APPENDIX 1

Isle of Man Public Sector Pensions Authority
2013 Actuarial Valuation
Valuation Report

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1   Executive summary

We have carried out an actuarial valuation of the Isle of Man (IOM) Public Sector Pensions Authority (PSPA) pension schemes ('the schemes') as at 31 March 2013. The results are presented in this report and are briefly summarised below.

PSPA pension schemes

The PSPA pension schemes included in the 2013 valuation are;

- IOM Government Unified Scheme 2011

- IOM Police Pensions Scheme

- IOM Teachers' Pension Scheme

- Superannuation Manual Workers NO1 Scheme 1973

- IOM Judicial Pension Scheme

- Tynwald Pension Scheme

Unless otherwise noted, figures shown in this report relate to the combined PSPA pension schemes (being the sum of each pension scheme noted above).

Past service liabilities

The table below summarises the past service liabilities of the schemes as at 31 March 2013 (and 31 March 2012, as determined for the 2012/13 actuarial statements) in respect of benefits earned by members up to this date.

Valuation Date	Total PSPA	
	31 March 2012	31 March 2013
Past Service Liabilities	*(£000)*	*(£000)*
Employees	1,106,641	1,131,859
Deferred Pensioners	165,983	141,530
Pensioners	774,144	789,951
Total Liabilities	**2,046,769**	**2,063,340**

The total past service liabilities have increased slightly over the period. The increase in the past service liabilities due to the interest cost (i.e. the effect of benefits being one year closer to payment) and the accrual of benefits (net of benefits paid) has been partially offset by changes to the actuarial assumptions.

Cost of accruing benefits

The schemes are unfunded arrangements. Active members pay contributions based on their pensionable pay, with the balance of cost being met by employers (principally, the IOM Government). The table below shows the cost of accruing benefits (the "future service rate") as at 31 March 2013 (and 31 March 2012), split by the amount paid by employees and the share of cost met by employers.

Valuation Date	Total PSPA	
	31 March 2012	31 March 2013
Employer Future Service Rate	27.0%	22.4%
Employee Contribution Rate	5.6%	6.4%
Total Future Service Rate	**32.6%**	**28.8%**

The reduction in the cost of accruing benefits is primarily due to changes in the actuarial assumptions.

These rates do not affect the actual contribution rates payable by employers which vary considerably.

2 Introduction

Purpose

We have carried out an actuarial valuation of the IOM PSPA pension schemes as at 31 March 2013.

- This valuation report complies with all of the relevant regulations and professional standards, as set out in **Appendix A**.

- The figures in this report are based on our understanding of the benefit structure of the schemes as at 31 March 2013, details of which are provided in **Appendix B**.

- The results of the valuation are dependent on the quality of the data provided to us by the PSPA for the specific purpose of this valuation. This data is summarised in **Appendix C**.

- As part of the valuation, assumptions must be made which are discussed in **section 3** as well as in **Appendix D.**

- The valuation results are then covered in **section 4**.

- An analysis of the key risks facing the schemes is set out in **section 5**.

Component reports

This document is an "aggregate" report, i.e. it is the culmination of various "component" reports and discussions, in particular:

- Our preparatory note entitled '2013 Actuarial Valuation of the Government Unified Scheme' dated December 2013.

- The data report dated 16 April 2014.

- The assumptions report dated 21 March 2014.

- The Initial Results (as per our email of 16 May 2014).

- Confirmation of recommended actuarial assumptions used in this document, as notified by email on 8 April 2014.

Note that not all of these documents may be in the public domain.

3   Assumptions and Funding Method

Actuarial assumptions

Assumptions must be made about the factors affecting the schemes' finances in the future. Broadly speaking, our assumptions fall into two categories – financial and demographic.

Demographic assumptions typically try to forecast **when** benefits will come into payment and what form these will take. For example, when members will retire (e.g. at their normal retirement age or earlier), how long they will then survive and whether a dependant's pension will be paid.

Financial assumptions typically try to anticipate the **size** of these benefits. For example, how large members' final salaries will be at retirement and how their pensions will increase over time. In addition, the financial assumptions also help us to estimate how much all these benefits will cost the schemes in today's money.

Financial assumptions

A summary of the main financial assumptions adopted for the valuation of members' benefits is shown below.

	Actuarial Statement	Valuation
Date	31 March 2012	31 March 2013
Discount rate	4.8% p.a.	5.0% p.a.
General salary growth	4.8% p.a.	4.5% p.a.
Pension increases	2.5% p.a.	2.0% p.a.
RPI Inflation	3.3% p.a.	3.0% p.a.
CPI Inflation	2.5% p.a.	2.0% p.a.

This is the first valuation of the Government Unified Scheme 2011. The assumptions shown as at 31 March 2012 were those adopted for the purpose of providing actuarial statements for the 2012/13 PSPA accounts and differ to those as at 31 March 2013. In the absence of a recent previous valuation of the PSPA schemes in which to base the 2012/13 actuarial statements on, the 2012 assumptions were set in line with the requirements of the FRS17 accounting standard. This ensured that the assumptions adopted for the actuarial statements were broadly consistent with the assumptions adopted to value the pension obligation in the IOM Whole of Government accounts.

The assumptions set for the 2013 actuarial valuation are set in different way to those set for the 2012/13 actuarial statements.

Approach

The financial assumptions to be adopted for the 2012 valuations of the UK unfunded pension schemes are set out in specific guidance issued by HMT[1], and are based on the SCAPE[2] real discount rate of 3% p.a. The real discount rate is the difference between the discount rate and the Consumer Price Inflation (CPI). This guidance also specifies how the Actuary (the Government Actuary's Department for the UK unfunded arrangements) should determine the demographic assumptions for valuation purposes.

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[1] The Public Service Pensions (Valuation and Employer Cost Cap) Directions 2014.

[2] Superannuation Contributions Adjusted for Past Experience

For the valuation of the PSPA schemes as at 31 March 2013, a similar approach has been adopted. We believe this is appropriate for unfunded arrangements supported by central government, as this assumption (i.e. 3% p.a. real) broadly reflects the level of real growth expected in the economy. IOM Treasury have confirmed their agreement to this approach.

Inflation

The inflation assumption is used to project the size of benefits expected to be paid in the future. This is a key assumption, especially when projecting future cash flows, and should be a best estimate of long-term future inflation.

Benefit increases for the PSPA schemes are set by reference to the change in the CPI index and the UK Government's long-term expectation for CPI inflation is 2% p.a[3]. The assumed long term rate of CPI pension increases for the 2012 valuation of the UK unfunded schemes is 2% p.a. (although this is slightly higher over the next few years to reflect short term inflation expectations).

The CPI assumption for the 2013 valuation is **2.0% p.a.**

Salary Growth

In many areas of the Public Sector, annual pay growth in recent years has been lower than the rate of inflation, and this may be expected to continue in the short to medium term. The pay growth assumption should however reflect what is expected in the long term, and be consistent with the other assumptions adopted.

The discount rate has been set relative to expected GDP growth. In the event of high GDP growth, it can be expected that workers, who will ultimately generate this growth, will share in the benefits of this. Therefore a high salary growth assumption is consistent with a high GDP growth assumption. For the purpose of the 2013 valuation, we are recommending a salary growth assumption of 1.5% above Retail Price Inflation (RPI).

In order to specify our assumed rate of RPI inflation, consistent with the discount rate methodology applied, we need to make an assumption on the 'gap' between RPI and CPI. Our current 'best estimate' of the **long term 'gap' between RPI and CPI is 1.0% p.a.** This compares with the current 'gap' of 0.9% (January 2014) and the most recent range estimate by the UK Office for Budget Responsibility (November 2011) of 1.3% to 1.5% p.a.

This leads to an assumed long term **RPI of 3.0% p.a.** and an assumed **salary growth of 4.5% p.a.**

We also make a separate allowance for expected salary growth as a result of promotion, which is considered separately under 'Demographic assumptions'.

Discount rate

The actuarial valuation is effectively a planning exercise, to assess the funds needed to meet the benefits as they fall due. The sole purpose of the discount rate assumption is to express the expected future benefit payments in today's money.

As outlined above, the discount rate is CPI + 3.0% p.a. As at 31 March 2013, this leads to a **discount rate of 5.0% p.a.**

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[3] OBR Economic and fiscal outlook: March 2014

Demographic assumptions

The demographic assumptions represent our "best estimate" of future experience. This effectively means that there is a 50% chance that future experience will be better or worse than the chosen assumption.

Longevity

Of all the demographic factors, longevity is the one that presents the greatest uncertainty. As a subscriber to Club Vita, the PSPA benefit from a greater understanding of longevity risk and the specific risk relative to their own schemes.

About Club Vita

Club Vita aims to provide greater insight into the longevity characteristics in occupational pension schemes by bringing like-minded schemes together in a community where longevity experience data is pooled. By combining the data from individual schemes a clearer picture of the underlying patterns emerges.

The combined data, known as **VitaBank**™, presented in this report comes from the 180 schemes currently participating in Club Vita, who in total had around 1.5m pensions in payment, spread across the UK and the Isle of Man.

As a member of Club Vita, you have access to a range of market leading analysis designed to aid your understanding and management of pensioner longevity. Club Vita's analysis will consider the expected longevity of each individual member of the scheme, based on a series of factors including affluence and retirement type. Rather than consider these factors separately, we analyse the combined effect for each member. The PSPA are therefore able to use longevity assumptions which are truly tailored to the diverse mix of their scheme members. This provides greater precision in assessing liabilities.

To help illustrate the scale and uncertainty of this risk, our valuation calculations will separate out the value of the liabilities based on current observed life expectancies (what we call 'baseline' longevity) and the value of liabilities allowing for a possible level of future improvements to longevity.

Baseline Longevity

The baseline longevity will be based on Club Vita tables. This is a scheme specific longevity table based on the specific characteristics of the PSPA schemes' membership.

Future improvement to longevity

Future trends in longevity are highly uncertain, but the custom and practice in recent years has been to assume that lifespans will continue to lengthen, although there has been considerable variation in how fast and how long this improvement is expected to last.

There are 3 key considerations to make when setting the future longevity improvement assumption:

1 **Short term rate of improvements**
   The first step is to consider if the rate of improvements has 'peaked' or will continue to rise before peaking in the future ('non-peaked'). Assuming that the rate of improvements has 'peaked' still means that life expectancy will continue to improve, but that it will do so at a lower rate than it is currently. A 'non-peaked' assumption is more prudent (i.e. results in higher liabilities) than a 'peaked' assumption.

2 **Long term rate of improvements**
   The second step to consider is the long term assumed rate of improvements. Over the last 100 years, life expectancy has increased at the rate of 0.7 years per decade (for men), but over the last 10 years has increased at the rate of 2.2 years per decade.

The key question here is - what is the likely impact of medical science and individual behaviour on future longevity? The higher the long term rate, the more prudent the assumption.

3   *Improvements for the 'oldest old'*
The third step to consider is the likely rate of improvements for the eldest in our society. Will the over 90s continue to experience the same improvements in life expectancy they have enjoyed prior to this? Credible historical evidence on the historic rates of improvement for this age group is hard to come by.

The start point for the improvements has been based on observed death rates in the Club Vita data bank over the period. Bearing the above in mind, the assumption for the future rate of longevity improvements is as follows;

1   In the short term it is assumed that the effect of strong improvements in life expectancy currently being observed amongst a generation born around the early and mid 1930s will continue to strengthen for a few more years before tailing off (i.e. 'non-peaked').

2   In the long term it is assumed that increases in life expectancy will stabilise at a rate of increase of 1 year per decade for men and women. In the technical language of actuaries this is equivalent to assuming that longer term mortality rates will fall at a rate of 1.25% p.a.

3   However, it is assumed that post age 90 improvements in mortality are hard to achieve, declining between ages 90 and 120 so that no improvements are seen at ages 120 and over.

The longevity assumptions give the following sample average future life expectancies for members (compared to the assumptions made for the 2012 actuarial statements):

Assumed life expectancy at age 65	Actives & Deferreds		Current Pensioners	
	Male	Female	Male	Female
2012 actuarial statements - with improvements	23.3	26.0	22.0	24.4
2013 valuation - baseline	20.7	23.4	20.7	22.8
2013 valuation - with improvements	26.7	28.8	24.1	26.0

Note that the figures for actives and deferreds assume that they are aged 45 at the valuation date.

The assumptions made for the purpose of the actuarial statements as at 31 March 2012 were based on the standard "SAPS" tables, published by the Continuous Mortality Investigation (CMI). Allowance for future improvements were in line with the CMI projections model, and assumed that the recent rate of improvements had reached a peak with a long term rate of improvement of 1% p.a..

Age retirements
The age retirement assumption is based on the earliest age at which members are able to retire from the scheme with no reduction to their benefits. For the non-GUS schemes, this is as defined in the rules. For the Unified Scheme, members are able to retire at any age between 55 and 75, with their benefits based on a variable accrual rate (except section 7). The assumed retirement age for Unified Scheme members is as follows;

- Sections 1 to 6 and all existing deferred members – age 60

- Section 7 – age 55

Other demographic assumptions
Assumptions such as the rate at which members are assumed to leave government employment with a deferred pension and the assumed incidence of ill-health early retirements affect the assessed cost of benefits accrued to date ("past service liabilities") and the cost of benefits accrued in the future ("future service rate").

The 2013 assumption for all other demographic assumptions are identical to those adopted for the 2012/13 Actuarial Statements. For further details, please refer to Appendix D.

Assets

The schemes are all unfunded arrangements with contributions used to meet the cost of benefits in payment and the balance of cost being met by IOM Government. A separate pensions reserve (PSEBR - Public Sector Employees Pension Reserve) exists for the primary purpose of meeting the balance of cost when benefits in payment exceed contributions made by employers and employees.

The pensions reserve exists for the benefit of all PSPA schemes and is not allocated to each scheme in any way. The value of the (PSEPR) pensions reserve as at 31 March 2013 was £251m.

Funding method

It is important to realise that the actual cost of each pension scheme (i.e. how much money it will ultimately have to pay out to its members in the form of benefits) is currently unknown. This cost will not be known with certainty until the last benefit is paid to the last pensioner. The core purpose of this valuation is to estimate what this cost will be and how it will develop in the future, so that the schemes can then develop a strategy to meet it.

Such a valuation can only ever be an estimate – as the future cannot be predicted with certainty. However, as actuaries, we can use our understanding of the schemes and the factors that affect it to determine an anticipated cost which is as sensible and realistic as possible.

For this valuation our calculations identify separately the expected cost of members' benefits in respect of scheme membership completed before the valuation date ("past service") and that which is expected to be completed after the valuation date ("future service").

Past service

The principal measurement here is the value placed on the scheme's liabilities (calculated using the assumptions outlined above). Our calculation of the scheme's liabilities explicitly allows for expected future pay and pension increases.

Future service

In addition to benefits that have already been earned by members prior to the valuation date, employee members will continue to earn new benefits in the future. The cost of these new benefits is met by both employers and employees.

For the valuation results for each scheme, we have calculated the future service rate as the cost of benefits being earned by members over the year following the valuation, taking account of expected future salary increases until retirement. This funding method we have used is known as the Projected Unit Method.

The future service rate should reflect the expected cost of benefit accrual (as a percentage of pay) now and in the future, i.e. the future service rate should be relatively stable from one valuation to the next (subject to the actuarial assumptions being unchanged).

Where a pension scheme admits new entrants, such that the overall membership profile remains broadly unchanged over time, the use of the Projected Unit Method leads to a relatively stable future service rate.

4 Results

Past service

In assessing the value of the past service liabilities at the valuation date, we have used the actuarial assumptions and the funding method described in the previous section of this report. The tables below compare the value of the liabilities at 31 March 2013, with those as at 31 March 2012, determined for the purpose of the 2012/13 actuarial statements.

Total PSPA

Valuation Date	Total PSPA	
	31 March 2012 (£000)	31 March 2013 (£000)
Past Service Liabilities		
Employees	1,106,641	1,131,859
Deferred Pensioners	165,983	141,530
Pensioners	774,144	789,951
Total Liabilities	**2,046,769**	**2,063,340**

Government Unified Scheme

Valuation Date	Section 1		Section 2		Section 3		Section 4	
	31 March 2012 (£000)	31 March 2013 (£000)	31 March 2012 (£000)	31 March 2013 (£000)	31 March 2012 (£000)	31 March 2013 (£000)	31 March 2012 (£000)	31 March 2013 (£000)
Past Service Liabilities								
Employees	52,489	102,615	695,866	685,065	70,367	67,798	4,837	5,924
Deferred Pensioners	144,990*	107,605	0	0	0	13,068	0	823
Pensioners	507,097*	487,627	0	31,155	0	2,295	0	27
Total Liabilities	**704,576**	**697,848**	**695,866**	**716,221**	**70,367**	**83,161**	**4,837**	**6,774**

Valuation Date	Section 5		Section 6		Section 7		Total GUS	
	31 March 2012 (£000)	31 March 2013 (£000)	31 March 2012 (£000)	31 March 2013 (£000)	31 March 2012 (£000)	31 March 2013 (£000)	31 March 2012 (£000)	31 March 2013 (£000)
Past Service Liabilities								
Employees	22,462	22,040	10	40	25,836	27,155	871,867	910,638
Deferred Pensioners	0	118	0	0	0	0	144,990	121,614
Pensioners	0	0	0	0	0	4,639	507,097	525,743
Total Liabilities	**22,462**	**22,158**	**10**	**40**	**25,836**	**31,794**	**1,523,954**	**1,557,995**

* Section 1 deferred and pensioners include those members who were deferred or pensioners prior to 1 April 2012.

Police Pension Schemes

Valuation Date	1991 Scheme		2010 Scheme		Total Police	
	31 March 2012 (£000)	31 March 2013 (£000)	31 March 2012 (£000)	31 March 2013 (£000)	31 March 2012 (£000)	31 March 2013 (£000)
Past Service Liabilities						
Employees	59,888	55,623	149	272	60,037	55,895
Deferred Pensioners	2,495	2,132	0	170	2,495	2,302
Pensioners	83,787	83,028	0	0	83,787	83,028
Total Liabilities	**146,170**	**140,783**	**149**	**442**	**146,319**	**141,225**

Teachers' Pension Schemes

Valuation Date	Pre 2007 Scheme		Post 2007 Scheme		Total Teachers	
	31 March 2012 (£000)	31 March 2013 (£000)	31 March 2012 (£000)	31 March 2013 (£000)	31 March 2012 (£000)	31 March 2013 (£000)
Past Service Liabilities						
Employees	156,403	146,313	6,401	8,215	162,804	154,528
Deferred Pensioners	17,258	16,393	150	356	17,408	16,749
Pensioners	162,337	160,920	0	358	162,337	161,278
Total Liabilities	**335,998**	**323,626**	**6,551**	**8,929**	**342,549**	**332,555**

Non GUS Small Schemes

Valuation Date	Judicial 1992		Judicial 2004		Manual Workers (No.1) Scheme	
	31 March 2012 (£000)	31 March 2013 (£000)	31 March 2012 (£000)	31 March 2013 (£000)	31 March 2012 (£000)	31 March 2013 (£000)
Past Service Liabilities						
Employees	0	0	2,119	2,390	1,144	1,818
Deferred Pensioners	0	0	0	0	448	250
Pensioners	1,880	1,803	3,849	3,646	4,949	5,076
Total Liabilities	**1,880**	**1,803**	**5,968**	**6,035**	**6,541**	**7,144**

Valuation Date	Tynwald		Total Non GUS small schemes	
	31 March 2012 (£000)	31 March 2013 (£000)	31 March 2012 (£000)	31 March 2013 (£000)
Past Service Liabilities				
Employees	8,670	6,589	11,933	10,798
Deferred Pensioners	642	614	1,090	865
Pensioners	10,245	9,378	20,923	19,903
Total Liabilities	**19,558**	**16,582**	**33,947**	**31,565**

Summary of changes to the past service liabilities

The chart below illustrates the factors that caused the past service liabilities to change between 31 March 2012 and 31 March 2013 for the combined PSPA schemes:
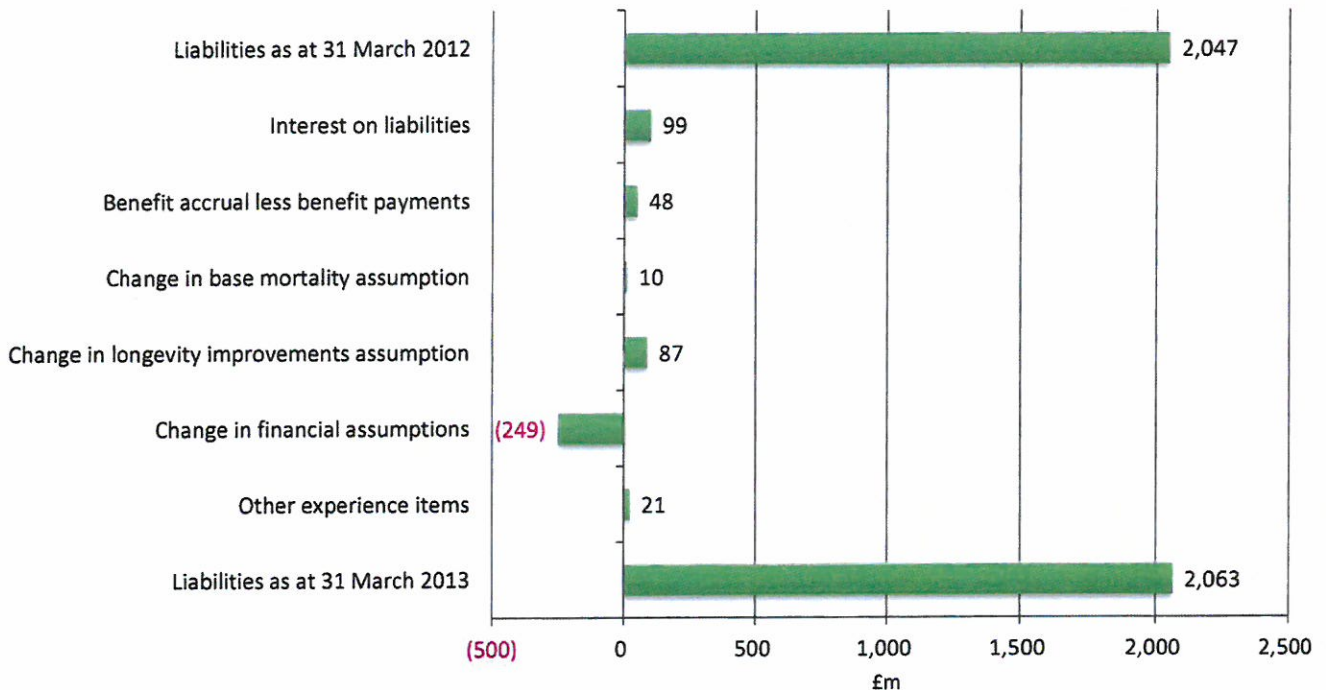
Further comments on some of the items in this chart:

- There is an interest cost of £99m. This is broadly one year of interest at 4.8% p.a. applied to the past service liabilities at 31 March 2012 (£2,047m).

- The impact of benefit accrual (net of benefits paid) has led to an increase to the liabilities of around £48m.

- The change in mortality assumptions (baseline and improvements) has given rise to an increase to the liabilities of £97m. This is mainly due to the change in assumed longevity improvements.

- The change in financial assumptions since the previous valuation has led to a decrease to the liabilities of £249m. This can be broadly split as a £79m decrease due to the change in the discount rate assumption and a £170m decrease due to the change in inflation related assumptions (salary increases, pension increases, deferred revaluation and CARE revaluation).

- Other experience items, such as changes in the membership data and changes to demographic assumptions, have served to increase the value of the past service liabilities at this valuation by around £21m. Salary increases and pension increases over 2012/13 were less than expected leading to a reduction in the past service liabilities. The net increase in the liabilities as at 31 March 2013 is due to a combination of this and other factors, such as the number of early leavers, deaths and ill health retirements. These items of experience have not been analysed due to insufficient membership data.

Appendix E sets out the factors that have caused the past service liabilities to change between 31 March 2012 and 31 March 2013 for the GUS, the Police schemes and the Teachers' schemes.

Future service – cost of accruing benefits

We have calculated the average contribution rate that employers would need to pay to meet the estimated cost of members' benefits earned after 31 March 2013 (the 'future service contribution rate'). We have used the assumptions set out in the previous section of this report and the method set out in **Appendix D**.

The tables below show the future service contribution rates for 31 March 2013 and shows the 31 March 2012 rates (calculated for actuarial statement purposes) for comparison.

Total PSPA

Valuation Date	Total PSPA	
	31 March 2012	31 March 2013
Employer Future Service Rate	27.0%	22.4%
Employee Contribution Rate	5.6%	6.4%
Total Future Service Rate	32.6%	28.8%

Government Unified Scheme

Valuation Date	Section 1		Section 2		Section 3		Section 4	
	31 March 2012	31 March 2013	31 March 2012	31 March 2013	31 March 2012	31 March 2013	31 March 2012	31 March 2013
Employer Future Service Rate	24.3%	19.2%	26.7%	23.2%	28.8%	26.8%	25.3%	19.3%
Employee Contribution Rate	4.7%	4.8%	5.5%	6.2%	4.5%	5.5%	6.0%	6.6%
Total Future Service Rate	29.0%	24.0%	32.2%	29.4%	33.3%	32.3%	31.3%	25.9%

Valuation Date	Section 5		Section 6		Section 7		Total GUS	
	31 March 2012	31 March 2013	31 March 2012	31 March 2013	31 March 2012	31 March 2013	31 March 2012	31 March 2013
Employer Future Service Rate	25.3%	19.8%	19.5%	18.2%	30.6%	36.2%	26.6%	22.5%
Employee Contribution Rate	9.5%	9.5%	8.4%	8.4%	11.0%	11.0%	5.4%	6.1%
Total Future Service Rate	34.8%	29.3%	27.9%	26.6%	41.6%	47.2%	32.0%	28.6%

Police Pension Schemes

Valuation Date	1991 Scheme		2010 Scheme		Total Police	
	31 March 2012	31 March 2013	31 March 2012	31 March 2013	31 March 2012	31 March 2013
Employer Future Service Rate	45.0%	30.9%	24.3%	19.1%	43.8%	30.3%
Employee Contribution Rate	12.25%	13.5%	10.1%	10.7%	12.1%	13.3%
Total Future Service Rate	57.25%	44.4%	34.4%	29.8%	55.9%	43.6%

Teachers' Pension Schemes

Valuation Date	Pre 2007 Scheme		Post 2007 Scheme		Total Teachers	
	31 March 2012	31 March 2013	31 March 2012	31 March 2013	31 March 2012	31 March 2013
Employer Future Service Rate	23.0%	17.1%	22.9%	17.1%	23.0%	17.1%
Employee Contribution Rate	6.4%	9.2%	6.4%	8.1%	6.4%	9.0%
Total Future Service Rate	29.4%	26.3%	29.3%	25.2%	29.4%	26.1%

Non GUS Small Schemes

Valuation Date	Judicial 2004		Manual Workers (No.1) Scheme		Tynwald	
	31 March 2012	31 March 2013	31 March 2012	31 March 2013	31 March 2012	31 March 2013
Employer Future Service Rate	52.9%	39.5%	27.3%	23.5%	57.5%	42.1%
Employee Contribution Rate	3.0%	3.0%	1.5%	1.5%	0.0%	4.0%
Total Future Service Rate	55.9%	42.5%	28.8%	25.0%	57.5%	46.1%

Note that the GUS employee contribution rates are in respect of the 2013/14 year only and allow for the phasing of contribution rate increases from the pre GUS employee rates to the ultimate GUS section employee rate.

Similarly, the average employee contribution rates for the Police, Teachers and Tynwald schemes are for the 2013/14 year only. For Police and Teachers, the rates shown allow for increases to rates being phased in over the three year period from 1 April 2012.

The above contribution rates do not include any allowance for expenses. I have assumed that these are paid by the IOM Treasury as and when they arise.

Summary of changes to the employer future service rate

The chart below illustrates the factors that caused the employer future service rate to decrease between 31 March 2012 and 31 March 2013:
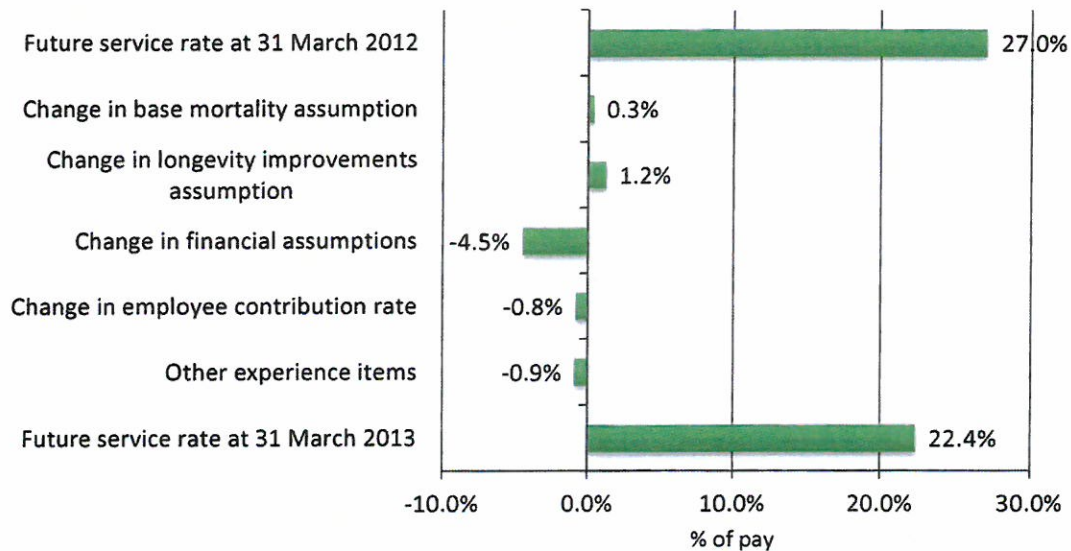
As can be seen from this chart, the factors that have had the biggest impact on the future service rate between 2012 and 2013 are broadly similar to those discussed for the past service position.

Appendix E sets out the factors that have caused the future service rates to change between 31 March 2012 and 31 March 2013 for the GUS, the Police schemes and the Teachers' schemes.

5 Risk Assessment

The valuation results depend critically on the actuarial assumptions that are made about the future of the scheme. If all of the assumptions made at this valuation were exactly borne out in practice then the results presented in this document would represent the true cost of the scheme as it currently stands at 31 March 2013.

However, no one can predict the future with certainty and it is unlikely that future experience will exactly match all of our assumptions. The future therefore presents a variety of risks to the scheme and these should be considered as part of the valuation process. In particular:

- The main risks to the financial health of the scheme should be **identified**.
- Where possible, the financial significance of these risks should be **quantified**.
- Consideration should be given as to how these risks can then be **controlled** or **mitigated**.
- These risks should then be **monitored** to assess whether any mitigation is actually working.

This section investigates the potential implications of the actuarial assumptions not being borne out in practice.

Set out below is a brief assessment of the main risks and their effect on the valuation results, beginning with a look at the effect of changing the main assumptions and then focusing on longevity risk.

Sensitivity of valuation results to changes in assumptions

The table below gives an indication of the sensitivity of the valuation results to small changes in some of the main assumptions used.

Assumption	Change	Impact	
		Liabilities (£m)	Future service rate (% of pay)
Discount rate	Decreases by 1.0%	Increase by £399m	Rises by 7.7%
Price inflation*	Increases by 0.5%	Increase by £186m	Rises by 3.5%

*effecting salary growth, CARE revaluation, deferred revaluation and pension increases.

This is not an exhaustive list of the assumptions used in the valuation. For example, changes to the assumed level of withdrawals and ill health retirements will also have an effect on the valuation results. However, the table contains those assumptions that typically are of most interest and have the biggest impact.

Note that the table shows the effect of changes to each assumption in isolation. In reality, it is perfectly possible for the experience of the schemes to deviate from more than one of our assumptions simultaneously and so the precise effect on the past service liabilities is therefore more complex.

Longevity risk

The valuation results are also very sensitive to unexpected changes in future longevity. All else being equal, if longevity improves in the future at a faster pace than allowed for in the valuation assumptions, the past service liabilities will increase and the cost of benefits accruing will increase.

Recent medical advances, changes in lifestyle and a greater awareness of health-related matters have resulted in life expectancy amongst pension scheme members improving in recent years at a faster pace than was originally foreseen. It is unknown whether and to what extent such improvements will continue in the future.

For the purposes of this valuation, we have selected assumptions that we believe make an appropriate allowance for future improvements in longevity, based on the actual experience of the schemes since the previous valuation.

The table below shows how the valuation results at 31 March 2013 are affected by adopting different longevity assumptions.

Longevity assumption	Liabilities (£m)	Total Future Service Rate
2013 valuation (with improvements)	2,063	28.8%
2013 valuation (further improvements)	2,079	29.1%
2013 valuation (1 year extra)	2,141	30.0%

The shaded box contains the results for this valuation.

Full details of the longevity improvements adopted at this valuation are set out on page 9 and in **Appendix D**.

The "further improvements" are a more cautious set of improvements that assume the long term rate of improvement will be 2.0% p.a., which corresponds broadly to an increase in life expectancy of 1.5 years each decade.

The "1 year extra" figures relative to a further year of life expectancies beyond those assumed in "further improvements".

Again, the range of assumptions shown here is by no means exhaustive and should not be considered as the limits of how extreme future longevity experience could be.

Early retirement

The liabilities and cost of the scheme could be sensitive to when members choose to retire as they would be receiving their pensions for a longer (or shorter) period of time. To investigate the effect of early retirements we have modelled a retirement pattern for the police, teachers and GUS (except section 7) allowing for retirement at all ages between ages 55-65 (c10% probability of retiring each year).

The impact of this (on the active liabilities only, as it has no effect on the deferred and pensioner liabilities) can be seen in the table below:

Flexible retirement assumption	Active liabilities (£m)	Future service rate
2013 valuation	1,131	28.8%
Flexible retirement from 55-65	1,094	27.8%

Both the liabilities and total future service rate have decreased slightly when the flexible retirement pattern is modelled. If the schemes have actuarially neutral early (late) retirement factors/accrual rates which decrease (increase) a member's pension when they early (late) retire then you would expect there to be no difference in the cost of the schemes. From the above table, we can see that, based on the valuation assumptions, flexible retirement leads to a small 'saving' to the schemes.

Other risks to consider

The table below summarises the effect that changes in some of the other valuation assumptions and risk factors would have on the funding position. Note that these are probably unlikely to have a large financial impact on the schemes and therefore the analysis is qualitative rather than quantitative.

Factor	Impact	
	Liabilities	Future service rate
Greater level of ill health retirement	Increase	Marginal
Reduced level of withdrawals	Increase	Marginal
Rise in average age of employee members	Marginal effect	Increases

One further risk to consider is the possibility of future changes to Regulations that could materially affect the benefits that members become entitled to. It is difficult to predict the nature of any such changes but it is not inconceivable that they could affect not just the cost of benefits earned after the change but could also have a retrospective effect on the past service position (as the move from RPI to CPI-based pension increases already has).

Managing the risks

Whilst there are certain things, such as the life expectancy of members, that are not directly within the control of the PSPA, that does not mean that nothing can be done to understand the risks further and to mitigate their effect. Although these risks are difficult (or impossible) to eliminate, steps can be taken to manage them.

Ways in which some of these risks can be managed could be:

- Implementation of a cost sharing mechanism. Separate advice has been provided to the PSPA in relation to the design of a suitable cost sharing mechanism for the PSPA schemes.

- Taking steps internally to monitor the decisions taken by members and employers (e.g. relating to early / ill health retirements or salary increases) in a bid to curtail any adverse impact on the Schemes. An annual review of actual pay increases against those assumed could be undertaken.

- Insuring against specific risks, where such insurance is available (e.g. ill health liability insurance).

- Setting employer specific contribution rates based on the benefits accrued in each section of the scheme by members employed by each employer.

- Recognising the effect of transfer values on cashflows and the cost of the schemes.

- Review of the option factors currently in place.

Adopting one or more of these measures can assist with the management of risk within the PSPA schemes.

6 Reliances and limitations

Scope

This document has been requested by and is provided to the IOM PSPA. It has been prepared by Hymans Robertson LLP for triennial valuation purposes. In particular, it fulfils the statutory obligation to carry out triennial actuarial valuations of the IOM Government Unified Scheme in accordance with rule 84.3 of the Isle of Man Government Unified Scheme 2011 Regulations. None of the figures should be used for accounting purposes (e.g. under FRS17 or IAS19) or for any other purpose.

This document should not be released or otherwise disclosed to any third party (other than IOM Treasury) without our prior written consent, in which case it should be released in its entirety. Hymans Robertson LLP accepts no liability to any other party unless we have expressly accepted such liability.

The results of the valuation are dependent on the quality of the data provided to us by the Administering Authority for the specific purpose of this valuation. We have previously issued a separate report confirming that the data provided is fit for the purposes of this valuation and have commented on the quality of the data provided. The data used in our calculations is as per our report of 16 April 2014.

We look forward to discussing this paper with you.

Peter Summers

Fellow of the Institute and Faculty of Actuaries

3 September 2014

Steven Scott

Fellow of the Institute and Faculty of Actuaries

Appendix A: Regulations and professional standards

PSPA schemes regulations

The projection of benefits from each PSPA pension arrangement has been carried out based on our understanding of the benefits payable under each scheme. The following regulations govern the benefit entitlement of the main PSPA schemes;

- Rules of the Isle of Man Government Unified Scheme 2011

- Police Pensions Regulations 1991

- Police Pensions Regulations 2010

- Public Sector Pensions Act 2011

- The Teachers Superannuation Order 2007 (formerly the Superannuation Act 1984)

Technical Actuarial Standards

Technical Actuarial Standards (TASs)[4] are issued by the Financial Reporting Council and they set the standard for certain items of actuarial work in the UK, in terms of the type of information provided and the way it is communicated. As actuaries, we must comply with these standards when presenting the results of triennial valuations. We have applied the TAS standards to this work even though the TASs do not apply in the Isle of Man.

This report complies with the Technical Actuarial Standards on Reporting (TAS R), Modelling (TAS M), Data (TAS D) and the Pensions TAS.

The valuation is effectively a planning exercise (as defined in TAS R) to assess funds needed to meet benefits as they fall due.

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[4] Technical Actuarial Standards (TASs) are issued by the Financial Reporting Council (FRC) and set standards for certain items of actuarial work, including the information and advice contained in this report.

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Appendix B: Summary of the schemes' benefits

Provided below is a brief summary of the non-discretionary benefits that we have taken into account for active members at this valuation. This should not be taken as a comprehensive statement of the exact benefits to be paid. For further details please see the Regulations.

Government Unified Scheme

Provision	Benefit Structure From 1 April 2012
Entry conditions	Section 1 and 7 is open to new members (aged 16 to 65). Sections 2 to 6 are closed to new entrants.
Normal retirement age (NRA)	Flexible between ages 55 and 75
Member contributions	Section 1: 5% Sections 2 to 7: 6.6% to 11% depending on the relevant section of membership
Transitional protections	Increases to contribution rates following implementation of GUS on 1 April 2012 are applied in 1% p.a. steps. Members within seven years of the previous scheme's Normal Pension Age as at 1 April 2012 will be able to join the Protected section without paying more than the Standard section contribution rate of 5% or your current rate of contribution if higher.
Pensionable pay	The amount of a Member's basic pay or fees due to the Member plus anything else if determined by the Commission or Employer and notified to the PSPA.
Final Pensionable Pay (FPP)	Final Salary sections: Average of best 3 consecutive years' pensionable pay in last 13 years, after each year has been revalued in line with inflation. CARE sections: Calculated as the Member's total pensionable pay for each year of pensionable service (with pay revalued) divided by the number of years of pensionable service in the relevant period of active membership.
Qualifying service	Qualifying service means any period: 1) of service where the member is in receipt of pensionable pay; 2) of service Unpaid Family Leave where the members contributions have been paid; 3) of linked service from two records; and 4) of service from transfers in.
Normal retirement benefits at NRA	Annual Retirement Pension – Accrual rate * FPP * Qualifying service. Accrual rate is determined by retirement age and section. Pension Commencement Lump Sum – By commutation of pension only; up to 30% of pension value.
Pension cap	75% of FPP for sections 1 to 6, 66.9% of FPP for section 7.
Ill-health benefits from active membership	Two tiers of ill health benefits apply: Lower - an immediate pension is paid if member is permanently incapable of doing current or comparable job. Pension = Qualifying Service * 1.5% * FPP. Upper - an enhanced pension is paid if permanently unable to work at all. Pension = Prospective service to 65 * 1.5% * FPP.
Ill-health benefits from deferment	Only applicable if permanently unable to work in any position. Pension = Accrued service * 1.5% * Final pay (increased in line with inflation to date of retirement)

Provision	Benefit Structure From 1 April 2012
Early retirement benefits (non ill-health)	Can retire from age 55 using the relevant accrual rate for the given section and age.
Death after retirement	Short term pension for 3 months equal to member's pension on date of death. Long term pension of 0.625% * FPP for each year of service (i.e. 1/160ths) increased in line with inflation to the date of death. Long term pension starts after 3 month short term is finished. For section 7 members, the rate is 1.11% rather than 0.625%.
Death in deferment	Long term pension of 0.625% * Deferred members FPP (increased in line with inflation from leaving active service to date of death) for each year of service. For section 7 members, the rate is 1.11% rather than 0.625%.
Death in service	Lump sum of 3 times pensionable pay at date of death. Short term pension for 3 months equal to pensionable pay on date of death. Long term pension of 0.625% * FPP * prospective years of service to 65. Long term pension starts after 3 month short term is finished, but is only payable if the member had more than 2 years' service. For section 7 members, the long term pension is calculated as 1.11% * FPP * prospective service to age 55 subject to a minimum of 30 years.
Leaving service options	Less than 3 months service: Refund of contributions. Service between 3 months and 2 years: Refund of contributions or a transfer value. More than 2 years' service: A deferred pension calculated as Accrual rate x FPP x Qualifying service where accrual rate is determined at actual retirement age.
State pension scheme	The scheme is contracted out.

Police Pension Regulations Scheme

Provision	Benefit Structure To 31 March 2010	Benefit Structure From 1 April 2010
Entry conditions	Closed to new members from 1 April 2010.	Open to new members.
Normal Retirement Age	Between ages 50-60 depending on length of service in the pension scheme and rank.	Between ages 55-65 depending on length of service in the pension scheme and rank.
Member contributions (payable from 1 April 2014)	Salary less than £60,000: 14.25% Salary greater than £60,000: 15.05% Rates apply if eligible for ill-health benefits.	Salary less than £27,000: 11.00% Salary between £27,000 & £60,000: 12.05% Salary greater than £60,000: 12.75% Rates apply if eligible for ill-health benefits.
Pensionable pay	Basic salary plus any additional salary on temporary promotion (not including overtime and other allowances).	
Final pay	Highest pensionable pay of the previous three years. Increases in line with inflation are applied to all historic salaries.	The greatest of: 1) Pensionable pay in the last twelve months prior to retirement; 2) Pensionable pay in either of the two preceding years; and 3) Pensionable pay averaged over any three consecutive years in the preceding seven. Increases in line with inflation are applied to all historic salaries.
Period of scheme membership	Total years and days of service during which a member contributes to the scheme.	
Normal retirement benefits at NRA	1/60th of final pay for each year of scheme membership for service up to 20 years. For each year of service worked over 20 years the member accrues 2/60ths of final pay.	1/70th of final pay for each year of scheme membership.
Pension cap	Maximum of 40/60ths final pay (30 years of service).	Maximum of 35/70ths final pay (35 years of service).
Retirement lump sum benefit	By commutation only	Lump Sum Retirement Grant - 4/70ths of final pay for each year of scheme membership
Option to increase annual pension	None	Option to exchange some of their lump sum into annual pension.
Ill-health benefits from active membership	In the event of premature retirement due to permanent ill-health or incapacity, an immediate pension is paid based on actual scheme membership plus an enhancement period of scheme membership. The enhancement period is dependent on scheme membership at date of leaving. No reduction is applied due to early payment.	There are two tiers of ill-health retirement. Tier 1: Accrued benefits are paid with no reduction. Tier 2: Accrued benefits plus an enhancement are paid with no reduction. The enhancement period is dependent on scheme membership at date of leaving.

Provision	Benefit Structure To 31 March 2010	Benefit Structure From 1 April 2010
Ill-health benefits from deferment	None	Members can receive their unreduced deferred pension if they meet the Tier 2 ill-health benefit requirements.
Early retirement (non ill-health)	The option to retire early on non ill-health grounds is not available.	Can retire from age 55. Benefits are subject to reduction on account of early payment.
Pension increases	Pensions are increased under IOM statute.	
Death after retirement	A spouse's or civil partner's short term pension equal to the member's pension will be paid for the first 13 weeks after death if the member had more than 3 years pensionable service; then A long term pension of one half of the member's pension is payable.	A spouse's or civil partner's pension of one half of the member's pension is payable
Guarantee on death after retirement	5 years	5 years
Death in deferment	A spouse's or civil partner's pension of one half of the member's pension is payable.	A spouse's or civil partner's pension of one half of the member's pension is payable.
Death in service	A lump sum of two times final pay; plus A spouse's or civil partner's short term pension equal to the member's salary will be paid for the first 13 weeks after death if the member had more than 3 years pensionable service; then A long term pension of one half of the member's pension.	A lump sum of three times final pay; plus A spouse's or civil partner's pension of one half of the member's ill-health pension.
Children's pension	May be payable in addition	
Leaving service options	Less than 3 months service: Refund of contributions. Service between 3 months and 2 years: Refund of contributions or a transfer value. More than 2 years' service: A deferred pension calculated as Accrual rate x Final pay x Qualifying service where accrual rate is determined at actual retirement age.	
State pension scheme	The scheme is contracted out.	

Teachers' Pension Scheme

Provision	Benefit Structure To 31 December 2006	Benefit Structure From 1 January 2007
Entry conditions	Closed to new members from 1 January 2007.	Open to all new members.
Normal retirement age (NRA)	Age 60	Age 65
Member contributions	Tiered contributions were introduced from April 2012 and revised in 2013 and 2014 to achieve an increase from an average rate of 6.4% in 2011/12 to 9.6% in 2014/15. The structure of employee contribution rates from 1 April 2014 is set out below; Tier 1: up to £14,999 6.4% Tier 2: £15,000 to £25,999 7.2% Tier 3: £26,000 to £31,999 8.3% Tier 4: £32,000 to £39,999 9.5% Tier 5: £40,000 to £44,999 9.9% Tier 6: £45,000 to £74,999 11.0% Tier 7: £75,000 to £99,999 11.6% Tier 8: over £100,000 12.4%	
Pensionable pay	Basic salary plus any bonuses, fees, sick leave pay, maternity pay.	
Final pay	The greatest of: 1) Pensionable pay in the last twelve months prior to retirement; and 2) Average of best consecutive 3 years pensionable pay in the last 10 years; Increases in line with inflation are applied to all historic salaries.	
Period of scheme membership	Total years and days of service during which a member contributes to the scheme.	
Normal retirement benefits at NRA	1/80th of final pay for each year of scheme membership.	1/60th of final pay for each year of scheme membership.
Pension cap	Maximum of 45/80ths final pay (45 years of service).	Maximum of 45/60ths final pay (45 years of service).
Retirement lump sum benefit	3/80th of final pay for each year of scheme membership. Additional lump sum can be provided by commutation of pension	By commutation only
Ill-health benefits from active membership	In the event of premature retirement due to permanent ill-health or incapacity, an immediate pension and lump sum are paid to the member. There are two tiers of ill-health retirement. Partial Incapacity Benefit (PIB): Accrued benefits are paid with no reduction. Total Incapacity Benefit (TIB): Accrued benefits plus an enhancement are paid with no reduction. The enhancement service is at most 50% of prospective service to NRA.	
Ill-health benefits from deferment	Members can receive their unreduced deferred pension if they meet the TIB requirements.	
Early retirement (non ill-health)	Benefits paid on redundancy grounds after age 50 are paid with no actuarial reduction. Can take early retirement from age 55 with employer's consent. Benefits are subject to reduction on account of early payment.	
Pension increases	Pensions are increased under IOM statute.	

Provision	Benefit Structure To 31 December 2006	Benefit Structure From 1 January 2007
Death after retirement	A spouse's or civil partner's short term pension equal to the member's pension will be paid for the first 3 months after death; then	
	A long term pension of 1/160th of the member's final pay for each year of scheme membership; plus	
	If the member dies within five years of retiring the balance of five years' pension payments will be paid in the form of a lump sum.	
Death in deferment	A spouse's or civil partner's long term pension of 1/160th of the member's final pay for each year of scheme membership.	
Death in service	A lump sum of three times final pensionable pay; plus	
	A spouse's or civil partner's short term pension equal to the member's salary will be paid for the first 3 months after death; then	
	A long term pension of 1/160th of the member's final pay for each year of scheme membership.	
Children's pension	May be payable in addition	
Leaving service options	Less than 3 months service: Refund of contributions.	
	Service between 3 months and 2 years: Refund of contributions or a transfer value.	
	More than 2 years' service: A deferred pension calculated as Accrual rate x Final pay x Qualifying service where accrual rate is determined at actual retirement age.	
State pension scheme	The scheme is contracted out.	

Appendix C: Data

This section contains a summary of the membership and accounting data provided by the PSPA for the purposes of this valuation (the corresponding membership and accounting data from the cashflow analysis / actuarial statements is also shown for reference). For further details of the data, and the checks and amendments performed in the course of this valuation, please refer to our separate report dated 16 April 2014.

Membership data – whole fund
Employee members

	Membership numbers		FTE salary (£000)		Actual salary (£000)		Average Age (unweighted)		Average Service (unweighted)	
	31 March 2012	31 March 2013	31 March 2012	31 March 2013	31 March 2012	31 March 2013	31 March 2012	31 March 2013	31 March 2012	31 March 2013
GUS and pre-GUS small schemes	6,597	7,716	216,181	239,358	216,375	196,298	46	46	11.8	11.9
Police	236	233	8,544*	8,485	8,544	8,366	39	39	14.6	14.7
Teachers	1,144	1,186	42,245	43,904	42,245	39,756	43	44	12.2	13.1
Tynwald	33	33	1,296	1,325**	1,296	1,325	56	56	14.2	13.5
Judicial	7	8	1,010	1,157	1,010	1,157	54	55	4.5	4.6
Manual Workers (No.1)	6	7	149	187	149	187	61	62	39.1	39.7
Total	**8,023**	**9,172**	**269,425**	**293,022**	**269,619**	**247,089**	**45**	**46**	**11.9**	**12.1**

* Revised following discussions with the PSPA subsequent to the issue of my July 2013 report.

** Data revised since the data report of April 2014.

The expected future working lifetime (FWL) indicates the anticipated length of time that the average employee member will remain as a contributor to the Fund. Note that it allows for the possibility of members leaving, retiring early or dying before retirement. The FWL of the active membership as at 31 March 2013 is 10.6 years.

Deferred pensioners

	Membership numbers		Deferred pension at valuation date (£000)		Average Age (unweighted)	
	31 March 2012	31 March 2013	31 March 2012	31 March 2013	31 March 2012	31 March 2013
GUS and pre-GUS small schemes	2,927	2,568	7,615	6,606	46	47
Police	32*	35	165*	188	46	45
Teachers	331	388	1,013	1,177	45	45
Tynwald	3	3	34	36	54	55
Judicial	-	-	-	-	-	-
Manual Workers (No.1)**	11	11	18	19	59	60
Total	**3,293**	**3,005**	**8,827**	**8,022**	46	47

* Revised following discussions with the PSPA subsequent to the issue of my July 2013 report.

** The 2012 data for the MW (No.1) Scheme is included in the GUS 2012 membership statistics. The 2012 totals therefore do not equal the sum of the individual 2012 figures shown.

Current pensioners (including spouses and children)

	Membership numbers		Pension (£000)		Average Age (unweighted)	
	31 March 2012	31 March 2013	31 March 2012	31 March 2013	31 March 2012	31 March 2013
GUS and pre-GUS small schemes	4,117	4,128	30,261	31,325	68	69
Police	218	217	4,049	4,243	62	63
Teachers	850	864	9,786	10,130	70	70
Tynwald	46	50	742	752	75	76
Judicial	8*	8	383*	398	74	74
Manual Workers (No.1)**	65	57	320	305	70	72
Total	**5,239**	**5,324**	**45,221**	**47,153**	**68**	**69**

* Revised following discussions with the PSPA subsequent to the issue of my July 2013 report.

** The 2012 data for the MW (No.1) Scheme is included in the GUS 2012 membership statistics. The 2012 totals therefore do not equal the sum of the individual 2012 figures shown.

Note that the membership numbers in the table above refer to the number of records provided to us and so will include an element of double-counting in respect of any members who are in receipt (or potentially in receipt of) more than one benefit.

Appendix D: Assumptions

Financial assumptions

Financial assumptions	Actuarial Statement	Valuation
Date	31 March 2012	31 March 2013
Discount rate	4.8% p.a.	5.0% p.a.
General salary growth	4.8% p.a.	4.5% p.a.
Pension increases	2.5% p.a.	2.0% p.a.
RPI Inflation	3.3% p.a.	3.0% p.a.
CPI Inflation	2.5% p.a.	2.0% p.a.

Mortality assumptions

Parameter	Value
Longevity – baseline	Vita curves
Longevity – improvements	
CMI Model version used	CMI_2013
Starting rates	CMI calibration based on ONS England & Wales data using the latest available data as at December 2013
Long term rate of improvement	**Period effects:** 1.25% p.a. for men and for women **Cohort effects:** 0% p.a. for men and for women
Period of convergence	**Period effects:** 10 years for ages 45 and below with linear transition to 40 years for those aged 75 and over **Cohort effects:** 40 years for those born in 1950 or later declining linearly to 5 years for those born in 1915 or earlier.
Proportion of convergence remaining at mid point	**Period effects:** 75% **Cohort effects:** 75%

We have suggested a longevity improvement assumption based on the latest industry standard. The start point for the improvements has been based on observed death rates in the Office for National Statistics (ONS) data over the period.

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In the short term we have assumed that the 'cohort effect' of strong improvements in life expectancy currently being observed amongst a generation born around the early and mid-1930s will continue in the short term before tailing off. This is known as 'non-peaked'.

In the long term we have assumed that increases in life expectancy will stabilise at a rate of increase of 1 year per decade for men and women. This is equivalent to assuming that longer term mortality rates will fall at a rate of 1.25% p.a. for men and women. However, we have assumed that post age 90 improvements in mortality are hard to achieve, declining between ages 90 and 120 so that no improvements are seen at ages 120 and over.

As a member of Club Vita, the longevity assumptions that have been adopted at this valuation are a bespoke set of VitaCurves that are specifically tailored to fit the membership profile of the Fund. These curves are based on the data you have provided us with for the purposes of this valuation. Full details of these are available on request.

Other demographic valuation assumptions

Age retirements	The age retirement assumption is based on the earliest age at which members are able to retire from the scheme with no reduction to their benefits. For the non-GUS schemes, this is as defined in the rules. The assumed retirement age for Unified Scheme members is as follows;

- Sections 1 to 6 and all existing deferred members – age 60
- Section 7 – age 55

Retirements in ill health	Allowance has been made for ill-health retirements before Normal Pension Age (see table below).
Withdrawals	Allowance has been made for withdrawals from service (see table below).
Family details	A varying proportion of members are assumed to be married (or have an adult dependant) at retirement or on earlier death. For example, at age 60 this is assumed to be 80% for males and 75% for females. Husbands are assumed to be 3 years older than wives.
Commutation	Future pensioners are assumed to elect to exchange pension for additional tax-free cash up to 50% of the maximum amount permitted.

The tables below show details of the assumptions actually used for specimen ages. The promotional pay scale is an annual average for all employees at each age. It is in addition to the allowance for general pay inflation described above. For membership movements, the percentages represent the probability that an individual at each age leaves service within the following twelve months.

Withdrawals

Age	Incidence for 1000 active members per annum	
	Male	Females
	Withdrawals	Withdrawals
20	122.40	116.10
25	80.85	78.10
30	57.35	65.45
35	44.80	56.45
40	36.05	46.95
45	29.50	38.65
50	22.85	29.45
55	19.80	22.70
60	12.00	10.55

Ill health retirements

Tier 1

Age	Incidence for 1000 active members per annum	
	Male	Females
	Ill Health	Ill Health
20	0.00	0.00
25	0.00	0.36
30	0.45	0.60
35	0.60	1.20
40	1.05	1.56
45	2.40	2.52
50	6.60	4.92
55	13.50	12.96
60	27.00	0.00

Tier 2

Age	Incidence for 1000 active members per annum	
	Male	Females
	Ill Health	Ill Health
20	0.00	0.00
25	0.00	0.19
30	0.24	0.32
35	0.32	0.64
40	0.56	0.83
45	1.28	1.34
50	3.52	2.62
55	7.20	6.91
60	14.40	0.00

Death in service

Age	Incidence for 1000 active members per annum	
	Male	Females
	Death in Service	Death in Service
20	0.30	0.16
25	0.30	0.16
30	0.36	0.24
35	0.42	0.40
40	0.72	0.64
45	1.20	1.04
50	1.92	1.52
55	3.00	2.00
60	5.40	2.56

Promotional salary scale

Age	Promotional Salary Scales	
	Male	Females
	Salary Scale	Salary Scale
20	100	100
25	100	100
30	123	123
35	138	138
40	148	148
45	158	158
50	168	168
55	168	168
60	168	168

Appendix E: Analysis of surplus (individual schemes)

Past service liabilities

Summary of changes to the past service liabilities – GUS
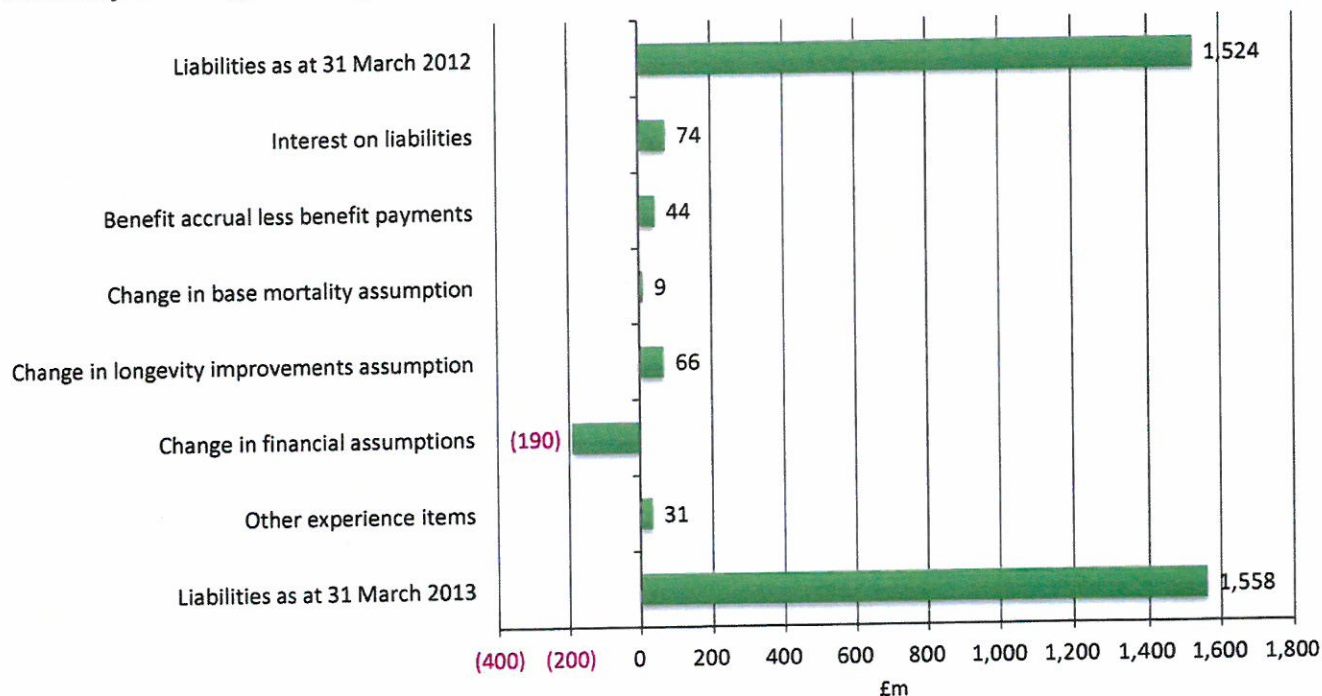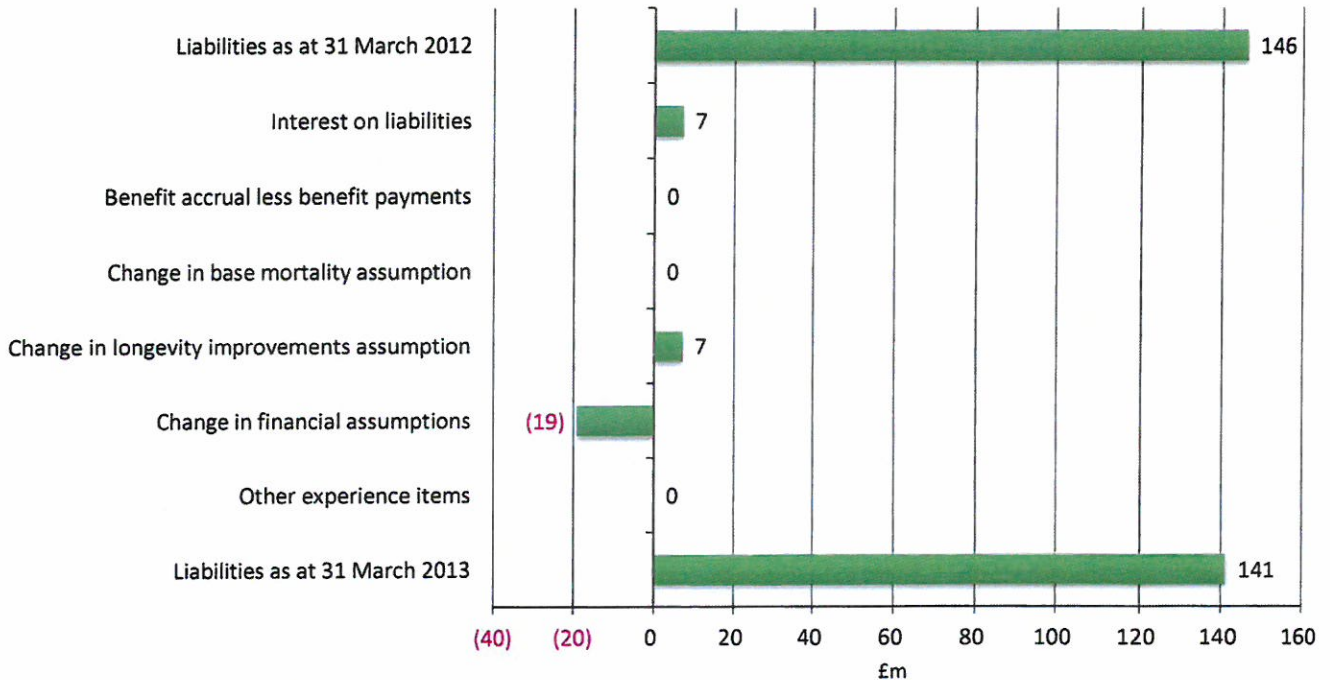

Further comments on some of the items in this chart:

- There is an interest cost of £74m. This is broadly one year of interest at 4.8% p.a. applied to the past service liabilities at 31 March 2012 (£1,524m).

- The impact of benefit accrual (net of benefits paid) has been an increase to the liabilities of around £44m.

- The change in mortality assumptions (baseline and improvements) has given rise to an increase to the liabilities of £75m. This is mainly due to the change in assumed longevity improvements.

- The change in financial assumptions between the previous valuation has led to a decrease to the liabilities of £190m. This can be broadly split as a £61m decrease due to the change in the discount rate assumption and a £129m decrease due to the change in inflation related assumptions (salary increases, pension increases, deferred revaluation and CARE revaluation).

- Other experience items, such as changes in the membership data and changes to demographic assumptions, have served to increase the value of the past service liabilities at this valuation by around £31m.

Summary of changes to the past service liabilities – Police Pension Scheme
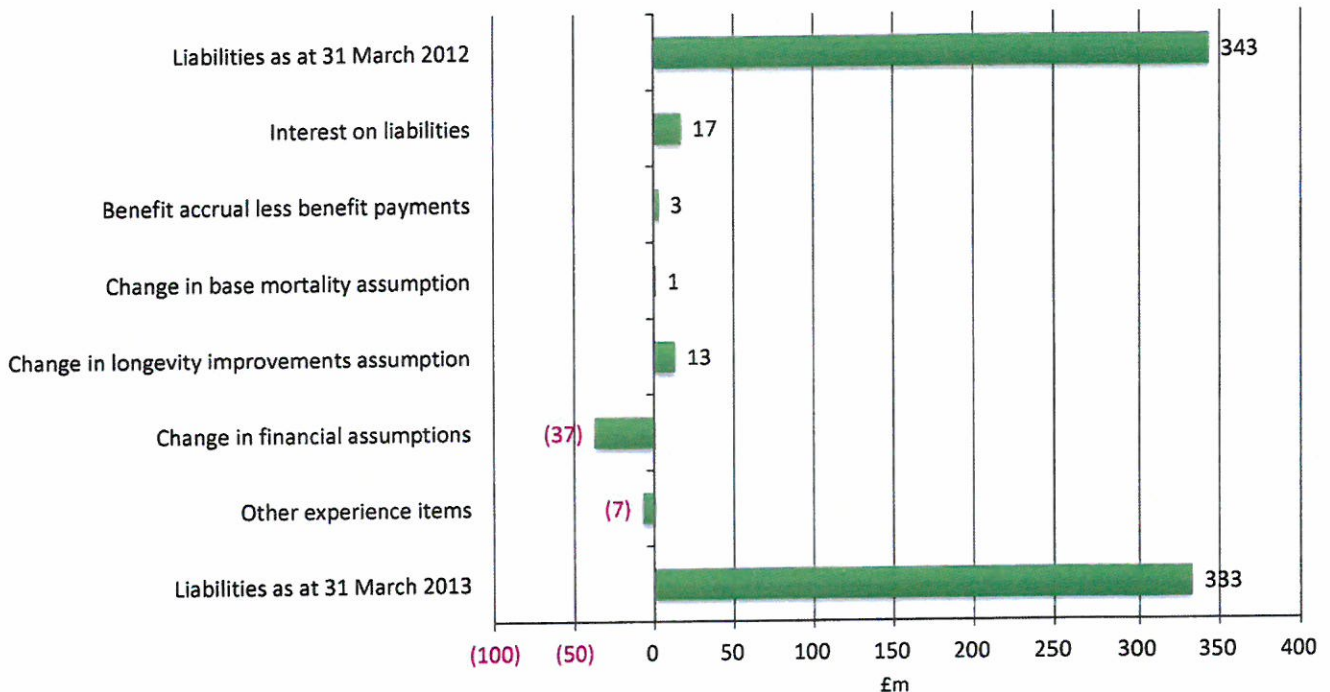

Further comments on some of the items in this chart:

- There is an interest cost of £7m. This is broadly one year of interest at 4.8% p.a. applied to the previous past service liabilities at 31 March 2012 (£146m).

- The change in mortality assumptions (baseline and improvements) has given rise to an increase to the liabilities of £7m. This is mainly due to the change in assumed longevity improvements.

- The change in financial assumptions between the previous valuation has led to a decrease to the liabilities of £19m. This can be broadly split as a £5m decrease due to the change in the discount rate assumption and a £14m decrease due to the change in inflation related assumptions (salary increases, pension increases and deferred revaluation).

- Other experience items, such as changes in the membership data and changes to demographic assumptions, have had a broadly neutral effect on the liabilities.

Summary of changes to the past service liabilities – Teachers' Pension Scheme

Further comments on some of the items in this chart:

- There is an interest cost of £17m. This is broadly one year of interest at 4.8% p.a. applied to the previous past service liabilities at 31 March 2012 (£343m).

- The impact of benefit accrual (net of benefits paid) has been an increase to the liabilities of around £3m.

- The change in mortality assumptions (baseline and improvements) has given rise to an increase to the liabilities of £14m. This is mainly due to the change in assumed longevity improvements.

- The change in financial assumptions between the previous valuation has led to a decrease to the liabilities of £37m. This can be broadly split as a £12m decrease due to the change in the discount rate assumption and a £25m decrease due to the change in inflation related assumptions (salary increases, pension increases and deferred revaluation).

- Other experience items, such as changes in the membership data and changes to demographic assumptions, have served to decrease the value of the past service liabilities at this valuation by around £7m.
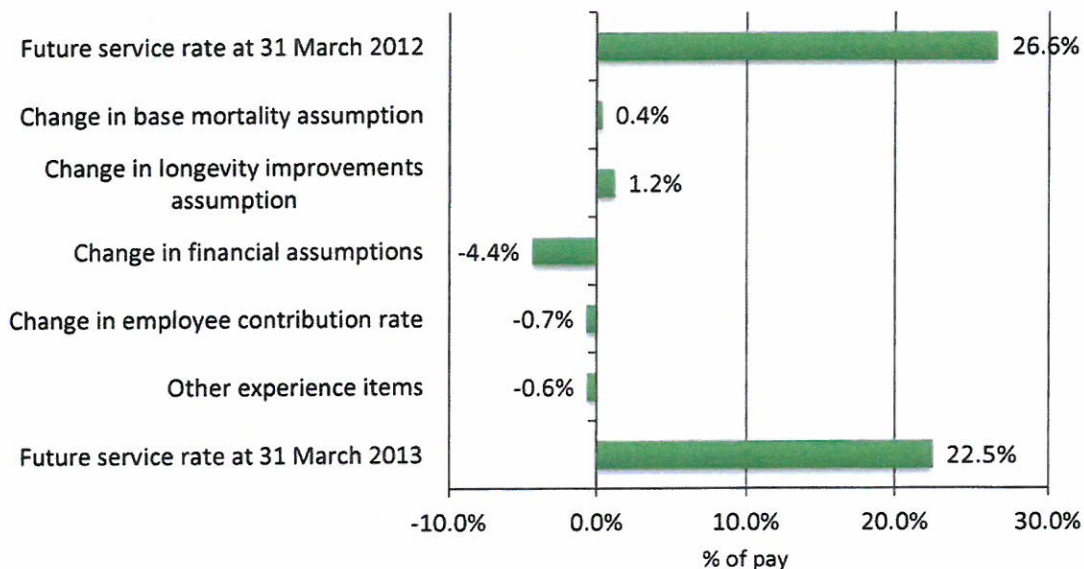
Summary of changes to the past service liabilities – Non GUS Small Schemes

The results of the Tynwald, Judicial 1992, Judicial 2004 and Manual Workers (No.1) schemes can be seen in the tables on page 8. Broadly speaking, their analysis follows a similar pattern to those of the GUS, Police and Teachers' schemes with interest and changes to the longevity assumptions increasing liabilities and the change in financial assumptions decreasing liabilities.
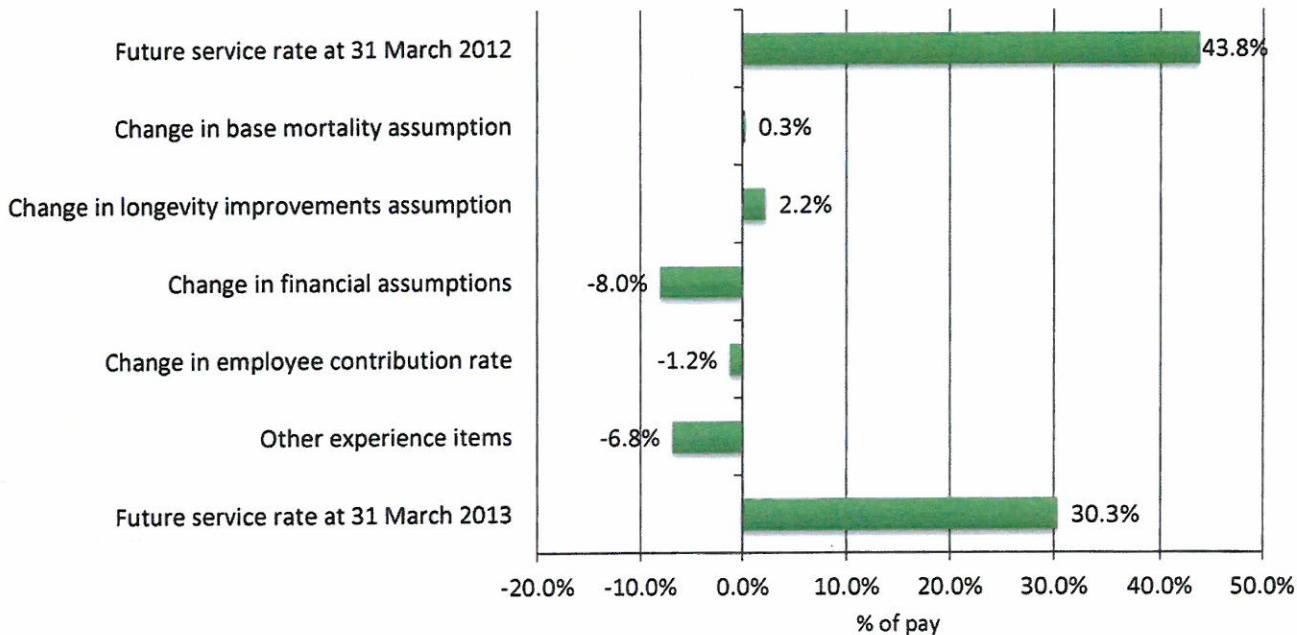
Future service rate

Summary of changes to the future service rate – GUS

	% of pay
Future service rate at 31 March 2012	26.6%
Change in base mortality assumption	0.4%
Change in longevity improvements assumption	1.2%
Change in financial assumptions	-4.4%
Change in employee contribution rate	-0.7%
Other experience items	-0.6%
Future service rate at 31 March 2013	22.5%

As GUS makes up the vast majority of the active membership of the Isle of Man pension schemes it is not a surprise that the change in future service rate analysis looks very similar to that of all the schemes combined.
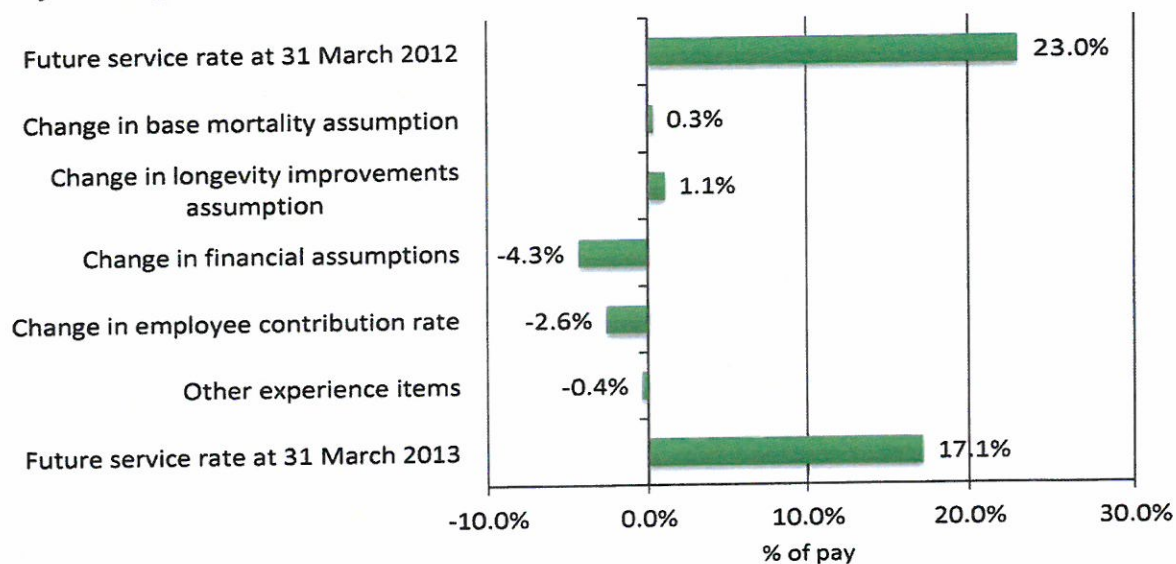
Summary of changes to the future service rate – Police Pension Scheme

	% of pay
Future service rate at 31 March 2012	43.8%
Change in base mortality assumption	0.3%
Change in longevity improvements assumption	2.2%
Change in financial assumptions	-8.0%
Change in employee contribution rate	-1.2%
Other experience items	-6.8%
Future service rate at 31 March 2013	30.3%

The 'other experience' item reflects a change in the membership mix, data supplied and a refinement in our calculations to allow for ill health benefits.

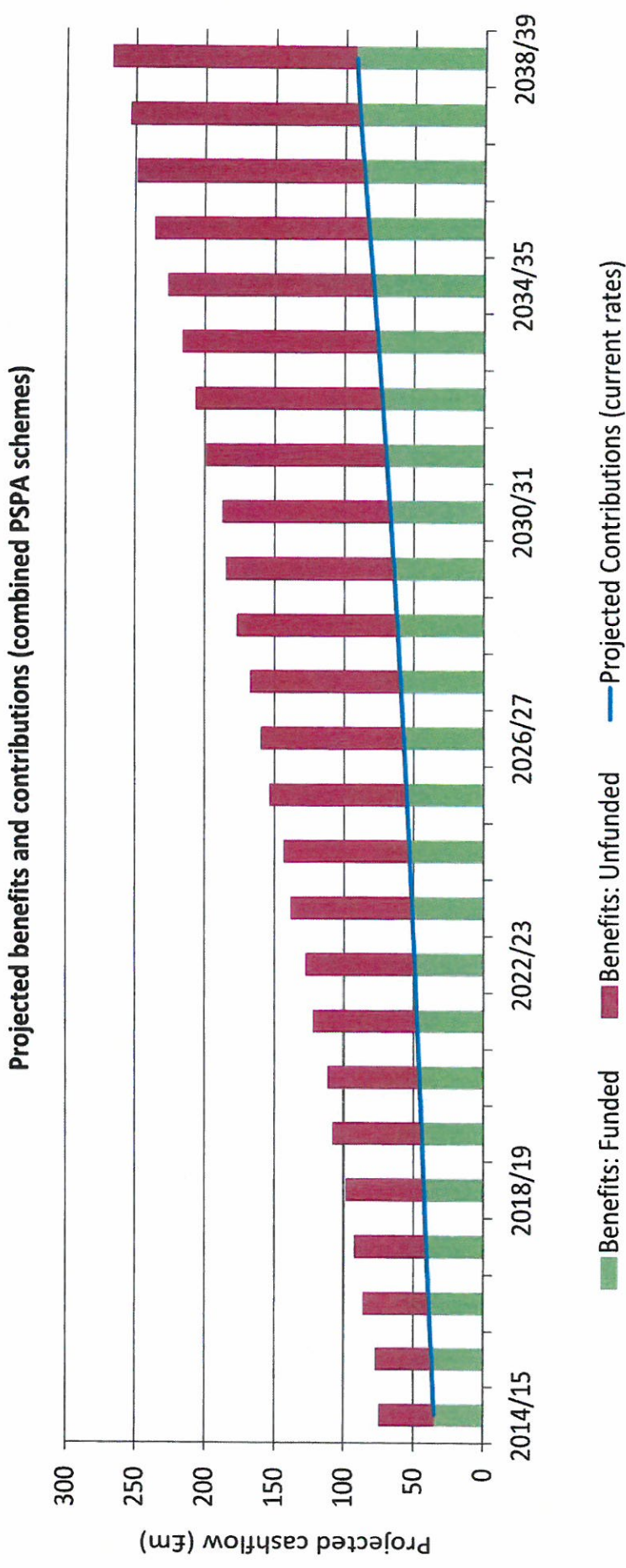**Summary of changes to the future service rate – Teachers' Pension Scheme**

The change in the Teachers' pension schemes future service rate is very similar to that of GUS with changes to the longevity assumptions increasing the future service rate and the change in financial assumptions decreasing the future service rate.

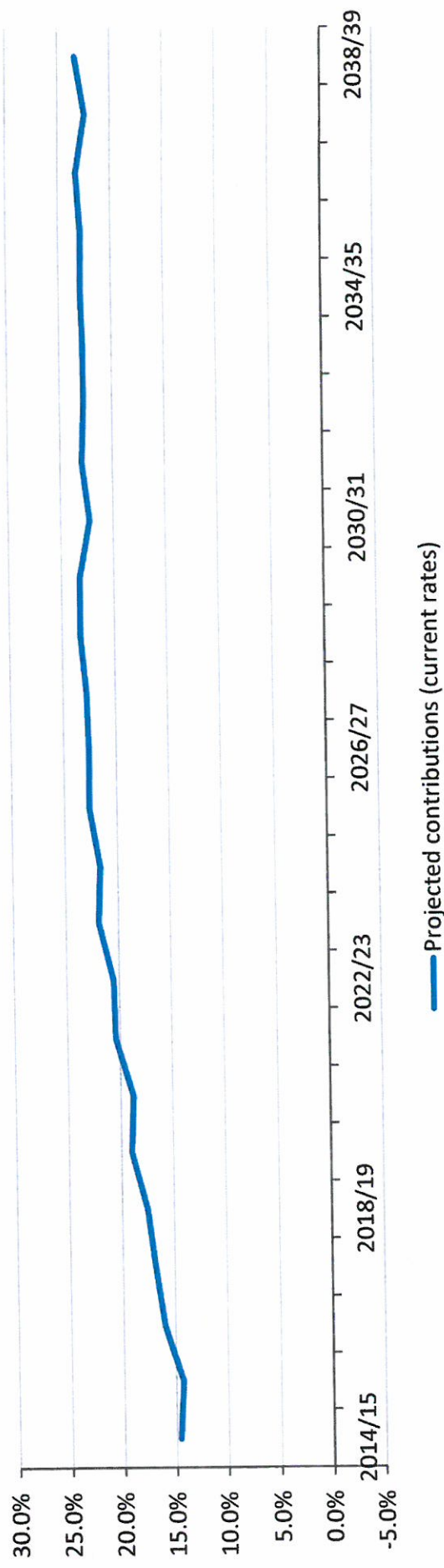**Summary of changes to the total future service – Non GUS Small Schemes**

The results of the Tynwald, Judicial 2004 and Manual Workers (No.1) schemes can be seen in the tables on page 13. Broadly speaking, their analysis follows a similar pattern to those of the GUS and the Teachers' schemes.
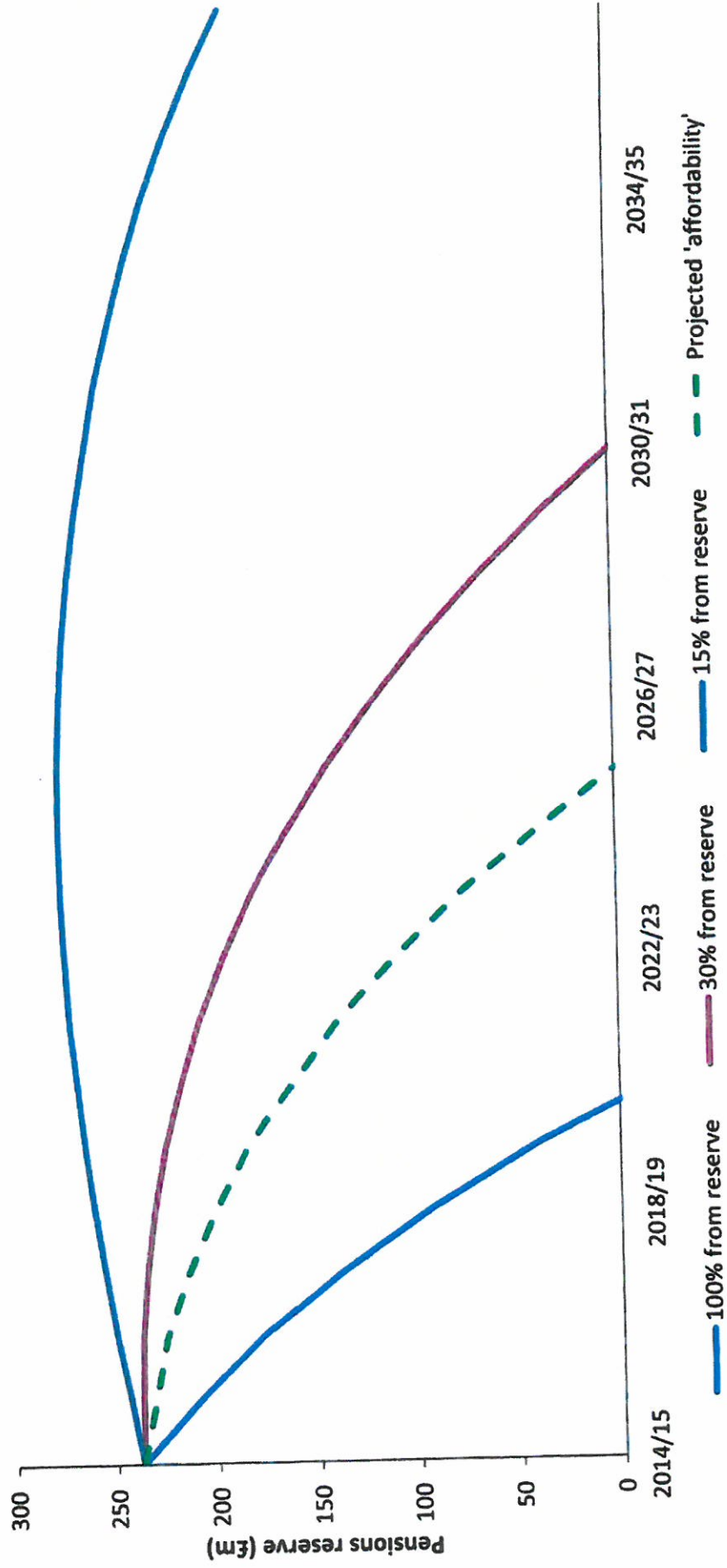
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Monetary projection – Current rates

Projected benefits and contributions (combined PSPA schemes)

Legend:
- Benefits: Funded
- Benefits: Unfunded
- Projected Contributions (current rates)

X-axis: 2014/15, 2018/19, 2022/23, 2026/27, 2030/31, 2034/35, 2038/39

Y-axis: Projected cashflow (£m) — 0, 50, 100, 150, 200, 250, 300

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Funding Gap – Current rates

Valuation Basis - Funding Gap expressed as % of pay

——Projected contributions (current rates)

3

Pensions reserve

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Projected pensions reserve (£m)

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Monetary projection – Revised rates

Projected benefits and contributions (combined PSPA schemes)

Benefits: Funded · Benefits: Unfunded · Projected Contributions (revised rates)

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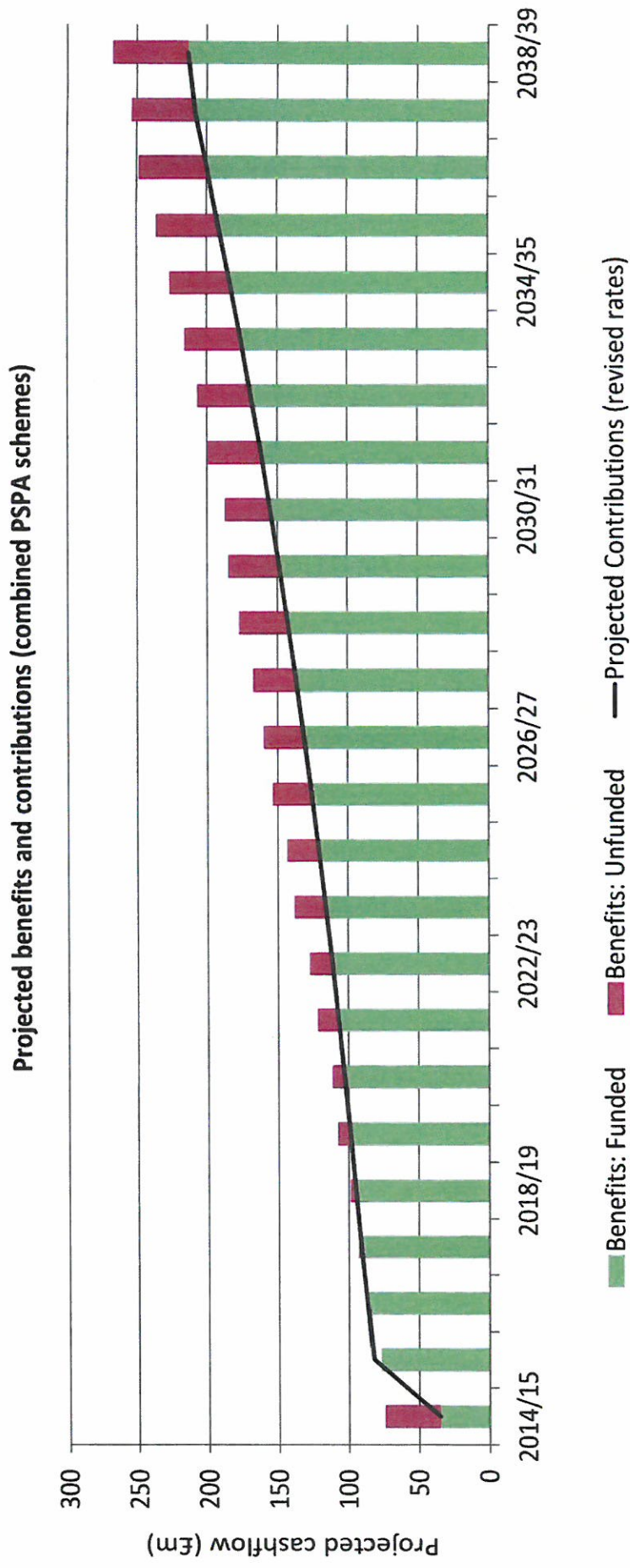
Funding Gap – Revised rates

Valuation Basis - Funding Gap expressed as % of pay

— Projected contributions (revised rates)

4

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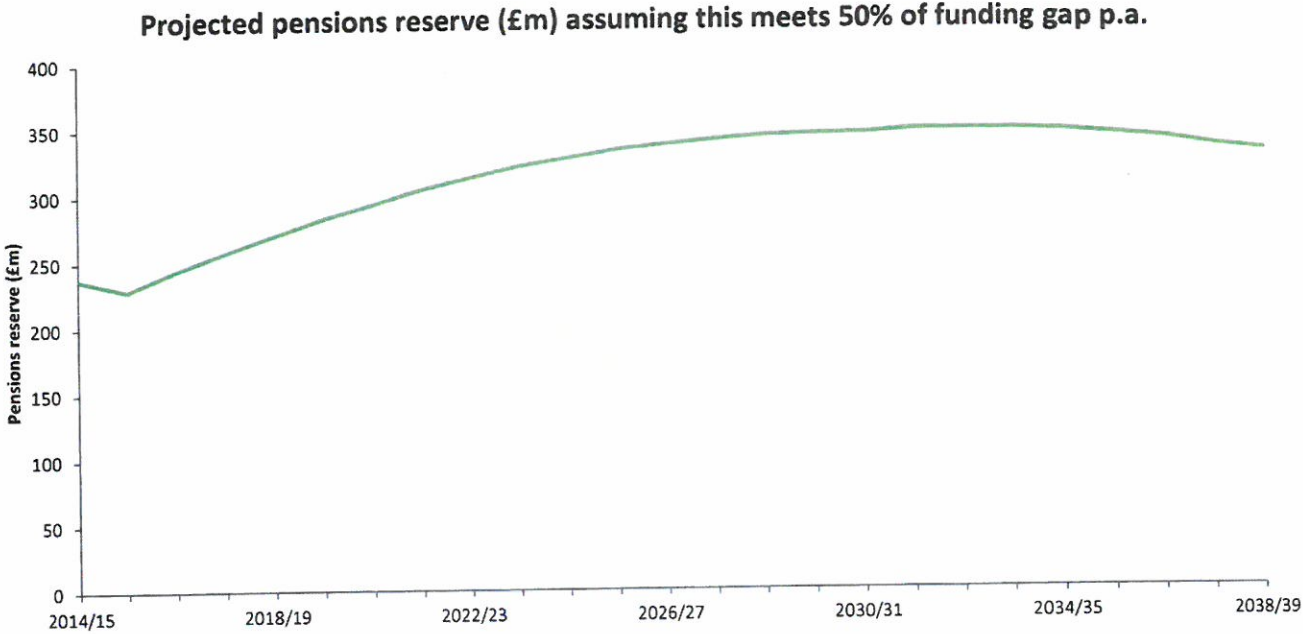## Projected pensions reserve (£m) assuming this meets 100% of funding gap p.a.

Assumptions

Employers: All employers pay contributions equal to 20% of pay from 1 April 2015.

Employees: Contribution rate for all employees (existing and new entrants) increased by 3% from 1 April 2015.

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Projected pensions reserve (£m) assuming this meets 50% of funding gap p.a.

Assumptions

Employers: All employers pay contributions equal to 20% of pay from 1 April 2015.

Employees: Contribution rate for all employees (existing and new entrants) increased by 3% from 1 April 2015.