Government Actuary's Department

# Local Government Pension Scheme England and Wales

## Review of LGPS fund valuations as at 31 March 2022 under Section 13

## Appendices

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# Appendix A: Compliance

A.1 In this appendix we set out the checks we conducted to determine whether the actuarial valuations of the 87 Local Government Pension Scheme (LGPS) funds have been completed in accordance with the scheme regulations.

## Statement of Compliance

A.2 The Government Actuary's Department (GAD) selected one fund as a representative example from each of the firms of actuarial advisors. The following statements of compliance were contained within the chosen reports by each firm:

**Table A1: Statement of Compliance**

| Fund | Statement of compliance |
|---|---|
| **Powys County Council Pension Fund (Aon)** | This report was commissioned by and is produced solely for the use of the Administering Authority. It is produced in compliance with: Regulation 62 of the Local Government Pension Scheme Regulations 2013. |
| **Buckinghamshire Pension Fund (Barnett Waddingham)** | 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 2023 to 31 March 2026 as required under Regulation 62 of the Regulations. |
| **London Borough of Croydon Pension Fund (Hymans Robertson)** | We have been commissioned by Croydon Council (the Administering Authority) to carry out a valuation of the London Borough of Croydon Pension Fund (the Fund) as at 31 March 2022. This fulfils Regulation 62 of the Local Government Pension Scheme Regulations 2013. |
| **Clwyd Pension Fund (Mercer)** | This report is addressed to the Administering Authority of the Clwyd Pension Fund ("the Administering Authority") and is provided to meet the requirements of Regulation 62 of the Local Government Pension Scheme Regulations 2013 (as amended) ("the Regulations"). |

## Compliance with valuation regulations

### Actuarial Valuation Reports Regulation 62 (1 - 2)

A.3 Regulation 62 (1) requires the administering authority to obtain an actuarial valuation report on the assets and liabilities of each of its pension funds, including a rates and adjustments certificate, as at 31st March 2016 and on 31st March in every subsequent valuation year (i.e. 31st March 2022). Regulation 62 (2) requires that the above documents be obtained by the first anniversary of the date at which the valuation is made, namely, 31 March 2023 in the case of the 2022 valuation.

## Publication

A.4 Each chosen fund was published in accordance with the regulations. The following table sets out dates of publication of the actuarial report.

**Table A2: Publication date**

| Fund | Date of publication |
|---|---|
| **Powys County Council Pension Fund (Aon)** | 30 March 2023 |
| **Buckinghamshire Pension Fund (Barnett Waddingham)** | 31 March 2023 |
| **London Borough of Croydon Pension Fund (Hymans Robertson)** | 31 March 2023 |
| **Clwyd Pension Fund (Mercer)** | 30 March 2023 |

## Demographic Assumptions

A.5 Regulation 62 (3) states that the actuarial valuation report must contain a statement of the demographic assumptions that have been used in making the valuation and must show how these assumptions reflect the experience that has occurred during the period since the last valuation. Each valuation report contains a section on demographic assumptions including all the assumptions that we would expect in an actuarial valuation report.

**Table A3: Demographic Assumptions**

| Demographic | Powys County Council Pension Fund (Aon) | Buckinghamshire Pension Fund (Barnett Waddingham) | London Borough of Croydon Pension Fund (Hymans Robertson) | Clwyd Pension Fund (Mercer) |
|---|---|---|---|---|
| Pre-retirement mortality | ✔ | ✔ | ✔ | ✔ |
| Post-retirement mortality | ✔ | ✔ | ✔ | ✔ |
| Dependant mortality | ✔ | ✔ | ✔ | ✔ |
| Ill health retirement | ✔ | ✔ | ✔ | ✔ |
| Normal health retirements | ✔ | ✔ | ✔ | ✔ |
| Withdrawals | ✔ | ✔ | ✔ | ✔ |
| Promotional salary scale | ✔ | ✔ | ✔ | N/A |
| Family details (partners and dependants) | ✔ | ✔ | ✔ | ✔ |
| 50:50 option take-up | ✔ | ✔ | ✔ | ✔ |
| Commutation | ✔ | ✔ | ✔ | ✔ |

Mercer did not make a separate promotional salary scale assumption and therefore effectively this was combined in their general pay increase assumption.

## Local Experience

A.6 The regulation requires that the reports "must *show how* the assumptions relate to the events which have actually occurred in relation to members of the Scheme since the last valuation" in respect of the demographic assumptions. For the four chosen funds:

- All have shown differences between expectations and experience for the inter-valuation period

Additional information on demographic experience and assumption setting may be contained in supporting (non-public) reports/advice.

## Contribution Rates

A.7 Regulation 62 sets out that employer contributions are separated into two components:

- Primary rates which meet the cost of ongoing accrual for current active members; and
- Secondary rates, which are mainly established to meet deficit or eliminate surplus over a given period (the deficit/surplus recovery period).

A.8 Regulation 62 (6) states that when setting the contribution rates the actuary must have regard to:

- the existing and prospective liabilities arising from circumstances common to all those bodies
- the *desirability* of maintaining as nearly constant a primary rate as possible

- the current version of the administering authority's funding strategy mentioned in regulation 58 (funding strategy statements), and
- 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.

A.9 Regulation 62 (4) states that the rates and adjustments certificate must specify both the primary rate of the employer's contribution and the secondary rate of the employer's contribution, for each year of the period of three years beginning with 1st April in the year following that in which the valuation date falls.

A.10 Each valuation report must set out primary and secondary employer contribution rates.

## Primary Rates

A.11 Regulation 62 (5) defines the primary rate of an employer's contribution as "the amount in respect of the cost of future accruals which, in the actuary's opinion, should be paid to a fund by all bodies whose employees contribute to it so as to secure its solvency", and specifies that this must be expressed as a percentage of the pay of their employees who are active members.

A.12 The following table shows the primary rate of employer contribution for the administering authorities' whole fund:

**Table A4: Primary contribution rate**

| Fund | Primary contribution rate % of pay |
|---|---|
| **Powys County Council Pension Fund (Aon)** | 21.4% |
| **Buckinghamshire Pension Fund (Barnett Waddingham)** | 19.7% |
| **London Borough of Croydon Pension Fund (Hymans Robertson)** | 20.4% |
| **Clwyd Pension Fund (Mercer)** | 18.8% |

A.13 Each primary rate of employer contribution has been calculated to cover the cost of future benefits accrued by their employees. Each valuation also provides a breakdown of the primary rate for each employer.

## Secondary Rates

A.14 Regulation 62 (7) states that the secondary contribution rate may be expressed as either a percentage or a monetary amount.

A.15 Each valuation report provides a secondary rate for each employer (expressed as a cash amount and/or percentage of pay for each employer). The secondary rates of employer contributions for each valuation have been defined to be adjustments to the primary rate as required. In all cases, the secondary rates have been provided for the next three years for each employer.

**Table A5: Whole fund Secondary Contribution Rates**

| Fund | 2023/24 | 2024/25 | 2025/26 |
|---|---|---|---|
| **Powys County Council Pension Fund (Aon)** | £2,194,000 | £1,919,000 | £1,619,000 |
| **Buckinghamshire Pension Fund (Barnett Waddingham)** | £8,870,000 | £8,360,000 | £7,920,000 |
| **London Borough of Croydon Pension Fund (Hymans Robertson)** | £5,385,000 | £5,526,000 | £5,464,000 |
| **Clwyd Pension Fund (Mercer)** | -£4,500,000 | -£12,700,000 | -£12,900,000 |

## Rates and Adjustments Certificate (Regulation 62 (8))

A.16 Regulation 62 (8) states that the rates and adjustments certificate must contain a statement of the assumptions on which the certificate is given as respects:

(a) the number of members who will become entitled to payment of pensions under the provisions of the Scheme; and

(b) the amount of the liabilities arising in respect of such members

during the period covered by the certificate.

A.17 In the following table we set out where the assumptions for each valuation can be found.

**Table A6: Location of assumptions**

| Fund | Statement in rates and adjustments certificate | Location of assumptions in valuation report |
|---|---|---|
| **Powys County Council Pension Fund (Aon)** | ✔ | Further information - Assumptions |
| **Buckinghamshire Pension Fund (Barnett Waddingham)** | ✔ | Appendix 2 |
| **London Borough of Croydon Pension Fund (Hymans Robertson)** | ✔ | Appendix 2 |
| **Clwyd Pension Fund (Mercer)** | ✔ | Appendix A |

## Regulation 62 (9)

A.18 Regulation 62 (9) states that the administering authority must provide the actuary preparing a valuation or a rates and adjustments certificate with the consolidated revenue account of the fund and such other information as the actuary requests.

A.19 For each of the four valuation reports examined we have seen evidence of having received relevant data from the administering authority.

# Appendix B: Consistency

B.1 In this appendix we set out analysis we undertook in relation to whether the actuarial valuations were carried out in a way which is not inconsistent with other valuations completed under the scheme regulations. This appendix contains comments and a number of charts referring to the following aspects:

- Key information
- Funding levels
- Discount rates
- Demographic assumptions
- Climate risk

## Key Information

B.2 All funds provided a standardised dashboard of results, which was originally recommended in the 2016 section 13 review and subsequently refined following the 2019 review. The agreed format of the dashboard for the 2022 valuations is as follows:

**Table B1: Dashboard**

| Item requested | Format |
|---|---|
| **Past service funding position – local funding basis** | |
| Funding level (assets/liabilities) | *%* |
| Funding level (change since last valuation) | *%* |
| Asset value used at the valuation | *£m* |
| Value of liabilities (including McCloud liability) | *£m* |
| Surplus (deficit) | *£m* |
| Discount rate – past service | *% pa* |
| Discount rate – future service used for contribution rate setting | *% pa* |
| Assumed pension increases (CPI) | *% pa* |
| Method of derivation of discount rate, plus any changes since the previous valuation | *Freeform text* |

| **Assumed life expectancies at age 65** | | |
|---|---|---|
| Life expectancy for current pensioners – men currently age 65 | *years* | |
| Life expectancy for current pensioners – women currently age 65 | *years* | |
| Life expectancy for future pensioners – men currently age 45 | *years* | |
| Life expectancy for future pensioners – women currently age 45 | *years* | |
| **Past service funding position – SAB basis (for comparison purposes only)** | | |
| Market value of assets | *£m* | |
| Value of liabilities | *£m* | |
| Funding level on SAB basis (assets/liabilities) | *%* | |
| Funding level on SAB basis (change since last valuation) | *%* | |
| **Contribution rates payable** | *2022 Valuation* | *2019 Valuation* |
| Primary contribution rate | *% of pay* | *% of pay* |
| Secondary contribution - 1st year of rates and adjustment certificate | *£m* | *£m* |
| Secondary contribution - 2nd year of rates and adjustment certificate | *£m* | *£m* |
| Secondary contribution - 3rd year of rates and adjustment certificate | *£m* | *£m* |
| Total expected contributions - 1st year of rates and adjustment certificate (£ figure based on assumed payroll) | *£m* | *£m* |
| Total expected contributions – 2nd year of rates and adjustment certificate (£ figure based on assumed payroll) | *£m* | *£m* |
| Total expected contributions – 3rd year of rates and adjustment certificate (£ figure based on assumed payroll) | *£m* | *£m* |
| Assumed payroll - 1st year of rates and adjustment certificate | *£m* | *£m* |
| Assumed payroll – 2nd year of rates and adjustment certificate | *£m* | *£m* |
| Assumed payroll – 3rd year of rates and adjustment certificate | *£m* | *£m* |
| 3-year average total employer contribution rate | *% of pay* | *% of pay* |
| Average employee contribution rate (% of pay) | *% of pay* | *% of pay* |
| Employee contributions (£ figure based on assumed payroll of £m) | *£m pa* | *£m pa* |

| **Deficit recovery plan** | *2022 Valuation* | *2019 Valuation* |
|---|---|---|
| Latest deficit recovery period end date, where this methodology is used by the fund's actuarial advisor | *Year* | *Year* |
| Earliest surplus spreading period end date, where this methodology is used by the fund's actuarial advisor | *Year* | *Year* |
| The time horizon end date, where this methodology is used by the fund's actuarial advisor | *Year* | *Year* |
| The funding plan's likelihood of success, where this methodology is used by the fund's actuarial advisor | *%* | *%* |
| Percentage of liabilities relating to employers with deficit recovery periods of longer than 20 years | *%* | *%* |
| **Additional information:** | | |
| Percentage of total liabilities that are in respect of Tier 3 employers | *%* | |
| Included climate change analysis/comments in the 2022 valuation report | *Yes/No* | |
| Value of McCloud liability in the 2022 valuation report (on local funding basis) | *£m* | |

B.3 All information was included for the sample fund reports we considered in more detail, as listed below:

**Powys County Council Pension Fund (Aon)**

**Buckinghamshire Pension Fund (Barnett Waddingham)**

**London Borough of Croydon Pension Fund (Hymans Robertson)**

**Clwyd Pension Fund (Mercer)**

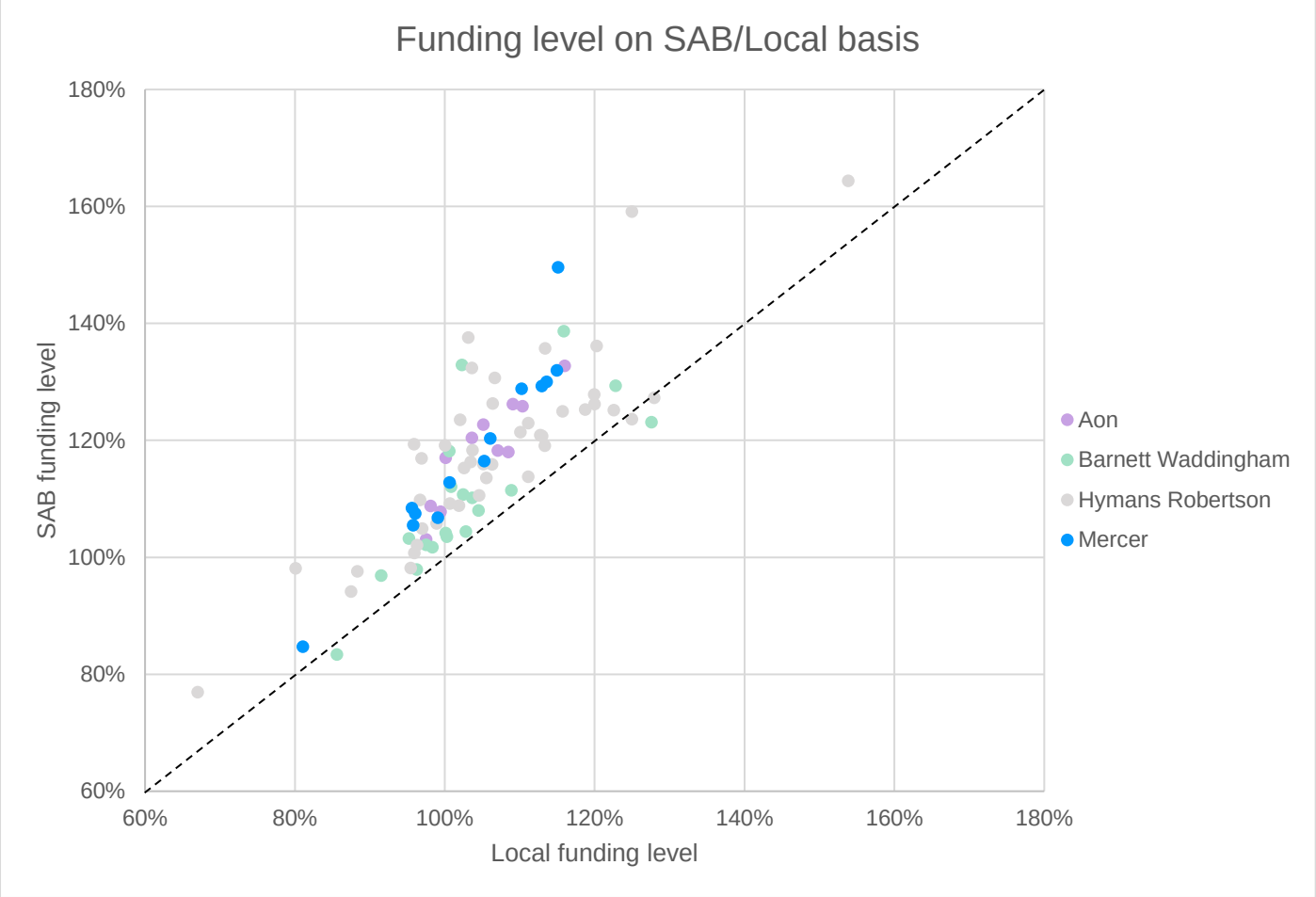
## Funding Levels

B.4 Chart B1 shows a plot of SAB funding level against the fund's local basis funding level, with different firms of actuarial advisor plotted in different colours. If there was no difference in funding on the SAB standard basis and that on the local funding basis all funds would sit on the dotted line. If differences in bases were consistent across funds, all funds would sit along a different line. There is considerable variation, with most funds having a higher SAB funding level than that on the local basis (which means that the liability value is lower on the SAB standard basis than on the local funding basis), but to different extents (evidenced by variations in the distance from the dotted line). Some funds lie below the dotted line (i.e. the funding level on the SAB basis is less than on the local funding basis). Note in this chart and throughout this chapter we have used shortened fund names in some charts for presentation ease.

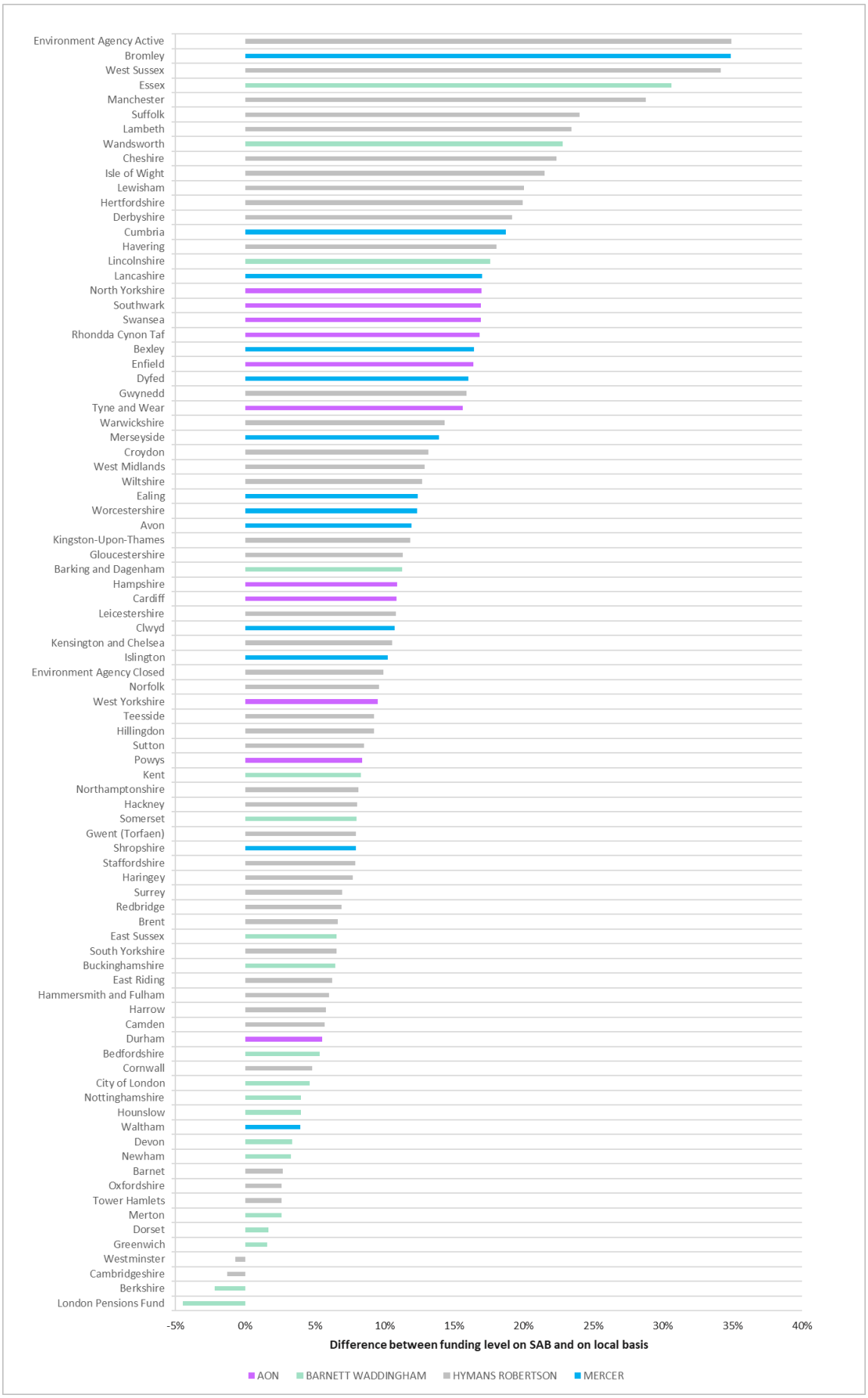
B.5 Chart B2 shows the same information in a different format by illustrating the difference between the SAB funding level and the local funding level for individual funds. There is a considerable range of differences both across the funds as a whole, the range is -4.5% to +35%, and between funds advised by the same advisors.

B.6 The SAB standard basis is a helpful comparator but it is not useful for assessing liabilities for funding purposes. The standard nature of this basis assists in analysis of the difference in prudence adopted in the local funding bases; i.e. it is the relative differences that are of interest rather than the absolute difference. We do not suggest the SAB standard basis as an appropriate or target local funding basis.

**Chart B1: Standardising Local Valuation results**



## Chart B2: Difference Between Funding Level on SAB Standardised Basis and Funding Level on Local Basis



# Discount Rates

B.7 Each firm of actuarial advisors applies a specific method for calculating discount rates as shown in the table below.

**Table B2: Discount Rate Methodology**

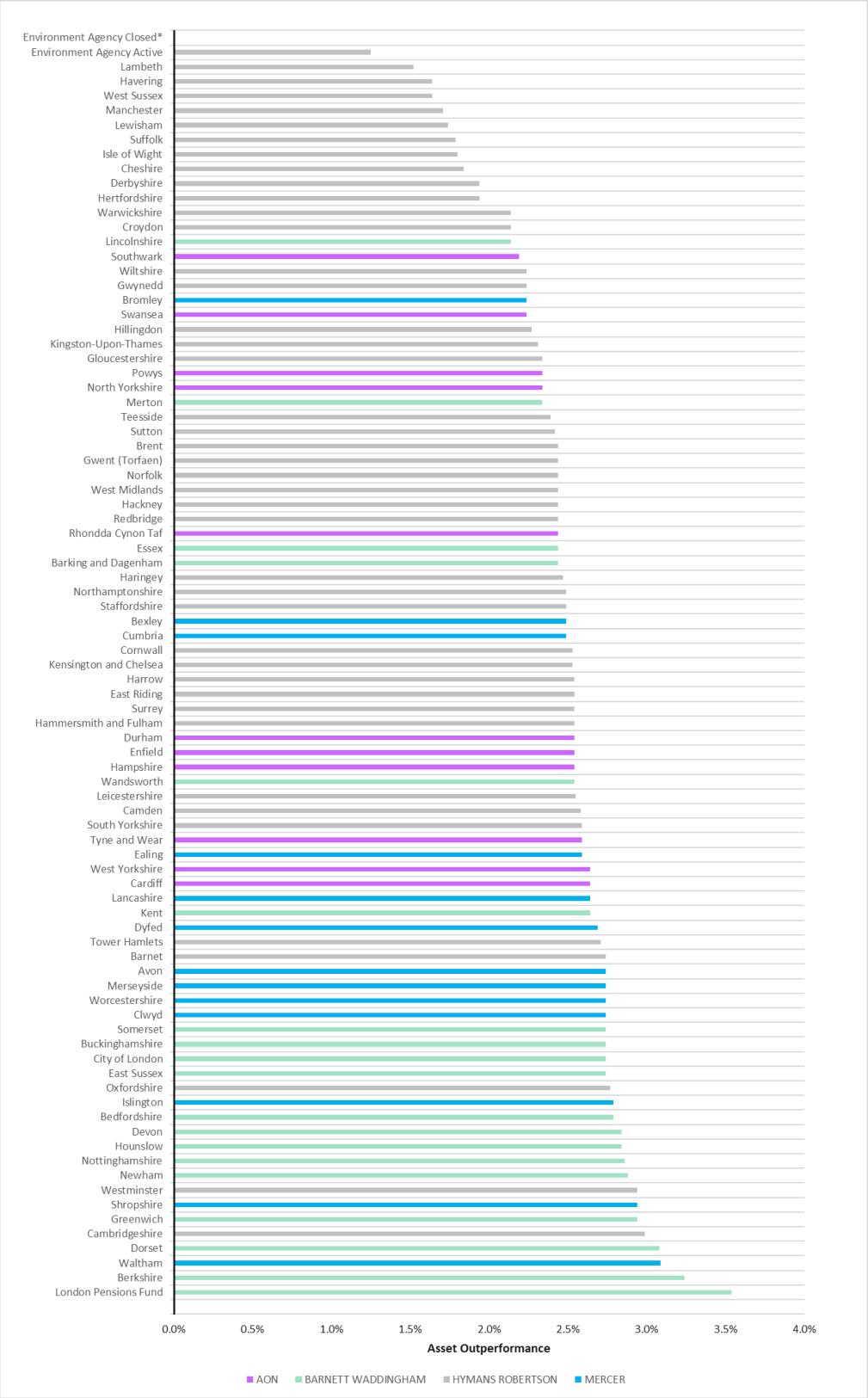
| Fund | Discount rate methodology |
|---|---|
| Powys County Council Pension Fund (Aon) | Stochastic modelling |
| Buckinghamshire Pension Fund (Barnett Waddingham) | Weighted average prudent estimated return on long term asset classes |
| London Borough of Croydon Pension Fund (Hymans Robertson) | Stochastic modelling |
| Clwyd Pension Fund (Mercer) | Stochastic modelling |

B.8 Some funds (advised by Mercer) used different discount rates to assess past service liabilities and future service contribution rates, we consider only the former here.

B.9 The discount rates set by each fund are likely to be linked to the mix of assets held by the fund, and we would therefore expect to see differences in discount rate from fund to fund. These differences are clear in Chart B3 overleaf (all discount rates in this chart have been reduced by a constant risk free rate, however the relative differences remain).

B.10 We assess implied asset outperformance as the discount rate less the risk-free rate, where the risk-free rate is assumed to be the Bank of England UK nominal 20 year spot rate as at 31 March 2022 (1.86%).

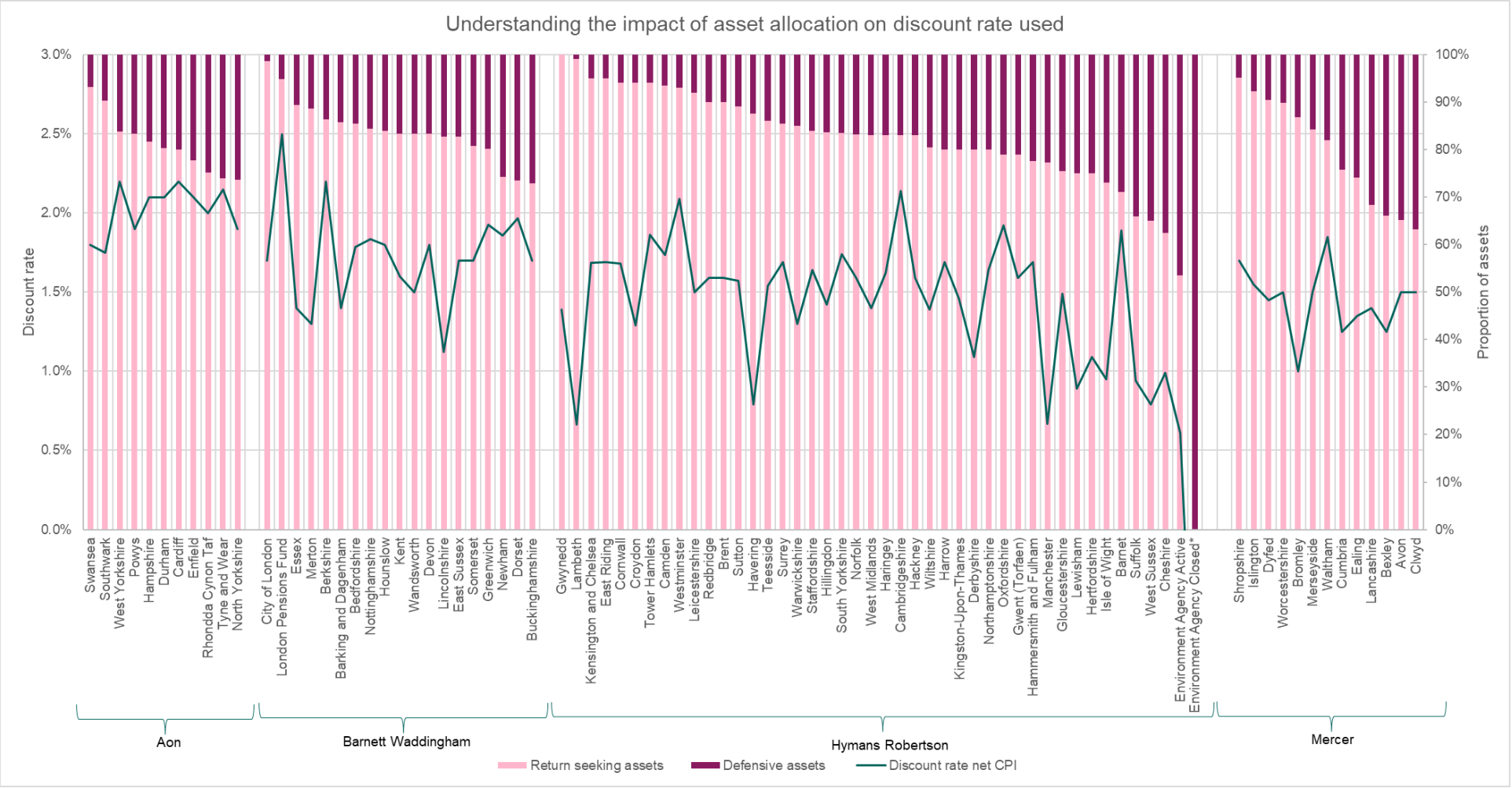
**Chart B3: Implied Asset Outperformance within Discount Rate**




*The implied asset outperformance for the Environment Agency closed fund is -0.1% (not shown in chart)

B.11 Assets can be considered in two broad categories, assets which are return seeking (for example equities) and those which are defensive (for example UK government bonds). Chart B4 below orders funds by their proportion of return seeking assets in the bar chart (right hand axis) and shows the corresponding discount rate net of CPI inflation as a green line (left hand axis), split by actuarial firm. There is no clear correlation between the proportion of return seeking assets and the discount rate adopted, suggesting that other factors (such as risk appetite) influence discount rates.

**Chart B4: Link between the asset allocation of funds and the discount rate**

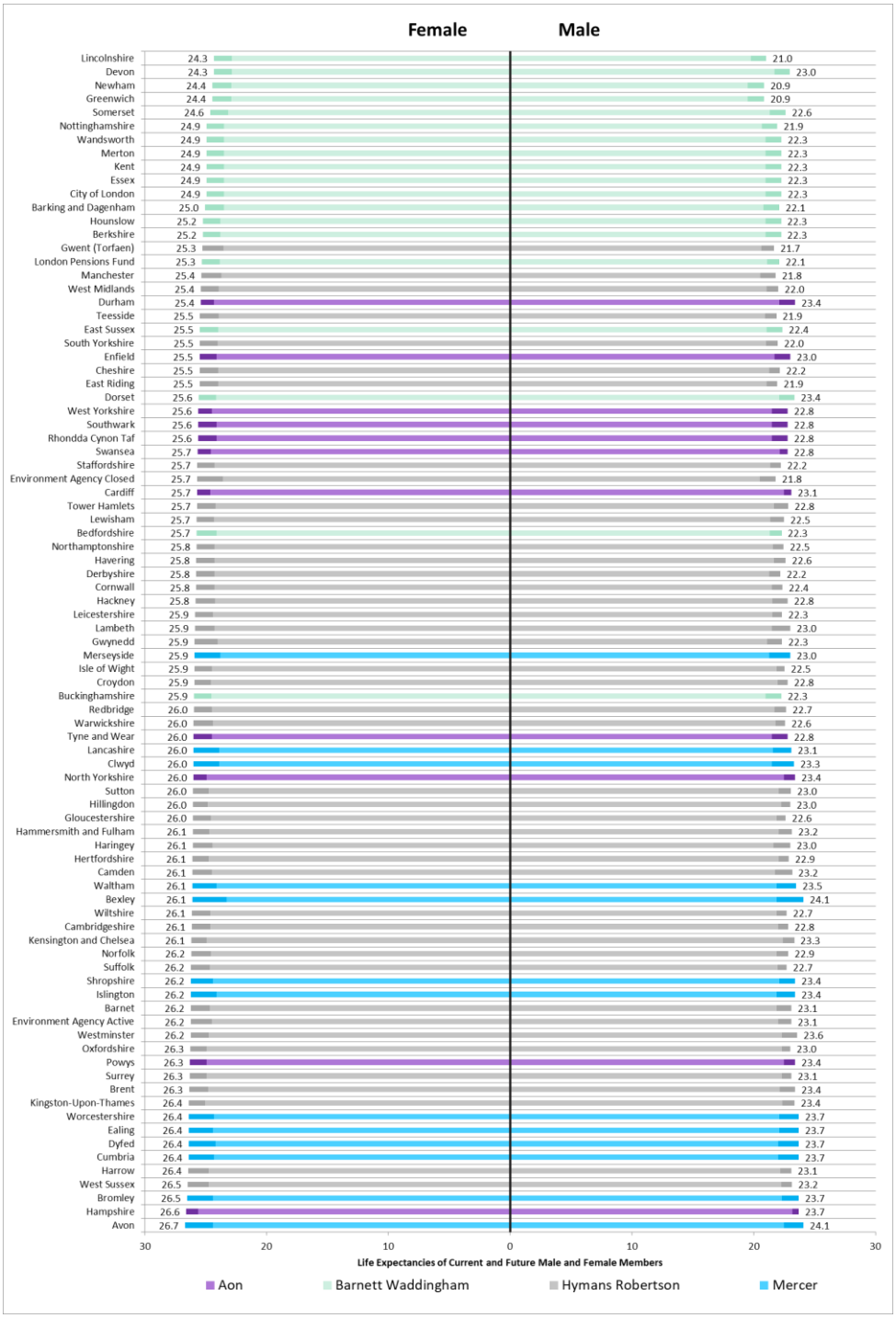



*The discount rate net of CPI for the Environment Agency closed fund is -1.4% (not shown in chart)

# Demographic assumptions

B.12 Mortality assumptions determine how long members of a fund are expected to live and hence the amount of pension benefits they will receive. The longer a member's life expectancy the more pension they will receive. Chart B5 shows the life expectancy for current pensioners, female and male, at age 65, and the life expectancy for future pensioners (active and deferred member currently aged 45) at age 65. The funds are ordered by increasing future life expectancy for females. We note these assumptions will be dependent on local variation.

**Chart B5: Life expectancy for pensioners and future pensioners at age 65**

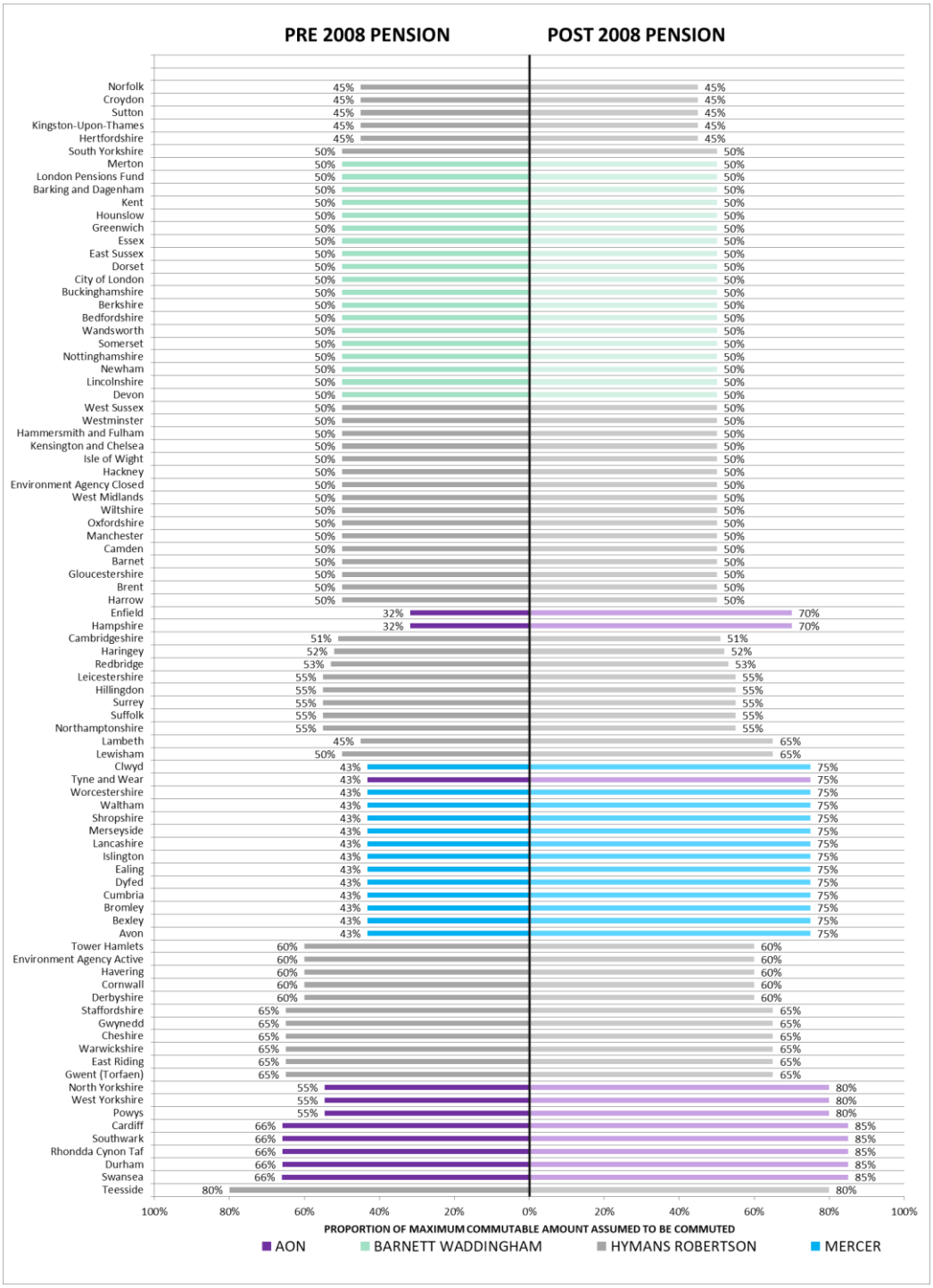



The paler shade in the middle of the bar represents the life expectancy of current pensioners whilst the total bar including the darker shade represents the life expectancy of future pensioners.

B.13 Chart B5 shows that overall members of funds advised by Barnett Waddingham are assumed to have a lower life expectancy when compared to other advisors. For funds advised by Mercer, future pensioners generally have higher life expectancy than average, but this does not appear to be the case for current pensioners. There is more variation in the ranking of life expectancy for funds advised by Aon and Hymans Robertson.

B.14 Commutation assumptions (the extent to which members on average exchange pension in favour of a tax free cash benefit) are set as the percentage of the maximum commutable amount that a member can take on retirement. Chart B6 shows the assumed percentages for both pre 2008 and post 2008 pensions, which may be set separately.

**Chart B6: Commutation Assumptions for Pre and Post 2008 Pensions**



B.15 Other things being equal, it is more prudent to assume a lower rate of commutation, because the cost of providing a pension benefit is higher than the commutation factor. Some cash lump sum was provided as of right in the LGPS prior to 2008 whereas for benefits accrued after that date, cash was available only by commutation of pension.

B.16 Chart B6 shows that the funds advised by Barnett Waddingham assume that members commute 50% of the maximum allowable cash amount for both pre-2008 and post-2008 pension. Funds advised by Mercer assume that members take 43% of the maximum allowable cash amount for pre-2008 pension and 75% of the maximum allowable cash amount for post-2008 pension. There is more variation in the commutation assumptions made by funds advised by Aon and Hymans Robertson.

# Climate risk

B.17 Most funds completed climate risk analysis in accordance with an agreed broad principles document agreed between MHCLG, fund actuaries and GAD, with the results of the analyses included in the 2022 valuation reports. The broad principles agreed for the 31 March 2022 valuations are shown in B.19. Where the data has been provided, we have summarised the information provided on the impact of two scenarios on funding positions at a single point in time, 31 March 2042. Results are relative to the disclosed funding positions, the base case. The two scenarios are:

a. Paris aligned

b. High temperature scenario

B.18 Chart B7 shows the projected funding levels under each of these two scenarios at 31 March 2042 relative to the base case funding level, for Aon, Barnett Waddingham and Mercer funds who have disclosed a funding level for each scenario. Hymans Robertson funds disclosed a success probability and, as this is not directly comparable to funding level, we have shown this information separately in Chart B8. Whilst we note Hymans Robertson have not given a funding level, the approach of considering the impact on success probability is consistent with their underlying valuation methodology. These charts are included for information only in order to illustrate the analyses set out in funds' valuation reports. The values shown are at a single future point in time and looking at a different time could produce very different results. Further we acknowledge that this summary relates to two specific scenarios and therefore does not in any way represent the full range of possible future outcomes. A full comparison and understanding of these results must take into account differences in assumptions and methodology as well as the projected impacts.

**Chart B7: Ratio of funding level under climate change scenarios to base funding level, as at March 2042 (for funds reporting projected funding level)**

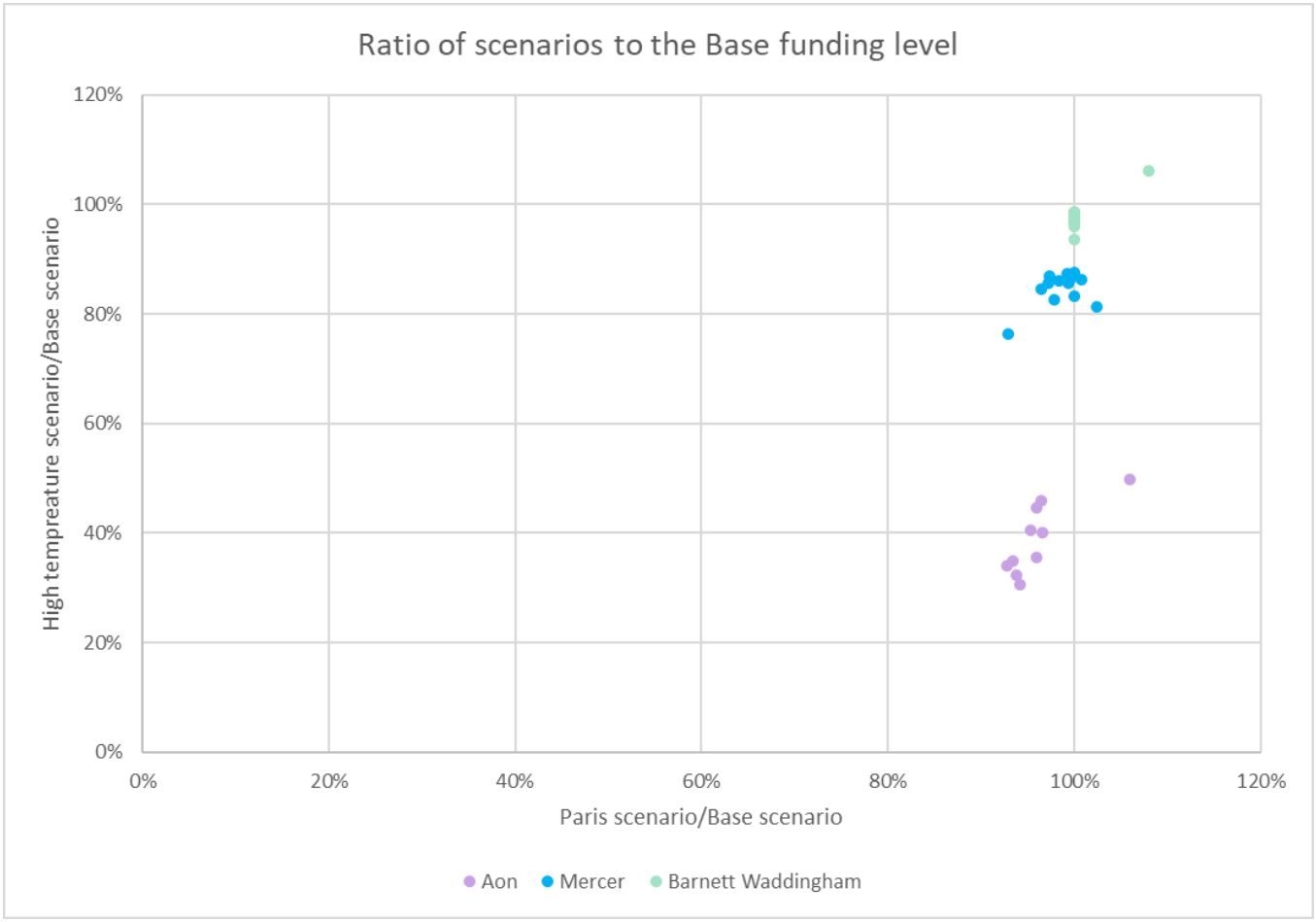
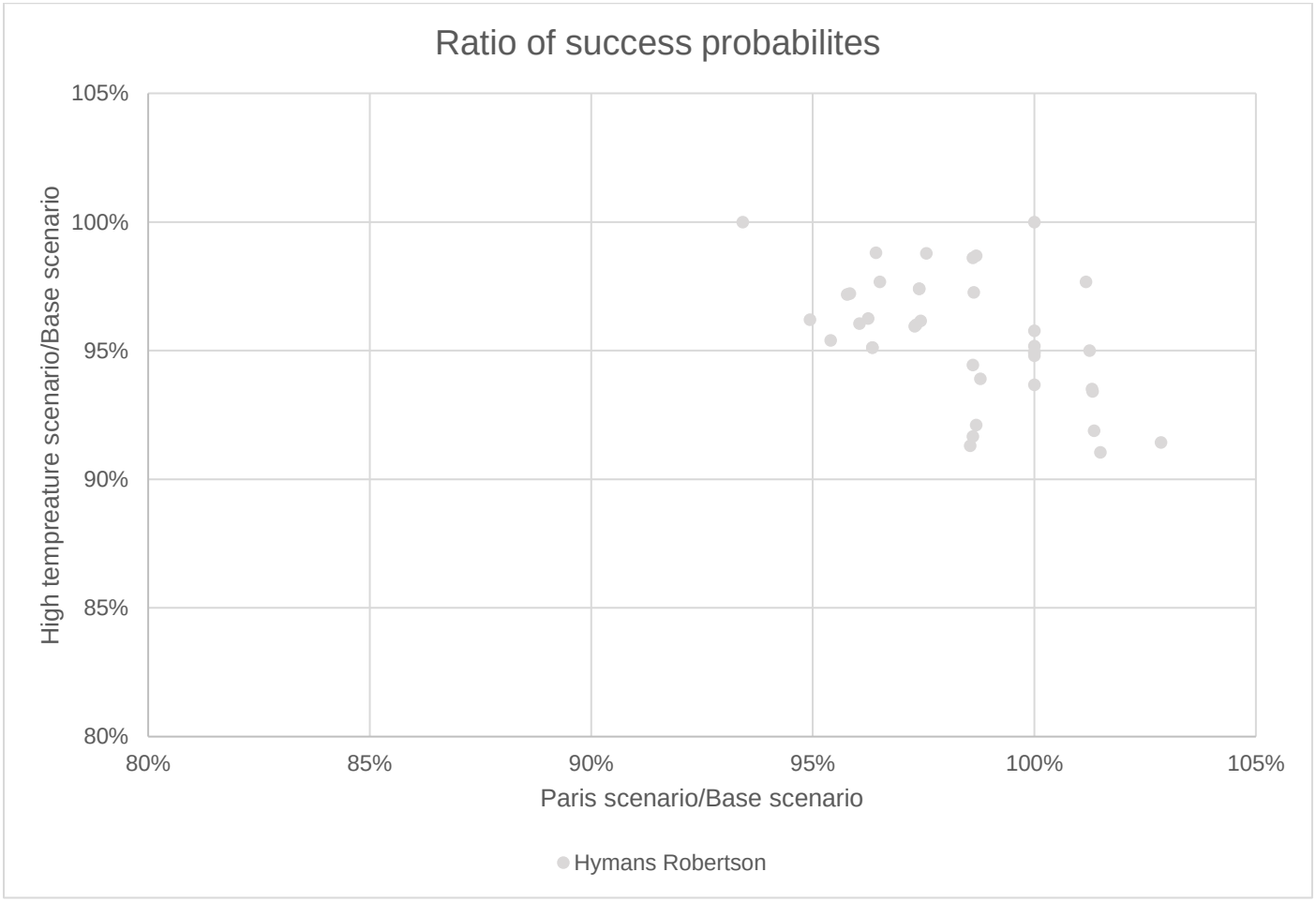


**Chart B8: Ratio of success probabilities under climate change scenarios to base scenario, as at March 2042 (for funds reporting success probabilities)**



B.19 The broad principles agreed for the 31 March 2022 valuation are shown below. These principles were agreed between the four actuarial firms, MHCLG and GAD.

# Climate Change Valuation Reporting Principles

1. Scope of the analysis

An important part of any analysis for the valuations will be to identify the impact of transition risk (shorter term) and physical risks (longer term) on the potential funding outcomes. It is therefore critical that any analysis covers an appropriate spectrum of outcomes e.g. degree of warming/rate of transition to low carbon state and also timeframe of analysis. This is the fundamental principle of how the core analysis should be considered.

Funds will consider at the outset the scope of the analysis to be undertaken and the scenarios to be considered at the Whole Fund level, comprising at least two alternate scenarios covering differing rates of transition. These may be considered relative to a base scenario with only implicit adjustment to assumptions for scenarios, which include varying degrees of climate change transition, consistent with the funding assumptions. This might be used, for example, to test whether the funding strategy is sufficiently robust in the context of the scenario analysis considered and therefore any potential contribution impacts.

This also should be supported by qualitative commentary on what potential actions are being taken to improve resilience to climate change and the potential implications. For example the path to net zero and any interim targets, and how they correspond to the scenarios modelled. Where action has already been taken, Funds may request some analysis to quantify the impact retrospectively if they wish (although we would expect this work to be done by the investment consultant or custodian).

2. Scenarios to be considered

- One of the scenarios will be Paris aligned scenario and there will be at least one other scenario consistent with a higher temperature outcome.
- Funds should consider both the projected potential global average temperature rise, and the nature of the transition to that temperature rise (e.g. timing and level of disruption).
- Ultimately Funds will take advice from their Fund Actuary (and other advisers as appropriate) on the analysis to be undertaken as part of the valuation.
- The detailed method and assumptions underpinning the climate change scenarios is not prescribed and will be determined by Funds working with their advisers based on their own plans to address climate change. However, as an example, the following impacts may be considered:
  - the potential impact on the future investment return outlook (and therefore discount rate) and inflation (and therefore inflation-linked assumptions), for the purpose of projecting liability values; and
  - the impact on the investment returns delivered by the Fund's investment strategy for the purpose of projecting asset values
- Funds could also consider with their advisers the extent to which the scenarios will consider additional elements such as the potential impact on life expectancy changes and employer covenant.
- As well as Funds having different approaches to dealing with climate change in their portfolio construction, it is recognised that different actuarial firms/GAD will legitimately have differing views on the methodology and assumptions underpinning different climate change scenarios although we would expect some commonality here.

3. Time horizon and output

The output from the scenarios will include consideration of the results (which will include the funding level on each scenario modelled) over a period of at least 20 years to ensure there is sufficient recognition of the transition and physical risks of climate change.

To ensure consistency with other reporting requirements, if a Fund chooses to do so then separate analysis could be undertaken to be consistent with the expected TCFD requirements i.e. giving consideration to the short, medium and long term impacts, but this would be subject to the final TCFD requirements for the LGPS.

4. Reporting

- The Fund Actuary will summarise the analysis/commentary in the final valuation report, including the headline assumptions underpinning the analysis, in line with the profession's expectations. Limited reporting in an agreed format could be included in the dashboard for consideration by GAD for Section 13 reporting requirements, though given the different possible approaches and scenarios the results may not be directly comparable.
- We recommend that Funds include in their Funding Strategy Statement a statement that the Fund has undertaken scenario analysis to assess the resilience of the strategy against climate change risk over the agreed period.

# Appendix C: Solvency

C.1 In this appendix we set out the analysis we undertook in relation to whether the rate of employer contributions to the LGPS pension fund is set at an appropriate level to ensure the solvency of the pension fund. This appendix contains a description of:

- Solvency considerations
- Core Spending Power
- Mapping of solvency considerations to measures adopted
- Methodology used for solvency measures
- Table of outcomes for each fund

## Potential for default

C.2 In the context of the LGPS:

- Our understanding based on confirmation from the Ministry of Housing, Communities and Local Government (MHCLG) is that, in contrast to employers in the private sector, there is no insolvency regime for local authorities
- Therefore, for the purposes of our analysis we assume that local authority sponsors cannot default on their pension liabilities through failure
- Members' benefits are therefore dependent on the assets of the scheme and future contributions from employers including local authorities

## Solvency considerations

C.3 In assessing whether the conditions for solvency are met, we will have regard to:

### Risks already present:

- funding level on the SAB standard basis
- whether or not the fund continues to be open to new members. If the fund is closed to new members or is highly mature and without any guarantee in place, we will focus on the ability to meet additional cash contributions.
- the ability of tax raising authorities to meet employer contributions

### Emerging risks:

- the risks posed by changes to the value of scheme assets (to the extent that these are not matched by changes to the scheme liabilities)
- the proportion of scheme employers without tax raising powers or without statutory backing

C.4 We express the emerging risks in the context of Core Spending Power (for English local authorities, described below) or financing data (for Welsh local authorities). For funds which have no or limited Core Spending Power we have followed the same approach used in 2019 and previous reviews.

# Core Spending Power

C.5 GAD's stress tests are designed to test the ability of the underlying tax raising employers to meet a shock to the fund; one that results in a sustained reduction to the funding position, requiring remedial action from those employers in the form of long term additional contributions.

C.6 The intention is to put this in the context of the financial resources available to those tax raising employers. In order to do that, MHCLG has pointed to an objective, well used and publicly available measure referred to as Core Spending Power. This applies for all local authorities across England and is published here.

C.7 Core Spending Power has the following components:

- Settlement Funding Assessment
- Compensation for under-indexing the business rates multiplier
- Council Tax Requirement excluding parish precepts
- Improved Better Care Fund
- New Homes Bonus
- New Homes Bonus returned funding
- Rural Services Delivery Grant
- Transition Grant
- Adult Social Care Support Grant
- Winter Pressures Grant
- Social Care Support Grant
- Social Care Grant
- Market Sustainability and Fair Cost of Care Fund
- Lower tier services grant
- 2022/23 Services Grant

C.8 GAD have referenced Core Spending Power for 2022-23 (to be consistent with the effective date of the data provided for section 13) as the measure of financial resource of the underlying (tax raising) employers, and amalgamated these up to the fund level, in order to compare like with like. After the date of the calculations, the Core Spending Power 2022-23 data was subsequently revised, however the results were not revised as this would not have materially changed the results of the solvency metrics.

C.9 Core Spending Power is not a measure of total local authority income. It does not include commercial income, sales fees and charges, or ring-fenced grants (except improved Better Care Fund). Core Spending Power includes an assumed modelled amount of locally retained business rates and as such does not include growth (or falls) in actual retained business rates. In some authorities, non-uniformed police employees participate in the LGPS, but their funding comes from Home Office. On the basis that the majority of this applies to uniformed police officers, no adjustment is made for it. Similarly, DfE funding for academies is not included.

C.10 Core Spending Power is publicly available and objective, therefore MHCLG have advised it is the best such measure available currently.

C.11 Core Spending Power does not apply to Welsh local authorities. For Welsh funds GAD have used "financing of gross revenue expenditure" ("financing data"), which is broadly comparable with Core Spending Power, following discussions with Welsh Government in 2016. This applies for all local authorities in Wales and is published here. The 2022-23 "financing of gross revenue expenditure" data was also subsequently revised after these calculations were completed, however the results were not revised as this would not have materially changed the results of the solvency metrics.

C.12 Financing data has the following components which GAD have included for the purpose of section 13 analysis:

- Adjustments (including amending reports)
- Council tax reduction scheme (including RSG element)
- Discretionary non-domestic rate relief
- General government grants
- Share of re-distributed non-domestic rates
- Amount to be collected from council tax

C.13 Financing data also has the following components which we have not included for the purpose of section 13 analysis:

- Specific grants
- Appropriations from(+) / to(-) reserves ie increasing reserves (+) / decreasing reserves (-)

C.14 Similarly to Core Spending Power, financing data excludes income from sales, fees, and charges and we have excluded police funding from the analysis.

## Funds with no or low core spending

C.15 There were four funds with no or low core spending:

- City of London Corporation Pension Fund
- Environmental Agency Active Fund
- Environmental Agency Closed Fund
- London Pension Fund Authority Pension Fund

C.16 For each of these funds, we have reverted to the methodology used in previous reviews for asset shock and employer default, which expressed the resulting additional contributions to meet the emerging deficit as a percentage of pensionable pay.

## Mapping of solvency considerations

C.17 The five solvency metrics adopted in the 2019 exercise have been retained for the 2022 exercise. We developed and considered other measures but have excluded, for example the liability shock used previously as it did not add value under current circumstances beyond what was already measured under the asset shock.

**Table C1: 2022 solvency measures**

| Consideration | Measure Used |
|---|---|
| **Risks already present:** | |
| The relative ability of the fund to meet its accrued liabilities | **SAB funding level:** A fund's funding level using the SAB standard basis, as set out in Appendix G |
| The extent to which the fund continues to be open to new members. If a fund is closed to new members or is highly mature, we will focus on the ability to meet additional cash contributions | **Open fund:** Whether the fund is open to new members |
| The proportion of scheme employers without tax raising powers or without statutory backing | **Non-statutory members:** The proportion of members within the fund who are/were employed by an employer without tax raising powers or statutory backing |
| **Emerging risks:** | |
| The cost risks posed by changes to the value of scheme assets (to the extent that these are not matched by changes to the scheme liabilities) | **Asset shock:** The change in average employer contribution rates expressed as a percentage of Core Spending Power (or financing data) after a 15% fall in value of return-seeking assets |
| The impact that non-statutory employers defaulting on contributions would have on the income of sponsoring employers as a whole | **Employer default:** The change in average employer contribution rates as a percentage of Core Spending Power (or financing data) if all employers without tax raising powers or statutory backing default on their existing deficits |

C.18 Emerging risk measures require assumptions. We used best estimate assumptions for this purpose, details of which can be found in Appendix G. Details of the methods used to calculate scores under each measure and the criteria used to assign a colour code can be found in this Appendix.

## Solvency measures – methodology

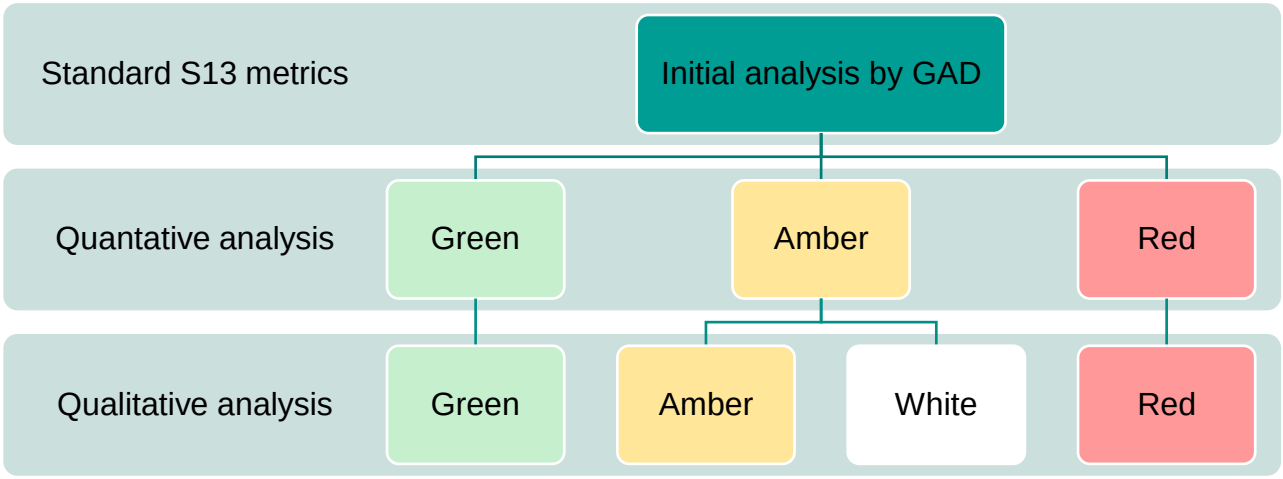
C.19 We detail the methodology behind the measures used to assess a fund's solvency position. The analysis is carried out a fund level, except where stated, but individual employers within any fund may be in a different position. Some of the measures listed below were calculated using a market consistent set of assumptions. For more information on this best estimate basis please see Appendix G.

C.20 The 2016 section 13 exercise developed the approach of setting red, amber and green ('RAG') flags for the solvency measure, where amber and red flags were raised when a fund breached thresholds set by GAD. For the 2019 and 2022 exercises, GAD has adopted the same RAG approach, however the flag allocations have been revised since 2016 taking into account the following:

- The scheme funding position has improved significantly since 2016 when the metrics were introduced;
- The size of funds has grown considerably since 2016 but the ability of tax backed employers to increase contributions if required (as measured by core spending power and financing data) has not kept pace. This could pose a risk to the LGPS, for example if there is a severe shock to return seeking asset classes.

C.21 Following discussions with MHCLG, GAD agreed that it is not helpful to raise individual fund flags which have been primarily driven by the relatively larger increase in the scale of liabilities relative to the possible contributions available, and introduced the “white” flag. The white flag is an advisory flag that highlights a general risk but does not require action in isolation.

C.22 The chart below illustrates the steps taken by GAD in determining the flag colours for the metrics.




C.23 The text box below defines each flag colour.

## Key

**RED** indicates a material issue that may result in the aims of section 13 not being met. In such circumstances remedial action to ensure solvency may be considered.

**AMBER** indicates a potential material issue that we would expect funds’ to be aware of. In isolation this would not usually contribute to a recommendation for remedial action in order to ensure solvency.

**WHITE** is an advisory flag that highlights a general issue but one which does not require an action in isolation. It may have been an amber flag if we had broader concerns.

**GREEN** indicates that there are no material issues that may contribute to a recommendation for remedial action in order to ensure solvency.

C.24 GAD will assess the position again at the time of the 2025 section 13 report and will decide whether to retain the white flag, return to the RAG approach or use other metrics/thresholds that are appropriate for the circumstances of the LGPS at that point in time.

### SAB funding level: A fund’s funding level using the SAB standard basis

C.25 This measure highlights possible risks to a fund as a result of assets being significantly lower than liabilities, where liabilities are those estimated on the SAB standard basis detailed in Appendix G.

C.26 A fund in deficit will need to pay additional contributions in order to meet the liabilities that have already been accrued.

C.27 This measure assesses the relative funding levels of individual funds. All funds have been ordered by this measure (highest funding level first) and the five funds ranked 82 to 86 out of 86 (i.e. not including the Environment Agency Closed Fund) are assigned an initial amber code. All other funds are assigned a green colour code.

C.28 As set out in the methodology section above, GAD undertook a subsequent qualitative analysis on whether initial amber flag colours should be revised to white.

## Open fund: Whether the fund is open to new members

C.29 A scheme that is closed to new members will be closer to maturity than a scheme which is still open. This creates a possible risk to sponsoring employers as there is less scope to make regular contributions and receive investment returns on those contributions. Additionally, if problems do occur with the scheme funding level, the reduced time to maturity of the scheme means that additional contributions must be spread over a shorter timeframe and could be more volatile as a result.

C.30 This measure is a 'Yes' when a fund is still open to new members and a 'No' otherwise. A 'Yes' results in a green colour code, while a 'No' results in a red colour code. As at 31 March 2022, the Environment Agency Closed Fund is the only closed fund. However, given that this fund has a DEFRA guarantee we consider it appropriate to set the flag to green in this circumstance.

## Non-statutory members: The proportion of members within the fund who are employed by an employer without tax raising powers or statutory backing

C.31 We have considered taxpayer-backed employers of stronger covenant value than other employers. It is important, in this context, that administering authorities and other employers understand the potential cost that may fall on taxpayers in the future if employers without statutory backing or tax raising powers are unable to meet their required contributions and those with such powers become responsible for the accrued costs.

C.32 Data for this measure has been taken from the publicly available 'Local government pension scheme funds local authority data: 2022 to 2023' published by MHCLG here. The data contains the number of employees within each fund by employer group, where:

- Group 1 refers to local authorities and connected bodies
- Group 2 refers to centrally funded public sector bodies
- Group 3 refers to other public sector bodies and
- Group 4 refers to private sector, voluntary sector and other bodies

C.33 For the purposes of this measure, and unless information has been provided to the contrary, it has been assumed that employers listed under groups 1 and 2 are those with tax raising powers or statutory backing and that employers listed under groups 3 and 4 are those without tax raising powers or statutory backing.

C.34 The measure therefore gives the proportion of members within the fund that are/were employed by group 1 and 2 employers as a proportion of all members within the fund.

C.35 Under this measure a fund has been allocated an amber colour code if its proportion of members who are employed by an employer without tax raising powers or statutory backing is between 25% and 50%, a red colour code would be allocated if the proportion is more than 50% and a green colour code is allocated in all other cases. It is not applicable to consider this metric in relation to the Environmental Agency funds.

C.36 As set out in the methodology section above, GAD undertook a subsequent qualitative analysis on whether initial amber flag colours should be revised to white.

## Asset shock: The change in average employer contribution rates expressed as a percentage of Core Spending Power or financing data after a 15% fall in value of return-seeking assets

C.37 This measure shows the effect on total employer contribution rates of a one-off decrease in the value of a fund's return seeking assets equal to 15% of the value of those assets expressed as a percentage of Core Spending Power or financing data. Defensive assets are assumed to be unaffected.

C.38 For the purposes of this measure liabilities have been restated on the standardised best estimate basis and deficit recovery periods have been standardised using a period of 20 years to ensure that results are comparable.

C.39 For the scenario where a fund is in deficit on the standardised best estimate basis after the asset shock (the funding level is less than 100% after the shock) and the relevant threshold has been breached (over 3%) as described below, then an initial amber flag is raised. However, where the fund is in surplus after the shock, the fund will not raise a flag even if it had breached the threshold but the risk remains that such an event could bring forward the need to increase contributions.

C.40 Return-seeking asset classes are assumed to be:

- Equities (UK, Overseas and Unquoted or private equities)
- Property
- Infrastructure investments which are equity type
- "Multi asset" funds (examples include diversified growth funds, managed funds, balanced funds, multi asset credit or absolute returns)
- "Other" return seeking investments

Defensive asset classes, which are less volatile but may still generate a return, are assumed to be:

- Cash
- Bonds (Gilts, Corporate Bonds or index linked)
- "Other" defensive investments

C.41 We calculated the emerging deficit from the shock following a 15% fall in return seeking assets which would be attributed to the employers covered by core spending or financing data (which we refer to as "% tax raising employers" below):

$$\text{New Deficit} = (\text{Pre stress asset value} - \text{post stress asset value}) \times \%\ \text{Tax raising employers}$$

We spread this over 20 years of annual payments and express as a percentage of Core Spending Power (or financing data for Welsh funds)

$$\frac{\text{New Deficit}}{\ddot{a}_{20} \times \text{Core Spending Power}}$$

Where:

- new deficit is calculated on the standardised best estimate basis as at 31 March 2022
- $\bar{a}_{20}$ is a continuous annuity over the 20-year deficit recovery period at the rate of interest equal to $\frac{(1+i)}{(1+e)} - 1$.
- $i$ is the nominal discount rate assumption on the standardised best estimate basis.
- $e$ is the general earnings inflation assumption on the standardised best estimate basis

C.42 A fund is allocated an initial amber colour code if its result is above 3% and a green colour code otherwise.

C.43 For those funds with no/low core spending the measure was expressed as a percentage of pensionable pay, with an amber flag raised if that was greater than 5% and is in deficit after the asset shock. Where such funds remain in surplus after the asset shock, we show a theoretical change in contributions. This is an illustration of sensitivity and there is no restriction on the theoretical contribution rate either pre or post asset shock. No results are available for the Environment Agency Closed Fund as there are no remaining active members within the fund with which to calculate a revised contribution rate.

C.44 As set out in the methodology section above, GAD undertook a subsequent qualitative analysis to consider whether it was felt that the risk identified was potentially material to the fund, and hence whether the initial amber flag should be maintained.

## Employer default: The change in average employer contribution rates as a percentage of payroll if all employers without tax raising powers or statutory backing default on their existing deficits

C.45 LGPS regulations require employers to pay the contributions set in the valuation. MHCLG has confirmed that:

- there is a guarantee of LGPS pension liabilities by a public body
- that public body is incapable of becoming insolvent, and
- the governing legislation is designed to ensure the solvency and long term economic efficiency of the Scheme.

C.46 It is important, in this context, that administering authorities and other employers understand the potential cost that may fall on taxpayers in the future if employers without statutory backing or tax raising powers are unable to meet their required contributions and those with such powers become responsible for the accrued costs.

C.47 A fund's deficit will not change as a result of the default, but as the deficit is spread over a smaller number of employers, the contribution rate for each of the remaining employers will increase.

C.48 For the purposes of this measure liabilities have been restated on the standardised best estimate basis and deficit recovery periods have been standardised using a period of 20 years to ensure that results are comparable.

C.49 For funds in surplus under the standardised best estimate basis, the flag colour for a fund is green, as there would be no deficits attributed to non-taxed backed employers. The measure therefore solely considers those funds in deficit on the standardised best estimate basis.

C.50 We calculated the amount of deficit attributed to tax raising authorities if other public sector bodies & private sector, voluntary sector and other bodies were to default:

$$\text{Share of Deficit} = \text{Deficit} \times \%\ \text{non} - \text{tax raising employers}$$

C.51 We spread this over 20 years of annual payments and express as a percentage of Core Spending Power for most funds (Welsh funds use financing data and funds with no/low Core Spending use pensionable pay, as set out in C.53 below).

$$\frac{(\text{Share of Deficit})}{(\ \bar{a}_{20} \times \text{Core Spending Power})}$$

Where:

- Share of deficit is calculated on the standardised best estimate basis as at 31 March 2022
- $\bar{a}_{20}$ is a continuous annuity over the 20 year deficit recovery period at the rate of interest equal to $\frac{(1+i)}{(1+e)} - 1$.
- $i$ is the nominal discount rate assumption on the standardised best estimate basis.
- $e$ is the general earnings inflation assumption on the standardised best estimate basis

C.52 A fund is allocated an initial amber colour code if its result is greater than 3% and a green colour code otherwise.

C.53 For those funds with no/low core spending the change of contribution rate was expressed as a percentage of pensionable pay, with an amber flag raised if that was greater than 2% and is in deficit after the asset shock. It is not applicable to consider this metric in relation to the Environmental Agency funds.

C.54 As set out in the methodology section above, GAD undertook a subsequent qualitative analysis on whether initial flag colours should be revised.

# Solvency measures – by fund

**Table C2: Solvency measures by fund**

| Pension fund | Open fund | SAB funding level | Non-Statutory employees | Asset shock | | Employer default | |
|---|---|---|---|---|---|---|---|
| | | | | Deficit or surplus post shock | Impact on core spending | Deficit or surplus | Impact on core spending |
| Avon Pension Fund | Yes | 107.5% | 4.9% | Deficit | 1.9% | Surplus | N/A |
| Bedfordshire Pension Fund | Yes | 96.9% | 6.8% | Deficit | 2.5% | Deficit | 0.1% |
| Buckinghamshire Pension Fund | Yes | 110.1% | 3.9% | Deficit | 2.8% | Surplus | N/A |
| Cambridgeshire Pension Fund | Yes | 123.6% | 7.2% | Surplus | 2.7% | Surplus | N/A |
| Cardiff and Vale of Glamorgan Pension Fund | Yes | 108.8% | 9.1% | Deficit | 1.6% | Surplus | N/A |
| Cheshire Pension Fund | Yes | 135.7% | 7.0% | Surplus | 2.8% | Surplus | N/A |
| City and County of Swansea Pension Fund | Yes | 117.0% | 3.4% | Surplus | 2.5% | Surplus | N/A |
| City of Westminster Pension Fund | Yes | 127.3% | 2.2% | Surplus | 3.5% | Surplus | N/A |
| Clwyd Pension Fund | Yes | 116.5% | 5.3% | Surplus | 2.0% | Surplus | N/A |
| Cornwall Pension Fund | Yes | 100.7% | 3.6% | Deficit | 2.2% | Surplus | N/A |
| Cumbria Local Government Pension Scheme | Yes | 128.9% | 6.4% | Surplus | 3.3% | Surplus | N/A |
| Derbyshire Pension Fund | Yes | 119.2% | 5.5% | Surplus | 3.4% | Surplus | N/A |
| Devon Pension Fund | Yes | 101.7% | 4.7% | Deficit | 2.1% | Surplus | N/A |
| Dorset County Pension Fund | Yes | 97.9% | 3.9% | Deficit | 2.1% | Deficit | 0.0% |
| Durham County Council Pension Fund | Yes | 102.9% | 4.2% | Deficit | 3.0% | Surplus | N/A |
| Dyfed Pension Fund | Yes | 129.3% | 3.6% | Surplus | 2.8% | Surplus | N/A |
| East Riding Pension Fund | Yes | 126.2% | 2.6% | Surplus | 4.1% | Surplus | N/A |
| East Sussex Pension Fund | Yes | 129.4% | 1.8% | Surplus | 3.0% | Surplus | N/A |

| Pension fund | Open fund | SAB funding level | Non-Statutory employees | Asset shock | | Employer default | |
|---|---|---|---|---|---|---|---|
| | | | | Deficit or surplus post shock | Impact on core spending | Deficit or surplus | Impact on core spending |
| Essex Pension Fund | Yes | 132.9% | 15.0% | Surplus | 2.9% | Surplus | N/A |
| Gloucestershire Pension Fund | Yes | 121.4% | 9.2% | Surplus | 2.5% | Surplus | N/A |
| Greater Gwent (Torfaen) Pension Fund | Yes | 104.9% | 7.9% | Deficit | 1.8% | Surplus | N/A |
| Greater Manchester Pension Fund | Yes | 132.4% | 22.4% | Surplus | 5.3% | Surplus | N/A |
| Gwynedd Pension Fund | Yes | 136.2% | 3.4% | Surplus | 3.2% | Surplus | N/A |
| Hampshire County Council Pension Fund | Yes | 118.2% | 3.5% | Surplus | 3.3% | Surplus | N/A |
| Hertfordshire County Council Pension Fund | Yes | 126.3% | 4.8% | Surplus | 2.7% | Surplus | N/A |
| Isle of Wight Council Pension Fund | Yes | 123.5% | 2.5% | Surplus | 2.6% | Surplus | N/A |
| Islington Council Pension Fund | Yes | 105.5% | 5.8% | Deficit | 3.6% | Surplus | N/A |
| Kent Pension Fund | Yes | 110.8% | 8.1% | Deficit | 2.4% | Surplus | N/A |
| Lancashire County Pension Fund | Yes | 132.0% | 8.7% | Surplus | 3.1% | Surplus | N/A |
| Leicestershire County Council Pension Fund | Yes | 116.0% | 1.3% | Deficit | 3.1% | Surplus | N/A |
| Lincolnshire Pension Fund | Yes | 118.2% | 6.2% | Surplus | 2.2% | Surplus | N/A |
| London Borough of Barking and Dagenham Pension Fund | Yes | 112.1% | 5.1% | Deficit | 3.0% | Surplus | N/A |
| London Borough of Barnet Pension Fund | Yes | 98.2% | 35.5% | Deficit | 1.4% | Deficit | 0.1% |
| London Borough of Bexley Pension Fund | Yes | 130.0% | 5.2% | Surplus | 1.4% | Surplus | N/A |
| London Borough of Brent Pension Fund | Yes | 94.1% | 17.9% | Deficit | 1.8% | Deficit | 0.2% |

| Pension fund | Open fund | SAB funding level | Non-Statutory employees | Asset shock | | Employer default | |
|---|---|---|---|---|---|---|---|
| | | | | Deficit or surplus post shock | Impact on core spending | Deficit or surplus | Impact on core spending |
| London Borough of Bromley Pension Fund | Yes | 149.6% | 2.9% | Surplus | 1.4% | Surplus | N/A |
| London Borough of Camden Pension Fund | Yes | 119.1% | 4.3% | Surplus | 4.0% | Surplus | N/A |
| London Borough of Croydon Pension Fund | Yes | 109.8% | 4.5% | Deficit | 2.0% | Surplus | N/A |
| London Borough of Ealing Pension Fund | Yes | 108.4% | 1.0% | Deficit | 1.9% | Surplus | N/A |
| London Borough of Enfield Pension Fund | Yes | 120.4% | 1.7% | Surplus | 2.1% | Surplus | N/A |
| London Borough of Hackney Pension Fund | Yes | 113.6% | 10.5% | Deficit | 3.0% | Surplus | N/A |
| London Borough of Hammersmith and Fulham Pension Fund | Yes | 110.6% | 16.6% | Deficit | 2.9% | Surplus | N/A |
| London Borough of Haringey Pension Fund | Yes | 120.7% | 2.6% | Surplus | 3.6% | Surplus | N/A |
| London Borough of Harrow Pension Fund | Yes | 102.1% | 1.9% | Deficit | 2.0% | Surplus | N/A |
| London Borough of Havering Pension Fund | Yes | 98.1% | 0.8% | Deficit | 2.0% | Deficit | 0.0% |
| London Borough of Hillingdon Pension Fund | Yes | 97.6% | 1.0% | Deficit | 2.3% | Deficit | 0.0% |
| London Borough of Hounslow Pension Fund | Yes | 108.4% | 12.6% | Deficit | 2.5% | Surplus | N/A |
| London Borough of Lambeth Pension Fund | Yes | 119.3% | 0.3% | Surplus | 3.3% | Surplus | N/A |
| London Borough of Lewisham Pension Fund | Yes | 116.9% | 3.8% | Surplus | 2.5% | Surplus | N/A |
| London Borough of Merton Pension Fund | Yes | 111.5% | 3.3% | Deficit | 2.8% | Surplus | N/A |
| London Borough of Newham Pension Fund | Yes | 103.5% | 22.9% | Deficit | 2.5% | Surplus | N/A |

| Pension fund | Open fund | SAB funding level | Non-Statutory employees | Asset shock | | Employer default | |
|---|---|---|---|---|---|---|---|
| | | | | Deficit or surplus post shock | Impact on core spending | Deficit or surplus | Impact on core spending |
| London Borough of Redbridge Pension Fund | Yes | 105.8% | 1.6% | Deficit | 2.2% | Surplus | N/A |
| London Borough of Southwark | Yes | 126.2% | 0.0% | Surplus | 3.6% | Surplus | N/A |
| London Borough of Tower Hamlets Pension Fund | Yes | 125.2% | 5.8% | Surplus | 3.4% | Surplus | N/A |
| London Borough of Waltham Forest Pension Fund | Yes | 84.7% | 3.1% | Deficit | 1.7% | Deficit | 0.1% |
| Merseyside Pension Fund | Yes | 120.3% | 10.7% | Surplus | 3.7% | Surplus | N/A |
| Norfolk Pension Fund | Yes | 115.9% | 8.2% | Surplus | 2.7% | Surplus | N/A |
| North Yorkshire Pension Fund | Yes | 132.7% | 5.0% | Surplus | 3.0% | Surplus | N/A |
| Northamptonshire Pension Fund | Yes | 120.9% | 4.0% | Surplus | 2.3% | Surplus | N/A |
| Nottinghamshire County Council Pension Fund | Yes | 104.2% | 5.7% | Deficit | 3.1% | Surplus | N/A |
| Oxfordshire County Council Pension Fund | Yes | 113.8% | 5.1% | Surplus | 3.2% | Surplus | N/A |
| Powys County Council Pension Fund | Yes | 107.8% | 6.3% | Deficit | 1.6% | Surplus | N/A |
| Rhondda Cynon Taf County Borough Council Pension Fund | Yes | 122.8% | 5.8% | Surplus | 2.6% | Surplus | N/A |
| Royal Borough of Greenwich Pension Fund | Yes | 104.4% | 4.1% | Deficit | 2.5% | Surplus | N/A |
| Royal Borough of Kensington and Chelsea Pension Fund | Yes | 164.4% | 3.7% | Surplus | 4.4% | Surplus | N/A |
| Royal Borough of Kingston-Upon-Thames Pension Fund | Yes | 123.0% | 7.7% | Surplus | 2.3% | Surplus | N/A |
| Royal County of Berkshire Pension Fund | Yes | 83.4% | 6.6% | Deficit | 1.8% | Deficit | 0.2% |

| Pension fund | Open fund | SAB funding level | Non-Statutory employees | Asset shock | | Employer default | |
|---|---|---|---|---|---|---|---|
| | | | | Deficit or surplus post shock | Impact on core spending | Deficit or surplus | Impact on core spending |
| Shropshire County Pension Fund | Yes | 106.8% | 8.8% | Deficit | 2.8% | Surplus | N/A |
| Somerset County Council Pension Fund | Yes | 103.2% | 8.3% | Deficit | 2.7% | Surplus | N/A |
| South Yorkshire Pension Fund | Yes | 125.3% | 8.4% | Surplus | 3.9% | Surplus | N/A |
| Staffordshire Pension Fund | Yes | 127.9% | 5.7% | Surplus | 3.4% | Surplus | N/A |
| Suffolk Pension Fund | Yes | 130.7% | 4.4% | Surplus | 2.1% | Surplus | N/A |
| Surrey Pension Fund | Yes | 108.8% | 4.3% | Deficit | 2.4% | Surplus | N/A |
| Sutton Pension Fund | Yes | 109.2% | 4.5% | Deficit | 1.9% | Surplus | N/A |
| Teesside Pension Fund | Yes | 125.0% | 4.4% | Surplus | 3.2% | Surplus | N/A |
| Tyne and Wear Pension Fund | Yes | 125.9% | 9.9% | Surplus | 3.7% | Surplus | N/A |
| Wandsworth Council Pension Fund | Yes | 138.7% | 5.0% | Surplus | 2.8% | Surplus | N/A |
| Warwickshire Pension Fund | Yes | 118.3% | 7.3% | Surplus | 2.7% | Surplus | N/A |
| West Midlands Pension Fund | Yes | 116.3% | 8.9% | Surplus | 3.3% | Surplus | N/A |
| West Sussex County Council Pension Fund | Yes | 159.1% | 4.0% | Surplus | 2.9% | Surplus | N/A |
| West Yorkshire Pension Fund | Yes | 118.0% | 19.8% | Surplus | 4.4% | Surplus | N/A |
| Wiltshire Pension Fund | Yes | 115.3% | 4.0% | Surplus | 2.4% | Surplus | N/A |
| Worcestershire County Council Pension Fund | Yes | 112.8% | 7.1% | Deficit | 2.8% | Surplus | N/A |
| City of London Corporation Pension Fund* | Yes | 102.1% | 10.5% | Deficit | 7.2% | Surplus | N/A |
| London Pensions Fund Authority Pension Fund* | Yes | 123.1% | 0.0% | Surplus | 10.2% | Surplus | N/A |
| Environment Agency Active Fund* | Yes | 138.0% | N/A | Surplus | 4.9% | N/A | N/A |

| Pension fund | Open fund | SAB funding level | Non-Statutory employees | Asset shock | | Employer default | |
|---|---|---|---|---|---|---|---|
| | | | | Deficit or surplus post shock | Impact on core spending | Deficit or surplus | Impact on core spending |
| Environment Agency Closed Fund | No | 76.9% | N/A | N/A | N/A | N/A | N/A |

Notes:
1. Funding levels are on the 2022 SAB standard basis.
2. For funds marked * the asset and employer default shocks are assessed as a percentage of pensionable pay (as we did in the previous exercises).

# Appendix D: Long term cost efficiency

D.1 We developed a series of relative and absolute considerations to help assess whether the contributions met the aims of section 13 under long term cost efficiency. This appendix contains a description of:

- Mapping of long term cost efficiency considerations to measures adopted
- Methodology used for long term cost efficiency measures
- Table of outcomes for each fund
- Proposed future long term cost efficiency measures

## Long term cost efficiency – considerations and methodology

**Table D1: Long term cost efficiency considerations and measures**

| Consideration | Measure Used |
|---|---|
| **Relative considerations:** | |
| The implied deficit recovery period | **Deficit Period:** Implied deficit recovery period calculated on a standardised best estimate basis |
| The investment return required to achieve full funding | **Required Return:** The required investment return rates to achieve full funding in 20 years' time on a standardised best estimate basis |
| The pace at which the deficit is expected to be paid off | **Repayment Shortfall:** The difference between: actual contributions in excess of GAD's best estimate of future service cost and the annual deficit recovery contributions required as a percentage of payroll to pay off the deficit in 20 years, where the deficit is calculated on a standardised best estimate basis |
| **Absolute Considerations:** | |
| The extent to which the required investment return set out above is less than the estimated future return being targeted by a fund's investment strategy | **Return Scope:** The required investment return rates as calculated in required return, compared with the fund's expected best estimate future returns assuming current asset mix maintained |
| The extent to which any deficit recovery plan can be reconciled with, and can be demonstrated to be a continuation of, the previous deficit recovery plan, after allowing for actual fund experience | **Deficit Reconciliation:** Confirmation that the deficit period can be demonstrated to be a continuation of the previous deficit recovery plan, after allowing for actual fund experience |

D.2 For the 2022 section 13 report, GAD has adopted the same measures as those in 2019. As in 2019 a qualitative step was introduced to consider whether it was felt that the risk identified was potentially material to the fund.

D.3 The analyses and calculations carried out under these long term cost efficiency measures are approximate. They rely on the accuracy of the data provided by the respective local firms of actuarial advisors.

D.4 Although the calculations are approximate, we consider they are sufficient for the purposes of identifying which funds are a potential cause for concern. While the measures should not represent targets, these measures help us determine whether a more detailed review is required; for example, we would have greater concern where multiple measures triggered amber for a given fund.

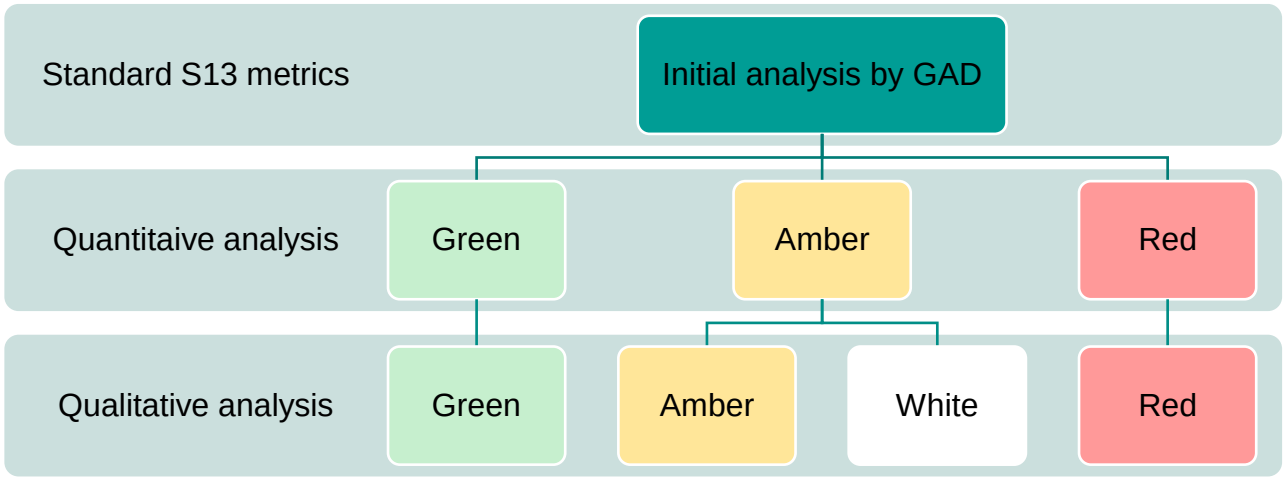
## Long term cost efficiency measures – methodology

D.5 We detail the methodology behind the measures used to assess a fund's long term cost efficiency position below. The analysis is carried out a fund level, except where stated, but individual employers within any fund may be in a different position. Some of the measures listed below were calculated using a market consistent set of assumptions. For more information on this best estimate basis please see Appendix G.

D.6 The 2016 section 13 exercise developed the approach of setting Red, Amber or Green ('RAG') flags for the long term cost efficiency measure, where amber and red flags were raised when a fund breached thresholds set by GAD. For the 2019 and 2022 exercises, GAD initially adopted the same RAG approach and thresholds, however the flag allocation has been revised to concentrate on funds which raised multiple flags. GAD also introduced a subsequent qualitative step, which utilised the graph showing relative funding level relative and contributions, which assisted GAD in determining whether to flag and/or engage with a fund.

D.7 Following discussions with MHCLG, GAD agreed that it is not helpful to focus on all individual fund flags but rather to concentrate on funds with multiple flags or those highlighted from consideration of the graph of relative funding level and contributions. This resulted in the introduction of a "white" flag. The white flag is an advisory flag that highlights a general risk but does not require action in isolation.

D.8 The chart below illustrates the steps taken by GAD in determining the flag colours for the metrics.



D.9 The text box below defines each flag colour:

**Key**

**AMBER** indicates a material issue that may result in the aims of section 13 not being met. In such circumstances remedial action to ensure long term cost efficiency may be considered.

**WHITE** indicates a potential material issue that we would expect funds' to be aware of. In isolation this would not usually contribute to a recommendation for remedial action in order to ensure long term cost efficiency.

**WHITE** is an advisory flag that highlights a general issue but one which does not require an action in isolation. It may have been an amber flag if we had broader concerns.

**GREEN** indicates that there are no material issues that may contribute to a recommendation for remedial action in order to ensure long term cost efficiency.

D.10 GAD will assess the position again at the time of the 2025 section 13 report and will decide whether to retain the white flag, return to the RAG approach or use other metrics/thresholds that are appropriate for the circumstances of the LGPS at that point in time.

## Deficit period: The implied deficit recovery period calculated on a standardised best estimate basis

D.11 This is a market related metric and calculations are done on a standardised best estimate basis.

D.12 The implied deficit recovery period in years on the standardised best estimate basis was found by solving the following equation for x:

D.13 $$\bar{a}_x = \frac{\text{Deficit on standardised BE basis}}{\text{Annual deficit recovery payment on standardised BE basis}}$$

Where:

- x is the implied deficit recovery period.
- $\bar{a}_x$ is a continuous annuity over x years at the rate of interest equal to $\frac{(1+i)}{(1+e)} - 1$.
- i is the nominal discount rate assumption on the standardised best estimate basis.
- e is the general earnings inflation assumption on the standardised best estimate basis.
- The deficit on the standardised best estimate basis is as at 31 March 2022.
- The annual deficit recovery payment on the standardised best estimate basis is calculated as the difference between the average employer contribution rate for the years 2023/24 to 2025/26, allowing for both contributions paid as a percentage of salary and fixed monetary contributions into the fund, where deficit contributions are fixed (i.e. the fixed monetary contributions, if any, have been converted so that they are quoted as a percentage of salary roll), and the employer standard contribution rate on the standardised best estimate basis for the years 2023/24 to 2025/26 (which is assumed to be equal to the future cost of accrual of that particular fund).

D.14 Funds that were in surplus or where the implied deficit recovery period was less than 10 years were flagged as green. Those with recovery periods greater than or equal to 10 years were flagged as

amber. If there were any funds that were paying contributions at a level that would result in an increase in deficit, they would have been flagged as red.

D.15 As set out in the methodology section above, GAD undertook a subsequent qualitative analysis on whether initial amber flag colours should be revised to white.

### Required return: The required investment return rates to achieve full funding in 20 years' time on the standardised best estimate basis

D.16 This is a market related metric and calculations are done on a standardised best estimate basis.

D.17 The following assumptions were made for the purposes of this calculations:

- Time 0 is 31 March 2022.
- Time 20 is 31 March 2042.
- $A_0$ is the value of the fund's assets at time 0 and was obtained from the data provided by the local firms of actuarial advisors.
- $A_{20}$ is the projected value of the fund's assets at time 20 (using the equation below)
- $L_0$ is the value of the fund's liabilities at time 0, on a standardised best estimate basis
- $L_{20}$ is the projected value of the fund's liabilities at time 20 (using the equation below)
- $C_0$ is one year's employer contributions paid from time 0
- $C_{0-20}$ is the total employer contributions payable over the period time 0 – 20, assumed to occur mid-way between time 0 and time 20 (i.e. at time 10)
- $B_0$ is the value of one year's benefits paid (excluding transfers) from time 0
- $B_{0-20}$ is the total value of benefits payable (excluding transfers) over the period time 0 – 20, assumed to occur mid-way between time 0 and time 20 (i.e. at time 10).
- $SCR_0$ is the standard contribution rate payable from time 0 to time 1 on a standardised best estimate basis.
- $SCR_{0-20}$ is the standard contribution rate payable from time 0 – 20, assumed to occur mid-way between time 0 and time 20 (i.e. at time 10).
- $Sal_0$ is the salary roll at time 0 and was obtained from the data provided by the local firms of actuarial advisors.
- $i$ is the nominal discount rate assumption on the standardised best estimate basis.
- $e$ is the general earnings assumption on the standardised best estimate basis.
- $x$ is the required investment return that is to be calculated

D.18 The membership profile is assumed to be constant.

D.19 The assets and liabilities at time 20 were then equated and the resulting quadratic equation solved to find the required rate of investment return to achieve full funding, i.e.:

$$A_{20} - L_{20} = 0$$

Where:

- $A_{20} = [A_0 \times (1 + x)^{20}] + [(C_{0-20} - B_{0-20}) \times (1 + x)^{10}]$
- $L_{20} = [L_0 \, x \, (1 + i)^{20}] + [(SCR_{0-20} - B_{0-20}) \times (1 + i)^{10}]$
- $C_{0-20} = C_0 \times 20 \times (1 + e)^{10}$
- $B_{0-20} = B_0 \times 20 \times (1 + e)^{10}$
- $SCR_{0-20} = Sal_0 \times SCR_0 \times 20 \times (1 + e)^{10}$

D.20 Where the required investment return was higher than the nominal discount rate on the standardised best estimate basis (i.e. i where i = 4.80%) funds would be classified as amber, whereas funds were classified as green if the required return was less than 4.80%.

D.21 As set out in the methodology section above, GAD undertook a subsequent qualitative analysis on whether initial amber flag colours should be revised to white.

### Repayment shortfall: The difference between the actual contribution rate net of GAD's best estimate future service cost and the annual deficit recovery contributions (on a standardised best estimate basis and assuming deficit is paid off in 20 years), as a percentage of payroll

D.22 This is a market related metric and calculations are done on a standardised best estimate basis.

D.23 For this calculation we determine the difference between:

- The employer contributions in excess of GAD's best estimate future service cost, and
- The required annual deficit recovery contribution rate on a standardised best estimate basis to pay off the deficit in 20 years' time

D.24 The required annual deficit recovery contribution rate to be paid on a standardised best estimate basis is equal to:

$$\frac{\text{Deficit on standardised best estimate basis}}{\bar{a}_{\mathbf{20}} \times \text{ Salary Roll}}$$

Where:

- The deficit on the standardised best estimate basis is as at 31 March 2022.
- $\bar{a}_{20}$ is a continuous annuity over the 20 year deficit recovery period at the rate of interest equal to $\frac{(1+i)}{(1+e)} - 1$.
- $i$ is the nominal discount rate assumption on the standardised best estimate basis.
- $e$ is the general earnings inflation assumption on the standardised best estimate basis.
- The salary roll is as at 31 March 2022 and has not been adjusted.

D.25 The difference in deficit recovery contribution rates is then defined as:

$$(\text{Avg ER cont rate paid} - \text{ ER SCR on BE basis}) - \frac{\text{Deficit on BE basis}}{\bar{a}_{20} \text{ x Salary Roll}}$$

Where:

- The average employer contribution rate is for the years 2023/24 – 2025/26, allowing for both contributions paid as a percentage of salary and fixed monetary contributions into the fund where deficit contributions are fixed (i.e. the fixed monetary contributions, if any, have been converted so that they are quoted as a percentage of salary roll).

- The employer standard contribution rate on the standardised best estimate basis is for the years 2023/24 – 2025/26. It is assumed that the standard contribution rate is equal to the future cost of accrual of that particular fund.

D.26 The data required for each of the funds to carry out the above calculation was provided by their respective firms of actuarial advisors.

D.27 Where appropriate, data has been restated on the standardised best estimate basis.

D.28 Funds in surplus on GAD's best estimate basis or where the difference in deficit recovery contribution rates is greater than 0% are flagged as green. Where the difference between contribution rates is between 0% and -3%, the funds would be flagged as amber and if the difference in deficit recovery contribution rates is less than -3%, then the fund would be flagged as red.

D.29 As set out in the methodology section above, GAD undertook a subsequent qualitative analysis on whether initial amber flag colours should be revised to white.

### Return scope: The required investment return rates as calculated in required return, compared with the fund's expected best estimate future returns assuming current asset mix maintained

D.30 This is a market related metric and calculations are done on a standardised best estimate basis.

D.31 The required investment return (x) calculated in the required return measure was compared against the best estimate investment return expected from the fund's assets held on 31 March 2022.

D.32 The asset data used in this calculation was provided by each fund's respective firm of actuarial advisors.

D.33 Funds where the best estimate future returns were higher than the required investment return by 0.5% or more were flagged as green. Those funds where this difference was between 0% and 0.5% would be flagged as amber whilst those where the best estimate returns were lower than the required investment returns were flagged as red.

D.34 As set out in the methodology section above, GAD undertook a subsequent qualitative analysis on whether initial amber flag colours should be revised to white.

### Deficit reconciliation: Confirmation that the deficit period can be demonstrated to be a continuation of the previous deficit recovery plan, after allowing for actual fund experience

D.35 This measure is used to monitor the change in the deficit recovery end point set locally by the fund at each valuation and what the underlying reasons are for any adverse changes in this period.

D.36 This measure considers the following:

- Whether contributions have decreased since the previous valuations (reducing the burden on current tax payers)

> Whether the deficit recovery end point has moved further into the future, compared with the previous valuation (increasing the burden on future tax payers)

D.37 Funds where both of the above have occurred are initially flagged amber otherwise funds are flagged green. A subsequent qualitative assessment considered whether the flag was affected by new deficit emerging over the inter-valuation period or by considered funding decisions at either the previous or current valuations.

## Long term cost efficiency measures – by fund

**Table D2: Long term cost efficiency measures by fund**

| Pension fund | Deficit period (rank) | Required return/(rank) | | Repayment shortfall | Return scope/(rank) | | Deficit recovery plan |
|---|---|---|---|---|---|---|---|
| Avon Pension Fund | Surplus | 3.5% | 56 | Surplus | 0.7% | 81 | Green |
| Bedfordshire Pension Fund | 2 (81) | 3.5% | 57 | 8.3% | 1.0% | 75 | Green |
| Buckinghamshire Pension Fund | Surplus | 3.4% | 50 | Surplus | 1.1% | 69 | Green |
| Cambridgeshire Pension Fund | Surplus | 3.1% | 38 | Surplus | 1.9% | 24 | Green |
| Cardiff and Vale of Glamorgan Pension Fund | Surplus | 3.9% | 76 | Surplus | 0.9% | 77 | Green |
| Cheshire Pension Fund | Surplus | 2.4% | 10 | Surplus | 1.6% | 41 | Green |
| City and County of Swansea Pension Fund | Surplus | 3.3% | 46 | Surplus | 1.9% | 23 | Green |
| City of London Corporation Pension Fund | Surplus | 3.8% | 72 | Surplus | 1.5% | 46 | Green |
| City of Westminster Pension Fund | Surplus | 3.0% | 29 | Surplus | 2.1% | 20 | Green |
| Clwyd Pension Fund | Surplus | 3.7% | 66 | Surplus | 1.3% | 51 | Green |
| Cornwall Pension Fund | Surplus | 3.9% | 77 | Surplus | 1.3% | 58 | Green |
| Cumbria Local Government Pension Scheme | Surplus | 2.9% | 25 | Surplus | 1.6% | 38 | Green |
| Derbyshire Pension Fund | Surplus | 3.2% | 43 | Surplus | 1.5% | 47 | Green |
| Devon Pension Fund | Surplus | 3.8% | 73 | Surplus | 0.9% | 78 | Green |
| Dorset County Pension Fund | 3 (82) | 4.1% | 83 | 5.1% | 0.5% | 86 | Green |
| Durham County Council Pension Fund | Surplus | 4.0% | 78 | Surplus | 0.8% | 79 | White |

| Pension fund | Deficit period (rank) | Required return/(rank) | | Repayment shortfall | Return scope/(rank) | | Deficit recovery plan |
|---|---|---|---|---|---|---|---|
| Dyfed Pension Fund | Surplus | 3.1% | 37 | Surplus | 1.9% | 28 | Green |
| East Riding Pension Fund | Surplus | 3.0% | 31 | Surplus | 2.2% | 18 | Green |
| East Sussex Pension Fund | Surplus | 2.7% | 22 | Surplus | 2.1% | 19 | Green |
| Environment Agency Active Fund | Surplus | 2.6% | 14 | Surplus | 1.3% | 55 | Green |
| Essex Pension Fund | Surplus | 2.1% | 5 | Surplus | 2.8% | 5 | Green |
| Gloucestershire Pension Fund | Surplus | 2.2% | 8 | Surplus | 2.4% | 14 | Green |
| Greater Gwent (Torfaen) Pension Fund | Surplus | 3.5% | 55 | Surplus | 1.1% | 68 | Green |
| Greater Manchester Pension Fund | Surplus | 2.4% | 12 | Surplus | 2.2% | 17 | Green |
| Gwynedd Pension Fund | Surplus | 2.8% | 23 | Surplus | 2.6% | 8 | Green |
| Hampshire County Council Pension Fund | Surplus | 3.4% | 52 | Surplus | 1.3% | 53 | Green |
| Hertfordshire County Council Pension Fund | Surplus | 2.9% | 24 | Surplus | 1.7% | 35 | Green |
| Isle of Wight Council Pension Fund | Surplus | 2.6% | 15 | Surplus | 1.9% | 27 | Green |
| Islington Council Pension Fund | Surplus | 3.6% | 60 | Surplus | 1.5% | 43 | Green |
| Kent Pension Fund | Surplus | 3.3% | 45 | Surplus | 1.5% | 48 | Green |
| Lancashire County Pension Fund | Surplus | 2.7% | 21 | Surplus | 1.8% | 29 | Green |
| Leicestershire County Council Pension Fund | Surplus | 2.4% | 11 | Surplus | 2.6% | 7 | Green |
| Lincolnshire Pension Fund | Surplus | 2.3% | 9 | Surplus | 2.5% | 11 | Green |
| London Borough of Barking and Dagenham Pension Fund | Surplus | 3.6% | 63 | Surplus | 1.3% | 52 | Green |
| London Borough of Barnet Pension Fund | 1 (79) | 3.3% | 44 | 9.9% | 1.3% | 57 | Green |
| London Borough of Bexley Pension Fund | Surplus | 2.6% | 16 | Surplus | 1.5% | 44 | Green |
| London Borough of Brent Pension Fund | 3 (84) | 3.0% | 32 | 12.2% | 1.9% | 25 | White |

| Pension fund | Deficit period (rank) | Required return/(rank) | | Repayment shortfall | Return scope/(rank) | | Deficit recovery plan |
|---|---|---|---|---|---|---|---|
| London Borough of Bromley Pension Fund | Surplus | 1.9% | 3 | Surplus | 3.1% | 1 | Green |
| London Borough of Camden Pension Fund | Surplus | 2.1% | 6 | Surplus | 2.9% | 3 | Green |
| London Borough of Croydon Pension Fund | Surplus | 3.5% | 53 | Surplus | 1.7% | 32 | White |
| London Borough of Ealing Pension Fund | Surplus | 3.4% | 49 | Surplus | 1.2% | 61 | Green |
| London Borough of Enfield Pension Fund | Surplus | 3.3% | 47 | Surplus | 1.3% | 56 | Green |
| London Borough of Hackney Pension Fund | Surplus | 2.7% | 20 | Surplus | 1.8% | 30 | Green |
| London Borough of Hammersmith and Fulham Pension Fund | Surplus | 3.6% | 59 | Surplus | 1.0% | 74 | Green |
| London Borough of Haringey Pension Fund | Surplus | 3.1% | 39 | Surplus | 1.7% | 33 | Green |
| London Borough of Harrow Pension Fund | Surplus | 4.1% | 84 | Surplus | 0.5% | 85 | Green |
| London Borough of Havering Pension Fund | 2 (80) | 3.7% | 65 | 6.9% | 1.1% | 66 | Green |
| London Borough of Hillingdon Pension Fund | 3 (83) | 4.0% | 80 | 5.3% | 0.6% | 83 | Green |
| London Borough of Hounslow Pension Fund | Surplus | 3.7% | 67 | Surplus | 1.1% | 72 | Green |
| London Borough of Lambeth Pension Fund | Surplus | 2.7% | 19 | Surplus | 2.5% | 12 | Green |
| London Borough of Lewisham Pension Fund | Surplus | 3.4% | 51 | Surplus | 1.2% | 65 | Green |
| London Borough of Merton Pension Fund | Surplus | 4.0% | 81 | Surplus | 0.9% | 76 | Green |
| London Borough of Newham Pension Fund | Surplus | 4.0% | 79 | Surplus | 0.6% | 82 | Green |
| London Borough of Redbridge Pension Fund | Surplus | 4.3% | 86 | Surplus | 0.6% | 84 | Amber |

| Pension fund | Deficit period (rank) | Required return/(rank) | | Repayment shortfall | Return scope/(rank) | | Deficit recovery plan |
|---|---|---|---|---|---|---|---|
| London Borough of Southwark | Surplus | 2.5% | 13 | Surplus | 2.3% | 15 | Green |
| London Borough of Tower Hamlets Pension Fund | Surplus | 2.0% | 4 | Surplus | 3.1% | 2 | Green |
| London Borough of Waltham Forest Pension Fund | 10 (85) | 3.8% | 71 | 5.7% | 1.1% | 70 | Green |
| London Pensions Fund Authority Pension Fund | Surplus | 3.1% | 35 | Surplus | 2.2% | 16 | Green |
| Merseyside Pension Fund | Surplus | 3.7% | 64 | Surplus | 1.0% | 73 | Green |
| Norfolk Pension Fund | Surplus | 2.9% | 26 | Surplus | 1.9% | 22 | Green |
| North Yorkshire Pension Fund | Surplus | 3.0% | 28 | Surplus | 1.3% | 54 | Green |
| Northamptonshire Pension Fund | Surplus | 3.0% | 30 | Surplus | 2.0% | 21 | Green |
| Nottinghamshire County Council Pension Fund | Surplus | 3.8% | 69 | Surplus | 1.1% | 71 | Green |
| Oxfordshire County Council Pension Fund | Surplus | 3.6% | 62 | Surplus | 1.3% | 60 | Green |
| Powys County Council Pension Fund | Surplus | 3.5% | 54 | Surplus | 1.2% | 63 | Green |
| Rhondda Cynon Taf County Borough Council Pension Fund | Surplus | 3.2% | 41 | Surplus | 1.4% | 50 | Green |
| Royal Borough of Greenwich Pension Fund | Surplus | 4.1% | 82 | Surplus | 0.8% | 80 | Green |
| Royal Borough of Kensington and Chelsea Pension Fund | Surplus | 2.7% | 17 | Surplus | 2.5% | 13 | Green |
| Royal Borough of Kingston-Upon-Thames Pension Fund | Surplus | 3.1% | 36 | Surplus | 1.6% | 40 | Green |
| Royal County of Berkshire Pension Fund | 12 (86) | 4.2% | 85 | 3.3% | 1.2% | 64 | Green |
| Shropshire County Pension Fund | Surplus | 3.8% | 75 | Surplus | 1.3% | 59 | Green |
| Somerset County Council Pension Fund | Surplus | 3.6% | 61 | Surplus | 2.6% | 10 | Green |

| Pension fund | Deficit period (rank) | Required return/(rank) | | Repayment shortfall | Return scope/(rank) | | Deficit recovery plan |
|---|---|---|---|---|---|---|---|
| South Yorkshire Pension Fund | Surplus | 3.1% | 40 | Surplus | 1.7% | 37 | Green |
| Staffordshire Pension Fund | Surplus | 1.9% | 2 | Surplus | 2.9% | 4 | Green |
| Suffolk Pension Fund | Surplus | 2.7% | 18 | Surplus | 1.7% | 36 | Green |
| Surrey Pension Fund | Surplus | 3.7% | 68 | Surplus | 1.1% | 67 | Green |
| Sutton Pension Fund | Surplus | 3.3% | 48 | Surplus | 1.5% | 42 | Green |
| Teesside Pension Fund | Surplus | 3.8% | 70 | Surplus | 1.4% | 49 | Green |
| Tyne and Wear Pension Fund | Surplus | 3.2% | 42 | Surplus | 1.5% | 45 | Green |
| Wandsworth Council Pension Fund | Surplus | 2.1% | 7 | Surplus | 2.7% | 6 | Green |
| Warwickshire Pension Fund | Surplus | 3.0% | 33 | Surplus | 1.8% | 31 | Green |
| West Midlands Pension Fund | Surplus | 2.9% | 27 | Surplus | 1.9% | 26 | Green |
| West Sussex County Council Pension Fund | Surplus | 1.8% | 1 | Surplus | 2.6% | 9 | Green |
| West Yorkshire Pension Fund | Surplus | 3.8% | 74 | Surplus | 1.2% | 62 | Green |
| Wiltshire Pension Fund | Surplus | 3.0% | 34 | Surplus | 1.6% | 39 | Green |
| Worcestershire County Council Pension Fund | Surplus | 3.6% | 58 | Surplus | 1.7% | 34 | Green |
| Environment Agency Closed Fund | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

## Long term cost efficiency measures – proposed future metrics

D.38 GAD propose introducing two new metrics to consider if funds are:

a. Utilising surpluses too quickly

b. Retaining “large” surpluses

**Surplus retention: contributions from funds in surplus could lead to too great a funding risk in the future (not utilising surpluses too quickly)**

D.39 The fund would need to pay sufficient contributions after allowing for future costs of accrual, such that either:

$$\text{Avg ER cont rate paid} - \text{ER SCR on GAD's best estimate basis} > 0$$

Or where

$$\text{Avg ER cont rate paid} - \text{ER SCR on GAD's best estimate basis} < 0$$

The implied surplus sharing period on GAD's best estimate basis was found by solving the following equation for x:

$$\bar{a}_x = \frac{\text{Surplus on GAD's best estimate basis}}{\text{Annual deduction to GAD's best estimate ER SCR}}$$

Where:

- x is the implied surplus sharing period.
- $\bar{a}_x$ is a continuous annuity over x years at the rate of interest equal to $\frac{(1+i)}{(1+e)} - 1$.
- i is the nominal discount rate assumption on the standardised best estimate basis.
- e is the general earnings inflation assumption on the standardised best estimate basis.
- The surplus on the standardised best estimate basis is as at 31 March 2022
- The average employer contribution rate is for the years 2023/24 – 2025/26, allowing for both contributions paid as a percentage of salary and fixed monetary contributions into the fund where deficit contributions are fixed (that is, the fixed monetary contributions, if any, have been converted so that they are quoted as a percentage of salary roll).
- The employer standard contribution rate on the best estimate basis is for the 2023/24 – 2025/26. It is assumed that the standard contribution rate is equal to the future cost of accrual of that fund.

D.40 Funds flag green where:

> the difference in contribution is greater than zero; or

> the difference in contributions is less than zero and the implied surplus sharing is greater than 10 years.

Otherwise, the funds are flagged amber.

## Surplus retention: proposed approach to consider if funds are retaining too much surplus

D.41 GAD will adopt a three-step approach:

1. Identify the highest funded funds, considering both the local bases and on a standard basis
2. Identify those funds which are relatively well funded, on the local and standard basis, and are also paying relatively high contributions
3. For those funds identified in steps one to two, we would undertake qualitative analysis, for example considering how contribution rates have evolved since the previous valuation and any stated rationale behind the approach adopted.

D.42 Steps one to three aim to identify funds which are exceptionally well funded, or those which are relatively well funded and paying relatively high contributions. We propose considering results on two bases, initially using the SAB funding level to provide a consistent basis. However as this is not a funding basis we will also consider the position on the local funding basis. The funds identified in

steps one to three will not raise an immediate flag as we also wish to consider any other relevant circumstances and the decision-making process.

D.43 We would then engage with any funds identified from this process to discuss any concerns before deciding which funds to flag.

# Appendix E: ALM

## Why perform an Asset Liability Modelling (ALM) exercise?

E.1 An ALM exercise allows us to simultaneously project the assets and liabilities of the scheme under a range of simulations (known as stochastic economic scenarios), to investigate possible outcomes for key variables and metrics. Modelling the scheme in this way allows us to understand not only central, expected outcomes but also the wider range of possible outcomes and associated probabilities.

E.2 A common use of ALM studies is to help pension scheme managers and sponsors determine investment, contribution and funding policy by illustrating the impact of changing policy on key variables, such as the funding level (i.e. ratio of assets to liabilities) of the scheme under a range of scenarios.

E.3 For this piece of work, we modelled the whole LGPS Scheme rather than individual funds and our focus was on variation in the employer contribution rates and funding level over time. We also analysed the impact of two potential surplus strategies ("surplus buffer" and "stability mechanism"), as a broad measure of long term cost efficiency. We are primarily interested in the extent to which contribution rates can vary from current levels as well as the projection of funding levels. Consequently, we have assumed that the current investment policy remains in place and is constant over the projection period.

E.4 Stochastic modelling techniques allow us to simulate a large number of economic scenarios – with different outturns and paths of key parameters and variables. The simulations are calibrated to reflect views on expected returns and relative behaviours between key variables, but importantly include an element of randomness in order to capture volatility observed in financial markets. By running the scenario generator many times, the spread of different possible outcomes can be illustrated, and the probability of certain outcomes can be estimated.

E.5 As with all models, the outcomes are a function of the assumptions adopted, and the outcomes are not intended to be predictors of the future but are illustrations of the range of possible outcomes. It is highly unlikely that the assumptions made will be borne out in practice and adjustments might be made to manage any pressures that arise. Actual future experience could be more extreme than any of the outcomes shown.

E.6 Our study models changes in economic outcomes only – we have not looked at any other possible changes such as demographic changes, including mortality, nor management changes such as changes to the investment approach or the impacts of climate change.

## Methodology

E.7 Our model projects the entire Scheme and assumes that the asset strategy and demographic future valuation assumptions are an average of those used for the individual funds as at 31 March 2022. In practice, schemes are likely to have specific asset strategies and valuation assumptions, for example the discount rate will have regard to the expected return for each fund.

E.8 Projected contribution rates are determined based on the liability and asset values at each future triennial valuation and these are assumed to remain consistent for the following three years.

E.9 To project the development of the scheme we must make assumptions about the following:

- Expected new entrants into the scheme

- The way in which liabilities will evolve – for example, the rate at which current active liabilities "migrate" to being non-active (i.e. deferred/pensioner liabilities) over time or the extent to which liabilities are increased by CPI inflation and wage inflation at each point in time
- The way in which liabilities are assessed, and
- The way in which contributions are determined – both in respect of ongoing accrual and in respect of any surplus or deficit that arises.

E.10 Any change to manage up or down employer contribution rates in the short term do not alter the long term cost of the scheme (which depends on the level of scheme benefits and scheme experience, including asset returns) and more generally might have some other less desirable outcomes, for example:

- increasing the length of recovery periods transfers costs onto future generations
- choosing a more return seeking investment strategy would be expected to increase volatility and risk
- maintaining stable contributions when in surplus may result in a greater burden falling on current tax payers

## Assumptions

E.11 An ALM produces a broader amount of information than a traditional deterministic actuarial valuation. Consequently, we need to make more assumptions to simplify the calculations involved in the projections and make it practical to analyse all the key outcomes we are interested in.

E.12 The box below provides details on the key assumptions made in respect of the ALM.

**Key assumptions made in the ALM**

For the purpose of assessing liabilities and determining contribution rates, assumptions are needed to carry out an actuarial valuation at each future point in time. In our modelling we have assumed that:

- The discount rate is set based on a constant margin above the expected yield on government bonds (gilts).
- The length of the recovery period is reset at each valuation, with deficit being spread over a time horizon of 20 years (based on typical historical recovery periods in the scheme).
- New entrants assumption – the scheme's active membership is assumed to remain stable over time
- The Scheme investment strategy is assumed to remain stable i.e. we assume the assets are rebalanced each year to the same allocation as that in the 2022 valuation.
- Demographic experience is as assumed in the underlying GAD LGPS 2022 valuation

E.13 To project the development of the scheme we must make assumptions about the key economic variables and financial assumptions for example price inflation, salary growth and returns on assets held. These are determined from the economic scenario generator (ESG).

E.14 The ESG was provided by Moody's, with a calibration date of 31 March 2023, and reflected the market expectations at that time. The ESG is calibrated to conditions at that moment in time and Moody's expectations for the future and specifies how key economic variables may vary (stochastically, according to probability distributions) in future. Moody's ESG calibration is only one view of possible future experience. Different assumptions would lead to different results.

E.15 GAD made the following adjustments:

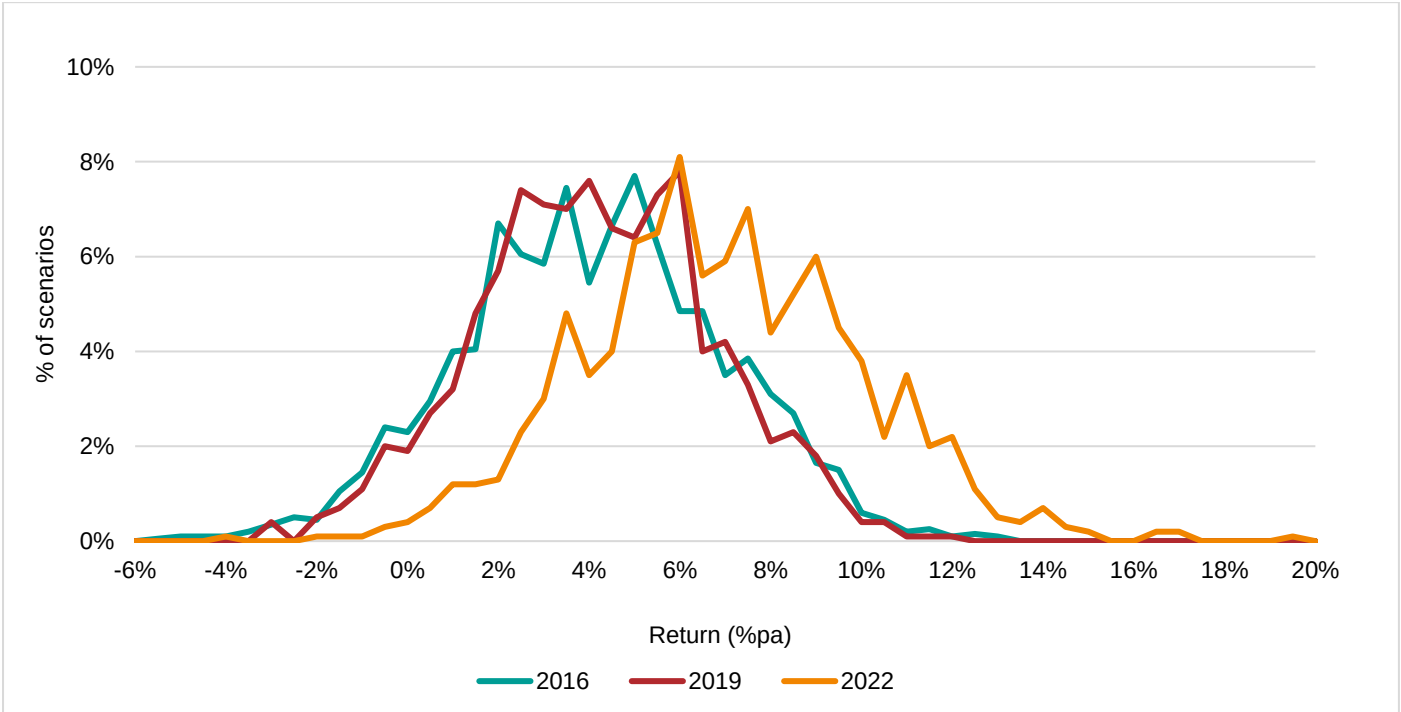
- As the calibration was as at 31 March 2023 and the individual fund valuations were as at 31 March 2022, asset returns for the 2022/23 scheme year were introduced to allow for the known financial outcomes and ensuring that the asset value as at 31 March 2023 is consistent with publicly available SF3 data
- CPI simulations are derived based on projected RPI simulations less a margin. The margin, set at 1.15% at 31 March 2023, is based on GAD's house view for the current difference between RPI and CPI and is expected to reduce to 0.1% at 2030, to reflect the RPI reforms which are expected to be implemented in 2030.

E.16 The annualised mean return over the projection period is 6.7%. The expected return in the ALM is in line with GAD's expectation based on the economic environment as at 31 March 2023.

E.17 Chart E.1 shows the distribution of the annualised portfolio returns over the twenty-year period and compares the projection to that of the 2016 and 2019 ALM exercises. The distributions of the returns show:

- Current expectations are better than those at the previous exercises, which is expected due to the change in the economic outlook since the previous valuations.
- Volatility in projected returns, even when annualised over a 20 year period. The chart illustrates that whilst annualised returns are mainly clustered between 0% and 14%, with the mean just below 7%, significant risks of low returns over the 20-year period remain but so does the upside potential.

**Chart E1: Distribution of annualised nominal investment returns**



# Appendix F: Data Provided

F.1 At the request of MHCLG, GAD collected data from each fund's 2022 valuation via the fund actuaries. These actuarial funding valuations were conducted by four firms of actuarial advisors:

- Aon
- Barnett Waddingham
- Hymans Robertson
- Mercer

F.2 Data was received from the relevant firm of actuarial advisors for all 87 pension funds and included additional information provided to the fund actuaries by administrators in respect of their fund's employers.

F.3 Limited checks, consisting of spot checks to make sure that data entries appear sensible, have been performed by GAD and the data received appears to be of sufficient quality for the purpose of analysing the 2022 valuation results. These checks do not represent a full, independent audit of the data supplied. The analysis contained in this report relies on the general completeness and accuracy of the information supplied by the administering authority or their firms of actuarial advisors.

F.4 In addition, data has been collated from the 'Local government pension scheme funds local authority data', which is published annually by MHCLG at Local government pension scheme funds for England and Wales: 2022 to 2023 - GOV.UK (www.gov.uk). This published data may be referred to elsewhere as SF3 statistics.

F.5 Unless otherwise stated the data detailed above has been used to inform the analysis contained in the LGPS England and Wales section 13 2022 Report.

F.6 The information provided to GAD is, in many instances, more detailed than that provided in the actuarial valuation reports.

# Data specification

**1) Membership Data**

| Data split by gender | |
|---|---|
| a) Active Members | Number of Members<br>Unweighted average age (to 2dp)<br>Total rate of annual actual pensionable pay at 31 March 2022 and 31 March 2019 (2014 pay definition) |
| b) Deferred Member | Number of members<br>Unweighted average age (to 2dp)<br>Total annual preserved pension revalued to 31 March 2022 for both 31 March 2022 and 31 March 2019.<br><br>Note this should exclude undecided members. |
| c) Pensioners (former members) | Number of Members<br>Unweighted average age (to 2dp)<br>Total annual pensions in payment at 31 March 2022 and 31 March 2019 |
| d) Pensioners (dependants including partners and children) | Number of Members<br>Average age (weighted as appropriate)<br>Total annual pensions in payment at 31 March 2022 and 31 March 2019 |

**2) Financial Assumptions**

| Assumptions used to value the liabilities of the most secure employers (e.g. local authorities) | |
|---|---|
| a) Specify what proportion of the liabilities is calculated using the assumptions below | |
| b) Provide assumptions used for past service liabilities, these have been given for both as at 31 March 2022 and 31 March 2019. | Nominal discount rate (pre & post retirement separately if applicable)<br>RPI inflation<br>CPI inflation rate<br>Earnings inflation |
| c) Provide assumptions used for future contributions, these have been given for both as at 31 March 2022 and 31 March 2019. | Nominal discount rate (pre & post retirement separately if applicable)<br>RPI inflation<br>CPI inflation rate<br>Earnings inflation |
| d) Short term assumptions used in the valuation (if applicable) | CPI<br>Salary Increases<br>Discount Rate |
| e) Maximum deficit recovery period | |
| f) Minimum surplus spreading period | |
| g) Likelihood of success of valuation funding plan on the previous valuation time horizon (where a fund is in deficit at the valuation date) | |

**3) Demographic Assumptions**

| | |
|---|---|
| Rates to be provided at sample ages split by gender<br>Each could be split further in Group 1, Group 2, Group 3, Group 4, and Group 5 | |
| a) Assumed life expectancy for members retiring in normal health | Pensioner members aged 65 (for members retiring on normal health) (to 2dp) (with mortality improvements)<br>Pensioner members aged 65 (for members retiring on normal health) (to 2dp) (without mortality improvements)<br>Active / deferred members at age 65 if they are currently aged 45 (to 2dp) (with mortality improvements)<br>Active / deferred members at age 65 if they are currently aged 45 (to 2dp) (without mortality improvements) |
| b) Commutation | Pre 2008 pension Commutation Assumptions (as % of maximum lump sum allowed under HMRC rules).<br>Post 2008 pension Commutation Assumptions (as % of maximum lump sum allowed under HMRC rules). |

**4) ASSETS**

| | | |
|---|---|---|
| These are split to provide information for 31 March 2022 and 31 March 2019 | | |
| a) Market value of assets | | |
| b) Value of assets used in the valuation | | |
| c) Do you use a smoothed asset value in the valuation? If yes please attach an explanation | | |
| d) Were there any “asset transfer” arrangements, as classified in the 2019 S13 report (page 59) for local authorities? If so please include | | |
| e) Actual Asset Distribution split into the following: | Proportion of assets held in Bonds | Proportion of bonds which are fixed interest government bonds<br>Proportion of bonds which are fixed interest non-government bonds (investment grade)<br>Proportion of bonds which are fixed interest non-government bonds (high yield)<br>Proportion of bonds which are inflation linked bonds |
| | Proportion of assets held in Equities | Proportion of equities which are UK equities<br>Proportion of equities which are overseas equities<br>Proportion of equities which are unquoted or private equities |
| | Proportion of assets held in Property | |
| | Proportion of assets held in Deferred or immediate fully insured annuities | |
| | Proportion of assets held in Hedge funds | |
| | Proportion of assets held in Cash and net current assets | |
| | Proportion of assets held in ABC arrangements | |
| | Proportion of assets held in Infrastructure – debt type | |

| | |
|---|---|
| | Proportion of assets held in Infrastructure* – equity type |
| | Proportion of assets held in Multi asset funds (examples include diversified growth funds, managed funds, balanced funds, multi asset credit or absolute returns) |
| | Proportion of assets held in "Other" investments – defensive |
| | Proportion of assets held in "Other" investments – return seeking |
| f) Weighted best estimate return | |
| g) Strategic asset distribution (if significantly different to actual asset distribution) | Proportion of assets held in:<br>Bonds<br>Equities<br>Property<br>Infrastructure<br>Cash and current assets<br>Other investments – defensive<br>Other investments – return seeking |
| h) Weighted best estimate return (strategic asset distribution) | |

**5) LIABILITIES AND FUTURE CONTRIBUTION RATE**

| These are split to provide information for 31 March 2022 and 31 March 2019 | |
|---|---|
| i) Local Assumptions | a) Past service liability – split between Actives, Deferred, Pensioners and Total<br>b) Funding level<br>c) Surplus / deficit<br>d) Assumed member contribution yield<br>e) Total employer contributions paid in respect of 2022/23<br>f) Other notable events that have occurred in respect of 2022/23<br>g) Other notable Post valuation events that have been considered as part of the 2022 valuation (including asset transfer or large contributions not covered in 4d) |
| ii) SAB Standardised Basis | a) Past service liability – split between Actives, Deferred, Pensioners and Total<br>b) Funding level<br>c) Surplus / deficit<br>d) SAB future service costs (excluding expenses) % |

**6) EMERGING ISSUES AND ACADEMIES**

| | |
|---|---|
| a) Is there a comment in your report that climate change is implicitly included in the funding basis | |
| b) Is climate change acknowledged in your FSS | |
| c) The next section is split for 4 distinct climate scenarios, Base case, Paris scenario, High temperature scenario, Alternative scenario (if applicable) | Funding level at 31 March 2042<br>Success percentage at 31 March 2042<br>Nominal discount rate, pre and post retirement<br>RPI inflation |

| | |
|---|---|
| | CPI inflation rate<br>Earnings inflation<br>Change in assumptions volatility |
| d) General allowances made for COVID-19 in 2022 valuation. | |

**7) Post 2014 scheme**

| |
|---|
| a) Assumption for members in 50/50 scheme (if a proportion of members include details in 7b below) |
| b) Proportion of members assumed to be in 50/50 scheme |

**8) Documentation required**

| |
|---|
| Valuation Report @ 31 March 2022 |
| Relevant related reports |
| Compliance Extract |
| Statement of Investment Strategy |
| Funding Strategy Statement |
| Other |

**ALTERNATIVE FINANCIAL ASSUMPTIONS**

| |
|---|
| Specify where a significant proportion of employer liabilities have been valued using alternative assumptions – provided as above in section (2) above. |

# Appendix G: Assumptions

G.1 Each piece of analysis contained in the main report is based on one of three sets of assumptions:

- The local fund assumptions, as used in the fund's 2022 actuarial valuation
- The SAB standardised set of assumptions, or SAB standard basis: this is used as a comparator between funds but is not market related
- A best estimate set of assumptions: this is a standardised market consistent basis which is used to assess potential impacts to solvency and long term cost efficiency.

G.2 Details of local fund assumptions can be found in each fund's actuarial valuation report as at 31 March 2022. Details of the SAB standard basis and the standardised best estimate basis can be found in the table below.

**Table G1: SAB standard basis and best estimate basis**

| Assumption | SAB standard basis | Best Estimate basis |
|---|---|---|
| **Methodology** | Projected Unit Methodology with 1 year control period | Projected Unit Methodology with 1 year control period |
| **Rate of pension increases** | 2% per annum | 2.4% per annum |
| **Public sector earnings growth** | 3.5% per annum | 3.9% per annum |
| **Discount rate** | 4.45% per annum | 4.8% per annum |
| **Changes to State Pension Age (SPA)** | As legislated | As legislated |
| **Pensioner Baseline mortality** | Set locally based on Fund experience | Set locally based on Fund experience |
| **Mortality improvements** | Core CMI_2021 (no allowance for 2020 and 2021 mortality data) with long term reduction in mortality rates of 1.5% per annum | Improvements in line with those underlying the ONS 2020-based principal population projections for the UK |
| **Age retirement** | Set locally based on Fund experience | Set locally based on Fund experience |
| **Ill health retirement rates** | Set locally based on Fund experience | Set locally based on Fund experience |
| **Withdrawal rates** | Set locally based on Fund experience | Set locally based on Fund experience |
| **Death before retirement rates** | Set locally based on Fund experience | Set locally based on Fund experience |
| **Promotional salary scales** | None | As set out in GAD's 2020 valuation |
| **Commutation** | SAB future service cost assumption of 65% of the maximum allowable amount | As set out in GAD's 2020 valuation |

| Assumption | SAB standard basis | Best Estimate basis |
|---|---|---|
| **Family statistics** | Set locally based on Fund experience | Set locally based on Fund experience |

G.3 The financial assumptions for the best estimate basis are based on GAD's neutral assumptions for long term inflation measures and asset returns, and the split of LGPS assets held, as at 31 March 2022. These neutral assumptions are not deliberately optimistic nor pessimistic and do not incorporate adjustments to reflect any desired outcome. We believe there is around a 50% chance of outcomes being better and a 50% chance of outcomes being worse than these assumptions imply, based on market conditions as at 31 March 2022.

G.4 Future asset returns are uncertain and there is a wide range of reasonable views on what future asset returns will be and therefore the best estimate discount rate should be. We have presented GAD's neutral view above, but there are other reasonable best estimate bases which may give materially different results.

# Appendix H: Section 13 of the Public Service Pensions Act 2013

## 13 Employer contributions in funded schemes

(1) This section applies in relation to a scheme under section 1 which is a defined benefits scheme with a pension fund.

(2) Scheme regulations must provide for the rate of employer contributions to be set at an appropriate level to ensure

(a) the solvency of the pension fund, and

(b) the long term cost efficiency of the scheme, so far as relating to the pension fund.

(3) For that purpose, scheme regulations must require actuarial valuations of the pension fund.

(4) Where an actuarial valuation under subsection (3) has taken place, a person appointed by the responsible authority is to report on whether the following aims are achieved

(a) the valuation is in accordance with the scheme regulations

(b) the valuation has been carried out in a way which is not inconsistent with other valuations under subsection (3)

(c) the rate of employer contributions is set as specified in subsection (2).

(5) A report under subsection (4) must be published and a copy must be sent to the scheme manager and (if different) the responsible authority.

(6) If a report under subsection (4) states that, in the view of the person making the report, any of the aims in that subsection has not been achieved

(a) the report may recommend remedial steps

(b) the scheme manager must

i. take such remedial steps as the scheme manager considers appropriate, and

ii. publish details of those steps and the reasons for taking them

(c) the responsible authority may

i. require the scheme manager to report on progress in taking remedial steps

ii. direct the scheme manager to take such remedial steps as the responsible authority considers appropriate.

(7) The person appointed under subsection (4) must, in the view of the responsible authority, be appropriately qualified.

The section of the legislation can be viewed on legislation.gov.uk, Public Service Pensions Act 2013

# Appendix I: Extracts from other relevant regulations

## Regulations 58 and 62 of 'The Local Government Pension Scheme Regulations 2013'

### Funding strategy statement (Regulation 58)

(1) An administering authority must, after consultation with such persons as it considers appropriate, prepare, maintain and publish a written statement setting out its funding strategy.

(2) The statement must be published no later than 31st March 2015.

(3) The authority must keep the statement under review and, after consultation with such persons as it considers appropriate, make such revisions as are appropriate following a material change in its policy set out in the statement, and if revisions are made, publish the statement as revised.

(4) In preparing, maintaining and reviewing the statement, the administering authority must have regard to

(a) the guidance set out in the document published in October 2012 by CIPFA, the Chartered Institute of Public Finance and Accountancy and called "Preparing and Maintaining a Funding Strategy Statement in the Local Government Pension Scheme 2012" and

(b) the current version of the investment strategy under regulation 7 (investment strategy statement) of the Local Government Pension Scheme (Management and Investment of Funds) Regulations 2016.

### Actuarial valuations of pension funds (Regulation 62)

(1) An administering authority must obtain

(a) an actuarial valuation of the assets and liabilities of each of its pension funds as at 31st March 2016 and on 31st March in every third year afterwards

(b) a report by an actuary in respect of the valuation, and

(c) a rates and adjustments certificate prepared by an actuary.

(2) Each of those documents must be obtained before the first anniversary of the date ("the valuation date") as at which the valuation is made or such later date as the Secretary of State may agree.

(3) A report under paragraph (1)(b) must contain a statement of the demographic assumptions used in making the valuation and the statement must show how the assumptions relate to the events which have actually occurred in relation to members of the Scheme since the last valuation.

(4) A rates and adjustments certificate is a certificate specifying

(a) the primary rate of the employer's contribution and

(b) the secondary rate of the employer's contribution,

for each year of the period of three years beginning with 1st April in the year following that in which the valuation date falls.

(5) The primary rate of an employer's contribution is the amount in respect of the cost of future accruals which, in the actuary's opinion, should be paid to a fund by all bodies whose employees contribute to it so as to secure its solvency, expressed as a percentage of the pay of their employees who are active members.

(6) The actuary must have regard to-

(a) the existing and prospective liabilities arising from circumstances common to all those bodies

(b) the desirability of maintaining as nearly constant a primary rate as possible

(c) the current version of the administering authority's funding strategy mentioned in regulation 58 (funding strategy statements) and

(d) 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.

(7) The secondary rate of an employer's contributions is any percentage or amount by which, in the actuary's opinion, contributions at the primary rate should, in the case of a Scheme employer, be increased or reduced by reason of any circumstances peculiar to that employer.

(8) A rates and adjustments certificate must contain a statement of the assumptions on which the certificate is given as respects

(a) the number of members who will become entitled to payment of pensions under the provisions of the Scheme and

(b) the amount of the liabilities arising in respect of such members

during the period covered by the certificate.

(9) The administering authority must provide the actuary preparing a valuation or a rates and adjustments certificate with the consolidated revenue account of the fund and such other information as the actuary requests.