London Borough of Haringey Pension Fund 2013 Actuarial Valuation Initial Results

HYMANS ROBERTSON

The Spirit of Independence

November 2013

Contents

Executive summary

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On behalf of your team at Hymans Robertson, we are delighted to present the initial results of the triennial valuation of the London Borough of Haringey Pension Fund as at 31 March 2013.

Purpose

The purpose of this document is to communicate the initial results at whole fund level and explain our approach to the valuation. Our analysis includes a range of alternative bases which will allow you to assess the risks and then together arrive at the very best strategy for the Fund.

High level results

The tables below summarise the financial position of the Fund and the marked-related (common) contribution rates as at 31 March 2010 and 31 March 2013.

Past Service Position	31 March 2010 (£m)	31 March 2013 (£m)
Past Service Liabilities	960	1,232
Market Value of Assets	664	863
Surplus / (Deficit)	(296)	(369)
Funding Level	**69.2%**	**70.0%**

Contribution Rates	31 March 2010 (% of pay)	31 March 2013 (% of pay)
Employer future service rate (incl. expenses)	17.3%	20.4%
Past Service Adjustment (20 year spread)	11.2%	15.1%
Total employer contribution rate (incl. expenses)	28.5%	35.5%
Employee contribution rate	6.8%	6.6%
Expenses	0.5%	0.5%

High level assumptions

The above results are based on our proposed set of assumptions for this valuation which are summarised below along with the 31 March 2010 assumptions.

Financial assumptions	31 March 2010	31 March 2013
Discount Rate	6.1%	4.6%
Salary Increases	5.3%*	4.3%**
Price Inflation / Pension Increases	3.3%	2.5%

*Salary increases were 1% p.a. until 31 March 2012 followed by the long term rate shown thereafter
** The reduction in real salary growth at 31 March 2013 reflects salary freezes and an expectation of constrained growth for the next valuation cycle.

Scope, reliances and limitations

Scope

This document has been requested by and is provided to Haringey Council in its capacity as Administering Authority to the London Borough of Haringey Pension Fund. It has been prepared by Hymans Robertson LLP to support a discussion on funding strategy with the Fund as part of the 2013 funding valuation.

This document should not be released or otherwise disclosed to any third party (including Fund employers) 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 valuation results are inextricably linked to the data provided to us and the assumptions that we use in our calculations. It is possible that as part of our ongoing discussions you may find that there is additional information you should provide us with. In a similar way, you may feel that one or more of our proposed assumptions are not suitable for the Fund and you may wish to explore the use of alternatives. Until both of these areas are definitively agreed by all relevant parties, the results in this document will remain "initial" and could be subject to change before the final valuation report is signed off. This document is a "component report" of the eventual final aggregate valuation report.

The results contained in this document are for the Fund as a whole. It does not set out the valuation results for individual employers, which will be derived at a later date. Employers come in different shapes and sizes and their valuation results are not uniform. We would advise against extrapolating the results contained in this document to predict possible contribution rates for employers at this stage.

Reliances and limitations

This document has been prepared for the purpose of reviewing the funding strategy and employer contributions to the Fund and nothing contained within it affects any member's benefits. Furthermore, none of the figures should be used for accounting purposes (e.g. under FRS17 or IAS19) or for any other purpose (e.g. a termination valuation under Regulation 38(1)).

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 November 2013.

The figures in this report are based on our understanding of the benefit structure of the LGPS as at 31 March 2013 and the changes taking effect from 1 April 2014. Details of this will be provided in our final valuation report.

Actuarial Standards

The following Technical Actuarial Standards[1] are applicable in relation to this report and have been complied with where material:

- TAS R – Reporting;
- TAS D – Data;
- TAS M – Modelling; and
- Pensions TAS.

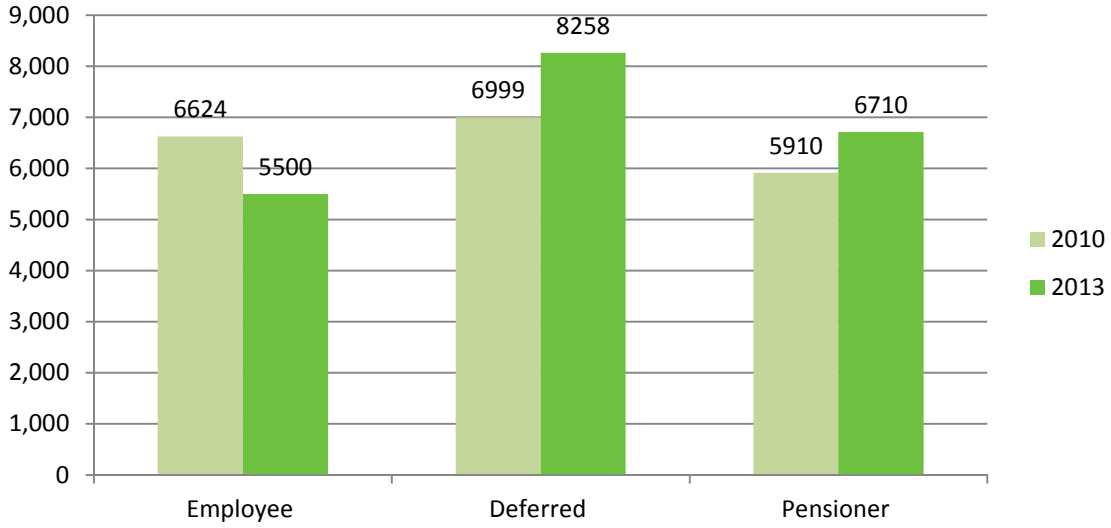
[1] Technical Actuarial Standards (TASs) are issued by the Financial Reporting Council (FRC) and set standards for certain items of actuarial work, including the information and advice contained in this report.

Events since 2010

Since the previous formal valuation of the Fund at 31 March 2010 various events have taken place, which have had an effect on the estimated cost of the Fund.

Changes in the Fund's membership

The membership profile of the Fund has changed since the previous valuation. New employee members have joined the Fund whilst others have left the Fund, retired or died. Whilst membership changes were anticipated at the previous valuation, the actual changes have inevitably not exactly matched our expectations. The chart below summarises both the number of members in each membership category at 31 March 2010 and 31 March 2013.



Maturity

The membership data that we have been provided with suggests that the Fund is gradually maturing. In other words, the proportion of the total membership attributable to employee members is gradually receding, meaning that the burden (as a percentage of current contributing members payroll) on contributing members of meeting the cost of the Fund's liabilities is becoming progressively greater. If this trend were to continue, the result would be that in future the overall contribution rate would become much more heavily influenced by the past service funding level, rather than simply the cost of new benefits being earned in future by contributing members.

Another measure of the maturity of the Fund is to look at the average age of its membership and the expected remaining future working lifetime (FWL). This is set out in the table below:

	Average Age (years)		FWL (years)	
Membership Profile	2010	2013	2010	2013
Employees	51.4	51.3	8.3	9.8
Deferred Pensioners	50.8	51.3	-	-
Pensioners	66.0	66.3	-	-

Note that the ages presented here are weighted by liability.

The expected future working lifetime 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.

Other financial and demographic changes

The table below summarises the actual and expected values for the various assumptions. Further details are given below.

Assumption/measure	Actual	Expected	Difference	Impact
Asset return				
Over 3 year period	27.0%	19.4%	7.6%	Positive
Annual	8.3%	6.1%	2.2%	
Pre-retirement experience				
Early leavers	1956	1662	18%	Positive
Ill health retirements	24	126	-81%	Positive
Salary increases (p.a.)	1.8%	3.1%	-1.3%	Positive
Post-retirement experience				
Pension increases	3.5%	3.3%	0.2%	Negative
Amount of pension ceasing over 3 year period (£m)	1.79	2.07	-14%	Negative

Assumption/measure	2010	2013	Difference	Impact
Fixed interest gilts	4.5%	3.0%	-1.5%	Negative
Index linked gilts	0.7%	-0.3%	-1.0%	Negative
Inflation (RPI)	3.8%	3.3%	-0.5%	Positive

Assets

The performance of the Fund's investments has been more than the expected return over the three year period to 31 March 2013. This has had a positive effect on the past service position of the Fund at this valuation.

The Fund's investment strategy has remained largely unchanged since 2010, with around 84% of the Fund invested in riskier assets (such as equities, property and alternatives). The experience of the last three years serves to underline the fact that, whilst these riskier assets are expected to outperform more risk averse investments (such as government bonds and cash) over the long-term, they are susceptible to volatility in the short-term.

Liabilities

The decrease in the real yield since 2010 has itself served to increase the value of the Fund's liabilities.

The discount rate used to value the Fund's future benefit payments is based on the return on fixed interest gilts, whilst the benefits themselves are projected to increase in line with both salary and price inflation. Therefore, the "real" return available on gilts (i.e. the return on fixed interest gilts net of inflation) is a key indicator in the measurement of liabilities.

All other things being equal, a decrease in real gilt yield serves to increase the value placed on the Fund's liabilities and vice versa.

Future service

The difference in the real gilt yield between 2010 and 2013 has itself led to an increase in the future service rate.

There is a similar relationship between real gilt yields and the future service contribution rate. All other things being equal, the fall in real gilt yields since 2010 will serve to push up the expected cost of new benefits earned by employee members in future.

Note that volatility in the market value of the Fund's equity-type investments has no immediate effect on the future service contribution rate, as opposed to the immediate and often tangible effect it can have on the past service position (i.e. the effect on the deficit at any given time). The effect on the future service rate may manifest itself at a later date, when the assumptions used to calculate it are updated to take account of this experience.

Pre-retirement experience

Early leavers

There were more early leavers than anticipated. This serves to decrease the Fund's liabilities, as broadly speaking deferred benefits are assumed to grow at a slower rate (price inflation) than those for active members (salary inflation).

Ill health retirements

There were fewer ill health retirements than expected. This serves to decrease the Fund's liabilities, as ill health benefits are costly. Those who retire early through ill health not only receive their benefits before their normal retirement age but are also credited with additional service, both of which place a strain on the Fund.

Non-ill health early retirements

We do not make any assumption about non ill-heath early retirements. Whilst the level of ill health in the population is linked to certain underlying factors that can be analysed, events such as redundancy are often made for commercial reasons and are far more difficult to predict. Where such early retirements have been granted, this will serve to increase the Fund's liabilities (except where pensions have been specifically reduced to reflect their early payment). Such an increase is usually offset by a lump sum payment from the retiree's employer (a "strain" payment). However, as time elapses it is unlikely that this payment will exactly match the liability it was originally intended to cover (for example, the member may go on to live much longer than expected).

Salary increases

Salaries have increased at a slower rate than expected over the last three years. This serves to decrease the Fund's liabilities, as members' retirement benefits are ultimately linked to final salary.

Post-retirement experience

Once retired, members (and possibly their dependants) will receive pension benefits for as long as they survive. The key factors that influence the cost of these benefits to the Fund are therefore pensioner mortality and increases to pensions in payment.

Pension increases

Pensions have increased more than expected over the last three years. This has had a slightly adverse impact on the funding position.

Pensioner longevity

The amount of pensions ceasing over the last three years was less than was anticipated. Whilst this is obviously good news for the Fund's pensioners, it inevitably places a bigger financial burden on the Fund. Note that when we analyse pensioner deaths and derive our assumptions for the future, we do not simply base our analysis on the number of pensioners dying. Rather, we look at the amount of pension that subsequently ceases to be paid out by the Fund. This is a more relevant figure, as the cost to the Fund will be more heavily influenced by those who are in receipt of larger pensions.

Having assessed the events that have affected the Fund since the previous valuation, we can now formulate an approach to this 2013 valuation which will incorporate this information into our long-term assumptions for the Fund.

New Scheme from April 2014

From 1 April 2014, the way in which benefits accrue in the LGPS will fundamentally change. The main change is that benefits will no longer be based on members' final salary at retirement, but will be based on members' Career Average Revalued Earnings (CARE). Details of the changes coming in on 1 April 2014 (the 2014 scheme) are set out in Appendix B.

Our calculation of the future service rate at the 2013 valuation is based on the 2014 scheme benefits, which comes into effect from 1 April 2014. This is consistent with the application of the contribution rates determined at the 2013 valuation, which also come into effect from 1 April 2014.

Having assessed the events that have affected the Fund since the previous valuation, we can now formulate an approach to this 2013 valuation which will incorporate this information into our long-term assumptions for the Fund.

2013 – Our proposed approach and assumptions

For our valuation approach, please see Appendix B and our briefing note titled '2013 Valuation approach' dated March 2013.

Similarly, please see our briefing note titled '2013 Valuation assumptions' which sets out our central recommended assumptions for the 2013 valuation. This can be found in Appendix D.

Details of our recommended assumptions for the Fund for this valuation are set out below, following discussions of our central recommendations.

Financial assumptions

The table below summarises the financial assumptions that we believe are most appropriate for the valuation of members' benefits at this valuation. The corresponding assumptions from the 2010 valuation are shown for reference.

	31 March 2010		31 March 2013	
Financial assumptions	**Nominal**	**Real**	**Nominal**	**Real**
Discount Rate	6.1%	2.8%	4.6%	2.1%
Salary Increases*	5.3%**	2.0%	4.3%***	1.8%
Price Inflation / Pension Increases	3.3%	-	2.5%	-

**Excluding promotional increases.*

***1% p.a. for 2010/11 and 2011/12, reverting to the long term assumption shown thereafter.*

*** The reduction in real salary growth at 31 March 2013 reflects salary freezes and an expectation of constrained growth for the next valuation cycle.

A further explanation of how we have derived these assumptions is set out below.

Discount rate

As set out in our briefing note (Appendix D), we recommend that Funds adopt the same Asset Outperformance Assumptions (AOA) as was adopted at the 2010 valuation, unless significant changes in the Fund's investment strategy have taken place.

The table below details the composition of the discount rate at 31 March 2013:

	31 March 2013	
Discount rate	**Nominal**	**Real**
"Gilt-based" discount rate	3.0%	0.5%
Asset Outperformance Assumption	1.6%	-
Funding basis discount rate	4.6%	2.1%

Price inflation / pension increases

Due to changes in the construction of the CPI index since 2010, we expect the average long term difference between RPI and CPI to be 0.8% p.a. Please see Appendix D for further details.

The table below confirms our assumption for CPI/pension increases at this valuation:

Assumed pension increases	31 March 2013
Market-derived RPI	3.3%
RPI to CPI adjustment	0.8%
CPI / pension increases	2.5%

Salary increases

Please see Appendix D for further details. The general salary growth assumption for the Fund as at 31 March 2013 is set equal to the long term rate of RPI plus 1% p.a. At 2010, the salary growth was 1% p.a. for 2 years and RPI plus 1.50% p.a. thereafter.

The reduction in the assumption in excess of inflation taken at 31 March 2013 for the long term salary increase assumption reflects salary freezes and an expectation of constrained growth for the next valuation cycle.

The table below summarises our proposed salary increase assumption:

Assumed salary increases	31 March 2013
Market-derived RPI	3.3%
Salary increase in excess of inflation	1.0%
Total salary increase	4.3%

Note that this assumption is made in respect of the general level of salary increases (e.g. as a result of inflation and other macroeconomic factors). We also make a separate allowance for expected pay rises granted in the future as a result of promotion. This assumption takes the form of a set of tables which model the expected promotional pay awards based on each member's age and class. Please see Appendix C.

Longevity

In setting the assumptions for longevity, there are two principal factors that we must consider:

- The life expectancy for members based on what we know today – known as "baseline longevity".
- How this life expectancy is forecast to improve in the future – known as the "longevity improvement".

At the 2010 valuation, for baseline longevity we used the "SAPS" tables which are a standard set of tables published by the actuarial profession based on the longevity experience of occupational pension funds.

We then allowed for future longevity improvements in line with the medium cohort projections with a minimum level of improvement of 1% p.a.

Baseline longevity - VitaCurves

As previously advised, the longevity assumptions that have been adopted at this valuation are a bespoke set of VitaCurves that are specifically tailored to fit the average membership profile of the Fund. These curves are based on the data you have provided us with for the purposes of this valuation.

Longevity improvement

Please see our briefing note which can be found in Appendix D which sets out the 3 key considerations to make when setting the future longevity improvement assumption.

The above assumptions give the following sample average future life expectancies (in years) for members:

	Actives & Deferreds		Current Pensioners	
Assumed life expectancy at age 65	**Male**	**Female**	**Male**	**Female**
2010 valuation - baseline	18.9	21.6	18.9	21.6
2010 valuation - improvements	23.3	26.1	21.9	24.7
2013 valuation - baseline	19.3	22.0	19.0	21.6
2013 valuation - improvements	24.2	26.6	22.0	24.1

Further details of the mortality assumptions adopted for this valuation can be found in **Appendix C**. Note that the figures for actives and deferreds assume that they are aged 45 at the valuation date.

Demographic assumptions

We are in the unique position of having a very large local authority data set from which to derive our other demographic assumptions. This year, as in previous years, we have made full use of this to analyse the trends and patterns that are present in the membership of local authority funds and tailor our assumptions to reflect LGPS experience.

As with the financial and longevity assumptions, these demographic assumptions affect both the past service and future service valuation results. Further details on these assumptions are set out below.

Withdrawals (early leavers)

See Appendix D and table in Appendix C.

Ill-health early retirements

See Appendix D and table in Appendix C.

Retirement age

See Appendix D. In addition to this, we have assumed that any new deferred members since 31 March 2010 will retire at age 65.

In order to ensure that we are treating these accrued benefits correctly in our valuation calculations, we are explicitly calculating the appropriate retirement age for each member (rather than simply using the age provided in the membership data extract). This is the same approach as we took at the 2010 valuation.

50:50 option under the new LGPS structure

See Appendix D.

Other demographic assumptions

See Appendix D and tables in Appendix C.

Further comments on the assumptions

Level of prudence

As required for Local Government Pension Scheme valuations, our proposed approach to this valuation must include a degree of prudence. This has been achieved by explicitly allowing for a margin of prudence in the Asset Outperformance Assumption.

For the avoidance of doubt, we believe that all other proposed assumptions represent the "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.

Taken as a whole, we believe that our proposed assumptions are more prudent than the best estimate. The assessed liability value on a "neutral" best estimate (not prudent) basis would perhaps be 20% lower than the figures shown here.

Selecting a set of final assumptions

The assumptions presented here are not the only ones that could be adopted for the valuation. It can be tempting to opt for a combination of assumptions that give the most favourable valuation results. However, whilst this approach may offer some short term benefits (for example, temporarily showing a higher funding level and lower contribution requirement for the Fund and its employers) there is a long term risk that the cost of the Fund is being underestimated. This can increase the risk of even greater deficits arising in the future, possibly at very inopportune times.

Conversely, it may seem attractive to choose a set of assumptions that are extremely cautious and that result in a much higher deficit, on the grounds of prudence. This could prompt a call for much higher contributions from employers in the short term, possibly unnecessarily so, which may be unsustainable and therefore not in the best interests of employers in the long term.

We believe that our proposed set of valuation assumptions, taken as a whole, are the most appropriate for the Fund as at 31 March 2013. We consider that the valuation results they yield give the best balance between prudence and a realistic assessment of the financial position of the Fund.

We have used these proposed assumptions to calculate the initial valuation results at 31 March 2013.

2013 – Initial results

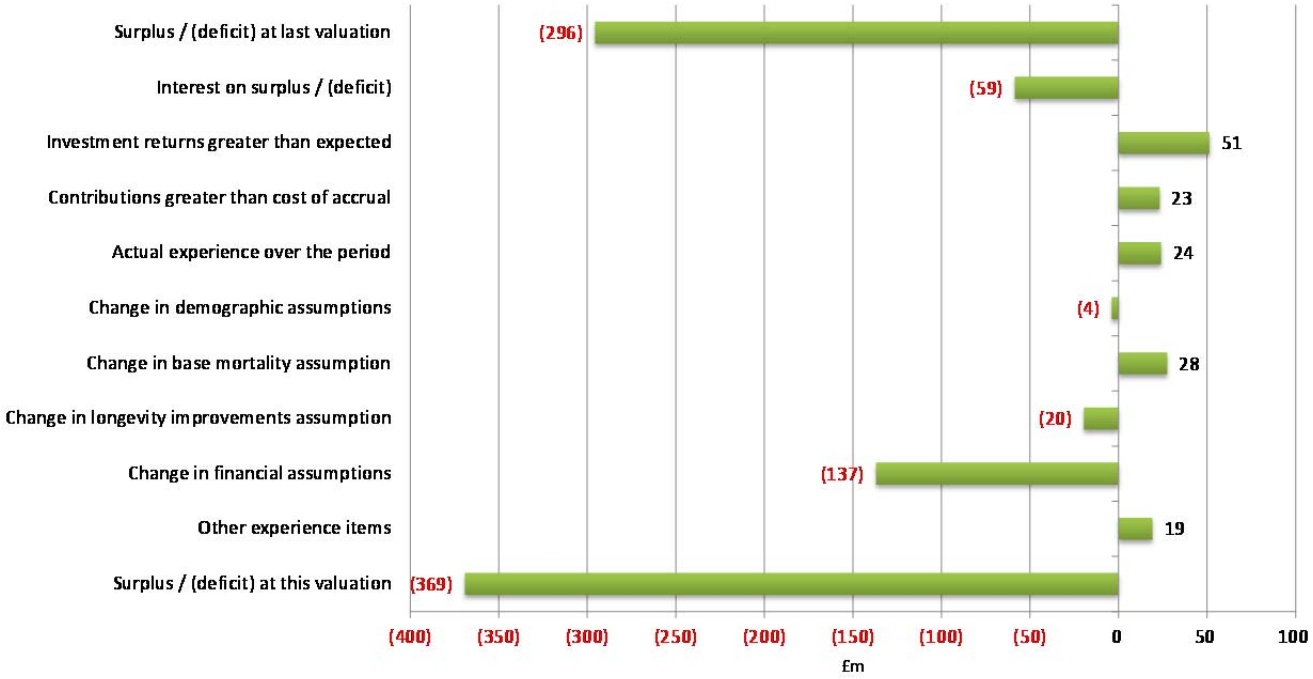
Past service – funding level and deficit

The table below shows the initial results for the past service position of the whole fund at 31 March 2013. These 2013 figures are based on our proposed valuation assumptions, as set out in the previous section. The final results of the previous valuation at 31 March 2010 are also shown for reference.

Valuation Date	31 March 2010	31 March 2013
Past Service Position	***(£m)***	**(£m)**
Past Service Liabilities		
Employees	399	427
Deferred Pensioners	205	293
Pensioners	355	513
Total Liabilities	960	1,232
Market Value of Assets	664	863
Surplus / (Deficit)	**(296)**	**(369)**
Funding Level	**69.2%**	**70.0%**

Why the past service position has changed

The chart below illustrates the various factors that have led to the deficit rising between the previous valuation and this one.



Further comments on the items in this chart:

- There is an interest cost of £59m. This is broadly three years of compound interest at 6.10% p.a. applied to the previous valuation deficit of £296m.
- Investment returns being higher than expected since 2010 lead to a gain of £51m. This is roughly the difference between the actual and expected three-year return applied to the whole fund assets from the previous valuation of £664m, with a further allowance made for cashflows during the period.
- The impact of contributions compared to accrual is a profit of £23m.
- The impact of the change in demographic assumptions has been a loss arising of around £4m.
- The change in mortality assumptions (baseline and improvements) has given rise to a gain of £8m. This is mainly due to the change in assumed baseline longevity
- The change in financial conditions between the previous valuation has led to a loss of £137m. This is due to a decrease in the real discount rate between 2010 and 2013. This has been partially been offset by the 0.3% p.a. increase in our assumption of the gap between RPI and CPI.
- Other experience items, such as changes in the membership data, have served to increase the deficit at this valuation by around £43m.

Illustrative results from alternative assumptions – past service position

These initial valuation results are based on our proposed set of assumptions, which we believe are appropriate to the Fund's circumstances. However, they are by no means the only set of assumptions that could be used.

The table below illustrates the funding level and deficit that would arise from using various combinations of the two most influential assumptions - namely investment return and longevity.

Past service position		Asset Outperformance Assumption		
		1.4%	1.6%	1.8%
Longevity	2013 Valuation (improvements 1)	67% (416)	70% (369)	73% (324)
	2013 Valuation (improvements 2)	65% (468)	67% (419)	70% (373)

The shaded box contains the initial results for this valuation, based on our proposed set of assumptions. Some points to note from this table are:

- "Improvements 1" are the longevity improvements that we are proposing for this valuation.
- "Improvements 2" are a more cautious set of improvements that, in the short term, assume the 'cohort 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. This is known as "non-peaked".

Having looked at the past service position, we must also analyse the future service costs and the contribution rates that arise from this valuation.

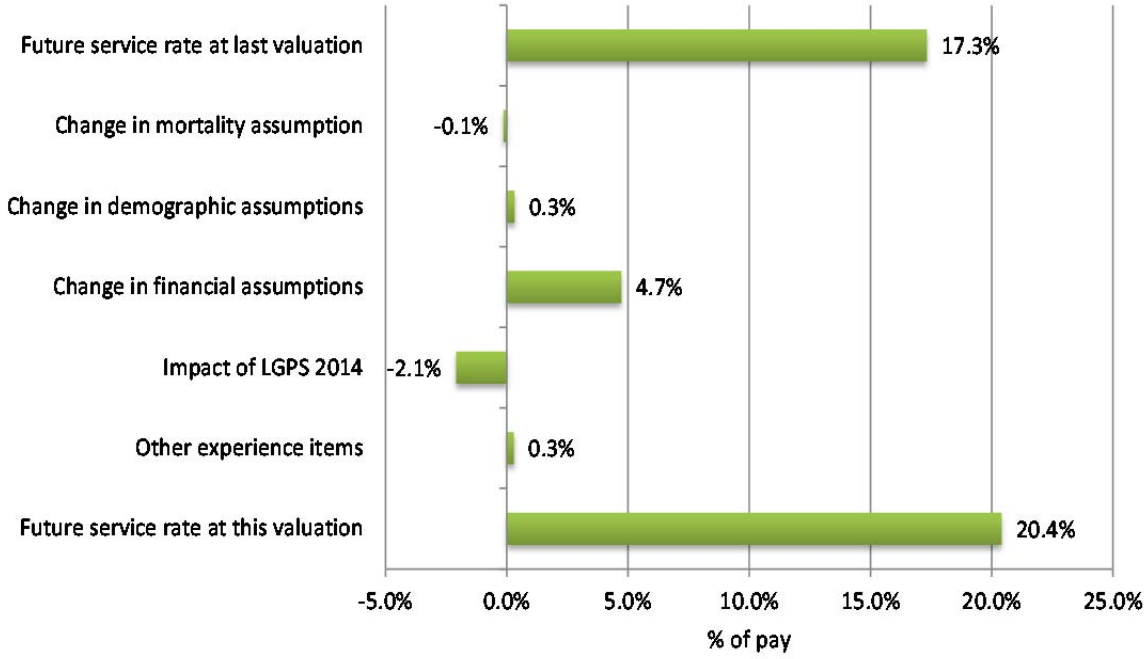
Contribution rates – future service rate

The table below shows the initial results for the future service cost for the whole fund as at 31 March 2013. Again, these 2013 figures are based on our proposed set of assumptions and the corresponding results from the previous valuation in 2010 are shown for reference.

Valuation Date	31 March 2010	31 March 2013
Future service rate	**% of pay**	**% of pay**
Employer future service rate (excl. expenses)	16.9%	19.9%
Expenses	0.5%	0.5%
Total employer future service rate (incl. expenses)	**17.3%**	**20.4%**
Employee contribution rate	6.8%	6.6%

Why the future service rate has changed

The chart below illustrates the various factors that have led to the employer future service rate rising between the previous valuation and this one.



As can be seen from this chart, the factors that have had the biggest impact on the future service rate between 2010 and 2013 are broadly similar to those discussed for the past service position, other than asset returns.

In addition to this, the impact of the LGPS 2014 scheme has resulted in a reduction in the future service cost of 2.1% p.a of payroll compared to the pre 2014 scheme.

Contribution rates – total contribution rate

The table below shows the initial results for the total (common) contribution rate, which consist of the future service rate plus the additional contributions required to repay the deficit (the past service adjustment).

Valuation Date	31 March 2010	31 March 2013
Total contribution rate	**% of pay**	**% of pay**
Future service rate (incl. expenses)	17.3%	20.4%
Past service adjustment (20 year spread)	11.2%	15.1%
Total employer contribution rate	**28.5%**	**35.5%**

For consistency, I have based my calculation of the past service adjustment on the same deficit recovery period as the previous valuation, namely 20 years. Theoretically, this period could be reduced or extended to suit the circumstances of the Fund at 31 March 2013. In practical terms, a reduction to the recovery period of one year would effectively increase the past service adjustment by roughly 0.7% and vice versa.

However, whilst extending the deficit recovery period on the grounds of affordability is an option, we believe this would be inadvisable given the current funding position. There are other ways to meet the need for affordable contributions for employers without jeopardising the health of the Fund in the long term which we will discuss later.

Illustrative results from alternative assumptions – total contribution rate

The table below illustrates the future service rate **(top)**, past service adjustment **(middle)** and total contribution rate **(bottom)** that would arise from using various combinations of the two most influential assumptions - namely investment return and longevity.

Contribution rates		Asset Outperformance Assumption		
		1.4%	1.6%	1.8%
Longevity	2013 Valuation (improvements 1)	21.8% 16.7% **38.5%**	20.4% 15.1% **35.5%**	19.1% 13.5% **32.6%**
	2013 Valuation (improvements 2)	23.3% 18.8% **42.0%**	21.8% 17.2% **39.0%**	20.4% 15.5% **35.9%**

The shaded box contains the initial results for this valuation, based on our proposed set of assumptions. The definitions of “Improvements 1” and “Improvements 2” are as described in the previous section.

2013 – Risk assessment

The valuation results depend critically on the actuarial assumptions that are made about the future of the Fund. 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 Fund 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 Fund and these should be considered as part of the valuation process. In particular:

- The main risks to the financial health of the Fund 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 the two most significant risks – namely investment risk and longevity risk.

Sensitivity of valuation results to changes in assumptions

Broadly speaking, there are two particular risks that are generally of most interest to pension funds – the performance of the Fund's investments and improvements in life expectancy compared to our assumptions. A further analysis of both is given below.

Investment risk

As the assets of the Fund are taken at their market value, volatility in investment performance can have an immediate and tangible effect on the funding level and deficit. This is particularly relevant because the Fund is invested predominantly in riskier assets such as equities and equity-type investments (e.g. property). A rise or fall in the level of equity markets has a direct impact on the financial position of the Fund, which may seem obvious.

Less obvious is the effect of anticipated investment performance on the Fund's liabilities (and future service cost). Here it is the returns available on government bonds that are of crucial importance, as the discount rate that we use to place a value on the Fund's liabilities is based on gilt yields at the valuation date. As described earlier, the discount rate used to value the Fund's future benefit payments is based on the return on fixed interest gilts, whilst the benefits themselves are projected to increase in line with inflation. Therefore, the return available on index-linked gilts is a key factor in the valuation of the Fund's liabilities (and future service cost).

The table below shows how the funding level (top), deficit (middle) and total contribution rate (bottom) would vary if investment conditions at 31 March 2013 were different. The level of the FTSE 100 Price index is taken as a suitable proxy for asset performance whilst the index-linked gilt yield is taken as a yardstick for the valuation of liabilities.

Index Linked Gilt Yield	FTSE 100 Price Index		
	5912	6412	6912
-0.10%	68% (380) 34.9%	73% (324) 32.6%	77% (268) 30.2%
-0.30%	65% (425) 37.8%	70% (369) 35.5%	75% (313) 33.2%
-0.50%	63% (472) 40.7%	67% (416) 38.5%	72% (360) 36.2%

The shaded box contains the initial results for this valuation. Note that this does not take account of the performance of all asset classes held by the Fund (e.g. property, bonds, cash) but it does serve to highlight, in broad terms, the sensitivity of the valuation results to investment conditions at the valuation date.

Note that the scenarios illustrated above are by no means exhaustive. They should not be taken as the limit of how extreme future investment experience could be.

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 funding level will decline and the required employer contribution rates will increase.

Recent medical advances, changes in lifestyle and a greater awareness of health-related matters have resulted in life expectancy amongst pension fund 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 Fund since the previous valuation.

The table below shows how the valuation results at 31 March 2013 are affected by adopting different longevity assumptions. See page 13 for further details. The bottom row represent the impact of pensioners living one year longer than the life expectancy under improvements 2.

	Impact		
Longevity assumption	Funding level	Deficit (£m)	Future service rate
2013 valuation (improvements 1)	70%	(369)	20.4%
2013 valuation (improvements 2)	67%	(419)	21.8%
1 year extra	65%	(458)	22.6%

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 Fund to deviate from many of these assumptions between valuations and so the precise effect on the funding position is therefore more complex.

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 change in such a way that would rank them as amongst the highest risks facing the Fund and therefore the analysis is qualitative rather than quantitative.

	Impact	
Factor	**Funding level**	**Future service rate**
Greater level of ill health retirement	Decreases	Marginal
Reduced level of withdrawals	Decreases	Marginal
Rise in average age of employee members	Marginal effect	Increases
Lower take up of 50:50 option	No impact	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 performance of investment markets or the life expectancy of members, that are not directly within the control of the pension fund, that does not mean that nothing can be done to understand them 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:

- Set aside a specific reserve to act as a cushion against adverse future experience (possibly by selecting a set of actuarial assumptions that are deliberately more prudent).
- Take 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 Fund.
- Pooling certain employers together at the valuation and then setting a single (pooled) contribution rate that they will all pay. This can help to stabilise contribution rates (at the expense of cross-subsidy between the employers in the pool during the period between valuations).
- Carrying out a review of the future security of the Fund's employers (i.e. assessing the strength of employer covenants).
- Carry out a bespoke analysis of the longevity of Fund members and monitor how this changes over time, so that the longevity assumptions at the valuation provide as close a fit as possible to the particular experience of the Fund. This is effectively what Club Vita does.
- Undertake an asset-liability modelling exercise that investigates the effect on the Fund of thousands of possible investment scenarios that may arise in the future. An assessment can then be made as to whether long term, secure employers in the Fund can stabilise their future contribution rates (thus introducing more certainty into their future budgets) without jeopardising the long-term health of the Fund. This is exactly what our comPASS tool does.
- Purchasing ill health liability insurance to mitigate the risk of an ill health retirement impacting on solvency and funding level of an individual employer.

- Monitoring different employer characteristics in order to build up a picture of the risks posed. Examples include membership movements, cash flow positions and employer events such as cessations.

We would be delighted to set out in more detail the risks that affect the Fund and discuss with you possible strategies for managing them.

Stabilisation of contribution rates (comPASS)

There can be occasions when the market-related employer contribution rate is not affordable or achievable in practice in the short term. This can occur in times of tight fiscal control or where budgets have been set in advance of new employer contribution rates being available.

In view of this possibility, the Administering Authority has carried out extensive modelling to explore the long term effect on the Fund of capping future contribution increases (and decreases). By adopting such a strategy, this effectively means that employers will pay slightly less than the market-related contribution rate in "bad" times and in turn will pay slightly more than the market-related rate in "good" times.

The comPASS modelling that we carry out makes an explicit allowance for the possible future investment risks that the Fund may encounter over the period of stabilisation. By doing so, the aim is to justify whether or not the long-term health of the Fund will be adversely impacted by the application of a cap on changes to contribution rates.

The results of the modelling are in a separate paper dated 5th August 2013.

Next steps

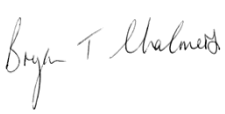
Next steps

This report sets out the initial results of the 2013 valuation at whole fund level. We have presented a set of valuation results based on our recommended set of actuarial assumptions and also show how these results would change if a variety of alternative approaches were taken.

The next steps in the process are as follows.

- The next step is for the Administering Authority and the Actuary to ***agree on the final actuarial assumptions*** that will ultimately be adopted for the valuation. This may simply be a ratification of the assumptions that we have proposed. On the other hand, you may feel that some of these assumptions are not appropriate for the Fund and you may want to look at some additional scenarios that you feel more closely reflect the Fund's experience.
- Once the final assumptions have been agreed, we will quantify the ***valuation results for each individual employer*** that participates in the Fund. When we present you with these results, we will set out the theoretical contribution rates that each employer should pay for the next three years from 1 April 2014.
- Of course, the contribution rate that each employer should pay in theory may be different to what they will actually pay in practice. Any deviation will be based on their own circumstances and a range of factors including (amongst other things) their perceived security, whether they are going to be pooled with other employers or any budgetary constraints that they may be bound by. We expect there to be a consultation period where you gather together all of these issues and ***come back to us with a set of final contribution rates for each employer.***
- We understand that you may require additional input from us before agreeing the final contribution rates. Some employers may accept their proposed contribution rates quite readily whilst others may want to explore their options. You may want us to look at the viability of ***different contribution strategies*** that are proposed by individual employers.
- Once a set of final contribution rates have been agreed for all employers, we will provide you with a ***final valuation report*** which will clearly set out the final valuation results and will meet all the relevant regulatory requirements. Included in this report will be the Certificate of Rates and Adjustments, which will certify the minimum contribution rates to be paid by each employer for the three year period beginning on 1 April 2014. This final valuation report must be provided to you no later than 31 March 2014.

I would be happy to discuss any aspect of these initial results at our scheduled meeting.



Bryan T Chalmers

Fellow of the Institute and Faculty of Actuaries

8 November 2013

Douglas Green

Fellow of the Institute and Faculty of Actuaries

8 November 2013

Appendix A: About the pension fund

The purpose of the Fund is to provide retirement benefits to its members. It is part of the Local Government Pension Scheme (LGPS) and is a multi-employer defined benefit pension scheme.

Defined benefit pension scheme

In a defined benefit scheme such as this, the nature of retirement benefits that members are entitled to is known in advance. For example, it is known that members will receive a pension on retirement that is linked to their salary and pensionable service according to a pre-determined formula.

However, the precise cost to the Fund of providing these benefits is **not** known in advance. The estimated cost of these benefits represents a liability to the Fund and assets must be set aside to meet this. The relationship between the value of the liabilities and the value of the assets must be regularly assessed and monitored to ensure that the Fund can fulfil its core objective of providing its members with the retirement benefits that they have been promised.

Liabilities

The Fund's liabilities are the benefits that will be paid in the future to its members (and their dependants).

The precise timing and amount of these benefit payments will depend on future experience, such as when members will retire, how long they will live for in retirement and what economic conditions will be like both before and after retirement. Because these factors are not known in advance, assumptions must be made about future experience. The valuation of these liabilities must be regularly updated to reflect the degree to which actual experience has been in line with these assumptions.

Assets

The Fund's assets arise from the contributions paid by its members and their employers and the investment returns that they generate. The way these assets are invested is of fundamental importance to the Fund. The selection, monitoring and evolution of the Fund's investment strategy are key responsibilities of the Administering Authority.

As the estimated cost of the Fund's liabilities is regularly re-assessed, this effectively means that the amount of assets required to meet them is a moving target. As a result, at any given time the Fund may be technically in surplus or in deficit.

A contribution strategy must be put in place which ensures that each of the Fund's employers pays money into the Fund at a rate which will target the cost of its share of the liabilities in respect of benefits already earned by members and those that will be earned in the future.

The long-term nature of the Fund

The pension fund is a long-term commitment. Even if it were to stop admitting new members today, it would still be paying out benefits to existing members and dependants for many decades to come. It is therefore essential that the various funding and investment decisions that are taken now recognise this and come together to form a coherent long-term strategy.

In order to assist with these decisions, the Regulations require the Administering Authority to obtain a formal valuation of the Fund every three years. Along with the Funding Strategy Statement, this valuation will help determine the funding objectives that will apply from 1 April 2014.

LGPS 2014

On 31 May 2012 the Local Government Association (LGA) and trade unions announced the outcome of their negotiations on the new LGPS proposals (for England and Wales) that are to take effect from 1st April 2014. The main elements of the proposed LGPS 2014 scheme are as follows:

- A Career Average Revalued Earnings (CARE) scheme using CPI as the revaluation factor (the current scheme is a final salary scheme).
- The accrual rate would be 1/49th (the current scheme is 1/60th).
- Reversion to a two year vesting period (it is currently 3 months).
- There will be no normal scheme pension age; instead each member's Normal Pension Age (NPA) will be their State Pension Age (the current scheme has an NPA of 65).
- Average member contributions to the scheme would be around the same as the current scheme with the rate determined on actual pay (the current scheme determines part-time contribution rates on full time equivalent pay). While there would be no change to average member contributions, the lowest paid would pay the same or less and the highest paid would pay higher contributions on a more progressive scale after tax relief.
- Members who have already or are considering opting out of the scheme could instead elect to pay half contributions for half the pension, while still retaining the full value of other benefits. This is known as the 50/50 option (the current scheme has no such flexible option).
- For current scheme members, benefits for service prior to 1st April 2014 are protected, including remaining 'Rule of 85' protection. Protected past service continues to be based on final salary and current NPA. Specific protection - the 'underpin' - is proposed to apply to members who were within 10 years of age 65 in April 2012. Some of these members would see their Normal Pension Age increase due to movements in the State Pension Age. So for these members a calculation will be done on retirement at 65 to ensure they will get a pension at least equal to that which they would have received in the LGPS 2008.
- Where scheme members are outsourced they will be able to stay in the scheme on first and subsequent transfers (currently this is a choice for the new employer).

Appendix B: About the valuation

It is important to realise that the actual cost of the pension fund (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, so that the Fund 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 Fund and the factors that affect it to determine an anticipated cost which is as sensible and realistic as possible. A decision can then be made as to how much is set aside now to meet this anticipated cost. The pace of this funding can vary according to the level of prudence that is built into the valuation method and assumptions.

For this valuation, as for the previous 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 comparison at the valuation date of the assets (taken at market value) and the value placed on the Fund's liabilities (calculated using a market-based approach). By maintaining a link to the market in both cases, this helps ensure that the assets and liabilities are valued in a consistent manner. Our calculation of the Fund's liabilities also explicitly allows for expected future pay and pension increases.

The funding level is the ratio of assets to liabilities at the valuation date. A funding level of less/more than 100% implies that there is a deficit/surplus in the Fund at the valuation date.

The funding target is to eliminate any deficit (or surplus) over a specified period and therefore get back to a funding level of 100%. To do so, additional contributions may be required to be paid into the Fund, either via lump sums or by increasing the employer's contribution rate. These additional contributions are known as the past service adjustment.

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 must be met by both employers and employees. The employers' share of this cost is known as the future service contribution rate.

For these initial valuation results for the Fund as a whole, I 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. If new entrants are admitted to the Fund to the extent that the overall membership profile remains broadly unchanged (and if the actuarial assumptions are unchanged) then the future service rate should be reasonably stable.

This funding method we have used is known as the Projected Unit Method. As well as the whole fund, it is appropriate for individual employers that continue to admit new entrants to the Fund.

However, some participating employers may have a policy of not admitting new entrants. In this case, the membership profile will inevitably begin to age. Under these circumstances, the Projected Unit Method is arguably no longer appropriate and will not promote sufficient stability in the future service rate. For these employers, we will adopt a funding method known as the Attained Age Method, which effectively looks at the cost of benefits that members will earn over the entirety of their remaining working lifetime (rather than just the year following the valuation).

When we come to issue the valuation results for individual employers, we will make clear which of these methods has been used to calculate each employer's future service rate.

Combining this future service rate with any past service adjustment required to repay a deficit (or reduce a surplus) gives us the total contribution rate. The total rate for the Fund as a whole is known as the common contribution rate. This is really just a notional figure. In practice, each individual employer will have a contribution rate which reflects their own particular circumstances.

The sensitivity of valuation results

The aim of this valuation is not only to determine these important figures but also to demonstrate their sensitivity to a number of key influences. This will promote an understanding of how the expected cost of the Fund may change in response to uncertain future events (e.g. changes in life expectancy or investment returns).

Appendix C: Demographic assumptions

Death in Service tables:

Age	Incidence per 1000 active members per annum			
	Male officers and Post 98	Male Manuals	Female officers and Post 98	Female Manuals
	Death	Death	Death	Death
20	0.26	0.32	0.14	0.17
25	0.26	0.32	0.14	0.17
30	0.31	0.38	0.20	0.26
35	0.36	0.45	0.34	0.43
40	0.61	0.77	0.54	0.68
45	1.02	1.28	0.88	1.11
50	1.63	2.04	1.29	1.62
55	2.55	3.19	1.70	2.13
60	4.59	5.74	2.18	2.72
65	7.65	9.56	2.79	3.49

Ill Health Early Retirements tables:

Tier 1

Age	Incidence for 1000 active members per annum							
	Male Officers & Post 98 Males		Male Manuals		Female Officers & Post 98 Females		Female Manuals	
	Ill Health		Ill Health		Ill Health		Ill Health	
	FT	PT	FT	PT	FT	PT	FT	PT
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.76	0.60	0.19	0.15	0.99	0.79
30	0.00	0.00	1.39	1.11	0.25	0.20	1.44	1.15
35	0.19	0.15	2.08	1.66	0.50	0.40	1.98	1.58
40	0.32	0.25	3.02	2.42	0.76	0.60	2.88	2.30
45	0.69	0.55	4.16	3.33	1.01	0.81	3.78	3.02
50	1.76	1.41	6.17	4.94	1.89	1.51	5.04	4.03
55	6.91	5.53	14.61	11.69	7.01	5.61	13.54	10.83
60	12.16	9.73	23.42	18.74	14.86	11.89	23.81	19.05
65	23.10	18.48	45.15	36.12	26.71	21.37	45.15	36.12

Tier 2

Age	Incidence for 1000 active members per annum							
	Male Officers & Post 98 Males		Male Manuals		Female Officers & Post 98 Females		Female Manuals	
	Ill Health		Ill Health		Ill Health		Ill Health	
	FT	PT	FT	PT	FT	PT	FT	PT
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.80	0.64	0.20	0.16	1.05	0.84
30	0.00	0.00	1.47	1.18	0.27	0.21	1.53	1.22
35	0.20	0.16	2.21	1.77	0.54	0.43	2.10	1.68
40	0.33	0.27	3.21	2.57	0.80	0.64	3.06	2.45
45	0.74	0.59	4.42	3.53	1.07	0.86	4.02	3.21
50	2.37	1.90	8.31	6.65	2.54	2.03	6.78	5.43
55	5.34	4.27	11.29	9.03	5.42	4.33	10.47	8.37
60	4.58	3.66	8.82	7.05	5.60	4.48	8.96	7.17
65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Tier 3

Age	Incidence for 1000 active members per annum							
	Male Officers & Post 98 Males		Male Manuals		Female Officers & Post 98 Females		Female Manuals	
	Ill Health		Ill Health		Ill Health		Ill Health	
	FT	PT	FT	PT	FT	PT	FT	PT
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.48	0.38	0.09	0.07	0.55	0.44
30	0.09	0.07	0.77	0.62	0.15	0.12	0.77	0.61
35	0.12	0.10	1.16	0.93	0.30	0.24	1.11	0.88
40	0.21	0.17	1.61	1.29	0.39	0.31	1.53	1.22
45	0.48	0.38	2.32	1.86	0.62	0.50	1.96	1.56
50	0.26	0.21	0.68	0.54	0.24	0.20	0.58	0.46
55	0.37	0.30	0.77	0.61	0.45	0.36	0.76	0.61
60	0.21	0.17	0.42	0.33	0.25	0.20	0.42	0.33
65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Withdrawal

Less than 2 years' service

Age	Incidence for 1000 active members per annum											
	Male Officers Withdrawals		Male Manuals Withdrawals		Female Officers Withdrawals		Female Manuals Withdrawals		Post 98 Males Withdrawals		Post 98 Females Withdrawals	
	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT
20	304.04	506.74	304.04	506.74	288.39	400.55	288.39	400.55	557.41	1000.00	384.52	640.87
25	200.83	334.72	201.20	335.01	194.07	269.50	194.43	269.79	368.19	736.38	258.74	431.17
30	142.53	237.46	143.05	237.91	162.69	225.89	163.17	226.27	261.24	522.40	216.89	361.38
35	111.38	185.51	112.17	186.19	140.45	194.94	141.07	195.43	204.11	408.11	187.19	311.79
40	89.71	149.31	90.77	150.23	116.92	162.22	117.80	162.92	164.33	328.47	155.80	259.40
45	73.64	122.28	75.03	123.55	96.49	133.73	97.50	134.54	134.71	268.98	128.49	213.73
50	56.96	94.68	57.28	95.02	73.34	101.75	73.60	101.96	104.26	208.28	97.73	162.71
55	49.47	82.09	49.77	82.44	56.73	78.59	56.97	78.78	90.46	180.57	75.53	125.58
60	29.97	49.75	30.13	49.94	26.40	36.55	26.52	36.65	54.81	109.43	35.13	58.39

More than 2 years' service

Age	Incidence for 1000 active members per annum											
	Male Officers Withdrawals		Male Manuals Withdrawals		Female Officers Withdrawals		Female Manuals Withdrawals		Post 98 Males Withdrawals		Post 98 Females Withdrawals	
	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT
20	119.85	199.76	119.85	199.76	113.69	157.90	113.69	157.90	219.73	439.46	151.58	252.63
25	79.17	131.95	79.31	132.06	76.50	106.24	76.64	106.35	145.14	290.28	101.99	169.97
30	56.18	93.60	56.39	93.78	64.13	89.05	64.32	89.20	102.98	205.93	85.50	142.46
35	43.90	73.12	44.22	73.40	55.37	76.84	55.61	77.04	80.46	160.88	73.79	122.91
40	35.36	58.85	35.79	59.22	46.09	63.95	46.44	64.22	64.78	129.48	61.42	102.26
45	29.03	48.18	29.59	48.71	38.04	52.72	38.44	53.04	53.10	106.03	50.65	84.25
50	22.45	37.31	22.58	37.46	28.91	40.11	29.01	40.19	41.10	82.10	38.52	64.14
55	19.50	32.35	19.62	32.50	22.36	30.98	22.46	31.06	35.66	71.18	29.77	49.50
60	11.82	19.60	11.88	19.69	10.41	14.41	10.46	14.45	21.61	43.14	13.85	23.02

Promotional salary scale

Age	Promotional Salary Scales							
	Male Officers & Post 98 Males		Male Manuals		Female Officers & Post 98 Females		Female Manuals	
	FT	PT	FT	PT	FT	PT	FT	PT
20	100	100	100	100	100	100	100	100
25	135	116	100	100	118	105	100	100
30	169	134	100	100	137	111	100	100
35	192	146	100	100	151	116	100	100
40	208	153	100	100	163	121	100	100
45	222	154	100	100	166	122	100	100
50	236	154	100	100	166	122	100	100
55	239	154	100	100	166	122	100	100
60	239	154	100	100	166	122	100	100
65	239	154	100	100	166	122	100	100

Longevity assumptions	31 March 2013
Longevity - baseline	Vita curves
Longevity - improvements	
CMI Model version used	CMI_2010
Starting rates	CMI calibration based on data from Club Vita using the latest available data as at December 2011.
Long term rate of improvement	Period effects: 1.25% p.a. for men and women. Cohort effects: 0% p.a. for men and for women.
Period of convergence	Period effects: CMI model core values i.e. 10 years for ages 50 and below and 5 years for those aged 95 and above, with linear transition to 20 years for those aged between 60 and 80. Cohort effects: CMI core i.e. 40 years for those born in 1947 or later declining linearly to 5 years for those born in 1912 or earlier.
Proportion of convergence remaining at mid point	50%

We have suggested a longevity improvement assumption based on the latest industry standard and combined information from our longevity experts in Club Vita. The start point for the improvements has been based on observed death rates in the Club Vita data bank over the period.

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 start to tail off, resulting in life expectancy increasing less rapidly than has been seen over the last decade or two. This is known as 'peaked'.

In the long term (post age 70) 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. The initial rate of mortality is assumed to decline steadily above age 98.

Appendix D: 2013 valuation assumptions

briefing note

2013 valuation assumptions

Catherine McFadyen
Actuary

Steven Scott
Actuary

Introduction

We recently outlined the approach we will take to the 2013 valuation in which we identified the distinction between the measurement of the funding position and the management of contribution rates.

The valuation assumptions determine the measurement of the funding position and application of these should result in a prudent measurement of the past service liabilities.

Our assumptions fall into two categories – financial and demographic.

Financial assumptions typically try to predict the **size** of 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 the cost of these benefits in today's money.

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 survive and whether they will exchange some of their pension for tax free-cash.

Financial assumptions

The discount rate and inflation assumptions are set with reference to the market's expectations of future economic conditions at the valuation date.

It is important that the financial assumptions reflect the period over which past service benefits are expected to be paid. The majority of benefits are paid many years in the future. In the period before the benefits are paid the assets are invested with the aim of achieving a return on these assets. So it is appropriate to allow for this investment return to determine how much money is needed now to make these future benefit payments. This process requires the use of a discount rate. All other things being equal, a lower discount rate results in more money being needed now and vice versa.

Discount rate

The discount rate should reflect the returns that the Fund expects to earn on its investments over the long term. We do this by considering the expected return on the lowest risk investments held (government bonds) and applying a margin to allow for the greater returns that are expected to be generated by the equity-type investments held (equities, property etc). We refer to this additional margin as the Asset Outperformance Assumption (AOA).

Although we have seen a downward shift in the expected returns on risky assets since the 2010 valuation, we believe the expected returns in excess of the returns on government bonds to be broadly unchanged since 2010.

2013 valuation assumptions

For the 2013 valuation, for consistency in measuring progress against a funding plan, we recommend Funds adopt the same AOA as was adopted at the 2010 valuation, unless significant changes in the Fund's investment strategy have taken place since 2010.

Inflation / pension increases

As per the previous valuation, the 'breakeven' RPI inflation assumption will be derived from the yields available on fixed-interest and index-linked government bonds.

LGPS benefit increases are linked to CPI and, as a market for CPI linked government bonds does not exist, we must set our pension increase assumption relative to expected RPI by making an appropriate deduction to reflect the differences between the construction of the RPI and CPI indices, namely the differences between the **"basket" of goods and services** and the impact of **the "formula effect".**

Due to changes in the construction of the CPI index since 2010 (specifically, how changes in clothing and footwear are measured) we expect the average long term difference between RPI and CPI to be 0.8% p.a. (2010: 0.5% p.a.). This compares to a difference of 0.5% p.a. at March 2013 and the Office for Budget Responsibility's (OBR) estimate of the long run difference of 1.4% p.a.[1]

This change has the effect of reducing the value placed on past service liabilities by circa 4% to 5%.

Salary growth

Although annual pay growth in recent years has generally been lower than the rate of inflation, our assumption for general salary growth is based on what we expect over the long term.

Since 2010, average increases to public sector pay have been restricted to broadly 1% p.a. It is expected that public sector pay will continue to be restricted until at least 31 March 2016 (as per the Chancellor's announcement in the 2013 budget). Rather than explicitly recognise the current public sector pay restrictions (as we did in 2010), our recommended approach in 2013 is to set a lower long term rate of salary growth. This reflects both shorter term pay constraints and the belief that general economic growth and hence pay growth may be at a lower level than historically experienced for a prolonged period of time. This assumption is also more appropriate for many types of employer, including academies and private contractors who are not subject to the short term restrictions. To that end, our recommended general salary growth assumption as at 31 March 2013 is set equal to the long term rate of RPI + 1% p.a. (2010: RPI + 1.5% p.a.).

This change (from 1.5% to 1.0% above RPI) has the effect of reducing past service liabilities for **active members** by circa 5% to 6%.

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

[1] Working paper No. 2 - The long-run difference between RPI and CPI inflation, November 2011

Assumptions as at 31 March 2013

The following table shows our 2013 valuation financial assumptions, based on the methodology described and market conditions as at 31 March 2013.

Assumption	Approach	Rate as at 31 March 2013
Discount rate	**Gilts + AOA**	**4.6% p.a.**
Gilt yield	FTSE published yields	3.0% p.a.
AOA	No change	1.6% p.a.
RPI Inflation	Implied from FTSE published yields	3.3% p.a.
Pension increases	RPI less 0.8% p.a.	2.5% p.a.
General salary growth	RPI + 1.0% p.a.	4.3% p.a.

Demographic assumptions

Longevity

Of all the demographic factors, longevity is the one that presents the greatest uncertainty. Subscribers to Club Vita benefit from a greater understanding of longevity risk, in particular the specific risk relative to their own scheme.

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 for all LGPS funds advised by Hymans Robertson will be based on Club Vita tables. For funds subscribing to the full Club Vita service, the baseline assumptions will be a series of bespoke VitaCurves applied to each member depending on socioeconomic factors. For all other funds, a fund specific baseline table will be created based on whole fund experience.

Future improvement to longevity

At the 2010 valuations, the rate of future longevity improvements was assumed to be in line with the medium cohort projections with a minimum level of improvement of 1% per annum. Following the release of the CMI[2] projections model ("the CMI model"), the 'cohort' projections are now outdated.

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:

[2] Continuous Mortality Investigation, which is supported and funded by the Actuarial Profession

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 2.4 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.

We have previously advocated a long-term approach to funding for longevity improvements in assessing the cash contributions that we recommend are paid by local authorities. We still feel that a "wait and see" approach is most appropriate as:

- The longevity risk faced by funds is mitigated in part by the link between Normal Retirement Age to State Pension Age for future service benefits (which in turn, is expected to increase in the future in line with increases in life expectancy);
- The LGPS 'employer cost cap' is expected to include longevity as a cost control mechanism, thus mitigating the impact of future longevity improvements; and
- Local authority funds have a long term time horizon over which to fund improvements in longevity if they emerge.

Bearing the above in mind, our recommended assumption for the future rate of longevity improvements is as follows;

- The current rate of improvements has reached a peak.
- Long term rate of 1.25% p.a. (or around 1 year per decade).
- Longevity improvements for the over 90s will decline.

The net effect of these changes will be to increase the past service liabilities of a typical LGPS fund by circa 2% to 3%.

We will continue to review the appropriateness of this assumption at future valuations.

As part of the 2013 valuation calculations we will calculate the value of past service liabilities and employer contributions on two possible models for longevity improvements, as well as pure baseline longevity, so that you can 'stress test' the impact of future experience on employer contributions. The first model is as described above. The second model for future improvements, which we will term 'further improvements', assumes that the current rate of improvements has not yet reached a peak.

Retirement demographics

Assumptions such as the rate at which members are assumed to leave local 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 future ("future service rate").

The starting point for our 2013 valuation assumptions was to analyse past experience over 2007 to 2010.

Withdrawals (excluding ill health)

When setting our withdrawal assumption at the 2010 valuation we allowed for the member's age and the period of past service to identify the likelihood of withdrawal (those with a lower service are more likely to withdraw).

This should more accurately reflect the rate of withdrawals each year in your fund and therefore place a more accurate value on the past service liabilities and the future service rate.

Our analysis of withdrawal experience confirms our belief that withdrawals are dependent on the period of past service. We also observed fewer withdrawals over 2007 to 2010 than we would expect from our 2010 assumption. We have made small adjustments to the likelihood of withdrawals at each age so our assumption better reflects recent experience.

The rate of withdrawals will no longer have an impact of the future service rate calculated for your scheme, which will be calculated on the CARE benefit basis at the 2013 valuation.

Ill health early retirements

The 2010 valuation was the first to recognise the three tier ill health structure introduced from 1 April 2008. We set our ill health retirement assumption based on the limited information available at that time and we can now evaluate this assumption based on actual ill health retirements over 2008 to 2010.

The evidence from 2008 to 2010 shows that:

- There are fewer ill health retirements occurring than was assumed at the 2010 valuation;
- The ages at which members take ill health early retirement are generally increasing; and
- The split of total ill health retirements between each tier is broadly in line with what was assumed in 2010.

We have made small adjustments to the ill health early retirement assumptions to reflect this experience.

Retirement age (non ill health)

The retirement age for current **active members** is assumed to be:

- Rule of 85 for those born prior to 31 March 1960 and protected under current regulations;
- 65 for all other members if they attain age 65 before 1 April 2022; otherwise
- State Pension Age.

Deferred members are assumed to retire at age 60 if they left active status before 1 April 2008, otherwise, they are assumed to retire at age 62.

All members are assumed to work for a minimum of one year past the valuation date.

50:50 option

From 1 April 2014, members can elect to pay half the standard level of contributions for half the accrued benefit (i.e. an accrual rate of 1/98ths). This option will affect future service only (past service is protected) and the employer's cost will fall as a result of members choosing this option.

As contribution rates are set once at each actuarial valuation, we need to make an assumption about the likely incidence of members taking the 50:50 option. Accurately predicting take-up of the 50:50 option will be challenging without any objective evidence. Forecasting the outcome will be made more difficult still by the uncertain impact of auto-enrolment which has not yet been implemented by most LGPS employers (members will be auto-enrolled and re-enrolled in the full benefits scheme).

In evaluating the cost savings from pension reform, the Government Actuary's Department (GAD) assumed that 10% of scheme members will take up the 50:50 option. In the absence of any other information, we believe this is a reasonable assumption to make. Therefore, our standard assumption at the 2013 valuation will be to assume that 10% of members (uniformly distributed across the age, service and salary range) will choose the 50:50 option.

This assumption will reduce employer future service costs by circa 0.5% to 0.8% of pay.

We will be able to further refine this assumption at future valuations, based on the evidence gained from 1 April 2014.

Other demographic assumptions

Our assumption for pay growth has historically been split into general inflationary pay increases and promotional pay growth. Our analysis shows no reason to change the level of assumed promotional pay growth at the 2013 valuation.

At the 2013 valuation we propose no change to our proportions married assumption set in 2010. Additionally, we have decided to keep our recommended commutation assumption constant for this valuation at 50% of HMRC limits for service to 1 April 2008 and 75% of HMRC limits for service from 1 April 2008.

2013 valuation assumptions

Impact

The following table shows the expected impact of our recommended 2013 valuation assumptions (relative to our recommended 2010 assumptions) on both the funding level and the future service contribution rate. The figures shown allow for changes to market conditions since 31 March 2010 in addition to changes in our assumption setting approach and are that expected for a typical LGPS fund.

Assumption	31 March 2010	31 March 2013	Impact on past service liabilities	Impact on future service contribution rate % of pay
Discount rate	6.1%	4.6%	⇧28%-35%	⇧8%-10%
Long term pay growth	5.3%	4.3%	⇩4%-6%	⇩2%-3%
Pension increases	3.3%	2.5%	⇩10%-15%	⇩2%-3%
Longevity				
Baseline	Club Vita	Club Vita	Variable	Variable
Future improvements	Medium cohort (1% underpin)	CMI projections	⇧2%-3%	⇧1%-2%
Withdrawals	2010	2013	⇧<1%	No impact
Ill health retirements	2010	2013	⇩<1%	⇩<1%
Promotional salary growth	2010	No change	No impact	No impact
Cash commutation	75% max	75% max	No impact	No impact
50:50 option take up	n/a	10%	No impact	⇩0.5%-0.8%

We believe that the recommended 2013 valuation assumptions set out in this note will be appropriate for the majority of LGPS funds. As ever, we welcome discussion on the suitability of these assumptions and your usual Hymans contact will be happy to consider deviation from the recommended assumptions where this is appropriate for your Fund. Please get in touch with your usual contact at Hymans if you have any questions.