Government Actuary's Department

Local Government Pension Scheme (Scotland)

Actuarial valuation as at 31 March 2017
Valuation Report (before allowance for McCloud)
by the Scheme Actuary

Date: 24 June 2022

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Contents

1 Executive summary

*This **valuation report** (before allowance for McCloud) is addressed to Scottish Ministers and provides a key intermediate result required for the cost control mechanism of the Local Government Pension Scheme (Scotland) ('LGPS Scotland').*

*The final 2016 **cost cap valuation results** are stated in the 2016 **cost cap valuation report**. No action is required on the basis of this pre-McCloud **valuation report**.*

Background

1.1 The Government established a cost control mechanism for public service pension schemes to ensure a fair balance of risks between scheme members and the taxpayer.

1.2 The ***employer cost cap*** for the LGPS Scotland was set at 15.2% of pay, following the 2014 valuation. If at subsequent valuations the cost of the scheme is outside a corridor above / below the ***employer cost cap***, the Public Service Pensions Act 2013 requires action to be taken to bring costs back to the target cost.

1.3 The cost of the scheme is tested against the ***employer cost cap*** for the first time at the 2017 valuation. The final 2017 ***cost cap cost of the scheme*** is calculated as the sum of two intermediate results in accordance with HM Treasury Directions:

> ***Employer contribution correction cost***, which is set out in this Pre-McCloud ***valuation report***

> ***Transitional protection remedy cost***, which arises following the McCloud judgment, and is set out in the ***cost cap valuation report***

Purpose of this pre-McCloud valuation report

1.4 This separate pre-McCloud ***valuation report*** reflects that the cost control process was paused following the McCloud judgment. The purpose of this pre-McCloud ***valuation report*** is to set out the intermediate value in the first bullet above: the ***employer contribution correction cost***. The ***cost cap valuation report*** sets out the final result of the valuation after the consideration of the remedy of the McCloud discrimination. Both reports have been prepared in accordance with the HM Treasury Directions of 7 October 2021.

1.5 The Scottish Public Pensions Agency ('SPPA') have instructed us to complete this pre-McCloud ***valuation report*** on the basis of scheme benefits before any adjustments as part of the ***transitional protection remedy***, and disregarding new information which emerged after 1 April 2020 (the ***implementation date***).

1.6 This is consistent with the HM Treasury Directions which require the difference in costs between ***pre-remedy benefits*** and ***post-remedy benefits*** to be captured by the ***transitional protection remedy cost***, and therefore excluded from the ***employer contribution correction cost***. It is also consistent with the approach required by the HM Treasury Directions to disregard pension increases after the ***implementation date***.

1.7 This approach will also ensure the 2017 LGPS Scotland ***employer contribution correction cost*** can be straightforwardly compared against those for the unfunded public service pension schemes. These were set out in valuations prepared to inform the employer contribution rates payable in those schemes and signed during spring 2019. No LGPS Scotland valuation report was needed at that time, because employer contributions in the LGPS are paid in accordance with rates and adjustments certificates issued by each administering authority under Regulation 60 of the Local Government Pension Scheme (Scotland) Regulations 2018, not by the actuarial valuation under HM Treasury Directions.

1.8 This pre-McCloud ***valuation report*** also presents the other information required by the latest HM Treasury Directions.

Conclusions and next steps

1.9 The ***employer contribution correction cost*** has been determined as 12.3% of pensionable pay.

1.10 The ***employer contribution correction cost*** is combined with the ***transitional protection remedy cost*** in the ***cost cap valuation report*** in order to determine the ***cost cap cost of the scheme***. If the ***cost cap cost of the scheme*** set out in the ***cost cap valuation report*** lies within the ±2% corridor above / below the ***employer cost cap***, then no changes to benefits or member contributions are required.

1.11 No action is required on the basis of this pre-McCloud ***valuation report***.

2 Key points from the valuation

*This chapter provides the **valuation results** required by the Directions, along with some commentary about the background, data and assumptions used and the changes from the previous valuation.*

Introduction

2.1 This pre-McCloud ***valuation report*** sets out a key intermediate result of the actuarial valuation of the combination of the 2015 Scheme established by the Local Government Pension Scheme (Scotland) Regulations 2018[1] ('the Regulations'), and the Earlier Schemes[2] (collectively referred to as the Local Government Pension Scheme (Scotland) or 'the Scheme'). The Scheme provides pensions and other benefits to employees who have worked in local government or for other Scheme employers, and to their dependants. The Scheme is managed and administered locally by the 11 administering authorities[3]. Member contributions are payable in accordance with Regulation 9 of the Regulations for membership after 1 April 2015. Employer contributions are payable in accordance with the rates and adjustments certificates issued under Regulation 60 of the Regulations.

2.2 GAD has been appointed as ***scheme actuary*** by Scottish Ministers to carry out an actuarial valuation of the Local Government Pension Scheme (Scotland) as at 31 March 2017 (the ***effective date***), as required by Regulation 100 of the Regulations. This pre-McCloud ***valuation report*** is addressed to the Scottish Ministers.

2.3 The valuation has been undertaken in accordance with *The Public Service Pensions (Valuations and Employer Cost Cap) Directions 2014 (as amended)* ('the Directions'). Terms defined in the Directions are shown in ***bold italics*** when used in this report.

2.4 The Scottish Public Pensions Agency ('SPPA') have instructed us to complete this pre-McCloud ***valuation report*** on the basis of scheme benefits before any adjustments as part of the ***transitional protection remedy***, and disregarding new information which emerged after 1 April 2020 (the ***implementation date***).

2.5 This is consistent with approach taken for unfunded public service pension schemes, which calculated the ***employer contribution correction cost*** in valuations signed during spring 2019. It is also consistent with the approach required by the HM Treasury Directions to disregard pension increases after the ***implementation date***.

[1] The scheme established and governed by SSI 2018 No 141
[2] As defined in the Local Government Pension Scheme (Transitional Provisions and Savings) (Scotland) Regulations 2014 (SSI 2014 No 233)
[3] See Regulation 51 and Part 1 of Schedule 3 of the Regulations.

2.6 The unfunded public service pension schemes valuations were signed in spring 2019 to inform employer contribution rates payable to those schemes from April 2019. No LGPS Scotland valuation report was needed at that time or a year later at the ***implementation date*** of the 2017 actuarial valuation, because employer contributions in the LGPS Scotland are paid in accordance with each administering authority's rates and adjustments certificate issued under Regulation 60 of the Local Government Pension Scheme (Scotland) Regulations 2018, not by the actuarial valuation under HM Treasury Directions.

2.7 In her written ministerial statement[4] ('WMS') made on 30 January 2019 following the McCloud judgment, the then Chief Secretary to the Treasury announced that there would be a pause to the cost cap process until there was certainty about the value of pensions to employees from April 2015 onwards. That pause has now been lifted and amending directions to allow all public service schemes to conclude their valuations by setting out how schemes must carry out the cost control element of those valuations were published[5] on 7 October 2021.

2.8 The Directions specify a number of assumptions, of which the use of the ***SCAPE discount rate*** is the most important, to be used for the valuation. In our opinion, the directed assumptions are reasonable to use for the valuation as they meet the Government's policy objectives. The Government Actuary has separately been consulted on the directed assumptions by HM Treasury. The consultation materials can be found online[6].

2.9 The main purposes of the valuation are set out in the Directions. For the Local Government Pension Scheme (Scotland) this primarily is to assess the cost of the LGPS Scotland within the cost control mechanism by calculating the ***cost cap cost of the scheme*** as at 31 March 2017 and then comparing this against the ***employer cost cap*** set at the actuarial valuation as at 31 March 2014. The ***cost cap cost of the scheme*** is calculated as the sum of:

> ***Employer contribution correction cost***

> ***Transitional protection remedy cost***

2.10 This pre-McCloud report presents the ***employer contribution correction cost*** determined at this valuation. The ***initial cost cap fund***, set equal to liabilities for contributing members at 31 March 2015, is also set at this valuation and is explained here as it is required to determine the ***employer contribution correction cost.***

2.11 A final ***cost cap valuation report*** covers the calculation of the ***transitional protection remedy cost*** and the comparison of the ***cost cap cost of the scheme*** to the ***employer cost cap***.

[4] https://questions-statements.parliament.uk/written-statements/detail/2019-01-30/hcws1286
[5] https://www.gov.uk/government/publications/public-service-pensions-completion-of-2016-valuations
[6] https://www.gov.uk/government/publications/public-service-pensions-actuarial-valuations-and-the-employer-cost-cap-mechanism-supplementary-documents

2.12 Directions also require that the valuation determines a notional rate of employer contributions using the same approach used to determine employer contribution rates for unfunded public service pension schemes. Therefore this pre-McCloud ***valuation report*** also sets out the ***uncorrected employer contribution rate*** and the ***corrected employer contribution rate*** that (notionally) would be effective from 1 April 2020 (the ***implementation date***) for the three-year period from 1 April 2020 (the ***implementation period***). Appendix G sets out where all the information that the Directions require a ***valuation report*** to include can be found (some of which is to be found in the related advice listed in paragraph 2.14 below).

2.13 Note that this pre-McCloud ***valuation report*** does not provide information on the actual required rate of employer contributions. LGPS Scotland employer contributions are payable in accordance with the rates and adjustments certificates issued under Regulation 60 of the Regulations as part of actuarial valuations carried out by an actuary appointed by each administering authority.

2.14 We have separately provided advice and information on data and assumptions to be used for the results presented in this pre-McCloud ***valuation report***. The following documents should be read in conjunction with this report.

- Local Government Pension Scheme (Scotland): Actuarial valuation as at 31 March 2017: Report on data as at 31 March 2017 dated 24 June 2022 ('the Data report')
- Local Government Pension Scheme (Scotland): Actuarial valuation as at 31 March 2017: Advice on assumptions dated 24 March 2020 ('the Assumptions report')

2.15 Please see Appendix I for the limitations of this report.

Data and assumptions

2.16 Data was received from the administering authorities for the 2017 valuation. This was generally adequate for the purposes of the valuation calculations. However, some aspects of the data were incomplete and/or unreliable for certain elements of our valuation calculations. Appendix F of the Data report sets out the uncertainty in valuation results arising from known deficiencies in the data, primarily those associated with incomplete data as at 31 March 2015 used to calculate the ***initial cost cap fund***.

2.17 To accurately calculate the **cost cap net leavers liability** ('CCNLL') in accordance with the Directions requires full movement data for all members who were active in 2015 and are no longer active at the 2017 valuation. The data available was not suitable for calculating the CCNLL and it was not possible to make assumptions to adjust the data available to provide for a reasonable estimate of the CCNLL to be calculated. There have been some difficulties for all schemes in using the valuation data to determine the CCNLL, and these difficulties are particularly acute for Local Government Pension Scheme where members may have multiple employments, and re-joining and aggregation of benefits occur.

2.18 It has not been possible to fully resolve these data issues. Therefore, calculating results for the 2017 valuation of the Scheme requires assumptions in respect of incomplete and/or unreliable individual member records and movements data. In particular, for the purposes of determining the 2017 valuation results, the approach adopted implicitly assumes that there is no unidentified experience gain or loss arising over the period 2015 to 2017. Appendix G of the Data report contains full details of the approaches taken in respect of missing and unreliable data.

2.19 We expect that the uncertainty introduced by the approach above is not more than 0.5% of pay. We would not expect significant unidentified experience gains or losses to arise over the two-year period 2015 to 2017; and although some uncertainty remains we would not expect any item as large as 0.5% of pay.

2.20 For the 2017 valuation, the CCNLL calculation period is only two years, rather than a full three-year ***inter-valuation period***. Given the short period over which any gain or loss may have arisen it might reasonably be concluded that the lack of data for the CCNLL calculation is not critical for this valuation. The cost control mechanism reforms to be introduced ahead of the next valuation in 2020 are expected to mean that no ***cost cap net leavers liability*** will need to be calculated as part of that valuation.

Employer contribution correction cost

2.21 The cost control mechanism was introduced via the Public Service Pensions Act 2013 and relevant Directions with the aim of ensuring that the risks associated with pension provision are shared with scheme members and the costs remain sustainable in the future.

2.22 The results in this report have been prepared and under the approach specified in the Directions, as they apply at the date of signing, and SPPA's instructions to complete this valuation on the basis of scheme benefits before any adjustments as part of the ***transitional protection remedy***, and disregarding new information which emerged after 1 April 2020 (the ***implementation date***.

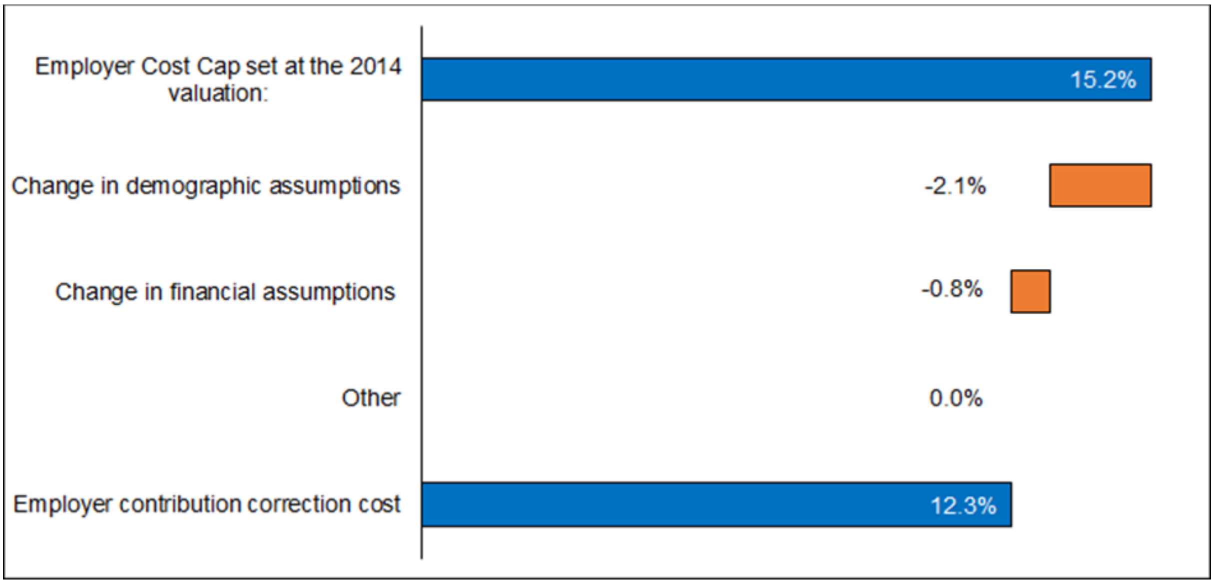
2.23 The ***initial cost cap fund*** is a notional pot of assets equal to the liabilities of contributing members as at 31 March 2015 and includes all benefits prospectively payable from the Scheme to those members in respect of service completed to that date. Liabilities arising from future pay inflation, or in-service benefit revaluation, to the assumed future date of cessation of pensionable service are included.

2.24 The ***initial cost cap fund*** has been calculated as part of this valuation as £14.9bn.

2.25 The ***employer contribution correction cost*** is a measure of the cost to employers of providing benefits under the 2015 Scheme to all currently contributing members, with an allowance for past service effects for members who were contributing to the Scheme as at 31 March 2015. Based on the scheme benefits before any adjustments arising as an outcome of the McCloud judgment, the ***employer contribution correction cost*** for the ***implementation period*** (1 April 2020 to 31 March 2023) is 12.3% of pensionable pay. This compares to the ***proposed employer cost cap*** of 15.2% set following the 2014 valuation.

2.26 Chart 2.1 summarises the key reasons for the change in the ***employer contribution correction cost*** compared with the ***proposed employer cost cap*** which was calculated in the 2014 valuation. Further explanation of the change is provided in section 3.

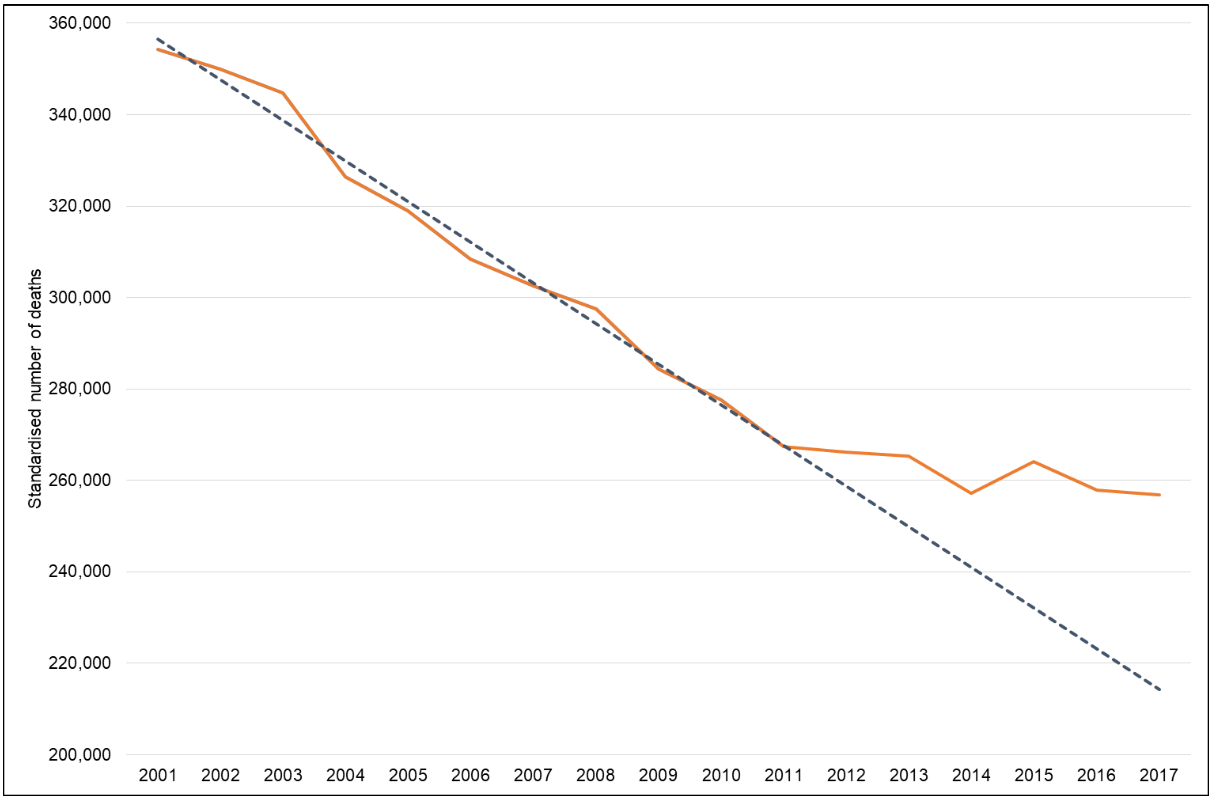
Chart 2.1: Employer contribution correction cost compared with the proposed employer cost cap



2.27 The change in demographic assumptions item in Chart 2.1 reflects the impact of a number of items including changes in scheme specific assumptions. However, the main driver behind this reduction of costs is a reduction in assumed future improvements in life expectancy under the ONS-2016 projections when compared with the ONS-2012 projections which were used in the 2014 valuation. The use of these projections is set out in the Directions.

2.28 Chart 2.2 shows the UK population experience which resulted in the revision of ONS projections of future life expectancy between the 2012 and 2016 projections. The number of standardised[7] deaths over time is shown by the solid orange line. The dotted line is the trend that was observed up until 2012. This shows that in the intervening years the number of deaths increased above the trend that was seen before 2012. This experience resulted in a downwards revision of future improvements in life expectancy with Scheme members being assumed to receive benefits for a shorter period of time than assumed at the previous valuation.

Chart 2.2: Age standardised number of deaths per calendar year, Males, UK

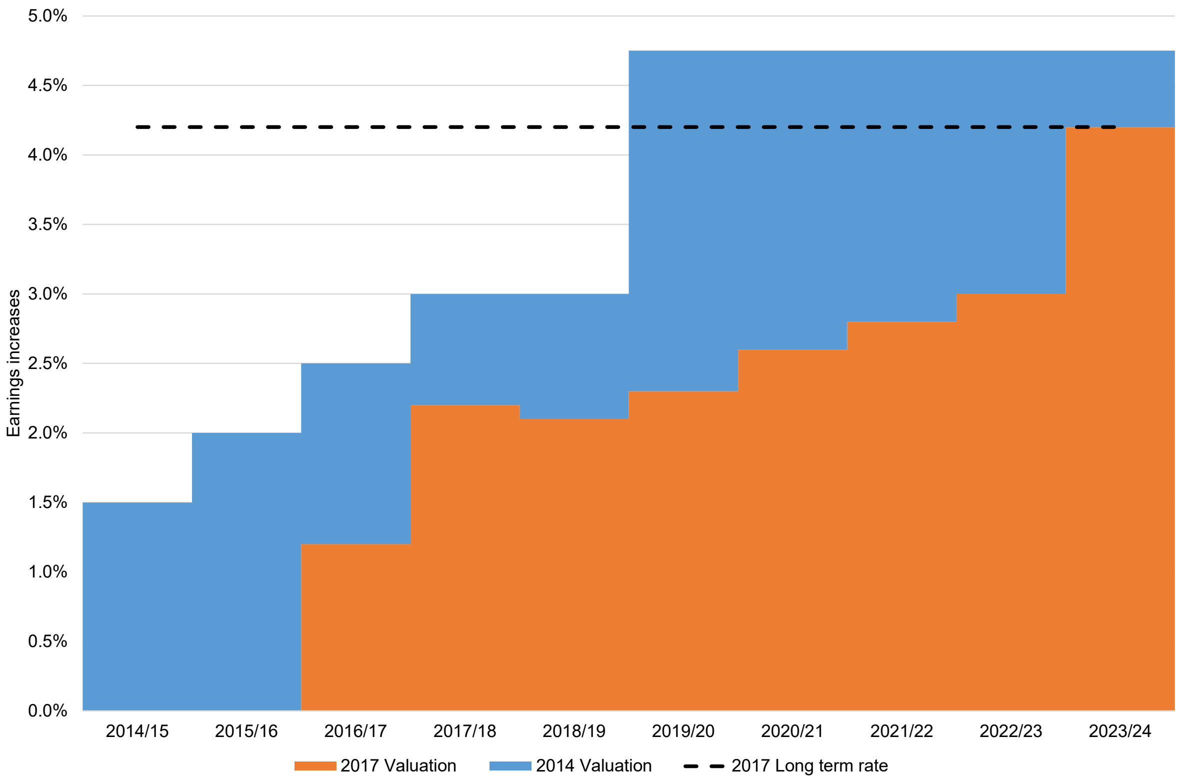


2.29 The change in financial assumptions item in Chart 2.1 is primarily due to the change in directed earnings assumptions, which are based on OBR forecasts. The ***cost cap fund*** is currently primarily made up of final salary benefits and therefore the level of future earnings increases has a significant impact on the expected future size of those benefits. The ***initial cost cap fund*** was set using the 2014 valuation earnings assumptions which are shown in blue in Chart 2.3. These assumptions anticipated some short-term pay restraint in the public service, before reversion to a long-term rate of increase.

[7] This is the number of deaths each year adjusted to remove the impact due to the population having different ages

2.30 The Directions anticipated public sector pay restraint continuing for a longer period than was assumed for the 2014 valuation. The 2017 valuation earnings assumptions are shown in orange in Chart 2.3. The value of the ***cost cap liabilities*** at 31 March 2017 takes account of this longer period of pay restraint. This has the effect of assigning a lower value to the ***cost cap liabilities*** for this valuation compared to that based on the 2014 valuation assumptions.

Chart 2.3: Short-term earnings increase assumptions



2.31 The change in the rate of assumed earnings growth between the current and previous valuations means that the value of the ***cost cap liabilities*** as at 31 March 2017 is lower than the ***cost cap fund*** at the same date which results in a cost cap surplus. This leads to a reduction in the ***employer contribution correction cost*** compared to a balanced position.

2.32 The change in ***SCAPE discount rate*** and long-term earnings assumptions described in paragraph 2.37 does not have a significant impact on the ***employer contribution correction cost*** because the Directions operate to largely remove the impact of the change.

2.33 Further details regarding the calculations are provided in section 3 and Appendix A.

Employer contribution rate

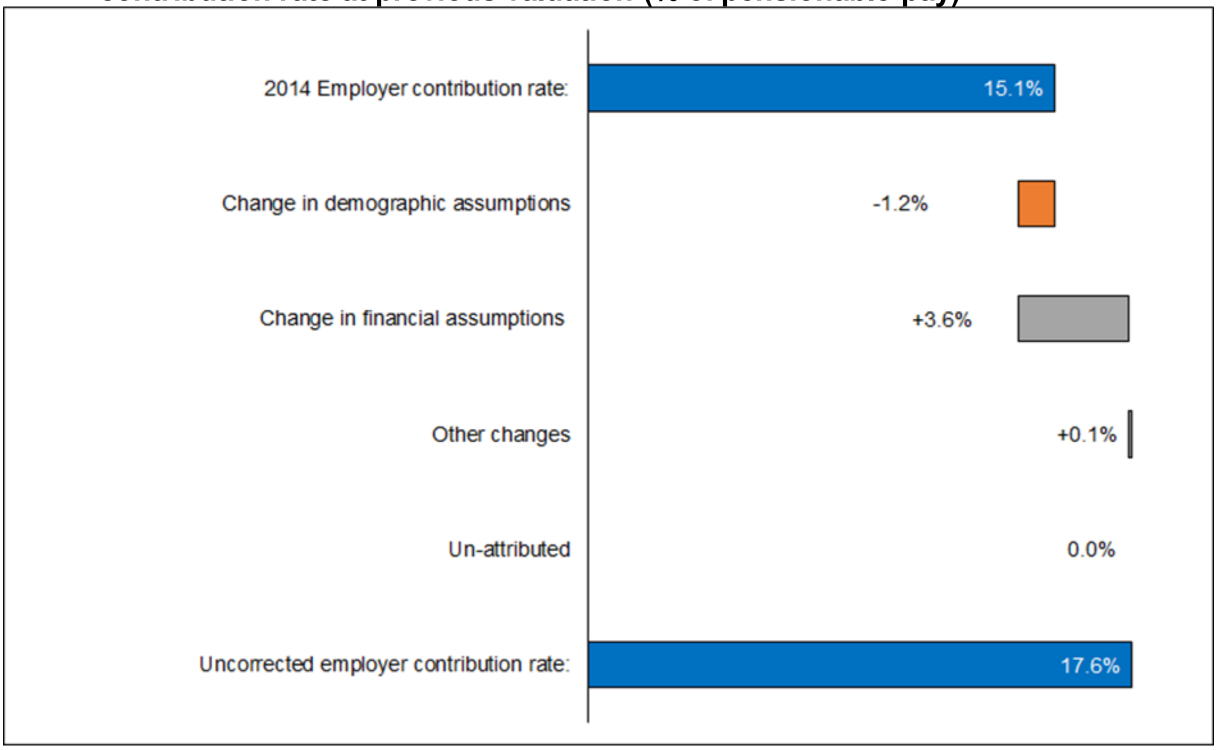
2.34 The Directions require two separate (notional) measures of employer contribution rate to be calculated and disclosed. (Note that, as set out in 2.13, neither represent the actual contributions paid by employers into the LGPS Scotland.)

> The ***uncorrected employer contribution rate*** effective over the ***implementation period*** (1 April 2020 to 31 March 2023) is 17.6% of pensionable pay. This represents the cost of accrual over the ***implementation period*** based on the scheme's current regulations plus an allowance for correcting any surplus or deficit in the scheme.

> The ***corrected employer contribution rate*** effective over the ***implementation period*** (1 April 2020 to 31 March 2023) is 20.5% of pensionable pay. This rate is calculated in the same way as the ***uncorrected employer contribution rate*** except that the accrual rate of the 2015 Scheme is assumed to be improved from 1 April 2020 to the extent necessary such that the ***employer contribution correction cost*** equals the ***target cost of the scheme***.

2.35 Chart 2.4 summarises the key reasons for the change in the ***uncorrected employer contribution rate*** from the previous valuation. Further explanation of the change is provided in section 3.

Chart 2.4: Difference between uncorrected employer contribution rate and employer contribution rate at previous valuation (% of pensionable pay)



2.36 The explanation for the change in demographic assumptions item is as described in paragraphs 2.27 to 2.28. The impact on the ***uncorrected employer contribution rate*** is different from that for the ***employer contribution correction cost*** because, unlike the ***employer contribution correction cost***, the ***uncorrected employer contribution rate*** does not take account of any (notional) past service liabilities.

2.37 The change in financial assumptions item is primarily due to changes in the ***SCAPE discount rate***. This is the rate used to discount future payments from the Scheme. A lower rate leads to a higher assessment of the value of the payments. ***The SCAPE discount rate*** is based on the OBR's forecast for long-term GDP growth and so aims to reflect the cost of the pension scheme obligations being made relative to the future size of the economy. By 1 April 2019, OBR had reduced the long-term forecast since the 2014 valuation. Accordingly, the ***SCAPE discount rate*** was updated to reflect these changes and was reduced from 3.0% pa above CPI to 2.8% pa above CPI from April 2016 to April 2019 and was subsequently reduced to 2.4% pa above CPI. The reductions in the ***SCAPE discount rate*** result in a higher cost of accruing benefits.

2.38 Other financial assumption changes include changes in the assumed level of short-term earnings (see paragraph 2.30), pension increases, and the rate of long-term earnings increases. These changes offset the change in ***SCAPE discount rate*** to some extent but have a much smaller impact.

Future valuations

2.39 Our final ***cost cap valuation report*** provides comments on the main uncertainties which could result in some variations in the ***valuation results*** at subsequent valuations.

3 Analysis of results

This chapter provides further details on the ***valuation results*** *and how these have changed since the previous valuation*

Employer contribution correction cost

A(i) Cost cap fund balance sheet – past service position

3.1 The ***initial cost cap fund*** is determined in accordance with direction 30 and represents a notional pot of assets equal to the liabilities of contributing members as at 31 March 2015 and includes all benefits prospectively payable from the Scheme to those members in respect of service completed to that date. Liabilities arising from future pay inflation, or in-service benefit revaluation, to the assumed future date of cessation of pensionable service are included. The ***initial cost cap fund*** has been calculated as part of this valuation as £14.9 billion.

3.2 The ***employer contribution correction cost*** is a measure of the cost to employers of providing benefits under the 2015 scheme to all currently contributing members, with an allowance for past service effects for members who were contributing to the Scheme as at 31 March 2015. The ***employer contribution correction cost*** for the ***implementation period*** (1 April 2020 to 31 March 2023) is 12.3% of pensionable pay. This compares to the ***proposed employer cost cap*** of 15.2% set following the 2014 valuation.

3.3 The ***cost cap fund*** and ***cost cap liabilities*** at the ***effective date*** calculated in accordance with the Directions, and otherwise as specified in this report, are set out in Table 3.1. The initial (prior) value of the ***cost cap fund*** was set as part of this valuation (as the position as at 31 March 2015), so there are no comparative figures at the previous valuation date. The derivation of both the prior value of the ***cost cap fund*** and the ***cost cap fund*** at this valuation is set out in Appendix D.

Table 3.1: Cost cap fund valuation balance sheet

	31 March 2017 £ billion	*Direction*
Cost cap liabilities	***14.3***	***39***
Relating to benefits accrued in the pre-2015 schemes and for members in service at the ***valuation date***	12.1	*39(2)(a)*
Relating to benefits accrued in the post-2015 scheme	2.1	*39(2)(b)*
Cost cap fund	***15.4***	***37***
Cost cap surplus (shortfall)	***1.1***	

3.4 The value of the ***cost cap liabilities*** includes the value of all liabilities for contributing members of the aggregate scheme as at 31 March 2017 and the value of all benefits currently or prospectively payable to pensioners and deferred pensioners from the 2015 Scheme only as at 31 March 2017. For currently contributing members the value of the liabilities comprises the value of all benefits prospectively payable from the aggregate scheme to those members in respect of service completed to that date, including the value of liabilities arising from future pay inflation, or in-service benefit revaluation, to the assumed future date of cessation of pensionable service.

A(ii) Employer contribution correction cost – past service impacts and accrual cost

3.5 Whilst the ***effective date*** of the actuarial valuation is 31 March 2017, the cost cap contribution rates determined are those (notionally) applicable in respect of the period 1 April 2020 to 31 March 2023 (the ***implementation period***).

3.6 The ***proposed employer cost cap*** (set at the 2014 valuation) and the ***employer contribution correction cost*** over the ***implementation period*** are set out in Table 3.2.

Table 3.2: Employer cost cap summary

	2017 % pa		Direction
Proposed employer cost cap	**15.2**	**A**	***Set in 2014***
Employer contribution correction cost	**12.3**	**B**	***42***
Difference	**2.9**	**A-B**	

3.7 The ***employer contribution correction cost*** over the ***implementation period*** is determined from several components, which are summarised in Table 3.3. The table also shows a comparison with the ***proposed employer cost cap***.

Table 3.3: Employer contribution correction cost

	% pa		*Direction*
Proposed employer cost cap set at 2014 valuation	**15.2**		
Cost cap future service cost (Contribution rate required to cover expected cost of benefits accruing between 1 April 2020 and 31 March 2023 by reference to assumptions in Direction 40)	23.9	A	*40*
Plus ***cost cap past service cost*** (Contribution rate required to be paid for 15 years from 1 April 2017 to correct cost cap shortfall as at 31 March 2017)	(1.8)	B	*41*
Less ***cost cap contribution yield*** (Contribution yield expected from members between 1 April 2020 and 31 March 2023)	6.3	C	*31*
Less ***cost cap difference***[8]	3.5	D	*42A*
Employer contribution correction cost	***12.3***	***A+B-C-D***	**42**
Difference between *target cost of the scheme* and *employer contribution correction cost*	***2.9***		

[8] This is the difference between the employer cost cap (after SCAPE adjustment) which is 18.7%, and the original ***employer cost cap*** (set at the 2014 valuation) of 15.2%.

3.8 Table 3.4 shows how the ***employer contribution correction cost*** has changed from the ***proposed employer cost cap*** as determined in the previous valuation. The past service impacts and accrual cost impacts are shown separately and have been considered in the order listed. Using a different order could change the allocation between items shown.

Table 3.4: Employer contribution correction cost analysis

	Past service	**Accrual cost**	**Note**
Change in financials	(0.8)%	n/a	1.
Change in mortality assumptions	(1.0)%	(1.1)%	2.
Changes in demographic assumptions	0.1%	(0.1)%	3.
Change in average age	n/a	0.1%	4.
Change in average State Pension age (Spa)	n/a	(0.2)%	5.
Identified experience gain	(0.1)%	n/a	6.
Mortality improvements: improvement due to elapsed time	n/a	0.2%	7.
Change to PSTC allowance	n/a	0.0%	8.
Change in expected member contribution yield	n/a	0.0%	9.
Unexplained	0.0%	0.0%	10.
Total difference between ***employer contribution correction cost*** and ***target cost of the scheme*** (past service/accrual cost)	(1.8)%	(1.1)%	
Total difference between ***employer contribution correction cost*** and ***target cost of the scheme***	**(2.9)%**		
Employer contribution correction cost	**12.3%**		

3.9 Table 3.5 provides further information on the items identified.

Table 3.5: Cost cap - Explanation of analysis

Note	Explanation
1.	Whilst any change in long-term assumptions is outside the cost cap mechanism, this item reflects the impact of the changes in short-term assumptions between the 2014 and 2017 valuation directions.
2.	This relates primarily to the change in directed mortality improvements resulting from the change from ONS 2012 to 2016, which results in a reduction in expected future life expectancy. Assumed future life expectancy is also affected by the change to assumed LGPS Scotland specific current mortality rates.
3.	There were a number of other demographic assumption changes, although the impact of each in isolation is small.
4.	The average age increased since 2014, which increases the cost of accrual.
5.	Although there has been no change in the timetable of SPa used for the valuation, the passage of time means that current members (with similar average age as the 2014 membership), have, on average, later SPa than the previous membership set. The later SPa results in cost savings in the 2015 scheme.
6.	The experience gain shown relates mainly to pay.
7.	The passage of time and the nature of the directed assumption for mortality improvements means that a member now aged 45 will have a different future life expectancy to a member aged 45 at the 2014 valuation. The figures shown reflect the impact of the passage of time on future life expectancy between successive ***implementation periods***. The impact shown is after allowance for the change in improvement basis described in note 2.
8.	The expected cost to the scheme of the Public Sector Transfer Club is unchanged since the previous valuation.
9.	The Member contribution yield based on the current regulations (but assuming no members opt for the 50:50 scheme) over the period 1 April 2020 to 31 March 2023 is expected to remain unchanged since 2014 valuation.
10.	The unexplained item is nil in respect of past service because, due to data limitations, the net effect on the cost cap fund arising because of members holding pre 2015 benefits joining and leaving active service during the intervaluation period has been set to ensure there is no unexplained item.

Analysis of change in employer contribution rate

B(i) Whole scheme valuation balance sheet – past service position

3.10 The assets and past service liabilities of the aggregate scheme as at the ***effective date*** calculated in accordance with the Directions, and otherwise as specified in this report, are set out in Table 3.6. Corresponding figures at the previous valuation date are shown for comparison purposes.

Table 3.6: Whole scheme valuation balance sheet

	31 March 2017 £ billion	*Direction*	31 March 2014 £ billion
Aggregate scheme notional assets	**31.5**	***25, 44***	**28.3**
Aggregate scheme liabilities[9] in respect of:			
Active members	13.9		12.9
Deferred pensioners	4.3		3.2
Pensioners	13.2		12.2
Total aggregate scheme liabilities	**31.5**	***24***	**28.3**
Surplus (Shortfall)	**(0.0)**		**0.0**

3.11 The liabilities valued include the value of all benefits currently or prospectively payable under the aggregate scheme to pensioners and deferred pensioners as at 31 March 2017 and to active members as at 31 March 2017 in respect of service completed to the ***effective date***. In the case of active members, liabilities include those arising from future pay inflation or in-service benefit revaluation to the assumed future date of cessation of pensionable service. Paragraph 44 of the Directions requires that the notional scheme assets are set equal to the liabilities for the Local Government Pension Scheme (Scotland).

3.12 The previous valuation of the Local Government Pension Scheme (Scotland) under HM Treasury Directions was carried out as at 31 March 2014. Table 3.7 shows how the scheme liabilities have changed since the previous valuation. Some figures have been calculated in an approximate manner but are sufficient to show the general size of the impact. Table 3.8 provides further information on the items identified. Impacts are considered in the order listed. Using a different order could change the intermediate figures, though there is no impact on the total liabilities.

[9] Includes liabilities relating to past added years and additional pension and other options paid for by member contributions

Table 3.7: Scheme liabilities - Comparison with previous valuation

	£ billion	Note
Liabilities as at 31 March 2014	**28.3**	
Cost of accrual	3.0	1.
Past service cost effect from GMP interim solutions	0.1	2.
Enhancements and transfers in	0.0	3.
Benefits paid and transfers out	(3.7)	4.
Other income	(0.1)	
Interest cost (unwinding of the discount rate)	4.5	5.
Experience effects		
Pension increase experience	(0.5)	6.
Pay increase experience	0.0	7.
Other experience effects	(0.1)	8.
Change in financial assumptions	1.6	9.
Impact of change in demographic assumptions (including change in ONS projection table)	(1.6)	10.
Unattributed	(0.2)	11.
Liability as at 31 Mar 2017	**31.5**	

3.13 Table 3.8 provides further information on the items identified.

Table 3.8: Explanation of analysis

Note	Explanation
1.	This is the increase in the scheme liability resulting from employee service between 2014 and 2017. It is assessed on the financial assumptions applying to the 2014 valuation.
2.	The Scheme will now pay CPI increases on guaranteed minimum pension (GMP) for members reaching State Pension age between 6 April 2016 and 6 April 2021.
3.	The scheme liabilities are increased by enhancements (increases to benefits due to payments made by employees or employers, e.g. on redundancy) or transfers in (members transferring benefits into the LGPS Scotland from other schemes).
4.	The scheme liabilities are reduced by benefit payments and transfers out (members transferring benefits from the LGPS Scotland to other schemes).
5.	The interest cost is the change in the scheme liability that arises from the passage of time. Future payments are three years closer to payment at 31 March 2017 than at 31 March 2014 and so there is three years' less discounting applied in the calculation of the scheme liability.

Note	Explanation
6.	There is an experience gain because pension increases from April 2015 to April 2017 (1.2%, nil, 1.0%) were lower than assumed at the 2014 valuation (1.2%, 2.1% and 2.0%).
7.	There is an experience loss because pay increases between 2014 and 2017 were higher than assumed at the 2014 valuation. Although headline pay awards were low during this period, analysis of the change in pay of employee indicates individuals had pay increases above these headline pay awards: see the Assumption report, section 9 for further details.
8.	There is a small experience gain mainly due to higher than expected commutation and pensioner mortality being heavier than expected.
9.	The financial assumptions are set by HM Treasury. Appendix F summarises the financial assumptions set for the current and previous valuations. The most financially significant change in the long-term financial assumptions is the reduction in the discount rate from 3% pa above CPI to 2.4% pa above CPI. This item also includes the offsetting impact of a reduction in the expected long-term rate of general pay increases from 4.75% pa to 4.2% pa. The Directions specify some variation in financial assumptions for the period between the ***effective date*** and the end of the ***implementation period***. The short-term assumptions specified for the 2017 valuation are different to those specified for the 2014 valuation and result in a lower value of assessed liabilities.
10.	This relates primarily to the change in directed mortality improvements resulting from the change from ONS 2012 to 2016, which results in a reduction in expected future life expectancy. Assumed future life expectancy is also affected by the change to assumed LGPS Scotland specific current mortality rates. There were a number of other demographic assumption changes, although the impact of each in isolation is small. Further details on the changes to the demographic assumptions can be found in the Assumptions report.
11.	Unattributed amount is the balancing item. It may relate to miscellaneous experience items that have not been quantified and improvements to the data, in particular in relation to deferred members' Rule of 85 retirement age and missing data.

B(ii) Employer contribution rate – accrual cost

3.14 Directions also require that the valuation determines a notional rate of employer contributions using the same approach used to determine employer contribution rates for unfunded public service pension schemes. The ***uncorrected employer contribution rate*** and the ***corrected employer contribution rate*** that (notionally) would be effective from 1 April 2020 (the ***implementation date***) for the three-year period from 1 April 2020 (the ***implementation period***) are set out below. Note that as set out in 2.13 this valuation does not report on the actual required rate of employer contributions.

3.15 Table 3.9 shows how the ***corrected employer contribution rate*** has changed since the previous valuation. Some figures have been calculated in an approximate manner but are sufficient to show the general size of the impact on the contribution rate. Impacts are considered in the order listed. Using a different order could change the intermediate figures, though there is no impact on the final contribution rate.

Table 3.9: Employer contribution rate - Comparison with previous valuation

	% pay
Employer contribution rate determined as at 31 March 2014	**15.4%**
Correction for 2014 mortality improvements error	(0.3)%
Employer contribution rate determined as at 31 March 2014 (re-stated)	**15.1%**
Change in financials	3.6%
Changes in demographic assumptions (including change in ONS projection table)	(1.2)%
Change in average age	0.1%
Change in average SPa	(0.2)%
Mortality improvements: improvement due to elapsed time	0.2%
Change to PSTC allowance	
Change in expected member contribution yield	
Unexplained	0.0%
Uncorrected employer contribution rate determined as at 31 March 2017	**17.6%**
Change in scheme accrual rate to align the *employer contribution correction cost* to the *target cost of the scheme*	**2.9%**
Corrected employer contribution rate determined as at 31 March 2017	**20.5%**

3.16 Paragraph 44 of the Directions requires that the notional scheme assets are set equal to the liabilities for the Local Government Pension Scheme, and so the employer contribution rates calculated above do not include any adjustment for any surplus or deficit.

3.17 The ***uncorrected employer contribution rate*** (17.6% of pay) is at the same level as the ***cost cap future service cost*** net of the ***cost cap contribution yield*** (see table 3.3 above, 23.9% of pay less 6.3% of pay is 17.6% of pay). This is as expected: theoretically small differences arise because the ***cost cap future service cost*** is based on assumptions adjusted to reflect members' likely behaviour had they never been members of the Earlier Schemes. This adjustment is required by the Directions and reflects a scenario where no members have entitlement to any benefits payable from age 60 without reduction, and so members would be likely to retire later. However, this small difference does not change the result when rounded to 0.1% of pay.

4 Sensitivity of valuation results to assumptions

*This chapter illustrates how the **valuation results** would change if different assumptions were used.*

4.1 This section illustrates the sensitivities of the ***valuation results*** to the assumptions adopted[10].

4.2 Table 4.1 shows the sensitivities relative to the ***uncorrected employer contribution rate*** and the ***employer contribution correction cost***. The assumptions determined by Scottish Ministers are set as best estimate based on available evidence (to 1 April 2020). The sensitivities illustrate how the valuation outcomes would change had different evidence been observed, leading to Scottish Ministers setting the different assumptions illustrated below. They are not intended to show the possible range of variation in assumptions which might be considered at future valuations and in light of future experience.

4.3 Our final ***cost cap valuation report*** will provide comments on the main uncertainties which could result in some variations in the ***valuation results*** at subsequent valuations.

Table 4.1: Sensitivity of valuation results to assumptions

	Addition to uncorrected employer contribution rate [12]	Addition to employer contribution correction cost[11]	Note
A. Directed assumptions			
Discount rate in excess of CPI (-0.25% pa)	1.5%	(0.2)%	1.
Pension increases as applicable to pensions in payment and deferred pensions (+0.25% pa)	0.8%	(0.1)%	2.
Long-term rate of public service earnings growth in excess of CPI (+0.25% pa)	0.0%	(0.2)%	3.
Short-term rate of public service earnings growth (+0.25% pa to each short-term rate)	0.0%	0.3%	4.
CARE revaluation rate (+0.25% pa to price measure revaluation rates)	0.7%	(0.1)%	5.
CARE revaluation rate (+0.25% pa to earnings measure revaluation rates)	n/a	n/a	
Allowance for future mortality improvements (reduction in mortality improvements such that (period) life expectancy is lower by around 1.25 years over 75 years)	(0.6)%	(1.3)%	

[10] Including those set out in Directions and those set by Scottish Ministers (as specified in direction 19(e)).

[11] The sensitivity of the employer contribution correction cost shown in the table allows for any offsetting expected from resulting changes to the cost cap difference, for items defined as 'employer costs' in HM Treasury's 2014 paper Public Service Pensions: actuarial valuations and the employer cost cap mechanism.

	Addition to uncorrected employer contribution rate [12]	Addition to employer contribution correction cost[11]	Note
State Pension age (SPa for 2015 scheme one year later than under current directions)	(0.7)%	(0.7)%	6.
Allowance for commutation as directed (additional 2% of pension assumed to be commuted for cash)	(0.1)%	(0.2)%	7.
Shortfall spreading period (spreading period increased by 5 years)	0.0%	0.4%	8.
B. Scottish Minister set assumptions			
Membership profile: 2 years older on average over implementation period	1.2%	1.2%	9.
Mortality rates: 5%* heavier rates of pensioner mortality	(0.3)%	(0.6)%	
Age retirement rates: active members retire (on average) one year later than currently assumed	Not material	Not material	
Commutation (other than directed) Members commute 2% of pension more than assumed in respect of pre-2009 service, keep 17.5% assumption for post-2009 service	No impact	(0.1)%	
Ill-health retirement: 5%* increase to assumed rates	0.1%	0.1%	
Ill-health retirement: 5%* increase in proportion assumed to receive higher tier benefits	0.0%	0.0%	
Proportions partnered: 5%* more members assumed to have qualifying partners at death	0.1%	0.2%	
Resignations and opt outs: 5%* higher numbers assumed to leave voluntarily before retirement (net of re-joiners)	Not material	Not material	10.
Promotional pay increases: 0.5% higher promotional pay increases than assumed	No impact	0.5%	11.

* All these represent multiplicative increases to rates, i.e. 5% means rates 1.05 times higher.

Note: Opposite changes in the assumptions will produce approximately equal and opposite changes in the valuation results.

4.4 Table 4.2 provides further information on the sensitivity items.

Table 4.2: Sensitivity of valuation results to assumptions - Explanation of analysis

Note	Explanation
1.	This shows the impact of a 0.25% pa decrease in the ***SCAPE discount rate*** with all other financial assumptions remaining unchanged.

Note	Explanation
2.	This shows the impact of a 0.25% increase in the long-term assumption for the Pension Increase (Review) order to 2.25% with the gross ***SCAPE discount rate*** and earnings assumptions remaining unchanged. It reflects a reduction in the ***SCAPE discount rate*** to 2.15% above CPI.
3.	This shows the impact of a 0.25% pa increase in the assumed long-term rate of public service earnings increases of 4.2% pa with all other assumptions remaining unchanged.
4.	This shows the impact of a 0.25% pa increase in each of the assumed short-term rates of public service earnings with all other assumptions remaining unchanged. Combined with the long-term rate of public service earnings increases sensitivity, this shows the impact of a change in all earnings assumptions.
5.	This shows the impact of a 0.25% increase to the assumption for the Public Service Pensions Revaluation orders which determines the rate of in-service revaluation with the gross ***SCAPE discount rate*** and earnings assumptions remaining unchanged. Combined with the pension increase sensitivity, this shows the impact of a 0.25% increase in the assumption for CPI.
6.	This shows the impact of an increase in State Pension age of 1 year for all members.
7.	This shows the impact of increasing the proportion of pension commuted for cash from 17.5% to 19.5% for post-2009 benefits (i.e. those benefits with no attaching automatic lump sum).
8.	This shows the impact of spreading any surplus / deficit over a period of 20 years (i.e. five years longer than the current spreading period).
9.	This shows the impact of a two-year increase in average ages caused by the age profile of new joiners.
10.	This shows the impact of an increase in the withdrawal assumption by 5%.
11.	This shows the impact of an increase in the promotional pay increase assumption by 0.5% pa.

4.5 In each item in Table 4.1 the sensitivity shown is in relation only to the change in the assumption described. The impact of a combination of assumption changes will not necessarily equate to the sum of the relevant rows above.

4.6 The sensitivities shown refer only to the results of this valuation. The sensitivity of the results to certain assumptions is expected to change materially over time. This is particularly the case for the ***employer contribution correction cost*** as the ***cost cap liabilities*** reflects only final salary liabilities for contributing members, but over time will reflect only liabilities accrued in the career average scheme and for all categories of member (ie including deferred and pensioner members).

4.7 The main impact of certain financial assumptions, specifically the ***SCAPE discount rate*** and rate of long-term earnings growth, is explicitly removed from the ***employer contribution correction cost*** calculations as provided in Directions. There is some residual sensitivity as shown in rows 1 to 3 of Table 4.1 above; these relate to the past service liabilities included within the ***employer contribution correction cost*** calculations.

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Government Actuary
24 June 2022

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Fellow of the Institute and Faculty of Actuaries
24 June 2022

Appendix A: Detailed results

Background

A.1 The key results of this valuation can be found in sections 2 and 3 of this report.

A.2 The Directions require information to be disclosed regarding the ***uncorrected employer contribution rate,*** calculated assuming that the Scheme's benefit design is unchanged from that as at 31 March 2017 over the ***implementation period.***

A.3 The relevant ***valuation results***, expressed as a percentage of pensionable payroll, are summarised in Table A2.

Table A1: Contribution rates

	2017		**2014[12]**		
	% pa	**% pa**	**% pa**	**% pa**	***Direction***
Contribution rate required to be paid for 15 years from 1 April 2020 to correct shortfall at 31 March 2017 (A)		0.0		0.0	*27(1)(a)*
Contribution rate required to be paid for 15 years from 1 April 2020 to correct underpayment of contributions between 1 April 2017 and 31 March 2020 (B)		0.0		0.0	*44(1)(g)*
Contribution rate required to cover cost of benefits accruing over implementation period	23.9		21.7		*27(1)(d)*
Less normal member contribution rate expected over implementation period[13]	6.3		6.3		*28(c)*
Employer contribution rate required for cost of accrual of benefits over implementation period (C)		17.6		15.4	
Uncorrected Employer contribution rate required over implementation period (A + B + C)		**17.6**		**15.4**	***29***

[12] Corresponding payment periods all 3 years earlier
[13] Assuming employee contribution rates and thresholds over 2019 to 2023 achieve target yield of 6.5% average rate.

Appendix B: Key inputs

This chapter summarises the calculations that were carried out, including the data, methodology and assumptions used, and the analysis performed on the results.

Data

B.1 At the ***effective date***, there were 228,000 contributors to the Scheme with a total payroll of £4.5 billion and 180,000 pensions in payment with total annual pensions amounting to £0.96 billion. There were a further 148,000 ex-contributors who had not yet started to receive their pension. Appendix C provides a summary of the membership data. Further details on the data, including the checks carried out on that data, the limitations of those checks and adjustments made, are provided in the Data report.

Benefits

B.2 The benefits provided to members of the Earlier Schemes and the 2015 Scheme are set out in regulations[14]. The 2015 Scheme was introduced from 1 April 2015 and all members transferred to the 2015 Scheme on 1 April 2015. Under transitional arrangements aimed at providing protection for those nearest retirement age, some older members have a final salary underpin to their benefits.

B.3 Full details on benefits and the membership of the Schemes are provided in the Data report.

Assumptions

B.4 The Directions specify certain assumptions to be used for the valuation whilst requiring certain other assumptions to be set as Scottish Ministers' best estimates, after taking the advice of the ***scheme actuary***. Actuarial advice on the scheme specific assumptions (including variations appropriate for the purposes of determining the ***employer contributions correction cost***), and other relevant information (including an analysis of the Scheme's demographic experience), is set out in the Assumptions report.

B.5 We have been instructed by Scottish Ministers, following consultation with relevant stakeholders, to adopt the best estimate assumptions recommended in our advice. Appendix F summarises the key assumptions made.

[14] SSI 2018 No 141

Methodology and calculations

B.6 The Directions specify that the Projected Unit Methodology should be used. Application of this methodology to determine the ***valuation results*** as specified requires some assumptions to be made about the size and make-up of the workforce up to the end of the ***implementation period***[15].

B.7 Since the expected cost of benefits provided to members in the Earlier Schemes differs from the expected cost of providing those members with benefits in the 2015 Scheme, and the expected cost of providing benefits varies for members with differing benefit provisions within the 2015 Scheme (notably for members with differing normal pension ages), projecting the membership gives a materially different estimate of the valuation result.

B.8 For short-term workforce planning purposes the Scottish Public Pensions Agency assumes that, overall, a largely stable population will be maintained. We have accordingly assumed that over the period from the ***effective date*** to the end of the ***implementation period*** the overall profile of the membership in terms of distribution of headcount and pay by age and gender will remain stable. Because we allow the existing membership to 'run off' in accordance with the assumptions set out in Appendix F over the projection period we are therefore making an implicit assumption about the profile of new joiners to the Scheme over that period. Full details of the membership projection are provided in the Assumptions report.

B.9 The Directions specify that benefits should be attributed to periods of service in accordance with the requirements of International Accounting Standard 19: Employee Benefits.

Scheme benefits

B.10 First, an estimate is made of the amount of benefit to be received by each Scheme member (and their dependants, where applicable) over each future year of the Scheme, from the ***effective date*** onwards. In order to do that, it is necessary to make some assumptions about the future service and salaries of the Scheme members, and the length of time over which they will receive benefits.

B.11 Having estimated the benefits as a stream of projected cashflows from the ***effective date*** onwards, the second step is to calculate the capital sum which would need to be held at the ***effective date*** in order to pay all of the benefits. This requires an assumption to be made as to the rate of return which would be earned by the capital sum if it were invested. The approach for this valuation is predicated on the premise that there is a notional fund with a notional investment return, rather than considering the scheme assets.

[15] 1 April 2020 to 31 March 2023

B.12 This capital sum is often referred to as the 'present value' of the benefits and is calculated by 'discounting' the future cashflows back to the ***effective date*** using the valuation discount rate (see Appendix F). The present value can alternatively be considered as the amount of money which would need to be invested at an assumed interest rate (equal to the discount rate) in order to pay all the benefits. The result of the calculation is, by its nature, a planning or budgeting estimate, not a 'valuation' as such.

Notional assets

B.13 The cost control mechanism uses a notional fund (the ***initial cost cap fund***) which is established as part of the current valuation and is set equal to the value of the liabilities of contributing members as at 31 March 2015 using the assumptions adopted for the 2014 valuation. An account of the notional ***cost cap fund*** will be maintained for future dates. The initial ***cost cap fund*** is increased by contributions (as determined for cost cap purposes) and a notional return, and reduced by benefit payments (relating to the 2015 Scheme only) and liability amounts (relating to the Earlier Schemes only) as members leave contributing service.

Calculations

B.14 For the valuation, it is necessary to separate the capital sum into two parts: (i) the sum needed to pay out benefits which relate to service *prior to* the ***effective date*** ('past service'), and (ii) the sum needed to pay out those benefits which relate to service *after* the ***effective date*** ('future service').

B.15 For both parts of the calculation we adopt the same assumptions regarding the future service and progression of salaries of the Scheme members and the rate of return which would be earned by the capital sum if it were invested.

Past service position

B.16 In relation to the past service element, we compare the capital sum (or present value) relating to past service with the ***notional assets*** at the ***effective date***. If all the assumptions made during previous reviews had been borne out exactly, and assuming no errors in previous data sets are revealed, the ***notional assets*** would exactly equal the capital sum now needed to pay for those past service benefits. But, if actual events have differed from the assumptions made, then the ***notional assets*** will exceed, or fall short of, the capital sum now estimated to be needed.

B.17 To the extent that the ***notional assets*** are *less* than the capital sum needed to pay out all the benefits relating to past service, the fund is said to be in *deficit*. This deficit needs to be met by additional contributions. If the ***notional assets*** *exceed* the capital sum required for past service benefits, it is said to be in *surplus* and there would be a reduction in the contributions that would otherwise be paid for future service.

Future contributions

B.18 To calculate the ***uncorrected employer contribution rate***, we have calculated the percentage of total pensionable pay that would need to be paid to meet the benefits accrued over the three-year ***implementation period***, and then deducted the member contributions. Paragraph 44 of the Directions requires that the notional scheme assets are set equal to the liabilities for the Local Government Pension Scheme. Accordingly, there is no surplus or deficit at the valuation date.

Employer contribution correction cost

B.19 The ***proposed employer cost cap*** is a measure of the cost of the 2015 Scheme.

B.20 The ***employer contribution correction cost*** is intended to capture cost risks associated with both the 2015 Scheme and the operation of the Earlier Schemes for members still in contributing service at the time the 2015 Scheme was introduced. The ***employer contribution correction cost*** is a measure of these costs and is compared to the ***target cost of the scheme***. The calculation of the ***employer contribution correction cost*** is similar to that of the ***uncorrected employer contribution rate,*** but the future service elements of the calculations are based on all members being in the 2015 Scheme with assumptions reflecting members' likely behaviour had they never been members of the Earlier Schemes.

Appendix C: Summary of membership data and comparison with data at previous valuation

Table C1: Summary of Actives data as at 31 March 2017

	Number of records (000's)	Actual pension-able pay (£m)	FTE pension-able pay (£m)	Average actual pay (£)	Average age weighted by FTE pay	Average reckon-able service[1] (years)	CARE pension (£m)
CRA 60	66	1,745	1,902	26,283	48.6	19.0	72
CRA 62	23	444	522	19,608	55.4	11.7	18
CRA 65	139	2,349	3,042	16,862	44.2	2.6	81
Total	**228**	**4,537**	**5,466**	**19,874**	**46.8**	**8.3**	**171**

1 Includes only pre-2015 service in the earlier final salary schemes

Table C2: Summary of Actives data as at 31 March 2014

	Number of records (000's)	Actual pensionable pay (£m)	FTE pensionable pay (£m)	Average actual pay (£)	Average age weighted by FTE pay	Average reckonable service[1] (years)	CARE pension (£m)
CRA 60	86	2,096	2,306	24,369	45.4	17.1	0
CRA 62	34	612	744	18,070	52.2	12.1	0
CRA 65	98	1,534	2,020	15,688	45.7	4.4	0
Total	**218**	**4,242**	**5,070**	**19,489**	**46.5**	**10.6**	**0**

1 Includes only pre-2015 service in the earlier final salary schemes

Table C3: Summary of Deferred pensioner data as at 31 March 2017

Category	Number of records (000's)	Total deferred pension[1] (£m)	Average pension[1] (£)	Average age[2] (years)
CRA 60	76	191	2,514	49.7
CRA 62	18	25	1,372	55.2
CRA 65	53	44	816	45.0
Total	**148**	**260**	**1,757**	**49.4**

[1] Includes pension increase payable in April 2017
[2] Weighted by deferred pension

Table C4: Summary of Deferred pensioner data as at 31 March 2014

Category	Number of records (000's)	Total deferred pension[1] (£m)	Average pension[1] (£)	Average age[2] (years)
CRA 60	15	32	2,187	48.6
CRA 62	102	173	1,700	49.1
CRA 65	8	12	1,363	46.3
Total	**125**	**217**	**1,735**	**48.8**

[1] Includes pension increase payable in April 2014
[2] Weighted by deferred pension

Table C5: Summary of Pensioner data as at 31 March 2017

	Number of records (000's)	Total pension[1] (£m)	Average pension[1] (£)	Average age[2] (years)
Age Retirement	121	716	5,916	69.4
Ill-Health Retirement	31	162	5,296	68.5
Total	**152**	**878**	**5,791**	**69.2**

[1] Includes pension increase payable in April 2017
[2] Weighted by current pension in payment

Table C6: Summary of Pensioner data as at 31 March 2014

	Number of records (000's)	Total pension[1] (£m)	Average pension[1] (£)	Average age[2] (years)
Age Retirement	106	621	5,834	68.5
Ill-Health Retirement	32	159	4,991	68.2
Total	**138**	**780**	**5,640**	**68.4**

[1] Includes pension increase payable in April 2014
[2] Weighted by current pension in payment

Table C7: Summary of Dependant data as at 2017

	Number of records (000's)	Total pension[1] (£m)	Average pension[1] (£)	Average age[2] (years)
Spouse	27	80	2,955	75.0
Children	1	3	1,882	19.4
Total	**28**	**82**	**2,900**	**73.1**

[1] Includes pension increase payable in April 2017
[2] Weighted by current pension in payment

Table C8: Summary of Dependant data as at 2014

	Number of records (000's)	Total pension[1] (£m)	Average pension[1] (£)	Average age[2] (years)
Spouse	23	65	2,777	74.4
Children	1	2	1,728	16.8
Total	**24**	**67**	**2,727**	**72.7**

[1] Includes pension increase payable in April 2014
[2] Weighted by current pension in payment

Appendix D: Notional assets and cashflows

D.1 The Directions specify the calculation of the ***notional assets*** (for both cost cap and ***employer contribution rate*** purposes) as at 31 March 2017. Paragraph 44 of the Directions requires that the ***notional assets*** for the whole Scheme (used for the ***employer contribution rate)*** are set equal to the liabilities for the Local Government Pension Scheme.

D.2 The calculation of the ***notional assets*** for ***employer contribution correction cost*** purposes, referred to as the ***cost cap fund***, is based on the prior value of the ***cost cap fund*** as specified in the Directions. For this valuation an initial value of the ***cost cap fund*** has to first be determined. This has been calculated as the value of the liability for contributing members as at 31 March 2015 using the assumptions set for the 2014 valuation (including those specified in the Directions issued for that valuation). The ***cost cap fund*** for this valuation is calculated by making adjustments to this initial value for income and benefit payments and a notional return is credited each year. A further adjustment, the ***cost cap net leavers liabilities***, is applied to allow for members leaving or re-joining contributory membership during the ***inter-valuation period***. These adjustments are made in a similar way to those for the whole Scheme ***notional assets*** but adapted to encompass only those payments which relate to the liabilities within the cost cap. The figures are set out in Table D1. Income and expenditure are assumed to occur mid-year for the purposes of crediting the notional return.

Table D1: Cost cap fund

	£ billion	***Direction***
Initial cost cap fund as at 31 March 2015	14.9	***30***
Plus ***cost cap income***	2.3	*33*
Less ***cost cap benefits paid***	(0.2)	*34*
Less ***cost cap net leavers liability***	(2.5)	*35*
Plus ***cost cap notional investment return***	0.9	*36*
Cost cap fund as at 31 March 2017	15.4	***37***

Notional investment returns

D.3 The actual ***notional investment returns*** used to roll up the ***notional assets*** and the ***cost cap fund*** from the prior value to the ***effective date*** of the valuation are set out in Table D2 below.

Table D2: Notional investment returns

	Cost cap fund*
2015/16	2.30%
2016/17	3.42%

*To note the rate of roll up for the ***cost cap fund*** is set as specified in the Directions.

Appendix E: Events since the 2014 actuarial valuation

Introduction of new scheme from 1 April 2015

E.1 A reformed Scheme, the 2015 Scheme, was introduced from 1 April 2015. The main differences compared to the previous arrangements were to provide benefits on a career average basis with normal pension age linked to State Pension age. Transitional arrangements were made under which some older members have a final salary underpin to their benefits. The benefits provided from the Schemes, together with a summary of the transitional provisions, are summarised in the Data report.

Member contributions

E.2 Changes to member contribution rates were introduced at the same time as the 2015 scheme. The revised rates were earnings-related and are shown in Table E1.

Table E1: Member contribution rates 2014/15

Actual pensionable pay	Member contribution rate 2014/15
≤ £20,300	5.5%
£20,301 - £24,800	7.25%
£24,801 - £34,000	8.5%
£34,001 - £45,300	9.5%
> £45,300	12%

Assumption changes

E.3 Future life expectancy and the ***SCAPE discount rate*** used have had a major impact on the results of the valuation. Further information on these assumptions and how they impact on the results of the valuation are set out in section 2.

Guaranteed Minimum Pension (GMP) increases

E.4 Members of public service schemes who reach State Pension age on or after 6 April 2016 and before 6 April 2021 will receive the same rate of increase on all scheme pension including GMP. This was announced after completion of the 2014 valuation and the corresponding liability is included in this valuation for the first time.

E.5 The Government has subsequently announced further changes to the treatment of other GMP rights in the Scheme which will result in further liability being included in future valuations.

GMP overpayments

E.6 Continuing GMP reconciliation work may result in identifying over or underpayments to members. We assume such payments will in aggregate not be material to the valuation.

Legal cases

E.7 A number of legal challenges, summarised below, have been brought against public service (and other) pension schemes since the 2014 valuation. We have not made any allowance for these in the current valuation.

Brewster: nomination forms for survivor benefits

E.8 In February 2017, the Supreme Court ruled that a regulation requiring a signed nomination form from a member of the Northern Ireland Local Government Pension Scheme, in order to entitle an unmarried partner to survivor benefits in the scheme, was unlawful (the Brewster judgement). The Government has instructed all public service schemes to make appropriate amendments in light of this ruling. The impact of doing this has not been reflected in the data provided for the current valuation and no estimate of the impact has been included.

Walker: survivor's pension payable to a surviving civil partner or same-sex spouse

E.9 In July 2017, the Supreme Court handed down judgement in the case of Walker vs Innospec Ltd and others. The Supreme Court found that it is unlawful to restrict the survivor's pension payable to a surviving civil partner or same-sex spouse so that it reflects only the member's pensionable service since 5 December 2005 (the date on which the Civil Partnership Act 2004 came into force). The exact implications of the judgement remain unclear.

Lloyds Banking Group: GMP equalisation

E.10 In October 2018, the High Court published its judgement in a case, brought by the pension trustees at Lloyds Banking Group, on equalisation of GMPs. They found that pensions must be equalised for the effects of unequal GMPs, and handed down guidance on how to do that in relation to the Lloyds Banking Group schemes. HM Treasury will consider the implications for the public service pension schemes, if any. No allowance has been made in the ***valuation results*** for any benefit changes required as a result of this ruling.

Pension increases and in-service revaluations

E.11 The actual rates of increase awarded to pensions in payment and to those in-service in the 2015 Scheme since the 2014 valuation are set out in Tables E2 and E3 respectively. The known rates of increase awarded since the ***effective date*** up to 31 March 2020 are also shown. These have been taken into account in the valuation.

Table E2: Pension increases since the previous valuation

Year	Pension Increase
April 2014	2.7%
April 2015	1.2%
April 2016	0.0%
April 2017	1.0%
April 2018	3.0%
April 2019	2.4%

Table E3: 2015 Scheme in-service revaluation since the previous valuation

Year	In-service revaluation
April 2016	(0.1)%
April 2017	1.0%
April 2018	3.0%
April 2019	2.4%

Appendix F: Summary of assumptions

F.1 The following tables show the financial assumptions and mortality assumptions. The financial assumptions and rate of future improvements in life expectancy are specified in the Directions. The baseline mortality assumption is set by Scottish Ministers.

Table F1: Financial assumptions at current valuation and 2014 valuation

	31 March 2017	31 March 2014
Discount rate		
For liabilities and contribution rate	2.8% pa real until 2019 and then 2.4% pa real thereafter 4.45% nominal from 2020	3% pa real; 5.06% pa nominal
For cost cap rate	2.4% pa real; 4.45% nominal	3% pa real; 5.06% pa nominal
Pension increases	2% pa	2% pa
Long term salary growth	4.2% pa, 2.2% pa in excess of assumed CPI	4.75% pa, 2.75% pa in excess of assumed CPI

Short term variations in assumptions

Year	Nominal discount rate	Pension increases[16]	Salary growth	Year	Nominal discount rate	Pension increases[31]	Salary growth
2017/18	5.88%	3.0% [17]	2.2%	2014/15	4.24%	1.2%	1.5%
2018/19	5.27%	2.4% [18]	2.1%	2015/16	5.16%	2.1%	2.0%
2019/20	4.24%	1.8%	2.3%	2016/17	n/a	n/a	2.5%
2020/21	n/a	n/a	2.6%	2017/18	n/a	n/a	3.0%
2021/22	n/a	n/a	2.8%	2018/19	n/a	n/a	3.0%
2022/23	n/a	n/a	3.0%				

[16] Relates to the Pension increase made in the April following the year end.
[17] Order made for 2017/18.
[18] Order made for 2018/19.

Table F2: Mortality assumptions

	2017 valuation		2014 valuation	
Baseline mortality	**Standard table[19]**	**Adjustment**	**Standard table**	**Adjustment**
Males				
Retirements in normal health	S2NMA	122%	S2NMA	120%
Ill-health pensioners	S2IMA	137%	S2IMA	132%
Dependants	S2NMA	159%	S2NMA	130%
Females				
Retirements in normal health	S2NFA	117%	S2NFA	114%
Ill-health pensioners	S2IFA	131%	S2IFA	127%
Dependants	S2DFA	131%	S2DFA	128%

F.2 Future mortality improvements are in line with the most recent ONS population projections at the date of each valuation: ONS-2016 projections for the 2017 valuation and ONS-2012 projections for the 2014 valuation.

F.3 Full details of the demographic assumptions are provided in the Assumptions report.

F.4 The Directions require us to provide the average expected future pensionable service of the Scheme members in service at the ***effective date***. This is shown below, along with the average duration of liabilities for active members and current pensioners (which gives an indication of the timing of future cashflows).

Table F3: Duration and average future working lifetime

Member Type	Average expected future pensionable service (years)	Duration of liabilities (years)
Active Member	10.5	22.8
Current Pensioner	n/a	10.6

[19] SAPS (S2) tables are published by the Actuarial Profession and based on the experience of self-administered pension schemes over the period 2004 to 2011. The 'S2' series has separate standard tables based on experience of members retiring in normal health (S2NXA) and in ill health (S2IXA) and for dependants (S2DXA). The S3 series of tables were released by CMI on 5 December 2018, these updated mortality tables cover experience between 2009 and 2016. The final tables are unchanged from the working paper issued during 2018, from which GAD concluded that moving to the S3 tables would likely have no material impact on the valuation results as a whole. It therefore remains appropriate to use the S2 tables for the current valuation.

F.4 The Directions require this report to provide the pensionable payroll for the Scheme at the ***effective date*** and that projected to the ***implementation date*** and the final day of the ***implementation period***. These are shown below.

Table F4: Projected pensionable payroll

Date	Pensionable Payroll (£ billion)
Effective date (31 March 2017)	4.5
First year of implementation period (2020/21)	4.9
Last year of implementation period (2022/23)	5.2

Appendix G: Location of material required by Directions

Direction	Description	Location
21 (1) (a) (i) and (ii)	Summary of membership data and checks carried out	Data report.
21 (1) (a) (iii)	Adjustments made to data Projections made	Data report. Assumptions report.
21 (1) (b)	Average age of active members	Appendix C1, Table C1
21 (1) (c)	Average expected future pensionable service of active members	Appendix F, Table F3
21 (1) (d)	Total projected pensionable payroll	Appendix F, Table F4
21 (1) (e)	Statement of compliance with Directions	Section 2, Paragraph 2.3
21 (1) (f)	Summary of regulations, Directions, and professional standards	Section 2, Paragraphs 2.1 and 2.5 Appendix H GAD website
21 (1) (g)	Summary of main provisions of the schemes	Data report.
21 (1) (h)	Analysis of demographic experience	Assumptions report.
21 (1) (i) (i) and (ii)	Statement of assumptions, including rationale	Section 2, Paragraph 2.4 Assumptions report. See also Appendix F
21 (1) (i) (iii)	Illustration of sensitivity to assumptions set by Scottish Ministers	Section 4, Table 4.1
21 (1) (j)	Other liabilities valued	None
21 (1) (k)	Any other matters scheme actuary feels relevant	None
21 (2)	Illustration of sensitivity to specific assumptions set in the Directions	Section 4, Table 4.1
22 (a), (b)	Valuation balance sheet	Section 3, Table 3.6
22 (c)	Notional asset cashflows	Appendix D, Table D2
22 (d), (e), (f), (g)	Contribution rates	Appendix A, Table A2
22A (a) and 30 (1)	The prior value of the cost cap fund	Appendix D, Table D3
22A (b)	The cost cap contribution yield	Section 3, Table 3.3

22A (c)	The cost cap income	Appendix D, Table D3
22A (d)	The cost cap benefits paid	Appendix D, Table D3
22A (e)	The cost cap net leavers liabilities	Appendix D, Table D3
22A (f)	The cost cap notional investment returns	Appendix D, Table D3
22A (g)	The cost cap fund	Section 3, Table 3.1
22A (h)	The cost cap liabilities	Section 3, Table 3.1
22A (i)	The cost cap future service cost	Section 3, Table 3.3
22A (j)	The cost cap past service cost	Section 3, Table 3.3
22A (k)	The employer contribution correction cost	Section 3, Table 3.3
22A (l)	The cost cap difference	Section 3, Table 3.3
48 (h)	Cost cap analysis	Section 3, Table 3.4
27 (1)	Breakdown of contribution rate	Appendix A, Table A2
28 (c) and 31 (1)	Member contributions expected over the implementation period	Appendix A, Table A2

Appendix H: Glossary

H.1 This report contains several terms with which you may not be familiar. Many of these terms come directly from the Directions or are specified in regulations, and paragraph 2 of the Directions gives some explanation of their meaning. This appendix is not intended to repeat the definitions of these terms from the Directions, rather to add further information to aid understanding of some of those terms and some other general pensions terms.

H.2 The ***valuation report*** is this pre-McCloud report, prepared by the scheme actuary in accordance with the Direction for the purpose of calculating the employer contribution correction cost.

H.3 The ***cost cap valuation report*** is the report to be prepared by the scheme actuary in accordance with the Directions for the purpose of determining the ***cost cap cost of the scheme***.

Terms relating to the calculation of the employer contribution correction cost

H.4 The ***employer contribution correction cost*** means the contribution rate which is compared against the ***target cost of the scheme*** at the first and each subsequent valuation of a scheme. It is calculated in four parts:

> The cost in respect of future service over the ***implementation period*** (H14), calculated as if all active members are in the 2015 Scheme and have no pre 2015 Scheme service; plus

> the cost in respect of past service, which is the difference between the ***cost cap fund*** (H4) and the ***cost cap liabilities*** (H5) converted to a contribution rate payable over 15 years; minus

> the ***cost cap contribution yield***, which is the expected average contribution rate payable by members over the implementation period; minus

> the ***cost cap difference***, which is the difference between the employer cost cap as set out in regulations and the ***proposed employer cost cap*** (H3) which would have been calculated in 2014 had updated financial assumptions been assumed. It acts to remove the impacts of changing the discount rate and long-term earnings assumptions from the cost control mechanism (in accordance with the policy aim contained in HM Treasury's policy document *Public service pensions: actuarial valuations and the employer cost cap mechanism*).

H.5 The ***proposed employer cost cap*** is the contribution rate, that was determined at the 2014 valuation, to cover the cost of benefits accruing over the ***implementation period*** as if all active members were in the 2015 Scheme and had no pre-2015 Scheme service, minus the expected average contribution rate payable by members over the implementation period.

H.6 The ***cost cap fund*** is a notional amount of money, initially set as the value at 31 March 2015 of the active members' past service liabilities. It has been updated to 31 March 2017 to take account of ***cost cap income*** (H6), ***cost cap benefits paid*** (H8), ***cost cap net leavers liabilities*** (H9) and ***cost cap notional investment returns*** (H10).

H.7 The ***cost cap liabilities*** are the value of the past service liabilities for all active members of the Scheme and all deferred and pensioner members of the 2015 Scheme as at the valuation date.

H.8 The ***cost cap income*** represents money received by the Scheme for example through employee contributions and transfer values received to the scheme. Employer contributions are also included, but these are set as the amount that would have been received if employer contributions were paid at the ***cost cap fund contribution rate*** (H7).

H.9 The ***cost cap fund contribution rate*** is the contribution rate required to cover the cost of benefits accruing to members of the Scheme from 1 April 2015 to 31 March 2017 less member contributions. It is calculated under the same updated assumptions that are used in the calculation to determine the ***cost cap difference***.

H.10 The ***cost cap benefits paid*** are the pension and lump sum benefits, and transfer and other sums paid out to members of the 2015 Scheme.

H.11 The ***cost cap net leavers liabilities*** are liabilities relating to benefits accrued in one of the pre-2015 schemes by members who have left, or re-joined, active service in the Scheme since the previous valuation. This item is needed because the cost control mechanism only captures costs relating to pre-2015 Scheme benefits while members are in active service and so such liabilities need to be removed from the ***cost cap fund*** (H4) when pre-2015 Scheme members cease active service.

H.12 The ***cost cap notional investment returns*** are notional amounts added to ***the cost cap fund*** (H4) which represent the returns that might have been received on the ***cost cap fund*** (H4). The investment returns are set in line with the ***SCAPE discount rate*** (H19).

General valuation terms

H.13 The ***uncorrected employer contribution rate*** is the percentage of pensionable pay that the employer would (notionally) need to pay to the Scheme over the ***implementation period*** (H14) in respect of active members of the Scheme to cover the cost of benefits accruing over the ***implementation period*** and includes allowance for any surplus or shortfall.

H.14 The ***corrected employer contribution rate*** is calculated in the same way as the ***uncorrected employer contribution rate***, except that the accrual rate of the 2015 Scheme is assumed to be improved from 1 April 2020 to the extent necessary such that the ***employer contribution correction cost*** equals the ***target cost of the scheme***.

H.15 The ***employer contribution correction cost*** is a measure of how the cost of the scheme has changed relative to the ***target cost of the scheme***.

H.16 ***The implementation period*** for this valuation is 1 April 2020 to 31 March 2023.

H.17 The ***inter-valuation period*** is the three-year period 1 April 2014 to 31 March 2017.

H.18 The ***notional assets*** are a notional amount of money, initially set as the value of all members' past service liabilities at a specific date (as set out in Schedule 2 of the Directions). It is updated at each valuation to take account of all actual Scheme income and benefits paid, plus an allowance for notional investment returns which are set in line with the ***SCAPE discount rate*** (H19).

H.19 Past service liabilities are the benefit promises (pensions, lump sums, survivor pensions etc) that have been made to members over their period of active membership of the Scheme prior to the ***effective date*** of the valuation. For active members, these liabilities include allowance for future salary inflation or in-service benefit revaluation until the assumed date of cessation of pensionable service.

H.20 ***Pensionable pay*** is the part of pay that is included for the purposes of determining contribution requirements and benefit payments.

H.21 The term SCAPE is short for the Superannuation Contributions Adjusted for Past Experience. The ***SCAPE discount rate*** is the Government's measure for determining the present value of future payments. It is currently set equal to the rate of expected long-term GDP growth. Further detail can be found in in the consultation documentation published by HM Treasury in December 2010 and April 2011[20].

[20] https://www.gov.uk/government/consultations/the-discount-rate-used-to-set-unfunded-public-service-pension-contributions

Appendix I: Limitations

I.1 This report is intended solely for the use of Scottish Ministers and the Scottish Public Pensions Agency, for the purpose of calculating the ***employer contribution correction cost***. The information and advice in this report should not be relied upon, or assumed to be appropriate, for any other purpose or by any other person. GAD does not accept any liability to third parties, whether or not GAD has agreed to the disclosure of its advice to the third party

I.2 We are content for Scottish Ministers to release this report to third parties, provided that:

- it is released in full
- the advice is not quoted selectively or partially
- GAD is identified as the source of the report
- GAD is notified of such release

I.3 Third parties whose interests may differ from those of the Scottish Ministers should be encouraged to seek their own actuarial advice where appropriate. GAD has no liability to any person or third party for any act or omission taken, either in whole or in part, on the basis of this report.

I.4 GAD is not responsible for any decision taken by the Scottish Public Pensions Agency, except to the extent that the decision has been made in accordance with specific advice provided by GAD. Advice provided by GAD must be taken in context and is intended to be read and used as a whole, not in parts. GAD does not accept responsibility for advice that is altered or used selectively. No significant action should be taken based on oral advice alone. Clarification should be sought if there is any doubt about the intention or scope of advice provided by GAD.

I.5 GAD relies on the accuracy of data and information provided by the administering authorities. GAD does not accept responsibility for advice based on wrong or incomplete data or information provided by the administering authorities or the Scottish Public Pensions Agency.

I.6 This work has been carried out in accordance with the applicable Technical Actuarial Standards: TAS 100 and TAS 300 issued by the Financial Reporting Council (FRC). The FRC sets technical standards for actuarial work in the UK.

I.7 Throughout this report the totals given for summed data may not be exactly the same as the sum of the components shown due to rounding effects.