



Government Actuary's Department

MRC Pension Scheme: MRC section

Actuarial valuation as at 31 December 2016

Report by the Actuary

Date: 7 December 2017

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1 Executive Summary

Introduction

- 1.1 This is my report on the actuarial valuation of the MRC Section of the MRC Pension Scheme ('the Scheme') as at 31 December 2016. This Report is addressed to the Trustee, although it may be shared with MRC ('the Employer') and other participating employers.
- 1.2 The main purposes of the valuation are to investigate the financial position of the Scheme relative to its Statutory Funding Objective and on a solvency assessment, and to record the future rate of contribution to be paid by the employers.

Ongoing funding position

- 1.3 The principal conclusions of this actuarial valuation, carried out on the basis of the Statement of Funding Principles dated 30 November 2017 as determined by the Trustee and agreed with the employer¹ are as follows:
- > The Scheme's Technical Provisions, the liabilities for all accrued benefit entitlements as at 31 December 2016 were £1,078.6m. Taking account of an additional funding objective set by the trustees the accrued liabilities amounted to £1,179.7m.
 - > The market value of assets as at 31 December 2016 (net of AVCs) was £1,338.7m.
 - > In accordance with the Statutory Funding Objective there is a funding surplus of £260.1m and a funding level (ratio of assets to liabilities) of 124%. Taking account of the additional funding objective the surplus was £159m, representing a funding level of 113%. At the previous valuation as at 31 December 2013 the funding level was 118%. The principle reason for the change in funding level are higher than expected investment returns over the intervaluation period offset by reduced future return expectations which result in a higher present value being placed on future benefit payments.

¹ Under the terms by which other employers participate in the MRC section of the Scheme (see paragraph 2.15), MRC (the Principal Employer) is empowered to act on behalf of UK SBS Ltd and the Francis Crick Institute in all regards under Part 3 of the Pensions Act 2004.



Contribution requirements

- 1.4 This valuation is the basis on which contributions are agreed for the period from 1 April 2018. The Scheme was sectionalised with effect from 1 January 2014 with some members transferring to the 'University section' with effect from that date. This report only covers the rate of contributions to be paid to the main 'MRC section'. The agreed rates of contribution are reflected in a Schedule of Contributions which must cover contributions for the 5 year period following certification. In practice the contribution rates will be reviewed at the next valuation which is due as at 31 December 2019.
- 1.5 On the assumptions agreed, the future cost of benefits accruing including allowance for expenses is 30.9% of Salary. The rate of 30.9% is higher than that of 24.5% determined at the 2013 valuation due reduced future return expectations which result in a higher present value being placed on future benefit payments. Most members pay contributions at the rate of 6.5% of Salary. The overall employers' share of the cost of accrual is therefore 24.4% of Salary.
- 1.6 The funding surplus allows a lower rate of contribution to be paid for a period. It has been agreed that MRC will increase its rate of contribution from 14% to 15% of Salary and other participating employers will continue to pay 0.9% above the rate contributed by MRC ie 15.9% of Salary. As contributions will be paid at a lower rate than the cost of accrual the funding level is expected to reduce over time. The estimated funding level at the time of the next valuation, due 31 December 2019 and assuming experience is in line with the assumptions made for this valuation, is 123% (on the Statutory Funding Objective).

Risks

- 1.7 The funding level at the next valuation may differ from that indicated in paragraph 1.6 since in practice experience may differ from the assumptions made. For example the assets may not yield the return assumed, the allowance for future longevity improvements may not be observed either in the population as a whole or for the Scheme membership. Margins have been incorporated into the actuarial assumptions to offset the likelihood of adverse experience but these do not guarantee that the Scheme will continue to meet its Statutory Funding Objective. Experience will be monitored against the assumptions made at regular actuarial valuations and these may result in adjustments to the Schedule of Contributions over time.
- 1.8 The Statement of Funding Principles is based on the Trustee's current assessment of the employers' covenants. This assessment considered both the employers' willingness and ability to continue to support the Scheme, as well as the anticipated change of Principal Employer from MRC to UKRI. Should the strength of the employers' covenants weaken the assessment of the Scheme's Technical Provisions may be expected to change significantly and this would have a material impact on the future contribution requirements.



Solvency

- 1.9 Had the Scheme been discontinued as at 31 December 2016 there would have been insufficient assets to fully secure benefits with an insurance company. We have estimated that 67% of the liabilities could have been secured in this manner using the Scheme's existing assets. To the extent that any liability may not be otherwise discharged in the event of the Scheme being wound up any such shortfall would form a debt on the employers. The position is marginally worse than that estimated at the 2013 valuation.

Next steps

- 1.10 This report has been finalised following consultation with the employers in accordance with the requirements of the Pensions Act 2004. It summarises the agreed position and includes the necessary certificates which must be provided on completion of the valuation. A copy of this report must be provided to the employer² within 7 days of receipt by the Trustee.
- 1.11 The Pensions Act 2004 requires the Trustee to put in place a revised Schedule of Contributions covering a period of 5 years from the date of certification. As the Scheme has a funding surplus there is no automatic requirement to submit the results of the valuation to the Pensions Regulator. However some information relating to the valuation must be submitted as part of the Scheme's annual return via the 'Exchange'.
- 1.12 The Trustee is required to disclose certain information, following receipt of this Report, in a Summary Funding Statement to all scheme members and beneficiaries within a reasonable period³.
- 1.13 The financial position of the Scheme and adequacy of the level of contributions will be reviewed at the next actuarial valuation, which in the normal course of events would be expected to be as at 31 December 2019. However, in the intervening years the Trustee will obtain annual actuarial reports covering an approximate update of the financial position since this valuation.

Sue Vivian
Fellow of the Institute of Actuaries
Government Actuary's Department

7 December 2017

² There is no requirement to provide a copy to those participating employers, for whom MRC is empowered to act in relation to Part 3 of the Pensions Act 2004.

³ The Pensions Regulator considers that the statement should normally be provided within three months from the date by when valuations or reports must be obtained.



Important notes / Limitations of investigation

Third parties

This report is addressed to the Trustee of the MRC Pension Scheme. It is recognised it will also be shared with the employers. I am aware that the Trustee may be required to disclose this report to the Pensions Regulator ('tPR'). Copies of this report may also be provided to individual members. This report should not be reproduced, or disseminated, to other parties without prior consent. The Government Actuary's Department (GAD) does not accept any liability to third parties, whether or not it has agreed to the disclosure.

Clarification should be sought if the Trustee has any doubt about the intention or scope of advice provided herein. GAD is not responsible for any decision taken, except to the extent that the decision has been made in accordance with specific advice provided in this report. Advice provided by GAD must be taken in context and is intended to be read, and used, as a whole and not in parts. GAD does not accept responsibility for advice that is altered or used selectively.

Data

The Trustee bears the primary responsibility for the accuracy of the Scheme's data but will have relied on others for the maintenance of that data, including the employers and the administrators. In preparing this report, GAD has relied on data and other information provided by the Scheme's administrator's JLT. GAD does not accept responsibility for advice based on wrong or incomplete data. Full details of the checks made on the data are given in my report on data, experience and assumptions dated 10 November 2017. Any checks that GAD has made on this information are limited to those described in that report and they do not represent a full independent audit of the data supplied. In particular GAD has relied on the general completeness and accuracy of the information supplied without independent verification.

Assumptions

The choice of assumptions is the responsibility of the Trustee, in agreement with the employers, after taking my advice. They are only assumptions; they are not predictions and there is no guarantee that they will be borne out in practice. The Trustee and employers should be aware that it is likely that the Scheme's experience is likely to be better or worse than that assumed from time to time and there are risks and uncertainties involved in any course of action based on decisions determined from results derived from these assumptions.

Other material

This report should be read in conjunction with my report on data, scheme experience and advice on assumptions dated 10 November 2017.

Compliance

This Report has been prepared in accordance with the applicable Technical Actuarial Standards: TAS 100 and TAS 300 issued by the Financial Reporting Council (FRC). The FRC sets technical standards for actuarial work in the UK.



2 Background

- 2.1 This report is addressed to the Trustee ('the Trustee') of the MRC Pension Scheme ('the Scheme') and sets out the results of the actuarial valuation of the MRC section of the Scheme which was carried out as at 31 December 2016 and records the decisions agreed by the Trustee and the employer⁴ in relation to future contribution payments to the Scheme.
- 2.2 The Scheme was sectionalised with effect from 1 January 2014 with some members employed by participating university employers transferring to the 'University section' with effect from that date. This report only covers the rate of contributions to be paid to the main 'MRC section'.

Why carry out an actuarial valuation?

- 2.3 There are a number of reasons why it is necessary to carry out an actuarial valuation:
- > Part 3 of the Pensions Act 2004 requires the trustees of a scheme to obtain an actuarial valuation, as described in the legislation, at intervals of no more than three years. The legislation also provides for various certificates to be given on completion of the valuation
 - > It is a requirement of Clause 15.24 of the Trust Deed that 'an actuarial investigation into the condition of the Fund shall be made at intervals of at least three years (or such other period as may from time to time be laid down under [legislation])'
 - > To determine the level of future contributions required to the Scheme
 - > To inform the trustees and the scheme sponsor about the solvency position of the Scheme.

Previous valuation and contributions paid

- 2.4 This is the fourth full review of the Scheme under the Scheme Funding Regulations introduced by the Pensions Act 2004. The previous review was carried out as at 31 December 2013, and the formal report on that valuation was dated 10 December 2014. This valuation is the first since the scheme was sectionalised on 1 January 2014. However the advice provided for the previous valuation anticipated the sectionalisation.

⁴ Under the terms by which other employers participate in the Scheme (see paragraph 2.15), MRC (the Principal Employer) is empowered to act on behalf of UK SBS Ltd and the Francis Crick Institute in all regards under Part 3 of the Pensions Act 2004.



- 2.5 At the previous review as at 31 December 2013, the value placed on the Scheme's assets exceeded the value placed on the liabilities for past service (the Technical Provisions) by £160.1 million⁵. Following discussions between the Trustee and the employers, the employer contribution rate was increased by 1% of Salary to 14% for MRC and maintained at 14.9% for other participating employers. Contributions by members have mostly been at the rate of 6.5% of Salary, but, for historical reasons, a minority of members have continued to pay at slightly lower rates.
- 2.6 MRC have paid additional special contributions to the MRC Section of the Scheme since the last valuation of £7.0 million in 2014, £5.0 million in 2015 and £2.5 million in 2016. In addition MRCT ceased to participate in the Scheme on 30 September 2014 and a contribution of £12.7 million was paid in March 2015 to discharge the Section 75⁶ debt arising.

Changes to MRCPS

- 2.7 The Scheme was sectionalised with effect from 1 January 2014 with some members employed by participating university employers transferring to a newly created 'University section' with effect from that date. Liabilities relating only to service since University participation were transferred to the University section, resulting in a transfer of £8.8 million of assets. All other liabilities including those for the transferring members with prior service with MRC were retained in the 'MRC section'. This valuation report only relates to the MRC section. A separate valuation has also been carried out for the University section as at 31 December 2016 and is covered in a separate report.
- 2.8 The University of Edinburgh transferred from the MRC Section to the University section after the initial sectionalisation, on 1 April 2015. This resulted in a bulk transfer payment of £4.1 million which was paid from the MRC section to the University section in October 2015. Members' have continued to transfer to University employment since the sectionalisation of the Scheme, however typically this is with respect to future service only so it does not trigger a payment between sections.

Benefits to be valued

- 2.9 The benefits payable under the Scheme are detailed in the Trust Deed and Rules. The Rules describe in full the benefits and contributions applicable to different categories of employees. Appendix A to this report summarises the main provisions of the Scheme for future service as at 31 December 2016.
- 2.10 There have been no significant changes to the members' benefits or contribution rates since the last valuation, other than to comply with any overriding legislative requirements.

⁵ Based on the whole scheme. Allowing for sectionalisation the MRC Section would have had a surplus of £155.4m

⁶ Section 75 of the Pension Act 1995 requires participating employers to make an additional payment to a pension scheme if the scheme is not fully funded on a buy out basis and if no alternative arrangement is agreed with the trustees.



- 2.11 The only uncertainties we are aware of about the form of benefits that the scheme is liable to provide are in relation to the potential requirement for equalisation of GMPs. We have not taken any account of this in the valuation.

Pension increases

- 2.12 Increases to pensions awarded in the intervaluation period were as follows:

- > April 2014 – 2.7%
- > April 2015 – 1.2%
- > April 2016 – 0%

Intervaluation experience

- 2.13 The Scheme's experience over the period since the 31 December 2013 valuation has been favourable compared to the assumptions adopted at the valuation. In particular there has been significant outperformance of the Scheme's assets over the period relative to the assumptions made which has a positive impact on the funding position of the Scheme. In addition, both pay growth and the pension increases awarded have been lower than assumed. Intervaluation experience is discussed further later in this report.

Participating employers

- 2.14 At the valuation date there were two participating employers in the MRC Section in addition to the Principal Employer, MRC. As noted in paragraph 2.6 a further participating employer, MRCT, ceased participation in the period.
- 2.15 The participating employers at the valuation date and the date from which their participation commenced are as follows.

	Date of participation
Francis Crick Institute	1 April 2015
UK SBS Ltd	1 August 2008

Creation of UKRI

- 2.16 The creation of UK Research and Innovation (UKRI) is expected to result in the dissolution of MRC. MRC have indicated to the trustee that BEIS have given approval for UKRI to replace MRC as Principal Employer of the MRCPS. The process to put this decision into effect is currently being developed.



- 2.17 When UKRI takes over the role of MRC the function of the current Council will be transferred to an operating committee. This committee though not a separate legal entity will manage the UKRI budget allocated to medical research. Under the new structure 'MRC' staff will continue to form an identifiable population and will be eligible to join the MRCPS. With the exception of the existing MRC Head Office function, which over time is expected to rationalise into a central UKRI function, the identifiable 'MRC' staff will remain eligible to remain and join the MRCPS. The membership profile of the MRCPS is therefore anticipated to remain broadly as expected pre-UKRI over the foreseeable future.
- 2.18 I understand MRC and UKRI have an agreement to keep the scheme open to new entrants subject to new entrants being offered 'career average' (CARE) benefits in nature. The value of these benefits will be no greater than those currently provided. Therefore I expect a slower utilisation of surplus compared to the current situation due to the reduction in accrual cost against contributions.



3 Membership and financial data

Membership data

- 3.1 In order to carry out the valuation I obtained detailed information about the current membership of the Scheme from the Scheme's administrators, JLT. Details of member movements between the different categories of membership since the last valuation were also provided. A summary of the membership data is provided in Appendix B. More detailed commentary on the data and the checks carried out are covered in my report on data, experience and advice on assumptions dated 10 November 2017.

Financial data

- 3.2 Audited Scheme accounts were available for the intervaluation period. Appendix C summarises the Section's assets held as at 31 December 2016 and also provides the Revenue Account covering the three years between 1 January 2014 and 31 December 2016.
- 3.3 The market value of the Fund on the valuation date is shown as £1,341.1m. This includes £2.5m in respect of members' Additional Voluntary Contributions ('AVCs') which are invested with an external insurance company. Since the liability in respect of these AVCs is exactly matched by the asset held neither the liabilities nor the assets have been taken into account for the purposes of the valuation. The asset value taken into account for the purpose of the valuation was £1,338.7m.
- 3.4 The asset value of £1,338.7m may be compared with the corresponding value (£1,054.2m) at the previous review date of 31 December 2013⁷. The total investment return on the Fund's assets, net of investment expenses and taking account of cash flows during the period, was a positive return of around 9.8% a year.
- 3.5 The assets of the MRC Pension Scheme were invested by sixteen investment managers as at 31 December 2016. These were:
- > Aviva Investors Jersey Unit Trusts Management Limited
 - > Baillie Gifford & Co
 - > BlackRock
 - > First State Investment Management (UK) Limited
 - > GAM Fund Management Limited
 - > HgCapital

⁷ Based on the whole scheme. Allowing for sectionalisation the MRC Section would have had assets of £1,045.4m



- > Infracapital
- > Legal & General Assurance (Pensions Management) Limited
- > M&G (Guernsey)
- > Mirabaud Investment Management Limited
- > Montanaro Asset Management Limited
- > Morgan Stanley
- > Partners Group Management IX Limited
- > Royal London Asset Management Limited
- > Royal London Cash Management Limited
- > TH Real Estate (formally Henderson Global Investors)

3.6 These managers are responsible for investing the assets of the fund in a range of different types of asset, in accordance with general criteria specified by the Trustee. The strategy adopted by the Trustee is to set 'benchmark distributions' for each asset category, but to allow the investment managers some flexibility to deviate from the benchmark for short-term tactical reasons.

3.7 The benchmark allocations to each asset class are set out in the Trustee's Statement of Investment Principles, the most recent of which is dated November 2016, and summarised below. Under the Scheme's investment strategy the majority of the assets (90%) are invested in 'return seeking' assets. Over the long term the Trustee expects these to yield a greater return than would be available from fixed return assets. Although the Trustee's expectation of return from return seeking assets is higher than that available from guaranteed return investments, the Trustee recognises there is an inherent risk in pursuing this investment strategy.

3.8 The benchmark allocations as at 31 December 2016 and 31 December 2013 are as follows:

	Benchmark Allocation %	
	31 December 2016	31 December 2013
Equities		
UK	21.75%	23.5%
Overseas	33.25%	31.5%
Property	25%	25%
Alternatives	10%	10%
Bonds	10%	10%
Total	100%	100%



4 Valuation method

Measuring the liabilities

- 4.1 Any actuarial valuation of liabilities involves placing a current value on a series of future cashflows which are due to be paid over some considerable future period. The cashflows are expected future benefit payments. For example:
- > for current pensioners the monthly amounts of pension payments, taking into account the dates on which the pensions are due to increase and the likelihood of the member continuing to receive the pension. Further cashflows are expected to arise for dependants following a pensioner's death
 - > for deferred pensioners similar cashflows are expected but with payment commencing in the future. In addition there will be lump sum payments due at the time a deferred pensioner retires
 - > for active members the majority of the expected cashflows will arise following members' retirement ie a lump sum at retirement and monthly pension payments thereafter. There are however a wider range of factors which will influence the amount and incidence of the cashflows. For example the age at which the member retires, whether he retires on normal or ill health grounds, whether he leaves service before drawing benefits.
- 4.2 In a solvency assessment the liabilities are similarly determined by valuing the expected cashflows. However in this assessment since all active members are assumed to leave service on the valuation date, a different set of cashflows arise, with a reduced mean term of liability. Further, different assumptions are adopted relative to those used for the Statutory Funding Objective, this means the liability value for the solvency assessment is likely to be materially different to that for the Statutory Funding Objective.
- 4.3 The current value of the future cashflows is compared with the amount of assets held. When deriving the current value it is reasonable to consider the rate at which the assets might increase in future, i.e. the amount expected to be available when the benefits fall to be paid. It is also necessary to take account of the level of benefits which will become payable. This will depend on factors such as future price inflation and individual members' salary progression. There are other uncertainties in the future cashflows for example the period over which pension payments will continue will depend on how long each member lives. To measure the current value, I make assumptions about these various financial and demographic factors. The assumptions used for the purposes of the assessment against the Statutory Funding Objective are explained in the following section. If different assumptions were used the results would be different. The key risks to the Scheme and the sensitivity of the results to key assumptions is explained in section 6.



Funding Objectives and Valuation method

- 4.4 Every scheme which is subject to Part 3 of the Pensions Act 2004 is subject to a 'Statutory Funding Objective'. This requires a scheme to have sufficient and appropriate assets to cover its 'Technical Provisions' (broadly speaking this means its liability for benefits already earned), or a plan to increase its assets to such a level.
- 4.5 The Scheme Funding Regulations require trustees to choose an 'accrued benefits funding method' to calculate the Technical Provisions. Before choosing a method the Trustee must take advice from the Scheme Actuary, and reach agreement with the employers. My advice on the funding method is contained in the report on data, scheme experience and advice on assumptions dated 10 November 2017.
- 4.6 At the 2013 valuation the Trustee adopted the 'Projected Unit' method. It has been determined that it is appropriate to continue to use this method for this valuation. For serving members this method allows for future increases in earnings until the assumed dates of exit, and for pension increases in accordance with the Scheme rules after termination of service. For former members, the present values placed on pensions in payment and preserved pensions allow for future increases in these pensions in accordance with the rules.
- 4.7 Under the Projected Unit method the Trustee firstly calculates the liabilities earned in respect of service to date. If the existing assets are insufficient to cover these liabilities the Trustee must prepare a Recovery Plan to achieve full funding. The Trustee should aim for any shortfall to be eliminated as quickly as the employers can reasonably afford, in the light of all the relevant factors including the Trustee's assessment of the employers' covenants. The contribution required for continuing accrual is calculated separately
- 4.8 The second part of the calculation under the Projected Unit valuation method determines the contributions to be paid for accruing benefits. The standard contribution rate (the cost of accruing benefits) calculated under the Projected Unit Method may be expected to remain stable in the short term, provided the average age of the members of the Scheme does not change significantly and provided the experience of the Scheme is in line with the assumptions made. The assessment of the standard contribution rate takes account of the benefits expected to accrue in the 3 years following the valuation date.
- 4.9 An additional objective was set for the Scheme in 2013 and has been retained, with some modification, for the current valuation. The additional objective seeks to ensure that Scheme benefits should be secured during members' active service with the employers by regular contributions which are expected to increase gradually to the full cost of accrual over an appropriate period of time. For this valuation the additional funding objective explicitly incorporates an additional margin for prudence for accrued rights above that already allowed for within the assumptions adopted for the Statutory Funding Objective. The purpose being to limit the amount of past service surplus which may be considered available for offsetting the cost of future accrual.



- 4.10 For the purposes of the valuation, it has been assumed that the composition of the workforce (including new joiners), by age, gender and status will remain broadly constant over the next three years.
- 4.11 Depending on actual experience and the comparison between the Technical Provisions and the Scheme's assets at each valuation, contribution rates may need to be temporarily higher or lower than the standard contribution rate required to cover the cost of accruing benefits to allow the funding objectives to be met.



5 Actuarial assumptions

- 5.1 The choice of assumptions is the responsibility of the Trustee, in agreement with the employers, after taking my advice. My advice and further information on the matters considered before determining the assumptions is provided in my report of data, scheme experience and assumptions dated 10 November 2017. Assumptions are not predictions and there is no guarantee that they will be borne out in practice. It is likely that the Scheme's experience will be better or worse than assumed from time to time and there are risks and uncertainties involved in taking any course of action based on these assumptions. To the extent that the actual experience turns out to be different from the assumptions the financial position of the Scheme will be affected. The results are especially sensitive to the assumptions made for the discount rate and for future longevity.
- 5.2 Under the Scheme Funding Regulations and related Code of Practice, assumptions must be chosen prudently⁸. However, this does not mean that all risks need to be eliminated or that Technical Provisions need to be set at the level at which accrued liabilities could be bought out with an insurance company.
- 5.3 In deciding on prudent assumptions, regard must be had to the strength of the employers' covenants. As part of the valuation process the Trustee has engaged with the Employer and has concluded that there is no evidence that the combined employers⁴ covenant has changed since the previous valuation and it remains strong. Given UKRI will be larger but otherwise similar to MRC in its relation to government (an arms' length public body), its covenant strength is expected to be at least as strong as MRC. The Employer and UKRI has reaffirmed its commitment to the Scheme, provided the cost can be managed in a sustainable manner. We believe this provides assurance to the Trustee that a long term view, when setting assumptions, is appropriate provided that the resultant costs are manageable.
- 5.4 In determining assumptions, it is appropriate to have regard to the Scheme's own experience in previous years, as well as to more general factors such as current and future expected economic conditions (particularly in financial markets), and to the experience of other larger pension schemes which are expected to have similar characteristics to the Scheme. The Scheme Funding Regulations require assets to be taken into account at market value and to ensure consistency between the valuation of the assets and liabilities the assumptions used for determining the liabilities should have regard to market conditions at the valuation date.
- 5.5 The assumptions adopted for this valuation are summarised below and are set out in full in the Statement of Funding Principles dated 30 November 2017.

¹⁰ Broadly speaking a set of prudent assumptions is one which produces a result (ie a liability value) which is higher than a 'best estimate' or 'neutral' set of assumptions might determine. Adopting a prudent set of assumptions to determine the Technical Provisions means more assets are required to meet the Statutory Funding Objective when compared with a best estimate set of assumptions.



Summary of financial assumptions

- 5.6 The table below shows the main financial assumptions adopted for the valuation as at 31 December 2016 and, for comparison purposes, as at 31 December 2013. Since the assumptions are market related some variation may be expected at differing valuation dates even if there is no intention to change the overall prudence of the actuarial basis.

Main Financial Assumptions	31 December 2016		31 December 2013
	SFO ² % pa	AFO ³ % pa	% pa
Investment Return/Discount rate ¹	4.8%	4.3%	5.6%
Earnings Increases (long term) + promotional scale	4.1%	4.1%	4.1%
RPI	3.5%	3.5%	3.5%
CPI	2.6%	2.6%	2.6%
Pension increases	2.6%	2.6%	2.6%
Discount rate net earnings increase	0.7%	0.2%	1.5%
Discount rate net pension increases	2.2%	1.7%	3.0%

¹ net investment expenses

² Statutory Funding Objective

³ Additional funding objective (accrued rights only)

Summary of demographic assumptions

- 5.7 The key demographic assumption is for pensioner mortality, i.e. how long members are expected to survive and receive a pension. The mortality assumptions adopted for the 31 December 2016 valuation, and for comparison, for the 31 December 2013 valuation are summarised below. Further information and the corresponding expectation of lives are shown in Appendix D.

Mortality in retirement	31 December 2016	31 December 2013
Baseline		
Normal health	S2NXA-14 x-1	S1NXA-12
Ill health	S2NXA-14 x-1	S1NXA-12
Dependants	Male: S2NMA-14 x-1 Female: S2DFA-14 x-1	S1NXA-12
Improvements	ONS 2014 population projections	ONS 2012 population projections

Note: mortality assumptions are based on year of usage 2016 for the current valuation and 2013 for the previous valuation



- 5.8 All other demographic assumptions are unchanged since the 2013 valuation. Full details of the demographic assumptions, including sample rates, are in Appendix D.

Expenses

- 5.9 Under Clause 15.16 of the Trust Deed, 'the Principal Employer may, from time to time, agree with the Trustees to bear such of the costs and expenses of managing and administering the Scheme as the Employer shall decide'.
- 5.10 In practice expenses have been charged to the Scheme in recent years. For the 2013 valuation an explicit allowance was included for expenses (other than investment expenses which are allowed within the net assumed return on assets) by addition of an amount of 1.4% of Salary to the contribution rate. An allowance of 1.6% of Salary has been included for this current valuation based on analysis of the expenses shown in the accounts over the three year period to 31 December 2016.

Opinion on assumptions

- 5.11 In my opinion the method and assumptions set out above form an appropriate basis for determining the Scheme's Technical Provisions. This opinion is given in light of the Trustee's determination on the strength of the employers' covenants, and in recognition that there are risks that Scheme experience may prove to be worse than that assumed.



6 Risks and sensitivity analysis

- 6.1 The Scheme Funding Regulations require the Trustee to put in place a Schedule of Contributions. The contributions set are by necessity based on a single set of assumptions and a wide range of alternative contribution rates could have been determined. If contributions are paid in accordance with the Schedule the expectation is that the Scheme's Statutory Funding Objective, to have sufficient assets to cover the Technical Provisions, will continue to be met at the end of the period covered by the Schedule.
- 6.2 The valuation does not guarantee that this position will be achieved and there are significant risks associated with the Scheme which could result in the objective not being met. If the risks are realised they may lead to the need for contribution rates to rise. The most significant risks are commented on below.
- 6.3 **Sponsor Risk** Meeting the Statutory Funding Objective is dependent on continued contributions to the Scheme ie the contributions made by the employers to cover the balance of continuing accrual costs (in addition to the contributions made by members). The agreed Schedule of Contributions takes account of the Trustee's engagement with the Employer which considered the employers' willingness and ability to continue to support the Scheme.
- 6.4 If the Scheme had to be wound up because of the insolvency of all of the employers, and no alternative sponsor could be found, the benefits would need to be secured with an insurance company. In this situation any shortfall in the amount of funds available from the Scheme would form a debt on the final employer. It is possible that employer may have insufficient funds (after all higher-priority debts have been satisfied) to meet this debt. In this case the Scheme may transfer to the Pension Protection Fund with some loss of benefits for most members. The Trustee has considered the risks in such a situation in light of the employers' covenants assessment and no specific actions are planned to mitigate these risks.
- 6.5 As the Scheme remains open to future accrual and new entrants its overall liabilities may be expected to continue to grow. Given this the amount of any shortfall on employer insolvency may be expected to correspondingly increase over time.
- 6.6 **Investment Underperformance Risk** The value placed on the Scheme's liabilities is very dependent on the discount rate assumed. For example a 0.5% reduction in the discount rate would increase the value of the liabilities by approximately £100 million. The discount rate used in the valuation is based on the expected average return which will be achieved on the assets assumed to be held by the Scheme, with a margin for prudence. To the extent the return from the assets falls short of the assumption made, the value of assets could be lower than the value of the liabilities at the end of the period covered by the Schedule of Contributions.



- 6.7 The margin for prudence (which is made by making an explicit deduction from the best estimate of return) is designed to reduce the risk of asset underperformance but it does not remove all risk. Owing to the large proportion of the assets which are invested in growth assets, this risk remains significant. The assumptions made also assume that future Scheme income (from contributions and/or investment income) may be invested on such terms as to provide the same yield as existing investments. Future economic circumstances may mean this is not the case. This represents a further investment risk. Again the margin for prudence against best estimate return is intended to reduce this risk.
- 6.8 **Mismatching Risk** The value of assets changes over time and the change may not be mirrored by the change in liabilities (which are determined based on the assumptions at that time). The nature of the assets held means that mismatching risk is significant. The margin for prudence taken in the discount rate assumption is intended to provide some protection.
- 6.9 **Inflation Risk** The benefits provided by the Scheme are heavily dependent on the actual rates of inflation which are experienced. Pension payments are increased based on a measure of inflation (CPI from April 2011), and for members in service the level of pension at retirement is dependent on their rate of pay at retirement. In the latter case there is much evidence to demonstrate that pay inflation is linked to price inflation (historic evidence considers the RPI measure) and the assumption adopted recognises this link. There is therefore significant exposure to inflation risk. If actual inflation is 0.25% higher than assumed the liabilities as at 31 December 2016 would increase by around £50m. This is inclusive of the impact on both pension increases and assumed higher rates of pay inflation. A margin for prudence has been incorporated into the assumptions made to mitigate this risk. The margin for prudence has been allowed for by assuming CPI increases will on average be 0.9% pa lower than RPI increases whereas I have advised the Trustee that my best estimate of the difference is 1.15% pa.
- 6.10 **Longevity Risk** The value placed on the Scheme's liabilities is very dependent on the expected period over which the members' benefits are assumed to be paid. For example if all members were assumed to live for one year longer in retirement the liabilities as at 31 December 2016 would increase by around £25m. If Scheme members live longer than assumed, then the assets may be insufficient to cover the Scheme's liabilities. As longevity seems likely to improve over time, it is important to build in allowances for future mortality improvements that may occur later in the lives of current scheme members. An explicit allowance has been made to mitigate this risk but it is impossible to predict future mortality with any certainty.
- 6.11 **Option Risk** In some circumstances, members of the Scheme have the option to take benefits in one of a variety of forms. The majority of the options available to members are designed to give benefits of approximately the same value, regardless of which option is chosen. The terms for exercising these options are reviewed from time to time to ensure that they remain cost-neutral. The level of risk resulting from these options is therefore unlikely to be large.
- 6.12 **Discretionary Benefits** The Trustee does not have any specific objective to provide discretionary benefits, and this assessment makes no provision for such benefits.



Sensitivity Analysis

- 6.13 The valuation results are particularly sensitive to the assumptions made for the discount rate and pensioner mortality. The scale of the risks implicit in these assumptions is indicated in paragraphs 6.6 and 6.10 above. Further analysis on the sensitivity of valuation results to the discount rate and asset value was contained in a draft paper I presented for consideration by the Trustee at their March 2017 meeting.



7 Results of the Review

Statutory Funding Objective

- 7.1 The Scheme's Statutory Funding Objective is to have sufficient assets to cover the Scheme's Technical Provisions as determined using the method and assumptions described in the earlier sections of this report. This section compares the Scheme's assets and Technical Provisions as at the valuation date. Corresponding figures as at the previous valuation are also shown. My certificate regarding the calculation of the Technical Provisions is given in Appendix G.

Valuation as at	31 December 2016 (MRC section)	31 December 2013 (MRC section)	31 December 2013 (whole scheme)
	£ million	£ million	£ million
Liabilities			
Active members	332.3		314.5
Deferreds	270.9		193.6
Pensioners	475.4		386.0
Total value of accrued benefits (Technical Provisions)	1,078.6	890.0	894.1
Market Value of Assets (excluding AVCs)	1,338.7	1,045.4	1,054.2
Surplus/(Deficit) (Assets less Technical Provisions)	260.1	155.4	160.1
Funding level (Assets / Technical Provisions)	124%	117%	118%

The value of the Scheme's Technical Provisions on the basis adopted is £1,078.6m. If all explicit margins for prudence were removed the corresponding liability value would amount to approximately £945m. The explicit margin for prudence has reduced since the last valuation.

- 7.2 The above shows that as at 31 December 2016 there was a funding surplus and the Scheme's assets exceeded the Scheme's Technical Provisions by £260.1 million. The funding level (ratio of assets to liabilities) was 124%. These figures compare with a surplus of £160.1 million and funding level of 118% at the 31 December 2013 valuation (considering the whole Scheme before sectionalisation). An analysis of the change in position is shown in section 8.



Additional funding objective

- 7.3 The additional funding objective seeks to make an explicit addition to the scheme's technical provisions to recognise the Trustee's aim of further protecting the members' accrued benefits in the event of unknown future events. This addition is also intended to manage the sponsor's desire for contribution stability by limiting the amount of surplus which may be considered for offsetting the cost of ongoing accrual. The additional reserve is determined by using a discount rate 0.5% lower than that adopted for the Statutory Funding Objective (4.3% a year at this valuation). Results taking account of the additional funding objective are shown below.

Valuation as at 31 December 2016	Statutory Funding Objective	Additional Funding Objective
	£ million	£ million
Total value of accrued benefits (Technical Provisions)	1,078.6	1,179.7
Market Value of Assets (excluding AVCs)	1,338.7	1,338.7
Surplus/(Deficit) (Assets less Technical Provisions)	260.1	159.0
Funding level (Assets / Technical Provisions)	124%	113%

- 7.4 The above shows that as at 31 December 2016 under the Scheme's additional funding objective there was a surplus of £159.0m, which corresponds to an additional reserve, relative to the Statutory Funding Objective, of £101.1m.

Cost of accruing benefits

- 7.5 The cost of accruing benefits (the joint contribution rate payable by the members and employers) calculated using the method and assumptions described in earlier sections of this report is 29.3% of Salary for the benefits in force as at 31 December 2016. The rate is higher than that determined as at 31 December 2013. At this valuation an explicit allowance for expenses of 1.6% is being added to the cost of accrual (compared to an addition of 1.4% for the 2013 valuation) giving a total contribution requirement of 30.9%.
- 7.6 Most members contribute at the rate of 6.5% of Salary.



Agreed contribution rate allowing for surplus

7.7 The Trustee and employers have agreed the following contribution rate for MRC:

	31 December 2016	31 December 2013
	% of Salary	% of Salary
Standard contribution rate in respect of accruing benefits	29.3	23.1
Allowance for expenses	1.6	1.4
Less member contributions	(6.5)	(6.5)
Less adjustment for funding surplus	(9.4)	(4.0)
MRC contribution rate	15.0%	14.0%

7.8 If the current assumptions are borne out in practice then the funding surplus could support the above level of contributions for around 42 years.

Other participating employers

7.9 MRC have indicated that the existing differential between the contribution rate paid by MRC and by other participating employers of 0.9% should remain, thus participating employers will contribute 15.9% of Salary.

Stability of contribution rates

7.10 The cost of accrual has been calculated using the Projected Unit Method, with a three year control period. This gives an estimate of the cost of benefits accruing over the three year period to the next valuation. The chosen method can be expected to give stable long term contribution rates for accruing benefits where the membership profile remains broadly stable over that long term (all other things being equal).

Expected position at next valuation

7.11 The next actuarial valuation of the Scheme is due to be carried out as at 31 December 2019. If all the assumptions made for the purposes of assessing the Statutory Funding Objective are borne out in practice, and contributions are paid in line with the Schedule of Contributions, the estimated funding level as at the next valuation date is expected to have decreased from 124% on the Statutory Funding Objective (see paragraph 7.1) to 123%.

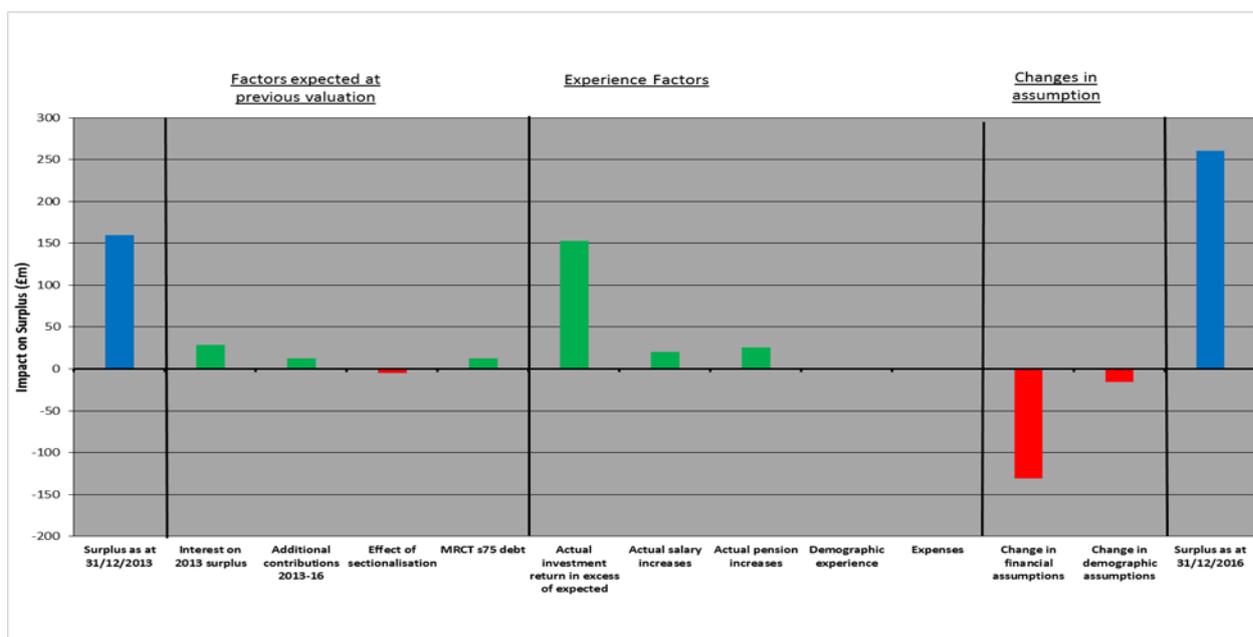


8 Analysis of the results

Statutory Funding Objective

8.1 The following table analyses how the Scheme's funding position, assessed on the Statutory Funding Objective basis, has changed since the valuation as at 31 December 2013. An alternative presentation is shown in the chart below the table.

	£ million
Expected factors	
> Surplus at 31 December 2013	160.1
> Interest on surplus 2013 to 2016	28.4
> Contributions vs accrual cost	12.3
> Effect of sectionalisation	(5.2)
> MRCT section 75 debt	12.7
Experience factors (relative to assumptions)	
> Return on assets	152.8
> Actual pay increases	20.4
> Actual pension increases	25.7
> Demographic experience (member movements etc)	1.0
> Expenses	(1.4)
Changes in assumptions/benefits	
> Change in financial assumptions	(131.0)
> Change in demographic assumptions	(15.7)
Surplus at 31 December 2016	260.1





Cost of accruing benefits

- 8.2 The standard joint contribution rate for accruing benefits assessed at this valuation is 29.3% of Salary, which is higher than that determined at the previous valuation. The increase is primarily due to a worsening in market conditions resulting in a lower discount rate.



9 Solvency position

Estimated solvency position

- 9.1 This section of the report considers the Scheme's financial position on a solvency, or buy out, basis. The solvency position has been assessed by comparing the Scheme's assets with an estimated cost of securing the Scheme's liabilities with an insurance company as at the valuation date. For this purpose all active members are assumed to leave service on the valuation date and the cost of securing insurance policies has been estimated based on principles likely to have been adopted by the market as at that date. These assumptions are different to those adopted for the purposes of determining the Technical Provisions owing to the differing environments in which ongoing pension schemes and insurance companies operate. The assumptions which are most important in the solvency assessment are those of pensioner mortality, discount rate, and the rate of future increases in benefits. The specific assumptions I have adopted are as follows. Comparable assumptions adopted for the 31 December 2013 valuation are also shown.

	Assumptions for solvency assessment	
	As at 31 December 2016	As at 31 December 2013
Pensioner mortality		
Baseline	S2NXA-14 x-1	90% of S1NXA
Improvements	ONS 2014 population projections	CMI 2012
Discount rate (net future increases)		
Current pensioners	(1.1)%	0.1%
Future Pensioners		
• In deferment	(1.1)%	(0.3)%
• In payment	(1.1)%	0.1%
Allowance for expenses	£30.2m	£25.7m

Assets and liabilities in respect of members' money purchase Additional Voluntary Contributions would be discharged separately in the event of a wind-up.



- 9.2 The results of the solvency assessment as at the valuation date are shown below together with the corresponding results as at 31 December 2013.

Approximate solvency assessment	As at 31 December 2016 (MRC section only)	As at 31 December 2013 (whole scheme)
	£ million	£ million
Liabilities including expenses	1,996	1,549
Market Value of Assets (excluding AVCs)	1,339	1,054
Shortfall (Assets less estimated cost of securing insurance policies)	657	495
Solvency level (Assets / Cost of insurance policies)	67%	68%

The Trustee should be aware that the above estimates are a guide to the Scheme's solvency position at a particular time only, market changes both in discount rates and in supply and demand for this type of business mean that no one estimate may be relied upon, and that ultimately, the true position can only be established by completing a buyout.

- 9.3 The estimated solvency position has worsened marginally since 31 December 2013. This is primarily because of an increase in the estimated cost of insuring the benefits, largely due to a reduction in the yields available on gilts, which insurers primarily base their pricing on. The impact of falling gilt yields has been partially offset due to the return on assets over the intervening period being higher than expected.
- 9.4 The above shows the Scheme had insufficient assets to be able to secure benefits in full with insurance policies at the valuation date. The impact on members' benefits would depend on whether or not a replacement sponsor could be found. If the Scheme were to wind up with a solvent employer, that employer would be required to meet the shortfall in full to enable members' benefits to be secured in full. In the event of the Scheme being wound up with no solvent employer it may become eligible for the Pension Protection Fund (PPF). This would result in the PPF assuming responsibility for the Scheme. Benefits would be payable in accordance with the PPF's regulations. A summary of the benefits to which members would become entitled if the Scheme were transferred into the PPF is given in Appendix E. These benefits are lower in some respects than members' entitlements under the Rules of the Scheme thus most members would suffer some loss in the event the Scheme transferred to the PPF.



- 9.5 Under the Scheme's rules, if on wind up there were insufficient assets to secure benefits in full, the available assets would be allocated in a specific order of priority. The actual order of priority and the coverage for each item as at the valuation date and at the last valuation would be as follows:

Wind-Up Priorities on Solvency Basis		31 December 2016	31 December 2013
		% of benefits secured	% of benefits secured
(i)	Expenses related to winding up scheme	100%	100%
(ii)	Liabilities in respect of PPF benefits	86%	100%
(iii)	Other benefits	0%	4%

Future developments in solvency position

- 9.6 If contributions are paid in accordance with the agreed Schedule of Contributions, and actual experience were in line with the solvency assessment assumptions, the solvency position of the scheme would be expected to deteriorate in the three years following the valuation, to around 62%. This is because the cost of accruing benefits in the scheme, on a solvency basis, is expected to significantly exceed the contributions paid.
- 9.7 However if the return on assets over the period to 31 December 2019 were in line with that assumed for determining the Technical Provisions, the funding level on the buy-out basis would be likely to slightly improve from its current level of 67% to around 68%. In both cases this assumes the assumptions underlying the pricing of insuring the benefits are unchanged.

Pension Protection Fund position

- 9.8 I am required to report to the Trustee the value of the assets and protected liabilities as determined in accordance with Section 179 of the Pensions Act 2004 (Pension Protection Fund : Valuations to determine scheme underfunding). The guidance and assumptions underlying this determination are specified by the Pension Protection Board from time to time. The guidance and assumptions used for the current assessment are termed G7 and A8 and may be found at www.pensionprotectionfund.org.uk



- 9.9 The assets and protected liabilities determined in accordance with Section 179 as at 31 December 2016 are as follows. The required certificate is enclosed in Appendix F.

Section 179 valuation	As at 31 December 2016
	£ million
Liabilities for members	1,519.2
Estimated wind up, installation and payment expenses	25.8
Total protected liabilities	1,545.0
Total assets	1,338.7
Section 179 funding level	87%



10 Conclusions

Results

- 10.1 Based on the method and assumptions as described in this report, the recommended and agreed rates of contribution payable to the MRC section with effect from 1 April 2018 are as follows. MRC also contributes additional amounts to the University Section, details of those contributions are set out in the report on the valuation of that Section carried out as at 31 December 2016.

	Contributions payable % Salary
	1 April 2018 – 31 March 2023
By most members	6.5%
By MRC	15%
By participating employers	15.9%

Next review

- 10.2 The contribution rates should be reviewed no later than at the next actuarial valuation which is due to be carried out no later than 31 December 2019.



Appendix A: Summary of Scheme Benefits

This Appendix summarises the main provisions of the MRCPS as at 31 December 2016 in respect of future service from that date.

Type of Scheme

Benefits are defined in terms of the member's salary and reckonable service. The scheme was contracted-out of the State Second Pension (previously the State Earnings-Related Pension Scheme). As a consequence, the scheme must pay pension benefits equal to at least the Guaranteed Minimum Pension for service prior to 6 April 1997. Contracting-out ended in April 2016 with the introduction of the new state pension.

Eligibility

All full-time and part-time employees.

Normal Retiring Age

Age 65 for Scientists and all new entrants since 1 September 1997. Age 60 for non-Scientists who were in service before 1 September 1997 and who did not opt to change their NRA to 65.

Salary

Is basic pay plus certain allowances (excluding overtime pay) as received by a member over any period.

Pensionable Salary

Is the best year's pensionable pay within the last 3 years.

Normal Retirement Benefits

- > On retirement, a member's pension is equal to $1/80^{\text{th}}$ of Pensionable Salary for each year of scheme membership (calculated in years and days) subject to a maximum of 40 years at NRA and 45 on later retirement.
- > On retirement, a lump sum benefit equal to 3 times the annual pension. Members may opt to commute pension for additional lump sum, subject to overall HMRC limits, at the rate of £14: £1 pa.
- > On death after retirement, a pension is payable to a dependant of the member at one half of the rate of the member's pension: i.e. effectively at $1/160^{\text{th}}$ of Pensionable Salary per year of service.

Pensions Increases

Pensions in payment and deferment are increased in line with prices in accordance with the Pensions (Increase) Acts.

Ill-health Retirement Benefits

A member who retires on ill-health grounds will receive an immediate pension and lump sum benefit, calculated in the same way as for normal retirement except that service is enhanced to Normal Retiring Age).



Dependants' Pensions on Death in Service

A dependant's pension arising from death in service is equal to one-half of the pension that would have been payable had the member taken immediate ill-health retirement.

Short-term dependant's Pensions

- > On death in service, dependants receive a short-term pension at the rate of the member's pensionable pay, for a period of 3 months (or for 6 months if there is an eligible child or children).
- > On death after retirement, dependants receive a short-term retirement pension equal to the member's pension for 3 months (or 6 months if there is an eligible child).

Lump Sum Death Benefits

- > On death in service, a lump sum equal to 4 times Pensionable Salary.
- > On death after retirement, a balance payment equal to the excess (if any) of 5 times the annual pension, less pension payments and lump sum already received.

Children's Pensions

If a dependant's pension is payable, an additional pension equal to one-half of the dependant's pension is payable for each eligible child, with a maximum of two children counting. (If there is no dependant, children's pensions are increased by one-third).

Withdrawal

Provided the member has completed 2 years' service, a deferred pension and lump sum benefit based on accrued service are payable from Normal Retiring Age. For members with less than 2 years' service, a refund of contributions (less tax and a share of the Contributions Equivalent Premium) is payable. At the member's option, a transfer value may be paid to another pension arrangement (subject to certain restrictions).

Member Contributions

Most active members contribute to the scheme either at the rate of 6½% (normal retiring age 65) of Salary or at the rate of 6¼% (normal retiring age 60) of Salary. A small minority of members have reserved rights to contribute to the scheme at the rate of 5%, 5¼% or 6% of Salary. These rates are set out in the Rules of the scheme.

These contributions are to be deducted from pay by the employer and paid to the scheme on or before the nineteenth day of the calendar month following deduction.

Members may pay additional contributions on a voluntary basis.



Appendix B: Summary of membership at 2013 and 2016 valuations

Membership data was provided for the whole scheme. Therefore the exact amount of past service for individual members that is attributable to each section was not available. In the absence of this, the service dates and employment transfer dates were used to pro-rate past service between the MRC and University Sections.

The following data summaries are for the whole scheme, but also contain the relevant proportions attributable to the MRC Section.

Table B1: Active members as at 31 December 2016 [Whole scheme]⁹

	Men	Women	Total
Number of members	1,168	1,347	2,515
Average age (salary weighted)	46	44	45
Average Service (unweighted)	11.2	9.7	10.4
Total pensionable salary (£ pa)	49,686,000	49,115,000	98,801,000
Average pensionable salary (£ pa)	42,500	36,500	39,300
Average accrued pension	7,500	5,100	6,200
Proportion of past service attributable to MRC section	94%	91%	93%
Proportion of salary attributable to MRC section for future service	78%	73%	75%

Table B2: Active members as at 31 December 2013 [Whole scheme]¹⁰

	Men	Women	Total
Number of members	1,428	1,710	3,138
Average age (unweighted)	43	41	42
Average Service (unweighted)	10.4	8.8	9.5
Total pensionable salary (£ pa)	58,045,000	58,272,000	116,317,000
Average pensionable salary (£ pa)	40,600	34,100	37,100
Average accrued pension	6,600	4,300	5,400

⁹ Excludes 32 zero-hour contract members

¹⁰ Excludes 12 zero-hour contract members



Table B3: Deferred members as at 31 December 2016 [Whole scheme]¹¹

	Men	Women	Total
Number of members	2,002	2,586	4,588
Total deferred pension (£ pa)	7,207,000	7,575,000	14,782,000
Average deferred pension (£ pa)	3,600	2,900	3,200
Average age (weighted by pension)	51	49	50
Proportion of pension attributable to MRC section	98%	98%	98%

Table B4: Deferred members as at 31 December 2013 [Whole scheme]¹²

	Men	Women	Total
Number of members	1,761	2,249	4,010
Total deferred pension (£ pa)	6,361,000	6,006,000	12,367,000
Average deferred pension (£ pa)	3,600	2,700	3,100
Average age (unweighted)	47	46	46

¹¹ At the 2016 valuation there were also 132 pending members

¹² At the 2013 valuation there were also 190 pending members



Table B5: Pensioner members as at 31 December 2016 [Whole scheme]

	Men	Women	Total
Normal health members			
Number of members	1,266	1,221	2,487
Total pension (£ pa)	20,530,000	8,618,000	29,148,000
Average pension (£ pa)	16,200	7,100	11,700
Average age (weighted by pension)	74	72	73
Ill health members			
Number of members	38	40	78
Total pension (£ pa)	439,000	358,000	797,000
Average pension (£ pa)	11,600	8,900	10,200
Average age (weighted by pension)	68	63	66
Adult dependants			
Number of members	53	267	320
Total pension (£ pa)	188,000	2,253,000	2,441,000
Average pension (£ pa)	3,600	8,400	7,600
Average age (weighted by pension)	69	78	77
Child dependants			
Number of members	19	13	32
Total pension (£ pa)	51,000	31,000	82,000
Average pension (£ pa)	2,700	2,400	2,600
Average age (weighted by pension)	18	19	18
Total pensioners			
Number of members	1,376	1,541	2,917
Total pension (£ pa)	21,209,000	11,259,000	32,468,000
Average pension (£ pa)	15,400	7,300	11,100
Average age (weighted by pension)	73	73	73
Proportion of pension attributable to MRC section	99.8%	99.6%	99.7%

Table B6: Pensioner members as at 31 December 2013 [Whole scheme]

	Men	Women	Total
Total pensioners¹³			
Number of members	1,236	1,384	2,654
Total pension (£ pa)	19,082,000	9,830,000	28,982,000
Average pension (£ pa)	15,400	7,100	10,900
Average age (unweighted)	72	72	71

¹³ Totals in the males and females columns exclude male and female children, however the total column includes children.



Appendix C: Asset and accounts details

Table C1: Distribution of invested assets by investment class at 31 December 2016

Asset class	%
UK Fixed Interest	4.4
Index linked securities	3.9
UK Equities	11.1
Overseas Equities	17.0
Property (Direct)	12.9
Pooled investment vehicles:	
UK Equity	9.9
Overseas Equity	19.5
Private Equity	3.2
Infrastructure	3.5
Property	11.0
Bonds	2.1
AVC Fund	0.2
Cash deposits and other investment balances	1.3
Total	100.0

Table C2: Revenue account for the period 1 January 2014 to 31 December 2016 (£000)

	2016	2015	2014
Market value of the Section's assets as at start of period⁽¹⁾	1,190,894	1,136,058	1,056,529
Income			
Contributions receivable	19,553	23,057	37,123
Transfers in	119	338	437
Investment income	40,360	29,976	30,523
Other receipts			1
Total income	60,032	53,371	68,084
Expenditure			
Benefits payable	38,574	35,813	35,098
Payments to and on account of leavers	1,256	1,266	2,405
Administrative expenses	979	2,032	1,603
Investment management expenses (incl taxation)	6,979	6,012	8,525
Transfer to University Section		4,100	8,797
Total expenditure	(47,788)	(49,223)	(56,428)
Net income	12,244	4,148	11,656
Change in market value of investments	137,993	50,688	67,873
Market value of the Section's assets at end of period⁽¹⁾	1,341,131	1,190,894	1,136,058

⁽¹⁾ The Fund values shown include the value of AVC Funds



Appendix D: Demographic assumptions

Assumed number of exits per 10,000 members in the year following the age stated

Male members

Exact Age	Deaths	Ill-Health Retirement	Voluntary Resignations	Promotional Salary Scale
20	3	2	975	100
25	3	2	810	128
30	4	2	705	157
35	5	3	540	185
40	8	4	360	207
45	13	6	210	228
50	24	13	105	247
55	37	31	30	263

Female members

Exact Age	Deaths	Ill-Health Retirement	Voluntary Resignations	Promotional Salary Scale
20	2	2	4949	100
25	2	3	4599	136
30	3	4	2969	169
35	4	6	1394	198
40	6	7	629	221
45	7	9	338	244
50	14	20	225	258
55	19	40	113	267

Age retirement

All members assumed to retire at their Normal Retiring Age.

Mortality

Mortality in retirement	31 December 2016	31 December 2013
Baseline		
Normal health	S2NXA-14 x-1	S1NXA-12
Ill health	S2NXA-14 x-1	S1NXA-12
Dependants	Male: S2NMA-14 x-1 Female: S2DFA-14 x-1	S1NXA-12
Improvements	ONS 2014 population projections	ONS 2012 population projections

Mortality assumptions are based on year of usage 2016 for the current valuation and 2013 for the previous valuation



Remaining expectation of life - Current Pensioners

	31 December 2016	31 December 2013
Male 60	29.7 years	28.2 years
Male 65	24.7 years	23.3 years
Female 60	31.4 years	30.7 years
Female 65	26.4 years	25.8 years

Remaining expectation of life - Future Pensioners

	31 December 2016		31 December 2013 (current age 40)
	(current age 51*)	(current age 40)	
Male 60	30.7	31.9	30.5 years
Male 65	26.2	27.3	26.0 years
Female 60	32.3	33.5	33.0 years
Female 65	27.8	28.9	28.5 years

* Average age of active members weighted by liabilities

Proportions partnered at death

Exact Age	Male	Female
20	10%	22%
30	70%	82%
40	90%	89%
50	99%	89%
60	100%	83%
70	94%	70%
80	71%	42%

Age difference between member and spouse (or other dependant)

Male members at all ages = +3 years
Female members at all ages = -2 years
(Male assumed older)

Commutation

No allowance.

Remarriage rate

No allowance.

Expenses

An explicit allowance of 1.6% of pay has been added to the contribution rate.



Appendix E: Pension Protection Fund benefits

The Pension Protection Fund offers limited protection to members of underfunded defined benefit pension schemes in the event of employer insolvency. The following benefits are provided:

- > 100% of the pension in payment where the pensioner is over Normal Retirement Age (NRA), or is retired on ill health grounds or is a dependant
- > 90% of other member benefits paid from NRA (or reduced for early retirement). These benefits are subject to a cap with an initial level (for 2017/18) of £38,505.61 at age 65 (adjusted for other ages and inclusive of the value of any additionally accrued lump sum), subject to annual review
- > Pension increases in deferment, in line with inflation up to a maximum of 2.5% pa
Pension increases in payment, a maximum of 2.5% pa (CPI if less) on post-1997 accrued benefits only, nil in respect of benefits accrued before April 1997, and
- > 50% spouse's (or other dependant's) pension.



Appendix F: Section 179 Valuation Certificate

Scheme/Section details:

Full name of scheme:	MRC Pension Scheme
Name of section, if applicable:	MRC Section
Pension Scheme Registration Number:	19017402
Address of scheme (or section, where appropriate)	Medical Research Council 14 th Floor One Kemble Street London WC2B 4AN

s179 valuation

Effective date of this valuation (dd/mm/yyyy)	31/12/2016
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Guidance and assumptions

s179 guidance used for this valuation	G7
s179 assumptions used for this valuation	A8

Assets

Total assets (this figure should <u>not</u> be reduced by the amount of any external liabilities and should <u>include</u> the insurance policies referred below)	£1,338,655,000
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Date of relevant accounts (dd/mm/yyyy)	31/12/2016
--	------------

Percentage of the assets shown above held in the form of a contract of insurance where this is <u>not</u> included in the asset value recorded in the relevant scheme accounts	0%
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Liabilities

Please show liabilities for:

Active members (excluding expenses)	£477,336,000
Deferred members (excluding expenses)	£511,405,000
Pensioner members (excluding expenses)	£530,492,000
Estimated expenses of winding up	£16,692,000
Estimated expenses of benefit installation/payment	£9,077,000
External liabilities	£0
Total protected liabilities	£1,545,002,000



Please provide the percentage of the liabilities shown above that are matched by insured annuity contracts for:

Active members	0%
Deferred members	0%
Pensioner members	0%

Proportion of liabilities

Please show the proportion of liabilities which relate to each period of service for:

	Before 6 April 1997	6 April 1997 to 5 April 2009 (inclusive)	After 5 April 2009
Active members	13%	43%	44%
Deferred members	19%	57%	24%

	Before 6 April 1997	After 5 April 1997
Pensioner members	55%	45%

Number of members and average ages

For each member type, please show the number of members and the average age (weighted by protected liabilities) as at the effective date of this valuation. Average ages should be rounded to the nearest whole year.

	Number	Average age
Active members	2,515	50
Deferred members	4,588	49
Pensioner members	2,917	70

I certify that this valuation has been carried out in accordance with the Pension Protection Fund (Valuation) Regulations 2005 and with the appropriate section 179 guidance and assumptions issued by the Board of the Pension Protection Fund. I also certify that the calculated value of the protected liabilities is, in my opinion, unlikely to have been understated.

Signature 

Name Sue Vivian

Qualification Fellow of the Institute of Actuaries

Employer Government Actuary's Department

Date 7 December 2017



As required, under Part 6 of the Guidance on undertaking a s179 valuation, the s179 certificate should form part of the scheme actuary's s179 valuation report. The details contained in this certificate should be separately submitted to the PPF as part of the annual scheme return via the Pension Regulator's system 'Exchange'.

This certificate should not be sent directly to the Pension Protection Fund.



Appendix G: Actuarial Certificate

ACTUARIAL STATEMENT MADE FOR THE PURPOSES OF SECTION 225 OF THE PENSIONS ACT 2004 & REGULATION 7(4a) OF THE OCCUPATIONAL PENSION SCHEMES (SCHEME FUNDING) REGULATIONS 2005

Name of scheme: MRC Pension Scheme: MRC Section

Calculation of Technical Provisions

I certify that, in my opinion, the calculation of the scheme's Technical Provisions as at 31 December 2016 is made in accordance with regulations under Section 222 of the Pensions Act 2004. The calculation uses a method and assumptions determined by the trustees of the scheme and set out in the Statement of Funding Principles dated 10 November 2017

Signature:

Date: 7 December 2017

Name: Sue Vivian Qualification: Fellow of the Institute of Actuaries

Address: Finlaison House,
15-17 Furnival St
London
EC4A 1AB Name of employer: Government Actuary's Dept