

Government Employees Pension Fund

Statutory Actuarial Valuation

31 March 2016



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Executive Summary

The Government Employees Pension Fund (the "Fund") was established in 1973. It is a defined benefit pension fund, with the objective of providing pensions and other benefits for members and their dependants. This is the twelfth statutory valuation of the Fund and the third valuation to be performed by Willis Towers Watson. Comparative results for the 31 March 2014 valuation are also reflected, where appropriate.

This report has been prepared in accordance with the Government Employees Pension Law, 1996 as amended (*"the GEP Law"*), which requires that the Fund shall have its financial condition investigated and reported upon by a valuator at least once in every three years. However, due to the significant changes in liability and asset values seen over the past few years, it is the practice of the Fund to perform bi-annual actuarial valuations to determine the value of the Fund's liabilities and the required contribution rate by the Employer.

The report takes into account the requirements set out in professional guidelines for actuarial reports (Standard of Actuarial Practice 201) issued by the Actuarial Society of South Africa, current as at the date of signature of the report. Consideration has also been given to the requirements of Board Notice 149 of 2010 and PF Notice No. 2 of 2016 issued by the Registrar of Pension Funds in respect of occupational funds on the basis that the information in these Notices would be good practice for the Fund although not a compliance requirement.

Past Service: Financial Status

The fair value of the accumulated assets of the Fund as at 31 March 2016 is compared to the best-estimate accrued actuarial liability, in respect of benefits earned for service rendered to that date, according to the Funding Level Policy of the Fund current as at the date of the valuation. Figures from the previous statutory valuation of the Fund (31 March 2014) have been included for comparative purposes.

Financial position as at	31 March 2016 R'm	31 March 2014 R'm
Fair value of assets	1 629 923	1 425 719
Less In-service member liability	(1 029 889)	(878 721)
S-case and exits in progress liability	(12 063)	(18 155)
Pensioner liability	(349 805)	(263 552)
Deferred pensioner liability	(0)	(6)
Data reserve	(7 724)	(6 590)
Past discriminatory practice reserve	(7 695)	(6 492)
Past service surplus before reserves	222 747	252 203
Minimum funding level ⁽¹⁾	115.8%	121.5%
Less Mortality improvement reserve	(41 340)	(33 918)
Pension increase reserve (past service)	(178 860)	(119 539)
Pension increase reserve (future service)	(125 268)	(84 918)
Solvency reserve	(301 581)	(303 000)
Past service surplus after reserves	(424 302)	(289 172)
Long term funding level ⁽²⁾	79.3%	83.1%

1. Minimum Funding Level

The minimum funding level at the valuation date, which is determined as the fair value of the assets divided by the liabilities (excluding solvency reserves and contingency reserves) is 115.8% and therefore exceeds the Trustees' targeted minimum funding level of 90%. At the previous valuation date, the minimum funding level was 121.5%.

2. Long-term Funding Level

The long-term funding level, which is determined as the fair value of the assets divided by the liabilities and the recommended solvency reserves and contingency reserves (including the future service element of the pension increase reserve) is 79.3% at the current valuation date, and is below the Trustees targeted long-term funding level of 100%. The Trustees are therefore only able to establish the solvency reserves and contingency reserves to the extent of R222 747 million, some 34.4% of the recommended solvency reserves and contingency reserves of R647 049 million.

The corresponding long-term funding level at the previous valuation date was 83.1%. Thus the Trustees were only able to establish the solvency reserves and contingency reserves to the extent of R252 203 million, some 46.6% of the recommended solvency and contingency reserves of R541 375 million.

Future Service: Required Contribution Rate

The required contribution rate by the employers, expressed as a percentage of pensionable salaries, at the current and previous valuation dates, without having regard to the funding level of the Fund, is reflected in the table below:

Required Contribution Rate	31 March 2016	31 March 2014	31 March 2012
Total required contribution rate	23.1%	22.3%	22.9%
Less: Contributions by members	(7.5%)	(7.5%)	(7.5%)
Required employer contribution rate	15.6%	14.8%	15.4%
Current average employer contribution rate	13.5%	13.5%	13.5%
Excess / (shortfall) between actual and required contribution rate	(2.1%)	(1.3%)	(1.9%)

The total required contribution rate includes the contributions in respect of the funded benefits and an allowance for annual Fund expenses and reflects the average required contribution rate in respect of both "Services" and "Other" Members. The current employer contribution rate represents the average of the 16% contribution rate in respect of Services members and the 13% contribution rate in respect of Other members.

Breakdown of required contribution rate by employer type

The underlying required contribution rates for the categories Services and Other, expressed as a percentage of pensionable salaries, at the current and previous valuation dates, are shown below:

Required Contribution Rate split by employer	31 March 2016		31 March 2014	
	Services	Other	Services	Other
Funded benefits	26.8%	22.0%	25.6%	21.2%
Allowance for Fund expenses	0.3%	0.3%	0.3%	0.3%
Total required contribution rate	27.1%	22.3%	25.9%	21.5%
Less: Contributions by members	(7.5%)	(7.5%)	(7.5%)	(7.5%)
Required employer contribution rate	19.6%	14.8%	18.4%	14.0%
Actual employer contribution rate	16.0%	13.0%	16.0%	13.0%
Excess / (shortfall) between actual and required contribution rate	(3.6%)	(1.8%)	(2.4%)	(1.0%)

Cost of additional pensionable service for Services members

The following table provides an indication of the effect on the contribution rate in respect of members of the Services category, who qualify for an additional 25% enhancement to their years of pensionable service greater than 10 years. The results are shown including and excluding the additional 25% enhancement:

Additional cost for Services Members	31 March 2016		31 March 2014	
	Including 25%	Excluding 25%	Including 25%	Excluding 25%
Funded benefits	26.8%	22.6%	25.6%	21.8%
Allowance for Fund expenses	0.3%	0.3%	0.3%	0.3%
Total required contribution rate	27.1%	22.9%	25.9%	22.1%
Less: Contributions by members	(7.5%)	(7.5%)	(7.5%)	(7.5%)
Required employer contribution rate	19.6%	15.4%	18.4%	14.6%
Actual employer contribution rate	16.0%	16.0%	16.0%	16.0%
Excess / (shortfall) between actual and required contribution rate	(3.6%)	0.6%	(2.4%)	1.4%

As indicated in the results above, the effect of the service enhancement in respect of *Services* members amounts to approximately 4.2% of pensionable salaries on the “*best estimate*” valuation basis. 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 rates. The residual difference can be explained by the differing decrement assumptions between the two categories of members.

Shortfall in the required employer contribution rate

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.

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.

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.

It should be noted that the shortfall between the required employer contribution rate (an average rate of 15.6% of pensionable salaries) and the current actual employer contribution rate (an average of 13.5% of pensionable salaries) amounts to some R6.0 billion per annum or some 0.43% of the Fund's liabilities.

If the employer continues to contribute at the current rate, the shortfall is therefore expected to reduce the funding level by 0.43% per annum.

5% equity risk premium allowance

The valuation basis assumes an “equity risk premium” of 3% per annum, i.e. that portion of the Fund’s assets invested in equities will earn a return that is 3% higher than the long-term bond yield assumption. The Trustees have invested a material portion of the Fund’s assets in local and foreign equities and property, namely 64.3% as at the valuation date (64.1% at the previous valuation). For valuation purposes, we have assumed that on average, 60% of the assets are invested on this basis in the future.

For illustrative purposes, previous valuation reports have also set out the required level of employer contributions if a 5% equity risk premium is assumed. The use of this assumption for determining the future funding requirements must be seen as a risk budgeting exercise for the employers. To the extent that equities over the long term earn a risk premium of 5% over bonds (and other experience is as assumed), the required level of contributions at the rates below would then be adequate. It should, however, be appreciated that the higher the assumed equity risk premium, the lower will be the required contribution rates, but that this also carries a greater risk of requiring additional contributions into the future should experience not be in line with that assumed:

Required Contribution Rate on 5% and 3% Equity Risk Premium	5% Equity Risk Premium		3% Equity Risk Premium (Valuation basis)	
	Services	Other	Services	Other
Funded benefits	21.3%	17.6%	26.8%	22.0%
Allowance for Fund expenses	0.3%	0.3%	0.3%	0.3%
Total contribution rate required	21.6%	17.9%	27.1%	22.3%
Less: Contributions by members	(7.5%)	(7.5%)	(7.5%)	(7.5%)
Required employer contribution rate	14.1%	10.4%	19.6%	14.8%
Actual employer contribution rate	16.0%	13.0%	16.0%	13.0%
Excess / (shortfall) between actual and required contribution rate	1.9%	2.6%	(3.6%)	(1.8%)

Based on a 5% equity risk premium assumption, the required employer contribution rate is 14.1% for *Services* employers and 10.4 % for *Other* employers. On this basis, there is an excess contribution of 1.9% for *Services* employers and an excess contribution of 2.6% for *Other* employers.

We would suggest that the Trustees and the employer should not rely on the Fund’s assets earning this higher equity risk premium over the long-term and that the required employer contribution rate should be considered in terms of the valuation basis, i.e. using a 3% equity risk premium.

Membership summary

A summary of the membership at the current and previous valuation dates is shown in the tables below.

	31 March 2016		31 March 2014	
	Number of members	Annual emoluments R'000	Number of members	Annual emoluments R'000
In-service Members				
Services	223 108	48 436 437	226 528	42 686 793
Other	1 062 318	236 360 298	1 060 832	204 197 318
Total	1 285 426	284 796 735	1 287 360	246 884 111

	31 March 2016		31 March 2014	
	Number of members	Annual emoluments / pension R'000	Number of members	Annual emoluments / pension R'000
In-service Members				
Males	538 609	122 227 407	549 249	107 647 792
Females	746 817	162 569 328	738 111	139 236 319
Total	1 285 426	284 796 735	1 287 360	246 884 111

Pensioners/Widow(er)s (including suspended)

Males	129 465	14 010 049	116 363	10 830 411
Females	283 639	19 140 078	252 006	13 910 243
Total	413 104	33 150 127	368 369	24 740 654

Deferred Pensioners

Males	9	231	11	223
Females	-	-	-	-
Total	9	231	11	223

Certifications

I certify that:

- The value of the assets of the Fund is sufficient to cover the best estimate accrued actuarial liabilities at the valuation date and the Fund was therefore financially sound on the minimum funding basis at the valuation date;
- The financial condition of the Fund has been assessed by considering the assets of the Fund in relation to its liabilities based on best estimate assumptions;
- In addition, the amount of solvency reserves and contingency reserves to allow for some fluctuations in asset values, improvements in longevity and pension increases equal to inflation have been determined. The Fund does not have sufficient assets to cover the recommended solvency reserves and contingency reserves in full. Allowing for the solvency reserves and contingency reserves in full reflects a long-term funding level of 79.3%.
- Given that the valuation is of necessity based on assumptions regarding the future, the assessed value of the liabilities, solvency reserves and contingency reserves may prove to be more or less than is required in practice.
- If the liabilities and the amount of the solvency reserves and contingency reserves set up prove to be inadequate in future, Trustee action will be required to rectify the position. This may involve, *inter alia*, the reduction of future benefit accruals or an increase in the required contribution rate, subject to the required consultations in terms of the GEP Law.
- Subject to the above and provided that the employer contributes at a rate of 19.6% of total pensionable salaries in respect of *Services* members and 14.8% in respect of *Other* members, the financial soundness of the Fund on the minimum funding basis should be maintained until at least the next actuarial valuation of the Fund.
- The employers contributed at a rate of 16.0% of total pensionable salaries in respect of *Services* members and 13.0% in respect of *Other* members during the inter-valuation period. If the employers continue to contribute at these rates, the contribution shortfall is expected to be some R6.0 billion per annum or some 0.43% of the Fund's total liabilities. The minimum funding level would therefore be expected to reduce by some 0.43% per annum.
- The valuation basis assumes a 3% equity risk premium over the long-term bond yield assumption. For illustrative purposes in testing the appropriateness of the current level of contributions, a 5% equity risk premium over the long-term bond yield assumption was also considered. This is a less conservative assumption than that used for valuing the past service financial position of the Fund. The use of this assumption for determining the future funding requirements must be seen as a risk budgeting exercise for the employers. To the extent that equities over the long term earn a risk premium of 5% over bonds (and other experience is as assumed), a lower level of contributions would be adequate. It should, however, be appreciated that the higher the assumed equity premium the lower will be the required contribution rates but that this also carries a greater risk of requiring additional contributions into the future should experience not be in line with that assumed.
- Based on a 5% equity risk premium assumption, the required employer contribution rate is 14.1% for *Services* members and 10.4% for *Other* members. On this basis there is an excess contribution of 1.9% for *Services* members and an excess contribution of 2.6% for *Other* members.
- For the current 16% contribution rate in respect of *Services* members to prove adequate (and other experience is as assumed), an equity risk premium of 4.3% over the long-term bond yield assumption would need to be achieved. Similarly, for the current 13% contribution rate in respect of *Other* members to prove adequate (and other experience is as assumed), an equity risk premium of 3.8% over the long-term bond yield assumption would need to be achieved.

- The cost of the service enhancement in respect of *Services* members amounts to approximately 4.2% of pensionable salaries, which is higher than the current difference in contributions paid by and in respect of *Services* and *Other* members, but reflects the reasonable difference in contributions.
- 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. In this regard, we would note that:
 - The level of contributions and the funding level should be monitored as part of each actuarial valuation of the Fund.
 - Rule 7.2 of the Fund's rules 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%". This can therefore be viewed as the primary funding objective of the Fund. The funding level of the Fund of 115.8% as at the valuation date was in excess of the minimum funding level.
 - The Funding Policy of the Fund also stipulates that the Board of 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 equalled 79.3%. The Fund at the valuation date therefore meets its minimum funding level, but as the solvency reserves and contingency reserves are not fully funded, does not meet its long-term funding objective.
- We recommend that the key demographic assumptions used for the Fund be monitored through an experience analysis exercise every three to five years. The previous analysis was carried out as at 31 March 2012. The next analysis should be completed following the current valuation of the Fund, and should include an investigation into any expected future mortality improvements for both in-service members and pensioners.
- I am 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 my opinion, adequate.
- Given the current financial condition and size of the Fund, the self-insurance of death and ill-health retirement risks remains appropriate.
- On the basis that the Fund was 115.8% funded on a best estimate basis as at the valuation date (and has therefore met its minimum funding objectives) and that the employer contribution shortfall of some 2.1% of salaries is expected to reduce the minimum funding level by some 0.43% per annum, the Fund was in a sound financial position as at the valuation date and should remain in a sound financial position until the next actuarial valuation of the Fund expected to take place effective 31 March 2018. The Fund's assets as at the valuation date were, however, only some 79.3% of the total of the Fund's liabilities and recommended solvency reserves and contingency reserves.

Section 1: Introduction

1.1 Background

This report on the statutory actuarial valuation of the Government Employees Pension Fund (“*GEPF*” or “*the Fund*”) as at 31 March 2016 (“*the current valuation date*”) has been prepared for the Trustees of the Fund in my capacity as the appointed valuator of the Fund and as an associate of Towers Watson (Pty) Ltd (“*Willis Towers Watson*”).

The previous statutory valuation was carried out by Willis Towers Watson as at 31 March 2014 (“*the previous valuation date*”). The period between the previous valuation date and the current valuation date is referred to hereinafter as the “*inter-valuation period*”.

1.2 Registration and operation

The Fund is a defined benefit pension fund that commenced in 1973, changing its name to the Government Employees Pension Fund in 1996. This is the twelfth valuation of the Fund and the third valuation to be performed by Willis Towers Watson. Where appropriate, comparative results for the 31 March 2014 valuation have been reflected in the report.

For the purposes of the valuation, in-service members are categorised as follows in the rules of the Fund:

- “*Services*”, which relates to members of the South African National Defence Force (SANDF), South African Police Service (SAPS), Correctional Services (CS), National Intelligence Agency (NIA) and South African Secret Service (SASS).
- “*Other*”, which relates to members not employed by the above employers.

Members contribute at the rate of 7.5% of pensionable salaries and the participating employers are required to meet the balance of the cost of providing benefits. The employers contributed at a rate of 16% of pensionable salaries in respect of *Services* members and 13% in respect of *Other* members over the inter-valuation period.

1.3 Objectives of the valuation

The objectives of the statutory valuation of the Fund are:

- to investigate and report on the financial position of the Fund on an ongoing basis by assessing whether the funding level meets the minimum funding requirement as outlined in rule 7.2 and the requirements of the Fund’s Funding Policy;
- to analyse the financial progress of the Fund since the previous statutory valuation;
- to analyse the sources of any surpluses or strains that have arisen in the inter-valuation period;
- to determine the assumptions to be used in the current valuation as a result of that experience;

- to review the allocations to and the build-up of, any contingency reserve accounts;
- to determine the required employer contribution rate for the period to the next valuation in respect of future service accrual and the expected strain or release to the Fund if the employers contribute at a different rate;
- to comment on the appropriateness of the investment strategy in place at the current valuation date; and
- to form 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.

1.4 Previous valuation

The previous statutory valuation of the Fund was carried out as at 31 March 2014. That valuation disclosed that the Fund was 121.5% funded on a best estimate basis and therefore met the minimum funding level at that date. The assets were some 83.1% of the liabilities and the recommended solvency reserves and contingency reserves, which was less than the target long-term funding level of 100%.

The required employer contribution rate was 18.4% of pensionable salaries in respect of *Services* members and 14.0% in respect of *Other* members for the two year period following the previous valuation date. The employers contributed at the rates of 16% and 13% respectively over the two year period.

1.5 Current valuation

This report sets out the results of the actuarial valuation of the Fund as at 31 March 2016, on the basis of the Rules of the Fund. A summary of the benefits is set out in Appendix A. The membership data used in the valuation, including all the adjustments required, is summarised in Appendix B.

Except where expressly stated in the report, we have relied upon the accuracy and completeness of information made available to us.

The administrators of the Fund, the Government Pensions Administration Agency (*“the Administrator” or “GPAA”*), supplied us with the membership and financial information necessary to perform this actuarial valuation. The results of the actuarial valuation depend upon the accuracy and completeness of this data. We have checked this data for consistency with the Fund’s audited financial statements and with the data supplied at the previous valuation date.

The Administrator has also confirmed that the data supplied for the purposes of the valuation is complete and correct.

We confirm that we are satisfied that the information provided, following the various adjustments detailed in Appendix B, is materially complete and sufficient for the purposes of this valuation.

1.6 Capacity, brief and professional guidance

This report has been prepared in accordance with the GEP Law, which requires that the Fund shall have its financial condition investigated and reported upon by a valuator at least once in every three years. However the Fund has continued the practice of performing biennial actuarial valuations. More frequent actuarial valuations provide the Trustees, the employers and GEPP management with more regular, up-to-date financial management information.

The report takes into account the requirements set out in professional guidelines for actuarial reports (Standard of Actuarial Practice 201) issued by the Actuarial Society of South Africa, current as at the date of signature of the report. In addition, and although the Fund is not subject to the Pension Funds Act, the report takes into account the requirements of Board Notice 149 of 2010 issued by the Registrar of Pension Funds and further considers the impact that PF Notice No. 2 of 2016 would have on the Fund if it were subject to the Pension Funds Act.

This report has been peer reviewed in terms of Willis Towers Watson's standard internal peer review process. This internal peer review does not constitute a Formal Review as defined in the Explanatory Note on Peer Review issued by the Actuarial Society of South Africa.

The information contained in this report and in all documents referred to in this report is confidential. This report is addressed to the Trustees of the Fund and has been prepared for use by the Trustees and should not be used by any other party, or for purposes not specifically catered for herein. It may be submitted to the relevant stakeholders of the Fund with the approval of the Trustees.

Willis Towers Watson does not accept any liability to any person 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 limitation of this report and purpose for which it is prepared.

Section 2: Developments since the previous valuation

2.1 Changes in benefits

Since the previous valuation date, the Fund has undertaken a number of exercises to review its current benefit structure, with the aim to remove any anomalies in the benefits and to provide appropriate benefits to members and pensioners. The proposals have not yet been finalised and are subject to further analysis or waiting for approval by the various stakeholders.

2.2 Pension increases

Pension increases were granted during the inter-valuation period as at 1 April 2014, 1 April 2015 and 1 April 2016 to pensions in course of payment. These increases have been taken into account for valuation purposes.

A special catch-up pension increase (the “catch-up”) to 100% of the change in the consumer price index (“CPI”) since the date of retirement was granted for each pensioner if required as at 1 April 2014, 1 April 2015 and 1 April 2016. A supplementary pension increase of an additional 0.5% was granted to pensioners at 1 April 2016. The following table summarises the pension increases (excluding any catch-ups) granted over the past three years:

Date of increase	Increase percentage	Headline inflation to preceding 30 November
01 April 2014	5.30%	5.30%
01 April 2015	5.80%	5.80%
01 April 2016	5.30%	4.80%

The Board of 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 equal to 75% of the original pension increased with full inflation.

Further details of the pension increase policy are set out in Appendix A.

2.3 Investment Return on the Fund’s assets

The investment return on the Fund’s assets is approximated by the change in the Notional Portfolio Index (“NPI”). The NPI is calculated each month and is based on the estimated returns earned by the Fund, as provided by the Fund’s asset consultants. Furthermore the return in each financial year is rebased to the returns approximated by the market values and cash flows reflected in the annual financial statements.

The annualised returns, available as at date of signature of this report and as derived from the annual financial statements, for the period 1 April 2014 to 31 March 2016 are tabled below:

Financial Year	Annualised Net Fund Return
1 April 2014 to 31 March 2015 *	14.05%
1 April 2015 to 31 March 2016 *	4.12%
Annualised return over period	8.97%

* The NPI has been rebased to reflect the return derived from the financial statements for the years ending 31 March 2015 and 31 March 2016.

2.4 Salary increases

The Public Service Co-ordinating Bargaining Council (“the PSCBC”) released the salary adjustments for the periods 2014/2015 and 2015/2016 according to the multi-term agreements on 31 July 2012.

The salary adjustment for public servants for the periods commencing 1 April 2014, 1 April 2015 and 1 April 2016 were the average projected CPI as per National Treasury plus 1%. These increases are in line with the long-term valuation assumption relative to inflation in respect of salary increases.

Salary increases granted during the inter-valuation period have been taken into account for valuation purposes. The following table summarises the average salary increases granted over the three years:

Date of increase	Increase (%)
1 April 2014	7.40%
1 April 2015	7.00%
1 April 2016	7.60%

2.5 Contribution rates paid

The participating employers undertake to meet the balance of the cost of providing benefits. The employers contributed at a rate of 16% of pensionable salaries in respect of *Services* members and 13% in respect of *Other* members over the valuation period.

The required employer contribution rate as at the previous valuation date, based on the valuation basis, was 18.4% in respect of *Services* members and 14.0% in respect of *Other* members. On this basis, there was a shortfall of 2.4% in respect *Services* members and 1.0% in respect of *Other* members.

2.6 Self-insurance of death and disability benefits

The benefits payable on the death or ill-health retirement of a member are not covered by any policies of insurance, but are rather “self-insured” by the Fund. These benefits are allowed for in the calculation of members’ actuarial reserve values, i.e. they are funded for in the past service liability, and are provided for in the future service contribution rate.

Given the size and current financial condition of the Fund, I consider that the self-insurance of death and ill-health retirement benefits remains appropriate.

2.7 Extraordinary changes in membership

There have been no extraordinary changes in the membership of the Fund over the inter-valuation period.

2.8 Changes in investment profile

The profile of the assets held by the Fund has changed over the inter-valuation period, as reflected by the assets in each asset class at the current and previous valuation dates:

Asset class allocation	31 March 2016	31 March 2014
Domestic Equity	58.1%	59.1%
Domestic Bonds	32.1%	30.4%
Domestic Property	0.6%	0.7%
Cash	2.0%	3.6%
Foreign Equity	5.6%	4.3%
Foreign Bonds	1.6%	1.9%
Total	100.0%	100.0%

Overall, the Fund's holdings in domestic equity has decreased by 1.0% with a corresponding increase in the overall foreign assets held by the Fund. The profile of the assets remains suitable for the nature of the liabilities of the Fund.

2.9 Any other events deemed relevant by the actuary

Over the inter-valuation period, the Fund updated its Actuarial Interest factors to reflect the results of the 2014 valuation. These factors were implemented with effect from 1 April 2015.

We understand that some parties felt that the consultation process was not in terms of the Fund's Rules and have litigated against the Fund to reverse the implementation of these factors. The litigation process is currently still underway.

Should the Fund be successful in defending its actions, there will be no financial impact on the Fund. Should the parties be successful, there may well be an impact on the financial position of the Fund, with such impact determined by the actual decision awarded against the Fund.

We note also that the Registrar of Pension Funds release Notice 2 of 2016 dealing with valuation bases. This notice is further discussed in the appendices to this report.

Section 3: Assets of the Fund

3.1 Assets of the Fund

The fair value of the Fund's assets as at 31 March 2016, taken from the audited financial statements, is broken down as follows:

	R'000	R'000	Percentage of the Fund
Local investments		1 519 619 348	93.2%
Shares in companies	950 529 383		58.3%
Bills, Bonds and Securities	526 393 124		32.3%
Property	10 524 312		0.6%
Money Market	9 793 504		0.6%
Loans	22 162 371		1.4%
Equipment	3 392		0.0%
Collective Investment Schemes	213 262		0.0%
International investments		117 975 265	7.2%
Shares in companies	9 132 754		0.6%
Bills, Bonds and Securities	25 498 428		1.6%
Collective Investment Schemes	83 344 083		5.0%
Current Assets		26 233 503	1.6%
Cash on hand	10 263 622		0.6%
Arrear contributions	4 336 101		0.3%
Funding loan	6 716		0.0%
Transfer receivable	1 980		0.0%
Accounts receivable	11 625 084		0.7%
Current Liabilities		(33 251 682)	(2.0%)
Accounts payable	(1 926 841)		(0.1%)
Benefits due	(27 120 780)		(1.7%)
Transfers payable	(1 006)		(0.0%)
Provisions	(4 587)		(0.0%)
Financial liabilities*	(4 198 468)		(0.2%)
Non-current Liabilities		(653 063)	(0.0%)
Unclaimed benefits	(653 063)		(0.0%)
Total		1 629 923 371	100.0%

* According to the financial statements, the GEPF entered into funded equity collar finance with Bank of America Merrill Lynch with a notional size of R5.0 billion. The initial financing amount, after prepaid interest and a premium of R347.5 million, amounted to R4.2 billion.

The assets have been valued at fair value, as disclosed in the financial statements of the Fund, since this is considered to be consistent with the best estimate valuation basis adopted for the valuation of the actuarial liabilities.

3.2 Net Asset Attribution

The assets of the Fund have been allocated to the Fund accounts as shown in the table below:

Account	31 March 2016 R'000
Accumulated Funds	1 622 071 620
Contingency reserves	7 851 751
Total net assets	1 629 923 371

The table represents the split of the assets as reflected in the audited financial statements. For the purposes of the valuation, we have not retained all of these reserves and have also retained some other contingency reserves – these are not reflected in the balance above.

3.3 Investment Returns earned over the period

The assets of the Fund have not been separately assigned to any particular categories of membership or reserve accounts. As such, the overall Fund returns as approximated by the change in NPI, rebased to the financial statements, for the period 1 April 2014 to 31 March 2016 is tabled below:

Financial Year	Annualised Net Fund Return
1 April 2014 to 31 March 2015	14.05%
1 April 2015 to 31 March 2016	4.12%
Annualised return over period	8.97%

3.4 Investment Strategy of the Fund

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 Registrar of Pension Funds 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.

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.

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).

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 under funded, 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.

The position should be kept under review, and assessed again no later than the effective date of the next statutory valuation, expected to be as at 31 March 2018.

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.

Section 4: Valuation Basis and Methodology

4.1 Valuation methodology

4.1.1 Assets

For the purposes of this valuation, the actuarial value of assets has been taken into account at a level equal to the market (or fair) value of the assets. The market value of the Fund's assets as at the valuation date has been derived from the audited annual financial statements. A comparison between the value of assets and liabilities of the Fund is only meaningful if the respective values are determined on a consistent basis. We note that the liabilities have been calculated using market-related assumptions at the valuation date and thus we consider it appropriate to take into account the full market value of the Fund's assets.

4.1.2 Funded benefits

The actuarial valuation in respect of in-service defined benefit members and Fund pensioners was considered in two parts:

- Pensionable service and accrued benefits up to the valuation date. The accrued liabilities associated with these are compared to the Fund's assets to determine the funding level in respect of past service; and
- Pensionable service after the valuation date (in-service members only). The required employer contribution rate in respect of future service benefits is considered in section 7.2 and again in greater detail in Appendix G of this report.

The accrued liabilities have been calculated as the present value of the benefits that have accrued to defined benefit members in respect of service to the valuation date, allowing for future salary increases, expected benefit payments at and prior to retirement, and for pensions, including annual pension increases, payable after retirement on a basis consistent with past practice and with communication to members and pensioners.

The required contribution rate for future service pension benefits (including death-in-service and normal/early/ill-health retirement pensions) for the in-service members has been established by calculating the contribution rate that is required in respect of benefits accruing over the two years following the valuation date with salaries projected to retirement date for pension benefits. This method, known as the Projected Unit Method, produces an accurate estimate of future service costs provided new entrants enter and exits leave the Fund at such a rate that its composition by age, salary and gender remains stable and provided the actual experience does not differ markedly from the assumptions made.

Over the inter-valuation period from 31 March 2014 to 31 March 2016, the salary weighted average age of the in-service members of the Fund increased slightly from 44.5 years to 44.9 years, resulting in a small increase in the liabilities and the future service contribution rate, all else being equal. In practice though, the impact of this is negligible and it is more the change in the valuation basis that has led to a small increase in the required contribution rate.

In the future, this required contribution rate may change if:

- there is any change in the Fund's benefit structure;
- the membership profile of the Fund changes materially; or
- the assumptions and method used at future valuations are different from those used for the current valuation.

4.1.3 Expenses

The future expenses of the Fund are not funded out of any specific reserve. As such an allowance for the administration and other expenses incurred by the Fund equal to 0.3% of pensionable salaries has been included in the assessment of the required contribution rate. This expense allowance is based on the budgeted expenses for the year following the valuation date.

The budgeted expenses do not include an allowance for the investment management fees which are deemed to be included in the discount rate, i.e. for valuation purposes they are assumed to be offset from the investment returns earned by the Fund.

4.2 Summary of the valuation basis

In the case of in-service members and pensioner liabilities, the value of the liability depends upon, *inter alia*, the future:

- investment returns;
- salary increases (pre-retirement) and pension increases (post-retirement);
- mortality (pre and post retirement); and
- retirement rates (including ill-health retirement).

The actuarial valuation basis is set on a *best estimate basis*, meaning that there is a 50% chance that the assumptions will be too conservative or too optimistic. To the extent that the actual experience of the Fund differs from the valuation assumptions, a surplus or deficit will arise.

A detailed analysis of the best estimate assumptions made in the valuation of the Fund is set out in Appendix D.

4.2.1 Financial Assumptions

A summary of the best estimate financial assumptions, with a comparison to the previous valuation assumptions, is set out in the following table.

Financial Assumptions	Best Estimate 31 March 2016	Best Estimate 31 March 2014
A. Long-term inflation	8.30% p.a.	6.90% p.a.
B. Long-term salary increases	9.30% p.a.	7.90% p.a.
C. Pension increases (80% x A)	6.60% p.a.	5.50% p.a.
D. Net long-term investment return	12.50% p.a.	11.40% p.a.
Net pre-retirement discount rate $[(1+D)/(1+B)]-1$	2.93% p.a.	3.24% p.a.
Net post-retirement discount rate $[(1+D)/(1+C)]-1$	5.53% p.a.	5.59% p.a.

The table reflects a decrease in both the net pre-retirement and the net post-retirement discount rate, which will result in, all else being equal, an increase in the past service liabilities and the required contribution rate.

4.2.2 Demographic assumptions

A detailed investigation had been carried out by Willis Towers Watson to examine the demographic experience of the GEPF as at 31 March 2012. The results of this investigation were adopted in the 31 March 2014 valuation. We propose to retain the demographic assumptions arising from this investigation until the completion of the next experience investigation.

We propose further that the family statistics assumptions (e.g. proportion of members married at retirement and the age difference between husband and wife) also be retained for the current valuation.

The demographic assumptions are discussed in greater detail in Appendix D.

Section 5: Funding Policy and Objectives

Rule 7.2 of the Fund's Rules requires that 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%.

In line with the point above, the Fund's Board of Trustees has adopted a Funding Level Policy (effective 24 August 2009) which provides guidance on when to recommend contribution increases or reductions, and when to consider benefit improvements. The following definitions are used in the Funding Level Policy to describe the manner in which it is to be applied:

Minimum Funding Level: The ratio of the market value of the Fund's assets to its liabilities, calculated on a best estimate basis with no solvency reserves and contingency reserves and no margins for conservatism.

Long-Term Funding Level: The ratio of the market value of the Fund's assets to its liabilities, calculated on a best estimate basis with realistic solvency reserves and contingency reserves and allowance for future mortality improvements (and no margins for conservatism). The solvency and contingency reserves determined should be those which the Trustees deem to be realistic in the long-term (without undue margins of conservatism).

Maximum Funding Level: The ratio of the market value of the Fund's assets to its liabilities, calculated on a best estimate basis with solvency reserves and contingency reserves which may include conservative provisions. The intention is that the excess of assets over the liabilities plus reserve balances on this basis is unlikely to be required to ensure the future solvency of the Fund.

One of the funding objectives outlined in this policy is to ensure that the minimum funding level does not fall below 90% and Rule 7.2 requires that *"The employer shall contribute to the Fund at the rate that is required to ensure that the Fund is able to meet its obligations at all times, subject to a minimum funding level of 90%."* The minimum funding objective is therefore considered to be the Fund's primary funding objective.

The Fund will also strive to maintain the long-term funding level at or above 100%. If the long-term funding level is above 100%, the Trustees can consider granting pension increases greater than the minimum increases (as per rule 23.2) or other benefit improvements. If the long term funding level is below 100%, the Trustees should consider taking steps to correct this in the medium term. This can be considered as the Fund's secondary funding objective.

We would note that notwithstanding the secondary funding objective, as described above, pension increases in excess of the minimum 75% increases have been granted by the Trustees, with actual pension increases matching inflation on average over the last 10 years.

Section 6: Contingency Reserve Accounts

The Trustees have deemed it appropriate, on the advice of the valuator, to establish a solvency reserve and a number of other contingency reserve accounts. Some of these reserve accounts are reflected in the Fund's financial statements and the others are reflected in the valuation report alone.

Some of the reserve accounts (namely the Data Reserve and the Past Discriminatory Practices Reserve) have been included with the liabilities in determining the minimum funding level, whereas the other reserves are only considered in determining the long-term funding level.

Full details of the assumptions and motivations for the various reserve accounts can be found in Appendix F. We have reflected below, the level of the various accounts and the degree to which these reserve accounts can be funded at the current and previous valuation dates:

Contingency Reserve Accounts	31 March 2016 (recommended) R'm	31 March 2016 (established) R'm	31 March 2014 (recommended) R'm	31 March 2014 (established) R'm
Fully funded and considered as part of the minimum funding level:				
Data reserve (In-service members) (Appendix F1)	7 724	7 724	6 590	6 590
Discriminatory practices reserve (Appendix F2)	7 695	7 695	6 492	6 492
Total	15 419	15 419	13 082	13082
Funded to the level affordable and considered as part of the long-term funding level:				
Solvency reserve (Appendix F3)	301 581	103 819	303 000	141 155
100% CPI reserve (Appendix F6)	304 128	104 697	204 457	95 247
Mortality Improvement reserve (Appendix F7)	41 340	14 231	33 918	15 801
Total	647 049	222 747	541 375	252 203
Combined Reserves	662 468	238 166	554 457	265 285

The reserve accounts reflected in Appendix F1 and Appendix F2 have therefore been funded in full, whilst the reserves in the balance of the sections of the Appendix have been funded proportionately to the extent affordable, namely some 34.4% as at the valuation date (some 46.6% at the previous valuation).

Section 7: Valuation Results

In considering the results of the valuation it is important to separate past service accrued benefits (i.e. in respect of service rendered up to the valuation date) from future service benefits (i.e. in respect of service to be rendered after the valuation date). The accrued service actuarial liabilities and determination of the required contribution rates are set out in detail in Appendix G.

7.1 Past Service: Financial Status

In respect of past service, the value of the accrued service actuarial liability is compared with the fair value of the assets at the valuation date.

The accrued service actuarial liability is the amount of money that would be required in the Fund at the valuation date to fund existing pensions and to provide the existing members with retirement benefits based on their pensionable service rendered to the valuation date and on their estimated pensionable emoluments at retirement date. In addition, allowance is made for the accrued portion of the value of the spouse's pension that applies on death, for members who die in service before retirement. No specific allowance is made for withdrawal from the Fund as members receive their full Actuarial Interest in the Fund on resignation or discharge.

The difference between the fair value of the assets and the accrued service actuarial liability is the past service surplus or, if negative, the past service deficit at the valuation date. The valuation revealed a surplus of R222 747 million on the minimum funding basis and is made up as follows:

Financial position as at	31 March 2016 R'm	31 March 2014 R'm
Fair value of assets	1 629 923	1 425 719
Less In-service member liability	(1 029 889)	(878 721)
S-case and exits in progress liability	(12 063)	(18 155)
Pensioner liability	(349 805)	(263 552)
Deferred pensioner liability	(0)	(6)
Data reserve	(7 724)	(6 590)
Past discriminatory practice reserve	(7 695)	(6 492)
Past service surplus before reserves	222 747	252 203
Minimum funding level ⁽¹⁾	115.8%	121.5%
Less Mortality improvement reserve	(41 340)	(33 918)
Pension increase reserve (past service)	(178 860)	(119 539)
Pension increase reserve (future service)	(125 268)	(84 918)
Solvency reserve	(301 581)	(303 000)
Past service surplus after reserves	(424 302)	(289 172)
Long term funding level ⁽²⁾	79.3%	83.1%

Given that the full recommended solvency reserve and contingency reserve accounts cannot be established, we recommend that the total amount of these reserves be limited to the amount available, i.e. R222 747 million.

1. Minimum Funding Level

The minimum funding level at the valuation date, which is determined as the fair value of the assets divided by the liabilities (excluding solvency reserves and contingency reserves) is 115.8% and therefore exceeds the Trustees' targeted minimum funding level of 90%. At the previous valuation date, the minimum funding level was 121.5%.

2. Long-term Funding Level

The long-term funding level, which is determined as the fair value of the assets divided by the liabilities and the recommended solvency reserves and contingency reserves (including the future service element of the pension increase reserve) is 79.3% at the current valuation date, which is below the Trustees' targeted long-term funding level of 100%. The Trustees are therefore only able to establish the solvency reserves and contingency reserves to the extent of R222 747 million, some 34.4% of the recommended solvency reserves and contingency reserves of R647 049 million.

The corresponding long-term funding level at the previous valuation date was 83.1%. Thus the Trustees were able to establish the solvency reserves and contingency reserves to the extent of R252 203 million, some 46.6% of the recommended solvency reserves and contingency reserves.

7.2 Future Service: Required Contribution Rate

7.2.1 Required future contribution rate

The required contribution rate by the employers, expressed as a percentage of pensionable salaries, at the current and previous valuation dates, without having regard to the funding level of the Fund, is reflected in the table below:

Required Contribution Rate	31 March 2016	31 March 2014	31 March 2012
Total required contribution rate	23.1%	22.3%	22.9%
Less: Contributions by members	(7.5%)	(7.5%)	(7.5%)
Required employer contribution rate	15.6%	14.8%	15.4%
Current average employer contribution rate	13.5%	13.5%	13.5%
Excess / (shortfall) between actual and required contribution rate	(2.1%)	(1.3%)	(1.9%)

The total required contribution rate includes the contributions in respect of the funded benefits and an allowance for annual Fund expenses and reflects the average required contribution rate in respect of both *Services* and *Other* Members. The current employer contribution rate represents the average of the 16% contribution rate in respect of *Services* members and the 13% contribution rate in respect of *Other* members.

7.2.2 Breakdown of required contribution rate by employer type

The theoretical underlying required contribution rates for the categories *Services* and *Other*, expressed as a percentage of pensionable salaries, at the current and previous valuation dates, are shown below:

Required Contribution Rate split by employer	31 March 2016		31 March 2014	
	Services	Other	Services	Other
Funded benefits	26.8%	22.0%	25.6%	21.2%
Allowance for Fund expenses	0.3%	0.3%	0.3%	0.3%
Total required contribution rate	27.1%	22.3%	25.9%	21.5%
Less: Contributions by members	(7.5%)	(7.5%)	(7.5%)	(7.5%)
Required employer contribution rate	19.6%	14.8%	18.4%	14.0%
Actual employer contribution rate	16.0%	13.0%	16.0%	13.0%
Excess / (shortfall) between actual and required contribution rate	(3.6%)	(1.8%)	(2.4%)	(1.0%)

7.2.3 Cost of additional pensionable service for Services members

The following table provides an indication of the effect on the contribution rate in respect of members of the *Services* category, who qualify for an additional 25% enhancement to their years of pensionable service greater than 10 years. The results are shown including and excluding the additional 25% enhancement, and at both the current and previous valuation dates:

Additional cost for Services Members	31 March 2016		31 March 2014	
	Including 25%	Excluding 25%	Including 25%	Excluding 25%
Funded benefits	26.8%	22.6%	25.6%	21.8%
Allowance for Fund expenses	0.3%	0.3%	0.3%	0.3%
Total required contribution rate	27.1%	22.9%	25.9%	22.1%
Less: Contributions by members	(7.5%)	(7.5%)	(7.5%)	(7.5%)
Required employer contribution rate	19.6%	15.4%	18.4%	14.6%
Actual employer contribution rate	16.0%	16.0%	16.0%	16.0%
Excess / (shortfall) between actual and required contribution rate	(3.6%)	0.6%	(2.4%)	1.4%

As indicated in the results above, the cost of the service enhancement in respect of *Services* members amounts to approximately 4.2% of pensionable salaries on the *best estimate* valuation basis. This is higher than the difference in contributions actually being paid by the *Services* employers (16%) and “*Other*” employers (13%), but highlights the appropriateness of the difference in contribution rates. The residual difference can be explained by the differing decrement assumptions between the two categories of members.

7.2.4 Shortfall in the required employer contribution rate

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.

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.

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.

It should be noted that the shortfall between the required employer contribution rate (15.6% of pensionable salaries) and the current actual employer contribution rate (an average of 13.5% of pensionable salaries) amounts to some R6.0 billion per annum or some 0.43% of the Fund's liabilities.

If the employer continues to contribute at the current rate, the shortfall is therefore expected to reduce the funding level by 0.43% per annum.

7.2.5 5% equity risk premium allowance

The valuation basis assumes an "equity risk premium" of 3% per annum, i.e. that portion of the Fund's assets invested in equities will earn a return that is 3% higher than the long-term bond yield assumption. The Trustees have invested a material portion of the Fund's assets in local and foreign equities and property, namely 64.3% as at the valuation date (64.1% at the previous valuation). For valuation purposes, we have assumed that on average 60% of the assets are invested on this basis in the future.

For illustrative purposes, previous valuation reports have also set out the required level of employer contributions if a 5% equity risk premium is assumed. The use of this assumption for determining the future funding requirements must be seen as a risk budgeting exercise for the employers. To the extent that equities over the long term earn a risk premium of 5% over bonds (and other experience is as assumed), the required level of contributions at the rates below would then be adequate. It should, however, be appreciated that the higher the assumed equity risk premium, the lower will be the required contribution rates, but that this also carries a greater risk of requiring additional contributions into the future should experience not be in line with that assumed:

Required Contribution Rate on 5% and 3% Equity Risk Premium	5% Equity Risk Premium		3% Equity Risk Premium (Valuation basis)	
	Services	Other	Services	Other
Funded benefits	21.3%	17.6%	26.8%	22.0%
Allowance for Fund expenses	0.3%	0.3%	0.3%	0.3%
Total contribution rate required	21.6%	17.9%	27.1%	22.3%
Less: Contributions by members	(7.5%)	(7.5%)	(7.5%)	(7.5%)
Required employer contribution rate	14.1%	10.4%	19.6%	14.8%
Actual employer contribution rate	16.0%	13.0%	16.0%	13.0%
Excess / (shortfall) between actual and required contribution rate	1.9%	2.6%	(3.6%)	(1.8%)

Based on a 5% equity risk premium assumption the required employer contribution rate is 14.1% for *Services* members and 10.4% for *Other* members. On this basis, there is an excess contribution of 1.9% for *Services* members and an excess contribution of 2.6% for *Other* members.

Looked at a different way, for the current 16% contribution rate in respect of *Services* members to prove adequate (and other experience is as assumed), an equity risk premium of 4.3% over the long-term bond yield assumption would need to be achieved. Similarly, for the current 13% contribution rate in respect of *Other* members to prove adequate (and other experience is as assumed), an equity risk premium of 3.8% over the long-term bond yield assumption would need to be achieved.

We would suggest that the Trustees and the employer should not rely on the Fund's assets earning this higher equity risk premium over the long-term and that the required employer contribution rate should be considered in terms of the valuation basis, i.e. using a 3% equity risk premium.

Section 8: Inter-valuation Experience

Even if a valuation is performed on exactly the same basis as was adopted at the previous valuation date, it is to be expected that a surplus or deficit will arise during the inter-valuation period, due to the actual experience of the various factors affecting the Fund differing to some extent from those assumed when calculating the liabilities at the previous valuation date and in assessing the required contribution rate.

It is possible to quantify these differences and, when the analysis is performed at each consecutive valuation, it assists the actuary in deciding if a particular factor giving rise to a surplus or deficit in the Fund is of a temporary or permanent nature. If it appears to be of a permanent nature, an appropriate adjustment can be made to future valuation assumptions.

The fair value surplus on the minimum funding basis before establishing any reserves was R252 203 million as at 31 March 2014. After establishing the solvency reserves and contingency reserves at the maximum level that was affordable, the fair value surplus on the long-term funding basis was Nil as at 31 March 2014.

This fair value surplus on the minimum funding basis before establishing any reserves has decreased to R222 747 million as at 31 March 2016. After establishing solvency reserves and contingency reserves at the maximum level that is affordable, the long-term surplus remains at Nil as at 31 March 2016.

The main factors contributing to the change in the actuarial surplus during the inter-valuation period are set out in the following table.

	Inter-valuation Period R'm
Previous surplus above minimum funding basis liabilities	252 203
Interest on opening surplus	47 292
Change in opening surplus	(5 948)
Investment returns	(62 774)
Economic assumptions	(22 180)
Member contributions	(338)
Employer contributions	(4 825)
Expense allowance	(273)
Salaries	14 077
Pension increases	(574)
Withdrawal profits	5 005
Retirement strains	(3 450)
Death in service profits	1 427
Other benefit profits	(88)
Pensioner movements	(3 249)
Benefits payable impact	6 092
Release from the data reserve	102
Miscellaneous items	248
Current surplus above minimum funding basis liabilities	222 747

The full surplus on the minimum funding basis is allocated towards the establishment of the solvency reserve and other contingency reserves as at the valuation date.

A number of the items in the table above interact with each other and should not be viewed in isolation. Specific comments relative to the more important items in the analysis of surplus are as follows:

Change in opening surplus:

This item has arisen as a result of changes to the valuation data effective at the previous valuation date. There have been a number of data corrections verified by the Fund's administrator. There are also a number of records that were not included in the liability at the previous valuation date which now appear in the current data; this is over and above the provision that was made at the previous valuation date for missing data records.

Investment returns:

A strain has arisen to the extent that the investment return achieved on the fair value of the assets was lower than that assumed. The Fund has earned an approximate return, net of management fees, of 8.97% per annum over the two years ending 31 March 2016. This is lower than the assumed discount rate (11.4% per annum) and has resulted in a substantial strain to the Fund.

Economic assumptions:

This item relates to the changes in the actuarial valuation basis, in particular, the change in the net pre-retirement and post-retirement discount rates. There is a material decrease in the net pre-retirement discount rate and a slight decrease in the net post-retirement discount rates, which will result in, all else being equal, an increase in liabilities and a strain to the Fund.

Employer contributions:

The actual employer contributions paid are compared with those required at the previous valuation date based on actual salaries and membership. The actual total employer contributions were less than required to fund the benefits accrued over the year. This has resulted in a strain to the Fund.

Expense allowance:

An allowance for expenses is made in the required employer contribution rate (0.3% of pensionable emoluments) as per the previous valuation. The actual expenses over the two years were slightly more than the allowance, resulting in a strain to the Fund.

Salaries:

General salary increases granted to members during the inter-valuation period were in line with the multi-year agreement between the Employer and bargaining councils and the “real” salary increase assumption in the valuation basis, namely inflation plus 1% per annum. The surplus arises as a consequence of both a “technical surplus”, being that the actual increases were lower than those assumed in the basis as inflation over the inter-valuation period was lower than that assumed in the basis (6.9% per annum over the long term– see Appendix D) and also the impact of the promotional salary increase assumption.

Pension Increases:

Pension increases granted to pensioners during the inter-valuation period (5.8% effective 1 April 2015 and 5.3% effective 1 April 2016) were some 104.9% of inflation over the relevant measurement periods, relative to an allowance of 80% of inflation in the valuation basis. The strain in respect of these increases was mostly offset by inflation over the period (5.3% per annum on average) being lower than what was assumed in the valuation basis (6.9% per annum over the long term).

Member movement profits:

This item relates to the net profits that emerge on the withdrawal, death, ill-health retirement and retirement of members. We have considered these modes of exit together as there is an interaction between the various exit modes, potentially as a result of the categorisation of the exit data.

Surpluses and deficits arise as a result of the difference between the benefits paid to exiting members and the reserve held in respect of those members, taking account of the assumptions made for exits under these various exit modes in the valuation basis. We have identified some items which will contribute to the net surplus arising:

- On withdrawal, members are paid their Actuarial Interest based on a set of factors derived from the valuation results at the previous valuation date. The Actuarial Interest factors derived from the previous valuation results are smoothed to ensure consistency in the accrual of benefits from one age to the next. The smoothing effect will result in a profit, particularly at the younger ages, where the valuation liabilities includes promotional increases in salaries to a greater extent than the Actuarial Interest factors.
- Profits arose in respect of the allowance made for ill-health retirements, when compared to the actual experience of ill-health retirements. On the basis that the benefit on ill-health retirement is a higher benefit than on resignation or normal retirement, a high assumed rate of ill-health retirement increases the valuation liabilities. To the extent that less than the expected number of ill-health retirements take place, part of the liabilities are released to profit. This outcome is consistent with the decrement investigation performed previously.

The profits that arose in respect of the ill-health retirements have been offset against the strain that arose in respect of the normal health retirements, resulting in an overall strain of R3 450 million on retirement benefits.

- Where appropriate, exits during the year (including resignations and retirements with less than 10 years of service) from 1 April 2014 to 31 March 2015 were paid in accordance with the previous Actuarial Interest factors which were higher than those derived from the 31 March 2014 valuation, resulting in a strain in respect of those members.

Pensioner movements:

The pensioner “movement” loss arose as a result of the pensioners experiencing lighter mortality than assumed over the valuation period. The experience of the pensioners should be investigated as part of the next demographic investigation and if it is found that the mortality assumptions need to be adjusted to reflect a different underlying experience in the Fund, it should be considered at that time.

Benefits payable impact:

The benefits payable profit is the net impact of reflecting the current S-case future payment provision as part of the liabilities of the Fund, and the release of the S-case future payment provision established at the previous valuation date. That is, there is no longer a need to hold as high a provision for future pensions arising from S-case members as there was at the previous valuation date.

Funding the contingency reserves:

The Fund has set aside a slightly lower reserve in respect of member data than the accumulated balance from the previous date. This results in a small release to the Fund.

Section 9: Certification and signature

I certify that:

- The value of the assets of the Fund is sufficient to cover the best estimate accrued actuarial liabilities at the valuation date and the Fund was therefore financially sound on the minimum funding basis at the valuation date;
- The financial condition of the Fund has been assessed by considering the assets of the Fund in relation to its liabilities based on best estimate assumptions;
- In addition, the amount of solvency reserves and contingency reserves to allow for some fluctuations in asset values, improvements in longevity and pension increases equal to inflation have been determined. The Fund does not have sufficient assets to cover the recommended solvency reserves and contingency reserves in full. Allowing for the solvency reserves and contingency reserves in full reflects a long-term funding level of 79.3%.
- Given that the valuation is of necessity based on assumptions regarding the future, the assessed value of the liabilities, solvency reserves and contingency reserves may prove to be more or less than is required in practice.
- If the liabilities and the amount of the solvency reserves and contingency reserves set up prove to be inadequate in future, Trustee action will be required to rectify the position. This may involve, *inter alia*, the reduction of future benefit accruals or an increase in the required contribution rate, subject to the required consultations in terms of the GEP Law.
- Subject to the above and provided that the employer contributes at a rate of 19.6% of total pensionable salaries in respect of *Services* members and 14.8% in respect of *Other* members, the financial soundness of the Fund on the minimum funding basis should be maintained until at least the next actuarial valuation of the Fund.
- The employers contributed at a rate of 16.0% of total pensionable salaries in respect of *Services* members and 13.0% in respect of *Other* members during the inter-valuation period. If the employers continue to contribute at these rates, the contribution shortfall is expected to be some R6.0 billion per annum or some 0.43% of the Fund's total liabilities. The minimum funding level would therefore be expected to reduce by some 0.43% per annum.
- The valuation basis assumes a 3% equity risk premium over the long-term bond yield assumption. For illustrative purposes in testing the appropriateness of the current level of contributions, a 5% equity risk premium over the long-term bond yield assumption was also considered. This is a less conservative assumption than that used for valuing the past service financial position of the Fund. The use of this assumption for determining the future funding requirements must be seen as a risk budgeting exercise for the employers. To the extent that equities over the long term earn a risk premium of 5% over bonds (and other experience is as assumed), a lower level of contributions would be adequate. It should, however, be appreciated that the higher the assumed equity premium the lower will be the required contribution rates but that this also carries a greater risk of requiring additional contributions into the future should experience not be in line with that assumed.
- Based on a 5% equity risk premium assumption, the required employer contribution rate is 14.1% for *Services* members and 10.4% for *Other* members. On this basis there is an excess contribution of 1.9% for *Services* members and an excess contribution of 2.6% for *Other* members.

- For the current 16% contribution rate in respect of *Services* members to prove adequate (and other experience is as assumed), an equity risk premium of 4.3% over the long-term bond yield assumption would need to be achieved. Similarly, for the current 13% contribution rate in respect of *Other* members to prove adequate (and other experience is as assumed), an equity risk premium of 3.8% over the long-term bond yield assumption would need to be achieved.
- The cost of the service enhancement in respect of *Services* members amounts to approximately 4.2% of pensionable salaries, which is higher than the current difference in contributions paid by and in respect of *Services* and *Other* members, but reflects the reasonable difference in contributions.
- 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. In this regard, we would note that:
 - The level of contributions and the funding level should be monitored as part of each actuarial valuation of the Fund.
 - Rule 7.2 of the Fund's rules 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%". This can therefore be viewed as the primary funding objective of the Fund. The funding level of the Fund of 115.8% as at the valuation date was in excess of the minimum funding level.
 - The Funding Policy of the Fund also stipulates that the Board of 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 equalled 79.3%. The Fund at the valuation date therefore meets its minimum funding level, but as the solvency reserves and contingency reserves are not fully funded, does not meet its long-term funding objective.
- We recommend that the key demographic assumptions used for the Fund be monitored through an experience analysis exercise every three to five years. The previous analysis was carried out as at 31 March 2012. The next analysis should be completed following the current valuation of the Fund, and should include an investigation into any expected future mortality improvements for both in-service members and pensioners.
- I am 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 my opinion, adequate.
- Given the current financial condition and size of the Fund, the self-insurance of death and ill-health retirement risks remains appropriate.
- On the basis that the Fund was 115.8% funded on a best estimate basis as at the valuation date (and has therefore met its minimum funding objectives) and that the employer contribution shortfall of some 2.1% of salaries is expected to reduce the minimum funding level by some 0.43% per annum, the Fund was in a sound financial position as at the valuation date and should remain in a sound financial position until the next actuarial valuation of the Fund expected to take place effective 31 March 2018. The Fund's assets as at the valuation date were, however, only some 79.3% of the total of the Fund's liabilities and recommended solvency reserves and contingency reserves.

Signature:

**Date:**

7 December 2016

7 December 2016

Name

Howard Buck

Kerrin Lynch

Qualifications:

Valuator
B.Sc. FASSAActuary
B.Sc. FASSA

Name of Employer:

Willis Towers Watson

Willis Towers Watson

Position:

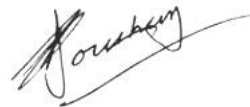
Associate

Associate

Address:

1st Floor
44 Melrose Boulevard
Melrose Arch, 21961st Floor
44 Melrose Boulevard
Melrose Arch, 2196**Signature:**

Liu He

**Date:**

7 December 2016

7 December 2016

Name

Liu He

Colin Southey

Qualifications:

B.BusSc.

Peer Review Actuary
B.Sc. FASSA

Name of Employer:

Willis Towers Watson

Willis Towers Watson

Position:

Associate

Associate

Address:

1st Floor
44 Melrose Boulevard
Melrose Arch, 21961st Floor
44 Melrose Boulevard
Melrose Arch, 2196

Our primary professional regulator is the Actuarial Society of South Africa

Appendix A: Summary of the Fund

A.1 Definitions

Concept	Criteria	Definition
N(adj)		Member's adjusted service at termination date
F(Z)	Ages less than 55	A factor determined by the Board of Trustees and the Minister of Finance acting on the advice of the Actuary
FAS		Average pensionable salaries during the last 24 months of pensionable service
A(X)	Ages more than 55	A factor determined by the Board of Trustees and the Minister of Finance acting on the advice of the Actuary
Annuity (A)	Service more than 10 years	$1/55 \times \text{FAS} \times \text{Service} + \text{R}360 \text{ per annum}$
Annuity (A)	Service less than 10 years	Nil
Gratuity (G)	Service more than 10 years	$6.72\% \times \text{FAS} \times \text{Service}$
Gratuity (G)	Service less than 10 years	$15.5\% \times \text{FAS} \times \text{Service}$
Actuarial Interest	Ages less than 55	$N(\text{adj}) \times \text{FAS} \times F(Z)$
Actuarial Interest	Ages more than 55	$G + A \times A(X)$, with G and A calculated according to the formula for more than 10 years of service
Annuity increases		Determined by the Board of Trustees acting on the advice of the Actuary
Pension age		In accordance with service conditions.
Pensionable salary		The basic annual salary plus any other emoluments recognised as pensionable
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
Total projected pensionable service		Period from commencement of pensionable service until the normal retirement date at pension age
Prospective service		Period from the current age until the pension age

A.2 Benefits

Concept	Criteria	Definition
Normal Retirement	Service less than 10 years	A gratuity equal to member's Actuarial Interest
Normal Retirement	Service more than 10 years	Gratuity (G) and Annuity (A), where: <ul style="list-style-type: none"> ■ G is increased by 12% for members of the SANDF who are younger than 53 years at retirement ■ In the case of <i>Services</i> members, pensionable service is increased by 25% for each year of pensionable service in excess of 10 years
Early Retirement	Ages less than 60	As for normal retirement but reduced by $\frac{1}{3}\%$ for each complete month between the member's actual and normal retirement date
Late Retirement	Ages more than 60	Benefits as for normal retirement but dependent on Employer approval
Ill-health Retirement	Service less than 10 years	A gratuity of 1.33 times the Gratuity G
Ill-health Retirement	Service more than 10 years	A gratuity of G and an annuity of A with lengths of pensionable service adjusted as below: <ul style="list-style-type: none"> ■ Pensionable service is increased by the smallest of five years, one third of pensionable service and prospective service ■ In the case of <i>Services</i> members, pensionable service is increased by 25% for each year of completed service in excess of 10 years ■ The gratuity is increased by 12% for members of the SANDF who are younger than 53 years at retirement
Death benefit before retirement	Service less than 10 years	A gratuity of the greater of final average salary and Actuarial Interest
Death benefit before retirement	Service more than 10 years	A gratuity of five times Annuity A plus a gratuity of G, where: <ul style="list-style-type: none"> ■ In the case of <i>Services</i> members, pensionable service is increased by 25% for each year of completed service in excess of 10 years ■ Pensionable service is increased by the smallest of five years, one third of pensionable service and prospective service

Concept	Criteria	Definition
Death benefit before retirement	Total projected pensionable service more than 10 years	Spouse's pension of 50% of the Annuity A, where: <ul style="list-style-type: none"> ■ Pensionable service is based on total projected pensionable service ■ In the case of Services members, pensionable service is increased by 25% for each year of completed service in excess of 10
Death benefit after retirement		<ul style="list-style-type: none"> ■ Spouse's annuity of 50% of the member's annuity, unless the member or pensioner has elected a 75% spouse's annuity in lieu of a reduced current pension or gratuity, as appropriate. ■ If death occurs within five years of retirement, then a gratuity of the balance of five years' annuity payments, excluding the R360 per annum pension
Funeral benefit		A funeral benefit of R7 500 on the death of a member, pensioner or spouse and R3 000 on the death of an eligible child or a stillborn child
Orphan's pension (only paid if both parents are deceased)		<ul style="list-style-type: none"> ■ 10% of the member's annuity on the death of the member or the surviving spouse of the member subject to a minimum determined by the Trustees which cannot be less than R200 per month ■ 10% of the pensioner's annuity on the death of the pensioner. 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 will be 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, this benefit is subject to a minimum amount determined by the Trustees, which cannot be lower than R200 per month
Discharge benefit		On discharge due to abolition of post or in the interest of the employer, the benefit is as for ill-health retirement
Resignation benefit		<ul style="list-style-type: none"> ■ On discharge due to misconduct or resignation or ill-health occasioned by own doing, a gratuity equal to 7.5% x FAS x pensionable service, increased by 10% for each completed year between 5 and 15 years of pensionable service ■ The benefit is subject to a minimum of the Actuarial Interest from 1 April 2012
Injury on duty		The rules specify various gratuities and annuities which are payable. These are, however, paid directly by the State and are not funded. They have been ignored for the purpose of this valuation

The above summary outlines the main benefits as they apply to the majority of members. Certain members (such as 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.

Pension Increase Policy

The Board of 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 (termed the "Basic Increase") plus any further increase necessary to ensure a minimum pension equal to 75% of the original pension increased with full inflation. Further increases are permitted at the discretion of the Trustees.

The GEPF Pension Increase Policy 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.

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

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"

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.

In order to allow the Trustees greater discretion in granting pension increases of 100% of CPI at times when such increases may not otherwise be affordable, an additional reserve has been established, to the extent affordable (see Appendix F).

A.3 Contribution Rates

The contribution rates being paid at the current valuation date are reflected below:

Contribution	Criteria	Definition
Member contributions		7.5% of pensionable salaries
Employer contributions	<i>Services</i>	16% of pensionable salaries
Employer contributions	<i>Other</i>	13% of pensionable salaries

Additional costs resulting from early retirement or discharge, other than due to ill-health, are borne by the Government or the employer or both (as required in the GEP Law 17(4)).

The cost of benefit improvements for specific groups of members are born by their employers.

A.4 Expenses and additional benefits

Administration and other Fund expenses are borne by the Fund. The expense budget for each of the two years following the valuation date has been set at 0.3% of pensionable salaries.

Appendix B: Summary of Membership and Data

B.1 In-service Member Data as at 31 March 2016

Age group	Number of members	Annual pensionable emoluments R'000	Accrued pension R'000	Average past service	Average Liability R'000
<20	460	44 106	628	0 years 6 months	11.95
20-25	23 701	3 808 347	99 186	1 years 4 months	52.34
25-30	107 011	18 783 743	1 183 291	3 years 5 months	137.94
30-35	172 078	31 097 799	3 473 725	5 years 11 months	244.31
35-40	174 789	33 812 587	5 361 600	8 years 2 months	365.70
40-45	213 983	47 537 859	11 057 832	11 years 10 months	627.91
45-50	225 738	54 900 911	17 609 496	16 years 6 months	985.88
50-55	191 225	49 212 712	19 651 295	20 years 9 months	1 356.14
55-60	131 047	34 435 522	16 046 081	24 years 3 months	1 685.60
>60	45 394	11 163 149	5 095 709	24 years 0 months	1 559.40
Total	1 285 426	284 796 735	79 578 843	13 years 6 months	801.20

B.2 In-service Member Data as at 31 March 2014

Age group	Number of members	Annual pensionable emoluments R'000	Accrued pension R'000	Average past service	Average Liability R'000
<20	587	48 838	789	0 years 7 months	10.97
20-25	26 850	3 618 737	115 765	1 years 9 months	50.52
25-30	116 332	17 230 643	1 146 444	3 years 7 months	113.91
30-35	163 779	25 317 815	2 768 117	5 years 9 months	191.45
35-40	182 406	31 734 561	5 224 591	8 years 4 months	323.75
40-45	225 691	44 637 906	11 181 111	12 years 9 months	577.94
45-50	224 111	47 784 397	16 067 251	17 years 5 months	880.35
50-55	182 478	40 531 770	16 625 124	21 years 4 months	1 179.95
55-60	120 817	26 981 433	12 686 153	24 years 5 months	1 433.86
>60	44 309	8 998 011	4 122 980	23 years 10 months	1 295.70
Total	1 287 360	246 884 111	69 938 325	13 years 8 months	682.57

B.3 In-service member reconciliation

A reconciliation of the in-service membership from 31 March 2014 to 31 March 2016 is shown below:

	Number of members	Number of members
Number of members in force at 31 March 2014		1 287 360
Data adjustments		17 973
Exits prior to 31 March 2014		(7 935)
Revised number of members at 31 March 2014		1 297 398
New entrants in the period		149 723
Exits in the valuation period		(161 695)
Withdrawals	(104 903)	
Retirements	(46 077)	
Ill Health	(2 431)	
Deaths	(8 284)	
Number of members in force at 31 March 2016		1 285 426

B.4 Pensioner and Suspended Pensioner Data as at 31 March 2016

Age group	Retired Members	Annual pension R'000	Dependents	Annual pension R'000
< 46	2 538	143 215	22 316	1 077 682
46-50	4 764	345 273	15 966	732 334
51-55	11 573	1 031 888	17 427	749 654
56-60	37 712	4 538 941	16 733	682 839
61-65	65 522	7 513 944	16 438	641 002
66-70	55 970	5 074 314	15 246	644 085
71-75	42 286	3 350 659	14 316	680 679
76-80	25 819	2 222 290	12 216	691 369
81-85	12 391	1 205 491	8 811	573 906
>85	7 905	766 197	7 155	484 364
Total*	266 480	26 192 212	146 624	6 957 914

The above table excludes 15 252 pensioners and dependants at 31 March 2016 that were inferred from retirements and deaths in the valuation data, but for whom no individual data was provided.

11 380 were reflected as retirements or dependants of members who died in service and 3 872 were reflected as dependants of pensioners who died. This is likely to be largely due to a timing issue – the member has retired or died but the pension has not yet been set up.

B.5 Pensioner and Suspended Pensioner Data as at 31 March 2014

Age group	Retired Members	Annual pension R'000	Dependents	Annual pension R'000
< 46	2 105	93 950	18 456	772 653
46-50	4 285	250 497	13 814	550 140
51-55	8 312	551 404	15 105	562 273
56-60	18 794	1 594 187	14 684	520 298
61-65	45 119	4 383 743	14 644	501 057
66-70	56 324	4 457 538	13 983	522 304
71-75	45 816	3 223 695	13 678	573 770
76-80	28 994	2 223 281	12 219	604 694
81-85	14 901	1 302 127	9 397	546 849
>85	9 293	950 187	8 446	556 009
Total	233 943	19 030 609	134 426	5 710 047

The above table excludes 14 293 pensioners and dependants at 31 March 2014 that were inferred from retirements and deaths in the valuation data, but for whom no individual data was provided.

B.6 Pensioner reconciliation

A reconciliation of the pensioner and suspended pensioner data from 31 March 2014 to 31 March 2016 is shown below:

	Pensioners and Suspended Pensioners
Number of pensioners at 31 March 2014*	382 662
Deaths prior to 1 April 2014	(218)
Further new pensioners prior to 1 April 2014	13 965
Revised number of pensioners at 31 March 2014	396 409
New pensioners**	61 537
Deaths/Disappearance of pensioners/suspended pensioners	(28 592)
Suspended for more than 5 years	(998)
Number of pensioners at 31 March 2016**	428 356

* Includes 14 293 pensioners per the note after the table in section B.5.

** Includes 15 252 pensioners per the note after the table in section B.4.

B.7 Deferred Pensioner Data as at 31 March 2016 and 31 March 2014

A reconciliation of the deferred pensioner data from 31 March 2014 to 31 March 2016 is shown below:

	Number of deferred pensioners
Number of deferred pensioners at 31 March 2014	11
Adjustments (Appearance)*	1
Revised deferred pensioners at 31 March 2014	12
New entrants in the period	-
Exits in the period	(3)
Number of deferred pensioners at 31 March 2016	9

* This is a deferred pensioner that was not included in the 2014 data but has subsequently been confirmed by the administrator that this is a Fund deferred pensioner.

B.8 Comparative Data

	31 March 2016		31 March 2014	
	Number of members	Annual emoluments / pension R'000	Number of members	Annual emoluments / pension R'000
In-service Members				
Services	223 108	48 436 437	226 528	42 686 793
Other	1 062 318	236 360 298	1 060 832	204 197 318
Total	1 285 426	284 796 735	1 287 360	246 884 111

	31 March 2016		31 March 2014	
	Number of members	Annual emoluments / pension R'000	Number of members	Annual emoluments / pension R'000
In-service Members				
Males	538 609	122 227 407	549 249	107 647 792
Females	746 817	162 569 328	738 111	139 236 319
Total	1 285 426	284 796 735	1 287 360	246 884 111
Pensioners and Suspended/ Widow(er)s				
Males	129 465	14 010 049	116 363	10 830 411
Females	283 639	19 140 078	252 006	13 910 243
Total	413 104	33 150 127	368 369	24 740 654
Deferred Pensioners				
Males	9	231	11	223
Females	-	-	-	-
Total	9	231	11	223

We have performed a number of reasonability and consistency checks on the data provided by the administrators as well as a comparison of the data used as at 31 March 2014 (the previous valuation date) with that provided as at 31 March 2016 (the current valuation date). These are discussed below in respect of the different types of membership.

B.9 In-service Member Data Checks

Membership at the start and the end of the valuation period

A breakdown of the membership reconciliation is provided in the above sections. This was used to confirm that the total number of in-service members at the previous valuation, plus any new entrants, less any exits (including S-cases) during the valuation period, matches the total membership as at the current valuation date. The build-up had to be adjusted by 10 038 in-service members at the previous valuation date.

The adjustment of in-service members at the previous valuation date is a net adjustment comprised of the following components:

- There were 17 973 in-service members who appeared in the 2016 data set with a pensionable service date prior to 31 March 2014, but who were not included in the 2014 data set as either in-service members or exited members. A large proportion of these members commenced employment shortly before the previous valuation date. These members have been included in the number of members at the start of the period following feedback from the administrators of the Fund.

- There were 7 935 in-service members who were included in the 2014 final valuation data, but who in actual fact exited prior to 31 March 2014 according to the S-case data files provided over the valuation period. These members were excluded from the number of in-service members at the start of the period.

Static data checks

The table below shows the changes in respect of “static data” provided by the administrator at the current and previous valuation dates, namely 31 March 2016 and 31 March 2014, respectively.

Changes in static data from previous to current valuation date	Records changed
Date of birth	201
Gender	1 096
Pensionable service date changed by more than 1 year	1 817
Employer category changed from “Other” to “Services”	5 906
Employer category changed from “Services” to “Other”	650

The above changes have been queried with the administrator of the Fund. In responding to the queries, the administrator of the Fund has confirmed that these changes were as a result of the data cleansing operation that took place during the inter-valuation period.

Checks on date of birth and gender to those implied by member’s identity number

We have performed reasonability checks on the date of birth and gender provided in the valuation data to those implied by the members’ identity numbers. The dates of birth and genders provided in the valuation data are reasonably consistent with those implied by the members’ identity numbers. The following differences were queried with the administrators of the Fund and the queries were satisfactorily resolved:

Description	Total
Date of birth differs from ID	62
Gender differs from ID	2 770

Missing data

The table below shows the number of missing data within each data entry as at 31 March 2016, the current valuation date.

Description	Total
Date of birth	32
Gender	30
Pensionable service date	3
Salary	21 735
With LWP indicator but missing scale *	2 517
With exit mode but missing date of exit	2 566

* “Leave without pay” (LWP) codes are normally provided with a scale indicating whether the service period is to be added to or deducted from the member’s actual service.

The above queries have been raised with the administrator of the Fund and were resolved to a satisfactory level. Where the queries could not be resolved (e.g. missing salary information), reasonable assumptions have been made.

Data outside of a reasonable range

The table below shows the number of in-service data entries outside of a reasonable range as at 31 March 2016, the current valuation date.

Description	Total
Date of birth prior to 1 April 1941	1 360
Pensionable service date prior to 1 April 1966	101
Pensionable service date prior to date of birth	2
Leave without pay of more than 10 years	935
Purchase of service of more than 15 years	551
Salary less than the minimum salary	6 945

The above queries have been raised with the administrator of the Fund and were resolved to a satisfactory level.

Salaries and Contributions checks

Salaries

The table below shows the number of invalid or unreasonable salaries based on the data as at 31 March 2016 provided by the administrator of the Fund.

Description	Total
Salary equal to 0 or 1	15 005
Other contributors with salaries below R72 000 per annum	6 945

The administrator of the Fund confirmed that they were not able to find any other salary information for these members. We have therefore, assumed the average salary of the Fund in respect of the members with salary equal to 0 or 1 for the purpose of the valuation. With regard to salaries below R72 000 per annum, we have adjusted the salaries to reflect the minimum of R72 000 per annum. The minimum salary of R72 000 per annum is consistent to the minimum salary used as at 31 March 2014 together with average salary increases granted during the inter-valuation period.

Contributions

The table below shows the salaries provided in the valuation data (including the valuation data salaries adjustments and assumptions) compared to the salaries implied by the contribution income in the financial statements of the Fund for the year ending 31 March 2016.

Description	Total (R' m)
Salaries –Following the adjustments and assumptions	284 797
Salaries – Contribution implied salaries taken from the financial statements	288 773

It is difficult to draw substantive conclusions based on the above reasonability check. The valuation data would reflect salaries at a point in time (i.e. the valuation date) while contributions implied by the financial statements would reflect the salaries during the financial year (i.e. including those of members who exited during the financial year). However, we do not expect significant differences between the two numbers for a fund such as GEPP and the amounts are not unreasonable.

B.10 Pensioner Data Checks

Membership build-up and adjustments

We performed a reconciliation of pensioners and suspended pensioners. This was used to confirm that the total number of pensioners and suspended pensioners at the previous valuation, plus any new pensioners and suspended pensioners who were reinstated, less any deaths and new suspended pensioners, matches to the total number of pensioners and suspended pensioners as at the current valuation date. We have adjusted the pensioner membership provided by the administrators of the Fund at the beginning and at the end of the inter-valuation period by 14 293 and 15 242 respectively.

The adjustment to the pensioners is a net adjustment comprised of the following components:

- There were 28 258 pensioners in the 2016 data set with dates of commencement of pensions prior to 1 April 2014 and who were not included in the data set used in the valuation as at 31 March 2014. In the previous valuation, we made an adjustment for the 14 293 pensioners that were reflected as retirements or dependants of members who died in service, but were not included in the pensioner data. The remaining 13 965 pensioners were added to the number of pensioners at the start of the valuation period.
- There were 218 pensioners who appeared in the March 2014 data set, but who had dates of death prior to 1 April 2014 according to the 2016 data. These pensioners have been removed from the number of pensioners at the start of the period.
- There were approximately 6 529 members that appeared in the in-service valuation data as retirements during the valuation period with more than 10 years of pensionable service but were not reflected in the pensioner data as new pensioners by 31 March 2016. Furthermore it was approximated that some 4 851 spouses in respect of members who died in service and some 3 872 spouses in respect of pensioners who died had not been classified as pensioners by 31 March 2016. These retirements and spouses were added to the number of pensioners at the end of the valuation period.

Static Data Checks

The table below shows the changes in respect of pensioners' static data between the previous and current valuation dates, 31 March 2014 and 31 March 2016, respectively.

Changes to static data from previous to current valuation date	Pensioner
Date of birth	5
Gender	935
Pension commencement date	2 959
Pensioner status	83

The above changes have been queried with the administrator of the Fund. In responding to our queries, the administrator of the Fund has confirmed that these changes were as a result of the data cleansing operation that took place during the valuation period. All changes have been either verified or corrected.

Checks on date of birth and gender to those implied by member's identity number

We have performed reasonability checks on the changed dates of birth and gender provided in the pensioner data to those implied by the pensioner's identity number and these were queried with the administrator of the Fund and the queries were satisfactorily solved.

Description	Total
Gender differs from ID	935

Missing data

The table below shows the number of pensioners with data missing as at 31 March 2016, the current valuation date.

Description	Total
Pensioner status	52
Last pension payment	68
Pension commencement date	2 883

The above queries have been raised with the administrator of the Fund and were resolved to a satisfactory level.

Dates outside of a reasonable range or invalid

The table below shows the number of pensioners with data outside of a reasonable range as at 31 March 2016, the current valuation date.

Description	Number of Pensioner
Retired members with age at pension commencement date < 16	49
Retired members with age at pension commencement date > 70	550
Pension commencement date prior to date of birth	3
Spouse pensioners with reversion factor > 0	8 887
Pensioners with date of birth prior to 1 April 1909	15
Date of death prior to date pension commenced	16

The above were queried with the administrator of the Fund. Retired members with age at pension commencement less than 16 are Ciskei child pensioners. For retired members with age at pension commencement greater than 70, the administrator of the Fund confirmed that we should use the information as supplied.

Pension payment checks

We have performed the following checks on pension payments:

Consistency check with pension payments in financial statements

A comparison of the pension payments in the financial statements to the total pensions in the valuation data as at 31 March 2016 is shown in the table below:

	R'm
Accrued pensions in financial statements	32 006
Pensions in valuation data after adjustments	33 150

The valuation data would reflect pensions at a point in time (i.e. the valuation date) while accrued pensions in the financial statements would reflect the total of all the pension payments made during the financial year (i.e. including those of pensioners who exited during the financial year). However, we do not expect significant differences between the two numbers for a fund such as GEPF and the amounts are reasonable.

Consistency check with pension payment at previous valuation date

We have performed consistency checks on the pension payment data between the previous and current valuation dates, 31 March 2014 and 31 March 2016 respectively. We have queried the pension payments for the 471 pensioners that differed by more than 10% from the 2014 data after applying the pension increases.

The administrator of the Fund confirmed that the reason for the differences between the 2014 and 2016 pension was due to arrears or recalculations being performed and the pensions as supplied could be used as is.

Reasonable range

Since there is no minimum pension that applies to the Fund, we requested the administrators of the Fund to test the 17 retired members with a pension less than R2 400 per annum and the 13 spouses with a pension less than R1 200 per annum. The administrator of the Fund confirmed that the pension payments are correct. Most of these pensioners are former TBVC (Transkei, Bophuthatswana, Venda and Ciskei) pensioners.

B.11 Additional checks

For each of the in-service members in the data files, we checked for missing dates of birth, dates of pensionable service, gender, salary and service type. We also performed the following reasonability checks:

- Dates are valid
- Dates in logical order
- Ages in reasonable ranges
- Pensionable service in reasonable ranges
- Pensionable salaries in reasonable ranges
- Date of birth and gender corresponds to that implied by the member identity number, where applicable

We have calculated the following members' statistics and checked them for reasonability. We have also compared these with the previous valuation and between member classes in the current data:

- Average age and salary weighted average age
- Average pensionable salary
- Average pensionable service
- Average contributions

We calculated similar statistics for the pensioners and compared them with the previous valuation and again between pensioner classes:

- Average age and pension weighted average age
- Average pension
- Check spouse/former member ratio

We checked the number of members that retired compared to the number of new pensioners.

We also checked that the number of members' deaths compares to the number of new spouses.

We have checked a number of statistical distributions, for example of membership by age, etc.

We compared the market value of the assets as supplied by the Fund's asset consultants with the value in the financial statements.

We compared the contributions made by the members to the contributions made by the employers.

We compared the investment income shown in the accounts with the expected rates of return on assets at the date when the previous valuation was performed.

B.12 Conclusion

Concerns still exist regarding data quality, e.g. the data adjustments necessary in the pensioner and in-service membership build-up from the previous valuation, the results of the S-case investigations, and the understatement of pensioner deaths/suspensions. It was therefore decided to maintain a data contingency reserve as outlined in Appendix F of the report.

However we acknowledge that the steps taken by the administrator over the inter-valuation period have resulted in a better quality of the data provided. Furthermore we recognise the proposed initiatives to be taken by the administrator going forward to minimise data issues.

Allowing for the various data adjustments noted in this report and the data reserve, we are generally satisfied with the overall appropriateness of the data for the purpose of calculating the Fund's liabilities.

Appendix C: Consolidated Revenue Account

A reconciliation of the movement of the revenue account over the inter-valuation period is set out below:

	R'000
Fund as at 31 March 2014	1 425 718 686
Inflows:	
Member contributions	41 917 938
Purchase of service	81 472
Employer contributions	74 951 703
Interest on contributions	685
Income from investments	112 106 073
Adjustment to fair value of investments	156 892 718
Transfers in	17 429
Total inflows	385 968 018
Outflows:	
Pensions paid	(59 968 288)
Gratuity payments	(22 511 188)
Withdrawal benefits	(76 732 707)
Death benefits	(9 050 828)
Retrenchment benefits	(185 347)
Transfers out	(541 748)
Other benefits	(442 035)
General administration expenses	(1 963 463)
Investment management fees	(5 911 510)
Interest paid	(4 456 219)
Total outflows	(181 763 333)
Fund as at 31 March 2016	1 629 923 371

The above table represents a reconciliation of the net assets of the Fund from the previous to the current valuation date, including the movement of the Fund's reserve accounts as reflected in the audited financial statements.

Excluding the adjustment to the fair value of investments, the Fund was still "cash flow positive" over the inter-valuation period.

Appendix D: Valuation Basis and Method Adopted

This appendix deals with the methodology and actuarial assumptions used in the valuation of the defined benefit member and pensioner liabilities of the Fund as at 31 March 2016 (with comparatives being provided at the previous valuation date).

D.1 Valuation methodology

The present value of accrued defined benefit liabilities depends on the assumptions made in respect of the future experience of members and pensioners. Consistent with the previous valuation and the requirements of Professional Guidance of the Actuarial Society of South Africa, best estimate assumptions have been used for the calculation of the defined benefit liabilities for this valuation.

The accrued liabilities have been calculated as the present value of the benefits that have accrued to defined benefit members in respect of service to the valuation date, allowing for future salary increases, expected benefit payments at and prior to retirement, and for pensions adjusted for pension increases payable after retirement on a basis consistent with past practice and with communication to members and pensioners.

The contribution rate for future service pension benefits (including withdrawal, death-in-service and normal/early/ill-health retirement pensions) for the in-service members has been established by calculating the contribution rate that is required in respect of benefits accruing over the two years following the valuation date with salaries being projected to retirement date for pension benefits. This method, the Projected Unit Method, produces an accurate estimate of future service costs provided new entrants enter and exits leave the Fund at such a rate that its composition by age, salary and gender remains stable and provided the actual experience does not differ markedly from the assumptions made.

D.2 Investment Returns, Salary Increases and Pension Increases

The best estimate financial assumptions adopted have been set as follows:

Valuation assumptions	Best estimate 2016 Valuation	Best estimate 2014 Valuation
Long-term inflation	8.3%	6.9%
Yield on nominal bond for appropriate duration	10.7%	9.6%
Less yield on real bond	(1.9%)	(2.2%)
Less Inflation Risk Premium ⁽¹⁾	(0.5%)	(0.5%)
Pre-retirement discounting		
Net long-term investment return (A)	12.5%	11.4%
Gross return on nominal bond	10.7%	9.6%
Equity Risk Premium (based on a 3% ERP) ⁽²⁾	1.8%	1.8%
Long-term salary increases (B) ⁽³⁾	9.3%	7.9%
In excess of inflation	1.0%	1.0%
Inflationary increase	8.3%	6.9%
Interest / salary differential [(1+A) / (1+B)] –1	2.93%	3.24%
Post-retirement discounting		
Long-term investment return (A)	12.5%	11.4%
Pension increases (80% of long term inflation) (C)	6.6%	5.5%
Net post retirement valuation rate [(1+A) / (1+C)] –1	5.53%	5.59%

Note (1): The Inflation Risk Premium of 0.5% is at a conservative level. The assumed inflation rate has increased and remains above the Reserve Bank target range for inflation in the long term.

(2) The allocation to equities has remained at around 60%, with the ERP on the *best estimate* basis remaining at 1.8% (being 3.0% x 60%). It is assumed that this allocation of 60% is applicable to both the in-service members and the pensioners.

(3): The actual salary increase awarded at 1 April 2016 of 7.6% has been explicitly allowed for and the long-term assumption is then applicable from the following year.

For the purposes of the above calculations, the yields were estimated from the yield curve at the valuation date, taking consideration of the duration of the Fund's in-service member liabilities. It was considered reasonable to apply the same yield to both the in-service members and the pensioners as the impact of using different valuation bases was small.

The allowance for future inflation is the difference between the nominal and index linked bond yields viz. {10.7% - 1.9%} = 8.8%. The result is reduced by an assumed inflation risk premium of 0.5%.

It can be seen from the above table that there is a decrease in the net pre-retirement discount rate and a slight decrease in the net post-retirement discount rate, which will result in, all else being equal, a slight increase in the past service liabilities and the required contribution rate.

D.3 Promotional Salary Increases

In addition to the salary inflation assumed, merit and promotional increases have been assumed as follows:

Age	Current	
	Other %	Services %
20	5.4	3.6
25	5.4	3.6
30	4.0	3.0
35	2.8	2.9
40	2.1	2.0
45	1.7	1.4
50	1.5	1.3
55	1.4	1.3

The scale of promotional increases is the same as that used for the previous valuation.

D.4 Pension Increases

The liabilities in respect of pension payments have been discounted at a rate of 5.53% per annum (being the net post-retirement valuation rate discussed in section D.2).

The allowance for pension increases depends on the reasonable expectations of pensioners and on the pension increase policy adopted and implemented in accordance with the requirements of Rule 23 of the Fund. The pension increase policy targets minimum pension increases of 75% of the increase in the consumer price index subject to a minimum pension equal to 75% of the original pension increased with full inflation, further subject to the affordability thereof. Consistent with previous valuations of the Fund, we have assumed that this can be represented by a pension increase of 80% of the inflation rate.

D.5 Demographic Assumptions

Willis Towers Watson completed an investigation into the demographic experience of the Fund over the period 1 April 2008 to 31 March 2012. Full details of the investigation were set out in our report finalised in October 2013: *“Government Employees Pension Fund Demographic Investigation: April 2008 – March 2012”*. The results of this investigation were adopted at the previous valuation.

The demographic assumption analysis was conducted separately in respect of the two categories of membership, namely *Services* members and *Other* members, and separately for males in females. Thus, demographic assumptions are set in respect of four categories.

We propose to retain the demographic assumptions as were used in the previous valuation. A sample of the independent decrement tables used in the current (and previous) valuation is shown in the following tables:

Pre-retirement mortality rates

Age	Male Services %	Female Services %	Male Other %	Female Other %
20	0.09	0.14	0.08	0.12
25	0.23	0.15	0.13	0.17
30	0.38	0.16	0.22	0.20
35	0.47	0.17	0.32	0.22
40	0.54	0.17	0.41	0.22
45	0.59	0.21	0.51	0.23
50	0.69	0.27	0.63	0.27
55	0.84	0.32	0.83	0.33
60	1.01	0.37	1.06	0.40
65	1.20	0.45	1.27	0.49

Post-retirement mortality rates

Age	Male %	Female %
50	2.24	1.20
55	2.24	1.18
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	12.01	8.97
90	18.60	14.59

Ill-health retirement rates

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	0.13	0.11	0.05	0.05
45	0.24	0.22	0.09	0.08
50	0.41	0.40	0.17	0.14
55	0.73	0.61	0.30	0.27
60	0.89	0.51	0.28	0.26
65	0.00	0.00	0.00	0.00

Normal health retirement rates

Age	Male Services %	Female Services %	Male Other %	Female Other %
55	8.83	8.83	1.75	2.62
56	3.01	3.01	1.75	2.62
57	2.84	2.84	1.72	2.48
58	2.67	2.67	1.91	2.55
59	5.33	5.33	2.05	2.70
60	80.77	80.77	13.49	19.86
61	20.15	20.15	8.16	13.66
62	20.15	20.15	7.85	12.46
63	20.15	20.15	7.45	12.03
64	20.15	20.15	12.05	12.20
65	37.74	37.74	78.62	82.74

Family statistics assumptions

We propose that the family statistics assumptions (e.g. proportion of members married at retirement and the age difference between husband and wife) be retained as follows.

Age	Proportion married %
20	25.0
25	32.5
30	46.0
35	65.0
40	80.0
45	92.5
50	97.5
55	97.5
60+	97.5

We have assumed that on average a husband would be four years older than his wife.

D.6 Expenses

It was assumed that future administration and other Fund expenses will be levied at a rate of 0.3% of payroll. This is based on the anticipated expenses as per the budget set by the GEPF and the Trustees and is reasonable when compared to the actual expenditure incurred.

D.7 Commutation

Members are paid a gratuity over and above their pension on retirement and no commutation of the pension is therefore allowed.

D.8 Suspended pensioners

Suspended pensioners have been valued on the same basis as in-force pensioners. Factors have then been applied to these calculated liabilities to allow for the reducing probability that pensions will recommence after they have been in suspension for several years. The factors applied are set in the table below and are unchanged from the previous valuation:

Years on suspension at the valuation date	Percentage reinstated
0 – 1	100%
1 – 2	80%
2 – 3	60%
3 – 4	40%
4 – 5	20%
5+	0%

D.9 Orphans' pensions

No explicit allowance has been made in the valuation for the liability in respect of contingent orphans' pensions, given the small number of such orphans and the expected amount of their liabilities. Only the current orphans' pensions in payment have been included in the calculated liability.

D.10 PF Notice No. 2 of 2016

On 8 July 2016, the Registrar issued PF Notice No. 2 of 2016 in which the reporting bases for defined benefit funds that fall under the Pension Funds Act is prescribed for all valuations with an effective date after 8 July 2016.

Whilst the Government Employees Pension Fund ("the Fund") is not subject to the requirements of the Pension Funds Act, 1956 and the notices thereto, we have considered 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 Pension Funds Act.

The Notice prescribes such funds must report on two bases, namely the "Funding Basis" and the "Bond Basis". Under the Funding Basis, the fund must assess its solvency on a basis which is very similar to the current best-estimate basis used for the valuation of the Fund. Specifically:

- The Notice permits an equity risk premium of 3% per annum to be applied to the equity and property assets of the Fund only. The valuation basis is consistent with this allowance.
- The Notice permits an inflation risk premium of 0.5% per annum to be used. The valuation basis is consistent with this allowance.

Thus the strength of the best-estimate valuation basis would meet the minimum requirements of this Notice in terms of the Funding Basis.

Appendix E: Sensitivity Analysis

The results of the actuarial valuation are dependent on a large number of assumptions regarding the financial development of the Fund. In order to provide the Trustees with an understanding of the sensitivity of the valuation results to changes in these assumptions, we have performed a sensitivity analysis. The sensitivity analysis assesses the impact on the valuation results of changes in the long-term assumptions.

The sensitivity of the long-term assumptions has been examined by varying the following key assumptions:

- the investment return assumption;
- the rate of salary increase; and
- the rate of pension increases.

These variations are summarised below:

	Valuation assumption	Variation
Investment return	12.5% per annum	± 1%
Salary increase	9.3% per annum	± 1%
Pension increases	6.6% per annum	± 1%

The minimum funding level and required employer contribution rate under these differentials are summarised in the tables below:

Minimum Funding Level

Assumption	-1%	Central	1%
Investment return	100.28%	115.83%	132.34%
Salary increase	123.59%	115.83%	108.05%
Pension increases	123.51%	115.83%	108.14%

We highlight the impact of the 1% per annum change in the investment return. The valuation results are clearly very sensitive to the change, and the Trustees should therefore consider this in light of the Equity Risk Premium allowed for in the valuation basis.

Required employer contribution rate

Assumption	-1%	Central	1%
Investment return	20.8%	15.6%	11.8%
Salary increase	13.0%	15.6%	18.9%
Pension increases	14.3%	15.6%	17.3%

Appendix F : Contingency Reserves

F.1 Data reserve

As a result of the concerns regarding the valuation data set out in Appendix B, it was deemed appropriate to maintain a data reserve, as the valuation liability may be understated as a result of errors or omissions in the valuation data. Although the data has been tested for overall reasonability and the administrator has undertaken an extensive exercise to improve the quality of the data, there remains the possibility that errors do exist in the data.

It should also be noted that there are possible discrepancies between the CIVPEN and PERSAL data sets. The data is generally only adjusted when a member exits the Fund.

As part of the previous valuation, the in-service member data reserve was set at 0.75% of the in-service member liability. The in-service member data reserve for the current valuation has been maintained at a level of **0.75% of the in-service member liability** or some R7 724million.

F.2 Discriminatory Practices Reserve

We have maintained the reserve in respect of previous discriminatory practices (PDP), being the accumulated value of 1% of the funding level in 1998. The value of this reserve, as per the Fund's financial accounts, was R7 852 million at the valuation date. The change in the value of the reserve since the last valuation relates to the allowance for Fund returns as well as a number of draw-downs which have occurred during the inter valuation period.

The reconciliation of the discriminatory practices reserve over the inter-valuation period is reflected below:

Discriminatory Practices Reserve (R'000)	Past Discriminatory Practices Reserve	General Assistants Reserve	Ciskei Strikers Reserve	Non-Statutory Forces Reserve
Balance at previous valuation	6 397 900	94 444	Nil	Nil
Benefits Paid	-	-	(12 741)	-
Net investment income	1 189 752	12 441	-	-
Methodology change	-	-	12 741	-
Balance at current valuation	7 587 652	106 885	Nil	Nil

The sum of the above reserve accounts amounts to R7 695 million, differing from the financial statements by R157 214 000 (the Ciskei Striker's Reserve as reflected in the financial statements). To date, the Fund has at the point of paying a benefit to an exiting member impacted by the Ciskei Strike, debited the reserve account to reflect the additional benefit paid. In practice, members have already been credited in full with the additional service and in order to be consistent with the liability (which reflects the full service), this portion of the reserve account should be released.

F.3 Solvency reserves

Solvency reserves can be determined in a number of different ways.

Historically, the Fund has used an asset-liability modelling approach as discussed in section F.4. This approach has again be used as the solvency basis for reporting purposes at the current valuation.

Alternative approaches (the discontinuance matched approach and the bond basis approach) are permitted or required, as appropriate, for funds governed by the Pension Funds Act. For information purposes, we have therefore explained these approaches and calculated the relevant reserves using these approaches in sections F.5 and F.6 respectively.

F.4 Solvency reserve for reporting purposes

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 (RisCura Consulting) using an asset-liability modelling (ALM) basis as was the case for the 2006, 2010, 2012 and 2014 valuations.

The parameters informing the model have been kept the same as were adopted in the 2014 calculation of the solvency reserve. That is, in setting the reserve, the value-at-risk measure of a 10% probability of becoming insolvent over a three-year time horizon was used.

The solvency reserve of R301.6 billion as at 31 March 2016 determined by RisCura has therefore been included in the valuation results set out in this valuation report. This corresponds to the solvency reserve of R303 billion as at 31 March 2014.

F.5 Solvency reserve – PF 117 approach: Discontinuance matched

Although the solvency reserve for valuation purposes has been calculated using the ALM approach as noted in section F.4, for comparative purposes the solvency reserve was also calculated on a discontinuance matched approach (DCM).

Pension Fund Circular 117 released by the Financial Services Board outlines the permissible basis for setting up solvency reserves on a DCM approach within funds. A maximum allowance may be made in the valuation basis for the costs of implementing and maintaining the matched investment strategy of 0.50%.

The lowest risk investment strategy would be to match the in-service member and pensioner liabilities using index-linked bonds, without any allowance for an equity risk premium. The solvency reserve should therefore be set relative to the cost of implementing such a strategy.

Accordingly, 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.

In effect, the solvency reserve represents the difference in past service liabilities on a conservative basis (to protect the long term solvency of the Fund and meet the reasonable benefit expectations of members and pensioners) and the liabilities on a realistic basis. A detailed breakdown is reflected in Appendix H.

At the valuation date index-linked bonds were trading at an average yield of 1.9%. The average yield on long dated nominal bonds at this date was 10.7%.

The maximum allowance for future inflation when determining the solvency reserve is the difference between the nominal and index-linked bond yields viz. $\{10.7\% - 1.9\% \} = 8.8\%$.

For the purposes of the above calculations, the yields were estimated from the yield curve at the valuation date, taking consideration of the duration of the Fund's in-service member and pensioner liabilities. The illustrative DCM solvency valuation basis is thus as follows:

Solvency basis (DCM approach)	2016	2014
Long-term inflation	8.8%	7.4%
Yield on nominal bond for appropriate duration	10.7%	9.6%
Less yield on real bond	(1.9%)	(2.2%)
Less Inflation Risk Premium	-	-
Pre-retirement discounting		
Net long-term investment return (A)	10.2%	9.1%
Gross return on nominal bond	10.7%	9.6%
Equity Risk Premium (based on a 3% ERP)	-	-
Cost of implementing and matching strategy	(0.5%)	(0.5%)
Long-term salary increases (B)	7.1%	6.0%
In excess of inflation *	(1.7%)	(1.4%)
Inflationary increase	8.8%	7.4%
Interest / salary differential $[(1+A) / (1+B)] - 1$	2.89%	2.92%
Post-retirement discounting		
Long-term investment return (A)	10.2%	9.1%
Pension increases (80% of long term inflation) (C)	7.0%	5.9%
Net post retirement valuation rate $[(1+A) / (1+C)] - 1$	2.99%	3.02%

* The real salary increase in excess of inflation has been set at a level that ensures a net 1.0% pre-retirement discount rate at the age of 40, after factoring in the *Other* members' promotional salary scale. This is an artificial limitation on the solvency reserve in accordance with PF 117 and should the rate not be limited in this manner, the discontinuance matched approach would yield a far higher reserve than is calculated based on the above.

The difference between the liabilities calculated on the solvency basis and best-estimate basis amounts to some R342 949 million, i.e. if the DCM approach was used to calculate the solvency reserve, a solvency reserve of this amount should be held were it affordable.

F.6 Solvency reserve – PF Notice No. 2 of 2016 approach: Bond basis

As discussed in Section D.10, the Notice applies to funds that fall under the ambit of the Pension Funds Act which must report valuation results on two bases, namely:

- **Funding basis:** The fund must assess its solvency on the “funding basis”, which is very similar to the current best-estimate basis used for the valuation of the Fund. Reserve accounts, to the extent they are affordable, can be established in addition to the liabilities.
- **Bond basis:** The “bond basis” is essentially the DCM approach described in section F.5, but the prescribed basis is typically weaker than the DCM solvency reserve as an assumption regarding an inflation risk premium is permitted in terms of the bond basis. However, it is noted that the DCM approach has an artificial limitation on the strength of the basis (a minimum pre-retirement discount rate of 1.0%, including the promotional salary scale has been adopted), and as a result of this limitation, the bond basis liability may in fact be higher than the DCM approach.

For the bond basis approach we have retained the same 0.5% inflation risk premium as is used in the best estimate liabilities. We believe 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 then the equity risk premium that is used in the best estimate basis.

The table below sets out a comparison of the underlying assumptions backing the calculations of the DCM and bond-basis approaches.

Solvency basis	Bond Basis approach 2016	DCM approach 2016
Long-term inflation	8.3%	8.8%
Yield on nominal bond for appropriate duration	10.7%	10.7%
Less yield on real bond	(1.9%)	(1.9%)
Less Inflation Risk Premium *	(0.5%)	-
Pre-retirement discounting		
Net long-term investment return (A)	10.7%	10.2%
Gross return on nominal bond	10.7%	10.7%
Equity Risk Premium (based on a 3% ERP)	-	-
Cost of implementing and matching strategy	-	(0.5%)
Long-term salary increases (B)	9.3%	7.1%
In excess of inflation *	1.0%	(1.7%)
Inflationary increase	8.3%	8.8%
Interest / salary differential [(1+A) / (1+B)] -1	1.28%	2.89%
Post-retirement discounting		
Long-term investment return (A)	10.7%	10.2%
Pension increases (80% of long term inflation) (C)	6.6%	7.0%
Net post retirement valuation rate [(1+A) / (1+C)] -1	3.85%	2.99%

* The 0.5% Inflation Risk Premium and the assumption of 1% long-term salary increase in excess of inflation are the same as that used in the best estimate basis.

The difference between the liabilities calculated on the bond basis and best-estimate basis amounts to some R432 583million, i.e. if the bond basis approach was used to calculate the solvency reserve, a solvency reserve of this amount should be held were it affordable.

It is noted that this value is significantly higher than the DMC approach, despite the higher net-post retirement discount rate (which should result in a lower liability amount). The higher liability arises from not applying the 1.0% artificial net discount rate pre-retirement.

The various solvency reserve approaches are discussed further in Appendix H.

F.7 100% CPI pension increase reserve

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).

The pension increase reserve has been established to provide for the possibility of granting pension increases of 100% of CPI. Separate reserves provide for the increase in the in-service member and pensioner liabilities and the present value of the increase in contribution rates that would be required to make an allowance to be able to grant future pension increases of 100% of 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 of 80% of CPI, as explained in Appendix D.3 of this report.

The 100% CPI pension increase reserves amounted to R304 128 million and the following table splits this reserve into its three components:

	Total (R'm)
In-service member liability	128 273
Pensioner liability	50 587
Future service contribution rate	125 268
100% CPI pension increase reserve	304 128

F.8 Mortality improvement reserve

Significant mortality improvements 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 largely through the advances of science, medicine and living conditions. It is appropriate to include an explicit allowance for mortality improvement in this valuation as was done in the previous valuation.

Mortality improvement for in-service members

In order to make an allowance for future improvements in mortality, we have used post-retirement mortality rates for in-service members equal to the mortality rates used in the best estimate valuation basis (derived from an experience analysis of the actual mortality experienced by the Fund) rated down two and a half years. i.e. we assume that a future pensioner is two and a half years younger than their actual age which allows for a longer expected lifetime. This issue should continue to be investigated for future valuations.

Mortality improvement for current pensioners

We have used mortality rates for pensioners equal to the mortality rates used in the best estimate valuation basis (derived from an experience analysis of the actual mortality experienced by the Fund) rated down one and half years. That is, we assume that pensioners are one and a half years younger than their actual age. This issue should continue to be investigated for future valuations.

Value of mortality improvement reserve

The allowance for post-retirement mortality improvements amounts to R29 686 million and R11 654 million for in-service members and pensioners respectively.

F.9 Summary of contingency reserves

The table below sets out a summary of the various reserves that are recommended for the Fund. We reflect the extent to which these reserves have been established at the current and previous valuation dates:

Contingency Reserve Accounts	31 March 2016 (recommended) R million	31 March 2016 (established) R million	31 March 2014 (recommended) R million	31 March 2014 (established) R million
Fully funded and considered as part of the minimum funding level:				
In-service member data (Appendix F1)	7 724	7 724	6 590	6 590
Discriminatory practices reserve (Appendix F2)	7 695	7 695	6 492	6 492
Fully funded reserves	15 419	15 419	13 082	13 082
Funded to the level affordable and considered as part of the long-term funding level:				
Solvency reserve (Appendix F3)	301 581	103 819	303 000	141 155
100% CPI Reserve (Appendix F6)	304 128	104 697	204 457	95 247
Mortality Improvement (Appendix F7)	41 340	14 231	33 918	15 801
Partially funded reserves	647 049	222 747	541 375	252 203
Combined Reserves	662 468	238 166	554 457	265 285

The reserve accounts reflected in Sections F1 and F2 have therefore been funded in full, whilst the reserves in the balance of the sections have been proportionately funded to the extent affordable, namely some 34.4% as at the valuation date (some 46.6% at the previous valuation).

Appendix G: Summary of Liabilities and Required Contribution Rates

G.1 Past service liabilities

A comparison of the best-estimate liability (excluding the data reserve and the past discriminatory practice reserve) at the current and previous valuation dates is set out below:

	Current Valn. R'000	Previous Valn. R'000
In-service member liability	1 029 889 384	878 720 976
Members' normal retirement & spouses' contingent pensions	900 860 925	764 275 226
Spouses' death in service pensions & lump sums	87 156 829	77 646 777
Members' and spouses' ill-health pensions & lump sums	41 871 630	36 798 973
S-case and exits in progress liability	12 063 346	18 154 251
Pensioner liability	349 805 240	263 552 153
Male pensioner liability	138 087 804	110 045 142
Female pensioner liability	138 497 519	96 128 579
Widower pensioner liability	7 642 755	5 346 254
Widow pensioner liability	65 577 162	51 839 786
Suspended pensioner liability*	-	192 392
Deferred pensioner liability	381	6 438
Total past service liabilities	1 391 758 351	1 160 433 818

* The suspended pensioner liability has been included with the balance of the pensioner liability in the current valuation. Suspended pensioners have been valued on the same basis as in-force pensioners calculated liabilities, but have been reduced by a factor based on years of suspension, in order to allow for the reducing probability that pensions will recommence after they have been in suspension for several years.

G.2 Past service liabilities split by employer type

A breakdown of the current valuation best-estimate in-service member liability between the employer types is set out below:

	Services R'000	Other R'000
In-service member liability		
Members' normal retirement & spouses' contingent pensions	193 684 919	707 176 006
Spouses' death in service pensions & lump sums	22 971 172	64 185 657
Members' and spouses' ill-health pensions & lump sums	17 330 240	24 541 390
Total in-service member liabilities	233 986 331	795 903 053

G.3 Required Contribution Rate

The required contribution rate, in respect of the two years following the current valuation date is as follows (the contribution rate following the previous valuation is reflected for comparison):

	2016 rate	2014 rate
Funded Benefits:	22.8%	22.0%
Retirement Benefits	18.8%	18.0%
Death in service prospective pensions	1.2%	1.2%
Death in service lump sum	1.2%	1.2%
Ill health pensions	0.8%	0.8%
Ill health lump sum	0.2%	0.2%
Mortality improvement	0.6%	0.6%
Allowance for Fund expenses	0.3%	0.3%
Total Contribution rate for in-service members	23.1%	22.3%
Less: Member contributions	(7.5%)	(7.5%)
Required employer contribution rate	15.6%	14.8%
Current employer contribution rate	13.5%	13.5%

G.4 Required contribution rate split by employer type

	Services Members Current Valuation	Other Members Current Valuation
Funded Benefits:	26.8%	22.0%
Retirement benefits	20.8%	18.4%
Death in service prospective pensions	1.7%	1.1%
Death in service lump sum	1.5%	1.2%
Ill health pensions	1.7%	0.6%
Ill health lump sum	0.5%	0.1%
Mortality improvement	0.6%	0.6%
Allowance for Fund expenses	0.3%	0.3%
Total contribution rate for in-service members	27.1%	22.3%
Less: Member contributions	(7.5%)	(7.5%)
Required employer contribution rate	19.6%	14.8%
Current employer contribution rate	16.0%	13.0%

G.5 Cost of additional pensionable service for “Services” members

	Including 25%	Excluding 25%
Funded Benefits:	26.8%	22.6%
Retirement benefits	20.8%	17.6%
Death in service prospective pensions	1.7%	1.4%
Death in service lump sum	1.5%	1.3%
Ill health pensions	1.7%	1.5%
Ill health lump sum	0.5%	0.3%
Mortality improvement	0.6%	0.5%
Allowance for Fund expenses	0.3%	0.3%
Total Contribution rate for in-service members	27.1%	22.9%
Less: Member contributions	(7.5%)	(7.5%)
Required employer contribution rate	19.6%	15.4%
Current employer contribution rate	16.0%	16.0%

Appendix H: Solvency Reserve Details

H.1 Solvency Reserve for reporting purposes

As noted in Appendix F.4, the solvency reserve for reporting purposes has been based on the ALM approach using the solvency reserve calculated by Riscura.

H.2 Solvency Reserve based on the DCM Approach

For illustrative purposes, we have reflected the breakdown of the solvency reserve account on the discontinuance matched approach had this approach been used for reporting purposes.

	Current Valn. R'000	Previous Valn. R'000
In-service member liabilities and reserves	1 284 431 458	1 129 762 830
Members' normal retirement & spouses' post death pensions	1 126 215 097	986 379 710
Spouses' death in service pensions & lump sums	103 888 492	94 535 805
Members' and spouses' ill-health pensions & lump sums	54 327 869	48 847 315
S-case and exits in progress	12 063 346	18 154 251
Pensioners liabilities and reserves	438 212 427	330 455 289
Male pensioners	173 272 372	135 340 286
Female pensioners	173 279 681	117 845 136
Widower pensioners	9 441 231	7 130 831
Widow pensioners	82 219 143	69 897 805
Suspended pensioners	-	241 231
Deferred Pensioners liabilities and reserves	508	8 113
Total past service liabilities and reserves (A)	1 734 707 739	1 478 380 483

Accrued service actuarial liabilities based on valuation basis is shown below:

	Current Valn. R'000	Previous Valn. R'000
Total Past Service Liabilities (see Appendix G1) (B)	1 391 758 351	1 160 433 818

Solvency reserve required on a discontinuance matched approach is shown below:

	Current Valn. R'000	Previous Valn. R'000
Required Solvency reserve on DCM approach (A – B)	342 949 388	317 946 665

H.3 Solvency Reserve based on Bond Basis Approach

The table below sets out the required solvency reserve as at 31 March 2016 on the bond basis approach had this approach been used for reporting purposes. The reserve was not calculated at the previous valuation date under this methodology.

	Current Valn. R'000	Previous Valn. R'000
In-service member liabilities and reserves	1 407 431 583	N/A
Members' normal retirement & spouses' post death pensions	1 242 064 540	N/A
Spouses' death in service pensions & lump sums	109 450 905	N/A
Members' and spouses' ill-health pensions & lump sums	55 916 138	N/A
S-case and exits in progress	12 063 346	N/A
Pensioners liabilities and reserves	404 846 058	N/A
Male pensioners	160 366 833	N/A
Female pensioners	160 586 023	N/A
Widower pensioners	8 688 316	N/A
Widow pensioners	75 204 886	N/A
Suspended pensioners	0	
Deferred Pensioners liabilities and reserves	469	N/A
Total past service liabilities and reserves (A)	1 824 341 456	N/A

Accrued service actuarial liabilities based on valuation basis is shown below:

	Current Valn. R'000	Previous Valn. R'000
Total Past Service Liabilities (see Appendix G1) (B)	1 391 758 351	N/A

Solvency reserve required on a bond basis approach is shown below:

	Current Valn. R'000	Previous Valn. R'000
Required solvency reserve on bond basis approach (A – B)	432 583 105	N/A

H.4 Comparison of the various solvency reserve approaches

The table below sets out a comparison of the different approaches to setting the required solvency reserve as at 31 March 2016.

Results	ALM R'000	DCM R'000	Bond Basis R'000
Best estimate liability active members*	1 041 952 730	1 041 952 730	1 041 952 730
Solvency reserve active members	- ***	254 542 074	377 542 199
Percentage of best estimate liabilities	- ***	24.4%	36.2%
Best estimate liability pensioners**	349 805 621	349 805 621	349 805 621
Solvency reserve pensioners	- ***	88 407 314	55 040 906
Percentage of best estimate liabilities	- ***	25.3%	15.7%
Total best estimate liabilities ****	1 391 758 351	1 391 758 351	1 391 758 351
Total solvency reserve	301 581 000	342 949 388	432 583 105
Percentage of best estimate liabilities	21.7%	24.6%	31.1%

* Provisions for S-cases are included in the active members' liability.

** Deferred pensioners are included in the pensioners' liability.

*** The ALM approach does not split the solvency reserve between in-service members and pensioners

**** These exclude the data reserve and past discriminatory practice reserve reflected as liabilities in the valuation results

The active member solvency reserve calculated under the bond basis approach is higher than the DCM approach – this is as a result of the limitation on the salary increase assumption under the DCM approach.

The pensioner solvency reserve under the bond basis approach is lower than under the DCM approach – this is expected given the higher net post-retirement rate.

The solvency reserves, split between the active members and the pensioners, and calculated as a percentage of the best-estimate liabilities make more “sense” under the bond basis approach when compared to the DCM approach, as it should be expected that the pensioner reserve as a percentage is lower given the shorter duration of the liabilities.

Overall, the bond basis approach yields a higher reserve (and consequently, a lower funding level, some 5% lower) than the DCM approach at 31 March 2016. It is expected that this will remain the case until such time as discount rates increase substantially, without an increase in the inflation rate (this is an unlikely long-term outcome).

The table below sets out the underlying assumptions backing the calculations of the best estimate liabilities and the solvency reserves under DCM and bond-basis approaches.

Assumptions	Best Estimate Basis	DCM Basis	Bond Basis
Discount rate (A)	12.5%	10.2%	10.7%
Inflation rate (B)*	8.3%	8.8%	8.3%
Salary increase rate (C) (B + 1.0%) **	9.3%	7.1%	9.3%
Pension increase rate (D) (80% of B)	6.6%	7.0%	6.6%
Net pre ret discount rate $(1+A) / (1+C) - 1$	2.93%	2.89%	1.28%
Net post ret discount rate $(1+A) / (1+D) - 1$	5.53%	2.99%	3.85%
Promotional salary scale	Per investigation	Modified	Per investigation

* For the bond-basis approach we have retained the same 0.5% inflation risk premium as is used in the best estimate liabilities. We believe 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 therefore in the two bases is then the equity risk premium that is used in the best estimate basis.

** This is applicable to the best estimate and bond bases where the artificial limit on the salary increase assumption is not applied.

Appendix I: Notional Pensioner Accumulation Amount

It is important to note that the Fund is not governed in terms of the Pension Funds Act and that there are no requirements in terms of the Fund's Rules and the GEP Law to separate "pensioner assets" from the other assets of the Fund. This Appendix is therefore only included for illustrative purposes and should the Fund fall under the Pension Funds Act in the future.

The Pension Funds Act prescribes a minimum pension increase test every three years equal to the greater of the increase that would be granted under the pension increase policy of the Fund and the lesser of:

- a "write-up" increase such that current pension liabilities equate to the value of the notional pensioner assets referred to as the notional pensioner accumulation amount (the "NPAA"), if this amount is larger than current pension liabilities; and
- a CPI increase, where each pensioner is granted a CPI related increase since the inception of the pension.

Our interpretation of the wording of the Pension Funds Act requires that the NPAA be calculated with reference to surviving pensioners only. A wider interpretation of this NPAA would suggest that it represents the assets attributable to the pensioners of the Fund, i.e. including profits realised on the death of pensioners.

Applying this wider interpretation of the NPAA to the Fund, we can effectively compare the "assets" backing the pensioner liability against the liability itself to determine whether any excess exists that could be utilised to strengthen the case for the award of a pension increase.

Calculation of notional pensioner accumulation amount for the current valuation:

A. Opening balance

The opening balance was set equal to the balance in the NPAA at the previous valuation date, which in turn has been built up from previous valuation dates.

B. Less pension payments

The pension payment amounts were derived from the financial statements, assumed to be deducted uniformly over each financial year.

C. Plus new entrants to the account

The value of all new retirements and all new spouses' pensions arising from the death of a member are added into the NPAA (spouse's pensions arising from deaths of pensioners are already reflected in the assets). The amount introduced into the account represents the best estimate actuarial liability and

allowance for the appropriate funded contingency reserves at the date of the commencement of the pension.

D. Exits from the account

There are no exits from the NPAA, as all the assets are assumed to remain behind for the purposes of meeting the pension increases for the remaining pensioners.

E. Plus investment returns credited to the account

The investment returns achieved by the Fund over the period, net of investment management fees, were credited to the account. The Fund has no assets specifically earmarked to meet the pensioner liability and it was therefore considered reasonable to use the returns applicable to the Fund as a whole. Note that if the Fund in the future formally separates the pensioner assets from the other assets, it may be appropriate to allocate assets and investment returns on a basis that better matches the nature of the pensioner liabilities.

We have reconciled the returns used to the reported returns over the same period and are satisfied that the returns used reflect the actual net investment return achieved by the Fund.

F. Less pensioner expenses

An allowance is made in respect of the expenses incurred in administering the pensions in payment.

G. Value of the Pensioner Accumulation Amount at the current valuation date:

The value of the notional pensioner accumulation amount calculated in terms of the above paragraphs amounted to **R481 276 million** as at 31 March 2016. This exceeds the value of the best estimate actuarial liabilities by some **R131 471 million (137.6% minimum funding level)**, but is less than the best estimate liabilities and the solvency reserves and contingency reserves in respect of pensioners and suspended pensioners by some **R7 232 million (98.5% long term funding level)**.

H. Value of the Pensioner Accumulation Amount at the previous valuation date:

The value of the notional pensioner accumulation amount calculated at the previous valuation date amounted to **R370 635 million**. This exceeded the value of the best estimate actuarial liabilities by some **R107 083 million (140.6% minimum funding level)**, but was less than the best estimate liabilities and the solvency reserves and contingency reserves in respect of pensioners and suspended pensioners by some **R2 551 million (99.3% long term funding level)**.

The position of the Pensioner Accumulation Amount has thus decreased slightly over the inter-valuation period.

Appendix J: Actuarial Interest Factors

The actuarial interest factors (based on the statutory actuarial valuation as at 31 March 2014) that came into effect on 1 April 2015 have been updated to reflect the revised results of the statutory actuarial valuation of the Fund as at 31 March 2016. 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.

J.1 F_Z factors applicable to members under the age of 55 years

Age	Current F(Z) Services	Current F(Z) Other	Proposed F(Z) Services	Proposed F(Z) Other
20	0.2251	0.1677	0.2210	0.2142
21	0.2252	0.1686	0.2210	0.2147
22	0.2254	0.1694	0.2210	0.2160
23	0.2255	0.1702	0.2210	0.2169
24	0.2257	0.1719	0.2211	0.2171
25	0.2259	0.1735	0.2211	0.2173
26	0.2260	0.1752	0.2215	0.2175
27	0.2262	0.1768	0.2220	0.2175
28	0.2264	0.1785	0.2225	0.2176
29	0.2268	0.1801	0.2229	0.2175
30	0.2271	0.1818	0.2235	0.2174
31	0.2275	0.1834	0.2242	0.2173
32	0.2279	0.1851	0.2247	0.2171
33	0.2282	0.1873	0.2251	0.2170
34	0.2286	0.1895	0.2256	0.2168
35	0.2291	0.1917	0.2258	0.2167
36	0.2296	0.1939	0.2258	0.2165
37	0.2301	0.1961	0.2260	0.2164
38	0.2308	0.1983	0.2259	0.2166
39	0.2316	0.2005	0.2261	0.2173
40	0.2323	0.2027	0.2262	0.2181
41	0.2331	0.2062	0.2272	0.2191
42	0.2339	0.2080	0.2286	0.2203
43	0.2348	0.2102	0.2300	0.2217
44	0.2366	0.2125	0.2320	0.2231
45	0.2385	0.2150	0.2345	0.2250
46	0.2406	0.2176	0.2370	0.2268
47	0.2432	0.2204	0.2397	0.2289
48	0.2458	0.2233	0.2423	0.2310
49	0.2485	0.2263	0.2451	0.2333
50	0.2514	0.2294	0.2480	0.2357
51	0.2545	0.2331	0.2512	0.2381
52	0.2575	0.2369	0.2544	0.2407
53	0.2610	0.2410	0.2578	0.2435
54	0.2662	0.2451	0.2612	0.2464

J.2 A_x factors applicable to members age 55 years or older

Age	Current A(X) Services	Current A(X) Other	Proposed A(X) Services	Proposed A(X) Other
55	13.7030	12.3302	14.4818	13.3962
56	13.5063	12.1524	13.7942	12.9557
57	13.1791	12.0555	13.2715	12.5909
58	12.8107	11.9641	12.8694	12.2936
59	12.4670	11.7526	12.6033	12.0573
60	12.0244	11.5293	12.1287	11.7847
61	12.0484	11.8003	12.1926	11.9525
62	12.0728	11.9488	12.2199	12.0206
63	11.9756	11.9136	12.1549	11.9778
64	11.8137	11.7826	11.9330	11.8866
65	11.6517	11.6517	11.7046	11.7046
66	11.4185	11.4185	11.4682	11.4682
67	11.1792	11.1792	11.2261	11.2261
68	10.9343	10.9343	10.9790	10.9790
69	10.6852	10.6852	10.7268	10.7268
70	10.4312	10.4312	10.4709	10.4709
71	10.1745	10.1745	10.2111	10.2111
72	9.9148	9.9148	9.9491	9.9491
73	9.6520	9.6520	9.6840	9.6840
74	9.3874	9.3874	9.4172	9.4172
75	9.1217	9.1217	9.1494	9.1494
76	8.8568	8.8568	8.8822	8.8822
77	8.5939	8.5939	8.6171	8.6171
78	8.3336	8.3336	8.3546	8.3546
79	8.0772	8.0772	8.0965	8.0965
80	7.8259	7.8259	7.8436	7.8436

These actuarial interest factors are discussed in a separate report accompanying this statutory actuarial valuation titled: “*Actuarial Interest Factors following 31 March 2016 valuation*”, which provides further detail on the methodology applied in deriving these factors.

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