# 2016 Actuarial Valuation

# Setting discount rate and pay growth assumptions

## Introduction

The next actuarial valuation of the Fund takes place as at 31 March 2016. This paper provide comments on analysis that can be used to agree two key valuation assumptions - the discount rate and the pay growth assumption.

Since the 2013 valuation, new Governance regulations have greatly increased the scrutiny that LGPS funds are under. 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 assumption. This paper will form part of the audit trail for the 2016 valuation.

The full reports on which the comments in this paper are based are attached as an appendix.

## Discount rate

This assumption reflects the rate of investment return that the Fund expects to earn in future. The choice of discount rate is one of the key decisions made at the actuarial valuation. The discount rate is used to place a single 'present' value on a series of projected future benefit payments. The single value is known as the liabilities.

The discount rate assumption is set in two parts;

1 Current long dated UK Government Fixed Interest bond yields, 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.

However it is expected that the Fund's assets will 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. At the 2013 valuation, the AOA was set equal to 2.0% pa.

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 is likely to remain appropriate under expected possible future changes to strategy.

To help inform the choice of AOA, modelling has been undertaken to better understand the level of prudence and downside risk inherent under differing levels of AOA (namely 1.8%, 2.0% or 2.2% pa).

### 2016 valuation AOA recommendation

The decision on the appropriate AOA level depends on how prudent the Fund wants to be, and on how it expects its investment strategy to change over the longer term (the next 20 or so years). There is no formal definition of "prudence" – typically an actuary might view an assumption as being prudent if there is at least a 2 in 3 chance of a positive outcome.

If the level of risk that is built into the Fund's current investment strategy (broadly 80% in growth assets) is likely to remain similar over the longer term, the analysis suggests that retaining the 2.0% AOA could be considered "prudent". If however the Fund were to "de-risk" to any significant extent over this period e.g. by moving from 80% to 60% in growth assets, an AOA of 1.8% pa may be more appropriate.

If the current investment strategy remains in place, the downside risk (measured by looking at what additional deficit recovery contributions would be payable under the worst 10% of possible funding outcomes) is around an extra 16% of pay pa in contributions. That downside risk would reduce to about 13% of pay if the Fund were to "de-risk" by moving 20% of its assets from growth to non-growth.

### Pay growth

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.

Our analysis considered the first element of the pay growth assumption only.

The assumption for annual 'inflationary' pay awards increases at the 2013 valuation was set equal to the rate of expected future RPI to reflect future pay growth expectations at that time. 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 benefits 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 before 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 restricted and Government policy suggests that this is likely to persist in the near future. In particular, the Government announced during the Summer Budget on 8 July 2015 that funding would be provided to meet public sector pay increases of only 1% p.a. for 4 years from 2016/17 (i.e. to 2019/20).

The analysis explored the suitability of different long term flat rate assumptions for pay growth from 2016 onwards, allowing for the proposed Government salary freeze until 2020 followed by a higher long term assumption thereafter.

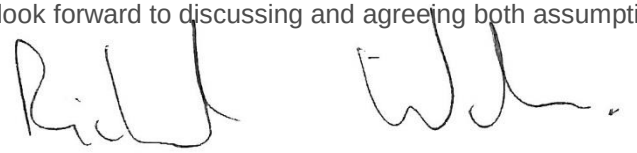
**2016 valuation pay growth recommendation**

It is no longer appropriate to set the pay growth assumption, used to value the past service liabilities at the 2016 valuation, equal to the historic average.

We suggest that an appropriate 2016 valuation pay growth assumption would be 1% p.a. until 2020 reverting to a long term rate of RPI p.a. thereafter.

### Next step

I look forward to discussing and agreeing both assumptions with the Pensions Committee.



Richard Warden
Fund Actuary
For and on behalf of Hymans Robertson LLP

23 May 2016

# Appendix A - Analysis of 2016 valuation AOA assumptions

# 2016 valuation – Asset Outperformance Assumption (AOA)

## Addressee

This paper has been commissioned by and is addressed to Croydon Council in its capacity as Administering Authority to the London Borough of Croydon Pension Fund ("the Fund"). It has been prepared in my capacity as Fund Actuary.

## 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 as part of the 2016 valuation process. 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 will 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.

At the 2013 valuation, the AOA was set equal to 2.0% 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

We have developed a model 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. 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.
- **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 1.8% / 2.0% / 2.2%.
- Current (80% *growth* / 20% *matching*) and alternate (60/40) 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.

**Probability of success**

| Probability of success | | Asset Outperformance Assumption (AOA) | | |
|---|---|---|---|---|
| | | 1.8% | 2.0% | 2.2% |
| Asset split (growth/matching) | Current (80/20) | 71% | 69% | 67% |
| | Alternative (60/40) | 68% | 64% | 61% |

Setting an agreed level of prudence in the valuation discount rate involves an element of subjectivity. What is 'prudent' for one Actuary/Fund may not be considered 'prudent' for another Actuary/Fund. Typically, for pension scheme funding purposes, a prudent funding approach is one which delivers around a 67% probability of success. The criteria for the RAG assessment above is based on this, in particular;

- Green – Probability of success greater than 69%
- Amber – Probability of success between 65% and 69%
- Red – Probability of success less than 65%

**Downside risk measure**

| Additional contributions required in the worst 10% of outcomes (% of pay p.a.) | | Asset Outperformance Assumption (AOA) | | |
|---|---|---|---|---|
| | | 1.8% | 2.0% | 2.2% |
| Asset split (growth/matching) | Current (80/20) | 16% | 16% | 16% |
| | Alternative (60/40) | 13% | 13% | 13% |

**Key observations**

- Based on the current investment strategy (broadly 80% growth), the modelling suggests each scenario could be considered as prudent.
- The choice of AOA should be robust to future changes in investment strategy. In the event of the Fund adopting a lower risk investment strategy, the valuation AOA should still represent a 'prudent' estimate of future returns.
    - An AOA of 1.8% appears 'prudent' under both investment strategies
    - However, if the Fund is likely to reduce the level of investment risk in the future, an AOA of 2.0% or 2.2% may not be appropriate.
- The additional contributions required in the worst 10% of outcomes is lower under the alternate investment strategy. This is consistent with the reasons for adopting a lower-risk investment strategy.

## Next steps

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.

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.

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.

## 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[1] 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 31 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.

Prepared by:-

Richard Warden FFA

27 April 2016

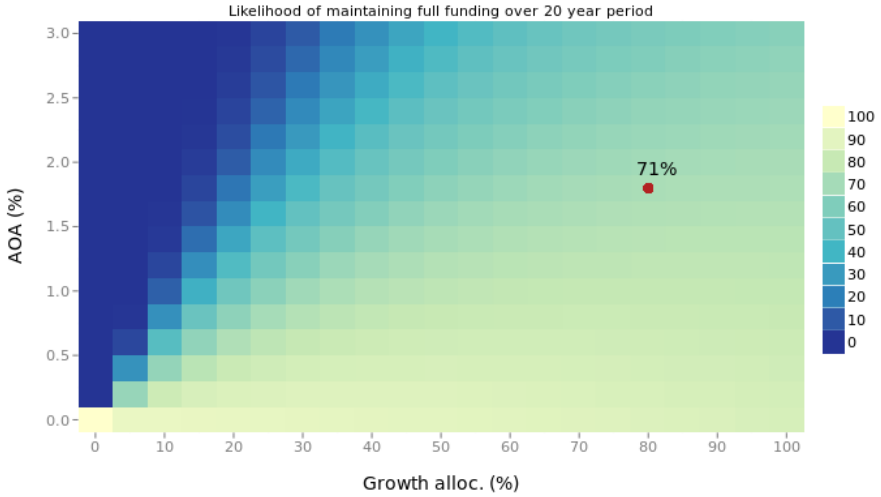
For and on behalf of Hymans Robertson LLP

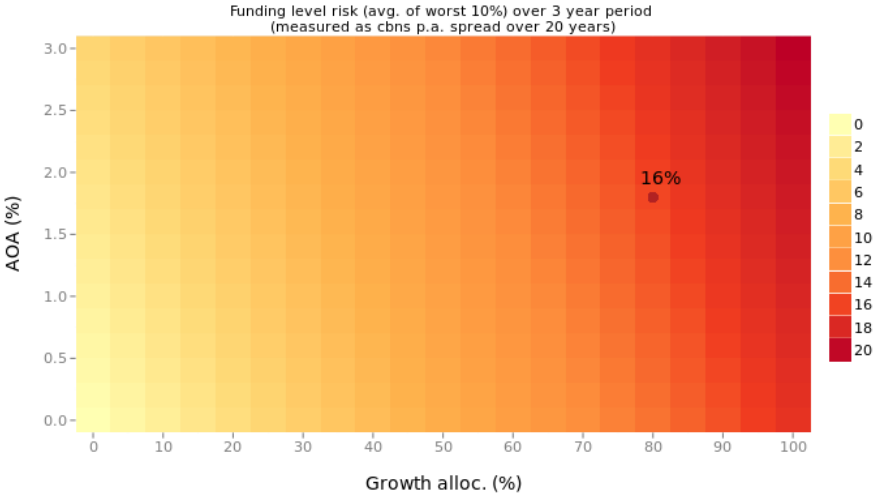
[1] Technical Actuarial Standards (TASs) are issued by the Financial Reporting Council (FRC) and set standards for certain items of actuarial work, including the information and advice contained in this paper.

# Appendix

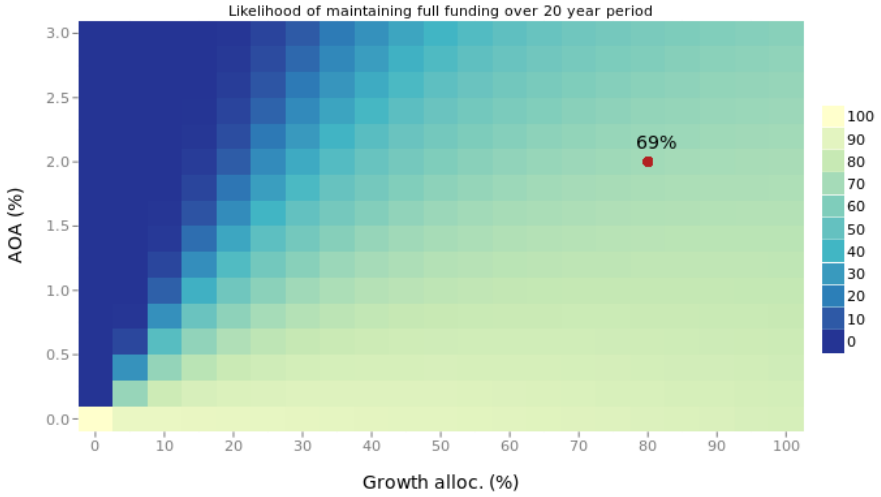
The following charts show the model output for each scenario considered in this paper.

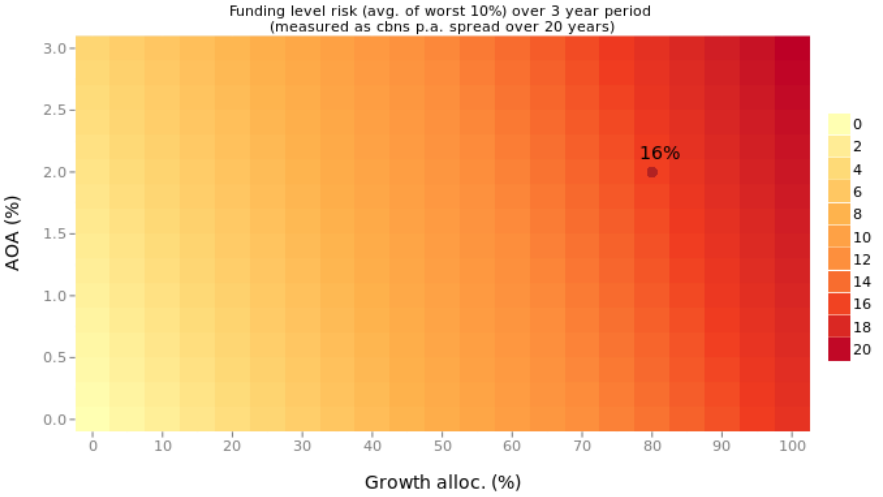
## Scenario 1 – 1.8% AOA / current investment strategy



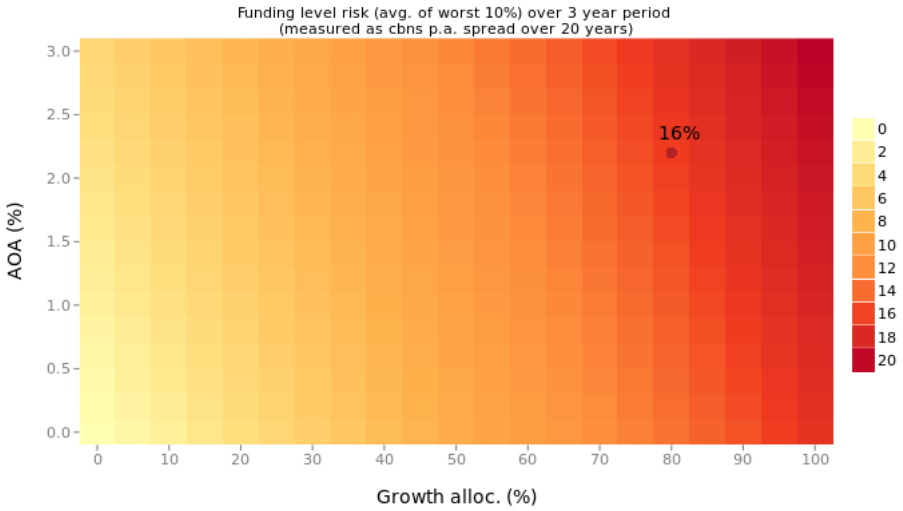




## Scenario 2 – 2.0% AOA / current investment strategy

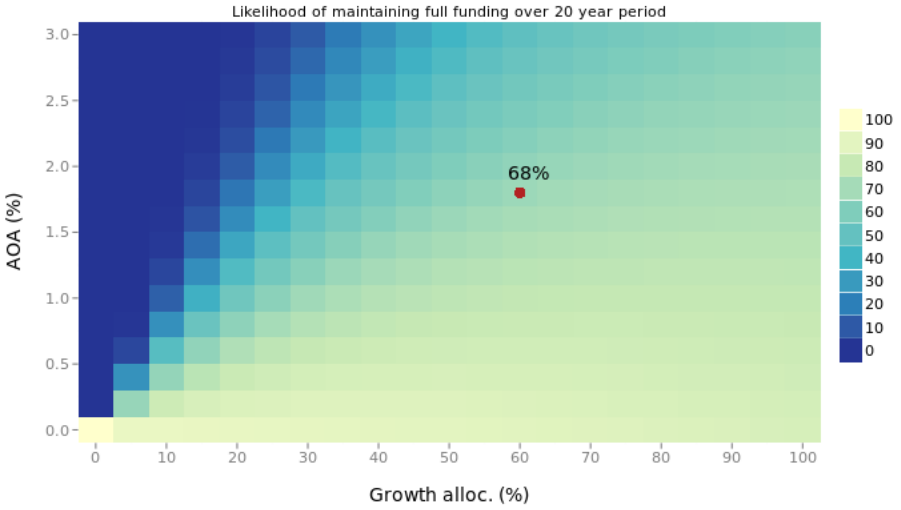


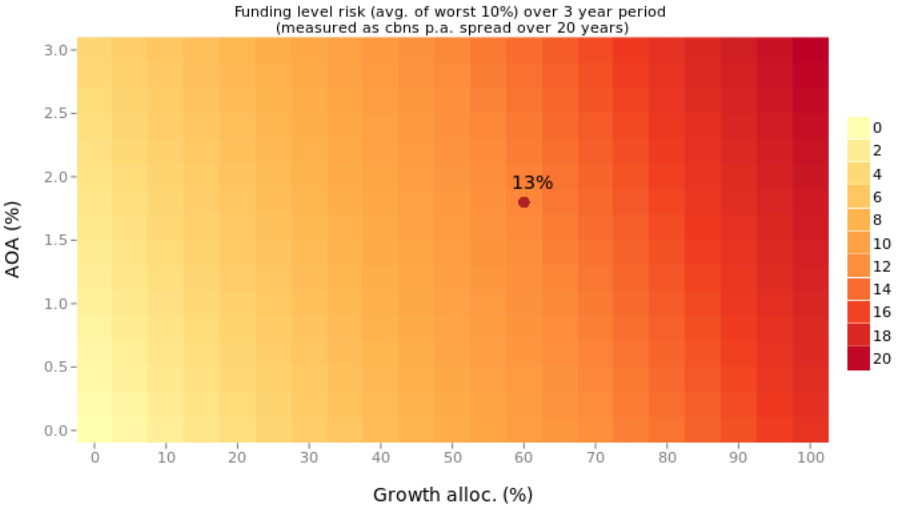



## Scenario 3 – 2.2% AOA / current investment strategy

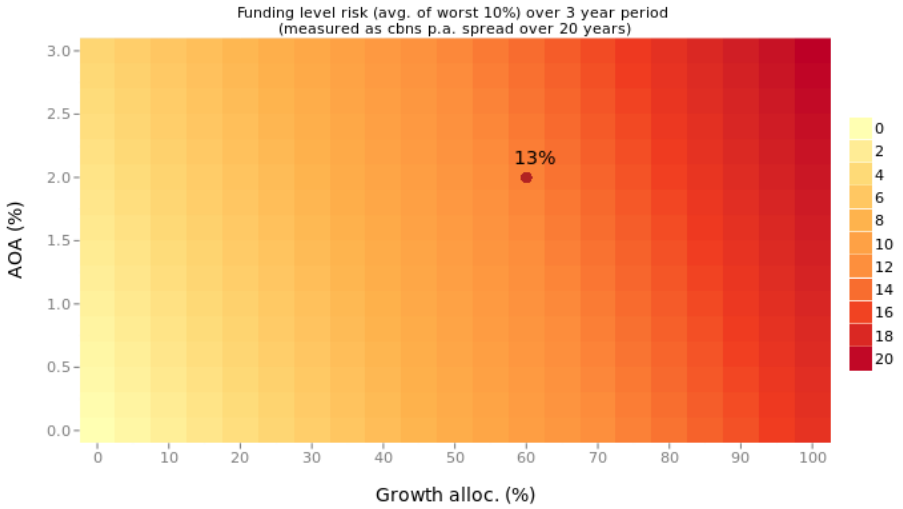




## Scenario 4– 1.8% AOA / alternate investment strategy

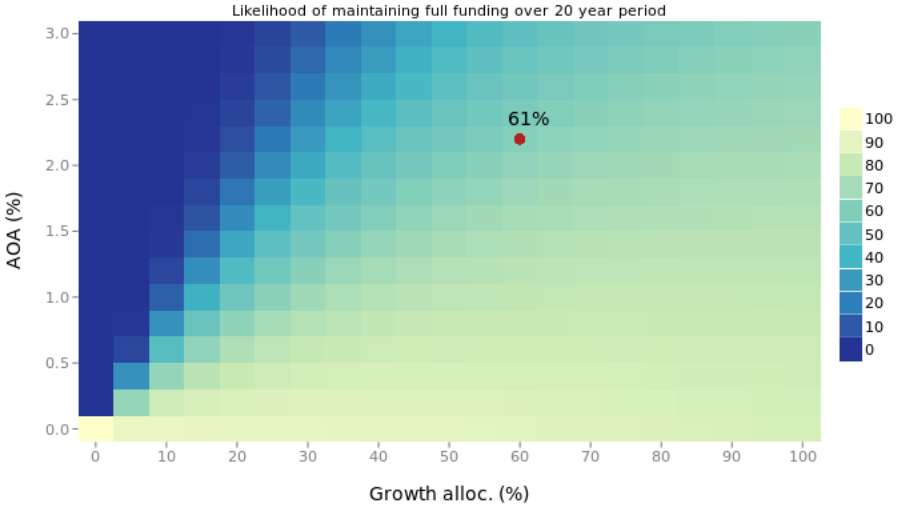


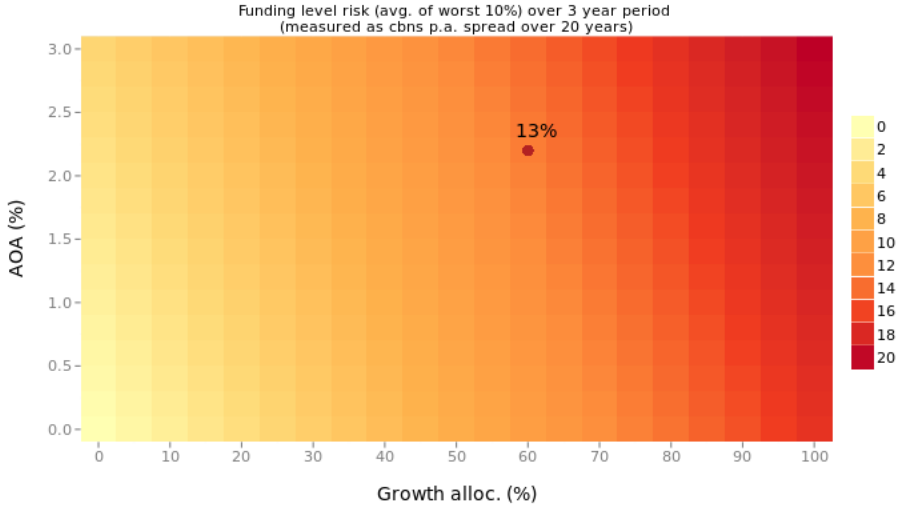



## Scenario 5– 2.0% AOA / alternate investment strategy


## Scenario 6– 2.2% AOA / alternate investment strategy



# Appendix B - 2016 Valuation Pay Growth assumption

# 2016 valuation – pay growth assumption

## Addressee

This paper has been commissioned by and is addressed to Croydon Council in its capacity as Administering Authority to the London Borough of Croydon Pension Fund ("the Fund"). It has been prepared in my capacity as Fund Actuary.

## 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 as part of the 2016 valuation process. 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. Further details of the assumed promotional pay awards will be provided at a later date.

The assumption for 'cost of living' increases at the 2013 valuation was set equal to the rate of expected future RPI. This assumption reflected future pay growth expectations at the time of the 2013 valuation. There are, however, two prevailing factors that necessitate a review of how the pay growth assumption is set;

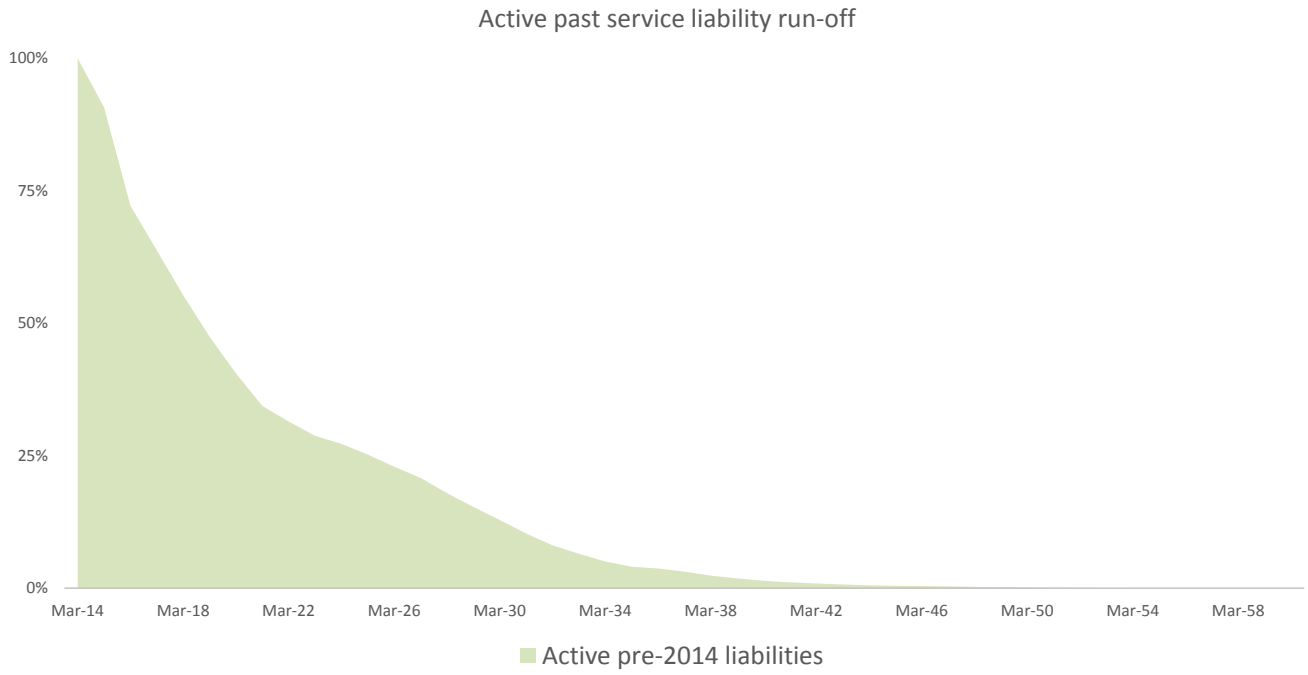
1. LGPS benefits accrued from 1 April 2014 are no longer linked to members' final pay due to the introduction of CARE benefit accrual. A Final Salary benefits underpin applies for members within 10 years of retirement at 1 April 2012, however it is unlikely that this will 'bite' in many cases due to 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 restricted and Government policy suggests that this is likely to persist in the near future. In particular, the Government announced during the 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).

When setting the pay growth assumption in order to value past service liabilities 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 impact of short term pay growth restrictions and the 'run-off' (or remaining payment period) of the Fund's pre-2014 active liabilities on the 2016 valuation pay growth assumption.

### 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-14 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 linked to members' pay) by 2020.
- Less than 15% of the existing pre-2014 active liabilities are expected to remain in 2031.
- By 2037, less than 5% of the existing pre-2014 active liabilities will still be active.

From this, we can see that the pay growth assumption has a diminishing impact on the Fund's total past service liabilities at each future triennial valuation.

Please note the above 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 as they stand.

### Sensitivity to active withdrawal assumptions

The projection of the pre-2014 active liabilities shown above has been calculated based on the 2013 valuation active member withdrawal assumption. This is the assumed rate of members leaving active service to become deferred members of the fund (e.g. when leaving employment, opting out the fund, etc). This assumption is set based on age, gender, job type and length of service.

Varying the withdrawal assumption will impact on the length and pace of run-off of active liabilities in the projections.

### Future pay progression

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

From the previous section we can see that more than 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.

For 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 focused on three scenarios;

1. As a minimum, it is reasonable to expect post 2020 pay growth to be no less than the **annual growth in CPI.**
2. Arguably, RPI is a better measure of the inflation experienced by the working population due to the inclusion of housing costs in the index (which are not included in the official CPI measure of inflation). This was the assumption for long term salary growth used by the Fund at the previous valuation. 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% pa. Post 2020 pay growth negotiations may therefore be conducted on grounds that salaries (at least) keep pace with the **annual growth in RPI.**
3. **RPI plus 1% p.a.** could be considered at the higher end of what could be expected in the immediate years following 2020.

## 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 higher 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 CPI p.a. thereafter
- Scenario 2: 1% p.a. until 2020 reverting to a long term rate of RPI p.a. thereafter
- Scenario 3: 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;

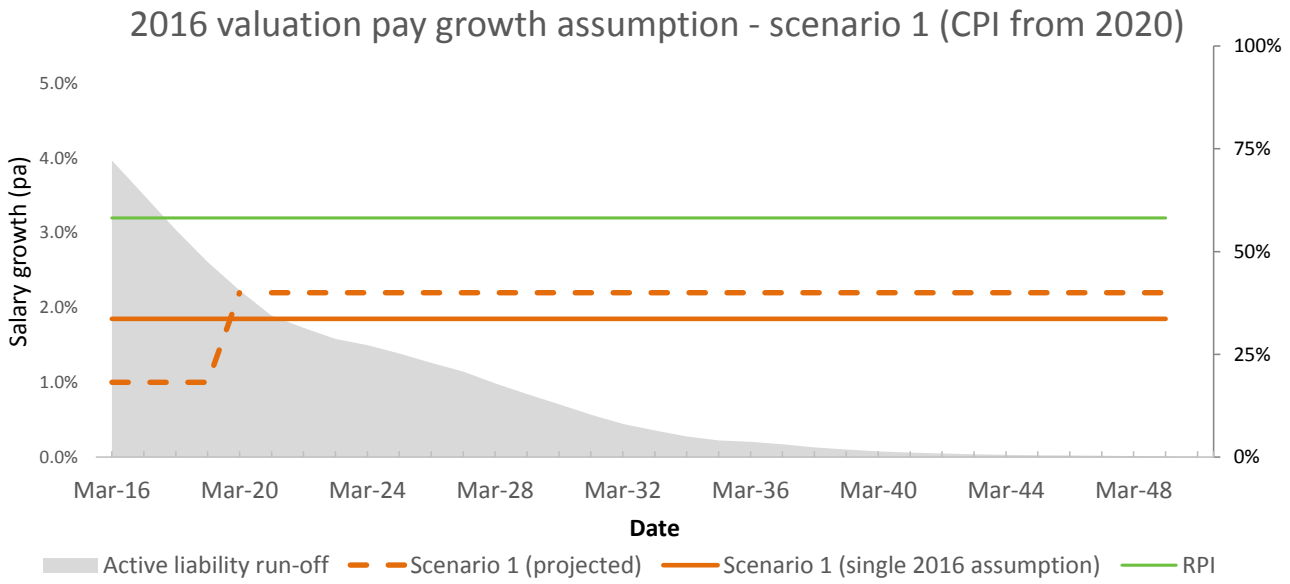
- RPI = 3.2% i.e. market implied RPI as at 31 March 2016.
- CPI = 2.2% i.e. adjusted RPI less 1% p.a. in respect of the assumed gap between RPI and CPI (the assumed gap between RPI and CPI at the 2013 valuation was 0.8% p.a.).

## Results

| | Scenario 1 | Scenario 2 | Scenario 3 |
|---|---|---|---|
| Pay growth (per annum)<br>- Short term (to 31 March 2020)<br>- Long term (from 1 April 2020) | <br>1%<br>CPI (2.2%) | <br>1%<br>RPI (3.2%) | <br>1%<br>RPI + 1% (4.2%) |
| Single equivalent 2016 valuation assumption<br>- Nominal<br>- Relative to CPI | <br>1.9%<br>CPI less 0.3% | <br>2.7%<br>CPI plus 0.5% | <br>3.3%<br>CPI plus 1.1% |
| Change to past service deficit* | - £50m to - £60m | - £10m to - £20m | £0m to + £10m |
| Change in funding level* | + 4% to + 5% | + 1% to + 2% | Negligible |

*Part of these changes will be as a result of the gap between RPI and CPI changing from 0.8% to 1%, as well as the difference in pay growth assumption used.

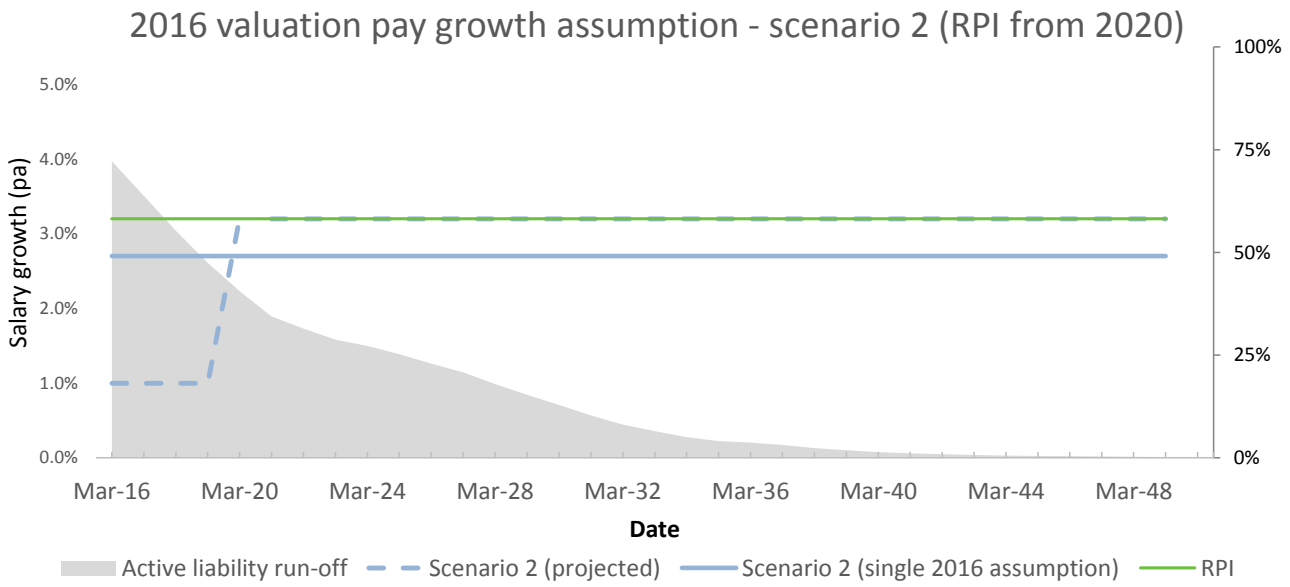
## Scenario 1




Under scenario 1 (1% until 2020 followed by CPI increases thereafter), the equivalent single pay growth assumption at the valuation is 2.0% pa, based on current market conditions, which can be expressed as CPI less 0.2% pa.

The current pay growth assumption (set at the 2013 valuation) is equal to market implied RPI. 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 between £50m to £60m, which is equivalent to an increase in the reported funding level of between 4% to 5%.

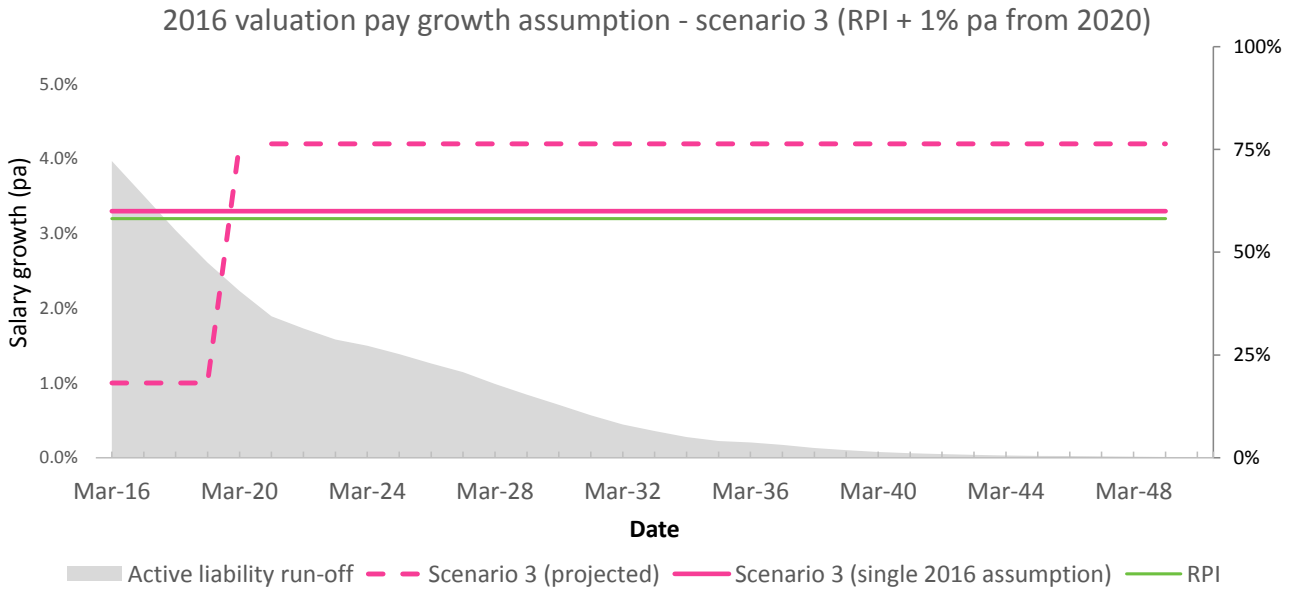
### Scenario 2




Under scenario 2 (1% until 2020 followed by RPI increases thereafter), the equivalent single pay growth assumption at the valuation is 2.7% pa, based on current market conditions, which can be expressed as CPI plus 0.5% p.a..

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 between £10m to £20m, which is equivalent to an increase in the reported funding level of between 1% to 2%.

### Scenario 3




Under scenario 3 (1% until 2020 followed by RPI plus 1% p.a. increases thereafter), the equivalent single pay growth assumption at the valuation would be 3.3% p.a., based on current market conditions, which can be expressed as CPI plus 1.1% p.a..

The effect of the change from the current pay growth assumption to that implied under scenario 3 (in isolation) would be an increase in the deficit of between £0m to £10m, which is equivalent to a negligible change in the reported funding level.

### 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 assumptions for the 2016 valuation should be based on your view of future salary increases and the potential range of increases that may be awarded across all employers. We would be happy to discuss this further.

We 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. We are happy to discuss how this would work in practice.

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

### 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. 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 in this analysis for members aged 55 or over on 1 April 2012 and therefore entitled to the final salary benefit underpin. Due to the nature of these liabilities, i.e. these members are expected to have left active service prior to 2022, this is expected to have only a negligible impact on the shape of the active liability run-off and the outcomes derived from this analysis.
- 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. 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 what we will assume at the 2016 valuation.

The following Technical Actuarial Standards[1] 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 31 March 2014 comprise the aggregate report for this advice, in accordance with TAS R.

Prepared by:-

Richard Warden FFA

27 April 2016

For and on behalf of Hymans Robertson LLP

[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 paper.

# Appendix

## 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) |
|---|---|---|
| **Total employee membership** | 7,422 | 140,882 |

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 31 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 March 2016, as summarised below.

| | 31 March 2013 | 31 March 2016 |
|---|---|---|
| | % per annum | % per annum |
| Market Implied RPI | 3.3% | 3.2% |
| RPI / CPI gap | 0.8% | 1.0% |
| CPI | 2.5% | 2.2% |