

## 2016 Formal Valuation: Setting the Funding Target

### Executive Summary

The Hertfordshire County Council Pension Fund (“the Fund”) will undertake a triennial valuation as at 31 March 2016. The valuation is a statutory requirement of the Regulations<sup>1</sup> which facilitates a health check of the Fund against an appropriate funding target and a review of its funding plan. In order to carry out the valuation, actuarial assumptions are required to set an appropriate funding target.

The assumptions are informed estimates about future experience and therefore, over time they may need to be updated to reflect emerging evidence and changes in the regulatory and environmental background. Ahead of the 2016 valuation, we have carried out a review of the assumptions used to set the funding target at the 2013 valuation. The results of our review are summarised below. Where we have suggested a change in assumption from 2013 we have also noted the reason.

Assumption	2013 assumption	Proposed 2016 assumption	Reason for change
Discount rate <sup>2</sup>			
- Methodology	Gilts plus	Gilts plus	No change
- AOA	1.8%	1.8%	
Pension Increases			
- RPI-CPI gap	CPI = RPI – 0.8%	CPI = RPI – 1.0%	Increased gap due to emerging evidence
Salary increases <sup>3</sup>			
- Inflationary	RPI + 0.5%	RPI – 0.9%	Continued public sector pay restraint, closure of final salary scheme to accrual of new benefits
Longevity			
- Baseline	Club Vita analysis	Club Vita analysis	No change in methodology but updates to the underlying mortality tables
- Future Improvements	CMI model, peaked improvements, long term rate of improvements of 1.25% p.a.	CMI model, peaked improvements, long term rate of improvements of 1.25% p.a.	
Withdrawal	Minor adjustments to reflect recent experience		
Ill health retirements	Reduction in assumed incidences of ill health to reflect recent experience		
Promotional salary increases	Removed distinction between genders and extended increases up to age 50 to reflect national trends and equal pay commitments		
50:50 take up option	10%	To be decided	To be discussed with officers taking into account emerging experience
Commutation	To be discussed with officers		
Pre-retirement mortality	No proposed change from 2013 valuation assumption		
Proportions married	No proposed change from 2013 valuation assumption		

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### Addressee and Purpose

This paper has been commissioned by Hertfordshire County Council in its capacity as Administering Authority to the Hertfordshire County Council Pension Fund (“the Fund”). It has been prepared by Hymans Robertson LLP in our capacity as actuaries to the Fund.

The purpose of this paper is to propose the assumptions to set the funding target for the Fund’s upcoming formal valuation as at 31 March 2016.

### Background

Pension schemes exist to pay benefits earned by their members during their years of eligible service. In the LGPS, the scheme is split into separate funds which pay benefits earned by employees of participating employers. The Hertfordshire County Council Pension Fund is one such fund. The actual cost of paying all the benefits cannot be known with certainty until the final benefit payment is made to the last remaining member. In funded schemes, like the LGPS, the benefits must be paid for out of funds set aside in advance. In order to determine how much money to set aside, it is therefore necessary to make assumptions about the level of the benefits and the returns that will be achieved on the Fund’s assets (financial assumptions) and when benefits will be paid to members (demographic assumptions). These assumptions are agreed by the Fund based on advice from its actuary and are used to set the funding target.

The Fund will undertake a triennial valuation as at 31 March 2016. The valuation is a statutory requirement of the Regulations<sup>1</sup> which facilitates a health check of the Fund against an appropriate funding target and a review of its funding plan. In order to carry out the valuation, actuarial assumptions are required to set an appropriate funding target.

The assumptions are informed estimates about future experience and therefore, over time they may need to be updated to reflect emerging evidence and changes in the regulatory and environmental background. Ahead of the 2016 valuation, we have carried out a review of the assumptions used to set the funding target at the 2013 valuation. The results of our review are summarised below. Where we have suggested a change in assumption from 2013 we have also noted the reason.

The following sections examines the main financial and demographic assumptions in detail.

### Financial assumptions

Broadly speaking, financial assumptions relate to the level of benefits (i.e. the amount in £) when they are in payment and their equivalent value in today’s terms.

### Discount rate

The discount rate is the name given to the assumed rate of investment returns that the Fund will achieve in the long-term. It determines the money or assets needed today such that future investment returns and contributions will be sufficient to pay members’ benefits.

Whilst considering the discount rate, the Fund should always consider:

- How likely are the Fund’s assets able to return the rate assumed in the discount rate over the long term?
- Does the choice of discount rate tie up with the Fund’s objectives and level of investment risk?
- Does the discount rate reflect the changing nature of the Fund?

<sup>1</sup> Local Government Pension Scheme Regulations 2013.

<sup>2</sup> See Appendix A for full details of the analysis underlying the recommendation.

<sup>3</sup> See Appendix B for full details of the analysis underlying the recommendation.

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Based on analysis we have carried out for the Fund, we recommend that the Fund does not change the approach to determining the discount rate. In other words, the discount rate will be set equal to the Long-dated UK government bond yield (fixed interest) at 31 March 2016 plus an asset out performance assumption of 1.8%.

Appendix A contains full details of Fund-specific modelling, results and reliances and limitations, as requested by the Fund.

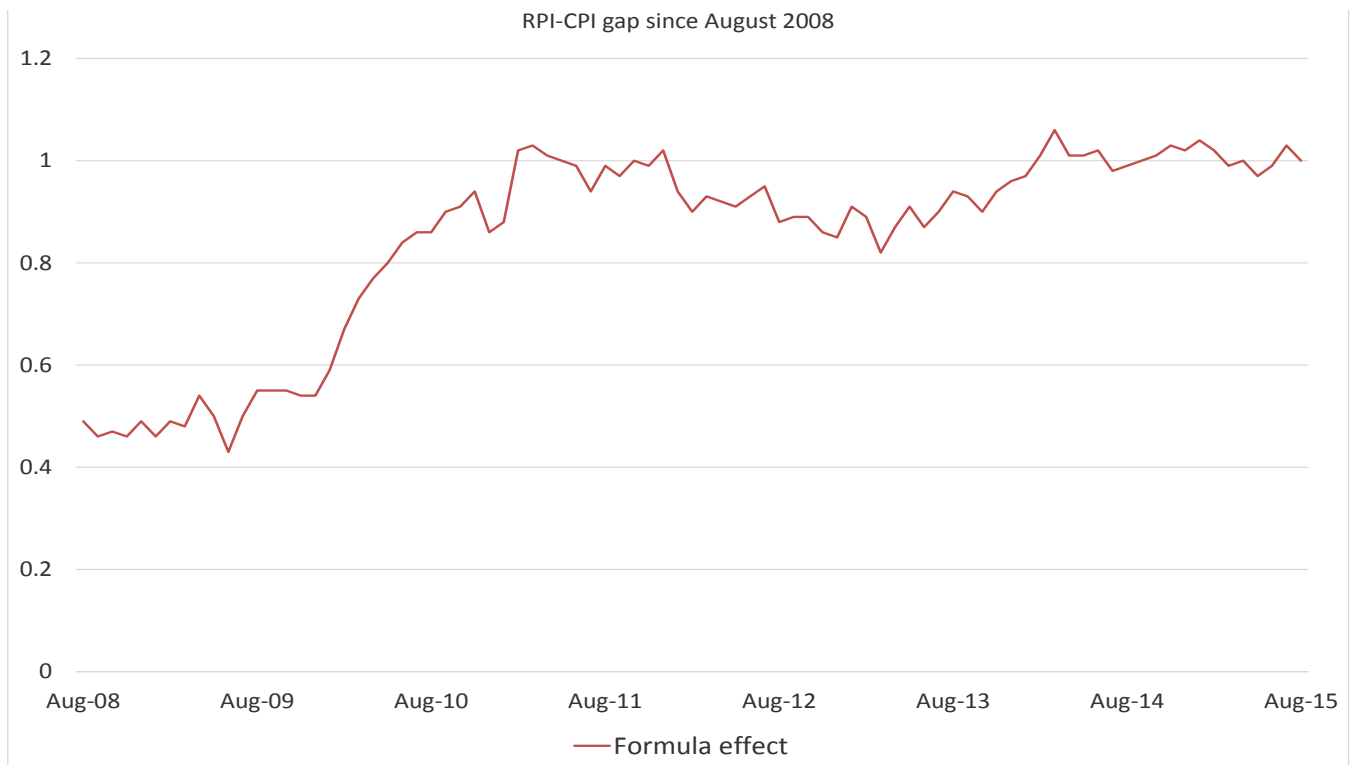
**Inflation / pension increases**

LGPS benefits increase each year in line with the Consumer Prices Index (“CPI”) measure of inflation, which is therefore a key financial assumption for the valuation. The best way to measure future financial values is to use information from the financial markets. As no market in CPI linked bonds exists, we calculate the market-implied value of future RPI (“Retail Price Inflation”) increases and adjust it downwards to get an assumption for CPI.

The two main differences between RPI and CPI are:

- The ‘basket’ of goods that each measure is based on (e.g. CPI doesn’t include mortgage payments and RPI doesn’t include the cost of new cars); and
- The ‘formula effect’ which is related to the way the index is calculated from the price changes of the goods in the basket.

At the 2013 valuation, CPI was assumed to be 0.8% less than RPI. At the 2016 formal valuation we are proposing to increase this long-term gap between RPI and CPI to 1.0% p.a. The main reason for the increase in this assumption is the steady increase in the formula effect over the last few years, as monitored and published by the Office for National Statistics on a regular basis. The chart below shows this increase:



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### Salary increases

All benefits accrued prior to 1 April 2014 are linked to the member's final salary before they leave active service. In calculating the cost of these benefits, it is therefore important to estimate the increase in salaries for active members until they leave active service.

We have carried out salary growth modelling for the Fund which considers the Fund's own membership, the public sector pay restraint until 2020 and 5 potential scenarios for salary increases after 2020. Following discussions with the officers, the proposed salary growth assumption for the 2016 formal valuation is RPI – 0.9% (which can be expressed as CPI + 0.1%).

Full details of this modelling are set out in Appendix B.

As this is a significant change in salary growth assumption from the 2013 formal valuation, the Fund may wish to consider the following risk mitigation actions.

### Risk mitigation

The proposed pay growth assumption makes full allowance for the public sector pay restraint. However, some employers that participate in the Fund are not bound by this pay restraint e.g. Academy Schools, Colleges and private sector employers such as Housing Associations. These employers may award salary increases greater than the long term assumption of RPI – 0.9%. If salary increases were higher than anticipated then this will lead to higher than expected pension costs. This increase in costs is referred to as 'salary growth strain' and may result in employers not being able to meet the additional pension costs in the future. Therefore the Fund should consider implementing a mechanism that helps control this risk.

One such mechanism could be monitoring salary increases annually and any salary growth strain arising will be immediately billed to the responsible employer.

### Demographic assumptions

Broadly speaking, demographic assumptions relate to the timing of benefits, i.e. when they start and for how long they are paid.

### Longevity

Of all the demographic factors, longevity is the one that presents the greatest uncertainty. As the Fund is a subscriber to Club Vita it benefits from a greater understanding of longevity risk, in particular the specific risk relative to its own members.

There are two components when setting an assumption for longevity:

- 1 How long people live for based on current observed life expectancies ('baseline longevity'); and
- 2 An allowance for possible future improvements to longevity ('future improvements').

We don't propose any change to methodology for the 2016 valuations. Details of the change in underlying tables and model adopted will be discussed with the Officers in due course.

The Fund should note that we have previously advocated a long-term approach to funding for longevity improvements in assessing the contributions payable by employers in the Fund. This is a "wait and see" approach: in other words, the assumption adopted for future improvements is not as prudent as most private sector schemes would adopt but is, we believe, a best estimate. This is the most appropriate as:

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- 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.

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

### Other demographics

The starting point for our proposed 2016 valuation assumptions was to analyse past experience over 2010 to 2013 for all the LGPS funds Hymans Robertson advises (40 funds in England & Wales). We use such a large data set to give us a big enough sample size for our analysis to be statistical credible. Some of the experience we analyse is rare, therefore we need a sufficiently large number of events to enable sound analysis.

Assumptions for withdrawals (excluding ill health), ill health early retirements and promotional salary scale have been updated to reflect emerging experience. We will discuss these changes with the Fund's Officers prior to the formal valuation.

There will be no change to the assumption for proportions married, pre-retirement mortality or commutation.

### 50:50 take-up option

From 1 April 2014, members have been able to elect to pay half the standard level of contributions for half the accrued benefit (i.e. an accrual rate of 1/98). This benefit is known as the *50:50 benefit*.

At the 2013 valuation we assumed that 10% of members (uniformly distributed across the age, service and salary range) would choose to take up the 50:50 option. In the absence of any evidence, this was based on the assumption made by the Government's Actuary Department when it evaluated the cost of the new 2014 scheme.

In the two years since the option was made available, the Fund, and the LGPS as a whole, has seen take-up levels far below 10% (the nationwide the figure is c0.2%). However, it is not clear whether take-up will remain low or increase in future due to the impact of auto-enrolment, cessation of contracting out and lower tax allowances is felt. We will discuss this assumption with the Officers to determine an appropriate allowance considering the Fund's own experience and views on future take-up.

### Reliances and limitations

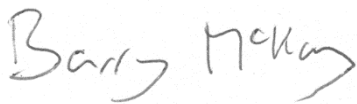
This information is addressed to Hertfordshire County Council as Administering Authority to the Hertfordshire County Council Pension Fund. It has been prepared in our capacity as actuaries to the Fund and is solely for the purpose of discussing our proposed assumptions for the 2016 formal valuation. It has not been prepared for any other purpose and should not be used for any other purpose.

The Administering Authority is the only user of this advice. Neither we nor Hymans Robertson LLP accept any liability to any party other than the Administering Authority unless we have expressly accepted such liability in writing. The advice or any part of it must not be disclosed or released in any medium to any other third party without our prior written consent. In circumstances where disclosure is permitted, the advice may only be released or otherwise disclosed in its entirety fully disclosing the basis upon which it has been produced (including any and all limitations, caveats or qualifications).

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The following Technical Actuarial Standards are applicable in relation to this advice, and have been complied with where material and to a proportionate degree:

- TAS R – Reporting; and
- Pensions TAS.



Barry McKay FFA

For and on behalf of Hymans Robertson LLP

23 May 2016



Julie West FFA

For and on behalf of Hymans Robertson LLP

23 May 2016

HYMANS ROBERTSON LLP

## Appendix A: 2016 valuation – Asset Outperformance Assumption (AOA)

### Addressee

This paper has been commissioned by and is addressed to Hertfordshire County Council in its capacity as Administering Authority to the Hertfordshire County Council Pension Fund (“the Fund”). It has been prepared in our capacity as actuaries to the Fund.

### Purpose

The next actuarial valuation of the Fund takes place as at 31 March 2016. This paper has been prepared to facilitate discussions on funding strategy and assumptions in advance of the 2016 valuation. In particular, this paper examines the choice of Asset Outperformance Assumption (AOA) at the 2016 valuation.

### Background

The choice of discount rate (or assumed investment return) is one of the key decisions made at the actuarial valuation. This assumption is used to provide a present value of projected future benefit payments.

The discount rate assumption is set in two parts;

- 1 Current long dated UK Government bond yields (Fixed Interest), plus
  - 2 The Asset Outperformance Assumption (“the AOA”).
- The current yield available on long dated UK Government bonds (1) is an estimate of the future ‘risk-free’ return that can be achieved by the Fund.
  - It is expected that the Fund’s assets to achieve higher returns due to the combination of riskier assets held by the Fund (e.g. equities, property and corporate bonds). The AOA (2) is a prudent estimate of the additional return expected to be achieved by the Fund’s assets in the long term over and above the ‘risk-free’ return available on long dated Government bonds. By prudent we mean that there is a greater than 50% chance that this assumption will be borne out in practice.

At the 2013 valuation, the AOA was set equal to the 2010 valuation AOA of 1.8% p.a. Since the 2013 valuation, the scrutiny LGPS funds are under has greatly increased. LGPS funds will now be expected to be able to justify their actions, including choice of assumptions, to both internal and external parties. Additionally, as the Fund’s funding plans are increasingly set via a risk based approach, the Fund also needs to understand the risk inherent in any choice of AOA.

### 2016 valuation AOA

Hymans Robertson have developed a model has been developed to allow a better understanding of the level of prudence and downside risk inherent in the valuation AOA.

- The model assumes that the Fund has achieved its long term funding objective, i.e. full funding on a specified AOA 20 years from now. This is a key assumption. As the liabilities increase each year in line with the discount rate, the assets will need to increase by more to achieve a fully funded position because
- Outperformance (relative to the discount rate) is required just to maintain the status quo e.g. if liabilities increase at 4.8% p.a. and the Fund is 80% funded then assets need to return 6% p.a. ( $4.8\% / 0.8$ ).
- In the above example the assets would need to increase in excess of 6% p.a. to repair the deficit.
- Therefore the Fund should consider how likely it is to achieve this higher level of return when setting the AOA and discount rate.

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- Based on a simplified representation of the Fund's long term asset strategy, the model provides two key risk metrics:
- **Probability of success** – The probability that the investment strategy would return at least what's required by the AOA, such that the Fund remains fully funded on the specified AOA a further 20 years in the future. In other words, once you have met your funding objective, what is the probability of remaining fully funded?
- **Downside risk measure** – The additional deficit recovery contributions that may be payable for a 20 year period due to the deficit that could emerge (measured as the average of the worst 10% of possible outcomes) if the funding level fell from full funding over a three year period.

### Scenarios

The level of prudence and downside risk inherent in the following scenarios has been considered in this paper;

- AOA of 1.6% / 1.8% / 2.0%.
- Current (70% growth / 30% matching) and alternative (50% growth / 50% matching) investment strategies.

The following parameters apply under all scenarios:

- A gearing ratio (i.e. the long term ratio of past service liabilities to pensionable payroll) of 10:1.
- A deficit spread period of 20 years.

### Results

The following table shows the probability of success and downside risk measure associated with each scenario considered.

#	AOA	Asset split (growth/matching)	Probability of success	Additional contributions (% of pay p.a.) required in the worst 10% of outcomes
1	1.6%	Current (70/30)	72%	14%
2	1.8%	Current (70/30)	70%	14%
3	2.0%	Current (70/30)	67%	14%

Based on the current investment strategy (70% growth), the modelling suggests each scenario could be considered as prudent.

However, as we expect the asset allocation to growth assets to decrease over the next 20 years as the demand for income generating assets increases, I have considered an alternative investment strategy below.

#	AOA	Asset split (growth/matching)	Probability of success	Additional contributions (% of pay p.a.) required in the worst 10% of outcomes
1	1.6%	Current (50/50)	65%	11%
2	1.8%	Current (50/50)	63%	11%
3	2.0%	Current (50/50)	60%	11%

Based on a 2/3<sup>rd</sup>s probability of success as the minimum level of prudence required, none of the proposed AOAs would be prudent on a more defensive investment strategy.

Further details of the scenarios are disclosed in the Appendix.



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### Recommendation

For the purpose of the 2016 valuation, it is important to set an AOA that reflects likely future experience, with allowance for prudence. The Fund should adopt an assumption that is appropriate based on the current investment strategy and will *remain appropriate* given expected possible future changes to strategy. Any choice should be reviewed again at the 2019 valuation and following any changes to investment strategy.

**My recommended AOA for this valuation would be 1.8%.** The justification is as follows:

- There is over a 70% probability that the Fund would remain fully funded, assuming it has returned to a fully funded position (on this basis) over the next 20 years on the current investment strategy.
- Adopting this assumption allows for the Fund to adopt a less risky investment strategy (moving to 60% growth at some point, if it wished – about 67% interpolating the results above) without dropping the probability of success below 2/3<sup>rd</sup>s
- Whilst the current strategy suggests that the AOA could be extended further to 2%, the Fund should aim to adopt an AOA that will remain appropriate in the medium-long term, and minimise the potential for reducing it again in the near future. In particular, use of a 2% AOA would not be recommended with a materially lower growth-oriented investment strategy.
- The downside risk is similar under all scenarios with the same investment strategy, and therefore we have not used this measure to inform the choice.

However, although adopting an AOA of 1.8% can be justified at this valuation, the Fund must be aware that this assumption may need to be decreased at future valuations if there is a significant change to investment strategy.

### Next steps and questions for the Fund

The discount rate will be confirmed following the statutory valuation date of 31 March 2016 and the reasons for the choice should be documented for audit trail purposes.

**The Fund should also consult with their investment advisor to determine their view of the “best estimate” returns from the Fund’s current investment strategy. This should then be communicated with us to ensure a sufficient level of prudence in the discount rate.**

The Fund should also consider any future plans to change investment strategy and in particular the level of risk that would be adopted should the Fund return to a fully funded position. Should the Fund return to a fully funded position, a lower level of risk in investment strategy than those quoted above may be desirable. In other words, the Fund may wish to protect the fully funded position. By way of comparison, on a 50% growth/50% matching investment strategy, the AOA would drop to 0.4% to give an 85% chance of remaining fully funded. Based on the assumptions underlying the model, this is equivalent to a discount rate of 4.9% in the long-term.

I have only considered the specific scenarios set out in this paper. I can carry out further analysis in order to advise on the effect of alternative scenarios if required.

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**Model assumptions and limitations**

The model is based on the following simplifying assumptions about the Fund's liabilities:

- The Fund remains open to new entrants and future accrual.
- The Fund is 100% funded on the specified AOA at outset.
- The evolution of the liability values is approximated using a portfolio of index-linked and fixed interest gilts (plus the assumed AOA).

For the assets:

- We split the portfolio at a very high level into *growth* and *matching*;
  - The *growth* portfolio is a combination (80:20) of equities and 'alternatives' (e.g. property and private equity).
  - The *matching* portfolio is assumed to be a perfectly matching portfolio of index-linked and fixed interest gilts (i.e. it's identical to the portfolio we use to approximate the liabilities).
- The 'starting point' of the model is 20 years into the future (i.e. when the long term funding objective has been achieved). The economic conditions at this point are expected to persist for the following 20 year projection period of the model, in particular;
- Equity risk premium (in excess of cash) of 3% p.a.
- Equity volatility of returns of 18% p.a. (one-year standard deviation of returns).
- Risk premia of 1% and 4.5% for property and private equity respectively.
- Future CPI of 2% p.a.
- Central expectation for long-term, long maturity nominal (real) Government bond yields of around 4.5% (1.3%).

**Reliance and Limitations**

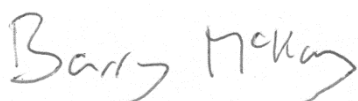
This paper has been prepared solely for the use of the Fund. This document should not be released or otherwise disclosed to any third party without our prior consent, in which case it should be released in its entirety. Hymans Robertson LLP accepts no liability to any other party unless we have expressly accepted such liability.

The following Technical Actuarial Standards<sup>4</sup> are applicable in relation to this paper:

- Pensions TAS
- TAS M - Modelling
- TAS R – Reporting; and

This paper complies with each of the above standards.

This paper and the 2013 valuation final results report dated 28 March 2014 comprise the aggregate report for this advice, in accordance with TAS R. It is expected that this report will also form part of the aggregate report for advice in connection with the 2016 valuation.



Barry McKay FFA

For and on behalf of Hymans Robertson LLP

23 May 2015



Julie West FFA

For and on behalf of Hymans Robertson LLP

23 May 2016

<sup>4</sup> 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 paper.

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## Appendix B: 2016 valuation – pay growth assumption

### Addressee

This paper has been commissioned by and is addressed to Hertfordshire County Council in its capacity as Administering Authority to the Hertfordshire County Council Pension Fund (“the Fund”). It has been prepared in my capacity as an Actuary to the Fund.

### Purpose

The next actuarial valuation of the Fund takes place as at 31 March 2016. This paper has been prepared to facilitate discussions on funding strategy in advance of the 2016 valuation. In particular, this paper summarises the factors influencing the choice of pay growth assumption at the 2016 valuation in order to provide a recommendation for consideration by the Fund.

### Background

One of the key actuarial assumptions used to determine the value of the past service liabilities is that relating to future pay growth. This assumption comes in two parts;

- Annual ‘inflationary’ pay awards, historically set in order for employees’ pay to keep up with the cost of living, and
- Promotional pay awards or those awarded as part of a defined pay scale.

This paper considers the first element of the pay growth assumption only. The scale used to determine promotional pay awards will be determined as part of the demographic analysis conducted for all Hymans Robertson funds prior to the 2016 valuation.

The assumption for ‘cost of living’ increases at the 2013 valuation was set equal to the rate of expected future RPI plus 0.5% pa. This assumption reflected future expectations at the time of the 2013 valuation<sup>5</sup>. However, based on our analysis, average historical pay growth for Hertfordshire County Council Pension Fund members (excluding promotional increases) has been around RPI + 1.1%. There are, however, two prevailing factors that necessitate a review of how the pay growth assumption is set;

- 1 LGPS benefits accrued from 1 April 2014 are no longer linked to members’ final pay due to the introduction of CARE benefit accrual. A Final Salary benefit underpin applies for members within 10 years of retirement at 1 April 2012, however it is unlikely that this will ‘bite’ in many cases due to the low salary growth environment we are currently experiencing. Future pay growth therefore only affects benefits built up to 31 March 2014. Although pre-2014 liabilities currently make up the vast majority of the Fund’s total active liabilities, this will diminish over time. The future period for which the pay growth assumption applies can therefore no longer simply be referred to as ‘long-term’.
- 2 Since 2010, pay growth in the public sector has been subdued and Government policy suggests that this is likely to persist in the near future. In particular, the Government announced during the recent Summer Budget on 8 July 2015 that funding would only be provided to meet public sector pay increases of 1% p.a. for 4 years from 2016/17 (i.e. to 2019/20).

What does this mean for setting the pay growth assumption at the 2016 valuation? It is no longer appropriate to set the future pay growth assumption equal to the historic average. This paper explores the effect of short term pay growth restrictions and the run-off of the Fund’s pre-2014 active liabilities on likely future average pay growth.

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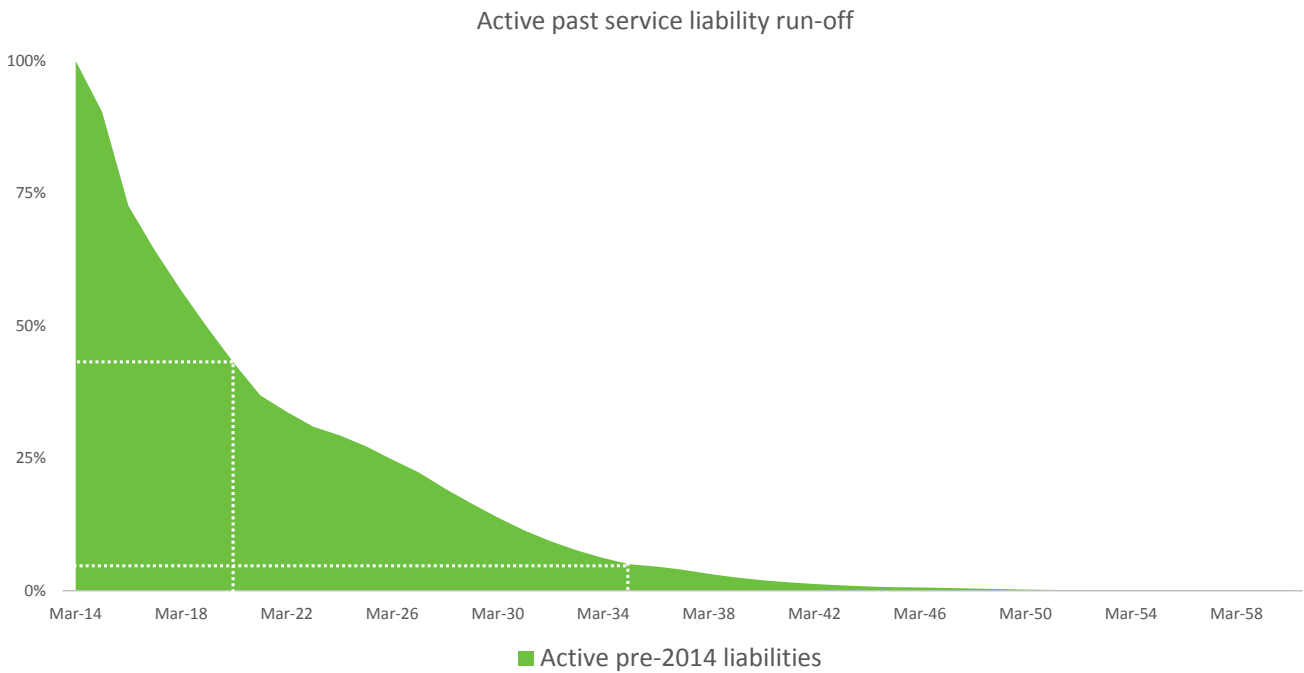
<sup>5</sup> Since 2001 (to 2010, before the public sector pay freezes), average historical pay growth for Hertfordshire County Council Pension Fund members (excluding promotional increases) has been around RPI + 1.1%.

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**Active pay linked liabilities**

Future pensions in respect of service accrued in the LGPS up to 31 March 2014 will be determined based on members’ eventual final pay at retirement (or earlier withdrawal). Benefits accrued from 1 April 2014 are based on the members’ pay over the year of accrual and future CPI increases (unless protected by the Final Salary underpin). When analysing the effect of future pay growth on the Fund’s liabilities, only those liabilities accrued up to 31 March 2014 (i.e. pre-2014) should be considered.

The chart below shows the expected run-off of the Fund’s pre-2014 active liabilities, i.e. those active pre-2014 liabilities remaining each future year. The chart starts at 100% and falls eventually to zero as current active members with pre-2014 benefits leave active status (due to retirement, withdrawal or death).



**Observations:**

- More than 50% of the pre-2014 active liability will no longer be active (and no longer be pay linked) by 2020 as shown on the chart.
- Only around 5% of the existing pre-2014 active liabilities are expected to still be active in 2035 as shown on the chart above.
- By 2044, less than 1% of the existing pre-2014 active liabilities will still be active.
- From this, we can see that the pay growth assumption will have a diminishing impact on the value of the total past service liabilities at each future valuation.

This is based on the 2013 valuation results and therefore is only based on service accrued up to 31 March 2013. Nevertheless it is still a reasonable representation of the expected run-off of pre 31 March 2014 liabilities.

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**Future pay progression**

The Government announced during the Summer Budget on 8 July 2015 that it would only fund pay increases in the public sector of 1% p.a. for 4 years from 2016-17 (which we take to mean until the 2019/20 financial year).

From the previous section we can see that around half of the pre-2014 pay linked liabilities will have run-off during this period of continued public sector pay restraint. Allowance for this should be made in the 2016 valuation assumption.

What about pay growth following this period? There are various arguments ranging between the following two extremes;

- Pay growth will rise substantially following the restricted period in order for public sector pay to 'catch-up' with historical averages.
- The public sector will continue to see low pay growth, possibly as a result of continued austerity and a lower reliance on the state.

In practice, public sector pay growth beyond 2020 will depend on a variety of factors (including the politics of the time). It is therefore extremely difficult to predict with any certainty what this is likely to be.

In order to help discussions around the setting of an 'inflationary' pay growth assumption at the 2016 valuation, we have modelled five scenarios;

- 1 RPI less 0.5% (as requested by the Fund).
- 2 RPI less 0.25% (as requested by the Fund).
- 3 RPI is generally the best measure of the inflation experienced by the 'in-work' population, due to the inclusion of housing costs in this (which are not included in the official CPI measure of inflation). In addition, some of the key elements of an individual's expenditure are set relative to RPI, for example regulated rail fares are currently increased each year in line with RPI plus 1% p.a. Post 2020 pay growth negotiations may therefore be conducted on grounds that salaries (at least) keep pace with the annual growth in RPI.
- 4 We have also modelled results based on an assumption of RPI plus 0.5% p.a. which is in line with the current pay growth assumption for the Fund set at the 2013 valuation. Historically, the pay growth assumption had reflected a long term average of RPI plus 1.5% p.a. but this was lowered at 2013 valuation to RPI plus 0.5% p.a. to make allowance for the public sector pay freezes.
- 5 We have also modelled results based on an assumption of RPI plus 1.0% p.a. Historically, pay increases in the Hertfordshire County Council Pension (excluding promotional increases) since 2001 to 2010 have been approximately equal to RPI plus 1.1% p.a. Although this is at the higher end of what could be expected, it could be argued that pay growth will return to a similar long term average in the immediate years following 2020.

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### Variable pay growth and single valuation assumption

#### Methodology

The aim of this analysis is to obtain a suitable long term flat rate assumption for salary growth from 2016 onwards, allowing for the proposed Government salary freeze until 2020 followed by a long term assumption thereafter.

For each active member at the 2013 valuation, we have revalued their past service liabilities up to their assumed retirement age (making an allowance for withdrawals based on the 2013 valuation assumptions). Please note that no allowance was made for new active members joining the Fund, ill health early retirements or death in service in the projection.

The revaluation rate for each active member is a weighted average of:

- assumed salary increases (in line with the 3 scenarios set out below) in that year for the proportion of the benefit still in force that year; and
- CPI for the proportion of the benefits assumed to withdraw in that year

The salary increase assumption used in each scenario is as follows:

- Scenario 1: 1% p.a. until 2020 reverting to a long term rate of RPI less 0.5% p.a. thereafter.
- Scenario 2: 1% p.a. until 2020 reverting to a long term rate of RPI less 0.25% p.a. thereafter.
- Scenario 3: 1% p.a. until 2020 reverting to a long term rate of RPI p.a. thereafter.
- Scenario 4: 1% p.a. until 2020 reverting to a long term rate of RPI plus 0.5% p.a. thereafter.
- Scenario 5: 1% p.a. until 2020 reverting to a long term rate of RPI plus 1.0% p.a. thereafter.

An average revaluation rate was then calculated across all members weighted by liability to determine a single equivalent flat rate salary growth assumption.

#### Assumptions

In each projection shown we have adopted the following future inflation assumptions which are in line with those set for the 2013 valuation, updated for recent market conditions;

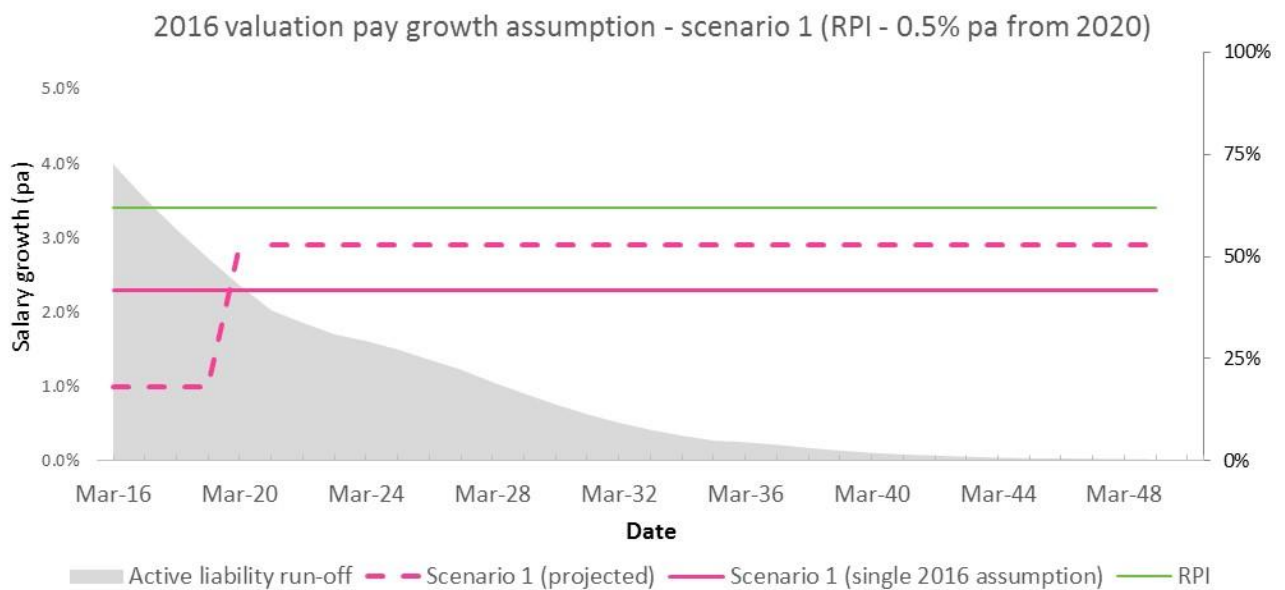
- RPI = 3.4% i.e. market implied RPI as at 31 October 2015.
- CPI = 2.4% i.e. adjusted RPI less 1.0% p.a. in respect of the assumed gap between RPI and CPI, which we expect to be used at the 31 March 2016 formal valuation.

**Results**

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
Pay growth (per annum)					
- Short term (to 31 March 2020)	1%	1%	1%	1%	1%
- Long term (from 1 April 2020)	RPI – 0.5% (2.9%)	RPI – 0.25% (3.15%)	RPI (3.4%)	RPI + 0.5% (3.9%)	RPI + 1.0% (4.4%)
Single equivalent 2016 valuation assumption					
- Nominal	2.3%	2.5%	2.7%	3.0%	3.4%
- Relative to RPI	RPI less 1.1%*	RPI less 0.9%	RPI less 0.7%	RPI less 0.4%	RPI
Reduction in past service deficit	c.£169m	c.£149m	c.£129m	c.£98m	c.£55m
Increase in funding level	4.1%	3.6%	c.3.1%	c.2.4%	c.1.3%

\*As this is lower than our assumption for CPI we would not be comfortable signing this off for the purposes of the 2016 valuation.

**Scenario 1**

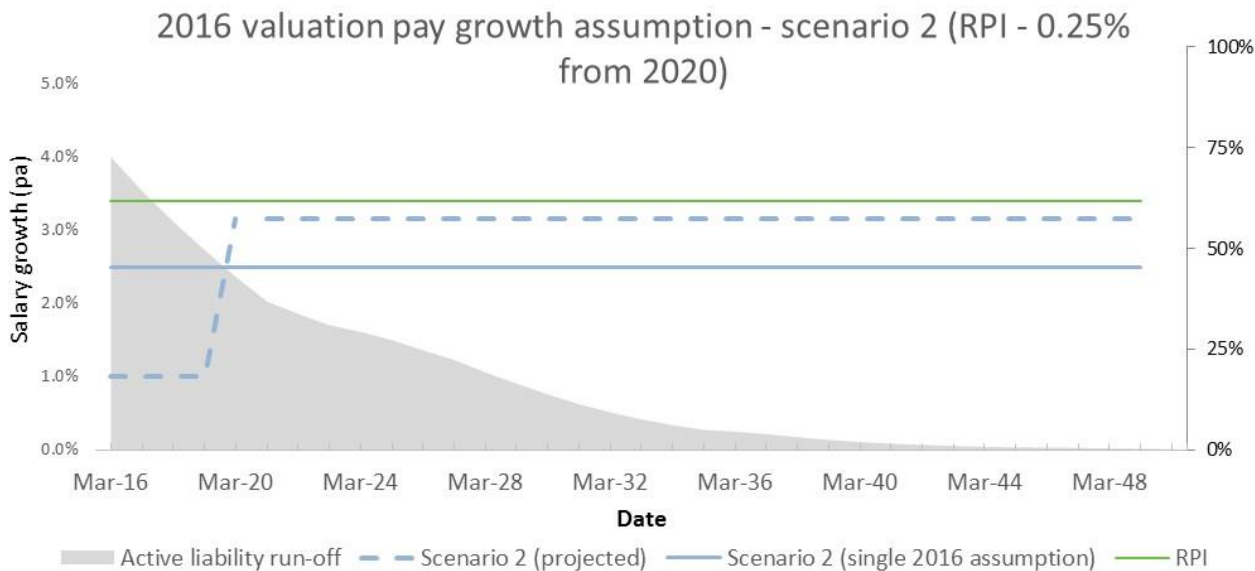


Under scenario 1 (1% p.a. until 2020 followed by RPI less 0.5% p.a. increases thereafter), the equivalent single pay growth assumption at the valuation would be 2.3% p.a., based on current market conditions, which can be expressed as RPI less 1.1% (or CPI less 0.1%).

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The effect of the change from the current pay growth assumption to that implied under scenario 1 (in isolation) would be a reduction in the deficit of around £169m, which is equivalent to an increase in the reported funding level of around 4.1%.

**Scenario 2**



Under scenario 2 (1% p.a. until 2020 followed by RPI less 0.25% p.a. increases thereafter), the equivalent single pay growth assumption at the valuation would be 2.5% p.a., based on current market conditions, which can be expressed as RPI less 0.9% (or CPI plus 0.1%).

The effect of the change from the current pay growth assumption to that implied under scenario 2 (in isolation) would be a reduction in the deficit of around £149m, which is equivalent to an increase in the reported funding level of around 3.6%.

**Scenario 3**



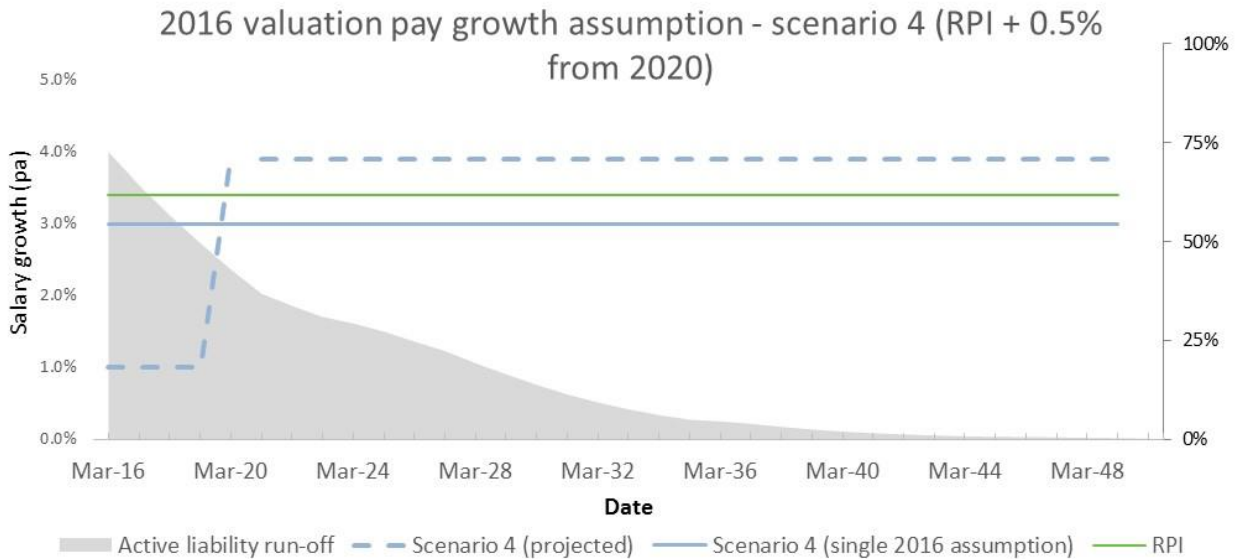
Under scenario 3 (1% until 2020 followed by RPI increases thereafter), the equivalent single pay growth assumption at the valuation is 2.7% p.a., based on current market conditions, which can be expressed as RPI less 0.7% p.a. (or CPI plus 0.3%).



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The current pay growth assumption (set at the 2013 valuation) is equal to market implied RPI plus 0.5% p.a. The effect of the change from the current pay growth assumption to that implied under scenario 3 (in isolation) would be a reduction in the deficit of around £129m, which is equivalent to an increase in the reported funding level of around 3%.

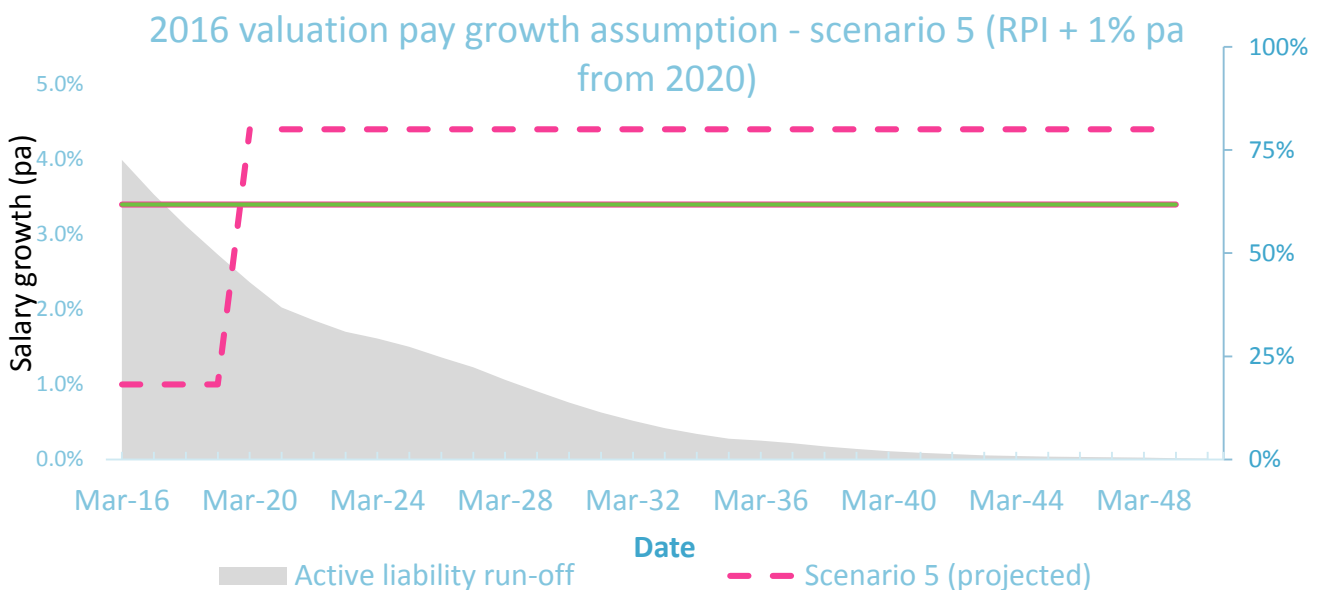
**Scenario 4**



Under scenario 4 (1% until 2020 followed by RPI plus 0.5% increases thereafter), the equivalent single pay growth assumption at the valuation is 3.0% p.a., based on current market conditions, which can be expressed as RPI less 0.4% p.a. (or CPI plus 0.6%).

The effect of the change from the current pay growth assumption to that implied under scenario 4 (in isolation) would be a reduction in the deficit of around £98m, which is equivalent to an increase in the reported funding level of around 2%.

**Scenario 5**



Under scenario 5 (1% p.a. until 2020 followed by RPI plus 1.0% p.a. increases thereafter), the equivalent single pay growth assumption at the valuation would be 3.4% p.a., based on current market conditions, which can be expressed as RPI (or CPI plus 1.0%).

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The effect of the change from the current pay growth assumption to that implied under scenario 5 (in isolation) would be a reduction in the deficit of around £55m, which is equivalent to an increase in the reported funding level of around 1%.

**Next steps**

For the purpose of the 2016 valuation, it is important to set a future pay growth assumption that reflects likely future experience. Each scenario presented in this paper is plausible and we attach no probability to them.

The choice of assumption for the 2016 formal valuation should be based on your view of future salary increases and the potential range of increases that may be awarded across all employers. I would be happy to discuss this further.

I also recommend that annual pay growth checks are put in place to protect the Fund against employers who give salary increases which are higher than assumed pay growth. Any additional strain on the Fund caused by higher than expected salary increases could be charged to employers in a similar manner to early retirement strains. I am happy to discuss how this would work in practice.

**Reliance and Limitations**

This paper has been prepared solely for the use of the Fund. This document should not be released or otherwise disclosed to any third party without our prior 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 following limitations apply in relation to this advice;

- The data used for this advice was that provided for the 2013 valuation. As such, the pre-2014 liabilities referred to in the report are specifically the liabilities built up to 31 March 2013 (i.e. pre-2013 liabilities). Allowance for the additional year's benefit accrual to 31 March 2014 would not lead to a material change in the shape of the active liability run-off or the outcomes derived from this analysis.
- No allowance has been made for the final salary benefit underpin that applies for members within 10 years of retirement. Due to the low salary growth environment and the more generous accrual rate of 1/49th under the CARE scheme, this underpin is unlikely to "bite" in any case.
- My recommendation is based on current future inflation (RPI) expectations, and on the assumption that this expectation will prevail until the date of the 2016 valuation (31 March 2016). In the unlikely event of inflation expectations changing materially between now and 31 March 2016 (e.g. by more than 0.5%), I may need to update this analysis and revise my recommendation.
- No allowance is made in the analysis for early retirements (either voluntary or as a result of redundancy), ill health retirements or death before retirement.
- The analysis is based on the withdrawal assumption set at the 2013 valuation as set out in your formal valuation report. Although this assumption is likely to be revised at the 2016 valuation, I do not expect this to have a material impact on the outcomes from this analysis.
- My analysis allows for a gap between RPI and CPI of 1.0% which is consistent with current market analysis. This assumption is likely to be adopted at the 2016 valuation and while this is a change to the assumption adopted at the 2013 valuation (of RPI less 0.8%), this assumption would not materially impact on the outcomes from this analysis.

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The following Technical Actuarial Standards<sup>6</sup> are applicable in relation to this paper:

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

This paper complies with each of the above standards.


This paper and the 2013 valuation final results report dated 28 March 2014 comprise the aggregate report for this advice, in accordance with TAS R.



Barry McKay FFA

For and on behalf of Hymans Robertson LLP

23 May 2016



Julie West FFA

For and on behalf of Hymans Robertson LLP

23 May 2016

<sup>6</sup> 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 paper.

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## Appendix C:

### Data and assumptions

#### Data

The member data used in this analysis was that supplied for the purposes of the 2013 formal valuation. This is summarised in the table below.

	Number	Actual pay/ pension (£000)
<b>Total employee membership</b>	28,642	462,383

Please note that the data used may not be an accurate reflection of the current active membership. In particular, I have not adjusted the data to allow for new entrants, new deferrals, deaths and retirements since the 2013 valuation. The only way to capture the actual experience of the Fund since the 2013 valuation would be to consider this exercise based on updated data at a recent date.

#### Assumptions

The financial and demographic assumptions adopted at the 2013 valuation are described in detail in the 2013 valuation final report, dated 28 March 2014.

The inflation assumptions used for the purpose of the analysis set out in this paper were based on market conditions as at 31 October 2015, as summarised below.

	31 March 2013	31 October 2015
	% per annum	% per annum
Market Implied RPI	3.3%	3.4%
RPI / CPI gap	0.8%	1.0%
CPI	2.5%	2.4%

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## Appendix D:

### Data and assumptions

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