



Government Employees Pension Fund

Statutory actuarial valuation as at 31 March 2021

Reference number: GEPF/SV/43922

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Contents	Page
Executive summary	1
1. Introduction.....	7
2. Developments since the previous valuation date	10
3. Benefit structure	13
4. Member data	14
5. Assets	17
6. Valuation method and basis	21
7. Valuation results.....	23
8. Future service contribution rate	25
9. Summary and recommendations	28

Appendices	Page
Appendix 1: Summary of benefits and contributions	31
Appendix 2: Member statistics	36
Appendix 3: Consolidated revenue account.....	40
Appendix 4: Funding method, valuation bases and assumptions	41
Appendix 5: Analysis of change in financial position	54
Appendix 6: Liabilities and reserves.....	57
Appendix 7: Sensitivity analysis	61
Appendix 8: Actuarial interest factors.....	62
Appendix 9: Valuation of pensioner liabilities on an alternative basis	64

EXECUTIVE SUMMARY

Introduction

1. This statutory actuarial valuation of the Government Employees Pension Fund (“GEPF” / “the fund”) was performed as at 31 March 2021. The previous statutory actuarial valuation was performed as at 31 March 2018.

Membership

2. The valuation of the fund was based on the membership data set out below. The corresponding statistics at the previous valuation date have been provided for comparison.

Active membership	31 March 2018		31 March 2021	
	Number	Pensionable emoluments (R'm)	Number	Pensionable emoluments (R'm)
Services	233 751	58 721	225 597	64 110
Other	1 048 072	272 637	1 044 847	311 311
Total	1 281 823	331 358	1 270 444	375 422
Pensioners	Number	Annual pensions (R'm)	Number	Annual pensions (R'm)
Retirees	286 831	34 434	315 397	48 492
Dependants	154 794	8 348	170 228	10 884
Subtotal	441 625	42 782	485 625	59 376
Deferred pensioners	8	0.17	8	0.17
Total	441 633	42 782	485 633	59 376

Financial position of the fund

3. The financial position of the fund as at 31 March 2021 is summarised below. The corresponding statistics at the previous valuation date have been provided for comparison.

Financial position of the fund	31 March 2018 R'm	31 March 2021 R'm
Fair value of assets	1 800 068	2 041 346
Accrued service liabilities		
Active member liability	1 171 396	1 218 049
S-case and exits in progress liability	11 673	27 095
Pensioner liability	451 487	595 256
Child pension provision*	10 535	0
Deferred pensioner liability	0.5	0.6
Data reserve	8 785	9 135
Discriminatory practices reserve	8 763	4 983
Total accrued service liabilities	1 662 640	1 854 519
Balance of assets before contingency reserves	137 428	186 827
Minimum funding level	108.3%	110.1%
Contingency reserves		
Mortality improvement reserve	48 259	49 955
Pension increase reserve (past service)	161 883	242 750
Pension increase reserve (future service)	108 751	140 983
Solvency reserve	402 000	459 152
Total value of contingency reserves	720 893	892 840
Balance of assets after contingency reserves	(583 464)	(706 013)
Long-term funding level	75.5%	74.3%

*The rule amendment replacing orphans' pensions with children's pensions was effective 1 June 2018. The liability in respect of reversionary child pensions, as at 31 March 2021, is included under the relevant active and pensioner liabilities.

4. The GEPF funding policy adopted by the board of trustees defines the **long-term funding level** as a funding level determined using solvency reserves and other contingency reserves which the trustees deem realistic in the long term (without undue margins of conservatism). The **minimum funding level** is defined as a funding level determined excluding any contingency reserves. The funding policy requires the trustees to take steps to ensure that the minimum funding level is always above 90% and to strive to maintain a long-term funding level at or above 100%.
5. The long-term funding level was 74.3% at the valuation date, based on fully funded contingency reserves. At the previous valuation the long-term funding level was 75.5%. However, by reducing the level of the contingency reserves to the level that is affordable, at 20.9% of the recommended level, the funding level is 100% at the valuation date.
6. The minimum funding level at the valuation date, which is determined as the funding level excluding any contingency reserves, would therefore exceed 100% at 110.1%. At the previous valuation the minimum funding level was 108.3%.

Future service contribution rates

7. For the purpose of this valuation, contributing members are categorised as follows:

“Services”, which relates to members of the South African National Defence Force (SANDF), South African Police Service (SAPS), Correctional Services (CS) and the State Security Agency (SSA).

“Other”, which relates to members not employed by the above employers.

Recommended contribution rate by employer group

8. The recommended employer contribution rate required to meet the cost of benefits accruing after the valuation date is set out below. The corresponding statistics at the previous valuation date have been provided for comparison.

Employer contribution rates by employer group	% of pensionable emoluments			
	31 March 2018		31 March 2021	
	Services	Other	Services	Other
Funded benefits	26.1%	21.6%	24.5%	20.7%
Fund expenses	0.3%	0.3%	0.3%	0.3%
Less: Member contributions	(7.5%)	(7.5%)	(7.5%)	(7.5%)
Recommended employer contribution rate	18.9%	14.4%	17.3%	13.5%
Actual employer contribution rate	16.0%	13.0%	16.0%	13.0%
Excess / (shortfall)	(2.9%)	(1.4%)	(1.3%)	(0.5%)

Cost of additional pensionable service for Services members

9. We have also considered the effect on the contribution rate in respect of members of Services members, who qualify for a 25% enhancement to their years of pensionable service in excess of ten years. The results are shown in the table below:

	% of pensionable emoluments			
	31 March 2018		31 March 2021	
	Including 25%	Excluding 25%	Including 25%	Excluding 25%
Funded benefits	26.1%	20.9%	24.5%	20.9%
Fund expenses	0.3%	0.3%	0.3%	0.3%
Less: Member contributions	(7.5%)	(7.5%)	(7.5%)	(7.5%)
Recommended employer contribution rate	18.9%	13.7%	17.3%	13.7%
Actual employer contribution rate	16.0%	16.0%	16.0%	16.0%
Excess / (shortfall)	(2.9%)	2.3%	(1.3%)	2.3%

10. As indicated in the results above, the effect of the service enhancement in respect of *Services* members amounts to approximately 3.6% of pensionable emoluments. This is higher than the difference in contributions payable by the *Services* employers (16%) and *Other* employers (13%) but highlights the appropriateness of the difference in contribution rate based on the benefit enhancement. The residual difference can be explained by the differing decrement assumptions between the two categories of members.

Findings and recommendations

11. As at 31 March 2021 the assets of the fund were sufficient to cover the best estimate liabilities in full, with a funding level of 110.1%. The current position therefore meets the trustees' targeted minimum funding level of 90%.
12. The fund does not have sufficient assets to cover the recommended solvency reserve and other contingency reserves in full. Allowing for the full solvency reserve and other contingency reserves reflects a long-term funding level of 74.3%. An amount of R186 827 million is available to cover these reserves, which implies that 20.9% of the recommended reserves are funded.
13. The employer currently contributes at a rate of 16% of total pensionable emoluments for *Services* members and 13% for *Other* members. An employer contribution rate of 17.3% and 13.5% of total pensionable emoluments is required respectively for *Services* and *Other* members to finance the benefits which are expected to accrue over the period between the current valuation date and the next valuation date (31 March 2023). These contribution rates are inclusive of the cost of death in service lump sum benefits, funeral benefits and the cost of administration expenses.
14. The cost of the service enhancement in respect of *Services* members amounts to approximately 3.6% of pensionable emoluments. This is higher than the current difference in contributions paid in respect of *Services* and *Other* members but highlights the appropriateness of the difference in contribution rates.
15. The level of contributions should be monitored as part of each actuarial valuation of the fund to ensure that it is in line with the adopted funding level policy.
16. In line with rule 7.2 of the fund's rules, which states that the employer contributions should be sufficient to ensure that the fund is able to meet its obligations at all times, subject to a minimum funding level of 90%, the funding policy adopted by the trustees requires the trustees to ensure that the minimum funding level is above 90%. This can therefore be viewed as the primary funding objective of the fund. The employer contribution rate must be determined by the employer in consultation with the trustees and the minister of finance, with due regard to the recommendations of the most recent actuarial valuation of the fund. The funding policy also states that the trustees should strive to maintain the long-term funding level at or above 100%. The long-term funding level of the fund at the valuation date was 74.3% with a minimum funding level of 110.1%. As at the valuation date the fund meets the minimum funding level, but as the contingency reserves are only partially funded, does not meet its long-term funding objectives.

17. For illustration purposes, we have approximated the additional contribution rates that would be required to eliminate the accrued shortfall in the long-term funding level over periods of 10, 15 and 20 years as 18.8%, 12.5% and 9.4% of pensionable salaries, respectively. For simplicity, we assumed that the future investment return equals the future salary increase rate and that the membership will remain roughly stable. These deficit-funding rates are provided only to give perspective on the level of the accrued deficit and do not take into account any strains that may arise in future.
18. We recommend that the current $F(Z)$ and $A(X)$ factors that are used to calculate actuarial interest, as well as the $F(X)$ factors that are used in the purchase of service calculations, be reviewed after each statutory actuarial valuation of the fund. This will enable the trustees to determine whether the basis produces factors which are sufficiently different to warrant a change in the factors used by the fund, and to ensure that the total members' actuarial interest values are close to the valuation liabilities. These factors are attached in Appendix 8.
19. We recommend that the key demographic assumptions used for the fund be monitored through an experience analysis exercise every three to five years.
20. On the basis that the fund has met its funding objectives and that the current contributions are expected to cover the cost of future benefits with specific reference to the risks mentioned in paragraph 11 above as well as the fact that the contingency reserves are only 20.9% funded, we can confirm that the fund was in a sound financial condition as at 31 March 2021.

1. INTRODUCTION

We are pleased to present to the trustees of the GEPF this statutory actuarial valuation as at 31 March 2021 (*“the valuation date”*). This report sets out the results of the statutory valuation of the fund as at 31 March 2021 and includes an analysis of the financial progress of the fund since 31 March 2018 (*“the previous valuation date”*). The period between the previous valuation date and the current valuation date is referred to hereinafter as the valuation period.

This report has been prepared in accordance with the Government Employees Pension Law, 1996 as amended (*“the GEP Law”*), which requires that the fund’s financial condition be investigated and reported upon by a valuator at least once in every three years. Although the practice of the fund is to have statutory actuarial valuations performed biennially, the abnormal events that occurred in March 2020 resulted in the fund deciding to perform an interim valuation as at 31 March 2020.

Registration and operation

- 1.1 The fund was established in 1973, changing its name to the Government Employees Pension Fund in 1996.
- 1.2 The fund operates on defined benefit principles. In terms of the rules of the fund, members contribute at a rate of 7.5% of pensionable emoluments, with the employer being responsible for the balance of the cost of providing fund benefits in terms of the rules. A brief summary of the fund benefits, contributions and expenses is set out in Appendix 1.
- 1.3 The previous statutory valuation was carried out by Alexander Forbes as at 31 March 2018. At that date, the fund reflected a minimum funding level (assets divided by liabilities – excluding solvency reserves and contingency reserves) of 108.3%, which exceeded the trustees’ targeted minimum funding level of 90%. The long-term funding level (assets divided by liabilities including recommended solvency reserves and contingency reserves) was 75.5%, which was below the trustees’ targeted long-term funding level of 100%.
- 1.4 The purpose of this valuation is to investigate the financial soundness of the fund in terms of the funding objectives of the fund’s funding policy.
- 1.5 For the purposes of this valuation, contributing members are categorised as follows:
 - "Services", which relates to members of the South African National Defence Force (SANDF), South African Police Service (SAPS), Correctional Services (CS) and the South African Secret Service (SASS)
 - "Other", which relates to members not employed by the above members.

1.6 The purpose of the valuation is therefore:

- to determine whether the existing assets of the fund are sufficient to cover the fund's liabilities accrued to the valuation date;
- to determine whether the funding level meets the minimum funding requirement as outlined in rule 7.2 of the fund's rules and the requirements of the funding level policy adopted by the fund;
- to investigate and report on the actual experience of the fund since the previous valuation;
- to review the assumptions used in light of actual experience and industry developments;
- to recommend an employer contribution rate to meet the cost of benefits accruing in the future;
- to assess the necessity for, and quantum of, any contingency reserves; and
- to perform the basis for consideration by the trustees of the pension increases to be granted to pensions in payment over the period to the next valuation.

Valuation data

1.7 In compiling this report, we have relied upon the accuracy and completeness of information made available to us by the administrators, the Government Pensions Administration Agency ("GPAA" / "the administrator"), and external parties. Except where expressly stated in the report, we have not independently verified the accuracy of the facts or the basis of the information supplied to us.

1.8 The results of the statutory valuation depend on the accuracy of:

- the membership data;
- the information on the assets, as supplied by the relevant sources; and
- the audited financial statements for the valuation period.

Reasonableness checks have been performed on the above and we are satisfied with the general accuracy and completeness of the data provided and with its suitability for purposes of this statutory valuation. Further information regarding the reasonableness checks performed is set out in Appendix 2.

1.9 The trustees and the employer must ensure that any significant fund events (e.g. large scale retrenchments or large salary adjustments, or change in the fund's investment strategy) which occurred during the valuation period as well as thereafter have been reported to the actuary, to ensure that the financial impact of such events on the fund is taken into account in determining the fund's position at the valuation date.

Capacity, brief and professional guidance

- 1.10 This report has been prepared by Alexander Forbes Financial Services (Pty) Ltd (*“Alexander Forbes”*) and African Origins Actuarial Solutions (*“African Origins”*) in accordance with the instructions of the fund’s trustees. This report has been prepared solely for the benefit of the trustees of the fund in my capacity as the valuator to the fund and as a director of African Origins. The information contained in this report and in all documents referred to in this report is confidential.
- 1.11 Our investigations have been undertaken to comply with the requirements of rule 4.9 of the fund, as well as section 16 of the Pension Funds Act, and are in accordance with the requirements of the Financial Sector Conduct Authority (*“FSCA”*). The report has been prepared in accordance with Standard of Actuarial Practice (*“SAP”*) 201 issued by the Actuarial Society of South Africa (*“ASSA”*), and, where relevant, the guidance provided by the Pension Fund (*“PF”*) Circulars published by the FSCA has been considered.
- 1.12 Throughout this report any values that have been determined are, except where otherwise stated, in accordance with our view of the most probable future experience. Our specific assumptions and other reliances and limitations are documented in the following sections and supporting appendices. These sections and appendices are an integral part of this report.
- 1.13 African Origins and Alexander Forbes do not accept any liability to any persons, other than the trustees, in connection with this report or its related enquiries. We accept no liability in respect of any matter outside the scope and limitations of this report and purpose for which it is prepared.
- 1.14 This report may not be disclosed and / or relied upon in whole or in part to / by any person other than the trustees or quoted in any other context without prior written consent. Any person, other than the trustees to whom this report is addressed, who receives a draft or copy of this report (or any part of it) or discusses it (or any part of it) or any related matter with me or any third party, does so on the basis that they acknowledge the source of this report and accept that they may not rely on it for any purpose whatsoever and that we owe a duty of care only to the trustees. Any portion of this report, if reproduced or transmitted, must include a reference to the full report and to this clause.
- 1.15 This report has been prepared as at 31 March 2021 and covers the valuation period given above. Unless specifically stated to the contrary, it does not take into account any events subsequent to the valuation date.
- 1.16 This report has been peer reviewed by an approved valuator.

2. DEVELOPMENTS SINCE THE PREVIOUS VALUATION DATE

Rules and amendments

- 2.1 A rule amendment, effective 18 May 2018, was gazetted (General Notice 258 of 2018, Government Gazette 41634). This rule amendment allows for the differentiation of the applicable periods and provisions for benefits due to voluntary and compulsory demilitarisation in respect of SANDF members.
- 2.2 A rule amendment, effective 1 June 2018, was gazetted (General Notice 314 of 2018, Government Gazette 41673). This rule amendment makes provision for the replacement of the orphans' pensions with children's pensions, at a higher level of 25% of the main member's pension.
- 2.3 A rule amendment, effective 1 August 2019, was gazetted (Notice 399 of Government Gazette 42603 of 31 July 2019). This rule amendment makes provision to replace the divorce debt approach with a pensionable service reduction approach to adjust the benefit of a member following a pension interest assigned to a former spouse of the member as result of a decree of divorce or for the dissolution of a customary marriage; and to provide for a transitional measure.
- 2.4 A rule amendment, effective 1 November 2019, was gazetted (General Notice 596 of 2019, Government Gazette 42819). This rule amendment makes provision that a member may elect, when he or she retires or is discharged, to have either the gratuity or the annuity reduced in favour of an increased spouse's pension. The calculation will be based on the valuation assumptions from the most recent approved actuarial valuation of the fund.

Pension increases

- 2.5 The pension increases granted to pensioners during the valuation period were as follows:

Date of increase	Increase	CPI (for the year ended 30 November)	Increase as % of CPI
1 April 2018	5.5%	4.6%	119.6%
1 April 2019	5.2%	5.2%	100.0%
1 April 2020	3.6%	3.6%	100.0%
1 April 2021	3.2%	3.2%	100.0%

- 2.6 Proportionate increases were granted to pensions in payment that had been in payment for less than twelve months at the time that an increase was granted. The pension increases detailed above have been taken into account in the valuation of the liabilities of the fund as at 31 March 2021.

Salary increases

2.7 The table below sets out the salary adjustments over the valuation period as based on the Public Service Co-ordinating Bargaining Council (“PSCBC”) multi-term agreements:

Date of increase	Increase
1 April 2019	5.7%
1 April 2020*	0.0%
1 July 2021	1.5%

*The 1 April 2020 salary adjustment per the PSCBC agreement was an adjustment based on projected CPI, but was not implemented as agreed.

2.8 The adjustments above for 2019 and 2020 reflect the corresponding increase for salary levels 8-10, as specified in DPSA Circular No.10 of 2018.

2.9 The PSCBC resolution 1 of 2021 specified salary adjustments as follows:

- a monthly non-pensionable cash allowance, depending on salary level, from 1 April 2021 to 31 March 2022; and
- a once-off pensionable salary adjustment of at least 1.5% to employees who do not qualify for a pensionable increase derived from pay progression with effect from 1 July 2021, including employees on the maximum notch of their salary level

2.10 The salary increases above were taken into account in the valuation of the liabilities of the fund as at 31 March 2021.

Contributions

2.11 The contributions paid by the members and employer during the valuation period were as follows:

Contribution rates	% of pensionable emoluments
Member contributions	7.50%
Employer contributions	
<i>Services</i>	16.0%
<i>Other</i>	13.0%

The recommended employer contribution rate at the previous valuation date was 18.9% of pensionable emoluments for *Services* members and 14.4% for *Other* members.

Administration and actuarial services

2.12 The fund was administered by the Government Pensions Administration Agency during the valuation period.

2.13 The valuator to the fund at the previous valuation date was Andre Pienaar. Sandile Mbili replaced Andre Pienaar in this capacity through a resolution of the board of trustees, effective 1 April 2020.

Demographic assumptions

- 2.14 An investigation into the demographic experience of the fund was completed in 2019, carried out over the period 1 April 2012 to 31 March 2019. The full details of the investigation are set out in the report finalised in August 2019: "Government Employees Pension Fund Demographic Investigation for the period April 2012 – March 2019". The board adopted the recommended new assumptions on 3 December 2019.

3. BENEFIT STRUCTURE

Active members

- 3.1 A summary of the current benefit structure, in terms of the registered rules of the fund, is included in Appendix 1.

Pensioners: pension increase policy

- 3.2 The trustees have adopted a formal pension increase policy in order to give effect to section 25 of the GEP Law and GEPF rule 23, to establish the pension increase that is affordable and to guide the trustees in their determination of the annual pension increase. According to rule 23, the fund aims to grant minimum pension increases, if affordable, of 75% of inflation subject to a minimum pension of the original pension increased with 75% of full inflation.

- 3.3 The GEPF Pension Increase Policy effective from 1 April 2013 states that in making their pension increase recommendation:

“8.2.1.1 The B&A Committee will recommend an inflation related increase, comprising of the Basic Increase and, possibly, a Further Inflation Related Increase. In considering the Further Inflation Related Increase, the B&A Committee may take account of the National Treasury’s forward estimate of inflation, or anticipated general increases in public service salaries, or increases in social grants, as well as the balance in the Notional Pensioner Account.

8.2.1.2 If the full Basic Increase cannot be granted because of the affordability provision in 10 below, a proportionate share will be granted.

8.2.1.3 The B&A Committee may recommend one or more of a Catch-up Increase and a Supplementary Increase, in addition to the inflation related increase in 8.2.1.1”

- 3.4 In addition, the pension increase policy states that the trustees may approve a pension increase recommendation provided that, after the recommended increase, the fund’s funding level is higher than the minimum funding level, or where the employer has committed to paying such amounts as will increase the funding level to the minimum funding level, after the recommended increase, within the next three years.

- 3.5 In order to allow the trustees greater discretion in granting pension increases of 100% of CPI at times when they may not be affordable and also not to create the unreasonable expectation that pension increases will always be 100% of CPI, an additional reserve has been established.

4. MEMBER DATA

The valuation of the fund at 31 March 2021 was based on the membership detailed below. Further statistics, including a reconciliation of the current membership with that present at the previous valuation date, are provided in Appendix 2. The trustees should verify that the statistics correspond with the actual membership of the fund.

Contributing members

4.1 Membership statistics in respect of active members at the valuation date are provided in the table below (the corresponding statistics at the previous valuation date have been provided for comparison):

	31 March 2018	31 March 2021	Change
Services			
Number of members	233 751	225 597	(8 154)
Salary-weighted average age	43.0 years	43.7 years	0.7 years
Salary-weighted average past service	17.7 years	18.3 years	0.6 years
Total pensionable emoluments (R'm)	58 721	64 110	9.2%
Average pensionable emoluments (R)	251 212	284 181	13.1%
Other			
Number of members	1 048 072	1 044 847	(3 225)
Salary-weighted average age	45.8 years	46.4 years	0.6 years
Salary-weighted average past service	14.9 years	15.1 years	0.2 years
Total pensionable emoluments (R'm)	272 637	311 311	14.2%
Average pensionable emoluments (R)	260 132	297 949	14.5%
Total			
Number of members	1 281 823	1 270 444	(11 379)
Salary-weighted average age	45.3 years	46.0 years	0.7 years
Salary-weighted average past service	15.4 years	15.7 years	0.3 years
Total pensionable emoluments (R'm)	331 358	375 422	13.3%
Average pensionable emoluments (R)	258 505	295 504	14.3%

4.2 The number of active members has decreased from 1 281 823 to 1 270 444 over the valuation period. At the same time there was an increase in the salary weighted average age of the fund's membership from 45.3 years to 46.0 years.

4.3 During the valuation period, the pensionable emoluments of members who contributed to the fund throughout the valuation period increased by an average of 6.2% per annum. The actual salary increases for members present at both the current and the previous valuation dates was lower than that assumed at the previous valuation date, i.e. 7.5% per annum plus age-related merit increases (or 9.0% per annum on average for members present at both valuation dates).

Pensioners

- 4.4 Details of the active and suspended pensioners and annual pension statistics at the valuation date are provided in the table below (the corresponding statistics at the previous valuation date have been provided for comparison):

Group	31 March 2018	31 March 2021	Change
Retirees			
Number	286 831	315 397	28 566
Total annual pensions (R'm)	34 434	48 492	40.8%
Average annual pension (R)	120 050	153 749	28.1%
Dependants			
Number	153 590	162 916	9 326
Total annual pensions (R'm)	8 334	10 580	26.9%
Average annual pension (R)	54 263	64 941	19.7%
Child pensioners			
Number	1 204	7 312	6 108
Total annual pensions (R'm)	14	304	2 107.4%
Average annual pension (R)	11 439	41 575	263.5%
Total			
Number	441 625	485 625	44 000
Total annual pensions (R'm)	42 782	59 376	38.8%
Average annual pension (R)	96 875	122 267	26.2%

The pensioner statistics above exclude 33 487 pensioners and dependants at 31 March 2021 (and 12 652 at 31 March 2018) that were inferred from retirements and deaths in the valuation data, but for whom no individual data were provided. Of the 33 487 such cases at 31 March 2021, 2 467 were reflected as retirements or dependants of members who died in service and 31 011 were reflected as dependants of pensioners who died. Of the 12 652 such cases at 31 March 2018, 12 034 were reflected as retirements or dependants of members who died in service and 618 were reflected as dependants of pensioners who died.

- 4.5 At 31 March 2021 there were 485 625 pensioners with total annual pensions (including increases up to 1 April 2021) of R59 376 million per annum.
- 4.6 During the valuation period, annual pensions increased by an average of 4.0% per annum. This is lower than the long term average rate of increase in annual pensions assumed at the previous valuation date, i.e. 5.2% per annum.
- 4.7 The pension-weighted average age of the group (excluding child pensions) increased from 66.82 to 66.98 years.

Deferred pensioners

- 4.8 Details of the deferred pensioners and annual deferred pension statistics at the valuation date are provided in the table below (the corresponding statistics at the previous valuation date have been provided for comparison):

	31 March 2018	31 March 2021	Change
Number	8	8	0
Total annual pensionable emoluments (R'000)	170	170	0.0%
Average annual pensionable emoluments (R)	21 250	21 250	0.0%

5. ASSETS

Details of the fund's investments and cash flows over the valuation period were provided as part of the financial statements.

Asset classes

5.1 The table below shows the breakdown of the fund's invested assets by asset class at the valuation date (corresponding values from the previous valuation of the fund have been provided for comparison):

Asset class	31 March 2018		31 March 2021	
	Market value (R'm)	Proportion	Market value (R'm)	Proportion
Local equities	1 025 149	56.8%	1 148 655	55.9%
Local property	14 297	0.8%	14 977	0.7%
Local fixed interest	563 089	31.3%	644 388	31.3%
Money market	30 228	1.7%	8 521	0.4%
Loans	44 244	2.5%	49 772	2.4%
Equipment	2	0.0%	8	0.0%
Collective investment schemes	660	0.0%	842	0.0%
Foreign investments	124 150	6.9%	192 120	9.3%
Total investments	1 801 819	100.0%	2 059 282	100.0%

Adjustments

- 5.2 Certain adjustments must be made to the fund's asset values to take account of outstanding debtors and creditors as well as cash on hand at the valuation date. These adjustments as extracted from the fund's audited financial statements as at the valuation date, are as follows. Corresponding values from the previous valuation of the fund have been provided for comparison.

	31 March 2018	31 March 2021
	R'm	R'm
Total investments	1 801 819	2 059 282
Cash at bank	22 197	33 974
Sundry debtors:		
Accounts receivable	7 530	6 745
Contributions receivable	3 711	3 721
Funding loan	7	7
Transfers receivable	1	1
Sundry creditors:		
Accounts payable	(3 650)	(4 680)
Benefits payable	(30 871)	(55 888)
Transfers payable	(1)	(1)
Provisions	(8)	(12)
Unclaimed benefits	(668)	(1 802)
Total assets after adjustments	1 800 068	2 041 346

- 5.3 A consolidated revenue and expenditure account (at market value), for the period 1 April 2018 to 31 March 2021 is shown in Appendix 3.

Valuation of assets

- 5.4 For purposes of this interim actuarial valuation, the assets have been taken into account at 100% of fair (or market) value and no investment margin has been set aside. Therefore the assets of the fund have been taken into account at R2 041 346 million as at the valuation date. This is consistent with the valuation methodology applied to the valuation of the fund's liabilities.

Fund returns

5.5 The investment return earned on the fund's assets is approximated by the change in the Notional Portfolio Index ("NPI"). The NPI is calculated on a monthly basis and is based on the estimated returns earned by the fund, as provided by the fund's asset consultants. The return in each financial year is rebased to reflect the returns approximated by the market values and cash flows reflected in the annual financial statements. This investment return (net of investment manager fees) earned over the valuation period is set out in the table below:

5.6 We have estimated the net annualised money-weighted yields earned on the overall fund for the valuation period, as follows:

Financial year	Net return
1 April 2018 to 31 March 2019	2.61%
1 April 2019 to 31 March 2020	-9.98%
1 April 2020 to 31 March 2021	29.16%
1 April 2018 to 31 March 2021 Annualised	6.06%

5.7 The yield of 6.06% per annum should be considered in the context of the long term expected return of 11.2% per annum assumed in the previous statutory valuation report.

Investment strategy

5.8 The trustees of the fund in consultation with the employers are responsible for the investment of the fund's assets, and need to ensure that the investment strategy of the fund remains appropriate given the nature of the fund's liabilities. In respect of occupational funds, Board Notice 149 of 2010 issued by the FSCA requires the actuary to the fund to comment on the appropriateness of the fund's asset strategy relative to its liabilities as part of the valuation report.

5.9 In this regard it should be noted that the fund's entire investment portfolio is managed on a market-linked basis, which means that the returns are expected to be volatile and, in particular, there may be negative returns for some periods. The fund's assets are invested in a mixture of asset classes, including South African equities, bonds, property, and cash and international assets.

5.10 A relatively high proportion of these assets is invested in equities and property. These are 'real' assets in the sense that over the long term they are expected to deliver an investment return above (and linked to) the rate of price inflation. This asset class provides a reasonable match to the fund's liabilities which are closely linked to future salary and pension inflation which in turn are linked to price inflation.

5.11 Other factors that the trustees and the employers should consider include:

- The employer 'underwrites' the fund in the sense that the employer would be obliged to pay a higher rate of contributions or lump sum amounts to the fund in the event that it was underfunded, to the extent that it is unable to meet its ongoing benefit obligations.
- As long as the fund continues in its current form, its liabilities are long term, in that benefits are not paid out to members until the point at which they retire, die or leave. It is therefore appropriate also to adopt a long-term view with regard to the fund's investment strategy. On this basis it is

reasonable to invest a significant proportion of the fund's assets in equities, which are generally expected to deliver a higher long-term investment return than the other asset classes in which the fund invests.

- Following from the above point, and whilst the funding level is currently above the minimum funding level, the fund is not able to set aside the full recommended solvency reserve and contingency reserves to protect the fund in the case of adverse investment performance, improvements in pensioner mortality and other contingencies.
- A feature of equity investment is that the capital value of the investments can be volatile in the short term. A consequence of the fund's investment strategy is that there may be times when there are significant falls in the fund's value of assets. The amount allocated to the solvency reserve (had it been fully funded) would provide a margin to protect the fund against such volatility, but given the level of funding of that reserve, may not be sufficient.
- The fund does not have a separate and specific asset strategy in place for the assets backing pensioner liabilities. Typically, such a strategy would involve a higher exposure to South African bonds (including inflation-linked bonds), and a reduction in equity exposure, compared to the current strategy. It is our understanding that the investment strategy adopted for the overall fund assets has been based on a weighted average of the investment strategy applicable to in-service members and to pensioners.
- The fund holds a lower percentage of foreign assets than might otherwise be suggested purely in terms of the risk diversification of assets.
- The trustees and the employers should continue to consider the appropriateness of the assets in the light of the nature of the fund, the employer covenant, the current funding level, the desired level of future pension increases and the required and affordable contribution rates by the employers.
- Taking the above factors into account, the current asset strategy of the fund remains reasonable as at the valuation date in relation to the liability profile of the fund. The strategy, however, does imply that the fund ideally needs to hold reasonable investment risk contingency reserves (solvency reserves) in order to have an acceptable probability of being able to meet the reasonable benefit expectations of in-service members and pensioners without calling on the employers to fund the effect of any volatility in the level of the assets.
- As such we are satisfied with the structure of the assets backing these liabilities and that the matching of the assets with these liabilities is, in our opinion, adequate.

6. VALUATION METHOD AND BASIS

- 6.1 This statutory actuarial valuation has been conducted on the basis of the benefits, contributions and other provisions of the rules as they stood at the valuation date. These are summarised in Appendix 1.
- 6.2 An appropriate method and basis need to be chosen to value the liabilities of the fund. These should be consistent with the objectives of the valuation, as outlined in section 1.
- 6.3 It has been standing practice, and approved by the trustees in the past, that an allowance for an equity risk premium, defined as the excess equity return over bonds, be included in the determination of the discount rate used to value the liabilities. The equity risk premium was set at 3% in the last few valuations. Alexander Forbes' research during 2018 and 2019 has shown that the relationship between bond and equity returns has a low correlation, and the experienced excess of equity over bond returns has shown a downward trend. Consequently, there is little empirical evidence to justify using past equity risk premia to estimate future equity returns and the research has resulted in an approach to setting expected equity returns based on more direct methods rather than assuming a strong link between equity and bond returns. As such, instead of assuming an equity risk premium of 3%, as of 2021 the expected return from equities for the next 20 years based on this research is expected inflation plus a real return of 5.3%. This valuation has therefore been undertaken on a best estimate basis, together with an explicit provision for a solvency reserve.
- 6.4 We have used the **projected unit** method to value the expected liabilities of the fund. This method separates the benefits accrued to the valuation date (the past service liabilities) from those expected to accrue in future (the future service liabilities). Allowance is made for expected salary and pension increases and for interest accrual to the member's anticipated date of withdrawal, death or retirement. This is discussed in more detail in Appendix 4.
- 6.5 A brief summary of assumptions for the valuation of the liabilities is provided in the table below (the corresponding assumptions at the previous valuation date have been provided for comparison).
- 6.6 It should be noted that actual experience is likely to differ from the assumptions below. The actual cost of benefit provision will ultimately depend on the actual financial and demographic experience of the fund.

BEST ESTIMATE	31 March 2018	31 March 2021
Financial assumptions		
Long term discount rate	11.2%	14.4%
Inflation	6.5%	9.2%
Salary inflation (before merit scale)	7.5%	10.2%
Net pre-retirement discount rate	3.44%	3.72%
Affordable pension increases	5.2%	7.4%
Net-post retirement discount rate	5.70%	6.42%
Demographic assumptions		
Mortality		
- Pre-retirement	refer to Appendix 4	refer to Appendix 4
- Post-retirement	refer to Appendix 4	refer to Appendix 4
Withdrawal	no allowance	no allowance
Ill-health	refer to Appendix 4	refer to Appendix 4
Spouse's age difference	Male spouse 4 years older than female spouse	Male spouse 4 years older than female spouse
Percentage married	refer to Appendix 4	refer to Appendix 4

SOVENCY RESERVE (Discontinuance basis)	31 March 2018	31 March 2021
Financial assumptions		
Long term discount rate	8.9%	13.7%
Inflation	7.0%	9.7%
Salary inflation	5.8% plus merit salary scale	10.7% plus merit salary scale
Net pre-retirement discount rate	2.93%	2.71%
Affordable pension increases	5.6%	7.8%
Net-post retirement discount rate	3.13%	5.47%

7. VALUATION RESULTS

- 7.1 In order to determine the level of solvency of the fund, it is necessary to compare the total assets of the fund with the total liabilities. The fund is solvent when the value of the assets is equal to or greater than the value of the liabilities, i.e. a funding level of 100% or greater. The funding level is the ratio of the value of the assets to the value of the liabilities of the fund at the valuation date.
- 7.2 The results of the statutory valuation of the fund as at 31 March 2021 are detailed in the table below. Corresponding values from the previous valuation of the fund have been provided for comparison.

Financial position of the fund	31 March 2018	31 March 2021
	R'm	R'm
Fair value of assets	1 800 068	2 041 346
Accrued service liabilities		
Active member liability	1 171 396	1 218 049
Retirement	1 013 694	1 071 372
Death in service	111 124	103 796
Ill-health	46 579	42 881
S-case and exits in progress liability	11 673	27 095
Pensioner liability	451 487	595 256
Male pensioners	168 859	219 262
Female pensioners	181 220	249 332
Widowers	9 157	12 379
Widows	72 626	84 270
Male child pensioners	36	712
Female child pensioners	39	750
Late pensioner adjustment*	19 550	28 551
Child pension provision**	10 535	0
Deferred pensioner liability	0.5	0.6
Data reserve	8 785	9 135
Discriminatory practices reserve	8 763	4 983
Total accrued service liabilities	1 662 640	1 854 519
Balance of assets before contingency reserves	137 428	186 827
Minimum funding level	108.3%	110.1%
Contingency reserves		
Mortality improvement reserve	48 259	49 955
Pension increase reserve (past service)	161 883	242 750
Pension increase reserve (future service)	108 751	140 983
Solvency reserve***	402 000	459 152
Total value of contingency reserves	720 893	892 840
Balance of assets after contingency reserves	(583 464)	(706 013)
Long-term funding level	75.5%	74.3%

*The Late Pensioner Adjustment allows for a delay in setting up pensioner records in respect of retired members and dependants of deceased members or pensioners.

**The rule amendment replacing orphans' pensions with children's pensions was effective 1 June 2018. The liability in respect of reversionary child pensions, as at 31 March 2021, is included under the relevant active and pensioner liabilities.

***Solvency reserve provided by Riscura

- 7.3 The above results (i.e. in respect of service up to 31 March 2021 and allowing for future salary increments in the case of contributors and future pension increases in respect of prospective and incumbent pensioners) reflect an accrued surplus of R186 827 million on the best estimate valuation basis, before any contingency reserves. This corresponds to a funding level of 110.1%, which meets the trustees' targeted **minimum funding level** of 90%. At the previous valuation the minimum funding level was 108.3%
- 7.4 The **long-term funding level** (i.e. the funding level after allowing for solvency reserves and other contingency reserves) is 74.3% at the valuation date. This is below the trustees' targeted long-term funding level of 100%. The fund can therefore only afford to hold R186 827 million, or 20.9%, of the full recommended solvency reserves and contingency reserves of R892 840 million. At the previous valuation the long-term funding level was 75.5%.
- 7.5 For illustration purposes, we have approximated the additional contribution rates that would be required to eliminate the accrued shortfall in the long-term funding level over periods of 10, 15 and 20 years as 18.8%, 12.5% and 9.4% of pensionable salaries, respectively. For simplicity, we assumed that the future investment return equals the future salary increase rate and that the membership will remain roughly stable. These deficit-funding rates are provided only to give perspective on the level of the accrued deficit and do not take into account any strains that may arise in future.

Analysis of change in financial position

- 7.6 In order to assist in understanding the financial impact that various items have had on the fund, we have prepared an analysis of the change in the fund's financial position (Appendix 5). This analysis investigates the extent to which actual experience has diverged from that assumed in the previous valuation basis.

Reserve accounts

- 7.7 The reserve accounts are discussed in more detail in Appendix 6.

Comment in terms of APN 205

- 7.8 Whilst the value of the liabilities is based on best estimate assumptions, where relevant, and the solvency and other contingency reserves established by the trustees on our advice allow for some fluctuations in asset values and / or unexpected changes in liabilities, there is no guarantee that these reserves will prove sufficient in practice. Conversely, it is possible that the reserves may prove to be more than sufficient.
- 7.9 If the reserves prove to be insufficient, management action will be required to rectify the position. This may involve, inter alia, the reduction in future benefit accruals, an increase in the required contribution rate or, in the event of liquidation of the fund, the possibility of a debt to the employer. If the reserves prove to be excessive then the balance of assets would have been understated. The uncertainty of the adequacy or otherwise of the reserves held is unavoidable and the actual outcome can only be determined when the fund ceases to have any further liabilities.

8. FUTURE SERVICE CONTRIBUTION RATE

Employer contribution rate during the valuation period

- 8.1 The recommended employer contribution rate to meet the balance of the cost of benefits accruing after 31 March 2018 (as per the previous statutory valuation), was 18.9% of pensionable emoluments for *Services* members and 14.4% for *Other* members.
- 8.2 The employer contributed at 16% of pensionable emoluments for *Services* members and 13% for *Other* members during the valuation period.

Recommended employer contribution rate for future service benefits as at the valuation date

- 8.3 The recommended employer contribution rate for benefits accruing after 31 March 2021, without having regard to the funding level of the fund, calculated on the best estimate valuation basis, is set out below. The corresponding statistics at the previous valuation date have been provided for comparison.

Employer contribution rates by employer group	% of pensionable emoluments			
	31 March 2018		31 March 2021	
	Services	Other	Services	Other
Funded benefits				
Retirement benefits	19.8%	17.5%	19.4%	17.4%
Death benefits	3.8%	2.7%	2.9%	2.2%
Ill health benefits	1.9%	0.7%	1.6%	0.7%
Mortality improvement	0.5%	0.6%	0.5%	0.5%
Total funded benefits	26.1%	21.6%	24.5%	20.7%
Fund expenses	0.3%	0.3%	0.3%	0.3%
Less: Member contributions	(7.5%)	(7.5%)	(7.5%)	(7.5%)
Recommended employer contribution rate	18.9%	14.4%	17.3%	13.5%
Current employer contribution rate	16.0%	13.0%	16.0%	13.0%

The required contribution rate has decreased mainly due to the higher pre- and post-retirement discount rates caused by the significant increase in market interest rates.

- 8.4 In our opinion, in light of the size of the fund and the potential impact of HIV/AIDS, the current self-insurance arrangements with respect to the death and disability benefits are appropriate. It should be noted that the cost of risk benefits could increase even if the age, sex and salary profile remains stable, due to for instance the impact of HIV/AIDS.

Cost of additional pensionable service for *Services* members

8.5 We have also considered the effect on the contribution rate in respect of members of *Services* members, who qualify for a 25% enhancement to their years of pensionable service in excess of ten years. The results are shown in the table below:

	% of pensionable emoluments	
	Including 25%	Excluding 25%
Funded benefits	24.5%	20.9%
Retirement benefits	19.4%	16.5%
Death benefits	2.9%	2.5%
Ill-health benefits	1.6%	1.4%
Mortality improvement	0.5%	0.4%
Fund expenses	0.3%	0.3%
Less: Member contributions	(7.5%)	(7.5%)
Recommended employer contribution rate	17.3%	13.7%
Actual employer contribution rate	16.0%	16.0%
Excess / (shortfall)	(1.3%)	2.3%

8.6 As indicated in the results above, the effect of the service enhancement in respect of *Services* members amounts to approximately 3.6% of pensionable emoluments. This is higher than the difference in contributions payable by the *Services* employers (16%) and *Other* employers (13%) but highlights the appropriateness of the difference in contribution rate based on the benefit enhancement. The residual difference can be explained by the differing decrement assumptions between the two categories of members.

Findings and Recommendations

- 8.7 For a fund governed in terms of the Pension Funds Act, the employer is required to contribute at the required rate determined by the valuator of the fund, or for any contribution shortfall to be funded from an employer surplus account in the fund.
- 8.8 The nature of the Government Employees Pension Fund is somewhat different in that it is governed in terms of the GEP Law and the covenant of the employer is much stronger in terms of being able to meet any funding shortfall in the future.
- 8.9 The trustees and the employer need to jointly determine the pace of funding, i.e. the employer contribution rate, and an acceptable level of funding, both in the short term and the long term for the fund.
- 8.10 It should be noted that the shortfall of the current employer contribution rate (an average of 13.5% of pensionable salaries) over the required employer contribution rate (an average of 14.2% of pensionable salaries) amounts to some R2.5 billion per annum or some 0.14% of the fund's liabilities.

- 8.11 If the employer continues to contribute at the current rate, the excess is expected to decrease the funding level by 0.14% per annum. However, this assumes that market conditions remain unchanged from those at the valuation date. We do not recommend that the fund or employer depend on this scenario.

9. SUMMARY AND RECOMMENDATIONS

Summary

- 9.1 The statutory actuarial valuation of the fund as at the valuation date was based on 1 270 444 active members with pensionable emoluments totalling R375 422 million, 485 625 pensioners with annual pensions totalling R59 376 million, and 8 deferred pensioners.
- 9.2 The adjusted value of the fund's available assets at 31 March 2021 was R2 041 346 million and the fund's accrued liabilities were R1 854 519 million on the best estimate basis.
- 9.3 The valuation thus disclosed excess liabilities of R186 827 million and an accrued funding level of 110.1% on the best estimate valuation basis as at 31 March 2021. The fund is accordingly financially sound on the minimum funding basis at the valuation date.

Findings and recommendations

- 9.4 As at 31 March 2021 the assets of the fund were sufficient to cover the best estimate liabilities in full, with a funding level of 110.1%. The current position therefore meets the trustees' targeted minimum funding level of 90%.
- 9.5 The fund does not have sufficient assets to cover the recommended solvency reserve and other contingency reserves in full. Allowing for the full solvency reserve and other contingency reserves reflects a long-term funding level of 74.3%. An amount of R186 827 million is available to cover these reserves, which implies that 20.9% of the recommended reserves are funded.
- 9.6 The employer currently contributes at a rate of 16% of total pensionable emoluments for *Services* members and 13% for *Other* members. Employer contribution rates of 17.3% and 13.5% of total pensionable emoluments are required respectively for *Services* and *Other* members to finance the benefits which are expected to accrue over the period between the current valuation date and the next valuation date (31 March 2023). These contribution rates are inclusive of the cost of death in service lump sum benefits, funeral benefits and the cost of administration expenses.
- 9.7 For illustration purposes, we have approximated the additional contribution rates that would be required to eliminate the accrued shortfall in the long-term funding level over periods of 10, 15 and 20 years as 18.8%, 12.5% and 9.4% of pensionable salaries, respectively.
- 9.8 The cost of the service enhancement in respect of *Services* members amounts to approximately 3.6% of pensionable emoluments. This is higher than the current difference in contributions paid in respect of *Services* and *Other* members but highlights the appropriateness of the difference in contribution rates.
- 9.9 The level of contributions should be monitored as part of each actuarial valuation of the fund to ensure that it is in line with the adopted funding level policy.
- 9.10 In line with rule 7.2 of the fund's rules, which states that the employer contributions should be sufficient to ensure that the fund is able to meet its obligations at all times, subject to a minimum funding level of 90%, the funding policy adopted by the trustees requires the trustees to ensure that the minimum funding level is above 90%. This can therefore be viewed as the primary funding objective of the fund. The employer contribution rate must be determined by the employer in

consultation with the trustees and the minister of finance, with due regard to the recommendations of the most recent actuarial valuation of the fund. The funding policy also states that the trustees should strive to maintain the long-term at or above 100%. The long-term funding level of the fund at the valuation date was 74.3% with a minimum funding level of 110.1%. As at the valuation date the fund meets the minimum funding level, but as the contingency reserves are only partially funded, does not meet its long-term funding objectives.

- 9.11 We recommend that the current $F(Z)$ and $A(X)$ factors that are used to calculate actuarial interest, as well as the $F(X)$ factors that are used in the purchase of service calculations, be reviewed after each actuarial valuation of the fund. This will enable the trustees to determine whether the basis produces factors which are sufficiently different to warrant a change in the factors used by the fund, and to ensure that the total members' actuarial interest values are close to the valuation liabilities. These factors are attached in Appendix 8.
- 9.12 We are satisfied with the suitability of the fund's investment strategy, the nature of the assets of the fund and that the matching of the assets with the liabilities is, in our opinion, adequate.
- 9.13 Given the current financial condition and size of the fund, the self-insurance of death and ill-health retirement risks remains appropriate.
- 9.14 We recommend that the key demographic assumptions used for the fund be monitored through an experience analysis exercise every three to five years.
- 9.15 On the basis that the fund has met its funding objectives and that the current contributions are expected to cover the cost of future benefits with specific reference to the risks mentioned above as well as the fact that the contingency reserves are 20.9% funded, we can confirm that the fund was in a sound financial condition as at 31 March 2021.



ANDRE RONALD PIENAAR

*Fellow of the Actuarial Society of South Africa
and the Institute and Faculty of Actuaries
in my capacity as the peer review actuary
and as an employee of
Alexander Forbes Financial Service*



SANDILE MBILI

*Fellow of the Actuarial Society of South Africa
in my capacity as valuator to the GEPP
and as a director of
African Origins Actuarial Solutions*

For the purposes of professional regulation the primary professional regulator of the signatories to this report is the Actuarial Society of South Africa.

November 2021

APPENDIX 1: SUMMARY OF BENEFITS AND CONTRIBUTIONS

A summary of the main benefits is given below. Full details are contained in the registered rules of the fund. Where there are special cases or benefits for particular members, these have been taken into account in the valuation.

Definitions

1. **Actuarial interest:** *For a member younger than 55 years:*

$N(\text{adj}) \times \text{FS} \times F(Z)$, where:

$N(\text{adj}) =$ member's adjusted service at termination date, and

$F(Z) =$ a factor determined by the board of trustees and the minister of finance acting on the advice of the actuary.

and

For a member older than 55 years:

$G + (A \times A(X))$, where:

$A(X) =$ a factor determined by the board of trustees and the minister of finance acting on the advice of the actuary.

A (Annuity) and G (Gratuity) are in this case always calculated using the formulae for members with 10 years of service or more.

Actuarial interest is always at least equal to the cash resignation benefit, which is summarised in paragraph 36 below.

2. **Annuity (A):** *Less than 10 years of pensionable service:*

nil

10 or more years of pensionable service:

1/55 of FS for each year of service, plus R360 per annum.

3. **Annuity increases:** Determined by the board of trustees acting on the advice of the actuary.

4. **Final salary (FS):** Average pensionable emoluments during the last 24 months of pensionable service.

5. **Gratuity (G):** ***Less than 10 years of pensionable service:***
- 15.5% of FS for each year of pensionable service.
- 10 or more years of pensionable service:***
- 6.72% of FS for each year of pensionable service.
6. **Pension age:** In accordance with service conditions. For the purposes of this valuation, retirement was assumed to occur in line with the specified retirement decrement tables.
7. **Pensionable emoluments:** The basic annual salary plus any other emoluments recognised as pensionable.
8. **Pensionable service:** Period since commencing service with the employer during which contributions were paid, including any additional service purchased and excluding any periods of leave-without-pay not allowed for in the rules.
9. **Potential service:** Period from commencement of pensionable service until the normal retirement date at pension age.
10. **Prospective service:** Period from the current age until the pension age.

Normal retirement benefit

- Less than 10 years of pensionable service:***
11. A gratuity equal to a member's actuarial interest
- 10 or more years of pensionable service:***
12. A gratuity of G and an annuity of A.
13. The gratuity is increased by 12% for members of the SANDF who are younger than 53 years at retirement.
14. In the case of *Services* members, pensionable service is increased by 25% for each year of pensionable service completed in excess of 10.

Early retirement benefit

15. As for normal retirement, but reduced by 1/3% for each complete month by which early retirement date precedes normal retirement date.

Late retirement benefit

16. With employer approval. Benefit is as for normal retirement.

Ill-health retirement benefit***Less than 10 years of pensionable service:***

17. A gratuity of $1.33 \times G$

10 or more years of pensionable service:

18. A gratuity of G and an annuity of A .
19. Pensionable service is increased by the smaller of 5 years, and $1/3$ of pensionable service completed and prospective service.
20. The gratuity is increased by 12% for members of the SANDF who are younger than 53 years at retirement.
21. In the case of *Services* members, pensionable service is also increased by 25% for each year of pensionable service completed in excess of 10.
22. Effective 1 October 2017, the ill-health benefit is subject to a minimum of the resignation benefit.

Death in service benefit***Less than 10 years of pensionable service:***

23. A gratuity of the greater of FS (as defined in paragraph 4 above) and actuarial interest.

10 or more years of pensionable service:

24. A gratuity of $5 \times A + G$.
25. Pensionable service is increased by the smaller of 5 years, $1/3$ of pensionable service completed and prospective service.
26. In the case of *Services* members, pensionable service is also increased by 25% for each year of pensionable service completed in excess of 10.

10 or more years of potential service:

27. A spouse's pension of $50\% \times A$.
28. Pensionable service is based on full potential service.
29. In the case of *Services* members, pensionable service is also increased by 25% for each year of pensionable service in excess of 10.

Orphan's / child's pension:

30. On the death of the member, a child's pension of 25% of the member's annuity becomes payable, subject to a minimum amount determined by the trustees, which cannot be less than R200 per month. The benefit remains payable until age 18, or age 22 if the child is a full time student, or for life in the case of a financially dependent disabled child.

Death benefit after retirement

31. A spouse's pension of $50\% \times A$, unless the member elected a reduced pension or gratuity with a 75% spouse's annuity.
32. A child's pension of 25%, increased from 10% from 1 June 2018, of the member's pension. If the orphan's pension becomes payable on the death of a surviving spouse who was in receipt of a spouse's pension, the orphan's pension is increased by the ratio of the spouse's pension at the date of his or her death to the initial spouse's pension. Effective 31 March 2009, the benefit is subject to a minimum amount determined by the trustees, which cannot be less than R200 per month. The benefit remains payable until age 18, age 22 if the child is a full time student, or for life in the case of a financially dependent disabled child.
33. If death occurs within the 5 years following retirement, a gratuity is payable equal to the balance of 5 years' annuity payments (excluding the R360 per annum pension).

Funeral benefit

34. A funeral benefit of R15 000 on the death of a member, pensioner or spouse and R6 000 on the death of an eligible child or stillborn child. The funeral benefit was increased from R7 500, effective 1 June 2018.

Discharge benefit

35. On discharge due to abolition of post or in the interest of the employer, the benefit is as for ill-health retirement.

Resignation benefit

36. On discharge due to misconduct or resignation or ill-health occasioned by own doing, a gratuity of:
 $7.5\% \times FS \times$ pensionable service.
The benefit is increased by 10% for each completed year of pensionable service between 5 and 15.
37. The benefit is subject to a minimum of the member's actuarial interest.

Injury on duty benefits

38. The rules specify various gratuities and annuities which are payable. These are, however, paid directly by the state and are not funded. They have therefore been ignored for the purpose of this valuation.

Contribution rates

39. Members contribute at a rate of 7.5% of pensionable emoluments
40. The employer is required to contribute at a level to ensure the fund can meet its obligations. The employer currently contributes at a rate of 16% of pensionable emoluments for *Services* members and 13% for *Other* members.
41. Additional costs to the fund resulting from the granting of early retirement or discharge benefits, other than due to ill-health, are borne by the government, the employer or both.
42. The cost or benefit improvements for specific groups of members are borne by their employers.

Expenses and other costs

43. Running expenses are borne by the fund.

Note

44. The above summary outlines the main benefits as they apply to the majority of members. Certain members (directors general, teachers and SANDF members with long service, etc.) may be subject to special provisions, which have not been listed above. We understand that the number of such members is not significant in terms of the overall membership of the fund.

APPENDIX 2: MEMBER STATISTICS

Contributory membership at the valuation date

1. The contributory membership changed as follows over the valuation period:

	Number of members
Active members at 31 March 2018	1 281 823
Opening adjustments	15 200
Entrants	162 481
Exits	
Corrections per GPAA	(5 136)
Withdrawal	(52 142)
Retirement	(72 530)
Ill-health	(3 948)
Death	(13 411)
Transfer	(7 931)
S-Case	(33 962)
Active members at 31 March 2021	1 270 444

The opening adjustment reflects members who were not present in the 31 March 2018 valuation data but who had service dates prior to 1 April 2018.

2. A summary of the membership data on which the valuation was based is set out below:

Age at 31 March 2021	Number of members	Pensionable emoluments (R'000)
< 20	9	1 241
20 – 24	12 418	2 813 619
25 – 29	89 106	21 827 702
30 – 34	150 323	37 145 307
35 – 39	189 201	48 679 114
40 – 44	182 803	49 854 198
45 – 49	215 305	66 521 720
50 – 54	218 531	73 665 684
55 – 59	159 011	56 340 312
60 - 64	50 627	17 791 798
65+	3 110	780 853
Total	1 270 444	375 421 548

3. The number of active members contained in this report differs from the report of the board of trustees reflected in the fund's audited financial statements at the valuation date. The report reflects the active membership as 1 265 406. We were not provided with an individualised listing of the members included in that figure. For the purposes of our valuation, the administrator provided a listing of members as at 31 March 2021 and a listing of members who exited over the valuation period. In arriving at the membership shown above, we excluded any appropriate exits. As part of the data validation process, the administrator excluded erroneous records prior to submitting the raw dataset to African Origins and Alexander Forbes. We queried further records where necessary and excluded erroneous cases after receiving appropriate confirmation from the administrator.

Pensioners

4. A reconciliation of the change in the number of active pensioners over the valuation period is provided below:

	Retirees	Dependants	Total
Number at 31 March 2018	286 831	154 794	441 625
Retirements	64 040	-	64 040
New Dependants	-	25 674	25 674
Appearances*	4 920	7 700	12 620
Deaths	(39 513)	(17 017)	(56 530)
Suspended over 10 years	(5)	(51)	(56)
Ceased to be eligible	(709)	(1 039)	(1 748)
Pension type corrections	(167)	167	-
Number at 31 March 2021	315 397	170 228	485 625

The pensioner statistics above exclude 33 487 pensioners and dependants at 31 March 2021 (and 12 652 at 31 March 2018) that were inferred from retirements and deaths in the valuation data, but for whom no individual data were provided. Of the 33 487 such cases at 31 March 2021, 2 467 were reflected as retirements or dependants of members who died in service and 31 011 were reflected as dependants of pensioners who died. Of the 12 652 such cases at 31 March 2018, 12 034 were reflected as retirements or dependants of members who died in service and 618 were reflected as dependants of pensioners who died.

*Appearances refers to a correction for pensioners that were not in the valuation data at the previous valuation, yet they are included in the current valuation data with pension commencement dates prior to the previous valuation.

5. A summary of the membership data on which the valuation was based is set out below:

Age at 31 March 2021	Number of pensioners	Pensions (R'000)
<20	5 693	235 240
20 – 24	1 499	64 438
25 – 29	245	23 273
30 – 34	1 017	78 977
35 – 39	3 196	233 753
40 – 44	7 238	515 439
45 – 49	15 630	1 149 883
50 – 54	24 388	1 895 424
55 – 59	42 813	5 006 972
60 - 64	98 693	16 251 259
65 - 69	102 182	14 999 777
70 - 74	72 872	8 211 941
75 - 79	49 976	4 696 580
80 - 84	35 208	3 366 887
85 - 89	16 457	1 723 177
90 - 94	6 660	736 553
95 - 99	1 514	164 100
100+	344	21 934
Total	485 625	59 375 608

6. At 31 March 2021 there were 485 625 pensioners, with pensions (including increases up to 1 April 2021) of R59 376 million per annum.
7. As at 31 March 2021 there were 8 deferred members, with total pensionable emoluments of R170 000 per annum.

Reasonableness checks performed

8. A large number of tests were carried out on the reasonableness and consistency of the data, including the following:
- a reconciliation of the number of members and pensioners at the valuation date and the previous valuation date, with the movements in membership reported
 - reasonableness tests on the salary and pension amounts, and the various membership dates (dates of joining, dates of pensionable service and dates of exit)
 - identifying any missing or invalid data fields
 - reviewing the fund's annual financial statements
 - reconciling exiting members with the claims paid in the annual financial statements
 - calculation of the fund's investment returns
 - a review of the levels of actual and projected fund expenses

Data quality and certification

9. The reader is referred to our separate report, prepared in October 2021 and titled "*Government Employees Pension Fund - Statutory actuarial valuation as at 31 March 2021: Data quality report*", for a detailed discussion of the quality of the data provided for the statutory valuation as at 31 March 2021. This report contains a comparison with the quality of the data provided for the 31 March 2020 interim valuation. A similar report, prepared in September 2020, compares the quality of the data provided for the 31 March 2020 interim valuation to that provided for the 31 March 2018 statutory valuation.
10. In general, there was a significant improvement in the data quality compared to the previous statutory valuation. With regards to the valuation to be performed as at 31 March 2021, we are satisfied with the general accuracy and completeness of the data and with its suitability for this purpose.

APPENDIX 3: CONSOLIDATED REVENUE ACCOUNT

	Fund account	Reserve accounts	Total
	R'm	R'm	R'm
Opening balance as at 31 March 2018	1 791 145	8 923	1 800 068
Income			
Member contributions	84 207	-	84 207
Purchase Periods of Service (GEPF Members)	100	-	100
Purchase Periods of Service (Divorce Benefits)	1 824	-	1 824
Purchase Periods of Service (Past Discriminatory Members)	4 402	-	4 402
Employer contributions	152 728	-	152 728
Interest on outstanding contributions	2	-	2
Transfers from other funds	114	-	114
Other Income	1 051	-	1 051
Expenses	(3 471)	-	(3 471)
Benefits			
Pensions	(156 202)	-	(156 202)
Gratuities	(55 808)	-	(55 808)
Withdrawal benefits	(85 524)	-	(85 524)
Retrenchment benefits	(114)	-	(114)
Transfers out	(308)	-	(308)
Ciskei Strikers' Reserve drawdown	-	(4)	(4)
Child and orphans benefits	(622)	-	(622)
Death benefits	(27 066)	-	(27 066)
Funeral benefits	(1 221)	-	(1 221)
Interest paid to members	(13 408)	-	(13 408)
Interest paid to dormant members	(0)	-	(0)
Divorce benefits	(5 968)	-	(5 968)
Unclaimed benefits	(3)	-	(3)
Discriminatory Practices Reserve drawdown	-	(4 396)	(4 396)
Sub total	1 685 858	4 523	1 690 381
Investment income	350 965	-	350 965
Transfers between accounts	(648)	648	-
Closing balance as at 31 March 2021	2 036 176	5 171	2 041 346

APPENDIX 4: FUNDING METHOD, VALUATION BASES AND ASSUMPTIONS

FUNDING METHOD

Introduction

1. This statutory actuarial valuation was considered in two parts:
 - pensionable service up to the valuation date (“past service”); and
 - pensionable service after the valuation date (“future service”).

Valuation methodology in respect of accrued benefits: past service liabilities

Active members

2. The liability in respect of the active members has been calculated using the **projected unit** method. At the previous valuation date the same funding method was used.
3. The past service liability in respect of active members at the valuation date was calculated by estimating the benefits expected to become payable in respect of service that had accrued up to the valuation date. Allowance was made for future salary increases to the date of retirement (or earlier exit) and pension increases after retirement. These projected benefits were then discounted back to the valuation date, thus producing the past service liability at the valuation date.

Pensioners

4. The liability in respect of pensioners was calculated as the present value of the expected payments in respect of these pensions, including allowance for future pension increases on a basis consistent with the pension increase policy and with communications to pensioners.
5. The benefits in respect of suspended pensioners have been valued on the same basis as those of active pensioners. Factors were then applied to these calculated liabilities to allow for the reducing probability that pensions will recommence after they have been in suspension for several years.
6. An experience investigation was conducted concurrent to the interim valuation as at 31 March 2020 analysing the probability of reinstatement of suspended pensioners. The analysis showed minor differences compared to the assumptions used in the statutory valuation as at 31 March 2018. The new assumptions for purposes of the statutory valuation as at 31 March 2021 are shown below.

7. The factors applied for purposes of the statutory valuation as at 31 March 2021 were as follows:

Period of suspension	Factor applied	
	Main and Spouse pensioners	Child pensioners
Less than 12 months	100%	10%
12 to 23 months	80%	7.5%
24 to 35 months	50%	5%
36 to 47 months	35%	0%
48 to 59 months	20%	0%
60 to 119 months	5%	0%
120 months and more	0%	0%

Deferred pensioners

8. The liability in respect of the deferred pensioners was calculated as the present value of the expected payments in respect of these pensions, including allowance for future pension increases, on a basis consistent with the pension increase policy and with communication to pensioners.

Notional pensioner accumulation amount

9. The fund is not governed by the Pension Funds Act and there are no requirements in terms of the rules of the fund to separate “pensioner assets” from the other assets of the fund. The calculation of the notional pensioner accumulation amount is therefore included in this report for illustrative purposes and should the fund fall under the Pension Funds Act in future. It is, however, used in the recommendations for annual pension increases.
10. The “notional pensioner accumulation amount” is calculated by:
- determining the fair value equivalent of each pensioner’s liability at retirement date (and at the commencement date of any spouse’s pension in the case of the spouse of a pensioner who died prior to the valuation date);
 - for each deferred pensioner the fair value equivalent is instead determined at the date of termination of service;
 - allowing for any contingent benefits payable in the event of the death of a pensioner and deferred pensioner;
 - deducting any pension payments made prior to the valuation date;
 - adding the value of any special increases that have been granted to pensioners and deferred pensioners which were funded otherwise than through the returns earned on the assets backing the pensioner and deferred pensioner liabilities; and
 - accumulating the above to the valuation date using the investment returns earned on the assets backing the pensioner and deferred pensioner liabilities.
11. The above calculation was performed for each pensioner and deferred pensioner who was alive at the valuation date.

12. In order to calculate the notional pensioner accumulation amount, the following assumptions were required:
- The starting value from the last valuation was used;
 - No deductions were made from the starting value for deceased pensioners;
 - Assumed expenses in respect of pensioners were allowed for.
13. The notional pensioner accumulation amount amounted to R700 157 million at the valuation date and was 17.6% higher than the pensioner and deferred pensioner liabilities calculated on a best estimate basis, and is 100.2% of the pensioner liabilities plus full recommended reserves for pensioners. This compares to an amount of R544 921 million at 31 March 2018, being 126% of the minimum funding level and 88% of the long-term funding level.

Valuation methodology in respect of benefits accruing after the valuation date: future service liabilities

Projected unit method of funding

14. The future service contribution rate was calculated by estimating the additional liabilities expected to accrue over the 2 years following the valuation date, but allowing for future salary increases to the date of retirement (or earlier exit) and dividing by the present value of the pensionable emoluments expected over the ensuing 2 years. Allowance has been made for assumed future salary and pension increases, mortality and investment returns.
15. The objective of this funding method is that at the end of the 2 years the additional assets accumulated will equal the increase in the past service liabilities, if the valuation assumptions are borne out in practice.
16. This method of funding effectively assumes that the composition of the fund by age, salary and gender will remain relatively stable over the 2 years with withdrawals, deaths and retirements being replaced by younger new entrants. If the salary-weighted average age of the fund decreases (increases) then, all other things being equal, the future contribution rate will decrease (increase).

Death in service and funeral benefits

17. The accrued portions of the death in service spouse and child pension benefits have been valued as past service liabilities. The future service contribution rate includes an allowance for these benefits as well as the lump sum death in service and funeral benefits accruing in the relevant period following the valuation date.

Administration and ad hoc expenses

18. We have made a current cost estimate of the fund's administration fees and expected ad hoc expenses for the purpose of determining the recommended employer contribution rate. The current cost estimate was based on actual fees and expenses paid during the last 3 years, expressed as a percentage of pensionable emoluments of all members over the same period.

BASES AND ASSUMPTIONS

Explanation of "best estimate" assumptions

19. The FSCA issued PF Circular 117 which details the principles to be adopted in setting the valuation basis for funds. The principles underlying this circular are accepted as best practice in South Africa and therefore should be considered. The circular also covers the use of "best estimate" assumptions.

20. The following are relevant extracts from the circular:

" 1. "Best estimate" assumptions

"Best estimate" assumptions should be used in the determination of the accrued liabilities and should be motivated with reference to the experience of the fund or similar funds or to statistics published or endorsed for use by the Actuarial Society of South Africa.

1.1. *Subject to the exception in 4.1 below, the actuarial assumptions should be "best-estimate assumptions".*

1.2. *No deliberate margins of conservatism should be included in the assumption.*

1.3. *The assumptions should be motivated by reference to any of the following:*

- *the experience of the fund, taking into account of the size of the fund and underlying trends in that experience where the actuary deems it appropriate to do so;*
- *statistical evidence relating to*
 - *funds in general, or*
 - *relevant published annuitant or in-service mortality or morbidity, including the effect of HIV/AIDS, or*
 - *an investigation performed within a firm of valuers in respect of funds advised by that firm where that evidence may relate to demographic items or to economic items such as the equity premium; or*
- *yields on classes of government or corporate bonds which, in terms of the actuarial method used by the valuator, determine the discount or inflation rates assumed at the valuation date.*

The valuator should include the motivation in the report, and, should make a copy of any investigation used in this motivation available to the Registrar, upon request.

Published mortality and morbidity investigations will include investigations published by ASSA, the Institute, Faculty and Society of Actuaries, and any statutory or industry body in South Africa or in other jurisdictions where the experience may be similar to that in South Africa or may be adjusted to be so similar.

- 1.4. *The use of “best-estimate” assumptions may result in a strengthening of the assumptions as used at the previous statutory actuarial valuation. This is acceptable provided it has been motivated as set out above.”*

The fund’s best estimate assumptions

21. We have again adopted a “best estimate” assumption basis for this statutory actuarial valuation, as explained below. The assumptions used for the valuation of the fund as at the previous valuation date have been provided for comparison

Valuation of assets

22. Assets have been valued at 100% of market or fair value. This is consistent with the assumptions used at the previous valuation date.

Valuation of liabilities

Net pre-retirement discount rate

23. For this valuation the investment return assumption (14.2%) was derived from the government bond yield curve at the valuation date, taking into account the duration of the fund’s active member liabilities. It was considered reasonable to apply the same yield to both the active members and pensioners as the impact of using different valuation bases was small. A duration of 17.49 years was used.
24. The allocation of the fund’s assets to equities is around 60%. As explained in section 6.3 of this report, the expected return on equity has been calculated as $9.2\% + 5.3\% = 14.5\%$.
25. No allowance has been made for investment fees since it was assumed that the active return earned from active asset management will equal the investment fees charged.
26. The final assumption was $(14.2\% \times 40\%) + (14.5\% \times 60\%) = 14.4\%$ per annum.
27. The net pre-retirement rate was set at 11.2% per annum at the previous valuation date.

Expected future inflation

28. Expected future inflation was set with reference to conventional and inflation-linked bond yields, where:
- Inflation = conventional bond yield - inflation-linked bond yield – inflation risk premium (0.5% per annum)
29. The inflation risk premium reflects that investors in conventional bonds will expect a higher prospective real return since their real return is less certain than an investor in inflation-linked bonds.

Therefore, the expected future inflation on 31 March 2021

$$= 14.2\% - 4.5\% - 0.5\%$$

$$= 9.2\% \text{ per annum}$$

30. The assumption in respect of expected future inflation was set at 6.5% per annum at the previous valuation date.

General salary escalation

31. On the basis of an Alexander Forbes Financial Services investigation into national salary experience, we have assumed that salaries increase at an average rate of 1% in excess of the increase in expected future inflation, i.e. at a rate of 10.2% per annum.

The best estimate financial assumptions are summarised in the table below:

	31 March 2018	31 March 2021
Yield on nominal bond of appropriate duration	9.4%	14.2%
Less yield on real bond	(2.4%)	(4.5%)
Less inflation risk premium	(0.5%)	(0.5%)
Long-term inflation	6.5%	9.2%
Pre-retirement		
Return on nominal bond	9.4%	14.2%
Return on equities	12.4%	14.5%
Net pre-retirement discount rate (A)	11.2%	14.4%
Long-term inflation	6.5%	9.2%
Excess over inflation	1.0%	1.0%
Salary inflation (B)	7.5%	10.2%
Real pre-retirement discount rate $[(1+A)/(1+B)-1]$	3.44%	3.72%
Post-retirement		
Long-term investment return (A)	11.2%	14.4%
Pension increases (C)	5.2%	7.4%
Net post-retirement discount rate $[(1+A)/(1+C)-1]$	5.70%	6.42%

Promotional salary increases

32. In addition, the impact of merit or promotional salary increases is taken into account based on the following table:

Age	Services	Other
20	3.59%	4.72%
25	3.63%	4.73%
30	3.20%	3.95%
35	3.19%	3.16%
40	2.60%	2.53%
45	2.01%	2.18%
50	1.87%	2.01%
55	1.79%	1.86%
60	1.70%	1.81%

33. The assumptions detailed above are mostly higher than those used at the previous valuation date, following the investigation into the demographic experience of the fund completed in 2019.

Net post-retirement discount rate

34. The trustees have adopted a formal pension increase policy in order to give effect to section 25 of the GEP Law and GEPF rule 23, to establish the pension increase that is affordable and to guide the trustees in their determination of the annual pension increase. According to rule 23, the fund aims to grant minimum pension increases, if affordable, of 75% of inflation subject to a minimum pension of the original pension increased with 75% of full inflation. We have assumed that this is equal to an average provision for pension increases of 80% of the assumed annual increase in price inflation, as pensioners who reach the minimum of 75% of their original pension plus full inflation must get full inflationary increases thereafter.
35. Given that the inflation assumption is set at 9.2% per annum, this implies that pension increases of 7.4% per annum are targeted by the pension increase policy. It would therefore be appropriate to use a net post-retirement discount rate of 6.42% per annum, $(1.143 / 1.074 - 1)$ at the valuation date.
36. The net post-retirement discount rate adopted by the trustees in the previous valuation was 5.70% per annum.
37. We are satisfied as to the reasonable expectation that the targeted pension increases are sustainable in light of the assumptions used and the investment strategy adopted.

Results on alternative “bond based approach” and “equity risk premium approach”

38. The FSCA now requires, in terms of PF Notice No. 2 of 2016, the Notice on Financial Soundness, 2016, that where a fund uses the “risk premium approach” for a valuation, it must also show the results on the more conservative “bond based approach”.
39. Whilst the fund is not subject to the requirements of the Pension Funds Act, 1956 and the notices thereto, we have considered the notice thereto, the intention behind the notice and the implications that it may have on the fund were the fund to comply with the notice or fall under the ambit of the Act.

Bond based approach

40. In terms of the bond based approach, the appropriate pre-retirement rate would be the return on long term bonds of appropriate duration, being 14.2% as at 31 March 2021.
41. The expected future inflation assumption is then set by subtracting the effective yield on inflation-linked bonds of the same duration from the yield on long term bonds of the same duration, and allowing for an inflation risk premium (0.5%). The expected future inflation assumption would therefore be 9.2% per annum (14.2% - 4.5% - 0.5%). The expected salary increase assumption, before merit salary increase, would therefore be 10.2% per annum (9.2% + 1.0%), and the net pre-retirement discount rate 3.63% ($1.142 / 1.102 - 1$).
42. In terms of the bond based approach, the appropriate post-retirement rate would be the return on long term bonds of appropriate duration at the valuation date, being 14.2% as at 31 March 2021, over the pension increase target of 80.0% of inflation - so ($1.142 / 1.074 - 1 = 6.3%$).

Equity risk premium approach

43. The prior valuation was done on a 3% equity risk premium basis. The allocation of the fund's assets to equities is around 60%, resulting in an equity risk premium of 1.8% ($3.0\% \times 60\% = 1.8\%$).
44. The appropriate pre-retirement rate on the equity risk premium approach would be the return on long terms bonds, with an allowance for the risk premium – so $14.2\% + 1.8\% = 16.0\%$.
45. With an expected future inflation assumption of 9.2%, the expected salary increase assumption, before merit salary increase, would be 10.2% ($9.2\% + 1.0\%$), and the net pre-retirement discount rate 5.26% ($1.160 / 1.102 - 1$).
46. Given that the inflation assumption is set at 9.2% per annum, this implies that pension increases of 7.4% per annum are targeted by the pension increase policy. It would therefore be appropriate to use a net post-retirement discount rate of 8.00% per annum ($1.160 / 1.074 - 1$) at the valuation date.
47. The comparative valuation results would be:

Valuation approach	Assets R'm	Liabilities R'm	Funding level
Current best estimate approach	2 041 346	1 854 437	110.1%
3% equity risk premium approach	2 041 346	1 525 110	133.8%
Bond based approach	2 041 346	1 877 428	108.7%

Demographic assumptions

48. An investigation into the demographic experience of the fund was completed in 2019, carried out over the period 1 April 2012 to 31 March 2019. The full details of the investigation are set out in the report finalised in August 2019: *“Government Employees Pension Fund Demographic Investigation for the period April 2012 – March 2019”*.
49. The board adopted the new assumptions on 3 December 2019. The new assumptions are set out below.

Pre-retirement mortality

50. We propose to use the new assumptions approved by the board. The mortality rates are mostly lower than those used in the previous valuation. A sample of the independent decrement rates used is provided in the table below:

Age	Male Services	Female Services	Male Other	Female Other
20	0.07%	0.10%	0.06%	0.10%
25	0.22%	0.12%	0.12%	0.13%
30	0.32%	0.14%	0.20%	0.17%
35	0.39%	0.16%	0.29%	0.20%
40	0.46%	0.18%	0.38%	0.21%
45	0.53%	0.21%	0.48%	0.24%
50	0.62%	0.26%	0.60%	0.28%
55	0.74%	0.31%	0.80%	0.35%
60	0.88%	0.36%	1.03%	0.42%
65	0.97%	0.42%	1.12%	0.45%

51. In terms of APN 206, detailed allowance for the effect of HIV/AIDS morbidity and mortality should be included in a valuation where there is adequate information to facilitate modelling the effect of the epidemic on membership and where the cost of such an approach can be justified. There is not adequate information available for fund members, and the cost of the investigation is not believed to be justified. No direct allowance has therefore been included for the effect of HIV/AIDS on the liabilities of fund members, although the trustees should be aware that the contribution in respect of lump sum and other death benefits could increase in the future as a result of the impact of HIV/AIDS.

Post-retirement mortality

52. We propose to use the new assumptions approved by the board. The mortality rates are higher over age 80 than those used in the previous valuation. A sample of the independent decrement rates used is provided in the table below:

Age	Males	Females
50	2.24%	1.20%
55	2.24%	1.17%
60	2.26%	1.27%
65	2.28%	1.56%
70	3.24%	2.19%
75	4.85%	3.37%
80	7.44%	5.46%
85	12.16%	8.99%
90	19.38%	15.12%

Withdrawal

53. Consistent with previous valuations, no allowance was made for exiting the fund, other than by way of death or retirement.

Ill-health retirement rates

54. We propose to use the new assumptions approved by the board. Assumptions are mostly lower than those used in the previous valuation. A sample of the independent decrement rates used is provided in the table below:

Age	Male Services	Female Services	Male Other	Female Other
20	0.00%	0.00%	0.00%	0.00%
25	0.01%	0.00%	0.00%	0.00%
30	0.01%	0.01%	0.00%	0.00%
35	0.06%	0.05%	0.02%	0.02%
40	0.11%	0.08%	0.03%	0.04%
45	0.21%	0.18%	0.08%	0.07%
50	0.38%	0.36%	0.17%	0.14%
55	0.63%	0.53%	0.29%	0.25%
60	0.71%	0.43%	0.27%	0.24%
65	0.00%	0.00%	0.00%	0.00%

Retirement rates (in good health)

55. We propose to use the new assumptions approved by the board. The assumptions are higher for *Other* members and lower for *Services* members, than in the previous valuation. A sample of the independent decrement rates used is provided in the table below:

Age	Male Services	Female Services	Male Other	Female Other
55	7.58%	6.99%	1.93%	2.49%
56	3.53%	2.96%	2.01%	2.53%
57	3.14%	2.81%	1.98%	2.49%
58	3.09%	2.78%	2.22%	2.65%
59	5.32%	4.64%	2.49%	2.90%
60	74.20%	67.24%	15.84%	17.77%
61	27.89%	19.33%	10.94%	16.38%
62	15.79%	17.19%	9.40%	14.13%
63	15.63%	17.38%	9.05%	12.85%
64	16.26%	17.25%	12.87%	13.21%
65	39.52%	45.62%	76.99%	80.06%

Spouse's age difference

56. We have assumed that husbands are 4 years older than their wives. This is consistent with the assumption used at the previous valuation date.

Proportion married

57. We propose to retain the assumptions used in the previous valuation. These assumptions are provided in the table below:

Age	Proportion married
20	25.0%
25	32.5%
30	46.0%
35	65.00
40	80.0%
45	92.5%
50	97.5%
55	97.5%
60+	97.5%

Commutation

58. On retirement, a gratuity is payable on top of the pension benefit. No commutation of the pension is therefore allowed.

Orphans' / Children's pensions

59. For current active members, an implicit allowance has been made in the valuation for the liability in respect of contingent future children's pensions by assuming a spouse's pension of 64% instead of 50%. For main pensioners, we made a direct valuation of the contingent children's pensions by assuming 7 out of 100 pensioners have a child of age 11 at the valuation date.

Solvency reserving basis

60. Historically an asset-liability matching ("ALM") approach has been used for calculating solvency reserves. Alternative approaches, such as the discontinuance matching strategy and bond basis approach, are permissible.

ALM approach

61. The level of the solvency reserve that could be established in the fund as a buffer against investment volatility has been determined by the asset consultants, using an ALM basis. This approach has been used in each valuation of the fund since 2006.
62. In setting the reserve, a value-at-risk measure of a 10% probability of becoming insolvent over a three-year time horizon was used.
63. Using this approach the solvency reserve at the valuation date was determined to be R459 152 million.

Discontinuance matching strategy

64. The FSCA's PF Circular 117 outlines an alternative basis for setting up solvency reserves within funds. The discontinuance matching approach allows for a 0.5% reduction in the pre- and post-retirement discount rates for the reasonable cost of implementing and maintaining a matched investment strategy.
65. The solvency reserve has been calculated as the difference between:
- the past service liabilities calculated on the assumption that the fund has implemented a matched investment strategy; and
 - the past service liabilities calculated on the best estimate valuation basis.
66. In effect, the solvency reserve represents the difference in past service liabilities on a conservative basis and the liabilities on a realistic basis.
67. At the valuation date, index-linked bonds were trading at an average yield of 4.5%. The average yield on long dated nominal bonds at this date was 14.2%.
68. The maximum allowance for future inflation when determining the solvency reserve is the difference between the nominal and index-linked bond yields, i.e. $14.2\% - 4.5\% = 9.7\%$.
69. For the purpose of the above calculations, the yields were estimated from the yield curve at the valuation date, taking consideration of the fund's active member and pensioner liabilities.

70. The solvency basis so derived is set out below:

	31 March 2018	31 March 2021
Yield on nominal bond of appropriate duration	9.4%	14.2%
Less yield on real bond	(2.4%)	(4.5%)
Less inflation risk premium	-	-
Long-term inflation	7.0%	9.7%
Pre-retirement		
Return on nominal bond	9.4%	14.2%
Return on equities	-	-
Cost of implementing and maintaining matching strategy	(0.5%)	(0.5%)
Net pre-retirement discount rate (A)	8.9%	13.7%
Long-term inflation	7.0%	9.7%
Excess over inflation*	(1.2%)	1.0%
Salary inflation (B)	5.8%	10.7%
Real pre-retirement discount rate [(1+A)/(1+B)-1]	2.93%	2.71%
Post-retirement		
Long-term investment return (A)	8.9%	13.7%
Pension increases (C)	5.6%	7.8%
Net post-retirement discount rate [(1+A)/(1+C)-1]	3.13%	5.47%

* In accordance with PF Circular 117, the 31 March 2018 inflationary salary increase assumption under the discontinuance matching basis was limited to ensure a 1.0% net pre-retirement discount rate at age 40, after factoring in the *Other* members' promotional salary scale. This is an artificial limitation on the solvency reserve. Should the rate not have been limited in this manner, the discontinuance matched approach would have yielded a far higher reserve than was calculated based on the above.

71. On the discontinuance matching method, the solvency reserve amounts to R256 945 million.

Bond basis

72. The bond basis is essentially the discontinuance matching approach, but the prescribed basis is typically weaker as an assumption regarding an inflation risk premium is permitted in terms of the bond basis. Note, however, that the discontinuance matched approach described above has an artificial limitation on the strength of the basis, and as a result the liability on the bond basis may be higher than on the discontinuance matched approach.

73. We have retained the 0.5% inflation risk premium used in the best estimate basis. We believe that this is reasonable and would ensure consistency in calculation over subsequent valuations if the same inflation risk premium is used in both calculations. The only difference between the bond basis and the best estimate basis is the assumed return on equity that is used in the best estimate basis.

APPENDIX 5: ANALYSIS OF CHANGE IN FINANCIAL POSITION

1. The valuation of the fund as at 31 March 2021 disclosed excess assets of R186 827 million on the best estimate valuation basis over the minimum funding basis liabilities. The previous valuation at 31 March 2018 revealed excess assets of R137 428 million. The overall change in financial position during the valuation period was therefore an improvement of R49 399.
2. The analysis of the change in financial position is summarised below and discussed in further detail thereafter.

Change in financial position	R'm
Excess assets at 31 March 2018	137 428
Interest on surplus at previous valuation	51 541
Investment income	(305 193)
Calculation methodology	12 539
Active member experience	(23 110)
Pensioner experience	42 232
Salary increases	168 433
Contribution shortfall	(17 662)
Pension increases	15 928
Expenses	(80)
Economic basis	182 816
Demographic basis and promotional salary scale	(77 988)
Miscellaneous items	(57)
Excess assets at 31 March 2021	186 827

Interest on excess assets at 31 March 2018

3. At 31 March 2018 the fund reflected excess assets of R137 428 million. With interest at the previous valuation rate of 11.2% per annum to 31 March 2021, the surplus would have been R188 969 million. This implies an increase in the excess assets of some R51 541 million.

Investment income

4. It was assumed that the assets of the fund would earn 11.2% per annum. Over the valuation period the fund earned approximately 6.06% per annum on the market value of assets. This resulted in a substantial strain of R305 193 million.

Calculation methodology

5. The model used to determine the valuation liabilities was adjusted to better reflect the benefits in terms of the fund Rules. This resulted in an improvement of R12 539 million.

Active member experience

6. The demographic experience of the active membership differed compared to that assumed in the previous statutory valuation basis. The overall impact was a strain of R23 110 million.

Pensioner experience

7. The demographic experience of the pensioners differed compared to that assumed in the previous statutory valuation basis. The overall impact was a release of R42 232 million.

Salary increases

8. Actual salary increases granted during the valuation period, for members who were present at both valuation dates, averaged 6.2% per annum and were lower than the average 9.0% per annum salary increases (including an allowance for merit salary increases) anticipated by the previous valuation assumptions. This resulted in a release of R168 433 million.

Contribution shortfall

9. The contributions paid into the fund were lower than those required to fund the benefits accruing over the valuation period. This resulted in a strain of R17 662 million.

Pension increases

10. Pension increases of approximately 4.0% per annum on average were granted during the valuation period, whereas the valuation basis made allowance for increases of approximately 5.2% per annum. This led to a release of approximately R15 928 million.

Expenses

11. The previous valuation assumed that administration expenses would be approximately 0.3% of active member pensionable emoluments per annum. A strain of R80 million arose due to expenses being slightly higher than assumed.

Change in valuation basis**Economic basis**

12. The net pre-retirement and net post-retirement discount rates, in the current best estimate valuation basis, are higher than those as at the previous statutory valuation date. The impact on the active and pensioner liabilities are shown below:

Category	Release/(strain) R'm
Active members	143 216
Pensioners	39 600
Total	182 816

Demographic basis and promotional salary scale

13. An investigation into the demographic experience of the fund was completed in 2019, carried out over the period 1 April 2012 to 31 March 2019. The board adopted the new assumptions on 3 December 2019. The impact on the active and pensioner liabilities are shown below:

Category	Release/(strain) R'm		Total
	Demographic assumptions	Promotional salary scale	
Active members	2 197	(81 528)	(79 331)
Pensioners	1 343	n/a	1 343
Total	3 540	(81 528)	(77 988)

Miscellaneous items

14. There are various items of profits and strains produced by other miscellaneous sources, including membership movements and data changes. These items have not been quantified separately, but in total produced a strain of some R57 million.

APPENDIX 6: LIABILITIES AND RESERVES

Data reserve

- Following an analysis of the data received for the valuation we would recommend that the data reserve for members be maintained in line with the practice applied in previous valuations.
- A data reserve of 0.75% of the active member liability, or some R9 135 million, has been held at the valuation date. This is consistent with the approach used in the previous valuation.

Discriminatory practices reserve

- We have maintained the reserve in respect of previous discriminatory practices, being the accumulated value of 1% of the funding level in 1998.
- The value of this reserve, as per the fund's financial statements, was R5 171 million at the valuation date. The change in the value of the reserve that was used for valuation purposes is shown in the table below:

Discriminatory practices reserve (R millions)	Other past discriminatory practices reserve	General assistants' reserve	Ciskei strikers' reserve	Total
Opening balance (as at 31 March 2018)	8 639	124	-	8 763
Plus: Investment returns	-	-	-	-
Plus: Transfer from net investment return to reserves	386	9	4	400
Less: Benefits paid	-	-	(4)	(4)
Balance (as at 31 March 2019)	9 025	133	-	9 158
Plus: Investment returns	-	-	-	-
Plus: Transfer from net investment return to reserves	(1 004)	9	-	(995)
Less: Benefits paid	(3 824)	-	-	(3 824)
Balance (as at 31 March 2020)	4 197	142	-	4 339
Plus: Investment returns	-	-	-	-
Plus: Transfer from net investment return to reserves	1 210	6	-	1 216
Less: Benefits paid	(572)	-	-	(572)
Balance (as at 31 March 2021)	4 835	148	-	4 983

- The sum of the above reserve accounts amounts to R4 983 million, differing from the financial statements by R188 million (the Ciskei Striker's Reserve reflected in the financial statements).
- The GPAA has confirmed that the records of members impacted by the Ciskei Strike have been credited in full with the relevant additional service. Considering that the valuation liabilities should reflect the value of the benefits in respect of this additional service, there should be no need to hold an additional reserve. This matches the treatment in the recent actuarial valuations.

Mortality improvement reserve

7. Significant improvements in mortality have been observed internationally and it is likely that we will follow a similar pattern in South Africa. The improvements in the mortality rates at older ages are attributable to advances in science, medicine and living conditions. It is appropriate to include an explicit allowance for mortality improvements in this valuation as was done in the previous valuation.

Mortality improvements for active members

8. In order to make allowance for future mortality improvements, we have assumed post-retirement mortality rates for active members in line with the best estimate basis, but rated down two and a half years (i.e. we have assumed that a future pensioner is two and a half years younger than their actual age, which allows for a longer expected lifetime). This allowance for post-retirement mortality improvements amounted to R31 535 million at the valuation date.

Mortality improvements for current pensioners

9. We have assumed mortality rates for active members in line with the best estimate basis, but rated down one and a half year (i.e. we have assumed that a pensioner is one and a half year younger than their actual age). This allowance for mortality improvements amounted to R18 420 million at the valuation date.

100% CPI pension increase reserve

10. The trustees of the fund have decided to set up an explicit reserve to enable them to exercise greater discretion in granting future pension increases in line with inflation. Based on the pension increase policy of the fund, the valuation basis allows for pension increases of 80% of CPI (being the targeted increase of 75% of CPI plus a margin for the purchasing power catch-up needed to ensure that 75% of the original pension maintains 100% of CPI increases).
11. The pension increase reserve has been established to provide for the possibility of granting pension increases at 100% of CPI. Separate reserves provide for the increase in the active member and pensioner liabilities and the present value of the increase in contribution rates that would be required for future pension increases of 100% at CPI. Establishing an explicit reserve allows the trustees to target this level of increase without changing the valuation basis, which assumes a pension increase target if 80% of CPI.
12. The 100% CPI pension increase reserve amounted to R383 733 million at the valuation date and is made up as follows:

100% CPI pension increase reserve	R'm
Active members	157 669
Pensioners	85 081
Future service contribution rate	140 983
Total	383 733

Solvency reserve**Solvency reserve for reporting purposes (ALM approach)**

13. As noted in section 6 of the main report, the solvency reserve has been based on an asset-liability approach using the solvency reserve calculated by Riscura, and this is again the approach recommended for this valuation. The recommended reserve at the valuation date was R459 152 million (R402 000 million at 31 March 2018).

Solvency reserve based on the discontinuance matching (DCM) strategy approach

14. Using this approach instead, the recommended solvency reserve would be as follows:

Solvency reserve (DCM)	31 March 2018 R'm	31 March 2021 R'm
Active members (including S-cases)	363 430	211 782
Pensioners (including deferred pensioners)	118 756	45 163
Total	482 186	256 945

Solvency reserve based on the bond basis approach

15. Using this approach instead, the recommended solvency reserve would be as follows:

Solvency reserve (Bond Basis)	31 March 2018 R'm	31 March 2021 R'm
Active members (including S-cases)	420 560	18 706
Pensioners (including deferred pensioners)	73 993	4 285
Total	494 553	22 991

Comparison of the different solvency reserve approaches

16. A comparison of the results under the different approaches is provided below:

Solvency reserve	ALM R'm	DCM R'm	Bond basis R'm
Active members (including S-cases)	not provided*	211 782	18 706
Pensioners (including deferred pensioners)	not provided*	45 163	4 285
Total	459 152	256 945	22 991

*The ALM approach does not provide a split of the solvency reserve between active members and pensioners.

Summary of contingency reserves

17. The table below provides a summary of the recommended reserves and the amounts held at the current and previous valuation dates:

Contingency reserve accounts	31 March 2018		31 March 2021	
	Recommended R'm	Held R'm	Recommended R'm	Held R'm
Fully funded and considered part of the minimum funding level:				
Data reserve	8 785	8 785	9 135	9 135
Discriminatory practices reserve	8 763	8 763	4 983	4 983
Fully funded reserves	17 548	17 548	14 119	14 119
Funded to the level affordable and considered part of the long-term funding level:				
Mortality improvement reserve	48 259	8 279	49 955	10 453
100% CPI pension increase reserve	270 634	46 428	383 733	80 296
Solvency reserve	402 000	82 721	459 152	96 078
Partially funded reserves	720 893	137 428	892 840	186 827
Combined reserves	738 442	154 976	906 959	200 945

18. As can be seen from the table above, the Data Reserve and the Discriminatory Practices Reserve have been funded in full whilst the rest have been funded to the extent affordable, which is 20.9% as at the valuation date (some 19.1% at the previous valuation).

19. We are satisfied that:

- the balance of the contingency reserves is not greater than that which is reasonably required in terms of the contingency in respect of which the accounts have been established; and
- the overall amount set aside in contingency reserve accounts is not unreasonable.

APPENDIX 7: SENSITIVITY ANALYSIS

The fund's liabilities have been calculated on best estimate assumptions. The effect of a 1% change in the main assumptions on the financial position and the required contribution rate is illustrated below:

Minimum funding level

Assumption	-1%	Central	+1%
Investment return	96.8%	110.1%	124.0%
Salary increases	116.1%	110.1%	103.9%
Pension increases	117.1%	110.1%	103.0%

Required contribution rate

Assumption	-1%	Central	+1%
Investment return	18.3%	14.2%	10.9%
Salary increases	12.0%	14.2%	16.8%
Pension increases	13.0%	14.2%	15.6%

APPENDIX 8: ACTUARIAL INTEREST FACTORS

The actuarial interest factors have been updated to reflect the revised results of the statutory actuarial valuation of the fund as at 31 March 2021. In particular the change in basis since the previous valuation date warrants the need for a new set of actuarial interest factors. The relevant factors are set out in the tables below.

F(Z) factors applicable to members under the age of 55 years

Age	Current (from the 2018 valuation)		Proposed	
	Services	Other	Services	Other
20	0.2097	0.2042	0.2096	0.1853
21	0.2097	0.2045	0.2091	0.1853
22	0.2097	0.2055	0.2086	0.1853
23	0.2097	0.2062	0.2083	0.1842
24	0.2097	0.2061	0.2080	0.1833
25	0.2097	0.2061	0.2077	0.1824
26	0.2099	0.2061	0.2076	0.1816
27	0.2101	0.2059	0.2075	0.1810
28	0.2104	0.2057	0.2075	0.1804
29	0.2105	0.2054	0.2076	0.1799
30	0.2109	0.2051	0.2077	0.1795
31	0.2113	0.2048	0.2079	0.1792
32	0.2116	0.2044	0.2082	0.1790
33	0.2117	0.2041	0.2086	0.1789
34	0.2119	0.2037	0.2091	0.1789
35	0.2119	0.2034	0.2096	0.1790
36	0.2117	0.2030	0.2102	0.1792
37	0.2116	0.2027	0.2109	0.1794
38	0.2113	0.2026	0.2116	0.1798
39	0.2113	0.2031	0.2125	0.1803
40	0.2112	0.2036	0.2134	0.1808
41	0.2119	0.2043	0.2143	0.1815
42	0.2129	0.2052	0.2154	0.1822
43	0.2140	0.2063	0.2165	0.1831
44	0.2156	0.2074	0.2177	0.1840
45	0.2177	0.2089	0.2190	0.1850
46	0.2198	0.2104	0.2204	0.1862
47	0.2221	0.2121	0.2218	0.1874
48	0.2243	0.2138	0.2233	0.1887
49	0.2266	0.2157	0.2249	0.1901
50	0.2290	0.2177	0.2266	0.1916
51	0.2317	0.2197	0.2283	0.1932
52	0.2344	0.2218	0.2302	0.1949
53	0.2373	0.2241	0.2321	0.1967
54	0.2402	0.2266	0.2346	0.1997

A(X) factors applicable to members age 55 years and older

Age	Current (from the 2018 valuation)		Proposed	
	Services	Other	Services	Other
55	14.3131	13.2402	12.5883	10.2008
56	14.0531	13.0978	12.0044	9.7347
57	13.7860	12.9467	11.4832	9.4011
58	13.5118	12.7865	11.0208	9.1942
59	13.2303	12.6168	10.6101	9.0946
60	12.9415	12.4376	10.2418	9.0728
61	12.6454	12.2484	10.4484	9.6023
62	12.3422	12.0493	10.6471	10.1277
63	12.0326	11.8407	10.8239	10.5916
64	11.7172	11.6230	10.9611	10.9235
65	11.3961	11.3961	11.0122	11.0122
66	11.1602	11.1602	10.8035	10.8035
67	10.9180	10.9180	10.5877	10.5877
68	10.6700	10.6700	10.3653	10.3653
69	10.4164	10.4164	10.1365	10.1365
70	10.1574	10.1574	9.9012	9.9012
71	9.8935	9.8935	9.6599	9.6599
72	9.6256	9.6256	9.4134	9.4134
73	9.3546	9.3546	9.1621	9.1621
74	9.0809	9.0809	8.9065	8.9065
75	8.8055	8.8055	8.6474	8.6474
76	8.5296	8.5296	8.3860	8.3860
77	8.2538	8.2538	8.1229	8.1229
78	7.9790	7.9790	7.8589	7.8589
79	7.7067	7.7067	7.5951	7.5951
80	7.4396	7.4396	7.3341	7.3341

These actuarial interest factors are discussed in a separate report (***“Actuarial interest factors resulting from the Statutory Actuarial Valuation as at 31 March 2021”***) accompanying this statutory actuarial valuation.

Once these factors have been approved by the trustees, following any required consultation process, they should be used for the calculation of the appropriate benefit payments.

APPENDIX 9: VALUATION OF PENSIONER LIABILITIES ON AN ALTERNATIVE BASIS

- The valuation basis agreed to by the trustees is a combination of the technically correct separate bases for the active and pensioner members, based on their own calculated liability durations.
- We were also requested to show the pensioner liabilities using the pensioner only basis. The difference between the assumptions is as follows:

	Combined basis	Pensioner only basis
Yield on nominal bond of appropriate duration	14.2%	9.7%
Less yield on real bond	(4.5%)	(3.4%)
Less inflation risk premium	(0.5%)	(0.5%)
Long-term inflation	9.2%	5.8%
Pre-retirement		
Return on nominal bond	14.2%	9.7%
Return on equity	14.5%	11.1%
Net pre-retirement discount rate (A)	14.4%	10.5%
Net post-retirement discount rate	6.42%	5.53%

- The impact on the pensioner liabilities would be as follows:

Pensioner liabilities	Combined basis	Pensioner only basis
	R'm	R'm
Male pensioners	219 261	238 188
Female pensioners	249 332	270 194
Widowers	12 379	13 450
Widows	84 270	92 112
Male child pensioners	712	749
Female child pensioners	750	789
Late pensioner adjustment	28 551	31 008
Total	595 256	646 491