 1 March 1970, to contribute at 1% less than the rates above. All members can elect to contribute at 6% for an entitlement reduced in the same proportion that 6% bears to the standard rate.</p>
	New GS	6.5%
	AF	7.6%
	Judges	8%, until reach 16 years of service, then 0%.
	MPs	11%, until reach 20 years service, then 8%
	Police	7.5%
	PS	8.5% (may cease contributing after 32 years)

<b>Contributory Service</b>	Old and New GS	Actual contributory service for all members
	AF	Actual contributory service plus any accrued leave at date of discharge or release
	Judges	Aggregate of all periods of contributory service as a Judge, temporary Judge or Associate Judge
	MPs	Actual contributory service as a member of Parliament
	Police	For members who joined before 1 May 1985 and 55 or over at retirement, then service is calculated as potential service up to age 60, with the period of additional service after retirement age further increased by 1/7th, to a maximum of 40 years.  For all other members, 125% of actual contributory service as a member of the Police, to a maximum of 40 years If actual contributory service is greater than 40 years, actual contributory service applies.
	PS	125% of actual contributory service as a member of the Prison Service, to a maximum of 40 years  If actual contributory service is greater than 40 years, actual contributory service applies.

<b>Final Salary</b>	All except Old GS, Judges and MPs	The lesser of salary in the last 12 months and the average of the last 5 years' salary, adjusted for CPI to date of exit.
	Old GS	Average of the last 5 years' salary
	Judges	Salary at date of resignation or date of retirement
	MPs	Salary payable to a backbencher at the date on which the retiring allowance first becomes payable.

<b>Retirement Entitlement Eligibility</b>	Old GS	Age 65, or age 60 and 40 years service, or age 50 and 20 years service with employer consent (other requirements apply to members of NZ Railways Corp or the Police, and certain females)
	New GS	Age 60 or age 50 with 10 years service and employer consent
	AF	20 years service, with at least 10 years in AF
	Judges	68 years or over 50 with 10 years service
	MPs	Over 50 with at least 9 years service
	Police	over 50 with 10 years service with employer consent
	PS	58 years or 50 years with 8 years service and employer consent

<b>Retirement Allowance Multiple</b>	Old GS	70% of 1/60th per year of service up to 40 years plus 120th per year of service after 40 years. For members of the Island Schemes, the 70% factor is not applied.
	New GS	1.05% per year of service adjusted for retirement before or after age 60 (add 0.0168% per year between age 60 and 65, subtract 0.0336% per year between age 55 and 60, subtract 0.0168% per year below 55). For members of the Island Schemes, all accrual rates are divided by 70%.
	AF	1.05% per year of service
	Judges	70% of 1/24th (less 1/750th per year if age under 55) per year of service, to a maximum of 70% of 2/3rds.
	MPs	70% of (1/30th per year of service up to 20 plus 1/120th per year of service over 20)
	Police	1.05% per year of service adjusted for retirement before age 55 (subtract 0.0336% per year between age 50 and 55)
	PS	1.05% per year of service adjusted for retirement before age 58 (subtract 0.0168% per year before age 53, subtract 0.0336% per year between age 53 and 58)

<b>Retirement Entitlement</b>	All parts except AF and MPs	Retirement allowance pension calculated at date of exit as Final Salary times Retirement Allowance Multiple. Pensions in payment are increased annually with CPI in April each year. Commutation of up to 25% of the pension is optional.
	AF and MPs	Retirement allowance pension calculated at date of exit as Final Salary times Retirement Allowance Multiple. Pensions in payment are increased annually with CPI. Commutation of up to 25% of the pension is optional. Members may defer their pension to age 55 or 60 for an additional lump sum.

<b>Medical Retirement Entitlement</b>	All except MPs	Retirement allowance calculated as per normal retirement at date of medical retirement.
	MPs	No special entitlement is payable on medical retirement

<b>Death while Active with spouse</b>	All parts except Old GS and MPs	Either: A. The greater of: a. One year's salary at date of death b. Refund of member contributions with interest B. 50% of the retirement allowance received if member had medically retired (option to commute part of members pension)
	Old GS	Either: A. The greater of: a. 50% of the retirement allowance received if member had retired on date of death b. \$390 pa B. Refund of member contributions
	MPs	Before 9 years of service, refund of two times member contributions without interest. With 9 or more years service, either: A. The greater of: a. One year's salary at date of death b. Refund of two times member contributions without interest B. 50% of the retirement allowance received if member was eligible to retire at date of death (option to commute part of the member's pension)

<b>Death without spouse</b>	All parts except Old GS and MPs	Return of member contributions with interest, less any pension payments already paid
	Old GS	Refund of member contributions without interest, less any pension payments already paid and any child allowance payments paid or payable.
	MPs	Return of two times member contributions without interest, less any pension payments already paid.

<b>Death as Pensioner with spouse</b>	All parts except Old GS and MPs	Either: A. Up to 50% of the pension reverts to an eligible spouse dependant on the length of the relationship. B. Return of member contributions with interest, less any pension payments already paid
	Old GS	Either: A. The greater of: a. Up to 50% of pension reverts to an eligible spouse dependant on the length of the relationship. b. \$390 pa if married before beginning pension, otherwise \$0. B. Refund of member contributions, less any pension payments received
	MPs	Either: A. Up to 50% of the pension reverts to an eligible spouse dependant on the length of the relationship. B. Return of two times member contributions without interest, less any pension payments already paid

<b>Death - Child Allowance</b>	All parts	Any member who dies leaving a child or children under 16 years (or are otherwise dependent on the deceased), each child receives an annual allowance of \$1,000 increased with CPI since 1982 until they reach age 16 or 18 if in full time education.  Child allowances are paid in addition to any other death entitlements, except for Old GS where child allowances are deducted from the return of contributions on death without spouse, but are paid in addition to other death entitlements.
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<b>Resignation</b>	All parts except MPs, and Old Scheme	<p>A. Refund of member contributions with interest; or</p> <p>B. With 10 or more years service (8 years if PS), deferred retiring allowance payable from age 50 or later (this option is not available to AF), or</p> <p>C. With 10 or more years service (8 years if PS), transfer value rolled into other superannuation fund equal to: Refund of member contributions with interest x (100%+10% per year of service from 10 to 20)</p>
	MPs	<p>Refund of two times member contributions without interest</p> <p>If have more than 9 years service and less than 50 on resignation, then entitled to a deferred pension payable from age 50 based on an ordinary MPs salary at that age and also commute some to a lump sum to be taken immediately.</p>
<b>Withdrawal</b>	All parts	<p>A. Refund of member contributions without interest (not available to MPs, AF, Police and Judges); or</p> <p>B. If join another employer subsidised scheme and have sufficient service, entitled to a deferred pension from age 50.</p>
<b>Death after resignation or withdrawal with spouse</b>	All parts except MPs	<p>A. Refund of member contributions with interest; or</p> <p>B. 50% pension, where pension is calculated using Final Salary at date of exit/withdrawal, then increased with CPI to date of death.</p>
	MPs	<p>Two times member contributions without interest</p> <p>If ceased before age 50 and has more than 9 years service, then entitlement of 50% spouse pension is payable from death if die before age 50 or from pension commencement age if chose to defer pension to 55 or 60.</p>
<b>Death after resignation or withdrawal without spouse</b>	All parts except MPs	Refund of member contributions with interest to date of death
	MPs	Two times member contributions without interest



## **Additional Entitlements**

Some Parts have entitlements on leave of absence without pay and temporary cessation of contributions. Entitlements are discounted per year of suspended service.

Members can surrender up to 50% of their retirement allowance to provide a pension for another person (the assignee). The value of the entitlement is actuarially determined so that the value of the entitlement is unchanged. The assignee's pension also increases with CPI and ceases on the assignee's death.

