Government Actuary's Department

Local Government Pension Scheme (Scotland)

Actuarial valuation as at 31 March 2014

Report by the scheme actuary

Date: 4 January 2016

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Contents

1 Executive summary

This report is addressed to the Scottish Ministers and provides the results of the actuarial valuation of the Local Government Pension Scheme (Scotland) carried out as at 31 March 2014.

1.1 At the request of the Scottish Public Pensions Agency, we have carried out an actuarial valuation of the Local Government Pension Scheme (Scotland) as at 31 March 2014. The valuation has been undertaken in accordance with *The Public Service Pensions (Valuations and Employer Cost Cap) Directions 2014*, which specify certain assumptions and require other assumptions to be the Scottish Ministers' best estimates.

1.2 This report is addressed to the Scottish Ministers, and sets out the results of the valuation. The ***valuation results*** specify the ***proposed employer cost cap***[1], which is to be set in regulations.

1.3 The key result of the valuation is as follows:

Proposed employer cost cap: 15.5% of pensionable pay

[1] In accordance with Section 12 of the Public Service Pensions Act 2013.

2 Background

The valuation has been carried out in accordance with the Directions issued by HM Treasury.

2.1 The Local Government Pension Scheme (Scotland) ('LGPS (Scotland)' or 'the Scheme') provides pensions 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 administering authorities[2]. Member contributions are payable in accordance with Regulations 9 and 10 of the Local Government Pension Scheme (Scotland) Regulations 2014[3]. Employer contributions are payable in accordance with each administering authority's rates and adjustments certificate issued under Regulation 60 of the Local Government Pension Scheme (Scotland) Regulations 2014 (or earlier regulations).

2.2 The Government Actuary's Department (GAD) has been appointed as ***Scheme actuary***[4] by the Scottish Ministers for the specific purpose of carrying out an actuarial valuation of the Scheme as at 31 March 2014 (the ***effective date***). This report on the valuation is addressed to the Scottish Ministers and is also being made available to HM Treasury (HMT).

2.3 The valuation has been undertaken in accordance with the *Public Service Pensions (Valuations and Employer Cost Cap) Directions 2014* ('the Directions') dated 11 March 2014 (as amended[5]), effective at the date of signing this report. Terms defined in the Directions are shown in ***bold italics*** when used in this report. This is the first time a valuation of the Scheme has been carried out under the Directions.

2.4 The Directions require the 2015 Scheme and the Earlier Schemes, both as defined by the Local Government Pension Scheme (Transitional Provisions and Savings) (Scotland) Regulations 2014[6], to be taken into account in aggregate for the purposes of the current valuation. The results shown in this report therefore relate to 'the aggregate scheme', that is the combination of the 2015 Scheme and the Earlier Schemes.

2.5 The main requirement of the valuation is to set a ***proposed employer cost cap***. This is a rate, expressed as a percentage of pensionable earnings of members of the Scheme, to be used for the purpose of measuring changes in the cost of the Scheme. The ***employer cost cap*** set in scheme regulations must be equal to the ***proposed employer cost cap*** calculated in this valuation (see Direction 48 of the Directions).

2.6 The Directions also require an assessment of the Scheme's accrued past service liabilities to be made and an employer contribution rate to be calculated, to enable comparisons between different public service pension schemes on a consistent basis. However neither of these will affect the operation of the cost control mechanism, and the actual employer contributions will be paid in accordance with each administering

[2] The administering authorities are listed at SSI 2014/164, Schedule 3
[3] SSI 2014/164, Regulation 9 and 10
[4] Direction 50(a) of the Public Service Pensions (Valuations and Employer Cost Cap) Directions 2014 requires that the actuarial valuation of the Scheme as at 31 March 2014 is carried out by a person appointed by the Scheme to act as actuary for the Scheme. For the purpose of undertaking the valuation as at 31 March 2013, the Directions are to be read as if references to a ***Scheme actuary*** are references to the person appointed in accordance with direction 50(a).
[5] Amendments include all those made up to and including The Public Service Pensions (Valuations and Employer Cost Cap) (Amendment) (No. 2) Directions 2015.
[6] SSI 2014/233, Regulation 1(4).

authority's rates and adjustments certificate issued under Regulation 60 of the Local Government Pension Scheme Regulations (Scotland) 2014. The calculation of the ***proposed employer cost cap*** at this valuation is therefore the most significant outcome of this valuation in relation to the operation of the Scheme.

2.7 The financial position relative to the ***employer cost cap*** will be reconsidered at each three-yearly valuation.

2.8 We have provided advice and information separately on certain aspects of the valuation. The following documents have been signed alongside this report and should be read in conjunction with it:

> Local Government Pension Scheme (Scotland) - Actuarial valuation as at 31 March 2014: Report on membership data, dated 4 January 2016.

> Local Government Pension Scheme (Scotland) - Actuarial valuation as at 31 March 2014: Report on data used for experience analysis, dated 4 January 2016.

> Local Government Pension Scheme (Scotland) - Actuarial valuation as at 31 March 2014: Advice on demographic assumptions, dated 4 January 2016.

> Local Government Pension Scheme (Scotland) - Actuarial valuation as at 31 March 2014: Report on methodology, dated 4 January 2016.

2.9 The Scottish Public Pensions Agency (SPPA) has consulted the Scheme Advisory Board on the assumptions determined by the Scottish Ministers. Drafts of the Advice on demographic assumptions and Report on methodology dated August 2015 and September 2015 respectively have been circulated to the Scheme Advisory Board. The final versions of these reports dated 4 January 2016 have no material changes compared with the drafts circulated to the Scheme Advisory Board.

2.10 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.

2.11 Appendix G sets out the limitations of this report.

3 Key inputs

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

Data

3.1 At the effective date, there were 217,644 contributors to the Scheme with a total payroll of £ 4.2 billion; 162,808 pensions in payment with total annual pensions amounting to £846.9 million; and 125,317 ex-contributors who had not yet started to receive their pension. Appendix A 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 report 'Local Government Pension Scheme (Scotland) - Actuarial valuation as at 31 March 2014: Report on membership data as at 31 March 2014', dated 4 January 2016.

Benefits

3.2 The benefits provided to members of the LGPS (Scotland) are set out in regulations[7]. A new scheme ('the 2015 Scheme') has been introduced from 1 April 2015. Members of the Earlier Schemes transferred to the 2015 Scheme on 1 April 2015.

3.3 Immediately prior to the change at 1 April 2015 the Scheme was a final salary scheme with an accrual rate of 1/60 (with lump sum by commutation). The 2015 Scheme is a career average scheme with Normal Pension Age equal to State Pension Age (SPA); accrual rate of 1/49; revaluation in line with the Consumer Prices Index (CPI) while in service and in deferment; and increases in line with CPI in payment. Member contribution rates are determined by reference to members' pensionable pay. Appendix B gives a summary of the benefits provided under the 2015 Scheme as well the benefits provided under the Scheme immediately prior to 1 April 2015 (which were applicable from 1 April 2009).

Assumptions

3.4 The Directions specify certain assumptions to be used for the valuation whilst requiring certain other assumptions to be set as the 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 ***proposed employer cost cap***), and other relevant information including an analysis of the Scheme's demographic experience, is set out in the report:

> Local Government Pension Scheme (Scotland) - Actuarial valuation as at 31 March 2014: Advice on demographic assumptions, dated 4 January 2016.

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

Methodology and calculations

3.6 Direction 11 specifies that the Projected Unit Methodology should be used. Application of this methodology to determine the ***valuation results*** as specified

[7] SSI 2014/164 and SSI 2015/87.

requires some assumptions to be made about the size and make-up of the workforce up to the end of the ***implementation period***[8].

3.7 To calculate the ***employer contribution rate***, we have placed a net present value on the annual benefit accrual over the three-year ***implementation period*** and then adjusted for member contributions. The calculation of the ***proposed employer cost cap*** is similar to that of the ***employer contribution rate*** but is based on assumptions reflecting members' likely behaviour had they never been members of the Earlier Schemes.

3.8 Appendix D summarises the actuarial methodology adopted for the valuation in more detail. Further details on methodology, including the approach taken to projecting the membership data and the rationale for that approach, are provided in the report 'Local Government Pension Scheme (Scotland) - Actuarial valuation as at 31 March 2014: Report on methodology', dated 4 January 2016. Appendix D also summarises the calculations undertaken to determine the ***valuation results*** in more detail.

Analysis of result

3.9 Section 5 provides further information which is intended to assist in the interpretation of the results shown. In particular, that section shows the main sensitivities of the ***valuation results*** to the assumptions set by the Scottish Ministers. The most significant of these are post-retirement mortality, withdrawal rates, and promotional pay increases.

3.10 Section 6 comments on the main risks which could result in some variations in the ***valuation results*** at subsequent valuations.

[8] 1 April 2017 to 31 March 2020.

4 Valuation results

This section provides the valuation results required by the Directions.

4.1 Directions 22 and 23 require certain numerical ***valuation results*** to be reported. This section provides the information required by the Directions.

Cost cap

4.2 The ***proposed employer cost cap*** is determined from the following components:

> The contribution rate, payable from 1 April 2017, required to cover the expected cost of benefits accruing by members over the ***implementation period***. This is to be determined using data, methodology and assumptions adjusted in accordance with Direction 53(3) to (6),

> Less normal member contributions expected to be payable over the ***implementation period***.

The relevant ***valuation results***, expressed as a percentage of pensionable payroll, are summarised in Table 4.1.

Table 4.1 - Cost cap

	%		Direction
Contribution rate required to cover expected cost of benefits accruing over implementation period	21.8	A	
Less normal member contribution rate expected over implementation period	6.3	B	
***Proposed employer cost cap* (A - B)**	15.5		*53*

4.3 Both the cost of benefits and the member contribution rate above are calculated assuming that no members ever have, or ever will, make an election under Regulation 10 of the Local Government Pension Scheme (Scotland) Regulations 2014 (Temporary reduction in contributions – the '50/50 section'), in accordance with Direction 18. Under this assumption, the contribution rate expected over the ***implementation period*** is 6.3%. For further details, see the report titled Local Government Pension Scheme (Scotland) - Actuarial valuation as at 31 March 2014: Report on methodology, dated 4 January 2016.

Valuation balance sheet at 31 March 2014

4.4 The past service liabilities of the Scheme as at the ***effective date,*** calculated in accordance with the Directions, and otherwise as specified in this report, are set out in Table 4.2. The liabilities valued include all benefits currently or prospectively payable under the Scheme to current pensioners, deferred pensioners and active members (in respect of service completed to the ***effective date)***. In the case of active members, liabilities arising from future pay inflation to the assumed future date of cessation of pensionable service is included in the liability shown.

4.5 This valuation reports the ***notional assets***, which are defined by the Directions to be a notional amount of money representing the assets of the Scheme used to calculate the employer contribution rate. The actual assets held by LGPS (Scotland) funds do not play any part in this valuation or the cost cap mechanism.

4.6 In accordance with Direction 44(1) of the Directions, the ***notional assets*** are set equal to the past service liabilities as at the ***effective date***. It follows that there is no surplus or shortfall reported at this valuation, because ***notional assets*** are equal to the past service liabilities.

4.7 The past service liabilities and ***notional assets*** as at 31 March 2014 are set out in Table 4.2.

Table 4.2 - Valuation balance sheet

	£ billion 31 March 2014	**Direction**
Aggregate scheme assets	**28.3**	25, 44
Aggregate scheme liabilities in respect of:		
Active members	12.9	-
Deferred pensioners	3.2	-
Pensioners	12.2	-
Total aggregate scheme liabilities	**28.3**	24
Surplus (shortfall) as at 31 March 2014	-	

Contribution rates

4.8 Whilst the ***effective date*** of the actuarial valuation is 31 March 2014, the ***employer contribution rate*** determined is that payable in respect of the period 1 April 2017 to 31 March 2020 (the ***implementation period***). The ***employer contribution rate*** required over the ***implementation period*** is determined from the following components:

> the contribution rate, payable from 1 April 2017, required to cover the expected cost of benefits accruing by members over the ***implementation period***

minus

> normal[9] member contributions expected to be payable during the ***implementation period***.

4.9 As noted in paragraph 4.6 above, the ***notional assets*** are set equal to the past service liabilities as at the ***effective date***. It follows that no contributions are required to meet the difference between the liabilities of the Scheme and the ***notional assets***, because the assets are equal to the liabilities.

[9] Excluding additional voluntary contributions or contributions being paid to secure additional pension

4.10 The relevant ***valuation results***, expressed as a percentage of pensionable payroll, are summarised in Table 4.3.

Table 4.3 - Contribution rates

	%	%		Direction
Contribution rate required to meet the difference between the liabilities of the Scheme and the notional assets at 31 March 2014		0.0	A	*27(1)(a)*
Contribution rate required to cover cost of benefits accruing over implementation period	21.7		C	*27(1)(d)*
Less normal member contribution rate expected over implementation period	6.3		D	*28(c)*
Employer contribution rate required for cost of accrual of benefits over implementation period		15.4	C-D	
Employer contribution rate (not implemented *) **(A + C) – D**		15.4		*29*

* As explained in paragraphs 2.1 and 2.6 employer contributions are payable in accordance with each administering authority's rates and adjustments certificate issued under Regulation 60 of the Local Government Pension Scheme (Scotland) Regulations 2014.

4.11 The calculation of the ***employer contribution rate*** is similar to the calculation of the ***proposed employer cost cap***, except that the assumptions used to calculate the ***proposed employer cost cap*** are adjusted to reflect members' likely behaviour had they never been members of the Earlier Schemes. This would mean, for example, that no members have entitlement to any benefits payable from age 60 without reduction, and so members would be likely to retire later.

4.12 The ***valuation results*** have been determined in accordance with the requirements as to data, assumptions and methodology as specified in the Directions.

5 Sensitivity of valuation results to assumptions

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

5.1 This section illustrates the sensitivities of the ***valuation results*** to the assumptions determined by the Scottish Ministers[10]. Sensitivities are not shown for assumptions specified in the Directions since these are fixed for the purpose of this valuation.

5.2 Table 5.1 shows the sensitivities relative to the past service liabilities and the ***proposed employer cost cap***. The sensitivities shown are intended to illustrate a range of reasonable outcomes which might have been determined at this valuation had different assumptions been used. 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. Section 6 comments on the main risks which could result in some variations in the ***valuation results*** at subsequent valuations.

5.3 The ***notional assets*** are set equal to the liabilities as at the ***effective date***, in accordance with Direction 44(1) of the Directions. Consequently there is no surplus or deficit as at 31 March 2014, regardless of the assumptions adopted. The impact of alterative assumptions on the ***employer contribution rate*** will be similar to the impact on the ***proposed employer cost cap***.

Table 5.1 Sensitivity of valuation results to Scottish Ministers-set assumptions

	Addition to past service liabilities (£billion)	**Additional to proposed employer cost cap (% pensionable pay)**
New entrant profile*: new joiners assumed 2 years older on average	No impact	+0.4%
Mortality rates*:		
(a) each pensioner subject to mortality rates 5% heavier than assumed[11]	-0.20	-0.1%
(b) 5% more deaths before retirement than currently assumed	Not material	Not material
Age retirement rates*: active members retire (on average) one year later than currently assumed	-0.20	Not material
Commutation in respect of pre-2008 service* (assumption for post-2008 service is specified in the Directions)**:** all eligible members	Not material	No impact

[10] As specified in Direction 19(e).
[11] Broadly speaking this is equivalent to assuming pensioners' life expectancy is 0.5 years shorter.

commute 2% of pension more than assumed		
Ill health retirements*		
(a) Rate of ill health retirements: 5% more members assumed to retire on ill health grounds than currently assumed	Not material	0.1%
(b) Severity of ill health retirements: 5% more members assumed to receive Tier 1 benefits than currently assumed	No impact	Not material
Members' dependants*		
(a) proportions partnered: 5% more members assumed to have qualifying partners at death	0.10	0.1%
(b) age difference between member and partner: dependants assumed to be 1 year older than the current assumption	-0.10	-0.1%
Withdrawals*: Withdrawal rates a third higher	-0.20	Not material
Promotional pay increases*: promotional pay increases 0.5% per annum higher on average than assumed	0.80	No impact

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

5.4 In each variant in Table 5.1 the sensitivity shown is in relation only to the change in assumption described. The impact of a combination of assumption changes will not necessarily equate to the sum of the relevant rows above.

6 Uncertainties around possible outcomes of the next valuation

This section considers some of the risks relating to the outcomes of the next valuation.

6.1 The results of this valuation are set out in section 4. Section 5 outlines the sensitivity of the results to those assumptions set by the Scottish Ministers. The sensitivities shown in that section are intended to illustrate the range of reasonable outcomes which might have been determined at this valuation had different assumptions been used. The range of reasonable outcomes at this valuation is different from, and not necessarily related to, the possible range of outcomes at future valuations.

6.2 The results of the next valuation (both the ***employer contribution rate*** and the ***cost cap cost of the scheme***) will differ from the results shown in this report for many reasons. Table 6.1 shows some of these reasons. These differences can be split into three categories:

> those that are expected

> those that are likely to occur due to short-term variations between experience and assumptions

> those that are possible but less likely and result from more significant experience variations leading to changes in assumptions or from material data errors

6.3 The results of future valuations might affect the level of contributions payable by members and/or the amount of benefits payable to members for future service. Further information on the cost cap mechanism and how this may affect member benefits and/or contributions after future valuations is provided in Appendix E.

6.4 The calculation of the ***cost cap cost of the scheme*** will take account of the liabilities of active members of the Scheme as at 31 March 2015 (the date accrual under the Earlier Schemes ceased). In particular at the 2017 valuation there may be a ***cost cap past service cost*** (which may be positive or negative). Such a ***cost cap past service cost*** may arise if, for example, pensionable pay experience between 31 March 2015 and 31 March 2017 is not in line with assumptions, or if the valuation assumptions change.

6.5 At the 2017 valuation, the ***notional assets*** will be set equal to the liabilities as at 31 March 2017, in accordance with Direction 44(1). Consequently there will be no surplus or deficit as at 31 March 2017, and the ***employer contribution rate*** will not include any past service cost to meet any surplus or deficit. Some changes that may affect the ***cost cap cost of the scheme*** will not therefore affect the ***employer contribution rate***.

6.6 Further explanation relating to the items in Table 6.1 is given in the remainder of this section. Further information about the cost cap mechanism and the ***cost cap cost of the scheme*** is provided in Appendix E.

6.7 ***Valuation results*** are sensitive to assumptions set in the Directions, such as the discount rate, mortality improvements and commutation take-up. The discount rate was set at 3.0% in excess of CPI in April 2011 and the then UK government proposed at that time to review the level of the discount rate every five years[12]. The Directions

[12] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/220809/consult_discount_rate_summary_responses.pdf

set mortality improvements to be in line with the Office for National Statistics' (ONS) 2012 principal population projections for the United Kingdom. The ONS published new population projections in October 2015, incorporating update assumptions about mortality improvements.

6.8 It is expected that any changes to assumptions in the Directions will impact on the ***employer contribution rate***. The expected impact of changes in assumptions on the cost cap mechanism is described in paragraphs 2.31 to 2.35 of *Public service pensions: actuarial valuations and the employer cost cap mechanism*; in particular changes in costs arising from changes the discount rate are not expected to be captured by the employer cost cap and so are not expected to not trigger changes in member contributions or future benefit accruals.

Table 6.1: Items that may affect the next valuation[13] [14]

Item		**Employer contribution rate[15]**	**Cost cap cost of the scheme[14]**
Expected:	Short-term mortality improvements & increases in members' average SPA	o	o
	Run-off of short-term financials up to the next valuation date (final salary benefits only)	N/A	N/A
Likely:	Short-term experience effects:		
	- demographic	N/A	✓
	- financial	N/A	✓
	Assumption changes:		
	- short-term financials after the next valuation date	N/A	✓✓
	- mortality improvements	✓	✓✓
Possible:	Errors found in data sets from previous valuations	✓	✓
	Unanticipated membership changes	✓	✓
	Assumption changes:		
	- demographics set by the Scottish Ministers subject to HMT approval	✓	✓

Key[16] [17]: N/A = not applicable

o = impact is likely to be less than 0.5% of pensionable pay

✓ = impact may well be more than 0.5% of pensionable pay but, although possible, is quite unlikely to be more than 2% of pensionable pay,

✓✓ = impact may well be more than 2% of pensionable pay

[13] All cost pressures are assumed to feed through to the ***employer contribution rate*** and the ***cost cap cost of the scheme*** in line with the Directions; more detail on how the Directions treat cost pressures is set out in paragraphs 2.31 to 2.35 of *Public service pensions: actuarial valuations and the employer cost cap mechanism* published by HMT in March 2014.

[14] We have ignored items such as changes to the Directions (apart from those described as "likely" in paragraph 2.39 of *Public service pensions: actuarial valuations and the employer cost cap mechanism*), benefit changes or changes to relevant law (including European law), because it is impossible for us to form any judgment on the likelihood or quantum of such changes.

[15] Each item is considered separately; a combination of these items could have a larger impact than is considered likely for any of those items individually.

[16] Showing relative importance of items in the table in our judgment at the time of signing.

[17] Shown in increasing order.

6.9 As explained above, some of the factors affecting the results of the next valuation are relatively predictable. For example:

> **Mortality improvements:** Life expectancies are expected to continue to increase, though the impact of this should be offset to an extent by increases in the average SPA of active members.

> **Short term financials:** The short term financial assumptions up to the ***effective date*** of the next valuation will determine some of the experience effects at the next valuation but otherwise will not be relevant to the determination of the ***valuation results*** of the next valuation.

6.10 It would be possible to calculate the expected contribution rate at the next valuation allowing for these more predictable effects. However, any estimate would still be subject to considerable uncertainty, not least because of the long period over which the membership would need to be projected.

6.11 Other impacts on the results of the next valuation are less predictable. These include:

> **Data:** If the data used for this valuation are later shown to be materially incorrect, a change may emerge when a correction occurs. For example, if the next valuation reveals that the average age of the membership was understated (or overstated) by a year, the ***employer contribution*** rate and the ***cost cap cost of the scheme*** could increase (or decrease) by around ½% of pensionable pay.

> **Scheme membership:** Similarly the distribution of future Scheme membership may differ from that projected at this valuation. For example, if the next valuation reveals that the average age of the membership is one year higher (or lower) than projected, the ***employer contribution rate*** and the ***cost cap cost of the scheme*** could increase (or decrease) by around ½% of pensionable pay.

> **Short term experience effects:** If experience is not in line with the assumptions made, a gain or loss will emerge over an inter-valuation period. Such effects may affect the ***cost cap cost of the scheme*** at the next valuation, but will not affect the ***employer contribution rate***.

> **Longer term experience effects:** Assumption changes at future valuations, in light of Scheme experience, may have more substantial effects on the results than actual experience effects. The greater sensitivity to assumption changes is because, typically, the assumptions apply to longer periods than the period over which the experience effects are measured. The results of future valuations might affect the level of contributions payable by members and/or the amount of benefits payable to members for future service.

> **Other assumption changes:** Assumptions may change for reasons other than Scheme experience, and paragraph 2.39 of *Public service pensions: actuarial valuations and the employer cost cap mechanism* flags the likelihood that some of the assumptions set in the Directions (including short-term financial assumptions) will change.

> **Public Sector Transfer Club (PSTC):** Costs arise on final salary PSTC transfers because the transfer value received by the Scheme is usually less than the cost of providing the service credit granted. The ***proposed employer cost cap*** includes an allowance for the associated costs of about 0.3% of pensionable pay. In the longer term, PSTC transfers will increasingly be transfers of career average benefits. It is likely that PSTC costs to the Scheme will fall over time.

7 Conclusion

This section summarises the valuation results.

7.1 Based on the detailed analysis as set out in this report, the key result of the valuation is as follows:

> ***Proposed employer cost cap***: 15.5**%** of pensionable pay

7.2 The Directions also require an assessment of the Scheme's accrued past service liabilities to be made and an employer contribution rate to be calculated, to enable comparisons between different public service pension schemes on a consistent basis. These are as follows:

> ***Employer contribution rate (not implemented[18]):*** ***15.4****% of pensionable pay*

> ***Total Scheme liabilities for service to the effective date:*** ***£28.3bn***

> ***Notional assets (set equal to liabilities as at 31 March 2014):*** ***£28.3bn***

7.3 The next valuation of the Scheme is due to be undertaken as at 31 March 2017. This will determine the opening value of the ***cost cap fund*** as at 31 March 2015 and provide the cost cap analysis as required by the Directions for future valuations.

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January 2016

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January 2016

[18] Employer contributions are payable in accordance with each administering authority's rates and adjustments certificate issued under Regulation 60 of the Local Government Pension Scheme (Scotland) Regulations 2014.

Appendix A - Summary of membership data

The membership information below allows for the rating-up for the missing information described in the data report dated 4 January 2016, referenced in paragraph 2.8. This report also contains a summary of the membership data before any rating-up and describes the rating-up adjustments made.

Table A1: Actives

	at 31 March 2014					
	Number of members	Total pensionable pay (i) (£m)	Average pensionable pay (£)	Average age (ii) (years)	Average period of membership (years)	Average accrued pension (£)
Male	73,304	1,803	24,593	47.2	12.8	5,116
Female	144,340	2,439	16,897	46.2	8.5	2,989
Total	**217,644**	**4,242**	**19,489**	**46.6**	**10.0**	**3,705**

(i) the pensionable pay shown is actual pensionable pay for the time worked.
(ii) weighted by actual pensionable pay.

Table A2: Deferreds

	at 31 March 2014			
	Number of members	Total deferred pension (i) (£m)	Average pension (£)	Average age (ii) (years)
Male	43,677	99.4	2,277	49.2
Female	81,640	118.0	1,445	48.5
Total	**125,317**	**217.4**	**1,735**	**48.8**

(i) pension amounts include increase granted in April 2014.
(ii) weighted by pensions.

Table A3: Pensioners

Type of benefit		at 31 March 2014 Number of members	Total pension (i) (£m)	Average pension (£)	Average age (ii) (years)
Age, late and early retirement (other than in ill-health)	Male	48,250	398.9	8,267	68.8
	Female	58,186	222.0	3,816	68.0
	Total	**106,436**	**620.9**	**5,834**	**68.5**
Ill-health retirement	Male	14,587	87.7	6,015	67.7
	Female	17,295	71.4	4,127	68.8
	Total	**31,882**	**159.1**	**4,991**	**68.2**
Spouses and other dependants	Male	4,817	7.7	1,597	59.5
	Female	19,673	59.1	3,004	74.4
	Total	**24,490**	**66.8**	**2,727**	**72.7**
All	Male	67,654	494.3	7,307	68.5
	Female	95,154	352.5	3,705	69.2
	Total	**162,808**	**846.9**	**5,202**	**68.8**

(i) pension amounts include increase granted in April 2014.
(ii) weighted by pensions.

Appendix B - Summary of benefits

B1 The Directions require the 2015 Scheme and the Earlier Schemes - as defined in the Local Government Pension Scheme (Transitional Provisions and Savings) (Scotland) Regulations 2014[19] - to be taken into account in aggregate for the purposes of the current valuation.

B2 The main benefit provisions of the Scheme, for service from 1 April 2008 to 31 March 2014 and for service from 1 April 2015, are shown in Table B1.

Table B1 - Main benefit provisions of LGPS (Scotland)

	From 1 April 2008 to 31 March 2015	From 1 April 2015
Basis of provision	Final salary	Career average with revaluation of CPI
Contracted out/in	Contracted out	Contracted out
Normal Pension Age (NPA)	65	State Pension Age, or 65 if higher
Early retirement	Transitional Rule of 85 for some members	Transitional Rule of 85 for some members
Pension accrual rate	1/60	1/49
Retirement lump sum accrual rate	By commutation (at 12:1) Total amount of the member's commuted sum shall not exceed 25% of the capital value of the member's accrued rights under all local government pension provision	By commutation (at 12:1) Total amount of the member's commuted sum shall not exceed 25% of the capital value of the member's accrued rights under all local government pension provision
Final pensionable pay	Pay in last 12 months prior to retirement or earlier exit, or in either of the previous two years if higher	N/A
Pay	Pay excluding non-contractual overtime and non-pensionable additional hours	Pay including non-contractual overtime and additional hours
Dependant benefits	1/160 (on death in service, full prospective service is included)	1/160 (on death in service, full prospective service is included)
Ill health pension	2-Tier system with benefit tier depending on prospect of return to gainful employment. Tier 1 A member is entitled to Tier 1 benefits if that member is unlikely to be capable of undertaking gainful employment before age 65. Tier 2 A member is entitled to Tier 2 benefits, if that member: a) is not entitled to Tier 1 benefits but, b) is likely to be able to undertake gainful employment before reaching age 65.	
Pension increases	Governed by the Pensions (Increase) Act 1971	Governed by the Pensions (Increase) Act 1971
Statutory underpin		For members meeting age and service criteria, pension is at least as high as under 2008 Scheme

[19] SSI 2014/233, Regulation 1(4)

Appendix C - Summary of assumptions

Financial assumptions

C1 Table C1 sets out the principal financial assumptions for the 31 March 2014 actuarial valuation.

Table C1: Financial assumptions at current and previous valuation

Discount rate	5.06% pa nominal (3.06% pa in excess of actual pension increase)			
Pension increases	2% pa			
Long term salary growth	4.75% pa (2.75% pa in excess of assumed pension increase)			
Short term variations in assumptions		Nominal Discount rate	Pension increases	Salary growth
	2014/15	4.24%	1.2%	1.5%
	2015/16	5.16%	2.1%	2%
	2016/17	n/a	n/a	2.5%
	2017/18	n/a	n/a	3.0%
	2018/19	n/a	n/a	3.0%

Demographic assumptions

C2 Full details of the demographic assumptions are provided in the report 'Local Government Pension Scheme (Scotland) – Actuarial valuation as at 31 March 2014: Advice on demographic assumptions' dated 4 January 2016. Sample rates and values are provided below.

C3 Retirements on or after NPA are assumed to occur on a member's birthday. Other decrements are assumed to occur mid-year.

Pensioner mortality

Table C2: Baseline mortality assumptions

Baseline mortality	Standard table[20,21]	Adjustment
Men		
Retirements in normal health	S2NMA	120%
Current ill-health pensioners	S2IMA	132%
Future ill-health pensioners	S2IMA	132%
Dependants	S2NMA	130%
Women		
Retirements in normal health	S2NFA	114%
Current ill-health pensioners	S2IFA	127%
Future ill-health pensioners	S2IFA	127%
Dependants	S2DFA	128%

C4 As specified by HM Treasury, future improvements in mortality will be assumed to be in line with those underlying the most recent Office for National Statistics (ONS) population projections.

C5 Resultant expectations of life are shown in Table C3.

Table C3 - Future life expectancy[22] (normal health retirement)

	2014 assumptions
Current pensioners	
Male aged 60	27.0 years
Male aged 65	22.2 years
Female aged 60	29.7 years
Female aged 65	24.8 years
Future pensioners – current age 45	
Male life expectancy from age 60	28.7 years
Male life expectancy from age 65	24.3 years
Female life expectancy from age 60	31.3 years
Female life expectancy from age 65	26.9 years

[20] From the 'S2' series of standard tables published by the Continuous Mortality Investigation and based on the experience of self-administered pension schemes over the period 2004 to 2011. Separate tables are available based on experience of members retiring in normal and ill-health and for female dependants.
[21] Adjusted to take account of improvements in population mortality between 2007 (the base year for the tables) and the date the future improvements are applied from.
[22] Cohort life expectancy, with future improvements in line with the ONS published 2012-based UK population principal projections.

Age retirement from service

Table C4.1: Detailed age retirement rates for members joining on or after 1 Dec 2006, and all members entitled to unreduced benefits between ages 60 and 65 under the 'Rule of 85'

Age	NPA 65	NPA 66	NPA 67	NPA 68
55	0.000	0.000	0.000	0.000
56	0.000	0.000	0.000	0.000
57	0.000	0.000	0.000	0.000
58	0.000	0.000	0.000	0.000
59	0.000	0.000	0.000	0.000
60	0.070	0.000	0.000	0.000
61	0.070	0.070	0.000	0.000
62	0.070	0.070	0.070	0.000
63	0.070	0.070	0.070	0.070
64	0.070	0.070	0.070	0.070
65	1.000	0.070	0.070	0.070
66	1.000	1.000	0.070	0.070
67	1.000	1.000	1.000	0.070
68	1.000	1.000	1.000	1.000

Table C4.2: Detailed age retirement rates for members entitled to unreduced benefits at age 60 under the rule of 85

Age	NPA 65	NPA 66	NPA 67	NPA 68
55	0.002	0.002	0.001	0.001
56	0.002	0.002	0.001	0.001
57	0.002	0.002	0.001	0.001
58	0.002	0.002	0.001	0.001
59	0.002	0.002	0.001	0.001
60	0.100	0.100	0.059	0.031
61	0.083	0.083	0.050	0.026
62	0.083	0.083	0.078	0.026
63	0.083	0.083	0.078	0.074
64	0.083	0.083	0.078	0.074
65	1.000	0.083	0.078	0.074
66	1.000	1.000	0.078	0.074
67	1.000	1.000	1.000	0.074
68	1.000	1.000	1.000	1.000

Ill-health retirement from service

Table C5.1: Ill-health retirement rates for all members

Age	Men %	Women %
20	0.00	0.00
25	0.00	0.02
30	0.02	0.03
35	0.03	0.05
40	0.05	0.07
45	0.11	0.11
50	0.29	0.22
55	0.60	0.57
60	1.20	1.09
65*	1.91	1.70

* rates are zero if above the member's NPA.

Table C5.2: Percentage of ill-health retirement in Tiers 1 and 2 for all members

Tier 1	Tier 2
70%	30%

Voluntary withdrawal from service

Table C6: Withdrawal rates (net of re-entry within 5 years) for all members

Age	Men %	Women %
20	9.9	9.4
25	6.5	6.3
30	4.6	5.3
35	3.6	4.6
40	2.9	3.8
45	2.4	3.1
50	1.8	2.4
55	1.6	2.0
60	1.2	2.0
65*	0.9	2.0

* rates are zero if above the member's NPA.

Commutation of pension for cash at retirement

Table C7: Commutation of pension for cash at retirement

	Pre-2009 service	2009-2014 service	2015 Scheme service
Men	10%	15%	15%
Women	10%	15%	15%

* As specified in Direction 18(e).

Death before retirement

Table C8: Death in service rates for all members

Age	Men %	Women %
20	0.02	0.01
25	0.02	0.01
30	0.03	0.02
35	0.03	0.03
40	0.06	0.05
45	0.10	0.08
50	0.16	0.12
55	0.25	0.17
60	0.45	0.33
65	0.77	0.58

Promotional pay increases

Table C9: Promotional salary scales for all members

Age	Men and Women
20	93
25	93
30	100
35	107
40	109
45	111
50	112
55	112
60	112
65	112

* Relative to an index value of 100 at age 30.

Family statistics

Table C10.1: Proportion married or partnered at retirement for future pensioners

	Proportion married or partnered at retirement
Men	80%
Women	70%

Table C10.2: Proportion married or partnered for current pensioners (at the valuation date)

Age	**Men**	**Women**
60	80%	70%
70	83%	66%
80	86%	33%
90	58%	0%

C6 Male members are assumed to be three years older than their partners and female members are assumed to be three years younger than their partners.

Appendix D - Summary of methodology and calculations

Methodology

D1 The Directions specify the use of the Projected Unit methodology and that benefits should be attributed to periods of service in accordance with the requirements of International Accounting Standard 19: Employee Benefits.

D2 Since the expected cost of benefits provided to members differs according to their age and gender, the various ways of projecting the membership can give materially different estimates of the valuation result.

D3 We have 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 pensionable pay by age and gender will remain stable. Allowing the existing membership to 'run off' over the projection period in accordance with the assumptions set out in Appendix C means an implicit assumption is made about the profile of new joiners to the Scheme over that period. Full details of the membership projection is provided in the report 'Local Government Pension Scheme (Scotland) – Actuarial valuation as at 31 March 2014: Report on methodology' dated 4 January 2016.

Calculations

D4 The following provides a brief explanation of the actuarial calculations used to derive the ***valuation results***.

Scheme benefits

D5 First, an estimate is made of the amount of benefit to be received by each Scheme member (and their dependants, where applicable) over all the future years 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. (More information about the assumptions is set out in Appendix C.)

D6 Having estimated the benefits as a stream of projected cash flows 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 the rate of return which would be earned by the capital sum if it were invested.

D7 This capital sum is often referred to as the 'present value' of the benefits and we speak of 'discounting' the future cash flows back to the ***effective date*** in order to arrive at this figure. It is often convenient (and completely accurate) to think of the present value simply as the amount of capital which would need to be invested at an assumed rate of return in order to meet all the projected cash flows. The result of the calculation is, by its nature, a planning or budgeting estimate, not a 'valuation' as such.

Calculations

D8 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').

Past service position

D9 In relation to the past service element, we compare the capital sum (or present value) relating to past service with the balance in a notional fund at the ***effective date***. If all the assumptions made during previous reviews had been borne out exactly, the notional fund 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 fund could exceed, or fall short of, the capital sum now estimated to be needed.

D10 To the extent that the notional fund is *less* than the capital sum needed to pay out all the benefits relating to past service, the Scheme is said to be in *deficit* and there would be an increase in the ***employer contribution rate***. Conversely, if the notional fund *exceeds* the capital sum required for past service benefits, the Scheme is said to be in *surplus* and there would be a reduction in the ***employer contribution rate***.

D11 The Directions specify that the notional fund at the ***effective date*** is set equal to the past service liabilities, and so there is neither surplus nor deficit at the ***effective date***.

Future contributions

D12 To arrive at the level of contributions required to meet benefits estimated to arise out of future service, we calculate the percentage of total pensionable pay which, if paid during the ***implementation period***, would be sufficient to make up the capital sum needed to pay out the benefits accrued during the ***implementation period***. (Or, using the terminology from above, we calculate the contribution rate which has the same 'present value' as the benefit stream which the contributions will pay for.) In making this calculation, we adopt the same assumptions that we mentioned above regarding the future service and salaries of the Scheme members and the rate of return which would be earned by the capital sum if it were invested.

Appendix E - The cost cap mechanism

E1 This report sets out an ***employer contribution rate*** (but this is not implemented[23]) and a ***proposed employer cost cap*** (the ***valuation results***) based on a number of assumptions about the future. Section 6 outlines the main reasons why future ***valuation results*** may differ from the results shown in this report. This Appendix gives further information on the cost cap mechanism and the factors which may influence the level of contributions payable by, or the amount of benefits payable to, members at future valuations.

Allocation of cost savings/increases at future valuations

E2 The cost cap mechanism specifies that:

a. if the ***cost cap cost of the scheme*** determined at a future valuation differs from the ***employer cost cap*** by more than 2% of pensionable pay, then member contributions or benefits will be adjusted.

b. if the ***cost cap cost of the scheme*** is within 2% of the ***employer cost cap***, then member contributions or benefits will not be adjusted.

Liabilities considered for future valuation results

E3 The ***employer contribution rate*** takes into account the whole of the aggregate scheme's liabilities ie those attributable to all service in both the 2015 Scheme and the Earlier Schemes.

E4 By contrast, only part of the aggregate scheme's liabilities are considered for the calculation of the ***cost cap cost of the scheme***. In particular the ***cost cap fund*** is intended to exclude costs relating to deferred and pensioner members of the Earlier Schemes. More detail is set out in paragraphs 2.24 to 2.27 of *Public service pensions: actuarial valuations and the employer cost cap mechanism* published by HMT in March 2014.

E5 The prior value of the ***cost cap fund*** will be first determined at the actuarial valuation due to be carried out as at 31 March 2017. This will be based on the Scheme's liabilities only for members who are active (that is, still in employment) as at 31 March 2015. As members with Earlier Scheme benefits progressively leave active service, their liability will move outside the ***cost cap fund***. Of the liabilities expected to establish the cost cap fund as at 31 March 2017 a significant proportion will relate to members who are expected to retire in the relatively short term. Over this period, the cost cap mechanism may therefore be exposed to significant variations in pensionable pay experience and retirement patterns.

E6 Over the longer term, the cost cap mechanism will become relatively more sensitive to other demographic assumptions. The ***cost cap cost of the scheme*** is sensitive to changes in longevity expectations. Initially, this only relates to active members but once members with 2015 Scheme service have retired, then any changes in expectations of their longevity will also have an impact on the ***cost cap cost of the scheme***. Further, although the retirement age of active members is intended to vary

[23] Employer contributions are payable in accordance with each administering authority's rates and adjustments certificate issued under Regulation 60 of the Local Government Pension Scheme (Scotland) Regulations 2014.

in line with longevity expectations, the timing of any legislative changes to retirement age is unlikely to be synchronised with the timing of future valuation cycles.

E7 More information about the employer cost cap mechanism can be found in *Public service pensions: actuarial valuations and the employer cost cap mechanism*.

Appendix F - Location of material required by Directions

Direction	Description	Location
21(a)(i) (ii)	Summary of membership data and checks carried out	Appendix A Local Government Pension Scheme (Scotland) - Report on membership data as at 31 March 2014 dated 4 January 2016.
21(a)(iii)	Adjustments made to data Projections made	Local Government Pension Scheme (Scotland) - Report on membership data as at 31 March 2014 dated 4 January 2016. Local Government Pension Scheme (Scotland) - Actuarial valuation as at 31 March 2014: Methodology report dated 4 January 2016.
21(b)	Average age of active members	Appendix A1
21(c)	Statement of compliance with Directions	Paragraph 2.3
21(d)	Summary of Regulations, Directions and professional standards	Paragraphs 2.3-2.6, GAD website
21(e)	Summary of main provisions of the Scheme	Appendix B Local Government Pension Scheme (Scotland) - Report on membership data as at 31 March 2014 dated 4 January 2016.
21(f)	Analysis of demographic experience	Local Government Pension Scheme (Scotland) - Actuarial valuation as at 31 March 2014: Advice on demographic assumptions dated 4 January 2016.
21(g)(i) (ii) 21(g) (iii)	Statement of assumptions, including rationale Illustration of sensitivity to assumptions set by the Scottish Ministers	Local Government Pension Scheme (Scotland) - Actuarial valuation as at 31 March 2014: Advice on demographic assumptions dated 4 January 2016. Appendix C Section 5
21(h)	Other liabilities valued	None
22(a)	Statement of Scheme liabilities	Section 4, Table 4.2
22(b)	Statement of ***notional assets***	Section 4, Table 4.2 – ***notional assets*** are set equal to past service liabilities by virtue of Direction 44(1)
22(c)	Build-up of ***notional assets***	Not included, due to the operation of Direction 44(1)
22(d)	Statement of contribution rate required	Section 4, Table 4.3; note that the contribution rates in Direction 27(b) and 27(c) are not included, due to the operation of Direction 44(1)
22(e)	Statement of member contribution yield	Section 4, Table 4.3; note that the contribution rates in Direction 28(a) and 28(b) are not included, due to the operation of Direction 44(1)
22(f)	Statement of required employer contribution rate	Section 4, Table 4.3; Note that 'B' is zero, due to the operation of Direction 44(1)
53	***Proposed employer cost cap***	Section 4, Table 4.1

Appendix G - Limitations

G1 This report is intended for the use of the Scottish Ministers for the purposes of determining the ***employer cost cap***, which is to be set in regulations. 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.

G2 We are content for the 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, and
- GAD is notified of such release.

G3 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.

G4 GAD is not responsible for any decision taken by the Scottish Ministers, 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.

G5 GAD relies on the accuracy of data and information provided by or on behalf of LGPS (Scotland) administering authorities. GAD does not accept responsibility for advice based on wrong or incomplete data or information provided by or on behalf of administering authorities or the Scottish Public Pensions Agency.