

# SUMMARY OF THE SCHEME ACTUARY'S VALUATION REPORT FOR THE PURPOSE OF RULE 76.1

## Universities Superannuation Scheme

April 2018

**NOTE:** In line with scheme rules, the Scheme Actuary's report was submitted to USS's Joint Negotiating Committee (JNC) in December 2017 to formally set out the Trustee's conclusions on the required contribution rate for maintaining the scheme's existing benefit structure.

The assumptions and approach adopted reflect the feedback from the consultation with Universities UK in September 2017.

The Scheme Actuary's report is the basis on which the JNC decides the scheme's future benefit structure and cost-sharing arrangements.

In order for the 2017 valuation to be completed in accordance with statutory and regulatory requirements, a further report will be completed by the Scheme Actuary and submitted to the Pensions Regulator.

# 1

## INTRODUCTION AND CONCLUSIONS

1. In December 2017 the Scheme Actuary (Ali Tayyebi of Mercer) provided a report to the Trustee solely for the purposes of Rule 76.1 of the Scheme's Rules ("the Scheme Actuary's Report"). The Scheme Actuary's Report set out the results of the calculations relating to the contribution rate for maintaining the current benefits. The Scheme Actuary's Report was shared with the JNC on 19 December 2017.
2. The Scheme Actuary's Report was prepared with the intention of it being a confidential document addressed to the Trustee. As such, Mercer does not consider it appropriate for it to be made public. This document therefore sets out the key results and conclusions contained in the Scheme Actuary's Report. The Scheme Actuary has reviewed this document and confirmed it is consistent with his report to the Trustee.

### CONTRIBUTION REQUIREMENTS

3. The total contribution requirement was made up of two elements:-
  - i. The cost of maintaining the continued accrual of current benefits for future service – the "**future service contribution rate**", plus
  - ii. The contribution rate required to correct the shortfall in assets compared to the capitalised present value of the benefits payable in respect of past service (the "past service liabilities") – this element of the contribution rate is referred to as the "**deficit contribution rate**"
4. The actuarial assumptions which are used to determine the past service liabilities are referred to as the "technical provisions basis" and the same set of assumptions are used to determine the future service contribution rate. The Trustee is responsible for selecting the technical provisions assumptions after seeking advice from the Scheme Actuary. The assumptions were determined as being appropriate based on the Trustee's assessment of the strength of the Employer covenant, having consulted with the Employers (via UUK) over the approach.
5. The technical provisions assumptions include assumptions for projecting forward the future benefit payments – these assumptions include, for example, rates of future inflation, mortality rates, rates of retirement etc. The most material technical provisions assumption is then the assumption for putting a present value on those payments – this is known as the "discount rate" and is based on a prudent assumption for the expected return on the Scheme's investment strategy now and over the longer term, which was in turn based on advice from the Trustee's investment adviser USSIM.

6. The key results of the calculations contained in the Scheme Actuary's Report are set out in Section 2. The Scheme Actuary's Report contained only the results of those calculations and did not contain details of the advice which was covered in various papers delivered throughout the valuation process.
7. The Scheme Actuary's Report did however note that given the significant range of possible outcomes for future investment returns in practice, there can be no right answer to the selection of the discount rate, and significant judgement is required in this area. The Scheme Actuary's Report therefore also set out illustrative results on alternative sets of assumptions (i.e. best estimate and self-sufficiency) which were referenced by the Trustee in coming to its decision on the technical provisions assumptions – and in particular the level of “prudence” which is adopted in those assumptions – and also in deciding what contribution rate should be paid towards the deficit. These are also set out in Section 2 along with commentary on the experience since the last valuation.
8. The full set of technical provisions assumptions used for the results set out in the Scheme Actuary's Report are set out in the Appendix to this paper. These assumptions were decided by the Trustee, having taken advice from the Scheme Actuary, as being appropriate if the current benefit levels are maintained. They may change if future benefits were to change.

## CONCLUSIONS

9. Based on the approach described above the Scheme Actuary's Report noted the following as its key conclusions as at 31 March 2017:-
  - a. *“There was a shortfall of £7.5bn in the funds held by the Scheme (the “assets”) against the cost of providing the benefits built up by members at the valuation date calculated using the Trustee's technical provisions basis (the “liabilities”);*
  - b. *The total (employer + employee) contribution rate to cover next year's cost of the benefits that active members will build up, including the cost of DC benefits and other costs incurred in running the Scheme was 31.4% of members' total pensionable salaries. If the assumptions are borne out in practice then the cost of future benefit accrual would be expected to reduce over the longer term;*
  - c. *The contribution rate that the Trustee has determined should be payable towards the correction of the deficit is 6% of members' total Pensionable salaries commencing no later than 1 April 2019, and;*
  - d. *Based on the above, the total employer + employee contribution rate to cover the cost of next year's future benefit accrual plus the deficit contribution rate totals 37.4% of members' total pensionable salaries.*

*As a result, if the benefit structure is maintained, the current employer plus member contribution rates of 18% plus 8% is insufficient to fund the scheme on a prudent basis.*

*It should also be noted that the covenant assessment has identified that an employer contribution rate above 25% of total pensionable salaries “would be feasible but .... would put pressure on the sector”; such a contribution rate might also mean it would leave certain participating employers very little capacity to respond to further deterioration in the funding position. The required employer contribution rate may be very close to or even exceed this level if there are no proposals to change benefits. In this circumstance the Trustee will need to consider what additional contingent provisions and monitoring needs to be put in place alongside the implementation of the increased employer contribution rate above to ensure that the overall risk remains within acceptable parameters.”*

## 2

## KEY RESULTS

## PAST SERVICE FUNDING POSITION: TECHNICAL PROVISIONS

The table below compares the assets and liabilities of the Scheme at 31 March 2017. Figures are also shown for the last formal actuarial valuation as at 31 March 2014 for comparison.

	£ billions	
	31 March 2017	31 March 2014
<b>Total assets</b>	<b>60.0</b>	<b>41.6</b>
<b>Liabilities:</b>		
<i>Active members</i>	<i>32.1</i>	<i>23.5</i>
<i>Deferred pensioners</i>	<i>8.8</i>	<i>4.9</i>
<i>Pensioners</i>	<i>26.6</i>	<i>18.5</i>
<b>Total liabilities</b>	<b>67.5</b>	<b>46.9</b>
<b>Past service surplus / (shortfall)</b>	<b>(7.5)</b>	<b>(5.3)</b>
<b>Funding level</b>	<b>89%</b>	<b>89%</b>

The Scheme contains a defined contribution section (Investment Builder) which at 31 March 2017 held assets of £0.5bn which are invested separately. These assets exactly match the value of the liabilities they cover and both have been excluded from the table.

The assets and liabilities of the Supplementary Scheme are included in the figures above.

The table shows that at 31 March 2017 there was a shortfall of £7.5bn. An alternative way of expressing the position is that the Scheme's assets were sufficient to cover 89% of its liabilities – this percentage is known as the funding level of the Scheme.

At the previous valuation at 31 March 2014 the shortfall was £5.3bn, also equivalent to a funding level of 89%.

## RISK AND PRUDENCE

The Trustee is required by law to set assumptions for its main funding measure, the technical provisions, prudently to allow for a margin of adverse experience relative to best estimate assumptions, i.e. the technical provisions need to represent a position more cautious than a best estimate.

In setting the technical provisions the Trustee also considers the reliance that a given level of technical provisions places on participating employers, being the difference between the level of assets being targeted if the Scheme is fully funded on the technical provisions basis and the assets required to move the Scheme to a low-risk, 'self-sufficient' portfolio – one that would have a low probability of requiring any further employer contributions in respect of benefits earned up to that point in time.

In reaching decisions on the appropriate level of the technical provisions, the Trustee therefore also considered the value of the liabilities on a 'best estimate' basis and 'self-sufficiency basis' and the results on these bases at 31 March 2017 are set out below:

	£ billions		
	Best estimate	Technical Provisions	Self-Sufficiency
<b>Total assets</b>	<b>60.0</b>	<b>60.0</b>	<b>60.0</b>
<b>Total liabilities*</b>	<b>54.8</b>	<b>67.5</b>	<b>82.4</b>
<b>Past service surplus / (shortfall)</b>	<b>5.2</b>	<b>(7.5)</b>	<b>(22.4)</b>
<b>Funding level</b>	<b>109%</b>	<b>89%</b>	<b>73%</b>
<i>*All these liability calculations use the same mortality assumptions as the technical provisions basis. If the best estimate mortality was used then this would reduce the best estimate liabilities by around 0.5% or £0.3bn</i>			

## CORRECTING THE TECHNICAL PROVISIONS SHORTFALL

The Trustee has determined that in order to correct the shortfall of £7.5bn the Employers should make deficit contributions of 6.0% p.a. of total salaries after allowing for future service contributions and contributions to the DC section.

Its deficit contribution are payable at this level from 1 April 2019 and if experience is in line with the technical provisions assumptions this would expect to correct the deficit by mid-2033. If experience is in line with the Trustee's best estimate assumptions the deficit will be cleared sooner.

## FUTURE SERVICE CONTRIBUTIONS

The table below gives a breakdown of the future service cost at 31 March 2017 and also shows the cost at 31 March 2014 for comparison. Active members currently pay contributions to the Scheme as a condition of membership, at the rate of 8% of Pensionable Salary. They are therefore deducted from the future service rate to calculate the Employers' future service contribution rate (prior to any application of the cost-sharing mechanism).

	% of total salaries p.a. (allowing for DB salary threshold and DC section)	
	31 March 2017	31 March 2014
Total normal cost of DB pension benefits (including life assurance)	28.1	20.4
Allowance for DB expenses	0.4	0.4
Total cost of DC benefits	2.9	3.1*
Total future service contribution rate for DB and DC benefits	31.4	23.9

*\* The formal report on the 2014 actuarial valuation contained an additional 0.3% within the cost of DC benefits in respect of death in service and ill health benefits that was subsequently reallocated to DB. The treatment here is consistent with this approach.*

In addition to the cost of future benefit accrual the Scheme incurs costs related to ongoing administration, levies such as the PPF levy. A provision for this is included by adding 0.4% of pensionable salary to the total contribution rate (included in the above). Investment expenses have been allowed for implicitly in determining the discount rate.

If the assumptions underlying the technical provisions are borne out, the cost of future benefit accrual would be expected to reduce over the longer term.

## ESTIMATED WIND-UP POSITION

The table below shows an estimate of the funding level of the Scheme at 31 March 2017 assuming all benefits were bought out with an insurer, together with the position as at 31 March 2014 for comparison.

Insurance companies use different assumptions to the Trustee's technical provisions when calculating the value of the Scheme's liabilities and the price they would charge to provide the benefits. The wind-up position was shown in the Scheme Actuary's report for information only, and does not mean that the Trustee or Employers are considering winding up the Scheme.

	£ billions	
	31 March 2017	31 March 2014
<b>Total assets</b>	<b>60.0</b>	<b>41.6</b>
<b><i>Liabilities:</i></b>		
<i>Active members</i>	69.6	42.3
<i>Deferred pensioners</i>	20.2	9.1
<i>Pensioners</i>	32.5	25.0
<i>Expenses</i>	1.6	0.9
<b>Total liabilities</b>	<b>123.9</b>	<b>77.3</b>
<b>Past service surplus / (shortfall)</b>	<b>(63.9)</b>	<b>(35.7)</b>
<b>Funding level</b>	<b>48%</b>	<b>54%</b>

# 3

## EXPERIENCE SINCE LAST VALUATION

### SUMMARY OF KEY CHANGES IN THE INTER-VALUATION PERIOD

The most recent formal actuarial valuation was carried out with an effective date of 31 March 2014. Since then a number of changes to the benefits provided by the Scheme have come into force. All changes were agreed prior to and allowed for in the finalisation of the 2014 valuation. The key changes agreed included:

- Final Salary section members – accrued entitlement up to 31 March 2016 is calculated using pensionable salary and service immediately prior to this date. These benefits revalue in line with increases in official pensions from that point.
- Defined benefit accrual after 31 March 2016 is on a Career Revalued Benefit (CRB) basis for all members with a pension accrual of 1/75th – and a cash lump sum of 3/75ths – of salary for each year of service.
- From 1 October 2016 defined benefit accrual is based on salary up to a threshold only. The threshold was set to £55,000 for 2016/17, increasing with CPI thereafter (subject to certain limits).
- From 1 October 2016 a new defined contribution benefit was introduced for salary in excess of the salary threshold. Total contributions of 20% of salary above the salary threshold (including member contributions of 8% of salary above the salary threshold) are made to the defined contribution section.
- Member contributions increased to 8% of salary from 1 April 2016.
- Members can opt to pay additional contributions into the defined contribution section of which the first 1% of salary is to be matched by the Employer.

The Trustee has carried out a detailed review of actuarial assumptions, including a detailed review of the Scheme's own experience. This has led to a number of amendments having been proposed and consulted on and these are reflected in the assumptions set out in the Appendix to this paper.

### SUMMARY OF EXPERIENCE OVER THE INTER-VALUATION PERIOD

The average Pensionable Salary increase for pre 1 October 2011 members who were in service from 31 March 2014 to 31 March 2016 (when the Final Salary link was broken) was 4.5% per annum.

Pensions in payment were increased as guaranteed under the Scheme as follows (other than Guaranteed Minimum Pension (GMP) amounts with limited increases):

- April 2014 2.7%
- April 2015 1.2%
- April 2016 Nil (CPI annual change was -0.1%)
- April 2017 1.0%

Over the 3-year period since the 2014 valuation, the investment return on the Scheme's assets has been c13.0% per annum.

The table summarises the contributions paid over the three year period since the 2014 valuation. These figures are from the audited accounts and are in line with the rates agreed at the last actuarial valuation. The figures below include contributions in to the defined benefit section, defined contribution section, section 75 debt, Main AVC section, Money Purchase AVCs and supplementary section.

DATE	EMPLOYERS' CONTRIBUTIONS	MEMBERS' CONTRIBUTIONS
1 April 2014 to 31 March 2015	£1.6bn (including £0.4bn of salary sacrifice)	£0.2bn
1 April 2015 to 31 March 2016	£1.7bn (including £0.4bn of salary sacrifice)	£0.2bn
1 April 2016 to 31 March 2017	£1.9bn (including £0.5bn of salary sacrifice)	£0.2bn

### REASONS FOR THE CHANGE IN FUNDING POSITION SINCE THE LAST ACTUARIAL VALUATION

The shortfall at the last valuation date was £5.3bn. The table below sets out the main reasons for the increase in the shortfall between 31 March 2014 and 31 March 2017.

<b>Shortfall at 31 March 2014</b>	<b>£5.3bn</b>
Expected interest on shortfall	0.9
Employers' contributions over inter-valuation period*	-0.2
Higher than expected investment returns	-11.0
Lower than assumed pension increases	-1.7
Change in underlying financial conditions (assuming 2014 Valuation approach)	20.0
Change in approach to setting financial assumptions	-3.0
Change in demographic assumptions	-2.8
<b>Shortfall at 31 March 2017</b>	<b>£7.5bn</b>
<i>*this reflects the difference between the contributions payable and the deficit and future service contribution rates identified in the 2014 valuation due to the timing of implementation of revised contribution rates</i>	

# APPENDIX

## ACTUARIAL ASSUMPTIONS USED IN THE SCHEME ACTUARY'S VALUATION REPORT FOR THE PURPOSE OF RULE 76.1

### METHOD AND ASSUMPTIONS USED IN CALCULATING THE TECHNICAL PROVISIONS Summary of decisions made as to method and key assumptions used for calculating technical provisions as at 31 March 2017

The actuarial method to be used in the calculation of the technical provisions is the Projected Unit method with a one-year control period. The key assumptions are summarized below.

Table 1: Summary of key assumptions

<b>Principal actuarial assumptions for Technical Provisions as at 31 March 2017</b>	
<b>Market derived price inflation</b>	In line with the difference between the Fixed Interest and Index-Linked yield curves
<b>Inflation risk premium</b>	0.3% pa
<b>Price inflation – Retail Prices Index</b>	Market derived price inflation less Inflation risk premium
<b>RPI / CPI gap</b>	1.0% pa
<b>Price inflation – Consumer Prices Index</b>	RPI assumption less RPI / CPI gap
<b>Investment return</b>	Years 1-10: CPI – 0.53% reducing linearly to CPI – 1.32% Years 11-20: CPI + 2.56% reducing linearly to CPI + 1.7% by year 21 Years 21 +: CPI + 1.7%
<b>Pension increases in payment</b>	CPI assumption (for both pre and post 2011 benefits)
<b>Mortality base table</b>	Pre-retirement: 71% of AMC00 (duration 0) for males and 112% of AFC00 (duration 0) for females Post retirement: 96.5% of SAPS S1NMA “light” for males and 101.3% of RFV00 for females
<b>Future improvements to mortality</b>	CMI_2016 with a smoothing parameter of 8.5 and a long term improvement rate of 1.8% pa for males and 1.6% pa for females

The derivation of these key assumptions and an explanation of the other assumptions to be used in the calculation of the technical provisions are set out below.

## FINANCIAL ASSUMPTIONS

The financial assumptions shall be determined using a 'yield curve approach', with different assumptions applying at different points in time, reflecting the term structure of financial instruments. The particular approach to be used in determining each of the financial assumptions is set out below.

### Inflation (RPI)

The assumption for the rate of increase in the Retail Prices Index (RPI) will be taken as a term structure derived from the investment market's expectation for inflation as indicated by the difference between an estimate of the yields available on conventional and index-linked UK Government bonds appropriate to the date of each future cash flow (extrapolated for cashflows beyond the longest available gilts), as advised by the Scheme Actuary. An adjustment may be made to the assumption to reflect market views that the prices of index-linked gilts include a 'risk premium' to reflect, for example, future inflation uncertainty. This adjustment may be limited by the existing or prospective level of inflation hedging targeted by the Scheme. For the 31 March 2017 valuation, the inflation risk premium is set to be 0.3% pa.

For the self-sufficiency basis the inflation risk premium is assumed to be nil.

### Inflation (CPI)

The assumption for the rate of increase in the Consumer Prices Index (CPI) will be derived from the RPI inflation assumption with an appropriate adjustment to recognise the difference between expectations of future RPI increases and future CPI increases. The adjustment will be reviewed at each valuation; at the 31 March 2017 valuation the adjustment was a deduction of 1.0% pa.

For the self-sufficiency basis the adjustment to expected RPI is a deduction of 0.8% pa.

### Investment return (discount rate)

A term structure derived from the expected CPI as above, plus a varying spread based on the allowance the Trustee has agreed for additional investment returns based on the investment strategy as set out in the applicable Statement of Investment Principles. The spread is CPI -0.53% pa decreasing linearly to CPI -1.32% in years 1-10, CPI +2.56% pa in year 11 reducing linearly to CPI +1.7% pa over the following 10 years and assumed to stay at CPI +1.7% pa beyond that point. This approach therefore includes a provision for gradual investment de-risking to take place over years 1 to 20.

As explained earlier, the choice of the discount rate may be impacted by the level of the future benefit accrual. For the 2017 valuation the discount rate takes into account the current benefit structure.

If, following a review of the investment strategy and any consequential changes to the Statement of Investment Principles after completion of the valuation then the assumed rate of investment return may also change at subsequent funding updates to reflect the different expected investment returns from the new asset mix.

For the “Self-sufficiency” basis the discount rate assumes a term structure derived from the yield of fixed interest gilts appropriate to the date of each future cash flow (extrapolated for cash flows beyond the longest available gilts), as advised by the Scheme Actuary. A margin of 0.75% pa is then added.

#### **Pension increases**

Increases to pensions are assumed to be in line with the CPI inflation assumption described above. In particular, at the 31 March 2017 valuation no adjustment has been made for the fact that pension increases on benefits accrued after 30 September 2011 do not fully reflect inflation once CPI exceeds 5% pa.

## SUMMARY

The table below shows the Technical Provisions discount rate and CPI assumptions as at 31 March 2017, determined in line with the above approach.

*Table 2: Assumed discount rate and CPI rate by term*

Term	Discount rate (one year forward)	CPI (one year forward)	Term	Discount rate (one year forward)	CPI (one year forward)
1	2.00%	2.53%	26	3.61%	1.91%
2	0.65%	1.27%	27	3.46%	1.76%
3	0.56%	1.26%	28	3.31%	1.61%
4	0.61%	1.41%	29	3.17%	1.47%
5	0.69%	1.57%	30	3.05%	1.35%
6	0.79%	1.76%	31	2.96%	1.26%
7	0.89%	1.94%	32	2.90%	1.20%
8	0.98%	2.13%	33	2.86%	1.16%
9	1.06%	2.29%	34	2.84%	1.14%
10	1.11%	2.43%	35	2.85%	1.15%
11	5.11%	2.55%	36	2.88%	1.18%
12	5.13%	2.65%	37	2.93%	1.23%
13	5.12%	2.74%	38	2.99%	1.29%
14	5.10%	2.80%	39	3.07%	1.37%
15	5.06%	2.85%	40	3.17%	1.47%
16	5.00%	2.87%	41	3.27%	1.57%
17	4.92%	2.87%	42	3.39%	1.69%
18	4.81%	2.85%	43	3.51%	1.81%
19	4.68%	2.80%	44	3.64%	1.94%
20	4.52%	2.73%	45	3.77%	2.07%
21	4.34%	2.64%	46	3.91%	2.21%
22	4.22%	2.52%	47	4.05%	2.35%
23	4.09%	2.39%	48	4.19%	2.49%
24	3.94%	2.24%	49	4.33%	2.63%
25	3.78%	2.08%	50	4.47%	2.77%

## DEMOGRAPHIC ASSUMPTIONS

### Mortality

The mortality assumptions is based on scheme-specific experience analysis, expressed as liability-equivalent adjustments to standard tables published by the Continuous Mortality Investigation (CMI), making allowance for future improvements in longevity. The mortality tables are as follows:

#### Mortality: Pre-retirement

AxC00 (duration 0) tables taking 71% for males and 112% for females, and improvements using CMI\_2016 with a smoothing parameter of 8.5, and long term rates of 1.8% pa for males and 1.6% pa for females.

#### Mortality: Post-retirement

- Males: S1NMA “Light” with 96.5% weighting and improvements using CMI\_2016 [1.8%] with smoothing parameter 8.5
- Females: RFV00\* with 101.3% weighting and improvements using CMI\_2016 [1.6%] with smoothing parameter 8.5

*\*At ages below 50, the RFV00 table will extended by blending into the RFC00 table*

### Early retirement

The allowance for early retirements will reflect emerging experience of retirements as monitored at each actuarial valuation and any adjustment for future expectations which is considered appropriate. For the 31 March 2017 valuation it has been assumed that ex-final salary active members will retire in line with the following decrement table (with all others assumed to retire at 65). Benefits relating to service accrued prior to 1 October 2011 are assumed to be paid with no reduction, and an allowance has been made for benefits accrued after 30 September 2011 to be reduced from the payable age of 65.

Table 3

Age	% leaving per annum
60	30
61	10
62	15
63	15
64	20

All other members of the scheme are assumed to retire at 65 and allowance is built in for the appropriate adjustment to each relevant tranche of benefit applicable to members in line with the benefit age or associated Contractual Pension Age.

### Ill health retirement

A small proportion of the active members will be assumed to retire owing to ill health. As an example of the rates assumed at the valuation with effective date 31 March 2017, the following is an extract from the decrement table used:

Table 4

	% leaving per annum	
Age	Males	Females
35	0.01	0.01
45	0.04	0.05
55	0.14	0.25

### Withdrawals

This assumption relates to those members who leave the Scheme with an entitlement to a deferred pension or transfer value. It has been assumed that active members will leave the Scheme at the following sample rates:

Table 5

Age	% leaving per annum
25	18.28
35	9.11
45	5.38

### Commutation

No allowance has been made for the option that members have to commute part of their pension at retirement in return for an additional lump sum (or indeed exchange part of their additional lump sum for pension) on the basis that the overall effect of these options is not expected to be material to the Scheme.

### Proportion of beneficiary pensions payable and age difference

It has been assumed that a proportion of members will have an eligible beneficiary at the time of retirement or earlier death based on the following:

#### Males:

All: 109% of the ONS 2008 table for males

#### Females:

Non-pensioners: 84% of ONS 2008 table for females

Pensioners: 68% up to and including age 59, 56% at 60 to 64 and 73% of ONS 2008 over age 64  
Sample rates as shown in the table below.

Table 6

Age	% spouse / partner		
	Male	Female pre-retirement	Female post-retirement
45	69.8	54.6	68.0
55	77.4	58.8	68.0
65	83.9	57.1	49.6
75	79.6	n/a	35.0
85	61.0	n/a	14.6

The surviving beneficiary of male members is assumed to be four years younger, on average, than the deceased scheme member, and the beneficiary of female members two years older.

### Expenses

Expenses including PPF Levies are met by the fund. A provision for this is included by adding 0.4% of salary to the total contribution rate. This addition is reassessed at each valuation. The future level of the PPF levy in particular is very uncertain. Investment expenses have been allowed for implicitly in determining the discount rates.

### ASSUMPTIONS USED IN CALCULATING CONTRIBUTIONS PAYABLE UNDER THE RECOVERY PLAN

The contributions payable under the recovery plan will be calculated using the same assumptions as those used to calculate the technical provisions, with the exception of the following during the period of the recovery plan:

#### Salary increases

The growth in the aggregate payroll of the scheme's membership, used in the recovery plan, is assumed to be CPI + 2% pa. Because of the methodology used for the valuation it is not necessary to specify assumptions for individual members' pay growth.

### METHOD AND ASSUMPTIONS USED IN CALCULATING THE COST OF FUTURE ACCRUAL

The cost of future accrual was calculated using the same assumptions as those used to calculate the technical provisions. The salary threshold has been assumed to increase in line with the CPI assumption, and an assumption has been made of an 80% take up for the 1% of salary matched contribution.

## OTHER ASSUMPTIONS USED WITHIN THIS REPORT

### BEST ESTIMATE ASSUMPTIONS

<b>Investment return (Discount Rate)</b>	Years 1-10: CPI +1.0% reducing linearly to CPI +0.08% Years 11-20: CPI + 3.54% reducing linearly to CPI + 2.56% by year 21 Years 21 +: CPI + 2.56%
<b>Mortality base table</b>	Post retirement: 98.5% of SAPS S1NMA “light” for males and 103.3% of RFV00 for females