Government Actuary's Department

MRC Pension Scheme: University section

Actuarial valuation as at 31 December 2016

Report by the Actuary

Date: 7 December 2017

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Contents

1 Executive Summary

Introduction

1.1 This is my report on the actuarial valuation of the University 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 employer[1] are as follows:

> The University section's Technical Provisions, the liabilities for all accrued benefit entitlements as at 31 December 2016 were £45.9m. Taking account of an additional funding objective set by the trustees the accrued liabilities amounted to £65.6m.

> The market value of assets as at 31 December 2016 (net of AVCs) was £66.9m.

> In accordance with the Statutory Funding Objective there is a funding surplus of £21.0 m and a funding level (ratio of assets to liabilities) of 146%. Taking account of the additional funding objective the surplus was £1.3m, representing a funding level of 102%. At the previous valuation as at 1 January 2014 the funding level was 131%. The principle reasons for the change in funding level are the additional contributions paid and higher than expected investment returns over the intervaluation period partially offset by reduced future return expectations which result in a higher present value being placed on future benefit payments.

Contribution requirements

1.4 This valuation is the basis on which contributions are agreed for the period from 1 April 2018. This report covers the rate of contributions to be paid to the 'University section' These 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] Under the terms by which other employers participate in the Scheme (see paragraph 2.12), MRC (the Principal Employer) is empowered to act on behalf of all University employers in all regards under Part 3 of the Pensions Act 2004.

1.5 On the assumptions agreed, the future cost of benefits accruing including allowance for expenses is 46.0% of Salary. The rate of 46.0% is higher than that of 42.8% determined at the 2014 valuation due to 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. It has been agreed that participating employers will increase their rate of contribution from 14.9% to 15.9% of Salary. MRC will pay the balance of contributions due of 23.6% of Salary.

1.6 If experience is in line with the assumptions made for this valuation the funding level, assessed by reference to the Statutory Funding Objective, is expected to be 126% at the next valuation, due 31 December 2019.

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 University section. Should the strength of the employers' covenants weaken the assessment of the section's Technical Provisions may be expected to change 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 sufficient assets to fully secure benefits with an insurance company. We have estimated that 108% of the liabilities could have been secured in this manner using the section's existing assets.

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 employer[2] 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 Section 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 period[3].

1.13 The financial position of the University section 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.

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[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 University section of the Scheme which was carried out as at 31 December 2016 and records the decisions agreed by the Trustee and the employer[4] in relation to future contribution payments to the University section.

2.2 The University section was created on 1 January 2014 by the sectionalisation of the Scheme into the University section and the MRC section. Members of the University section are existing members of the Scheme whose employment was transferred to a University on the dates shown in paragraph 2.12. All liability relating to benefits accrued after the date of transfer rests in the University section, with any liability relating to service before the date of transfer remaining in the 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 second full review of the Scheme under the Scheme Funding Regulations introduced by the Pensions Act 2004. The previous review was carried out as at 1 January 2014, and the formal report on that valuation was dated 16 January 2014.

[4] Under the terms by which other employers participate in the Scheme (see paragraph 2.12), MRC (the Principal Employer) is empowered to act on behalf of all University employers in all regards under Part 3 of the Pensions Act 2004.

2.5 At the previous review as at 1 January 2014, the participating employer contribution rates in the University section were retained from those payable in the MRC section at 14.9% of Salary. 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. MRC pay the balance of contributions due, which was 21.4% of Salary following the 2014 valuation.

2.6 MRC have paid additional special contributions to the University section of the Scheme since the last valuation of £5.7 million in 2014, £0.8 million in 2015 and £4.55 million in 2016.

Changes to the University section

2.7 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. A further top up payment in respect of this transfer was also made by MRC of £4.0 million in 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. University of Nottingham became a participating employer on 1 June 2016.

Benefits to be valued

2.8 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.

2.9 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.

Pension increases

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

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

Intervaluation experience

2.11 The Scheme's experience over the period since the 1 January 2014 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

2.12 The participating employers at the valuation date and the date from which their participation commenced are as follows.

	Date of participation
University College London	1 August 2013 1 April 2015
University of Cambridge	1 May 2013 1 October 2013 1 December 2016
University of Dundee	1 May 2013
University of Edinburgh	1 October 2011
University of Glasgow	1 May 2013 1 June 2013
University of Nottingham	1 June 2016
University of Oxford	1 April 2010 1 July 2013 1 July 2016
University of Southampton	1 May 2013

Creation of UKRI

2.13 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.

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 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 £66.9m.

3.4 The asset value of £66.9m may be compared with the corresponding value (£8.1m) at the previous review date of 1 January 2014. 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 13.4% a year.

3.5 The assets of the MRC Pension Scheme were invested by Royal London Asset Management as at 31 December 2016. 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 23 November 2013, and summarised below.

	Benchmark Allocation %	
	31 December 2016	**1 January 2014**
Index linked gilts	75%	75%
UK Corporate bonds	25%	25%
Total	100%	100%

3.6 Following consultation with MRC during the valuation process, the Trustee agreed to change the investment strategy by switching 20% of the allocation from index linked gilts to equities.

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. In this assessment all active members are assumed to leave service on the valuation date and different assumptions are typically 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 2014 valuation the Trustee adopted the 'defined accrued benefits method'. This method was adopted in conjunction with assumptions set by reference to the expected cost of buying out liabilities for the purposes of assessing the statutory funding objective. The method and assumptions chosen were in recognition of MRC's aim of minimising the size of any section 75 debt arising (given MRC have indemnified university employers against any future section 75 debt and are unable to otherwise make provision for such liabilities due to government accounting constraints).

4.7 As part of the consultation process on the valuation MRC requested a modest adjustment to the investment strategy in order to manage affordability whilst continuing to seek to minimise section 75 debts. The Trustee agreed to this and will switch 20% of the asset allocation from index linked gilts to equities. Given the continued focus on minimising section 75 debts the defined accrued benefits method has been retained for this valuation. However it has been adapted slightly to include allowance for pay increases for a period of up to 5 years after the valuation date. The financial assumptions have also been adapted to reflect the change in investment strategy.

4.8 An additional objective is that as far as possible the Trustee will seek to maintain sufficient assets in the scheme to avoid section 75 debts arising in the future. Whilst the sponsor recognises it is not able to pay contributions at a level which would support an investment strategy to minimise the risk of such debts ever occurring the trustee has set an objective to support the aim. Under the additional objective liabilities will be assessed on a buy-out basis (including allowance for 5 years future pay growth) and compared to existing assets before any consideration is given to offsetting future accrual costs in light of any surplus of assets against Technical Provisions.

4.9 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 five years.

4.10 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 prudently[5]. 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 (as they were at the 2014 valuation).

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 the covenant is 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, including the University section, 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.

[5] 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 1 January 2014. 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**		**1 January 2014**
	SFO[2] % pa	**AFO[3] % pa**	**% pa**
Investment Return/Discount rate[1]	2.6%	1.9%	3.6%
Earnings Increases (long term) + promotional scale	4.1%	5.0%	5.0%
RPI	3.5%	3.5%	3.5%
CPI	2.6%	3.0%	3.5%
Pension increases	2.6%	3.0%	3.5%
Discount rate net earnings increase	**-1.5%**	**-3.1%**	**-1.4%**
Discount rate net pension increases	**0.0%**	**-1.1%**	**0.1%**

[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 1 January 2014 valuation are summarised below. Further information and the corresponding expectation of lives are shown in Appendix D.

Mortality in retirement	**31 December 2016**	**1 January 2014**
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 2014 for the previous valuation

5.8 All other demographic assumptions are unchanged since the 2014 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 2014 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 1.1% 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 of the whole scheme 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 (though closed to new employees of the participating employers) 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, although the additional funding objective is designed to minimise the risk of this happening.

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 £7.5 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 Once the section is invested in equities the risk of investment underperformance increases. However, the margin for prudence (which is made by making an explicit deduction from the best estimate of return) is designed to reduce this risk but it does not remove all risk. 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 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 the CPI measure of inflation, 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 £3.5m. 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 £1m. 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.

6.13 **Insurance risk** Changes in the Insurance market could lead to an increase in bulk buy out pricing. In this situation material section 75 debts could still arise. No allowance has been taken into account for this risk.

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. Figures from the Scheme's Statutory Funding Objective 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**	**1 January 2014**
Liabilities	£ million	£ million
Active members	34.2	6.2
Deferreds	8.8	
Pensioners	2.9	
Total value of accrued benefits (Technical Provisions)	45.9	6.2
Market Value of Assets (excluding AVCs)	66.9	8.1
Surplus/(Deficit) (Assets less Technical Provisions)	**21.0**	**1.9**
Funding level (Assets / Technical Provisions)	**146%**	**131%**

The value of the Scheme's Technical Provisions on the basis adopted is £45.9m. If all explicit margins for prudence were removed the corresponding liability value would amount to approximately £39m.

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 £21 million. The funding level (ratio of assets to liabilities) was 146%. These figures compare with a surplus of £1.9 million and funding level of 131% at the 1 January 2014 valuation. An analysis of the change in position is shown in section 8.

Additional funding objective

7.3 The additional funding objective is that as far as possible the Trustee will seek to maintain sufficient assets in the scheme to avoid section 75 debts arising in the future. Under the additional objective, liabilities will be assessed on a buy-out basis (including allowance for 5 years future pay growth) and compared to existing assets.

Valuation as at 31 December 2016	**Statutory Funding Objective**	**Additional Funding Objective**
	£ million	£ million
Total value of accrued benefits (Technical Provisions)	45.9	65.6
Market Value of Assets (excluding AVCs)	66.9	66.9
Surplus/(Deficit) (Assets less Technical Provisions)	**21.0**	**1.3**
Funding level (Assets / Technical Provisions)	**146%**	**102%**

7.4 The above shows that as at 31 December 2016 under the Scheme's additional funding objective there was a surplus of £1.3m, so the objective was met at the valuation date.

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 44.4% of Salary for the benefits in force as at 31 December 2016. The rate is slightly higher than that determined as at 1 January 2014. At this valuation an explicit allowance for expenses of 1.6% is being added to the cost of accrual (compared to an addition of 1.1% for the 2014 valuation) giving a total contribution requirement of 46%.

7.6 Most members contribute at the rate of 6.5% of Salary. MRC have indicated that the existing differential between the contribution rate paid by MRC in the MRC section and by other participating employers of 0.9% should remain, thus participating employers will contribute 15.9% of Salary (an addition of 1.0% since the previous valuation). It has been agreed that the current surplus should be retained in the scheme and thus the balance of the accrual cost, 23.6% pa of Salary, will be met by MRC.

Stability of contribution rates

7.7 The cost of accrual is susceptible to changes in market conditions from time to time. Reductions in the yields available from the asset classes used may be expected to increase the required rate of employer contribution and vice versa. The periods of time during which members remain in the University section may also result in some variability in contribution requirements (for existing service and future accrual) at successive valuations.

Expected position at next valuation

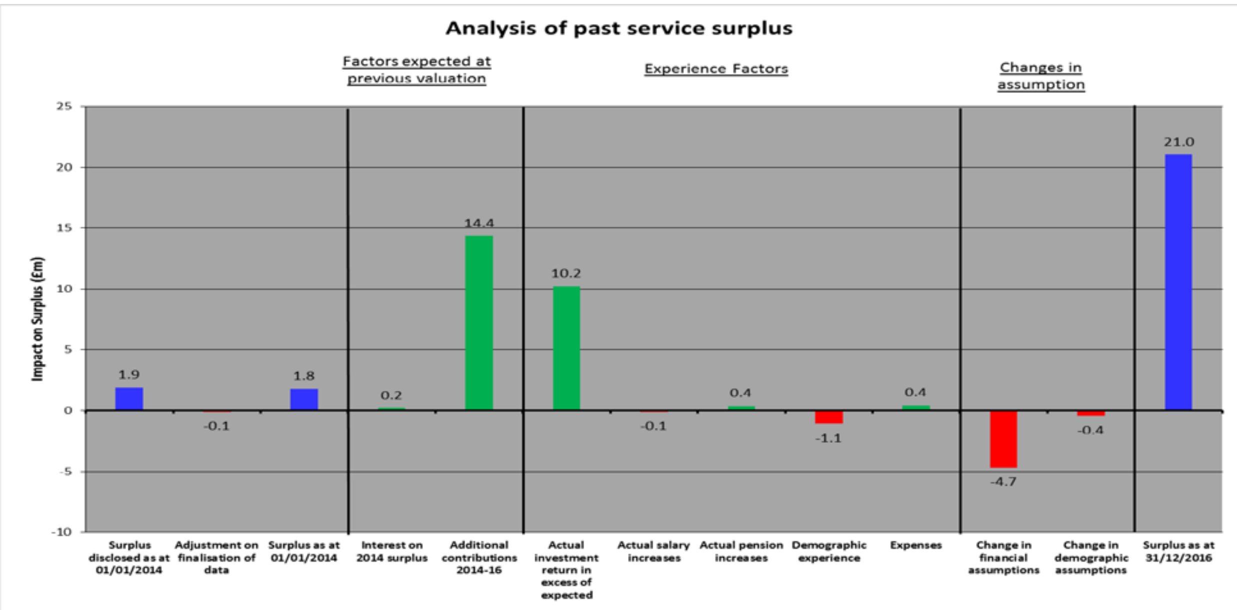
7.8 The next actuarial valuation of the Scheme is due to be carried out as at 31 December 2019. If all the assumptions made for the purposes of assessing the Statutory Funding Objective are borne out in practice, and contributions are paid in line with the Schedule of Contributions, the estimated funding level as at the next valuation date is expected to have decreased from 146% (see paragraph 7.1) to 126%. The reduction in funding level is because both the assets and liabilities are expected to increase by similar amounts so the surplus remains broadly constant but the funding level will reduce.

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 1 January 2014. An alternative presentation is shown in the chart below the table.

	£ million
Expected factors	
> Surplus disclosed at 1 January 2014	**1.9**
> Adjustment on finalisation of data	**(0.1)**
> Surplus at 1 January 2014	**1.8**
> Interest on surplus 2014 to 2016	0.2
> Contributions vs accrual cost	14.4
Experience factors (relative to assumptions)	
> Return on assets	10.2
> Actual pay increases	(0.1)
> Actual pension increases	0.4
> Demographic experience (member movements etc)	(1.1)
> Expenses	0.4
Changes in assumptions/benefits	
> Change in financial assumptions	(4.7)
> Change in demographic assumptions	(0.4)
Surplus at 31 December 2016	**21.0**



Cost of accruing benefits

8.2 The standard joint contribution rate for accruing benefits assessed at this valuation is 44.4% of Salary, which is slightly higher than that determined at the previous valuation. The increase is primarily due to reduced future return expectations which result in a higher present value being placed on future benefit payments.

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 1 January 2014 valuation are also shown. At the 1 January 2014 valuation the assumptions used for the solvency assessment were identical to those used for the Statutory Funding Objective.

	Assumptions for solvency assessment	
	As at 31 December 2016	**As at 1 January 2014**
Pensioner mortality		
Baseline	S2NXA-14 x-1	S1NXA-12
Improvements	ONS 2014 population projections	ONS 2012 population projections
Discount rate (net future increases)		
Current pensioners	(1.1)%	0.1%
Future Pensioners		
• In deferment	(1.1)%	0.1%
• In payment	(1.1)%	0.1%
Allowance for expenses	£2.5m	£0.5m

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 1 January 2014.

Approximate solvency assessment	As at 31 December 2016	As at 1 January 2014
	£ million	£ million
Liabilities including expenses	61.7	6.7
Market Value of Assets (excluding AVCs)	66.9	8.1
Shortfall (Assets less estimated cost of securing insurance policies)	**5.2**	**1.4**
Solvency level (Assets / Cost of insurance policies)	**108%**	**121%**

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 level has worsened since 1 January 2014. 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 sufficient assets to be able to secure benefits in full with insurance policies at the valuation date.

Future developments in solvency position

9.5 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 97%. This is because the cost of accruing benefits in the scheme, on a solvency basis, is expected to significantly exceed the contributions paid.

9.6 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 also deteriorate from its current level of 108% to around 99%. In both cases this assumes the assumptions underlying the pricing of insuring the benefits are unchanged.

Pension Protection Fund position

9.7 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

9.8 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	44.2
Estimated wind up, installation and payment expenses	2.2
Total protected liabilities	46.4
Total assets	66.9
Section 179 funding level	**144%**

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 University section with effect from 1 April 2018 are as follows.

	Contributions payable % Salary
	1 April 2018 – 31 March 2023
By most members	6.5%
By MRC	23.6%
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 1/80th 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 1/160th 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

Table B1: Active members as at 31 December 2016 [University section only]

	Men	Women	Total
Number of members	232	329	**561**
Average age (salary weighted)	48	47	**48**
Average Service (unweighted)	2.8	3.3	**3.1**
Total pensionable salary (£ pa)	11,032,000	13,305,000	**24,337,000**
Average pensionable salary (£ pa)	47,600	40,400	**43,400**

Table B2: Active members as at 1 January 2014 [University section only]

	Men	Women	Total
Number of members	204	365	**569**
Average age (unweighted)	42	41	**41**
Average Service (unweighted)	0.8	0.7	**0.7**
Total pensionable salary (£ pa)	8,714,000	12,707,000	**21,422,000**
Average pensionable salary (£ pa)	42,700	34,800	**37,600**

Table B3: Deferred members as at 31 December 2016 [University section only]

	Men	Women	Total
Number of members	99	157	**256**
Total deferred pension (£ pa)	116,000	160,000	**276,000**
Average deferred pension (£ pa)	1,200	1,000	**1,100**
Average age (weighted by pension)	44	42	**43**

Table B4: Pensioner members as at 31 December 2016 [Whole scheme]

	Men	Women	Total
Number of members	22	26	**48**
Total pension (£ pa)	45,000	53,000	**98,000**
Average pension (£ pa)	2,100	2,000	**2,100**
Average age (weighted by pension)	64	63	**63**

Deferreds and pensioners as at 1 January 2014

No data was available and hence no liabilities calculated for deferred and pensioner members of the University section as at 1 January 2014.

Appendix C: Asset and accounts details

The Universities Section of the MRCPS is 100% invested in UK Pooled Investment Bonds by Royal London Asset Management in accordance with the Trustee's Statement of Investment Principles.

Table C1: Revenue account for the period 1 January 2014 to 31 December 2016 (£000)

	2016	2015	2014
Market value of the Scheme's assets as at start of period[1]	**43,194**	**26,698**	**-**
Income			
Contributions receivable	13,144	13,366	14,518
Transfers in	-	-	-
Investment income	124	79	36
Transfer from MRC Section		4,100	8,797
Total income	**13,268**	**17,545**	**23,351**
Expenditure			
Benefits payable	139	151	12
Payments to and on account of leavers	39	67	-
Administrative expenses	38	104	177
Investment management expenses (incl taxation)	123	82	55
Total expenditure	**(339)**	**(404)**	**(244)**
Net income	**12,929**	**17,141**	**23,107**
Change in market value of investments	**10,771**	**(645)**	**3,591**
Market value of the Scheme's assets at end of period [1]	**66,894**	**43,194**	**26,698**

[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

Members are assumed to leave service in line with the following rates, or five years' from the valuation date if earlier.

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	1 January 2014
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 2014 for the previous valuation

Remaining expectation of life - Current Pensioners

	31 December 2016	1 January 2014
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		1 January 2014 (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 salary 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:	University Section
Pension Scheme Registration Number:	19017401
Address of scheme (or section, where appropriate)	Medical Research Council 14th Floor One Kemble Street London WC2B 4AN

s179 valuation

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

Guidance and assumptions

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

Assets

Total assets (this figure should not be reduced by the amount of any external liabilities and should include the insurance policies referred below)	£66,894,000
Date of relevant accounts (dd/mm/yyy)	31/12/2016
Percentage of the assets shown above held in the form of a contract of insurance where this is not included in the asset value recorded in the relevant scheme accounts	0%

Liabilities

Please show liabilities for:

Active members (excluding expenses)	£31,949,000
Deferred members (excluding expenses)	£9,706,000
Pensioner members (excluding expenses)	£2,533,000
Estimated expenses of winding up	£1,326,000
Estimated expenses of benefit installation/payment	£856,000
External liabilities	£0
Total protected liabilities	£46,370,000

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	0%	0%	100%
Deferred members	0%	0%	100%

	Before 6 April 1997	After 5 April 1997
Pensioner members	0%	100%

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	561	48
Deferred members	256	42
Pensioner members	48	62

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 Susan Vivian. Date 7 December 2017

Name Sue Vivian

Qualification Fellow of the Institute of Actuaries

Employer Government Actuary's Department

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: University 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 30 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