



Government  
Actuary's  
Department

# Local Government Pension Scheme Scotland

Section 13 Report as at 31 March  
2020

Appendices

March 2023

Jenny Bullen and Oscar Castro Lado



# Contents

Appendix A: Compliance	3
Appendix B: Consistency	8
Appendix C: Solvency	12
Appendix D: Long-term Cost Efficiency	18
Appendix E: Data provided	24
Appendix F: Assumptions	28
Appendix G: Section 13 of the Public Service Pensions Act 2013	30
Appendix H: Extracts from other relevant regulations	31
Appendix I: Distribution of Scottish local authorities to LGPS Scotland administering authorities	33

# Appendix A: Compliance

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

## Statement of Compliance

A.2 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
<p><b>Aberdeen City Council Transport Fund (Mercer)</b></p>	<p>This report is addressed to the Administering Authority of the Aberdeen City Council Transport Fund ("the Administering Authority") and is provided to meet the requirements of Regulation 60 of the Local Government Pension Scheme (Scotland) Regulations 2018 (as amended) ("the Regulations").</p>
<p><b>Fife Pension Fund (Hymans Robertson)</b></p>	<p>We have been commissioned by Fife Council ("the Administering Authority") to carry out an actuarial valuation of the Fife Pension Fund ("the Fund") as at 31 March 2020 as required under Regulation 60 of the Local Government Pension Scheme (Scotland) Regulations 2018 ("the Regulations").</p>
<p><b>Tayside Pension Fund (Barnett Waddingham)</b></p>	<p>We have been asked by Dundee City Council, the administering authority for the Tayside Pension Fund (the Fund), to carry out an actuarial valuation of the Fund as at 31 March 2020. The Fund is part of the Local Government Pension Scheme (LGPS), a defined benefit statutory scheme administered in accordance with the Local Government Pension Scheme (Scotland) Regulations 2018 (the Regulations) as amended.</p>

## Compliance with valuation regulations

### Actuarial Valuation Reports Regulation 60 (1 - 2)

A.3 Regulation 60 (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 31<sup>st</sup> March 2020 and on 31<sup>st</sup> March in every subsequent valuation year. Regulation 60 (2) requires that the above documents be obtained by the first anniversary of the date at which the valuation is made, namely, 31 March 2021 in the case of the 2020 valuation.

### Publication

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

**Table A2: Publication Date**

Fund	Publication Date
Aberdeen City Council Transport Fund (Mercer)	31 March 2021
Fife Pension Fund (Hymans Robertson)	30 March 2021
Tayside Pension Fund (Barnett Waddingham)	11 March 2021

### Demographic Assumptions

A.5 Regulation 60 (3) states that the actuarial valuation report must contain a statement of the demographic assumptions that have been used in the valuation and must show how these assumptions reflect the experience that has actually occurred during the period since the last valuation. Each valuation report contains a section on demographic assumptions. The following table lists the demographic assumption that one may expect in an actuarial valuation report and indicates which reports provided this assumption.

**Table A3: Demographic Assumptions**

Demographic	Aberdeen City Council Transport Fund (Mercer)	Fife Pension Fund (Hymans Robertson)	Tayside Pension Fund (Barnett Waddingham)
Pre-retirement mortality	✓	✓	✓
Post-retirement mortality	✓	✓	✓
Dependant mortality	✓	✓	✓
Ill health retirement	✓	✓	✓
Normal health retirement	✓	✓	✓
Withdrawal	✓	✓	✓

Demographic	Aberdeen City Council Transport Fund (Mercer)	Fife Pension Fund (Hymans Robertson)	Tayside Pension Fund (Barnett Waddingham)
Family details (partners and dependants)	✓	✓	✓
50:50 option take-up	✓	✓	✓
Commutation	✓	✓	✓

## 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 three chosen funds:
- > All reports have showed that the assumptions have been updated to reflect experience. All funds have shown differences between expectations and experiences for the inter-valuation period, and the impact of these differences on the funding position.
  - > We note that additional information on demographic experience and assumption setting may be contained in supporting (non-public) reports/advice.

## Contribution Rates

- A.7 Regulation 60 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 repay deficit or eliminate surplus over a given period (the deficit/surplus recovery period).
- A.8 Regulation 60 (5) 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 56 (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 60 (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 60 (8) 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 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.

A.13 The Dashboard included as an appendix to the Funding Analysis report shows the primary rate of employer contribution for each administering authority's whole fund.

### **Secondary Rates**

A.14 Regulation 60 (8) states that the secondary contribution rate may be expressed as either a percentage or a monetary amount. 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.

A.15 The Dashboard included as an appendix to the Funding Analysis report shows the secondary rate of employer contribution for each administering authority's whole fund.

### **Rates and Adjustments Certificate Regulation 60 (6)**

A.16 Regulation 60 (6) 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 A4: Location of assumptions**

Fund	Statement in Rates and Adjustments Certificate	Location of assumptions in Valuation Report
Aberdeen City Council Transport Fund (Mercer)	Not transparent to GAD	Appendix A
Fife Pension Fund (Hymans Robertson)	✓	Appendix 3
Tayside Pension Fund (Barnett Waddingham)	✓	Appendix 2

### Regulation 60 (7)

- A.18 Regulation 60 (7) 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 Each valuation shows 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 on the key information contained in valuation reports, which feeds into our comments on presidential consistency.

### Key Information

B.2 Based on the recommendation in the 2017 report all funds provided a standardised dashboard of results. The information requested as part of the standardised dashboard is provided below, but in green are suggested additional elements which have been recommended as part of the 2020 section 13 review.

**Table B1: Dashboard**

Item requested	Format
<b>2023 funding position – local funding basis:</b>	<b>2023 Valuation</b>
Funding level (assets/liabilities)	%
Funding level (change since last valuation)	%
Asset value used at the valuation	£m
Value of liabilities	£m
Surplus (deficit)	£m
Discount rate – past service	% pa
Discount rate – future service	% pa
Assumed pension increases (CPI)	% pa
Method of derivation of discount rate, plus any changes since the previous valuation	Freeform text
<b>Assumed life expectancies at age 65:</b>	<b>2023 Valuation</b>
Life expectancy for current pensioners – men currently age 65	years
Life expectancy for current pensioners – women currently age 65	years



<b>Item requested</b>	<b>Format</b>	
Life expectancy for future pensioners – men currently age 45	<i>years</i>	
Life expectancy for future pensioners – women currently age 45	<i>years</i>	
<b>Past service funding position – SAB basis (for comparison purposes only):</b>		
	<b>2023 Valuation</b>	
Market value of assets	<i>£m</i>	
Value of liabilities	<i>£m</i>	
Funding level on SAB basis (assets/liabilities)	<i>%</i>	
Funding level on SAB basis (change since last valuation)	<i>%</i>	
<b>Contributions rates payable:</b>		
	<b>2023 Valuation</b>	<b>2020 Valuation</b>
Primary contribution rate (average for the fund)	<i>% of pa</i>	<i>% of pa</i>
Secondary contribution rate (cash amounts in each year in line with CIPFA guidance)		
Secondary contribution - 1 <sup>st</sup> year of rates and adjustment certificate	<i>£m</i>	<i>£m</i>
Secondary contribution - 2 <sup>nd</sup> year of rates and adjustment certificate	<i>£m</i>	<i>£m</i>
Secondary contribution - 3 <sup>rd</sup> year of rates and adjustment certificate	<i>£m</i>	<i>£m</i>
Giving total expected contributions		
Total expected contributions - 1 <sup>st</sup> year of rates and adjustment certificate	<i>£m</i>	<i>£m</i>
Total expected contributions – 2 <sup>nd</sup> year of rates and adjustment certificate	<i>£m</i>	<i>£m</i>
Total expected contributions – 3 <sup>rd</sup> year of rates and adjustment certificate	<i>£m</i>	<i>£m</i>
Assumed payroll (cash amounts in each year)		
Total assumed payroll - 1 <sup>st</sup> year of rates and adjustment certificate	<i>£m</i>	<i>£m</i>
Total assumed payroll – 2 <sup>nd</sup> year of rates and adjustment certificate	<i>£m</i>	<i>£m</i>
Total assumed payroll – 3 <sup>rd</sup> year of rates and adjustment certificate	<i>£m</i>	<i>£m</i>

<b>Item requested</b>	<b>Format</b>	
3-year average total employer contribution rate	<i>% of pay</i>	<i>% of pay</i>
Average employee contribution rate (% of pay)	<i>% of pay</i>	<i>% of pay</i>
Employee contribution rate (£ figure based on assumed payroll of £m)	<i>£m pa</i>	<i>£m pa</i>
<b>Deficit recovery and surplus spreading plan</b>	<i>2023 Valuation</i>	<i>2020 Valuation</i>
Latest deficit recovery period end date, where this methodology is used by the fund's actuarial advisor	<i>Year</i>	<i>Year</i>
Earliest surplus spreading period end date, where this methodology is used by the fund's actuarial advisor	<i>Year</i>	<i>Year</i>
The time horizon end date, where this methodology is used by the fund's actuarial advisor	<i>Year</i>	<i>Year</i>
The funding plan's likelihood of success, where this methodology is used by the fund's actuarial advisor	<i>%</i>	<i>%</i>
Percentage of liabilities relating to employers with deficit recovery periods of longer than 20 years	<i>%</i>	<i>%</i>
<b>Additional information:</b>	<i>2023 Valuation</i>	
Percentage of total liabilities that are in respect of Tier 3 employers	<i>%</i>	
Included climate change analysis/comments in the 2023 valuation report	<i>Yes /No</i>	
Value of McCloud liability in the 2023 valuation report (on local funding basis)	<i>£m</i>	

B.3 All information was provided by fund actuaries in respect of the 2020 valuations and this is summarised in the Appendix to the funding analysis report.

# 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 S pension fund is set at an appropriate level to ensure the solvency of the pension fund. This appendix contains a description of:

- Solvency considerations
- Mapping of solvency considerations to measures adopted
- Methodology used for solvency measures

## Potential for Default

C.2 In the context of LGPS Scotland:

- Our understanding based on confirmation from SPPA 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 will 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, GAD 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, GAD will focus on the ability to meet additional cash contributions
- the proportion of members whose employers are without tax raising powers or without statutory backing
- the ability of tax raising authorities to meet employer contributions

### 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)

## Solvency Measures

C.4 For the 2020 exercise, we have used the following four metrics to test solvency.

**Table C.1: 2020 Solvency measures**

Consideration	Measure Used
<b>Risks already present:</b>	
The relative ability of the fund to meet its accrued liabilities	<b>SAB funding level:</b> A fund's funding level using the SAB standard basis, as set out in Appendix F
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	<b>Open fund:</b> Whether the fund is open to new members
The proportion of members whose employers are without tax raising powers or without statutory backing	<b>Non-statutory members:</b> The proportion of members within the fund who are/were employed by an employer without tax raising powers or statutory backing
<b>Emerging risks:</b>	
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)	<b>Asset shock:</b> The change in average employer contribution rates expressed as a percentage of payroll after a 15% fall in value of return-seeking assets

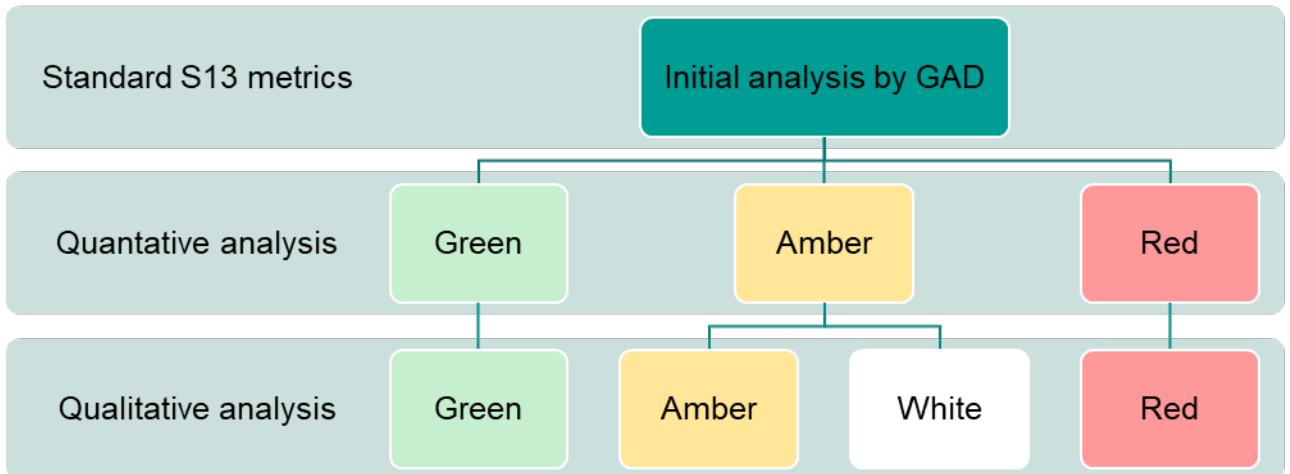
C.5 Emerging risk measures require assumptions. We used best estimate assumptions for this purpose, details of which can be found in Appendix F. Details of the methods used to calculate scores under each measure and the criteria used to assign a colour code can be found in this chapter.

## Solvency measures – methodology

C.6 This Appendix details the methodology behind the measures used to assess a fund's solvency position. Some of the measures listed below were calculated using the best estimate basis, which is a market consistent set of assumptions. For more information on this best estimate basis please see Appendix F.

C.7 The 2017 exercise used 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 2020 exercise, GAD initially adopted the same RAG approach and 2017 thresholds, however the flag allocations were subsequently revised for the solvency measures to reflect the current circumstances (at an aggregate the scheme was well funded despite depressed asset values at the valuation date, see the section 13 report for further information).

- C.8 Following discussions with SPPA, GAD agreed that it is not helpful to raise individual fund flags which have been primarily driven by the depressed asset values 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.9 The chart below illustrates the steps taken by GAD in determining the flag colours for the metrics



- C.10 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.11 GAD will assess the position at the time of the 2023 section 13 report and will decide whether to retain the white flag, return to the RAG approach or use other metric/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.12 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 F.

C.13 This measure assesses the relative funding levels of individual funds.

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

C.14 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 employees as there is less scope to make regular contributions and receive investment returns on those contributions. Additionally, if the scheme funding level falls, 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.15 Following fund mergers prior to 2020, there are only two remaining closed funds. One of those, Scottish Homes, is backed by a Scottish Government guarantee. Solvency is therefore not a concern for that fund.

C.16 We understand that the second closed fund, Aberdeen City Council Transport Fund, will merge with the North East Scotland Pension Fund prior to March 2023. We believe that this will mitigate the solvency risks associated with that closed fund.

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

C.17 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.18 Data for this measure has been provided by the actuarial firms.

C.19 Under this measure a fund has been allocated an amber flag 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 flag would be allocated if the proportion is more than 50% and a green flag in all other cases.

**Asset shock: The change in average employer contribution rates as a percentage of pensionable pay after a 15% fall in value of return-seeking assets**

- C.20 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 pensionable pay. Defensive assets are assumed to be unaffected.
- C.21 For the purposes of this measure, we have restated liabilities on the best estimate basis. We have standardised deficit recovery periods using a period of 20 years to ensure results are comparable. Where a fund is in surplus under the best estimate basis, the surplus is assumed to be paid back to the employer over a period of 20 years.

C.22 Return-seeking asset classes are assumed to be:

- Overseas Equities;
- UK Equities;
- Other equities e.g. unquoted or private
- Property; and
- Other return seeking assets

Defensive asset classes are assumed to be:

- Cash;
- Gilts
- Corporate Bonds; and
- Other defensive assets

C.23 We calculated the emerging deficit from the shock following a 15% fall in return seeking assets:

$$\text{New Deficit} = (\text{Pre} - \text{stress asset value minus post stress asset value})$$

We spread this over 20 years of annual payments and express as a percentage of pensionable pay:

$$\frac{\text{New Deficit}}{\bar{a}_{20} \times \text{pensionable pay}}$$

Where: (overleaf)

- new deficit is calculated on the best estimate basis as at 31 March 2017
- $\bar{a}_{20}$  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 best estimate basis.
- $e$  is the general earnings inflation assumption on the best estimate basis

C.24 A fund is allocated a red flag if its result is above 7.5%, an amber flag if its result is above 5% and a green flag otherwise.

C.25 As set out in methodology section above, GAD undertook a subsequent qualitative analysis on whether flag colours should be revised.

C.26 The asset shock reduces the funding level of the funds, on the best estimate basis. If a fund was in surplus post-shock (that is, the funding level was in excess of 100% after the shock) the fund is allocated a green flag. The table of results in the section 13 report includes the position for the funds following the asset shock and the effect of the asset shock on contribution levels.



# 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 D1: Long-term Cost Efficiency Considerations and Measures**

Consideration	Measure Used
<b>Relative considerations:</b>	
The implied deficit recovery period	<b>Deficit Period:</b> Implied deficit recovery period calculated on a best estimate basis
The investment return required to achieve full funding	<b>Required Return:</b> The required investment return rates to achieve full funding in 20 years' time on a best estimate basis
The pace at which the deficit is expected to be paid off	<b>Repayment Shortfall:</b> The difference between actual contribution 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
Contributions from funds not in deficit are not likely to lead to a deficit arising in the future when assessed on the best estimate basis	<b>Surplus retention:</b> The average employer rate set at the 2020 valuation for a fund is either greater than GAD's best estimate of future service cost; or where the rate is less than the best estimate future service cost the implied surplus sharing period over which a surplus on a best estimate basis might be spread is not considered too short
<b>Absolute Considerations:</b>	
The extent to which the required investment return above is less than the estimated future return being targeted by a fund's investment strategy	<b>Return Scope:</b> 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

Consideration	Measure Used
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	<b>Deficit Reconciliation:</b> 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 The analyses and calculations carried out under these long-term cost efficiency measures are approximate and they rely on the accuracy of the data provided.
- D.3 Although the calculations are approximate, we consider them sufficient for the purposes of identifying which funds are a 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 concern where multiple measures are triggered amber for a given fund.
- D.4 For the 2020 section 13 report, GAD has adopted the same measures as those in 2017, however the surplus retention metric has been refined to allow for some surplus spreading even if this reduces the overall contribution rate to below that of the best estimate SCR.
- D.5 In line with the approach adopted for the solvency measures an additional qualitative step may have been considered if any red or amber flags had been raised.
- D.6 We have calculated maturity as the liability of a fund on GAD’s best estimate basis divided by the payroll. If problems do arise with the scheme funding level, funds with higher maturity will have a shorter timeframe over which to spread additional contributions.

### Long-term cost efficiency measures – methodology

- D.7 We detail the methodology behind the measures used to assess a fund’s long-term cost efficiency position below. Some of the measures listed were calculated using a best estimate set of assumptions. For more information on this best estimate basis please see Appendix F.

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

- D.8 The calculations are done on a best estimate basis.
- D.9 The implied deficit recovery period on the standardised best estimate basis was found by solving the following equation for x:

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

- D.10 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 best estimate basis.
- $e$  is the general earnings inflation assumption on the best estimate basis.
- The deficit on the best estimate basis is as at 31 March 2020.
- The annual deficit recovery payment on the best estimate basis is calculated as the difference between the average employer contribution rate for the years 2021/22 – 2023/24, 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 best estimate basis for the years 2021/22 – 2023/24 (which is assumed to be equal to the future cost of accrual of that particular fund).

D.11 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 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.

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

D.12 The following assumptions were made for the purposes of this calculations:

- Time 0 is 31 March 2020.
- Time 20 is 31 March 2040.
- $A_0$  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 value of the fund's assets at time 20.
- $L_0$  is the value of the fund's liabilities at time 0, and was obtained from the data provided by the local firms of actuarial advisors.
- $L_{20}$  is the value of the fund's liabilities at time 20.
- $C_0$  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 from time 0.
- $B_{0-20}$  is the total value of benefits payable 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 and was calculated by restating the standard contribution rates on the local fund bases using the 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 best estimate basis.
- $e$  is the general earnings assumption on the best estimate basis.
- $x$  is the required investment return that is to be calculated.

D.13 The membership profile is assumed to be constant.

D.14 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:

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

D.15 Where the required investment return was higher than two times the nominal discount rate on the best estimate basis (i.e.  $2 \times i$  where  $i = 4.60\%$ ) funds would be classified as red. Where the investment return was higher than  $i$  the fund would be classified as amber. Funds were classified as green if the required return was less than  $i$ .

**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.16 This measure is an extension from the deficit period measure, as it considers the affordability of the deficit on GAD's best estimate basis. 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.17 The required annual deficit recovery contribution rate to be paid on a standardised best estimate basis is equal to:

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

Where:

- The deficit on the standardised best estimate basis is as at 31 March 2020
- $\bar{a}_{20}$  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 2020 and has not been adjusted.

D.18 The difference in deficit recovery contribution rates is then defined as:

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

Where:

- The average employer contribution rate is for the years 2021/22 – 2023/24, 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 2021/22 – 2023/24. It is assumed that the standard contribution rate is equal to the future cost of accrual of that particular fund.

D.19 The data required for each of the funds to carry out the above calculation was provided by their respective firms of actuarial advisors.

D.20 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.

**Surplus retention: contributions from funds not in deficit are not likely to lead to a deficit arising in the future**

D.21 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 deficit on the standardised best estimate basis is as at 31 March 2020
- The average employer contribution rate is for the years 2021/22 – 2023/24, 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 2021/22 – 2023/24. It is assumed that the standard contribution rate is equal to the future cost of accrual of that fund.

D.22 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 were flagged amber.

D.23 The data required for each of the funds to carry out the above calculation was provided by their respective firms of actuarial advisors.

**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 is maintained**

- D.24 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 2020.
- D.25 The asset data used in this calculation was provided by each fund's respective firm of actuarial advisors.
- D.26 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.

**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.27 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.28 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)

Funds that were in surplus at the 2020 valuation were flagged as green. For funds in deficit where both of the above have occurred are flagged amber; otherwise funds in deficit are flagged green.

## Appendix E: Data provided

- E.1 At the request of the Scottish Public Pensions Agency ('SPPA') the Government Actuary's Department ('GAD') has collected data from each fund's 2020 valuation report. These actuarial funding valuations were conducted by three firms of actuarial advisors:
- Barnett Waddingham
  - Hymans Robertson
  - Mercer
- E.2 Data was received from the relevant local actuary for all 13 pension funds.
- E.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 2020 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.
- E.4 In addition GAD has received individual membership data from each of the funds as part of the 2020 scheme valuation. This data has been used in GAD's best estimate calculations.
- E.5 Unless otherwise stated the data detailed above has been used to inform the analysis contained in the LGPS Scotland section 13 2020 report.
- E.6 The information provided to GAD is, in many instances, more detailed than that provided in the actuarial valuation reports.
- E.7 There was some inconsistency in the format of information provided to GAD. For example, membership details were not always split by gender as requested. However, this did not have a material impact on the analysis that GAD was able to complete.



## Data specification (as requested)

### 1) MEMBERSHIP DATA

Data split by gender.

- (a) Active members: number of members, unweighted average age, total rate of annual actual pensionable pay at 31 March 2020 and 31 March 2017 (2015 pay definition)
- (b) Deferred members: number of members, unweighted average age, total annual preserved pension revalued to 31 March 2020 for both 31 March 2020 and 31 March 2017. Note this should exclude undecided members.
- (c) Pensioners (former members): number of members, unweighted average age, total annual pensions in payment at 31 March 2020 and 31 March 2017
- (d) Pensioners (dependants including partners and children): number of members, unweighted average age, total annual pensions in payment at 31 March 2020 and 31 March 2017

### 2) FINANCIAL ASSUMPTIONS

Assumptions used to value the liabilities of the most secure employers (e.g. local authorities)

- (b) Provide assumptions used for past service liabilities, these have been given for both as at 31 March 2020 and 31 March 2017.
  - i. Nominal discount rate (pre & post retirement separately if applicable)
  - ii. RPI inflation
  - iii. CPI inflation rate
  - iv. Earnings inflation
- (c) Provide assumptions used for future contributions, these have been given for both as at 31 March 2020 and 31 March 2017.
  - i. Nominal discount rate (pre & post retirement separately if applicable)
  - ii. RPI inflation
  - iii. CPI inflation rate
  - iv. Earnings inflation

(d) Short term assumptions used in the valuation (if applicable)

- i. CPI
- ii. Salary Increases
- iii. Discount Rate

(e) Deficit Recovery Period (years)

### 3) DEMOGRAPHIC ASSUMPTIONS

Rates to be provided at sample ages split by gender

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

- i. Pensioner members aged 65 (for members retiring on normal health) (to 2dp) (with mortality improvements)
- ii. Pensioner members aged 65 (for members retiring on normal health) (to 2dp) (without mortality improvements)
- iii. Active / deferred members at age 65 if they are currently aged 45 (to 2dp) (with mortality improvements)
- iv. Active / deferred members at age 65 if they are currently aged 45 (to 2dp) (without mortality improvements)

(b) Commutation

- i. Pre 2009 pension Commutation Assumptions (as % of maximum lump sum allowed under HMRC rules).
- ii. Post 2009 pension Commutation Assumptions (as % of maximum lump sum allowed under HMRC rules).

### 4) ASSETS These are split to provide information for 31 March 2020 and 31 March 2017

a) Value of Assets (market value)

b) Actual Asset Distribution split into the following:

- i) Proportion of assets held in Bonds (fixed interest government bonds, fixed interest non-government bonds, inflation linked bonds)
- ii) Proportion of assets held in Equities (UK equities, overseas equities, unquoted or private equities)
- iii) The rest in Property, Insurance Policies, Deferred or immediate fully insured annuities, Hedge funds, Cash and net current assets, Commodities, ABC arrangements,

Infrastructure - debt type, Infrastructure - equity type "Other" investments – defensive, "Other" investments - return seeking

- c) Value of assets used in valuation
- d) Is a smoothed asset value used? If Yes, an explanation is included
- e) Weighted best estimate return

## 5) LIABILITIES AND FUTURE CONTRIBUTION RATE

These are split to provide information for 31 March 2020 and 31 March 2017;

### **Local assumptions**

- a) Past Service Liability – split between Actives, Deferred, Pensioners and Total
- b) Funding Level
- c) Surplus / Deficit
- d) Deficit Recovery Period (maximum for any employer in deficit)
- e) Assumed member contribution yield (%)

### **SAB Standardised Basis**

- a) Past Service Liability – split between Actives, Deferred, Pensioners and Total
- b) Funding Level
- c) Surplus / Deficit
- d) SAB future service costs (excluding expenses) %

## (7) Post 2015 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

- (a) Valuation Report @ 31 March 2020
- (b) Relevant related reports
- (c) Compliance Extract
- (d) Statement of Investment Strategy

(e) Funding Strategy Statement

(f) Other

(9) McCloud approach

Please note the planned approach to risks arising from the McCloud judgement

## Appendix F: Assumptions

F.1 Each section 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 2020 actuarial valuation
- The LGPS England and Wales SAB standardised set of assumptions (as agreed appropriate to use for comparison purposes by fund actuaries and SPPA)
- A GAD best estimate set of assumptions

F.2 Details of local fund assumptions can be found in each fund's 31 March 2020 actuarial valuation report. See the table below for details of the E&W SAB standardised basis (which it was agreed was appropriate for use for LGPS S) and the GAD best estimate basis. We have highlighted differences.

**Table F1: SAB standard basis and Best Estimate basis**

<b>Assumption</b>	<b>SAB standard basis</b>	<b>GAD Best Estimate basis</b>
Methodology	Projected Unit with 1-year control period	
Rate of pension increases	2.0% per annum	2.0% per annum
Public sector earnings growth	3.5% per annum	3.75% per annum
Discount rate	4.45% per annum	4.6% per annum
Changes to State pension age (SPA)	As legislated	
Pensioner baseline mortality	Set locally based on fund experience	
Mortality improvements	Core CMI_2018 with long term reduction in mortality rates of 1.5% per annum	Improvements in line with those underlying the ONS 2018-based principal population projections for the UK
Age retirement	Set locally based on fund experience	
Ill health retirement rates	Set locally based on fund experience	
Withdrawal rates	Set locally based on fund experience	
Death before retirement rates	Set locally based on fund experience	
Promotional salary scales	None	As set out in GAD's 2017 valuation
Commutation	SAB future service cost assumption of 65% of the maximum allowable amount	As set out in GAD's 2017 valuation
Family statistics	Set locally based on fund experience	
50:50 Take-up	5% of the membership opt for 50/50	As set out in GAD's 2017 valuation

## Standardised basis

- F.3 The purpose of the SAB standard basis is to enable cross comparison of funds. The local valuations for each fund use financial assumptions specific to that fund, and so the funding levels (assets divided by liabilities) on the local fund bases are not directly comparable. The SAB standard basis uses market values of assets and a fixed discount rate for all funds, which allows for comparison of relative funding levels on a standard basis.
- F.4 The SAB standard basis does not value assets and liabilities consistently, and so it is not suitable for funds to use for their funding valuations and cannot be seen as a 'target' or 'minimum funding requirement' basis. As a result, it is not appropriate to use the SAB standard basis to:
- > assess whether a fund is fully funded or has a deficit (whether the funding level on the SAB standard basis is more or less than 100% is irrelevant, only the SAB standard basis funding level relative to other funds is meaningful)
  - > Compare funding levels at 2020 with the previous valuation at 2017
- F.5 Because of this there is a wide range of assumptions from which a reasonable basis could be chosen – what matters is that funds use consistent bases.

## Best estimate basis

- F.6 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 Scotland assets held as at 31 March 2020. 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.
- F.7 The previous assumptions underlying GAD's best estimate basis as at 31 March 2017 can be found in the [appendices to the previous report](#). The key financial assumptions have been derived in a consistent manner but updated for changes in market conditions.
- F.8 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 house view above, but there are other reasonable best estimate bases which may give materially different results.

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

## 13 Employer contributions in funded schemes

- (1) This section, which can be found at [Public Service Pensions Act 2013 \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukpga/2013/24/section/13), 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.

# Appendix H: Extracts from other relevant regulations

## Regulations 56 and 60 of [‘The Local Government Pension Scheme \(Scotland\) Regulations 2018’](#) (prior to 1 June 2022)

### Funding strategy statement

- 56**—(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 2016.
- (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 current version of the document published the Chartered Institute of Public Finance and Accountancy (‘CIPFA’) and called a “Preparing and Maintaining a Funding Strategy Statement in the Local Government Scheme”(F1); and
  - (b) the statement of investment principles published by the administering authority under regulation 12 of the Local Government Pension Scheme (Management and Investment of Funds) (Scotland) Regulations 2010.

### Actuarial valuations of pension funds

- 60**—(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 2020 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 Scottish Ministers 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 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 56 (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.

(6) 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.

(7) 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.

(8) In this regulation –

(a) 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; and

(b) 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.

# Appendix I: Allocation of Scottish local authorities to LGPS Scotland administering authorities

Scottish local government consists of 32 local authorities. These participate in the LGPS Scotland through eleven administering authorities. The local authorities are allocated across these administering authorities as shown below.

## **LGPS Administering Authorities, funds and allocation of local authorities**

### **Glasgow City Council**

#### Strathclyde Pension Fund

Glasgow City Council  
Argyle and Bute Council  
East Ayrshire Council  
North Ayrshire Council  
South Ayrshire Council  
West Dunbartonshire Council  
East Dunbartonshire Council  
North Lanarkshire Council  
South Lanarkshire Council  
East Renfrewshire Council  
Renfrewshire Council  
Inverclyde Council

### **City of Edinburgh Council**

#### Lothian Pension Fund

City of Edinburgh Council  
Midlothian Council  
West Lothian Council  
East Lothian Council

### **Aberdeen City Council**

#### North East Scotland Pension Fund

Aberdeen City Council  
Aberdeenshire Council  
Moray Council

## **Dundee City Council**

### Tayside Superannuation Fund

Dundee City Council  
Angus Council  
Perth and Kinross Council

## **Scottish Borders Council**

### Scottish Borders Pension Fund

Scottish Borders Council

## **Dumfries & Galloway Council**

### Dumfries and Galloway Pension Fund

Dumfries and Galloway Council

## **Falkirk Council**

### Falkirk Council Pension Fund

Falkirk Council  
Stirling Council  
Clackmannanshire Council

## **Fife Council**

### Fife Council Pension Fund

Fife Council

## **Highland Council**

### The Highland Council Pension Fund

Highland Council  
Western Isles Council

## **Shetland Islands Council**

### Shetland Islands Pension Fund

Shetland Islands Council

## **Orkney Islands Council**

### Orkney Islands Pension Fund

Orkney Islands Council