London Borough of Hammersmith and Fulham Pension Fund

Actuarial valuation as at 31 March 2019

Initial results and proposed assumptions advice

Barry McKay FFA
Barnett Waddingham LLP

01 October 2019

Introduction

We have been asked by London Borough of Hammersmith and Fulham, the administering authority for the London Borough of Hammersmith and Fulham Pension Fund (the Fund), to carry out an actuarial valuation of the Fund as at 31 March 2019. The Fund is part of the Local Government Pension Scheme (LGPS), a defined benefit statutory scheme administered in accordance with the Local Government Pension Scheme Regulations 2013 (the Regulations) as amended.

This report is addressed to the administering authority of the Fund. The purpose of the valuation is to review the financial position of the Fund and to set appropriate contribution rates for each employer in the Fund for the period from 1 April 2020 to 31 March 2023 as required under Regulation 62 of the Regulations.

In particular, the purpose of this report is to set out the background to the valuation, and summarise the proposed methods and assumptions to be used alongside the initial results on that basis.

The final assumptions will be agreed with the administering authority and will be consistent with the Fund's Funding Strategy Statement.

The last formal actuarial valuation of the Fund was carried out as at 31 March 2016 and the results of that valuation carried out by Barnett Waddingham were set out in the formal valuation report, dated 31 March 2017.

This report focuses on the whole Fund results only.

This advice is not intended to assist any user other than the administering authority in making decisions or for any other purpose and neither we nor Barnett Waddingham LLP accept liability to third parties in relation to this advice.

This advice complies with Technical Actuarial Standards (TASs) issued by the Financial Reporting Council – in particular TAS 100: Principles for Technical Actuarial Work and TAS 300: Pensions.

The administering authority must provide us with sufficient and up to date information relating to matters relevant to our advice. We will only be able to accept responsibility for the advice based on the information provided.

This report is provided further to the proposed methods and assumptions advice dated 21 June 2019 and discussions had with the administering authority on 10 June 2019.

This report should be considered alongside the initial results presentation that is set to take place on 3 October 2019.

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Executive summary

Some of the key messages contained within this report are set out below:

Funding position
Based on the proposed assumptions set out in this report the funding position of the whole Fund has increased from 88% to 97% since the 2016 valuation

Contributions
Individual employer contributions will be communicated later in the process but the average primary rate has increased from 15.5% to 17.4% since the 2016 valuation.

Discount rate
We have used a smoothed approach to calculate the discount rate of 5.0% based on a weighted average of estimates of long-term asset returns with an allowance for prudence.

Mortality
Indicators of future levels of mortality improvements have fallen leading to an improvement in the funding position.

Salary increases
Based on evidence we have taken a view to reduce the future level of salary increases over the long term. This leads to a small improvement in the funding position.

Risks
Regulatory uncertainties including McCloud, cost cap management, Section 13 valuations and GMP equalisation have put increased pressure on the 2019 valuation results.

Proposed assumptions

Our proposed principal assumptions are set out in the table below along with a comparison of the assumptions used at the previous valuation. We confirm that in our opinion these assumptions are appropriate for the purpose of the valuation. Assumptions in full are set out in Appendix 2.

Key assumptions	Proposed assumption for 2019 valuation	Assumptions used for the 2016 valuation
CPI inflation	2.6% p.a.	2.4% p.a.
Salary increases		
Short-term	n/a	CPI to 31 March 2020
Long-term	3.6% p.a.	3.9% p.a.
Discount rate	5.0% p.a.	5.4% p.a.
Post retirement mortality	Male / Female	Male / Female
Member base tables	S3PA	S2PA
Mortality multiplier	110% / 105%	120% / 85%
Projection model	CMI 2018	CMI 2015
Long-term rate of improvement	1.25% p.a.	1.5% p.a.
Smoothing parameter	7.5	n/a
Initial addition to improvements	0.5% p.a.	n/a

Results

The proposed assumptions are, overall, expected to give results as follows:

- The Fund's funding level has increased from 88% to 97% as at 31 March 2019, corresponding to a deficit of £35,449,000 on an ongoing funding basis.
- The primary contribution rate required to meet the cost of benefits as they are earned from year to year has increased from 15.5% p.a. to 17.4% p.a. of Pensionable Pay, at the whole Fund level.
- The Fund's estimated funding position on the standardised basis has increased from 92% to 101%.

The total contribution rates (i.e. primary plus secondary rates) to be paid by each employer will be calculated, discussed and finalised following agreement of the assumptions to be used in the valuation.

Please note that the above represents the impact on a whole Fund level; results on an individual employer level will vary.

Methodology

We do not propose any fundamental changes to the existing approach to setting contributions. In particular, we will continue to use a smoothed approach and the discount rate will be based on a weighted average of estimates of long-term asset returns with an allowance for prudence. We have assumed that the Funding Strategy Statement (FSS) will be broadly unchanged.

We have proposed some changes or updates to some assumptions since the previous valuation, particularly around the discount rate assumption which will place a higher value on projected liabilities compared to the assumptions used at the 2016 valuation. However, some of this increase will be offset by the proposed changes to the salary increase assumption and the mortality projection

model which will lead to a reduction in the value of the liabilities.

The proposed assumptions were set out in our separate advice paper dated 21 June 2019. These assumptions were based on market conditions to 7 June 2019 and were therefore subject to change. The market statistics that we have used in this report have been smoothed around the valuation date so that the market conditions used are the average of the daily observations over the period 1 January 2019 to 30 June 2019.

Regulatory uncertainties

There are currently a few important regulatory uncertainties surrounding the 2019 valuation as follows:

- Effect of the McCloud and Sargeant cases and the cost cap on the future and historic LGPS benefits structure
- Change in timing of future actuarial valuations from a triennial cycle
- Guaranteed Minimum Pensions (GMP) equalisation

More details of these issues can be found later in this report. At this stage we have made no allowance for these issues in the proposed assumptions but as we go through the valuation process we will work closely with the administering authority to consider how to approach these issues when setting the contribution rates for employers. In particular, due to further announcements by MHCLG we will need to consider the treatment of McCloud and disclose clearly in the Funding Strategy Statement the approach taken.

Next steps

We look forward to discussing this advice with the administering authority at our meeting on 3 October 2019, following which we will prepare the individual employer valuation results allowing for any agreed changes to the proposed assumptions.

We will provide the administering authority with access to our online contribution modelling tool, *Illuminate ME*. This tool will enable the administering authority to engage with their employers where appropriate to discuss their individual contribution rates, and agree appropriate and affordable recovery plans for any deficits revealed based on their own covenant strength.

Following agreement of the final method and assumptions to be used, we will prepare our formal report on the valuation which will include a certificate setting out the primary and secondary contribution rates for all employers in the Fund for the period from 1 April 2020 to 31 March 2023. The report will be completed no later than 31 March 2020 and must be made available to members on request.

We look forward to discussing this paper with the administering authority.

Barry McKay FFA
Barnett Waddingham LLP
1 October 2019

Valuation purpose

The purpose of the 2019 actuarial valuation is to set appropriate contribution rates for each employer in the Fund for the period from 1 April 2020 to 31 March 2023, as required under Regulation 62 of the LGPS Regulations. This three year period is currently being considered by the Ministry of Housing, Communities and Local Government (MHCLG) and there is a possibility of moving to a quadrennial valuation cycle in line with other public service schemes. This is likely to have a knock on effect on the number of years of contributions certified as part of the 2019 valuation.

The contribution rates consist of two elements, the primary rate and the secondary rate:

- The **primary rate** for each employer is the employer's future service contribution rate (i.e. the rate required to meet the cost of future accrual of benefits) expressed as a percentage of pay.
- The **secondary rate** is an adjustment to the primary rate to arrive at the total rate each employer is required to pay (for example, to allow for deficit recovery).

Regulation 62 specifies four requirements that the actuary "must have regard" to and these are detailed below:

1. The existing and prospective liabilities arising from circumstances common to all those bodies
2. The desirability of maintaining as nearly a constant a primary rate as possible
3. The current version of the administering authority's Funding Strategy Statement
4. The requirement to secure the "solvency" of the pension fund and the "long-term cost efficiency" of the Scheme, so far as relating to the pension fund

The wording of the second objective is not ideal in that it appears to be aimed towards the primary rate rather than taking into account the surplus or deficit of the employer. We believe that if we achieve reasonably stable total individual employer rates (which seems like a preferable objective) then we will also meet the regulatory aim.

The third clause simply means that we should be aware of and take account of the Fund's Funding Strategy Statement (FSS). The administering authority is responsibility for drafting and maintaining this statement although we would anticipate being consulted on the drafting.

Definitions for "solvency" and "long-term cost efficiency" are included in CIPFA's FSS guidance. These can be briefly summarised as:

- ensuring that employers are paying in contributions that cover the cost of benefit accrual and target a fully funded position over an appropriate time period using appropriate actuarial assumptions, and
- that employers have the financial capacity to increase contributions (or there is an alternative plan in place) should contributions need to be increased in future.

Asset valuation

We have been provided with a final copy of the Fund accounts for the year ending 31 March 2019 and the audited Fund accounts for the years ending 31 March 2018 and 31 March 2017.

The market asset valuation as at 31 March 2019 was £1,052,073,000, excluding members' additional voluntary contributions (AVCs).

For the purposes of the valuation, we use a smoothed value of the assets rather than the market value. The financial assumptions that we use in valuing the liabilities are smoothed around the valuation date so that the market conditions used are the average of the daily observations over the period 1 January 2019 to 30 June 2019. Therefore we value the assets in a consistent way and apply the same smoothing adjustment to the market value of the assets.

The purpose of smoothing the asset value is for consistency with the valuation of liabilities and to help stabilise employer contribution rates and it means that contribution rates over the next 20-30 years are not singularly dependent on the market value of assets and market conditions on one particular day.

The smoothed asset valuation as at 31 March 2019 was £1,043,467,000, based on a smoothing adjustment of 99.2%.

More details of the asset and accounts information used are set out in the Fund's annual report which is available on request from the Fund or on their website.

The following table sets out the annual Fund investment returns for the Fund over the intervaluation period as disclosed in the Fund accounts.

Annual Fund investment returns

Year to 31 March 2017	18.2%
Year to 31 March 2018	1.7%
Year to 31 March 2019	6.0%
Average return over intervaluation period (p.a.)	**8.4%**

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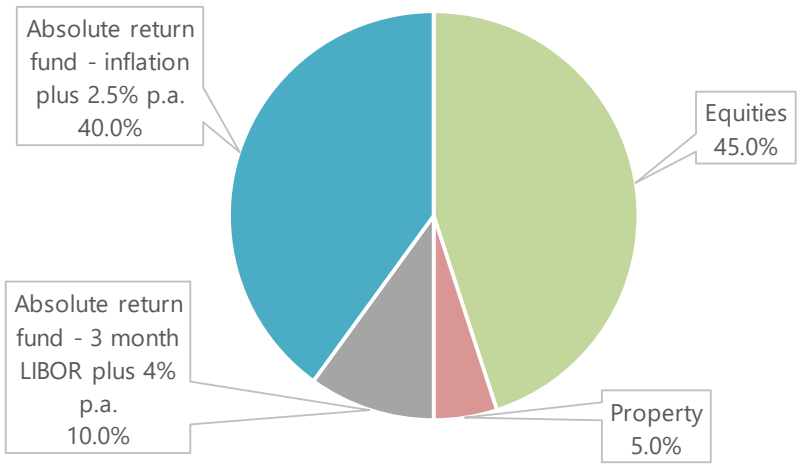
Investment strategy

For the purposes of the actuarial valuation we are interested in the long-term investment strategy of the Fund. As the current asset allocation may differ from the long-term strategy, the administering authority has provided us with details of the long-term investment strategy of the Fund.

The Fund's long-term investment strategy will be set out in an Investment Strategy Statement (ISS) that should be made publicly available on the Fund's website. A breakdown of the long-term investment strategy is set out in the chart below.

Long-term investment strategy



Valuation of liabilities

The value of accrued or past service benefits (allowing for future salary and pension increases) are referred to as the past service liabilities, or simply the liabilities.

Using the valuation assumptions set out in Appendix 2 we estimate the future cashflows which will be made to and from the Fund throughout the future lifetime of existing members. We then discount these projected cashflows using the discount rate which is essentially a calculation of the amount of money which, if invested now, would be sufficient together with the income and growth in the accumulating assets to make these payments in future, using our assumption about investment returns.

This amount is called the present value (or, more simply, the value) of members' benefits. Separate calculations are made in respect of benefits arising in relation to membership before the valuation date (past service) and for membership after the valuation date (future service).

To produce the future cashflows or liabilities and their present value we need to formulate assumptions about the factors affecting the Fund's future finances such as inflation, salary increases, investment returns, rates of mortality, early retirement and staff turnover etc.

Prudence

As part of our calculations, we have made reference to a neutral set of assumptions which are derived in a way that is not deliberately optimistic or pessimistic.

However, our proposed funding assumptions will include a margin for prudence. The prudence margin will be set with input from the administering authority to reflect their own investment strategy and risk appetite. In this report we have produced results on both the neutral and proposed funding assumptions to give

the administering authority an idea of the level of prudence contained within their assumptions.

We take a view that the overall level of prudence should be reflected in the discount rate assumption for simplicity.

Past service funding level

A comparison is made of the value of the existing assets with the value of liabilities. If there is an excess of assets over the liabilities then there is a surplus. If the converse applies there is a deficit.

Primary rate

The first stage is to calculate the value of benefits accruing to existing active members in the future over a certain period. The value of benefits accruing in the period following the valuation date is then expressed as a percentage of payroll over the same period having first deducted the equivalent contribution paid by the active members. This therefore reflects the employer's share of the cost of benefits and is known as the primary contribution rate.

At individual employer level we use a one year period for all employers who still admit new employees into the Fund. For employers in the Fund who are closed to new entrants we consider the cost of future benefit accrual over a longer period, for example, the expected remaining working lifetime of existing active members, rather than just over the next twelve months.

This is the same approach as taken in the previous valuation.

Overall result and required contribution rate

Any past service surplus, if significant, can be used to offset the contribution rates payable by employers over the period following the valuation date.

If there is a material deficiency then additional contributions are required to be paid by employers over an agreed period, either as a percentage of payroll or as monetary amounts.

Proposed assumptions

The proposed assumptions and their derivation are set out in the next section.

Longevity assumptions

Our specialist longevity team carried out analysis to determine the best-estimate assumptions to be used by the Fund Actuary for the purpose of the Fund's 2019 valuation. This set out a recommended percentage rating to make to the S3 series mortality tables. We have used this report in this advice to set out the proposed longevity assumption used in the initial results and the assumptions are summarised in Appendix 2.

Proposed assumptions

To project the future payments that are expected to arise in respect of benefits accrued at the valuation date, assumptions are required for matters such as increases to benefits, how long members live, members' dependants who may be eligible for death benefits, the exercise of member options, and when members will leave active service. How the future expenses of running the scheme will be met will also need to be considered.

To produce the future cashflows or liabilities and their present value we need to formulate assumptions about the factors affecting the Fund's future finances. We can consider these assumptions as:

- The statistical assumptions which generally provide estimates of the likelihood of benefits and contributions being paid. This includes the rates of mortality, early retirement and staff turnover; and
- The financial assumptions which determine the estimates of the amount of benefits and contributions payable as well as their current or present value. This includes inflation, salary increases and investment returns (also referred to as the discount rate).

The assumptions that we use as part of our approach are a combination of market-related statistics, historical averages and judgement. In addition, the base market statistics that we use are smoothed around the valuation date so that the market conditions used are the average of the daily observations over the period 1 January 2019 to 30 June 2019. Assets are also smoothed in a consistent way.

The smoothing mechanism is used to help with the objective of setting reasonably stable contribution rates.

We have not proposed any changes to the model adopted for the 2016 valuation or any significant changes to the assumptions used but we have proposed some changes to individual assumptions which we will set out in the relevant sections below.

We take a view that the overall level of prudence should be reflected in the discount rate assumption for simplicity, and therefore all other assumptions are a neutral estimate.

When looking at a market yield curve we generally take the 20 year point on that curve as we have estimated that 20 years is consistent with the duration of an average LGPS fund's liabilities.

In the next few sections of this report we set our advice on the proposed assumptions to be used.

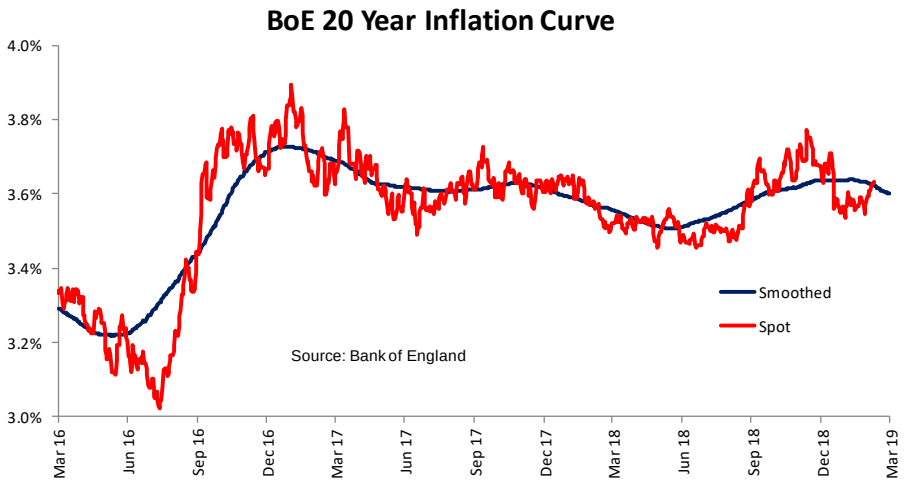
Please note that the valuation results indicate the expected cost of providing the Fund benefits based on the underlying method and assumptions; the actual cost of providing the benefits will depend on the actual experience.

Revaluation of benefits

Under the Regulations, the majority of the benefit increases are linked to inflation and the likely level of future inflation will therefore need to be considered in order to set our pension increase and revaluation assumptions.

Retail Price Index (RPI) inflation

Our starting assumption for inflation is the (smoothed) 20 year point on the Bank of England implied Retail Price Index (RPI) inflation curve which is 3.6% p.a. as at 31 March 2019.



As mentioned above, when looking at a market yield curve we take the 20 year point on that curve as we have estimated that 20 years is consistent with the duration of an average LGPS fund's liabilities. We believe that this is an appropriate approach to take for the Fund.

The same approach was taken at the previous valuation which resulted in an RPI inflation assumption of 3.3% which was based on the market-implied rate at that time.

In the 2016 valuation we made no allowance for an inflation risk premium and we do not believe that there is enough evidence to make any changes to this assumption, therefore we have not allowed for any inflation risk premium in our RPI inflation assumption.

Therefore our assumption for RPI inflation is 3.6% p.a.

Consumer Price Index (CPI) inflation

There is currently no reliable market derived measure for CPI inflation, as there are no CPI-linked government bonds.

Historically, CPI inflation has been lower on average than RPI inflation and this effect is expected to persist over the long term. The main areas of difference between the two indices are:

- The **'formula effect'** which occurs as a result of the CPI being calculated using a different statistical methodology compared to the RPI which is likely to persist over the long term;
- **Housing costs** such as council tax and mortgage interest payments, which are included in the RPI but not the CPI; and
- **Other differences in coverage** between the two indices, both in terms of constituent goods and the weightings of goods and households assessed.

At the 2016 valuation, we assumed that future CPI inflation would be 0.9% p.a. less than future RPI inflation. This difference is primarily due to the "formula effect".

Based on a decomposition by the Office for National Statistics (ONS) of recent differences between the two indices, we suggest that the formula effect is likely to contribute between 0.8% p.a. and 1.0% p.a. to the rate by which RPI inflation is expected to exceed CPI inflation over the long term.

Taking the above into account, and given the uncertainty around future constituents, we propose that a reasonable long-term assumption for CPI inflation at the valuation date is 1.0% p.a. lower than the RPI inflation assumption.

We also recently moved to this as a standard assumption for IAS19 and FRS102 pensions accounting where this assumption is required to be best estimate.

Therefore, we propose a CPI inflation assumption of 2.6% p.a.

The CPI inflation assumption used at the previous valuation was 2.4%, which was 0.9%p.a. lower than the RPI inflation assumption.

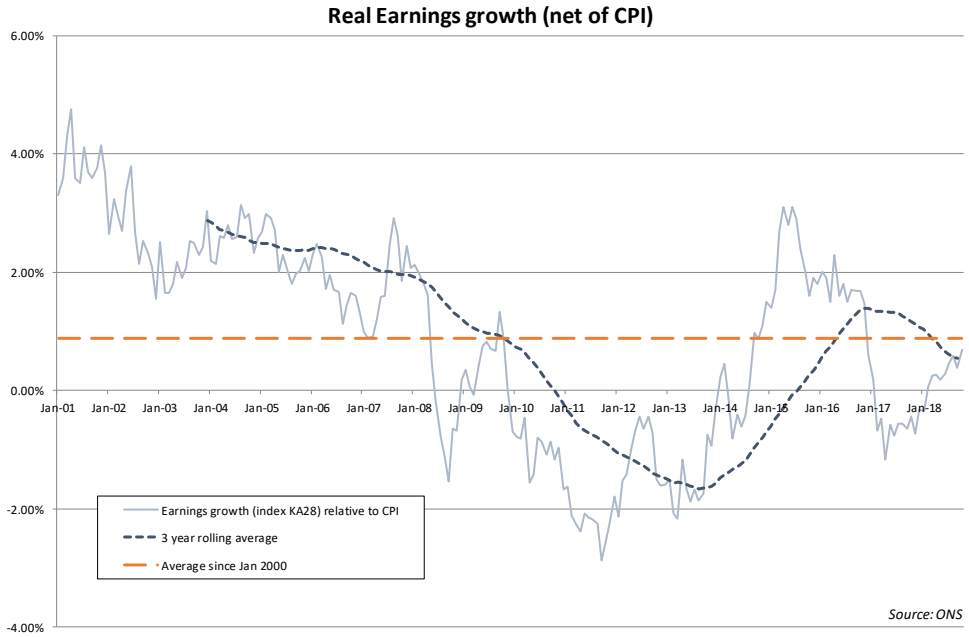
The Bank of England has a CPI target of 2.0% p.a. Effectively, we are saying that the market suggests that the Bank will, on average, not make this target and CPI inflation will average higher than the target over the next 20 years.

In the 29 October 2018 Budget, the Chancellor announced that "over time" pension increases would be in line with Consumer Prices Index Housing (CPIH). This was confirmed by a further announcement by the Chancellor on 4 September 2019 stating that the move would be made by 2030. CPIH is CPI but with housing costs (the average change in residential rents) included in the basket of goods that are measured. As housing costs often increase quicker than other goods CPIH is generally higher than CPI (but not always). All else being equal this would increase liabilities slightly. However, as Eurostat, the body which sets the statistical methodology on which CPI is based, had previously stated its intention to amend CPI to include housing costs, we had already factored this into our CPI assumption at the 2016 valuation. Eurostat have since revoked this intention but as we had already built in an allowance, the move to CPIH means that the existing difference remains appropriate and therefore we do not feel that any further adjustments are necessary at this stage.

Salary increases

While the LGPS was a final salary scheme for benefits earned prior to 1 April 2014, it is now a career average revalued earnings (CARE) scheme so that benefits earned after 1 April 2014 are increased in line with CPI inflation rather than salary increases. Therefore, the overall effect of the salary increase assumption is less than it was previously: active members' accrued final salary benefits continue to increase in line with salary increases, however, the primary rate is unaffected by the salary increase assumption. At the 2016 valuation, salary increases were assumed to be in line with CPI until 31 March 2020, and CPI plus 1.5% p.a. thereafter. The short-term assumption was set to reflect a short-term restriction in public sector pay.

The chart below shows past UK earnings growth reflected in the ONS's Average Weekly Earnings (AWE) statistics (which reflect both inflationary and promotional increases).



Earnings growth has typically been relatively volatile, especially over short time periods. It has historically been more stable in real terms although we can see from the graph above that there is still significant volatility over the last 18 years. Over the last 18 years the overall average rate has been around CPI plus 0.9%.

Recognising that there are a wide a range of potential outcomes for long-term future salary growth, we would propose that a reasonable assumption is CPI plus 1.0%. We propose that this assumption reflects both inflationary and promotional increases and therefore we would remove the salary scale assumption which previously applied in addition to the salary increase assumption. We are not proposing to have a separate assumption about short-term increases in salary. The removal of the promotional scale and the short-term overlay simplifies our overall allowance for salary increases.

Therefore, we propose a salary increase assumption of CPI plus 1.0% p.a.

Pension increases

All LGPS pension increases are linked to CPI inflation. Therefore we propose to use the CPI inflation assumption with no adjustment as a pension increase assumption. Some pension elements increase at different rates (e.g. GMP) and we allow for this in our calculations. This is the same approach taken to the previous valuation.

Discount rate assumption

The Fund's benefits will be discharged over a long period. Therefore, for comparison with the value of the assets, the liabilities should be measured in a way that allows for the future investment return expected on those assets.

In other words, the amount of each projected benefit payment should be reduced to reflect interest prior to its payment. This process is called 'discounting' and the interest (or investment return) allowed for is called the 'discount rate'. The higher the discount rate, the lower the value of the liabilities and hence the higher the Fund's funding level.

There are a number of different approaches which can be adopted in deriving the discount rate to be used, and the approach that is most appropriate will depend on the purpose of the valuation, the overall funding objectives and the risk appetite of the administering authority.

As outlined earlier in this document, we believe that the most appropriate starting point for a valuation that sets employer contribution rates is to consider the expected returns on the long-term investment strategy. We do this by grouping the various assets into broad classes, deriving an assumed return for each asset class and then working out the average based on the asset allocation between the groups.

When deriving the neutral returns for the asset classes, we will mainly be considering the return that can be achieved from passive investing. The rationale behind this is that any outperformance will then come through as "profit" rather than being anticipated in advance and there is also a practical reason which is simply that there is more information with which to make a robust assumption about future returns from passive investment across the entire asset class. The active/passive distinction is not straightforward for all asset classes but the above is the general principle.

We consider a neutral estimate of the assumed investment return for each asset class and then make an overall explicit adjustment for prudence to the discount rate assumption, which is the same as the approach taken in the 2016 valuation.

An appropriate level of prudence will depend on the risks being considered and in our review we have allowed for risks relating to volatility of asset returns and the administering authority's risk appetite.

Our starting point is the level of prudence agreed as part of the 2016 valuation.

Our approach is what could be called a "best-estimate minus" approach. While there are other approaches available (for example, setting discount rates relative to gilt yields), we believe that this approach is the most appropriate starting point for the LGPS and the Fund in particular, as it has the following characteristics:

- The Fund has a significant allocation to growth assets
- The Fund is open to new entrants
- The employers are able to absorb volatility inherent in growth assets; and
- The stability of the disclosed funding objective is an important issue.

Consistency and Section 13 considerations

The discount rate is certainly an assumption where there is justification for variance between funds due to different investment strategies or different attitudes to risk leading to different levels of prudence in the assumption.

The discount rate used to provide results to the Scheme Advisory Board (SAB) on a standardised set of assumptions has not been confirmed, but we suspect it will be equal to the "SCAPE" rate used for unfunded schemes which was recently revised from CPI plus 2.8% p.a. to CPI plus 2.4% p.a. In theory this should have no impact on the discount rates used in the funded LGPS. However, the lower

SCAPE rate is likely to have some bearing on the assumptions used by the Government Actuary's Department (GAD) for carrying out the Section 13 analysis for the 2019 valuation (i.e. they are likely to use lower discount rates in their analysis) and so it is arguably another factor to consider when choosing a discount rate for the funding valuation.

The risk of course is that that making significant changes to the discount rate assumption might lead to an unduly pessimistic discount rate which can cause issues for individual employers through contributions becoming unaffordable and so an appropriate balance needs to be found.

Asset types

For the purposes of this document we have considered the Fund's long-term investment strategy. We propose grouping the assets into the following types which we believe allows for sufficient flexibility and accuracy:

- Equities
- Property
- Absolute return i.e. Cash plus
- Absolute return i.e. Inflation plus

Where the assets do not have a widely-published objective market-based indicator of future returns, then we consider the characteristics and benchmark of each fund's investment in these asset classes to derive an assumption that we believe is appropriate and this is usually based on building up from the returns derived for simpler asset classes.

Our proposed neutral returns for these asset classes are set out below. We are aiming to propose consistent derivation methods between funds to help with the consistency objective but we are happy to consider changes to these, particularly if they can be locally justified.

Equities

Model

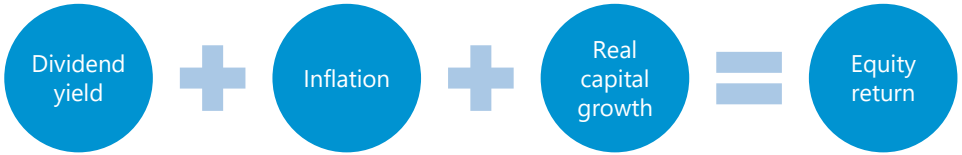
Unlike the previous asset classes, there is no direct market indicator of future equity returns and so some degree of judgement is required.

Given the extra risk and volatility from investing in equities compared to most other asset classes, it is reasonable to assume that long-term expected returns for equities will be higher than the other asset classes.

When setting this assumption, we take a cashflow-based approach and consider the return on a portfolio of equities as being equal to the dividends paid on these shares plus the growth in the value of the shares.

We also assume that the growth in the value of the equities will, over the long-term, be in excess of and linked to inflation i.e. if we assume that prices are going to increase at a faster/slower rate, we assume that there will be a corresponding change to equity values.

This means that our assumption is:



Finally, we compare the equity return assumption suggested by this model to other asset returns and to independent forecasts.

Region

We understand that the Fund's equity holdings are predominantly global. Ideally, the model would therefore incorporate global factors (appropriately weighted between the different markets and allowing for any currency hedging).

Previously we effectively used the UK model as a proxy for global equities and this gave similar long-term returns at 31 March 2016. However, the proportion of corporate earnings paid as dividends in the FTSE All-Share is currently at its highest level since 1993 and so we are concerned that this might be overstating longer-term dividend streams. Therefore, as discussed below, we propose to use global indicators. In our opinion, this should give a more appropriate view for the Fund's future equity performance.

We are conscious of the current and potential volatility in UK markets due to Brexit and as a result, we will be carrying out further regular reviews to check whether we believe that the model is still appropriate for future use or whether any adjustments are needed. This will be for the purpose of monitoring funding levels and future valuations rather than directly affecting the 2019 valuation.

Dividend yield

One of the effects of including the dividend yield in the equity return assumption is when equity values fall (so that the asset value falls) the dividend yield increases so the overall equity return and discount rate assumptions increase. Effectively, we assume that at least some of the fall in the asset value will be recovered in future i.e. the value of the assets that we need now to pay the accrued benefits (the liabilities) in future also falls. This also works the other way too (i.e. if there is an asset bubble, future assumed returns fall under our model) so this approach gives some automatic stabilisation when there are market shocks. This does mean that in the current climate where equity values have recently fallen, our equity return model gives higher assumptions than might be obtained from other models.

When the dividend yield increases in this way, it triggers a review whereby we consider whether under current market conditions we believe our model is still sufficiently robust, i.e. does it still give long-term assumptions that we are comfortable with and that are reasonable for the purposes of setting employers' contribution rates. As discussed above, we are concerned the dividend yield on the FTSE-All Share may be overstating longer-term dividend streams.

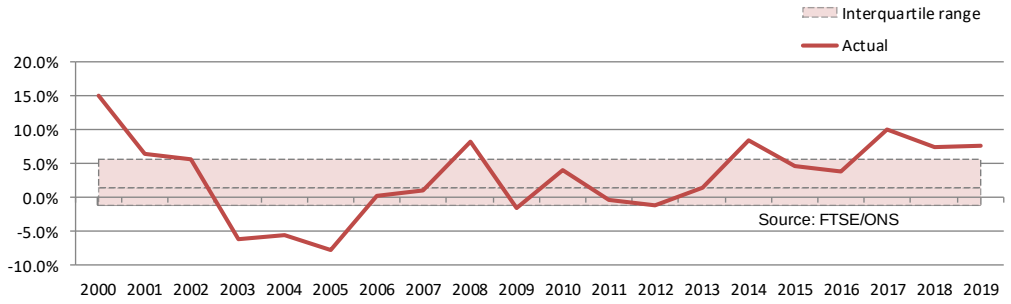
Therefore, as discussed above, we propose to use the FTSE All-World dividend yield which in our opinion should give a more balanced view of longer-term dividend streams, particularly given the Fund is predominantly invested in global equities. We believe this provides a long-term assumption for equity returns that are reasonable for setting employers' contribution rates.

Real capital growth

The other building blocks for determining the equity assumption are the real capital growth assumption. At the last valuation, this was 1.2% for the neutral assessment of the real capital growth in relation to CPI i.e. the equity assumption was equal to the dividend yield plus the CPI assumption plus 1.2%.

As we have used a global dividend yield and a UK inflation assumption, it follows that our real capital growth assumption is global capital growth in relation to UK inflation. The next chart shows the capital growth from global equities based on the FTSE All-World index, relative to CPI, since the turn of the century, together with the inter-quartile range (i.e. the range of observations that account for 50% of all observations around the median).

Global equity returns from capital growth only, net of CPI - Rolling 5 Year Averages (% p.a.)

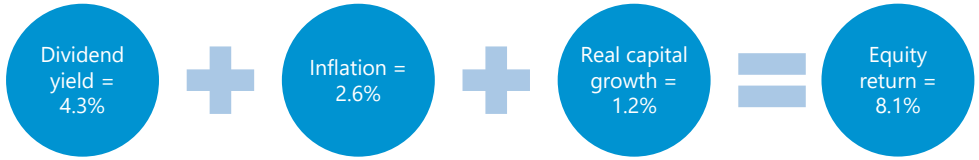


As we can see, equity capital returns are very volatile. The median value, observing the data since 2000, was around 1.5% p.a. above CPI, although there have been prolonged periods when the returns have been significantly different.

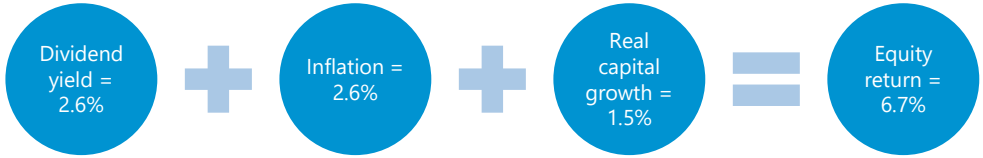
We believe therefore that a suitable neutral assumption for the capital growth assumption (in relation to CPI) is 1.5% p.a.

Equity assumption

Using the 2016 model, updated for known market conditions and changes in the RPI/CPI gap, would give an illustrative neutral equity assumption of 8.1% p.a. (derived below).



Updating the dividend yield to be based on the FTSE All-World index and a global real capital growth assumption of 1.5% p.a. would give a neutral equity assumption of 6.7% p.a. at 31 March 2019 (derived below).



As a comparison, this equates to an assumption equal to the gilt yield plus 5.0% p.a. While this could be argued as being high in relation to gilt yields (which in theory is the risk-free rate of return available), current gilt yields are low in a historical context and there are arguments that the underlying risk-free rate of return is understated by the current long-term gilt yield.

Property

Property would intuitively be expected to give long-term returns somewhere between those on gilts and equities (probably closer to equities). Further, the ability to review rents might mean there is some inflation linkage. At the 2016 valuation we derived the neutral assumption for property to be the CPI assumption plus 3.5% p.a.

We would propose to maintain this assumption at the 2019 assumption, which would lead to a neutral property assumption of 3.7% p.a.

Cash

The Fund always needs to hold cash in order to pay benefits although it might also hold it for tactical reasons. Previously we used the smoothed Merrill Lynch 20 year London Inter-bank Offered Rate (LIBOR) swap curve point. It can be argued that 20 year time horizon is too long for short-term holdings in cash. In addition, LIBOR is to be discontinued by the FRC from 2021 and Sterling Overnight Interbank Average Rate (SONIA) will replace it as the reference rate for swap transactions.

We would propose to use the current Bank of England base rate of 0.75% p.a. for simplicity.

Absolute return/others

For those assets held in absolute or total return funds we have assumed a return based on the benchmark targeted by these funds.

Based on information provided to us by the administering authority, we understand the Fund's long-term investment strategy includes investments in funds targeting CPI Inflation plus 3.5% and 3 month LIBOR plus 4%.

Our proposed long-term return on absolute return funds is therefore 6.1% p.a. and 4.8% p.a., respectively.

Expenses

To allow for administration, oversight and governance expenses at the 31 March 2016 valuation we included an overall deduction of 0.2% in the discount rate (as the average of the three preceding years expenses as a percentage of the whole Fund asset value). To allow for (passive) investment management expenses, we included a further deduction of 0.1% in the discount rate. In practice, this figure might be higher due to the use of active management but the aim is to more than cover these additional expenses by achieving excess returns.

The administration, oversight and governance expenses accounted for 0.1% of the whole Fund asset value in 2016/17, 0.1% of the whole Fund asset value in 2017/18 and 0.1% of the whole Fund asset value in 2018/19. We therefore propose to maintain our expenses assumption at 0.2%.

Therefore our total expenses allowance would be a deduction of 0.2% to the discount rate.

Allowance for prudence

Based on the methodology described above, the derivation of the above investment return assumptions would result in a neutral estimate – in other words assumptions that produce returns that are not overly pessimistic or optimistic.

Where there is greater uncertainty in a particular assumption, such as the discount rate (i.e. investment return assumption) the recommended assumption should include a margin for prudence. We feel that it is appropriate to include a prudence margin into the discount rate assumption to reflect this uncertainty.

Ultimately, the adjustment to allow for prudence is a subjective one, having considered:

- Views on the ability of employers to pay more later if required (the employer covenant)
- Attitude to risk and risk appetite of the administering authority
- Levels of volatility in the assumed asset returns
- Consistency of the prudence margin with the previous valuation

The discount rate in real terms should also be considered in light of the SAB standardised comparative basis and estimate of the Section 13 basis that will be set by GAD.

The prudence allowance adopted at the 2016 valuation was 0.7% p.a.

A higher level of prudence places less reliance on investment return. More prudent assumptions would usually lead to higher contributions, at least initially, and then if assets delivered good returns, any deficit could either be funded over a shorter period or contributions could decrease.

We propose to reduce the current margin for prudence to 0.5% p.a. as this results in a suitably prudent nominal long term return of 5.0% p.a.

For the purposes of these illustrative assumptions, we have considered a prudence allowance of 0.5% p.a.

Combining returns

The principle behind setting the discount rate is that it reflects the actual investment strategy of the Fund so that we take the above base assumptions and combine them to get an overall discount rate. In doing this we can consider the current asset allocation or an allocation that reflects the long-term strategy. It is usually our preference to reflect the long-term strategy, where known.

We have requested information from the administering authority on the long-term investment strategy of the Fund and this is set out below, alongside the broad grouping that each asset class has been allocated to.

Asset class	Benchmark
Equities	45.0%
Property	5.0%
Absolute return fund - 3 month LIBOR plus 4% p.a.	40.0%
Absolute return fund - inflation plus 2.5%	10.0%

Therefore our discount rate assumption is calculated as follows:

Asset class	2019 allocation	Neutral assumption (p.a.)
Equities	45.0%	6.7%
Property	5.0%	3.7%
Absolute return fund - 3 month LIBOR plus 4% p.a.	40.0%	4.8%
Absolute return fund - inflation plus 2.5% p.a.	10.0%	6.1%
Less expenses		0.2%
Neutral return		**5.5%**
Less prudence adj.		0.5%
Prudent discount rate assumption		**5.0%**
Relative to CPI		**2.4%**

At 31 March 2016, the discount rate used was 5.4% p.a. (CPI + 3.0%). We have then re-assessed the discount rate as part of this paper and our proposed assumption is 5.0% p.a. (CPI + 2.4%). This is lower due to a higher assumed gap between RPI and CPI, and a switch to global indicators for the future equity assumption.

We can also compare this discount rate to the "SCAPE" rate used for unfunded schemes which is likely to have some bearing on the discount rate used by GAD for carrying out the Section 13 analysis for the 2019 valuation. At the 2016 valuation, the discount rate was equal to CPI plus 3.0% p.a., which compared to a SCAPE rate of CPI plus 3.0% p.a. (which was subsequently reduced to CPI plus 2.8%). Although the discount rate was higher than the SCAPE rate at the time, GAD did not flag the Fund for having too high a discount rate which means that the discount rate was within acceptable bounds in GAD's analysis.

The SCAPE rate is now CPI plus 2.4% p.a. and we can reasonably expect that this will lead to a reduction in the acceptable discount rate bounds within GAD's analysis. Our proposal matches the SCAPE rate and we therefore believe that this is sensible to reduce the probability that the Fund will be flagged within GAD's Section 13 analysis for the 2019 valuation.

Mortality assumption

Post-retirement mortality

The key demographic assumption required for determining the pension liabilities is the post-retirement mortality assumption.

The Fund should review their post-retirement mortality assumptions at each valuation, taking into account all available evidence, to ensure they remain appropriate for the Fund.

There are two aspects to consider in determining appropriate post-retirement mortality assumptions:

- choosing an appropriate mortality assumption applicable today taking into account characteristics of the Fund members; and
- making an appropriate allowance for moirtality to improve in future.

The administering authority has asked Barnett Waddingham's Longevity team to do an analysis of their Fund's membership.

Using the results of the analysis we set out in the table below our recommended assumptions for the mortality base tables to be used and we include the 2016 assumptions for comparison:

Post-retirement mortality base tables	Proposed assumption	Previous assumption
Post-retirement mortality: member		
	Male / Female	Male / Female
Base table	S3PA	S2PA
Multiplier	110% / 105%	120% / 85%
Post-retirement mortality: dependant		
	Male / Female	Male / Female
Base table	S3DMA / S3DFA	S2PA
Multiplier	70% / 85%	120% / 85%

Mortality improvements

The terms 'mortality improvement' and 'rate of improvement' both refer to the amount by which the probability of death decreases for a particular age group from one year to the next. The average rate of mortality improvement in the UK over the last century has been around 1.25% pa. This rate accelerated rapidly during the 1980s and 1990s, and the average rate which applied over the period 2000 to 2011 was 2.4% p.a. before falling to 0.5% p.a. for males and 0.1% p.a. for females over the period 2011 to 2017.

However, it should be noted that the mortality improvements for members of self-administered pension schemes have been higher than those of the general population over the period from 2008 by just over 1% p.a. on average and we comment on this further below.

Model

At the previous valuation, allowance was made for mortality to improve in future using a model developed by the CMI. This allows for recent improvements based

on actual observed trends before converging to a long-term rate of improvement over a period of around 40 years. At the 2016 valuation we used the CMI 2015 projections model. The model is updated annually by the CMI to take into account the latest available data.

The CMI_2018 model was released on 7 March 2019. The latest version continues the post-2011 trend of low improvements and subsequent falls in projected life expectancies – in particular, there were nil improvements in mortality over 2018.

The model has two elements which users can amend to vary how recent improvements are assumed to converge to the chosen long-term trend. We have included further discussion on both of these elements below.

The first variable element is the **smoothing parameter** to the model, which allows the user to adjust how much credibility is placed on the most recent mortality data, which in recent years has shown lower improvement rates than previously. All else being equal a lower smoothing parameter will therefore lead to lower life expectancies and liability values as this places more weight on recent data. However, following the release of CMI 2018 there have been reports of slightly better mortality improvements in more recent data so we propose to increase the smoothing parameter to put less weight on the lower improvements reported in CMI 2018. The CMI published a default value of 7 and we propose a value of 7.5 is adopted for the valuation.

The second variable element is the **initial addition to mortality improvements parameter** which allows the user to define the extent to which recent improvements observed in the general population will be representative of recent experience of the Fund. The CMI model is based on data for the whole of the England and Wales population (rather than pension scheme data which is the case for the S3 series base tables). The CMI have published some analysis of how recent mortality improvements in the general England and Wales population have varied by socio-economic status. This has shown that while there has been a slowdown in improvements across the whole population, this has mainly been experienced by lower socio-economic groups and the higher socio-economic groups have not been affected as strongly. In particular, the improvements in the SAPS population between 2008 and 2016 have been just over 1% p.a. higher than for the general population, possibly reflecting that pension scheme members tend to come from higher socio-economic groups on average.

The Barnett Waddingham Longevity team have carried out an analysis of the improvements observed over our LGPS client base. On the basis of this analysis, we propose a parameter of 0.5%. More detail on the reasoning for this change can be found in the longevity analysis report but in general a higher initial addition parameter will increase the value of the liabilities.

We therefore, currently, plan to adopt the 2018 version of the CMI model with the adjustment to the smoothing parameter and initial addition as mentioned above.

Long-term rate of mortality improvements

As well as choosing to use the CMI model, we need to specify the long-term rate of mortality improvement. The Fund used a long-term improvement of 1.5% p.a. at the 2016 valuation, as did most LGPS funds.

This is a particularly subjective assumption as it is asking users to make a judgement about what mortality improvements rates may be far into the future. It depends on factors such as improvements in medical technology and societal behaviours so it crosses a range of disciplines. The average rate of mortality improvement in the UK over the last thirty years has been around 2% and although, as discussed earlier, there is evidence that this has been slowing down over recent years this is less pronounced for members of pension schemes.

From survey information from the Pensions Regulator, we understand around 70% of private sector pension schemes adopt an assumption of 1.5% p.a. Most private sector pension schemes include an allowance for prudence in their long-term rate of mortality improvement assumption and therefore there is an argument that a best estimate assumption would be lower than this. As we aim to include prudence in the discount rate only, **we propose to decrease the long-term rate of improvement used in the model to 1.25% p.a.**

Sensitivity of the mortality assumption

To help understand the sensitivity of the results to the change in mortality assumption we have set out in the table below some illustrative average life expectancies on a number of bases in order to illustrative the effect of changing both the base table adjustment and the improvement model. We have set out life expectancies at 65 for males and females who are 65 now, and 65 in 20 years' time (i.e. age 45 now):

Life expectancy at age 65 (in years)	Proposed assumption	Previous assumption with updated base table	Previous assumption
Male currently aged 65	21.7	22.2	24.6
Female currently aged 65	24.3	25.0	26.2
Male currently aged 45	23.1	24.4	26.9
Female currently aged 45	25.8	27.2	28.5

As we can see, the change in the mortality projection assumption approximately represents a drop in projected life expectancies (from age 65) of around 3% for current 65 year olds and 6% for current 45 year olds (i.e. a very significant drop, reflecting recent data). The impact of this will be to reduce the value placed on the liabilities. However, it should be noted that the impact varies across the ages.

Other statistical assumptions

We also need to consider the retirement age assumptions as well as pre-retirement assumptions such as withdrawals and transfers out. As previously mentioned, we propose to incorporate all margins for prudence in our financial assumptions and therefore the assumptions detailed in this section will be used in both our neutral and funding basis proposals.

Retirement ages

Members can be subject to multiple retirement age regimes in the LGPS. At the last valuation, we assumed that members would retire at the average age that their various tranches of benefit are payable from. For example, if a member has a large amount of pension payable from age 60, it is likely to be financially advantageous for them to take their benefits closer to age 60 than to age 65 or later. However, if most of their benefit is payable from their State Pension Age and they only have a small amount of pension available without reduction at earlier ages, they are likely to retire later.

We have performed an analysis of retirement patterns using data covering the two years to 31 March 2018 for the LGPS funds that we advise (where data was made available). Over all the funds that we analysed and the Fund specifically, the analysis revealed that the assumption was not materially different to the actual experience of retiring members.

Therefore, for the 2016 valuation, we propose an assumption that members retire at the average of each tranche retirement age, weighted by pension, which is the same method assumed in 2016.

Transfer out decrement

At the 2016 valuation, there was no allowance for transfers out in the funding basis.

However, the discount rate used for calculating transfer values in the public sector has now decreased to CPI plus 2.4% p.a., which was much lower than at the time of the initial analysis. Therefore, this leads to higher transfer values (both in and out), which in turn, may also lead to more transfer values out and so it is sensible to re-consider for the 2019 valuation. We have carried out an analysis of transfer out experience over our Funds and noted that current levels of transfers out are low and so we believe it is reasonable **to continue to assume no transfers out of the Fund**, particularly given the extra complexity adding a transfer out decrement into the basis would bring.

Pre-retirement decrements (withdrawals, ill-health retirement, death before retiremenet and salary scales)

At the 2016 valuation, we used assumptions that were equal to those assumed by GAD when they carried out their 2013 valuation of the LGPS for "dry-run" Section 13 purposes. The rationale for these was generally that it was in line with the most recent study of national LGPS experience that they had carried out.

GAD has since updated the experience analysis and tables used as part of their 2016 valuation of the LGPS for cost management purposes (currently draft at the time of writing). We have conducted analysis on withdrawals, ill-health retirements and death in service using data provided by our funds for the two years to 31 March 2018 (where that data is was available) and we have compared the actual experience with that assumed by the assumptions adopted at the 2016 valuation, and by the updated GAD assumptions.

We have no concerns about the goodness-of-fit for the withdrawal and death before retirement assumptions. The ill-health experience is discussed in the following section.

Ill-health experience

From the analysis we carried out, it appears recent ill-health experience has been significantly less than both GAD assumptions (around 60% less retirements than were assumed based on the 2016 assumptions and around 50% less retirements than assumed based on the updated assumptions).

GAD's own analysis of the overall LGPS experience in the three year period to 31 March 2016 also suggests a drop in numbers of ill-health retirements compared to the assumptions used for their 2013 valuation of the LGPS. GAD's updated assumption takes into account the six years of experience from 2010 to 2016 (and therefore recent experience is smoothed out with earlier data).

We believe it would be appropriate to allow for 50% fewer retirements than the GAD assumption in the funding basis. We have provided some sensitivity analysis which allows for GAD's assumption in full.

Salary scale

As discussed in the "Salary Increase" section, we propose to remove our salary scale assumption and include promotional increases within our general salary increase assumption.

Death before retirement

As part of their analysis, the BW specialist longevity team have also reviewed the mortality experience of the Fund before retirement and how it compared to the GAD table. They suggest a rating of 100% (males) and 102% (females) of the GAD tables. We propose rounding this to 100% in our initial results.

Therefore, we plan to adopt the updated GAD assumptions used as part of their 2016 valuation of the LGPS for cost management purposes, with the exception of the salary scale assumption, which we propose to remove (incorporating promotional increases within the general salary increase assumption), and the ill-health incidence, where we propose to reduce GAD's assumption by 50%.

50:50 membership

Some active members may elect to reduce their accrual rate in return for paying lower contributions. Actual take-up of this has been very low (initial analysis of our funds' data suggests around 0.5% of active members). We are aware of the working being undertaken by SAB to encourage take up of membership in the 50:50 scheme but at the moment we do not consider there to be enough evidence to change our assumption from that used in 2016.

We will assume that members will continue to participate in their current section and this is the same assumption that was used in 2016.

Commutation

At the 2016 valuation, we assumed that members would, on average, exchange pension to get 50% of the maximum available cash on retirement.

We have performed an analysis using the data for the two years to 31 March 2018 for the LGPS funds that we advise (where data was made available). **The analysis suggested that 50% continues to be an appropriate assumption for the LGPS funds we advise** and the Fund experience was not materially different. We will revisit this analysis later in the year when we have data from more funds available.

Family statistics

At the 2016 valuation, we assumed that 75% of males and 70% of females have an eligible dependant at retirement or earlier death. This was based on ONS projections to 2023 (published as at 2014). The ONS published a snapshot of population data in 2017 for married or cohabiting partners and this appears broadly in line with the assumption made at the 2016 valuation so **we propose to maintain this for the 2019 valuation.**

Age difference of spouse

This assumption tends to be relatively insignificant from a financial perspective and we suggest the existing assumption that husbands are, on average, three years older than their partners is maintained.

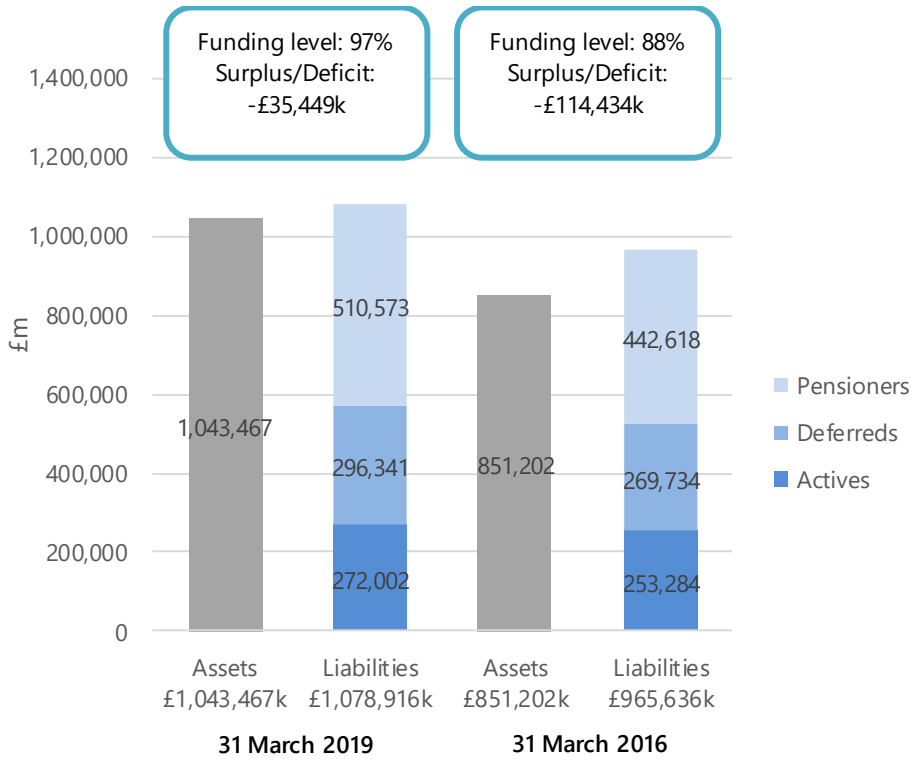
Allowance for discretionary benefits

Employers in the Fund are able to award certain discretionary benefits to their employees including unreduced early retirements. We are not aware of any previous practice or existing policy regarding the granting of discretionary benefits and therefore we propose to make no allowance for discretionary benefits to be awarded. This is the same assumption as in the previous valuation.

2019 estimated funding position

Shortfall between assets and liabilities

Using the proposed assumptions the results of the valuation are set out in the table below. We have included the funding position at the previous valuation for comparison:



There was a deficit of £35,449,000 in the Fund at the valuation date, corresponding to a funding level of 97%.

Previous valuation

The previous valuation was carried out as at 31 March 2016 by Graeme Muir. The results are summarised in the valuation report dated 31 March 2017 and revealed a deficit of £114,434,000.

The contributions payable by each employer were set out in the valuation report dated 31 March 2017. These contribution rates differ for each employer from the rate above as they are based on the employer's own membership and experience or they are the employer's share of the contributions payable within a pool of employers.

The method and assumptions used for the previous valuation are set out in the Funding Strategy Statement and the final valuation report dated 31 March 2017.

Results on other bases

We set out valuation results on the neutral basis, the standardised basis and the minimum risk basis in Appendix 3 .

Reconciliation to the previous valuation

The results of the previous valuation are summarised in the report dated 31 March 2016 and show a funding level of 88% corresponding to a deficit of £114,434,000. The change in the funding position over the intervaluation period will mainly depend on the answers to the following three questions:

- What were **asset returns** for the intervaluation period to 31 March 2019?
- How have the **key assumptions** changed over the intervaluation period?
- How has actual **experience compared** to the assumptions made at the previous valuation?

The key factors that have influenced the funding level of the Fund over the period are illustrated in the chart below.

Experience

- Investment returns have been strong since 2016 leading to a profit of £87.8m. The Fund has returned over 8.4% p.a. compared to the assumed return of 5.4% p.a. over the three year period. Please note that the assumed return is a long-term assumption.
- Contributions paid were higher than the cost of benefits accrued as the employers made deficit contributions resulting in a profit of £27.0m.
- Salary increases were greater than assumed with some offset from pension increases being less than assumed resulting in a loss of £1.7m. The overall impact of other demographic experience was neutral.
- The "Other" item is mainly a result of ongoing transfers to and from the Fund that have not been settled as yet as well as improvements in the membership data quality since 2016.

Assumptions

- A review of the approach when setting the financial assumptions combined with the change in market conditions resulting in an increase in the liabilities of £86.1m
- Updating the mortality assumptions to allow for a fall in future life expectancies resulting in a decrease in the liabilities of £54.2m


Changes in past service position
Surplus / Deficit £000s
0
-20,000
-40,000
-60,000
-80,000
-100,000
-120,000
-140,000
-114,434
-17,375
27,037
87,760
-7,901
-1,722
6,840
3,392
3,471
-93,968
54,198
17,253
-35,449
Surplus (Deficit) at 2016
Interest
Contributions vs cost of accrual
Investment returns vs assumed
Market changes on the liabilities
Salary increase experience
Pension increase experience
Mortality experience
Other demographic experience
Change in assumptions: financial
Change in assumptions: demos
Other
Surplus (Deficit) at 2019

Contribution rates

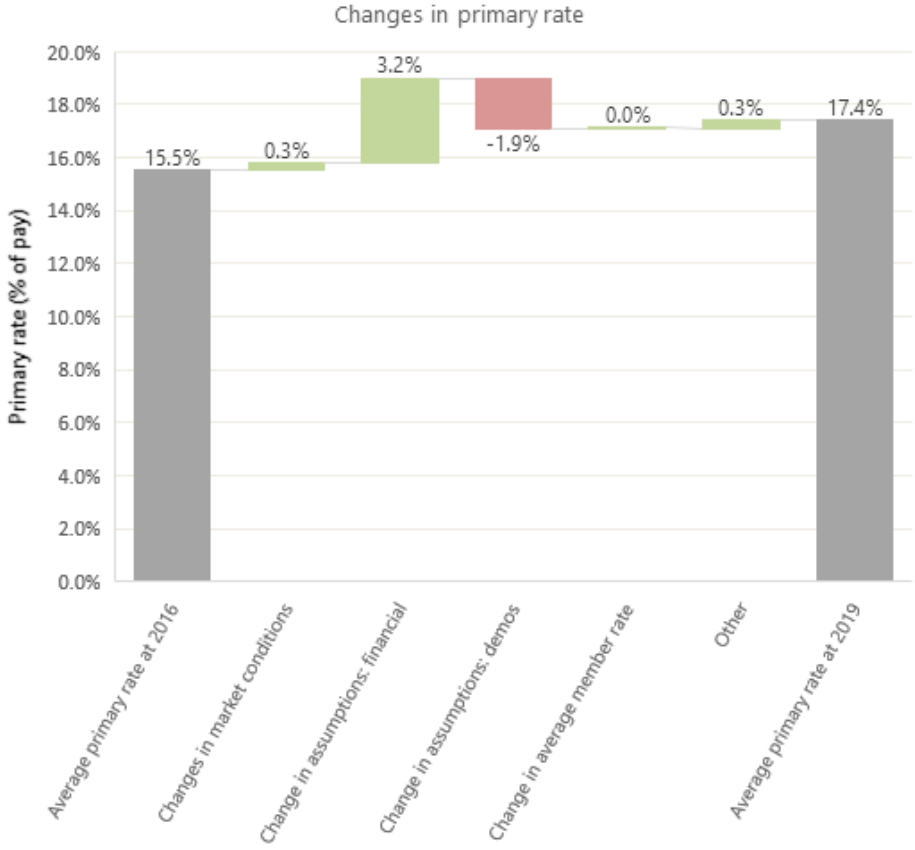
The total contribution rate payable by employers consists of two elements: the primary rate and the secondary rate.

We are not able to give an indication of the secondary contributions payable by each employer at this stage as these depend on the funding strategy, assumptions and employer flexibilities that are yet to be agreed.

Primary rate

Using the proposed assumptions the resulting average primary rate across the whole Fund is set out in the table below after allowing for member contributions.

Primary rate	Proposed basis 31 March 2019 % of payroll p.a.	Previous valuation 31 March 2016 % of payroll p.a.
Average total future service rate	24.4%	22.5%
Less average member rate	-7.0%	-7.0%
Fund primary rate	**17.4%**	**15.5%**



Expenses are dealt with in the derivation of the discount rate and therefore we make no explicit allowance in the primary rate for expenses.

This compares to the average primary rate of 15.5% of Pensionable Pay as calculated in the 2016 valuation. The reasons for the change in the cost of future benefit accrual are set out in the reconciliation chart below.

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Secondary rate

The secondary rate is an adjustment to the primary rate to arrive at the total rate each employer is required to pay (for example, to allow for deficit recovery). Contributions should be set to restore the funding positions to 100% over an agreed "recovery period".

At 31 March 2016 there was a deficit in the Fund and the secondary contributions were agreed with individual employers in order to restore the Fund to a funding position of 100% by 31 March 2038. Please note that the recovery period for individual employers varied across the Fund.

As noted earlier, we are not able to give an indication of the secondary contributions payable by each employer at this stage as these depend on the funding strategy, assumptions and employer flexibilities that are yet to be agreed.

Although it depends on the final assumptions adopted, there is likely to be a shortfall between the value of the assets and the assumed cost of providing the benefits for some of the participating employers in the Fund. The change in an individual employer's funding position will be based on their own membership and experience unless they are in a pooled arrangement with other employers.

The administering authority will need to agree recovery periods with these employers to address these shortfalls. There are a number of issues for the administering authority to consider when agreeing recovery periods with individual employers including strength of employer covenant and affordability as well as considering external pressures as a result of the Section 13 report.

Following agreement of the funding assumptions, the administering authority will have access to the online employer rate modeler, *Illuminate ME*, to demonstrate different recovery periods for all employers before these are agreed with us as the Fund Actuary.

Section 13

It is important to consider the possible results of the Section 13 report when setting a recovery plan as this is the area where the report can flag that a Fund has not met the requirements to secure solvency of the pension fund.

It is almost certain that we will not know the assumptions and tests that GAD will use for Section 13 purposes at 2019 , but we do not think that it is likely that it will be more prudent than the Scheme Advisory Board's standardised basis.

We understand that GAD are particularly keen to see recovery periods reducing from one valuation to the next, where possible.

Sensitivities to the liabilities

The results set out in this report are based on a particular set of assumptions. The actual cost of providing the benefits will depend on the actual experience, which could be significantly better or worse than assumed. The sensitivity of the results to some of the key assumptions is set out in the chart below and the corresponding risks are described in Appendix 4.

The figures in the table are shown relative to the deficit of £35,449,000 and funding level of 97% on the proposed funding basis. The data labels on each bar show the absolute change in deficit.

Sensitivity analysis - Past service funding position

	Valuation basis	Decrease discount rate by 0.1% p.a.	Increase CPI inflation by 0.1%	Increase salary assumption by 0.5%	Increase initial addition to mortality improvement by 0.5%	Increase long-term rate of mortality improvement by 0.25%	Twice as many ill-health retirements
	£000	£000	£000	£000	£000	£000	£000
Smoothed asset value	1,043,467	1,043,467	1,043,467	1,043,467	1,043,467	1,043,467	1,043,467
Total past service liabilities	1,078,916	1,095,516	1,086,383	1,085,114	1,087,419	1,091,034	1,082,298
Surplus (Deficit)	**-35,449**	**-52,049**	**-42,916**	**-41,647**	**-43,952**	**-47,567**	**-38,831**
Funding level	97%	95%	96%	96%	96%	96%	96%

Sensitivities to the primary contribution rate

The calculated primary contribution rate required to fund benefits as they are earned from year to year will also be affected by the particular set of assumptions chosen. The sensitivity of the primary rate to changes in some key assumptions is shown below.

The figures in the table are shown relative to the primary rate of 17.4% of Pensionable Pay on the proposed funding basis.

Sensitivity analysis - Primary rate

	Valuation basis	Decrease discount rate by 0.1% p.a.	Increase CPI inflation by 0.1%	Increase salary assumption by 0.5%	Increase initial addition to mortality improvement by 0.5%	Increase long-term rate of mortality improvement by 0.25%	Twice as many ill-health retirements
	% of pay	% of pay	% of pay	% of pay	% of pay	% of pay	% of pay
Total future service rate	24.4%	24.9%	24.6%	24.5%	24.6%	24.6%	25.1%
less employee contribution rate	-7.0%	-7.0%	-7.0%	-7.0%	-7.0%	-7.0%	-7.0%
Total primary rate	**17.4%**	**17.9%**	**17.6%**	**17.5%**	**17.6%**	**17.6%**	**18.1%**

Next steps

Funding discussions and alternative results

This document has been provided as background information to the triennial valuation of the Fund and detailed information regarding the funding model and the assumptions proposed along with the initial results on the proposed basis.

The approach to the assumptions and the initial results will then be discussed with the Fund and a set of proposed assumptions will be agreed.

Risks

There are many factors that affect the Fund's funding position and could lead to the Fund's funding objectives not being met within the timescales expected. Some of the key risks that could have a material impact on the Fund can be found in Appendix 4.

Employer covenant review

The Fund has previously undertaken an objective assessment of the participating employers' financial positions and their ability to meet the required contribution rates (the "employer covenant"). This may be updated and the results used to influence the recovery period used for the participating employers.

Funding Strategy Statement

Once agreed, the assumptions used for the valuation must be documented in a revised Funding Strategy Statement to be agreed between the Fund Actuary and the administering authority. We will help the Fund to prepare the Funding Strategy Statement following discussion of the initial results between the Fund and the employers and using the latest guidance issued by CIPFA.

Rates and Adjustments Certificate

Employers each pay their own primary contribution rate to Fund to cover the cost of benefit accrual. Where an employer has a shortfall between the value of assets and assumed cost of providing the accrued benefits (a deficit), the administering authority will set a recovery plan, in consultation with the employer, to address this shortfall through a secondary contribution. Employers in surplus may also have a secondary rate adjustment.

The contributions payable in respect of benefit accrual and any deficit contributions under the recovery plan must be set out in a Rates and Adjustments Certificate issued in accordance with Regulation 62 of the Regulations. In this certificate no allowance will be made for additional costs arising which need to be met by additional contributions by the employer such as non-ill health early retirements.

Before it becomes effective, we must certify that the Rates and Adjustments Certificate is sufficient to ensure that the funding target is met and a funding level of 100% of liabilities in maintained by the end of the recovery period. For this purpose, the certificate should be based on the position at the valuation date.

Once the final assumptions are agreed we propose to use our online employer rate modeler, *Illuminate ME* to provide illustrations of alternative recovery scenarios to help the administering authority agree appropriate recovery plans with the participating employers.

Final valuation report and certificate of contributions

Following agreement of the final assumptions and the contributions to be paid, we will prepare a formal report on the valuation which will include a certificate setting out the contribution rates for all employers in the Fund for the period from 1 April 2020 to 31 March 2023. The report will be completed by 31 March 2020 and must be made available to members on request.

Barry McKay FFA
Partner
Barnett Waddingham LLP

Appendix 1 Summary of membership data and benefits

Membership data

The membership data has been provided to us by the administering authority on behalf of the Fund's administrators. We have relied on information supplied by the administering authority being accurate. A summary of the membership data is included below and data from the previous valuation is also shown for comparison.

The membership data has been checked for reasonableness and we have compared the membership data with information in the Fund's accounts. Any missing or inconsistent data has been estimated where necessary. Whilst this should not be seen as a full audit of the data, we are happy that the data is sufficiently accurate for the purposes of the valuation.

Membership summary

A summary of the membership data used in the valuation is as follows. The membership data from the previous valuation is also shown for comparison. The 2019 average ages are weighted by liability calculated on the proposed funding basis, while the 2016 average ages are unweighted.

Active members

	31 March 2019			31 March 2016		
	Number	Pensionable pay £000s	Average age	Number	Pensionable pay £000s	Average age
Males	1,206	41,695	55	1,351	40,889	48
Females	2,424	57,423	54	2,597	52,762	47
Total	3,630	99,118	55	3,948	93,650	47

Deferred members (including undecided)

	31 March 2019			31 March 2016		
	Number	Current Pension £000s	Average age	Number	Current Pension £000s	Average age
Males	2,589	7,928	54	2,491	7,403	49
Females	5,184	10,392	53	4,484	8,982	48
Total	7,773	18,320	53	6,975	16,384	48

Pensioner and dependant members

	31 March 2019			31 March 2016		
	Number	Current Pension £000s	Average age	Number	Current Pension £000s	Average age
Males	2,094	18,072	68	2,164	16,884	70
Females	2,901	16,000	68	2,367	12,680	71
Total	4,995	34,071	68	4,531	29,563	71

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Benefits

Full details of the benefits being valued are as set out in the Regulations as amended and summarised on the LGPS website and the Fund's membership booklet. We have made no allowance for discretionary benefits.

Allowance for GMP equalisation

On 26 October 2018 the judgement was published for the Lloyd's Banking Group Pensions Trustees Ltd vs Lloyds Bank Plc & Ors on how their Guaranteed Minimum Pensions (GMPs) should be equalised. However, HMT have confirmed that the GMP judgement "does not impact on the current method used to achieve equalisation and indexation in public service pension schemes", which is set out here:

https://www.gov.uk/government/consultations/indexation-and-equalisation-of-gmp-in-public-service-pension-schemes/consultation-on-indexation-and-equalisation-of-gmp-in-public-service-pension-schemes

On 22 January 2018, the Government published the outcome to its Indexation and equalisation of GMP in public service pension schemes consultation, concluding that the requirement for public service pension schemes to fully price protect the GMP element of individuals' public service pension would be extended to those individuals reaching SPA before 6 April 2021. HMT published a Ministerial Direction on 4 December 2018 to implement this outcome, with effect from 6 April 2016.

The assumption made at the 2016 valuation was that funds pay limited increases for members that have reached SPA by 6 April 2016, with the Government providing the remainder of the inflationary increase and that funds will be required to pay the full indexation on GMPs for those attaining State Pension Age after 6 April 2016. This effectively assumes that the Government extends their current policy indefinitely and we believe this is a sensible approach to making an interim allowance for GMP equalisation.

Therefore we are not anticipating any change in our approach to valuing GMP in the 2019 valuation unless there is further guidance released for public service schemes.

Appendix 2 Summary of assumptions

In this Appendix we have summarised the assumptions at 31 March 2019 that we propose to use for the 2019 valuation. The assumptions used in the previous valuation are also given below for comparison

Assumptions	Proposed assumption for 2019 valuation	Assumptions used for the 2016 valuation
Financial assumptions		
Market date	31 March 2019	31 March 2016
CPI inflation	2.6% p.a.	2.4% p.a.
Salary increases		
Short-term	n/a	CPI to 31 March 2020
Long-term	3.6% p.a.	3.9% p.a.
Discount rate	5.0% p.a.	5.4% p.a.
Pension increases on GMP	Funds will pay limited increases for members that have reached SPA by 6 April 2016, with the Government providing the remainder of the inflationary increases. For members that reach SPA after this date , we have assumed that Funds are required to pay the entire inflationary increases	

Assumptions	Proposed assumption for 2019 valuation	Assumptions used for the 2016 valuation
Demographic assumptions		
Post-retirement mortality	Male / Female	Male / Female
Member base tables	S3PA	S2PA
Member mortality multiplier	110% / 105%	120% / 85%
Dependant base tables	S3DMA / S3DFA	S2PA
Dependant mortality multiplier	70% / 85%	120% / 85%
Projection model	CMI 2018	CMI 2015
Long-term rate of improvement	1.25% p.a.	1.5% p.a.
Smoothing parameter	7.5	n/a
Initial addition to improvements	0.5% p.a.	n/a
Retirement assumption	Weighted average of each tranche retirement age	
Pre-retirement decrements	GAD 2019 scheme valuation with no salary scale, 50% IH decrement	GAD 2013 scheme valuation
50:50 assumption	Member data	Member data
Commutation	50% of maximum	50% of maximum
% members with qualifying dependant	75% / 70%	75% / 70%
Age difference	Husbands are 3 years older	Husbands are 3 years older

Appendix 3 Results on other bases

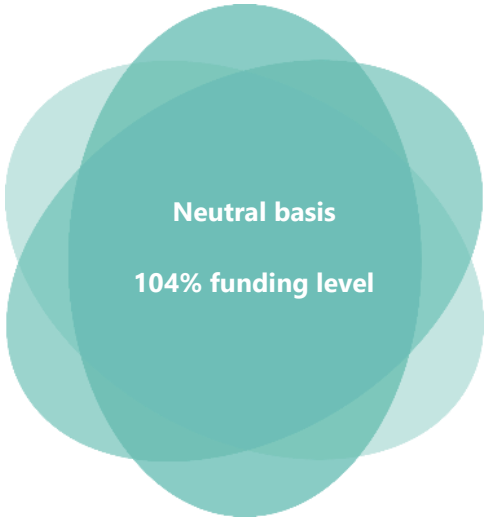
Neutral basis

The neutral basis is set with the main purpose of providing the administering authority an idea of the level of prudence contained within the funding basis. The neutral estimate should represent our best estimate of the funding position, in other words, we believe that it is equally likely that the fund will beat or miss the funding target based on the neutral assumptions derived. The neutral estimate does not contain any margins for prudence.

The funding basis includes an allowance for prudence in the discount rate assumption only. The discount rate on the neutral basis is therefore 5.9% p.a. as set out above. All other assumptions are the consistent with the proposed funding basis.

The results on the neutral basis as at 31 March 2019 are set out in the table below.

Past service funding position	Neutral basis 31 March 2019 £000s
Smoothed asset value	1,043,467
Past service liabilities	
Actives	247,749
Deferred pensioners	268,762
Pensioners	485,160
Total Liabilities	1,001,671
Surplus (Deficit)	**41,796**
Funding level	**104%**



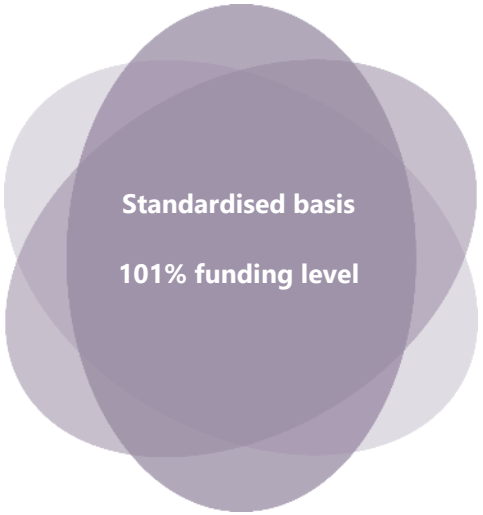
Standardised basis

As part of our calculations we have considered the results a standardised basis as set by the Scheme Advisory Board (SAB). We are required to provide the Scheme Advisory Board with the results for the Fund for comparison purposes.

The standardised basis is set by GAD with some of the assumptions used being set locally (such as mortality) and some are set at Scheme level (including all the financial assumptions).

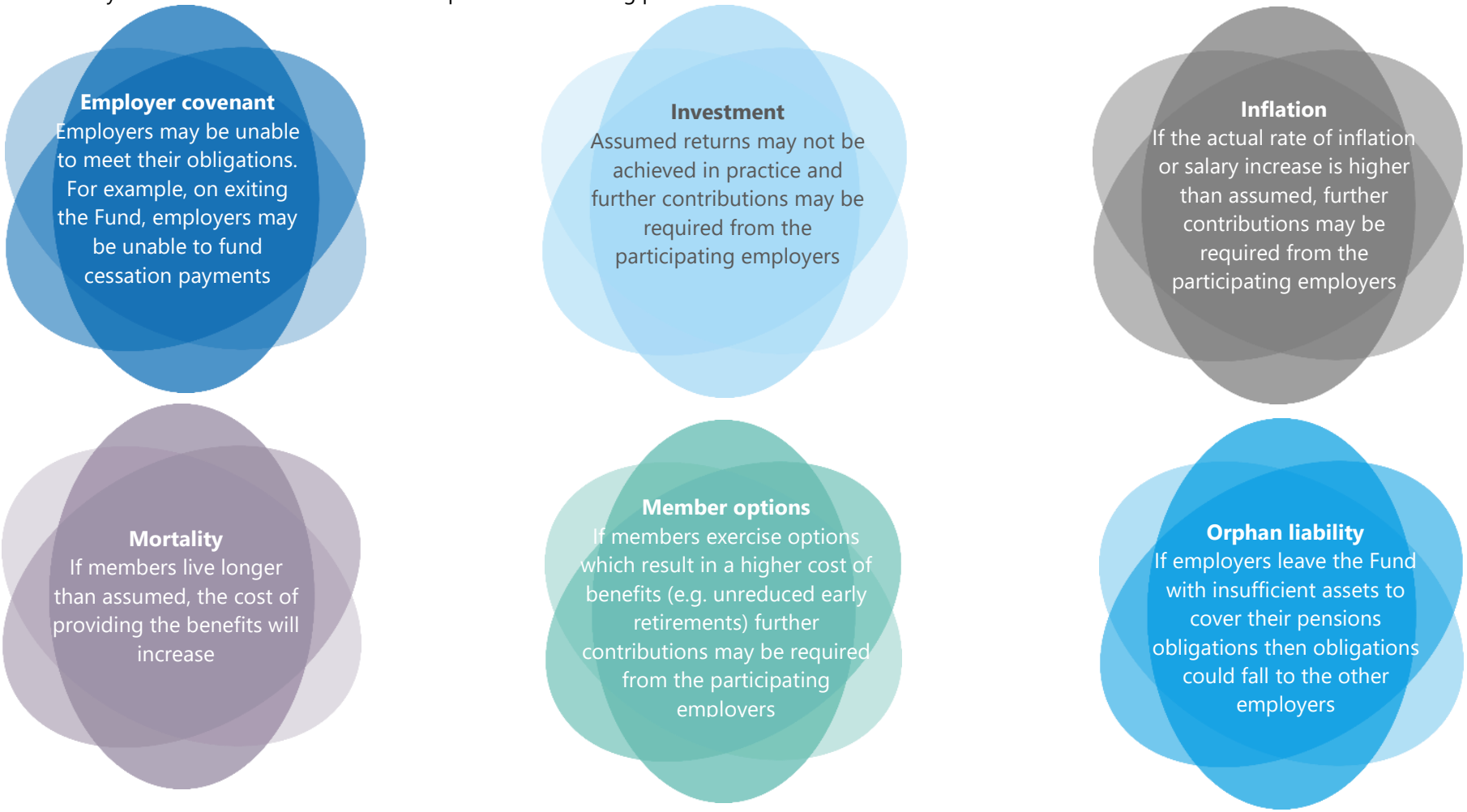
The results on the standardised basis as at 31 March 2019 are set out in the table below.

Past service funding position	Standardised basis 31 March 2019 £000s
Smoothed asset value	1,043,467
Past service liabilities	
Actives	265,518
Deferred pensioners	272,786
Pensioners	499,918
Total Liabilities	1,038,222
Surplus (Deficit)	**5,245**
Funding level	**101%**



Appendix 4 Risks

Some of the key risks that could have a material impact on the funding position of the Fund are described below.



Further details on the key risks are set out below.

Employer covenant risk

In agreeing the Recovery Plan with each participating employer it is important that the administering authority considers the ability of the employer to make contributions to the Fund both now and in the future as well as their ability to meet any future cessation deficits as they fall due.

The administering authority should form an objective assessment of the strength of the employer covenant when deciding at what level to set the recovery period for each participating employer. The administering authority should also monitor the strength of the employer covenant over time, so that any sudden changes in the employer's position can be mitigated.

Investment risk

Allowance is made in the assumptions for the expected long-term performance of each asset class. There is a risk that these returns will not be achieved in practice, which would result in further contributions being required. Further, the value of the Fund's assets may not move in line with the Fund's liabilities – either because the Fund invests in volatile assets such as equities whose value might fall, or because the value of the liabilities has increased due to falling interest rates and the assets are not of sufficient duration to keep up (or a combination of these).

The administering authority should regularly review their investment strategy to ensure they understand the risks being taken and that those risks are being managed appropriately.

Inflation

In projecting the future benefit payments, assumptions are made regarding the future price inflation and future salary increases. There is a risk that the actual rate of inflation or salary increase will be higher than assumed which will increase the cost of providing the benefits. This would result in additional contributions being required and a deterioration in the funding position unless investment returns are similarly higher than expected.

Mortality

It is not possible to predict with any certainty how long members of the Fund will live, and if members live longer than expected, additional contributions will be required and the Fund's funding position will deteriorate.

Member options

There are also other demographic risks. Certain benefit options may be exercised by members without requiring the consent of the administering authority or the Employer, for example commutation of pension for cash at retirement or taking a transfer value. The value of the cash benefit is generally expected to be less than the value of the pension exchanged so the funding position would only deteriorate if fewer members than expected took this option. Individual transfer values can be higher or lower than the value of the valuation liabilities, depending on the particular member and market conditions.

Orphan liability

As many unrelated employers participate in the Fund there is an orphan liability risk where employers leave the Fund with insufficient assets to cover their pensions obligations so that the difference may fall on the remaining employers.

Section 13

Under Section 13 of the Public Service Pensions Act 2013, the Ministry of Housing, Communities and Local Government (MHCLG) is required to commission a report on the actuarial valuations of the LGPS funds, and this report is currently prepared by the Government Actuary's Department (GAD). The purpose of the "Section 13" report to is report on whether the following aims are achieved: compliance, consistency, solvency and long-term cost efficiency, and to identify any funds that cause concerns.

The report covering the 2016 round of valuations was published in September 2018 and made a number of recommendations. One of those recommendations stated that "the Scheme Advisory Board should consider what steps should be taken to achieve greater clarity and consistency in actuarial assumptions, except where differences are justified by material local variations, with a view to making a recommendation to the MHCLG Minister in advance of the next valuation". If this recommendation is taken forward, this would clearly have a material impact on the ability of fund actuaries and administering authorities to set assumptions that they believe to be appropriate for their own fund.

There are good reasons why assumptions vary across funds. In particular, different investment strategies lead to different expected future returns, a fund's geographical region and membership profile has a significant impact on longevity assumptions and the fund's attitude to risk is factored into the discount rate through a transparent and bespoke level of prudence. Changes in assumptions will also only be made if considered appropriate in light of experience and other factors emerging since the previous valuation. We do not have a house view on assumptions. However, the external push towards consistency is another factor that we may need to consider in setting appropriate assumptions for the Fund and we will discuss consistency at various points in this document.

One "consistent" set of assumptions may be the set of assumptions that we are required to provide 2019 valuation results on to the LGPS Scheme Advisory Board (SAB) in order to aid comparison between funds. The assumptions used are a mixture of standardised and local demographic assumptions. We do not believe that these assumptions as a whole are appropriate for the funding of the Fund but they are a useful reference point.

Current regulatory uncertainties

There are currently a few important regulatory uncertainties surrounding the 2019 valuation which we have set out below. At this stage we have made no allowance for any of these issues in the proposed assumptions advice as we are awaiting further guidance. However, we are keen to engage with the administering authority at an early stage to consider the approach to each of these issues as we go through the 2019 valuation process.

McCloud/Sargeant judgement and cost cap

The 2016 national Scheme valuation was used to determine the results of HM Treasury's (HMT) employer cost cap mechanism for the first time. The HMT cost cap mechanism was brought in after Lord Hutton's review of public service pensions with the aim of providing protection to taxpayers and employees against unexpected changes (expected to be increases) in pension costs. The cost control mechanism only considers "member costs". These are the costs relating to changes in assumptions made to carry out valuations relating to the profile of the Scheme members; e.g. costs relating to how long members are expected to live for and draw their pension. Therefore, assumptions such as future expected levels of investment returns and levels of inflation are not included in the calculation, so have no impact on the cost management outcome.

The 2016 HMT cost cap valuation revealed a fall in these costs and therefore a requirement to enhance Scheme benefits from 1 April 2019. However, as a funded Scheme, the LGPS also had a cost cap mechanism controlled by the SAB

in place and HMT allowed SAB put together a package of proposed benefit changes in order for the LGPS to no longer breach the HMT cost cap. These benefit changes were due to be consulted on with all stakeholders earlier this year and implemented from 1 April 2019.

However, on 20 December 2018 there was a judgement made by the Court of Appeal which resulted in the Government announcing their decision to pause the cost cap process across all public service schemes. This was in relation to two employment tribunal cases which were brought against the Government in relation to possible discrimination in the implementation of transitional protection following the introduction of the reformed 2015 public service pension schemes from 1 April 2015. Transitional protection enabled some members to remain in their pre-2015 schemes after 1 April 2015 until retirement or the end of a pre-determined tapered protection period. The claimants challenged the transitional protection arrangements on the grounds of direct age discrimination, equal pay and indirect gender and race discrimination.

The first case (McCloud) relating to the Judicial Pension Scheme was ruled in favour of the claimants, while the second case (Sargeant) in relation to the Fire scheme was ruled against the claimants. Both rulings were appealed and as the two cases were closely linked, the Court of Appeal decided to combine the two cases. In December 2018, the Court of Appeal ruled that the transitional protection offered to some members as part of the reforms amounts to unlawful discrimination. On 27 June 2019 the Supreme Court denied the Government's request for an appeal in the case. We still have to wait for a remedy to be either imposed by the Employment Tribunal or negotiated and applied to all public service schemes, so it is not yet clear how this judgement may affect LGPS members' past or future service benefits. It has, however, been noted by Government in its 15 July 2019 statement that it expects to have to amend all public service schemes, including the LGPS.

It is still unclear what this means for the LGPS. On 14 February 2019 the SAB released a series of Q&As and a question for administering authorities to consider how they should approach the 2019 valuation. There was an overwhelming majority of funds who wanted SAB to provide guidance in order to promote a consistent approach between the funds. This guidance should assist funds deciding with their actuary how to approach these potential benefit changes in the 2019 valuation and we would be happy to discuss this further once this guidance has been issued. This could potentially include backdating benefit changes to 1 April 2019.

On 14 May 2019, the SAB published an advice note covering the implications of McCloud and the cost cap in relation to the 2019 fund valuations. The note recommended that should there be no finalised outcome by 31 August 2019 then no changes should be made to the Scheme benefit design for valuation purposes, however each administering authority should consider how they approach the additional risks that these potential extra costs may pose. This would involve making employers aware of the potential for extra costs to arise, for example via the Fund's FSS. Once the outcome is known, it may be possible to revisit contributions through an interim valuation, subject to the outcome of the consultation regarding changes to the local valuation cycle.

GAD have carried out some calculations to estimate the impact that the McCloud judgement could have on local authority accounts as at 31 March 2019, which should provide assistance to administering authorities. However we would be happy to carry out some Fund specific calculations if that would be helpful.

Timing of future actuarial valuations

LGPS valuations currently take place on a triennial basis which results in employer contributions being reviewed every three years. In September 2018 it was announced by the Chief Secretary to HMT, Elizabeth Truss, that the national Scheme valuation would take place on a quadrennial basis (i.e. every four years) along with the other public sector pension schemes. This results of the national

Scheme valuation are used to test the cost control cap mechanism and HMT believed that all public sector scheme should have the cost cap test happen at the same time with the next quadrennial valuation in 2020 and then 2024.

Although this has no immediate effect on the local fund triennial valuation process as the 2019 valuation is going ahead as planned, MHCLG are considering the implications of also moving the local fund valuations to a quadrennial basis. We are currently awaiting the outcome of the consultation on this which closed on 31 July 2019 but at the moment we are unsure how many years of contributions we will need to certify as part of the 2019 valuation, as the next valuation could be delayed until 2024. As part of the consultation we were pleased to see a proposal enabling interim valuations as well as a requirement for funds to reassess funding positions and contribution rates prior to 2024 as we have concerns about the five year gap between valuations which have already been raised with MHCLG.

Other regulatory uncertainties

There are a number of other risks to the Fund and the LGPS in general, including:

- If the LGPS was to be discontinued in its current form it is not known what would happen to members' benefits.
- The potential effects of GMP equalisation between males and females, if implemented, are not yet known.
- More generally, as a statutory scheme the benefits provided by the LGPS or the structure of the scheme could be changed by the Government. This is particularly poignant following the implementation of investment pooling.
- The State Pension Age is due to be reviewed by the Government in the next few years.