

HYMANS  ROBERTSON

London Borough of Lewisham Pension Fund

Actuarial valuation as at 31 March 2019

March 2020

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1 Introduction

Background to the actuarial valuation

We have been commissioned by the London Borough of Lewisham (“the Administering Authority”) to carry out an actuarial valuation of the London Borough of Lewisham Pension Fund. (“the Fund”) as at 31 March 2019 as required under Regulation 62 of the Local Government Pension Scheme Regulations 2013 (“the Regulations”).

The actuarial valuation is a risk management exercise with the purpose of reviewing the current funding plans and setting contribution rates for the Fund’s participating employers for the period from 1 April 2020 to 31 March 2023. This report summarises the outcomes of the valuation and the underlying advice provided to the Administering Authority throughout the valuation process.

This summary report is the culmination of other communications in relation to the valuation, in particular:

- Our [2019 valuation toolkit](#) which sets out the methodology used when reviewing funding plans;
- Our papers of 11 July 2019 and 4 July 2019 which outlined our advice on the assumptions to be adopted when setting employer funding plans;
- Our Initial Results Report dated 27 September 2019 which outlines the whole fund results and inter-valuation experience; and
- The Funding Strategy Statement which details the approach taken to adequately fund the current and future benefits due to members.

¹ Technical Actuarial Standards (TASs) are issued by the Financial Reporting Council (FRC) and set standards for certain items of actuarial work.

Reliances and Limitations

This report has been prepared for the sole use of the London Borough of Lewisham in its role as Administering Authority of the Fund to provide an actuarial valuation of the Fund as required under the Regulations. It has not been prepared for any other third party or for any other purpose. We make no representation or warranties to any third party as to the accuracy or completeness of this report, no reliance should be placed on this report by any third party and we accept no responsibility or liability to any third party in respect of it.

Hymans Robertson LLP is the owner of all intellectual property rights in this report. All such rights are reserved.

The totality of our advice complies with the Regulations as they relate to actuarial valuations.

The following Technical Actuarial Standards¹ are applicable in relation to this report and have been compiled with in a proportionate manner:

- TAS 100 – Principles for technical actuarial work; and
- TAS 300 – Pensions.

Use of this report by other parties

This report is addressed to the Administering Authority of the Fund only. We appreciate that other parties may also seek information about the 2019 valuation process and methodology. We would encourage such parties to refer to the following publicly available documents for further information:

- The Fund's Funding Strategy Statement;
- The Fund's Investment Strategy Statement; and
- Published papers and minutes for the quarterly Pensions Investment Committee (PIC) meetings.

Considering these papers alongside this valuation report will provide a more complete view of the Fund's funding strategy and the decision-making process surrounding this. These documents are available on the Fund's website (<https://lewishampensions.org/>) or on request.

2 Valuation approach

Employer contribution rates

The purpose of the valuation is to review the current funding strategy and ensure the Fund has a contribution plan and investment strategy in place that will enable it to pay members' benefits as they fall due.

Valuations for open defined benefit multi-employer pension funds such as the London Borough of Lewisham Pension Fund are complex. Firstly, the time horizons are very long; benefits earned in the LGPS today will be paid out over a period of the next 80 years or more, and new members will continue to join in the future. Secondly, as they depend on unknowns such as future inflation and life expectancy, the actual value of future benefit payments is uncertain. Finally, to keep contributions affordable, the Fund invests in return seeking assets which have higher levels of future volatility.

Given the above and that the future cannot be predicted with certainty, employer contribution rates can only ever be an estimate. However, the valuation approach adopted uses an understanding of the Fund, and the uncertainties and risks discussed above, to quantify the likelihood of the contribution plan and investment strategy for each employer being sufficient to fund future benefit payments.

This is achieved in practice by following the process outlined below.

Step 1: The Fund sets a funding target (or funding basis) for each employer which defines the estimated amount of assets to be held to meet the future benefit payments.

Step 2: The Fund sets the funding time horizon over which the funding target is to be achieved.

Step 3: The Fund sets contributions that give a sufficiently high likelihood of meeting the funding target over the set time horizon.

These three steps are central to the "risk-based" approach to funding which is described in Guide 5 of our [2019 valuation toolkit](#).

The risk-based approach uses an Asset Liability Model (described in Guide 6 of the [2019 valuation toolkit](#)) to project each employer's future benefit payments, contributions and investment returns into the future under 5,000 possible economic scenarios. Future inflation (and therefore benefit payments) and investment returns for each asset class (and therefore asset values) are variables in the projections. Further details of these variables are provided in Appendix 2. The investment strategy underlying the projection of employer asset values is provided in Appendix 1.

By projecting the evolution of an employer's assets and benefit payments 5,000 times, a contribution rate can be set that results in a sufficient number of the future projections being successful (i.e. meeting the funding target by the end of the employer's funding time horizon).

The risk-based approach to setting employer contributions allows the Fund and its employers to understand and quantify the level of risk inherent in funding plans, something that is not possible using a single set of assumptions alone.

Further detail on the approach to calculating contributions for individual employers, including the parameters used in the three steps for each type of employer, is set out in the Fund's Funding Strategy Statement.

Funding position as at 31 March 2019

The valuation also offers an opportunity to measure the Fund's funding position as at 31 March 2019. Whilst this measurement has limited insight into

understanding the long term ability of the Fund to be able to pay members' benefits, it is a useful summary statistic.

For the purposes of this valuation we have adopted a "mark to market" approach, meaning that the Fund's assets have been taken into account at their market value and the liabilities have been valued by reference to a single set of assumptions based on market indicators at the valuation date. These assumptions are detailed in Appendix 2. As we have taken a market-related approach to the valuation of both the assets and the liabilities, we believe that they have been valued on a consistent basis.

Significant events

The figures in this report are based on our understanding of the benefit structure of the LGPS in England and Wales as at 31 March 2019. Details can be found at <http://www.lgpsregs.org/>.

McCloud ruling

The LGPS benefit structure is currently under review following the Government's loss of the right to appeal the McCloud and other similar court cases. At the time of writing, the format and scope of any benefit changes in light of the McCloud ruling is still unknown. In line with the [advice issued by the Scheme Advisory Board in May 2019](#), the following allowance has been made at the valuation for the McCloud ruling:

- Employer contribution rates: additional prudence has been incorporated into funding plans for scheduled bodies via an increase in the required likelihood of success (step 3) when setting contribution rates; and
- Employer funding targets: additional prudence has been reserved within employer funding targets to reflect the uncertainty presented by McCloud.

Further details of the approach taken are set out in Section 2.7 of the Funding Strategy Statement.

Indexation and equalisation of Guaranteed Minimum Pensions (GMP)

As a result of the Government's introduction of a single-tier state pension (STP) there is currently uncertainty around how who funds certain elements of increases on GMPs for members reaching State Pension Age after 6 April 2016.

As part of the introduction of STP, the Government confirmed that public service pension schemes, including the LGPS, will be responsible for funding all increases on GMP as an 'interim solution'. In their [January 2018 consultation response](#), HM Treasury confirmed that the 'interim solution' will continue to remain in place up to 5 April 2021. Thereafter the Government's preferred approach is to convert GMP to scheme pension.

For the 2019 valuation, given the Government's preference for conversion to scheme benefits, we have assumed that all increases on GMPs for members reaching State Pension Age after 6 April 2016 will be paid for by LGPS employers. This has served to increase the value placed on the liabilities.

The Government have also stated that their preferred long term indexation solution of converting GMP to scheme pension will also meet the requirements of equalisation.

3 Valuation results

Employer contribution rates

The key objective of the Fund is to set employer contributions that are likely to be sufficient to meet both the cost of new benefits accruing and to address any funding surplus or deficit relative to the funding target over the agreed time horizon. A secondary objective is to maintain relatively stable employer contribution rates.

In order to meet the above objectives, the methodology set out in Section 2 has been used to set employer contributions from 1 April 2020.

Employer contributions are made up of two elements:

- a) the estimated cost of future benefits being built up each year, after deducting members' own contributions and including an allowance for the Fund's administration expenses. This is referred to as the "primary rate", and is expressed as a percentage of members' pensionable pay; plus
- b) an adjustment for the difference between the primary rate above, and the total contribution the employer needs to pay, referred to as the "secondary rate". In broad terms, the secondary rate is in respect of benefits already accrued at the valuation date. The secondary rate may be expressed as a percentage of pay and/or a monetary amount in each year.

The primary rate and secondary rate for every contributing employer in the Fund is set out in the Rates and Adjustments Certificate in Appendix 3.

Each employer has been certified primary and secondary contributions that are appropriate for that employer's circumstances and which reflects that employer's experience. However, broadly speaking:

- Primary contribution rates have been subject to some upwards pressure as a result of a weaker outlook for future investment returns and the additional prudence built into funding plans to allow for the McCloud ruling; and
- Secondary contributions have decreased as employer assets have increased since 31 March 2016, reducing any extra contributions required in respect of benefits accrued to the valuation date. The impact of this on secondary contributions has been partially offset by the additional prudence built into funding plans to allow for the McCloud ruling.

The table below summarises the whole fund primary and secondary contribution rates at this valuation. The primary rate is the payroll weighted average of the underlying individual employer primary rates and the secondary rate is the total of the underlying individual employer secondary rates, calculated in accordance with the Regulations and CIPFA guidance. The whole fund primary and secondary contributions calculated at the 2016 valuation of the Fund are shown for comparison.

| | Last Valuation 31 March 2016 | | | This Valuation 31 March 2019 | | |
|-------------------------|---------------------------------|-----------|---------|---------------------------------|--|--|
| Primary Rate (% of pay) | 15.8% | | | 17.2% | | |
| Secondary Rate (£) | 2017/18 | 9,447,000 | 2020/21 | 7,741,000 | | |
| | 2018/19 | 9,550,000 | 2021/22 | 7,756,000 | | |
| | 2019/20 | 9,545,000 | 2022/23 | 7,792,000 | | |

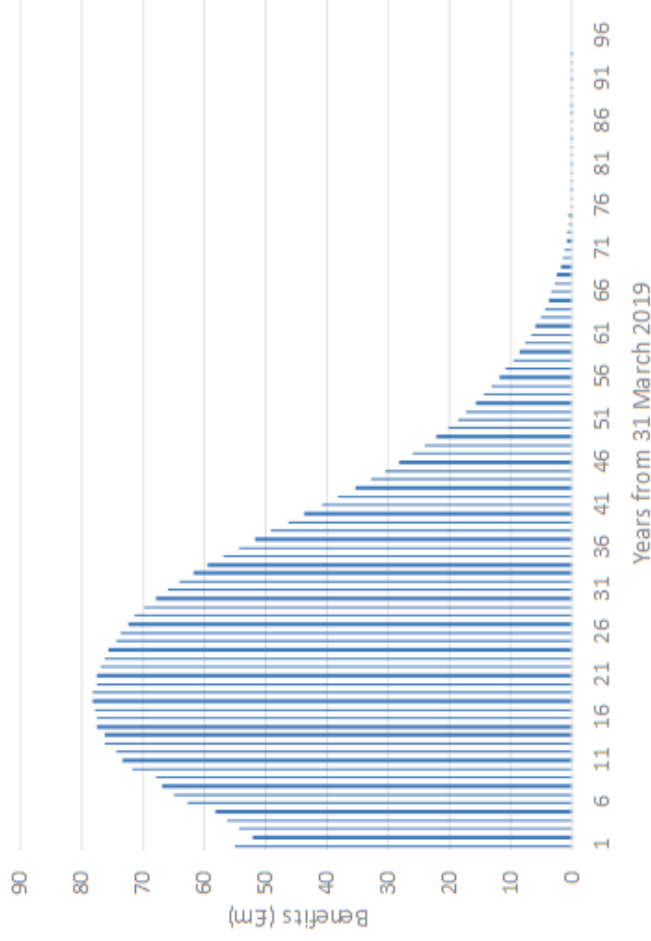
The Primary rate includes an allowance of 0.7% of pensionable pay for the Fund's expenses (0.6% at the 2016 valuation).

The average employee contribution rate is 6.7% of pensionable pay (6.6% at the 2016 valuation).

Funding position as at 31 March 2019

The funding position is a summary statistic often quoted to give an indication of the health of the fund. It is limited as it provides only a snapshot in time and is based on a single set of assumptions about the future. To measure the funding position at 31 March 2019, we compare the value of the Fund's assets on that date against the expected cost (including an allowance for future investment returns) of all the future benefit payments accrued up to the valuation date (the liabilities).

The chart below details the projected future benefit payments based on the membership data summarised in Appendix 1 and the demographic, salary and benefit increases assumptions summarised in appendix 2.



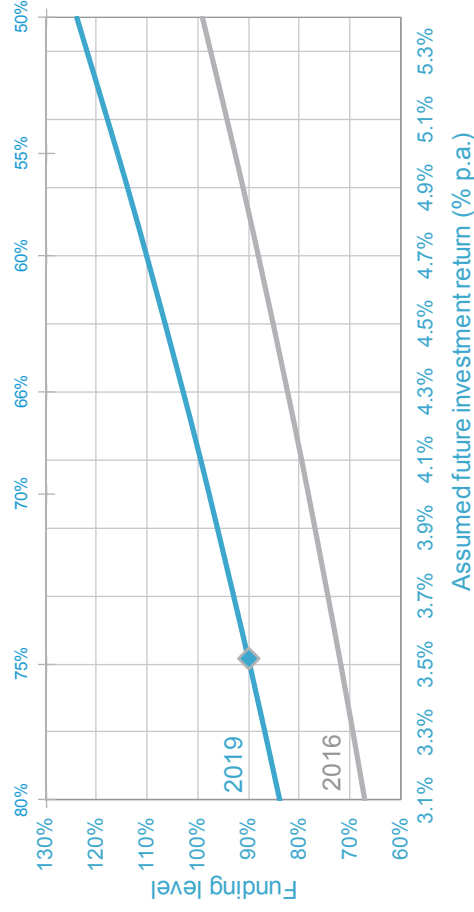
Using an assumption about the future investment return generated from the Fund's assets then allows a value to be placed on these payments in today's money; the liabilities. The higher the assumed investment return, the lower the liability value and therefore the higher the funding level.

The value placed on the liabilities is extremely sensitive to the investment return assumption. Based on the Fund's current benchmark investment strategy (detailed in Appendix 1) and the same model used in the contribution rate calculations, it is estimated that:

- There is a 50% likelihood of the Fund's investments achieving at least an annual return of 5.4% p.a. over the next 20 years;
- There is a 70% likelihood of the Fund's investments achieving at least an annual return of 4.0% p.a. over the next 20 years; and
- There is an 80% likelihood of the Fund's investments achieving at least an annual return of 3.1% p.a. over the next 20 years.

The following chart shows how the funding level varies with the future investment return assumption (blue line). For comparison, the funding level associated with the same choice of investment return assumption at the 2016 valuation is also shown (grey line).

Likelihood of achieving the assumed future investment return over 20 years (from the 2019 valuation date)



Reported funding position

The valuation outputs are more meaningful when stakeholders can understand the likelihood, and hence the level of prudence, attached to them. The above chart does this for the measurement of the funding position.

However, there is still a requirement to report a single funding position at 31 March 2019. This reported position must include a margin of prudence.

For the purpose of reporting a funding level and an associated funding surplus/deficit for the 2019 valuation, an assumed investment return of 3.5% p.a. has been used. It is estimated that the Fund's assets have a 75% likelihood of achieving this return and is represented as the blue dot in the above chart.

The resulting funding position is as follows:

| Valuation Date | 31 March 2016 | 31 March 2019 |
|--|---------------------|--------------------|
| Past Service Liabilities | Employees | (£m) 419.7 |
| | Deferred Pensioners | 414.6 |
| | Pensioners | 706.5 |
| Total Liabilities | 1,328.3 | 1,540.8 |
| Assets | 1,041.4 | 1,386.7 |
| Surplus / (Deficit) Funding Level | (286.9) 78% | (154.1) 90% |

There has been an improvement in the reported funding level since 31 March 2016 from 78% to 90% and an improvement in the funding deficit from £287m to £154m.

A breakdown of the key factors that have influenced the reported funding position from 31 March 2016 to 31 March 2019 are detailed overleaf.

From this chart, we can see that:

- Regardless of the investment return assumption used, there has been a genuine improvement in the funding position at 31 March 2019 compared to the last valuation, reflecting an increase in the assets held today per pound of benefit to be paid out in future;
- The funding position would be 100% if future investment returns were around 4.1% p.a. (at 2016, the investment return would have needed to be 5.4% p.a.). The likelihood of the Fund's assets yielding at least this return is around 68%; and
- If future investment returns were 5.4% p.a. then the Fund currently holds sufficient assets to meet 124% of the accrued liabilities. The likelihood of the Fund's assets yielding at least this return is 50%. 124% can therefore be considered the "best estimate" funding position.

| Change in the surplus/deficit position | Assets (£m) | Liabilities (£m) | Surplus / (Deficit) (£m) |
|---|--------------|------------------|--------------------------|
| Last valuation at 31 March 2016 | 1,041 | 1,328 | (287) |
| Cashflows | | | |
| Employer contributions paid in | 96 | | 96 |
| Employee contributions paid in | 28 | | 28 |
| Benefits paid out | (149) | (149) | 0 |
| Other cashflows (e.g. Fund expenses) | (4) | | (4) |
| Expected changes in membership | | | |
| Interest on benefits already accrued | | 165 | (165) |
| Accrual of new benefits | | 120 | (120) |
| Membership experience vs expectations | | | |
| Salary increases less than expected | | (11) | 11 |
| Benefit increases less than expected | | 0 | 0 |
| Early retirement strain (and contributions) | 2 | 2 | 0 |
| Ill health retirement gain | | (4) | 4 |
| Early leavers greater than expected | | (2) | 2 |
| Pensions ceasing greater than expected | | (5) | 5 |
| Commutation greater than expected | | (2) | 2 |
| Impact of GMP equalisation | | 4 | (4) |
| Other membership experience | | (23) | 23 |
| Changes in market conditions | | | |
| Investment returns on the Fund's assets | 373 | | 373 |
| Changes in future inflation expectations | | 38 | (38) |
| Changes in actuarial assumptions | | | |
| Change in demographic assumptions (excl. longevity) | | (3) | 3 |
| Change in longevity assumptions | | (40) | 40 |
| Change in salary increase assumption | | 0 | 0 |
| Change in assumed rate of investment returns | | 123 | (123) |
| This valuation at 31 March 2019 | 1,387 | 1,541 | (154) |

Since the previous valuation, various events have taken place which affect the value placed on the liabilities, including:

- Members have accrued £120m of new benefits while £149m in benefits have been paid by the Fund;
- There is an interest cost of £165m. This is broadly three years of compound interest at 4.0% p.a. applied to the previous valuation liability value of £1,328m. The benefits that have been accrued to the valuation date are three years closer to payment at 31 March 2019 than they were at 31 March 2016, meaning there is less opportunity for future investment returns to help meet this cost. This serves to increase the value placed on the liabilities;

- The areas of membership experience that have had the greatest impact on the surplus/deficit position of the Fund are set out below, together with their impact on the liabilities include:

| | Expected | Actual | Difference | Impact on Liabilities |
|--------------------------------------|----------|--------|------------|-----------------------|
| Pre-retirement experience | | | | |
| Early leavers (no of lives) | 1,816 | 2,570 | 754 | Positive |
| Ill health retirements (no of lives) | 59 | 51 | (8) | Positive |
| Salary increases (p.a.) | 3.4% | 2.1% | (1.4%) | Positive |
| Post-retirement experience | | | | |
| Benefit increases (p.a.) | 2.1% | 2.1% | (0.0%) | Broadly neutral |
| Pensions ceasing (£m) | 3,074 | 3,736 | 663 | Positive |

However, the overall impact of membership experience has been small versus other experience items.

- The assumed rate of future CPI inflation has increased from 2.1% p.a. at 31 March 2016 to 2.3% p.a. at 31 March 2019. This has increased the value of the liabilities by £38m;

- The changes to the longevity assumptions used for the valuation have resulted in a modest reduction in life expectancies. This has served to reduce the liabilities by £40m; and
- The assumed rate of future investment returns has decreased from 4.0% p.a. to 3.5% p.a.. This has increased the value of the liabilities by £123m.

There has been a large increase in the value of the Fund's assets since the previous valuation. The various events affecting the value of the Fund's assets include:

- The Fund received £124m in contributions from members and employers while paying out £149m in benefits; and
- The investment return on the Fund's assets for the period 31 March 2016 to 31 March 2019 was 36.0%. This has increased the value of the assets by £373m.

Projection of the funding position

The progression of the funding position will depend on various factors including future asset performance, economic conditions and membership movements. If the financial and demographic assumptions made at this valuation are borne out in practice, and there are no changes to the valuation assumptions, we project that the funding level at the 2022 valuation date will be approximately unchanged from that at 31 March 2019. This allows for contributions to be paid as described in Appendix 3.

4 Sensitivity analysis

The results set out in this report are based on assumptions about the future. The actual cost of providing the benefits will depend on the actual experience of the Fund, which could be significantly better or worse than assumed. This section discusses the sensitivity of the results to some of the key assumptions.

Sensitivity of contribution rates to changes in assumptions

The approach to setting employer contribution rates mitigates the limitation of relying on one particular set of assumptions about the future by recognising the uncertainty around future investment returns and inflation. Therefore, there is no need to carry out additional analysis of the sensitivity of contribution rates to changes in financial assumptions.

The contribution rates are sensitive to changes in demographic assumptions. The results in this section in relation to the funding position can be broadly applied to the contribution rates.

Sensitivity of the funding position to changes in assumptions

The reported valuation funding position is based on one set of actuarial assumptions about the future of the Fund. If all of the assumptions made were exactly borne out in practice then the liability value presented in this report would represent the actual cost of providing benefits from the Fund as it stands at 31 March 2019.

Sensitivity of the funding position to future investment returns

The chart in Section 3 details how the funding position varies with the future assumed investment return.

Sensitivity of the funding position to future inflation

Pensions (both in payment and in deferment) in the LGPS increase annually in line with CPI. Furthermore, benefits accrued in the CARE scheme are revalued annually in line with CPI. If future CPI inflation is higher than the assumed rate of 2.3% then the cost of the benefits will be higher than we have set out in Section 3.

The table quantifies the impact on the funding position of varying the benefit increases and CARE revaluation (CPI) assumption below.

| CPI Assumption | Surplus/(Deficit) | Funding Level |
|----------------|-------------------|---------------|
| % pa | (£m) | % |
| 2.1% | (116) | 92% |
| 2.3% | (154) | 90% |
| 2.5% | (192) | 88% |

Sensitivity of the funding position to life expectancy

The main area of demographic risk is people living longer than expected. If long term mortality rates fall at a rate of 1.5% p.a. (compared to the assumed 1.25% p.a.) then members will live slightly longer than we have assumed in this valuation. The impact on the funding position is detailed below.

| Long term rate of improvement | Surplus/(Deficit) | Funding Level |
|-------------------------------|-------------------|---------------|
| % pa | (£m) | % |
| 1.25% | (154) | 90% |
| 1.50% | (167) | 89% |

Other demographic risks to consider

There are other risk factors which would have an impact on the funding position. Examples of these include the level of ill health retirements, withdrawals from the scheme and take up of the 50:50 option. These are probably unlikely to change in such a way that would rank them as amongst the highest risks facing the Fund and therefore there has been no further quantification of their risk.

Comment on sensitivity analysis

Note that the tables above show the effect of changes to each assumption in isolation. In reality, it is perfectly possible for the experience of the Fund to deviate from more than one of the assumptions simultaneously and so the precise effect on the funding position is therefore more complex. Furthermore, the range of assumptions shown here is by no means exhaustive and should not be considered as the limits of how extreme experience could actually be.

Other risks to consider

Regulatory, Administration and Governance risks

As well as financial and demographic risks, the Fund also faces:

- Regulatory risks – central government legislation could significantly change the cost of the scheme in the future; and
- Administration and governance risk – failures in administration processes could lead to incorrect data and inaccuracies in the actuarial calculations.

These risks are considered and monitored by the Fund as part of its ongoing risk management framework.

Resource and environment risks

The Fund is exposed to risks relating to future resource constraints and environmental changes. These risks may prove to be material.

Climate change is a complex issue for the Fund. Adverse future climate change outcomes will have an impact on future longevity, inflation, government and corporate bond yields and equity returns.

Whilst there has been no explicit increase in certified employer contribution related to climate change, these risks have been considered by the Administering Authority when setting the overall strategies for the Fund.

Risk management

Employers participating in the Fund are exposed to a number of risks. These include, but are not limited to:

- Investment risk;
- Market risks;
- Demographic risks;
- Regulatory risks;
- Administration and Governance risks; and
- Resource and Environmental risks.

The Funding Strategy Statement has further details about these risks and what actions the Fund takes to monitor, mitigate and manage each one.

Post valuation events

There has recently been significant volatility in financial markets related to the COVID-19 pandemic which has resulted in a reduction in the funding level since 31 March 2019. As an open scheme, with a strong covenant, the Fund is able to take a long term outlook when considering the general funding implications of such external events. The Administering Authority monitors risks on an ongoing basis and will consider appropriate actions where necessary.

5 Final comments

The Fund's valuation operates within a broader framework, and this document should therefore be considered alongside the following:

- the Funding Strategy Statement, which in particular highlights how different types of employer in different circumstances have their contributions calculated;
- the Investment Strategy Statement, which sets out the investment strategy for the Fund;
- the general governance of the Fund, such as meetings of the PIC and Local Pension Board, decisions delegated to officers, the Fund's business plan, etc;
- the Fund's risk register; and
- the information the Fund holds about the participating employers.

Intervalluation employer events

New employers joining the Fund

Any new employers or admission bodies joining the Fund should be referred to the Fund Actuary to assess the required level of contribution. Depending on the number of transferring members the ceding employer's rate may also need to be reviewed.

Cessations

Any employer who ceases to participate in the Fund should be referred to the Fund Actuary in accordance with Regulation 64 of the Regulations.

Bulk transfers

Any bulk movement of scheme members:

- involving 2 or more scheme members being transferred from or to a non-LGPS pension arrangement; or
- involving 10 or more scheme members being transferred from or to another LGPS fund;

should be referred to the Fund Actuary to consider the impact on the Fund in accordance with Regulation 98 and Regulation 103 of the Regulations.

Valuation frequency

Under the provisions of the LGPS regulations, the next formal valuation of the Fund is due to be carried out as at 31 March 2022 where contribution rates payable from 1 April 2023 will be set.



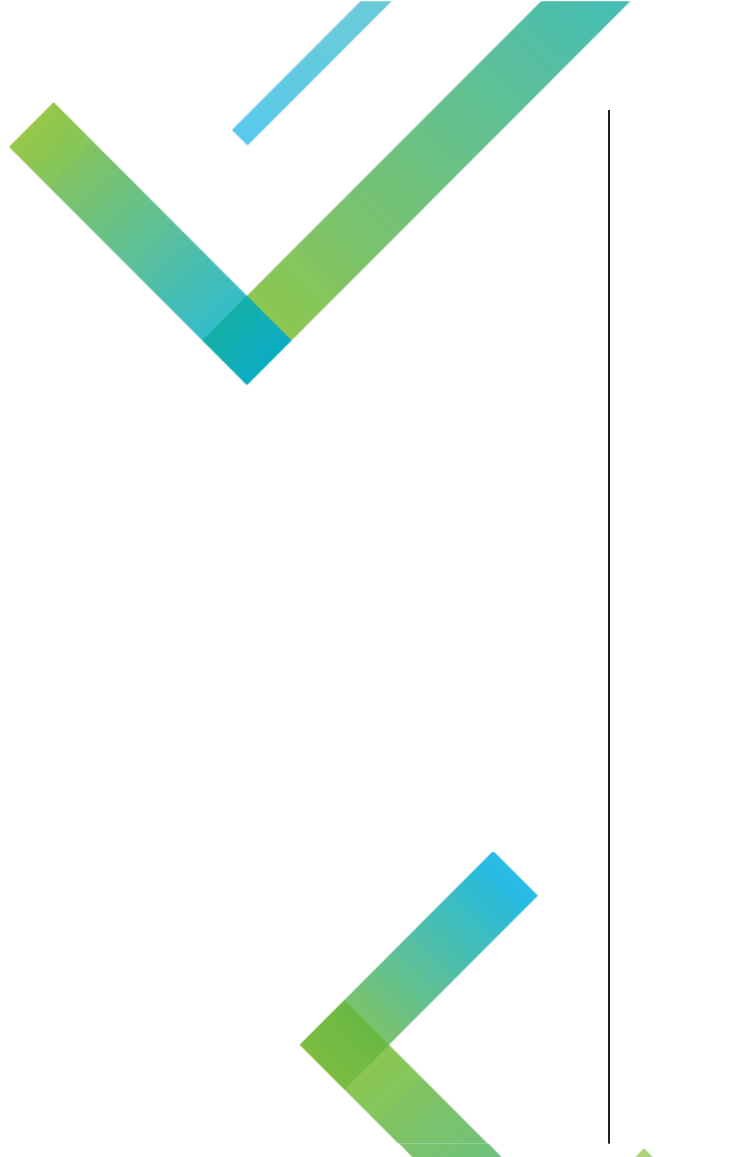
Steven Law

Fellow of the Institute and Faculty of Actuaries

For and on behalf of Hymans Robertson LLP

26 March 2020

Appendices



Appendix 1 – Data

Membership data as at 31 March 2019

A summary of the membership data provided by the Administering Authority for the purposes of the valuation at 31 March 2019 is shown below. The corresponding membership data from the previous valuation is also shown for reference.

| Whole Fund Membership Data | Last Valuation 31 March 2016 | This Valuation 31 March 2019 |
|---------------------------------------|---------------------------------|---------------------------------|
| Employee members | | |
| Number | 6,887 | 6,722 |
| Total Actual Pay (£000) | 133,492 | 142,890 |
| Total Accrued Pension (£000) (80ths)* | - | 5,951 |
| Total Accrued Pension (£000) (60ths)* | - | 6,075 |
| Total Accrued Pension (£000) (CAIRE) | 4,783 | 11,138 |
| Average Age (liability weighted) | 51.6 | 52.5 |
| Future Working Lifetime (years) | 9.6 | 8.3 |
| Deferred pensioners | | |
| Number | 9,773 | 11,386 |
| Total Accrued Pension (£000) | 19,255 | 20,912 |
| Average Age (liability weighted) | 52.1 | 52.5 |
| Pensioners | | |
| Number | 7,250 | 7,782 |
| Total pensions in payment (£000) | 38,530 | 43,261 |
| Average Age (liability weighted) | 67.2 | 67.8 |
| Average duration of liabilities | 17.5 | 17.7 |

*Please note the split of accrued pensions between 80ths and 60ths pension was not quantified for reporting purposes at the previous valuation of the Fund.

Benchmark investment strategy

The following investment strategy has been used to assess employer contribution rates and to set the future investment return assumption as at 31 March 2019:

| % allocation | Current strategy |
|--------------------------------|------------------|
| Total growth assets | 60% |
| Total income generating assets | 16% |
| Total protection assets | 24% |

Please see the Fund's Investment Strategy Statement and annual report for further details.

Other data used in this valuation

We have also relied upon asset and accounting data from the Fund's published 2016/17, 2017/18 and 2018/19 Annual Report and Accounts. Employer level cashflow data was provided by the Administering Authority and reconciled against the information shown in these documents.

Comment on data quality

The results of the valuation are dependent on the quality of the data provided to us by the Administering Authority for the specific purpose of this valuation. We have carried out validations on the membership data provided to ensure it is fit for the purpose of the valuation. Further details can be found in our report entitled "Data report for 2019 valuation", dated March 2020. We believe the membership data is fit for the purposes of this valuation.

Appendix 2 – Assumptions

Financial assumptions used to set employer contribution rates

Projection of assets and benefit payments

The approach to setting employer contribution rates does not rely on a single set of assumptions but involves the projection of an employer’s future benefit payments, contributions and investment returns under 5,000 future economic scenarios. In this modelling, inflation (and therefore benefit payments) and investment returns for each asset class (and employer asset values) are variables and take different values in each projection.

The model underlying these projections is Hymans Robertson’s proprietary economic model, the Economic Scenario Service (ESS). The ESS is a complex model to reflect the interactions and correlations between different asset classes and wider economic variables. The table below shows the calibration of the model as at 31 March 2019. All returns are shown net of fees and are the annualised total returns over 5, 10 and 20 years, except for the yields which refer to simulated yields at that time horizon.

| Years | Annualised total returns | | | | | | | | | | |
|--------------------------|--------------------------|-----------------------------|-------------------------------|-----------|-----------------|----------|---------------|-----------|--------------------|---------------|------|
| | Cash | Index Linked Gilts (medium) | Fixed Interest Gilts (medium) | UK Equity | Overseas Equity | Property | Corp Medium A | Inflation | 17 year real yield | 17 year yield | |
| 5 | 16th %ile | -0.4% | -2.3% | -2.9% | -4.1% | -4.1% | -3.5% | -2.7% | 1.9% | -2.5% | 0.8% |
| | 50th %ile | 0.7% | 0.5% | 0.3% | 4.0% | 4.1% | 2.4% | 0.8% | 3.3% | -1.7% | 2.1% |
| | 84th %ile | 2.0% | 3.3% | 3.4% | 12.7% | 12.5% | 8.8% | 4.0% | 4.9% | -0.8% | 3.6% |
| 10 | 16th %ile | -0.2% | -1.8% | -1.3% | -1.5% | -1.4% | -1.5% | -0.9% | 1.9% | -2.0% | 1.2% |
| | 50th %ile | 1.3% | 0.0% | 0.2% | 4.6% | 4.7% | 3.1% | 0.8% | 3.3% | -0.8% | 2.8% |
| | 84th %ile | 2.9% | 1.9% | 1.7% | 10.9% | 10.8% | 7.8% | 2.5% | 4.9% | 0.4% | 4.8% |
| 20 | 16th %ile | 0.7% | -1.1% | 0.1% | 1.2% | 1.3% | 0.6% | 0.7% | 2.0% | -0.7% | 2.2% |
| | 50th %ile | 2.4% | 0.3% | 1.0% | 5.7% | 5.8% | 4.3% | 1.9% | 3.2% | 0.8% | 4.0% |
| | 84th %ile | 4.5% | 2.0% | 2.0% | 10.3% | 10.4% | 8.1% | 3.0% | 4.7% | 2.2% | 6.3% |
| Volatility (Disp) (1 yr) | | | | | | | | | | | |
| | | 1% | 7% | 10% | 17% | 17% | 14% | 11% | 1% | | |

Funding target

At the end of an employer’s funding time horizon, an assessment is made – for each of the 5,000 projections – of how the assets held compare to the value of assets required to meet the future benefit payments (the funding target). To value the cost of future benefits assumptions are made about the following financial factors:

- Benefit increases and CARE revaluation;
- Salary growth; and
- Investment returns (the “discount rate”).

Each of the 5,000 projections represents a different prevailing economic environment at the end of the funding time horizon and so a single, fixed value for each assumption is not appropriate for every projection. Therefore, instead of using a fixed value, each assumption is set with reference to an economic indicator. The economic indicators used are:

| Assumption | Economic Indicator |
|---------------------------|---|
| Benefit increases | Future CPI inflation expectations |
| CARE revaluation | Future CPI inflation expectations |
| Salary increases | As above plus 0.7% p.a. |
| Future investment returns | Prevailing risk free rate of return plus margin |

The Fund has three funding bases which will apply to different employers depending on their type. Each funding basis uses a different margin in the future investment return assumption.

| Funding Basis | Margin above risk-free rate |
|-----------------------|---|
| Ongoing participation | 2.0% |
| Contractor exit | Same as used to allocate assets on joining the Fund |
| Gilts exit | 0% |

**Financial assumptions used to assess the funding position
Salary and Benefit Increases**

| Financial Assumptions (p.a.) | 31 March 2016 | 31 March 2019 |
|--|---------------|---------------|
| Benefit increases and CARE revaluation (CPI) | 2.1% | 2.3% |
| Salary increases | 2.9%* | 3.0%* |

*CPI plus 0.7%

Investment Return

The reported funding position is based on an assumed future investment return of 3.5%. The derivation of this assumption is set out in Section 3. The equivalent assumption at the 2016 valuation was 4.0%. This was derived in a different way, please see the 2016 valuation report for further details.

Demographic assumptions

The same demographic assumptions are used in setting contribution rates and assessing the current funding position.

Longevity

As the fund is a member of Club Vita, the baseline longevity assumptions are a bespoke set of Vita Curves that are tailored to fit the membership profile of the Fund. These curves are based on the data the Fund has provided us with for the purposes of this valuation.

We have also allowed for future improvements in mortality based on the CMI 2018 model with an allowance for smoothing of recent mortality experience and a long term rate of improvement of 1.25% p.a. for both women and men.

| Longevity Assumptions | 31 March 2016 | 31 March 2019 |
|-----------------------|--|--|
| Baseline Longevity | Club Vita | Club Vita |
| Future Improvements | CMI2013, Peaked, 1.25% p.a. long term | CMI2018, Smoothed, 1.25% p.a. long term |

Full details are available on request.

The longevity assumptions result in the following typical future life expectancies from age 65 (figures for 2016 shown for comparison):

| Assumed Life Expectancy | 31 March 2016 | 31 March 2019 |
|-------------------------|---------------|---------------|
| Male | | |
| Pensioners | 22.2 years | 20.9 years |
| Non-pensioners | 24.0 years | 22.2 years |
| Female | | |
| Pensioners | 24.6 years | 23.5 years |
| Non-pensioners | 26.5 years | 24.8 years |

Non-pensioners are assumed to be aged 45 at the valuation date

Other demographic assumptions

We have a very large local authority data set from which to derive our other demographic assumptions. We have analysed the trends and patterns that are present in the membership of local authority funds and tailored our demographic assumptions to reflect LGPS experience. The resulting demographic assumptions are as follows:

Demographic Assumptions

| | |
|-------------------------------------|---|
| Retirements in normal health | We have adopted the retirement age pattern assumption as used for the purpose of the 2016 LGPS cost cap valuation. Further details are available on request. |
| Death in Service | See sample rates below |
| Retirements in ill health | See sample rates below |
| Withdrawals | See sample rates below |
| Promotional salary increases | See sample increases below |
| Family details | A varying proportion of members are assumed to have a dependant at retirement or on earlier death. For example, at age 60 this is assumed to be 90% for males and 85% for females. The dependant of a male member is assumed to be 3 years younger than him and the dependant of a female member is assumed to be 3 years older than her. |
| Commutation | 25% of future retirements elect to exchange pension for additional tax free cash up to HMRC limits for service to 1 April 2008 (equivalent 63% service from 1 April 2008). |
| 50:50 option | 2.0% of members (uniformly distributed across the age, service and salary range) will choose the 50:50 option. |

Sample rates for demographic assumptions

Males

| Age | Salary Scale | Death Before Retirement FT & PT | Incidence per 1000 active members per annum | | | | | |
|-----|--------------|------------------------------------|---|--------|-------------------|------|-------------------|------|
| | | | Withdrawals | | Ill Health Tier 1 | | Ill Health Tier 2 | |
| | | | FT | PT | FT | PT | FT | PT |
| 20 | 105 | 0.21 | 252.69 | 439.47 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | 117 | 0.21 | 166.91 | 290.28 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30 | 131 | 0.26 | 118.43 | 205.93 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35 | 144 | 0.30 | 92.53 | 160.88 | 0.10 | 0.07 | 0.02 | 0.01 |
| 40 | 150 | 0.51 | 74.50 | 129.48 | 0.16 | 0.12 | 0.03 | 0.02 |
| 45 | 157 | 0.85 | 69.98 | 121.60 | 0.35 | 0.27 | 0.07 | 0.05 |
| 50 | 162 | 1.36 | 57.68 | 100.12 | 0.90 | 0.68 | 0.23 | 0.17 |
| 55 | 162 | 2.13 | 45.42 | 78.88 | 3.54 | 2.65 | 0.51 | 0.38 |
| 60 | 162 | 3.83 | 40.49 | 70.28 | 6.23 | 4.67 | 0.44 | 0.33 |
| 65 | 162 | 6.38 | 0.00 | 0.00 | 11.83 | 8.87 | 0.00 | 0.00 |

Females

| Age | Salary Scale | Death Before Retirement FT & PT | Incidence per 1000 active members per annum | | | | | |
|-----|--------------|------------------------------------|---|--------|-------------------|------|-------------------|------|
| | | | Withdrawals | | Ill Health Tier 1 | | Ill Health Tier 2 | |
| | | | FT | PT | FT | PT | FT | PT |
| 20 | 105 | 0.12 | 227.37 | 252.63 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | 117 | 0.12 | 152.99 | 169.97 | 0.10 | 0.07 | 0.02 | 0.01 |
| 30 | 131 | 0.18 | 128.25 | 142.46 | 0.13 | 0.10 | 0.03 | 0.02 |
| 35 | 144 | 0.30 | 110.69 | 122.91 | 0.26 | 0.19 | 0.05 | 0.04 |
| 40 | 150 | 0.48 | 92.12 | 102.26 | 0.39 | 0.29 | 0.08 | 0.06 |
| 45 | 157 | 0.77 | 85.97 | 95.41 | 0.52 | 0.39 | 0.10 | 0.08 |
| 50 | 162 | 1.13 | 72.48 | 80.35 | 0.97 | 0.73 | 0.24 | 0.18 |
| 55 | 162 | 1.49 | 54.08 | 60.02 | 3.59 | 2.69 | 0.52 | 0.39 |
| 60 | 162 | 1.90 | 43.58 | 48.31 | 5.71 | 4.28 | 0.54 | 0.40 |
| 65 | 162 | 2.44 | 0.00 | 0.00 | 10.26 | 7.69 | 0.00 | 0.00 |

Prudence in assumptions

We are required to include a degree of prudence within the valuation. This has been achieved in both the setting of contributions and assessment of funding position.

Contribution rates

Employer funding plans have been set such that the likelihood the employer's funding target is met by the end of the funding time horizon is more than 50%. The actual likelihood varies by employer. Further detail in is the Funding Strategy Statement.

Funding position

The funding position of the Fund has been measuring assuming the Fund's investments have at least a 75% likelihood of returning the assumed return.

All other assumptions represent our "best estimate" of future experience.

The assumptions used in this valuation have been agreed with the Administering Authority and are set out in the Fund's Funding Strategy Statement.

Appendix 3 – Rates and Adjustments certificate

In accordance with regulation 62(4) of the Regulations we have made an assessment of the contributions that should be paid into the Fund by participating employers for the period 1 April 2020 to 31 March 2023 in order to maintain the solvency of the Fund.

The method and assumptions used to calculate the contributions set out in the Rates and Adjustments certificate are detailed in the Funding Strategy Statement and in Appendix 2 of our report on the actuarial valuation dated March 2020. These assumptions underpin our estimate of the number of members who will become entitled to a payment of pensions under the provisions of the LGPS and the amount of liabilities arising in respect of such members.

The table below summarises the whole fund primary and secondary contribution rates for the period 1 April 2020 to 31 March 2023. The primary rate is the payroll weighted average of the underlying individual employer primary rates and the secondary rate is the total of the underlying individual employer secondary rates, calculated in accordance with the Regulations and CIPFA guidance.

| Whole Fund Contribution Rate | | |
|------------------------------|---------|-----------|
| Primary Rate (% of pay) | | 17.2% |
| Secondary Rate (£) | 2020/21 | 7,741,000 |
| | 2021/22 | 7,756,000 |
| | 2022/23 | 7,792,000 |

The required minimum contribution rates for each employer in the Fund are set out below.

- Further sums should be paid to the Fund to meet the costs of any early retirements and/or augmentations using methods and factors issued by us from time to time or as otherwise agreed.
- Payments may be required to be made to the Fund by employers to meet the capital costs of any ill-health retirements that exceed those allowed for within our assumptions. If an employer has ill health liability insurance in place with a suitable insurer and provides satisfactory evidence to the Administering Authority, then their certified contribution rate may be reduced by the value of their insurance premium, for the period the insurance is in place.
- The certified contribution rates represent the **minimum** level of contributions to be paid. Employing authorities may pay further amounts at any time and future periodic contributions may be adjusted on a basis approved by the Fund's actuary.
- There has been significant volatility in the financial markets during February and March 2020 as a result of the COVID-19 pandemic. This volatility may impact funding balance sheets for those employers planning to exit the Fund during the period covered by this Rates and Adjustments Certificate. In order to effectively manage employer exits from the Fund, the Administering Authority may revisit the contribution rates for employers that are expected to cease participation in the Fund in accordance with Regulation 64.

Signature:



Name: Steven Law

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Date: 26 March 2020

Appendix 4 – Section 13 dashboard

The following information has been provided to assist the Government Actuary's Department in complying with Section 13 of the Public Service Pensions Act.

| Item | | |
|---|---|---|
| Past service funding position - local funding basis | <p>Funding level (assets/liabilities)</p> <p>Funding level (change since last valuation)</p> <p>Asset value used at the valuation (£m)</p> <p>Value of liabilities (£)</p> <p>Surplus (deficit) (£)</p> <p>Discount rate(s)</p> <p>Assumed pension increases (CPI)</p> <p>Method of derivation of discount rate, plus any changes since previous valuation</p> <p>Assumed life expectancies at age 65:</p> <p>Average life expectancy for current pensioners - men currently age 65</p> <p>Average life expectancy for current pensioners - women currently age 65</p> <p>Average life expectancy for future pensioners - men currently age 45</p> <p>Average life expectancy for future pensioners - women currently age 45</p> | <p>90%</p> <p>12% increase</p> <p>1,386,727,000</p> <p>1,540,817,000</p> <p>(154,090,000)</p> <p>3.5% p.a.</p> <p>2.3% p.a.</p> <p>There is a 75% likelihood that the Fund's investments will return at least 3.5% over the next 20 years based on a stochastic asset projections.</p> <p>The assumption at the 2016 valuation was 1.8% above the yield available on long-dated fixed interest gilts.</p> <p>20.9 years</p> <p>23.5 years</p> <p>22.2 years</p> <p>24.8 years</p> |
| Past service funding position - SAB basis (for comparison purposes only) | <p>Market value of assets (£)</p> <p>Value of liabilities (£)</p> <p>Funding level on SAB basis (assets/liabilities)</p> <p>Funding level on SAB basis (change since last valuation)</p> | <p>1,386,727,000</p> <p>1,266,155,000</p> <p>110%</p> <p>16% increase</p> |
| Contribution rates payable | <p>Primary contribution rate</p> <p>Secondary contribution rate (cash amounts in each year in line with CIPFA guidance):</p> <p>Secondary contribution rate 2020/21 (£)</p> <p>Secondary contribution rate 2021/22 (£)</p> <p>Secondary contribution rate 2022/23 (£)</p> <p>Giving total expected contributions:</p> <p>Total expected contributions 2020/21 (£ figure based on assumed payroll of £147.2m)</p> <p>Total expected contributions 2021/22 (£ figure based on assumed payroll of £151.7m)</p> <p>Total expected contributions 2022/23 (£ figure based on assumed payroll of £156.3m)</p> <p>Average employee contribution rate (% of pay)</p> <p>Employee contribution rate (£ p.a. figure based on assumed payroll of £147.2m)</p> | <p>17.2% of pay</p> <p>7,741,000</p> <p>7,756,000</p> <p>7,792,000</p> <p>33,010,000</p> <p>33,792,000</p> <p>34,619,000</p> <p>6.7% of pay</p> <p>9,862,000</p> |
| Additional information | <p>Percentage of liabilities relating to employers with deficit recovery periods of longer than 20 years</p> <p>Percentage of total liabilities that are in respect of Tier 3 employers</p> | <p>0%</p> <p>2%</p> |