Government Actuary's Department

Firefighters' Pension Schemes (England)

Actuarial valuation as at 31 March 2012

Report on methodology

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Contents

1 Introduction

1.1 This report has been prepared by the Government Actuary's Department (GAD) in its capacity as actuarial advisor to the Department for Communities and Local Government (DCLG) in connection with the Firefighters' Pension Schemes in England ("the Schemes").

1.2 The purpose of this report is to summarise the methodologies adopted for certain aspects of the valuation calculations. It also explains why the approaches taken are necessary and their financial impact on the valuation results.

1.3 The data and assumptions to be used for the valuation are the subject of separate reports.

1.4 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.

1.5 HM Treasury (HMT) Directions ("the HMT Directions"), made under the Public Service Pensions Act 2013, provide the legal framework for carrying out the valuation. References to the 'Directions' in this report are in respect of these Directions, specifically 'The Public Service Pensions (Valuations and Employer Cost Cap) Directions 2014 dated 11 March 2014 (as amended).

1.6 This report is intended solely for the use of DCLG. We are content for DCLG 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.

1.7 Third parties whose interests may differ from those of DCLG 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.

1.8 A draft of this report was circulated to Firefighters' Pension Committee in October 2014. It has been signed alongside the formal valuation report. Additional wording regarding the sensitivity of the proposed employer cost cap figure to the membership projections has been included in paragraph 2.22. There are also various minor changes which do not affect any of the recommendations.

2 Active membership projections

2.1 The Directions[1] require the actuary to calculate the expected cost of benefits accruing over the periods 1 April 2012 to 31 March 2015 and 1 April 2015 to 31 March 2019.

2.2 In addition to the assumptions used, the main factors affecting the expected cost of the benefits are:

> The scheme benefits being accrued by members; and

> The profile of the active membership over these periods.

2.3 The former is particularly important due to the changes being introduced on 1 April 2015 as a result of the reform of the Firefighters' Pension Scheme ("the 1992 scheme") and the New Firefighters' Pension Scheme ("the 2006 scheme"), with the introduction of the Firefighters' Pension Scheme 2015 ("the 2015 scheme"). The expected cost of benefits provided to members remaining in the existing scheme differs from the expected cost of providing those members with benefits in the 2015 scheme. Further, the expected cost of providing benefits varies for members in the 1992 scheme and 2006 scheme.

2.4 The Directions therefore implicitly require the scheme actuary to estimate the expected active membership up to 31 March 2019 in order to calculate the valuation results. However, for a practical application of the methodology we have focused on the projected membership of the Schemes as at 31 March 2015, 1 April 2015[2], 31 March 2017[3] and 31 March 2019.

Approach to determining the active membership of the Firefighters' Pension Schemes as at 31 March 2015, 31 March 2017 and 31 March 2019

2.5 To enable the valuation results to be calculated it is necessary to separately project the membership within each scheme and benefit category at the valuation date to the start and end of the implementation period (the four year period between 31 March 2015 and 31 March 2019).

2.6 There are two main alternative approaches which could be used to determine the active membership at future dates:

> Assume the active population remains relatively stable by total salary roll at each age. Appropriate adjustments would then be made to allow for the transfer of members to the 2015 scheme.

[1] HMT's *The Public Service Pensions (Valuations and Employer Cost Cap) Directions 2014*.
[2] The active membership will essentially be the same on both 31 March 2015 and 1 April 2015. The difference is that unprotected members will transfer across to the 2015 scheme on 1 April 2015. For the purpose of this report, any reference to data as at 31 March 2015 also applies to the data as at 1 April 2015.
[3] The requirement for data as at 31 March 2017 is discussed in paragraph 3.3 of this report.

> Project forward the 31 March 2012 membership data and allow for the expected changes in the workforce at future dates.

2.7 Fire and Rescue Authorities (FRAs)' forecasts of the number of new entrants to the scheme in the period 2012-19 indicate that the number of active members of the scheme will reduce over this period (see paragraph 2.11 below for more details). This is likely to reduce the proportion of members at younger ages. As such, it is not appropriate to assume that the active membership will remain stable by age and salary roll over the period 1 April 2012 to 31 March 2019.

2.8 The active membership therefore needs to be projected to 31 March 2015, 2017 and 2019 in order to determine the active membership at these dates. This requires two components:

> Project the 2012 active membership to 31 March 2015, 31 March 2017 and 31 March 2019 allowing for assumed decrements such as early leavers, retirements and deaths.

> Add in expected new entrants over the period 2012-2015, 2015-17 and 2017-2019.

Projecting the active membership data to 31 March 2015, 31 March 2017 and 31 March 2019

2.9 Not all of the active membership at 31 March 2012 will still be in active service as at 31 March 2015, 31 March 2017 or 31 March 2019. We have projected the 31 March 2012 membership forward assuming members leave in line with the valuation assumptions adopted for normal health retirements, ill-health retirements, withdrawals, deaths in service and allowing for promotional salary increases. These assumptions were set based on recent experience in the Schemes and therefore represent the best estimate of future movements within the Schemes.

2.10 The projections were based on retirement assumptions appropriate to the Firefighters' Pension Schemes Proposed Final Agreement, published by DCLG in May 2012. The 2015 scheme is not the same as that outlined in the Proposed Final Agreement and provides for enhanced early retirement factors to be provided from age 55, rather than age 57. The retirement assumptions for the valuation were updated to reflect this change in scheme design, but were left unchanged for the data projections. We are content that updating the projections to reflect retirement assumptions appropriate to the new 2015 scheme design would not have a material impact on the projections, as a material number of retirements from the 2015 scheme are not expected during the projection period.

New entrants to the Firefighter's Pension Schemes

2.11 DCLG submitted forecasted income and expenditure information to the Office for Budget Responsibility for use in their work on the Autumn Statement 2013. To inform these forecasts, DCLG collected information from FRAs, including forecasts of the number of new entrants to the schemes in the period to 2019. We have assumed that the number of new entrants to the Schemes is in line with these forecasts provided by FRAs.

2.12 The profile of new entrants (in terms of age, gender and salary) has been assumed to be consistent with the profile of recent entrants to the 2006 scheme (based on the data provided for the 2012 valuation). Specifically, we have assumed that the members as at 31 March 2015 who have entered the Schemes since 31 March 2012 have the same profile as members in 2012 with less than three years' service. The average age of this new entrant profile as at the date of joining is 31.0 years. Similarly the profile of entrants between 2015-2017 and 2017-2019 is based on membership in 2012 with less than two years' service. The average age of this new entrant profile as at the date of joining is 30.9 years.

2.13 We have added the appropriate proportion of the subset of the 2012 membership to the projection of the existing membership to match the number of new entrants in the FRAs' forecasts. New members are assumed to join the 2006 scheme over this period.

2.14 The projected membership in 2017 is determined in a similar way, with the assumed 2015 membership projected in line with valuation assumptions and new entrants added in to match the number of new entrants in the FRAs' forecasts. New entrants are assumed to join the 2015 scheme over this period. Similarly, the 2019 membership is derived from the assumed 2017 membership.

Total salary roll as at 31 March 2015, 31 March 2017 and 31 March 2019

2.15 The projected salary roll at 31 March 2015, 31 March 2017 and 31 March 2019 depend on the combination of membership at 31 March 2012, valuation assumptions for retirements and other leavers and individual authority assumptions for new entrants up to 31 March 2019, as described above.

2.16 The following table compares the projected salary roll at 31 March 2015, 31 March 2017 and 31 March 2019 with that as at 31 March 2012.

Table 2.1: Total salary roll

Date	Total salary (nominal) £ million	Total salary (2012 salary terms) £ million	Change in total salary roll since 2012 (2012 salary terms)
31 Mar 2012	£954	£954	0%
31 Mar 2015	£926	£891	-7%
31 Mar 2017	£914	£841	-12%
31 Mar 2019	£914	£794	-17%

Summary of the Schemes' membership as at 31 March 2015, 31 March 2017 and 31 March 2019

2.17 We have determined the expected membership of the Schemes as at 31 March 2015, 31 March 2017 and 31 March 2019 in line with the method set out above.

2.18 The tables below summarise the active membership data at these dates, showing the proportions of payroll and the average age in each section of the Schemes at the relevant dates.

Table 2.2: Projected proportion of payroll

Section	31 March 2012	31 March 2015	1 April 2015	31 March 2017	31 March 2019
1992 scheme	78%	73%	44%	32%	18%
2006 scheme	22%	27%	3%	2%	2%
2015 scheme	0%	0%	53%	65%	80%

Table 2.3: Average age* of projected membership

Section	31 March 2012	31 March 2015	1 April 2015	31 March 2017	31 March 2019
1992 scheme	43.3	45.0	49.0	50.6	52.5
2006 scheme	34.8	36.7	53.2	55.5	57.5
2015 scheme			37.0	39.2	41.3
All schemes	41.5	42.8	42.8	43.3	43.6

* weighted by salary

2.19 The distribution of the membership by age and salary roll at each relevant date is shown in the charts below.

Chart 2.1: 31 March 2012 membership profile by age and salary roll

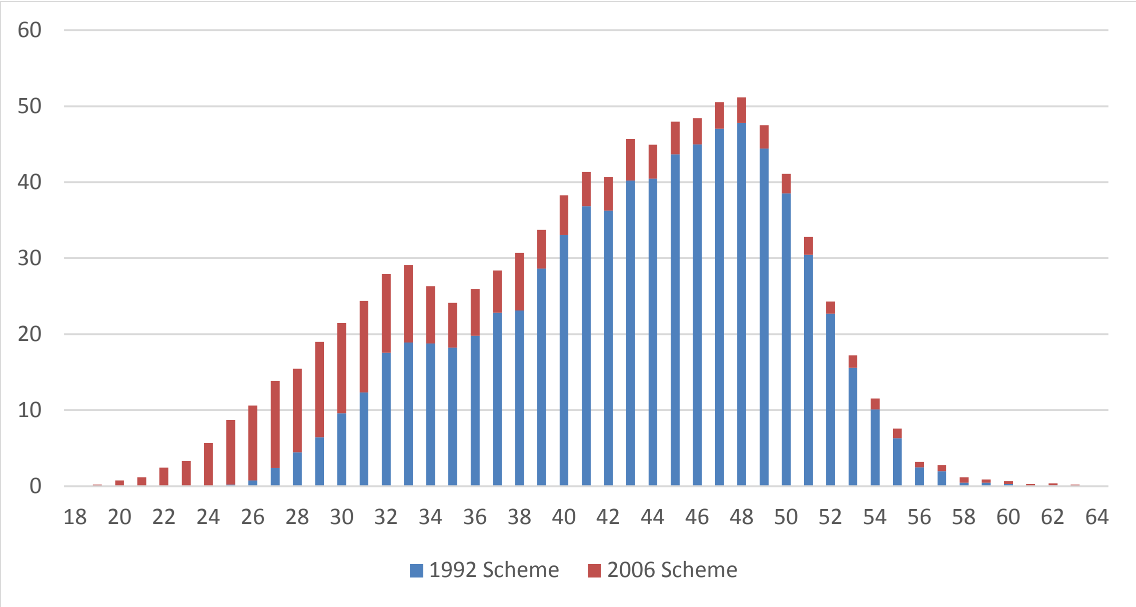


Chart 2.2: 31 March 2015 projected membership profile by age and salary roll

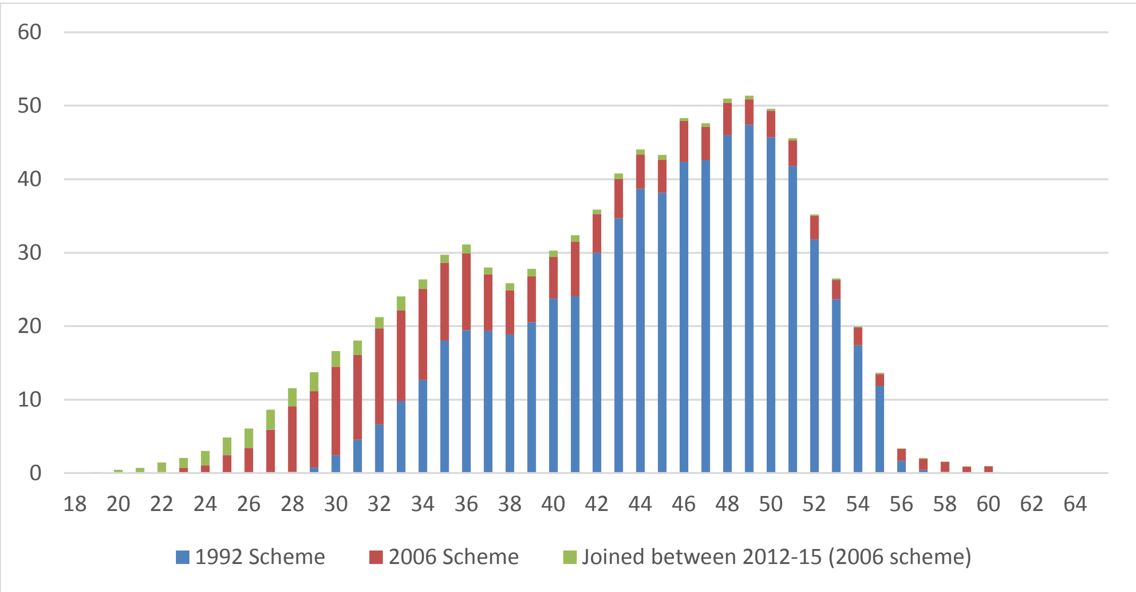


Chart 2.3: 1 April 2015 projected membership profile by age and salary roll

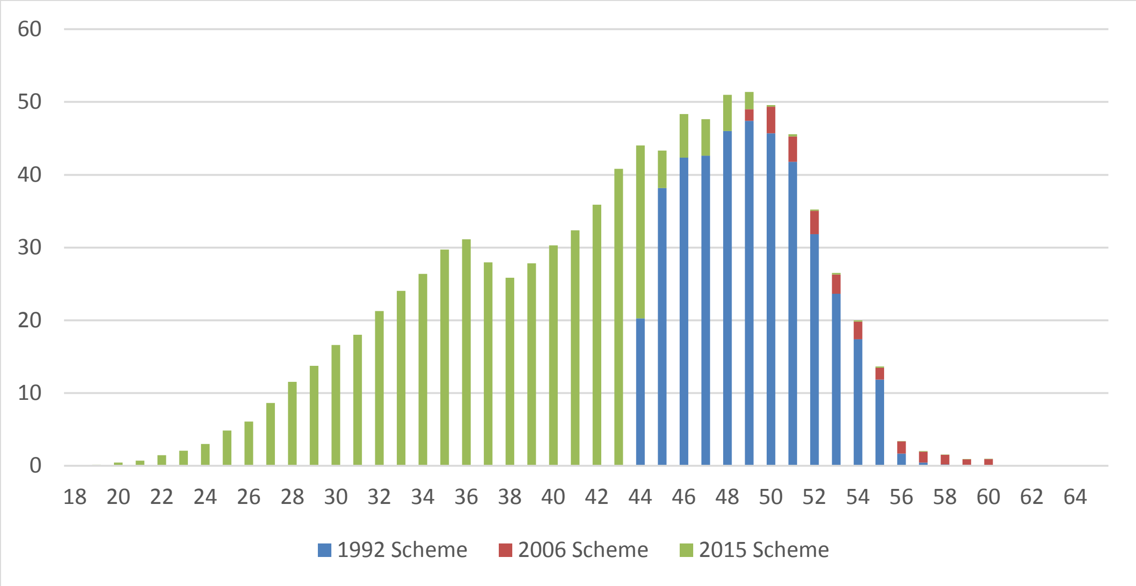


Chart 2.4: 31 March 2017 projected membership profile by age and salary roll

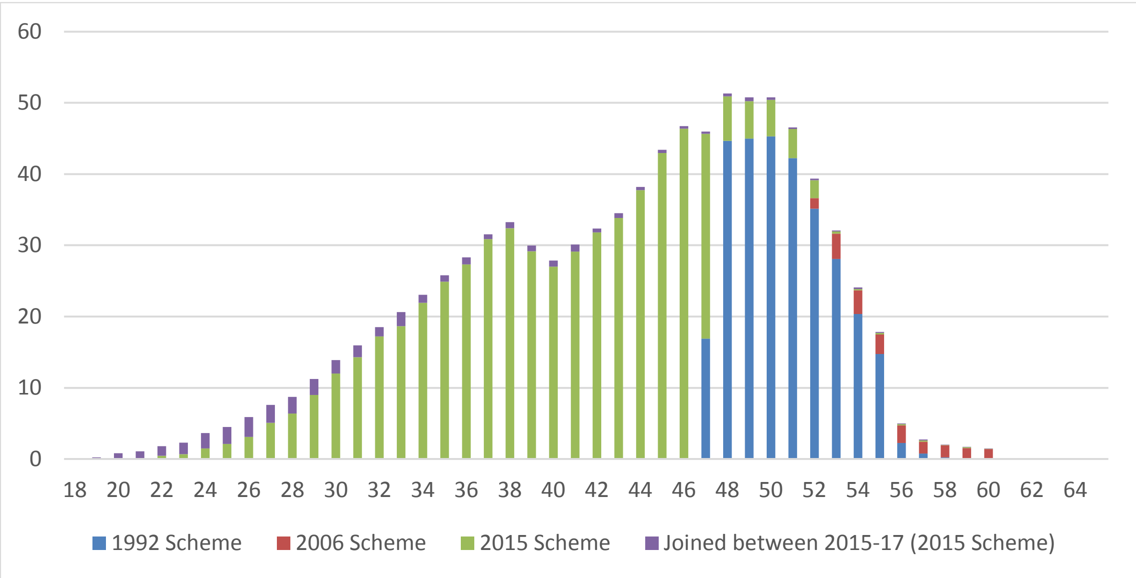
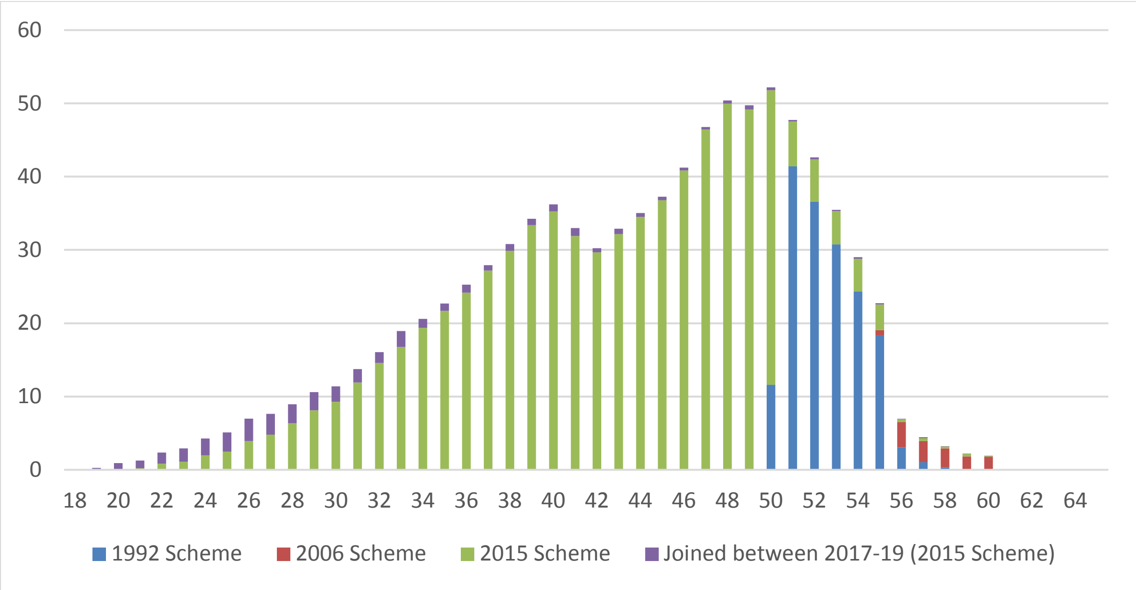


Chart 2.5: 31 March 2019 projected membership profile by age and salary roll



Projecting the membership beyond 31 March 2019

2.20 After 31 March 2019, the total salary roll is assumed to increase in line with general pay increases set out in Direction 17. The total salary roll up to 31 March 2030 is required to determine the contributions payable under Directions 27(1)(a) and (c).

Membership projections for the employer cost cap

2.21 The same membership projections are used to calculate the estimated cost of accrual over 2015-19 (Direction 27(1)(d)) and the proposed employer cost cap (Direction 53).

2.22 A different projected membership profile would be obtained if a different methodology or alternative assumptions were used in the data projection. This may then result in the projected membership being younger or older on average. As an example, if the projected membership were two years older, then the proposed employer cost cap would increase by approximately 0.3% of pensionable pay.

3 Accrual cost methodology

3.1 Individual active members have been grouped together for the purposes of calculating liabilities. The membership is grouped according to scheme (1992 scheme, 2006 scheme, 2006 scheme retained), aged nearest birthday and service length (to nearest whole year). Within those larger groups the membership is then grouped by gender and member's 2015 protected status (protected, tapered or unprotected).

3.2 Direction 11 requires the use of the projected unit methodology to determine the valuation results.

3.3 When determining the estimated cost of accrual as required by the Directions 27(1)(b), 27(1)(d) and 53(1), the cost has first been determined at the start and end of the relevant period based on the projected membership of the sections of the Schemes and the applicable assumptions at those times. The overall cost of accrual for the period is then determined as the average cost of accrual at the start and end, weighted by the expected present value of the payroll at these times. This approach should be reasonable provided that changes to the membership are spread out evenly across the period. This may not be the case for the Firefighters' schemes over 2015-19. In particular the tapered group may not reduce steadily and there may not be steady levels of recruitment over this period. We have therefore split the period by considering 2015-17 and 2017-19 separately.

3.4 Directions 14, 16 and 17 specify some modifications to the financial assumptions in the short term. An implication of the short term modifications is that the projected unit methodology is expected to result in an increasing standard contribution rate over successive time periods. For example the estimated cost of accrual under the existing scheme is lower in 2012 than in 2015 - for a similar group of members. This effect is not immaterial for final salary benefits but has no effect on the cost cap calculation since the short term assumptions are explicitly disregarded for this purpose in Direction 53.

3.5 Non-accruing benefits such as lump sums payable on death in service or enhancements payable on ill-health retirement or death in service are recognised only at the time of assumed retirement or death.

3.6 The cost of double accrual for later periods of service in the 1992 scheme has been spread uniformly from joining the scheme up to the point of exit, or 30 years' service if earlier.

3.7 The cost of accrual for members in the 2015 scheme has been determined using their salary at the time of accrual with revaluation to retirement (rather than the average revalued salary over all service).

4 Approximations and miscellaneous items

Guaranteed Minimum Pensions (GMPs)

4.1 The Schemes are not liable for the full indexation of GMPs and so makes savings on GMPs compared to the cost of providing a fully indexed pension. In general, individual GMP data could not be supplied for members where the GMP was not in payment and so the savings for the Schemes have been estimated in an approximate and appropriate manner.

4.2 The approximation is based on the ratio of GMP to total pension liability for pensioners who are old enough for GMP to be in payment. This provides an indication of the total GMP that will have been accrued in the Schemes. The approximation is intended to be unbiased but its accuracy will be affected by changes in scheme size and earnings profile over the period of GMP accrual (1978-1997).

4.3 The total estimated savings are a little under 1% of total liabilities and allowance for this serves to reduce the contributions by a little over 1% of pensionable pay, compared with valuing all benefits as full indexed pensions. All of the savings have been attributed to pensioner members because the clear majority of GMP will have been accrued by firefighters who have now retired.

4.4 Any difference between the estimated saving and a more accurate assessment using more complete data will feed into the surplus or deficit at subsequent valuations and impact on the employer contribution rate then determined in relation to addressing the surplus or deficit.

4.5 The estimation of the GMP savings has no impact on the calculation of the employer cost cap. Provided accurate GMP data is available as at 31 March 2015, the approximation will not apply to the starting value of the cost cap fund and so will not impact on the operation of the cost cap mechanism.

Notional earnings cap

4.6 The earnings cap only applies in limited circumstances in the 1992 scheme and the 2006 scheme. No allowance has been made for its impact as this would not be material to the valuation results. There will be no earnings cap in the 2015 scheme.

Public Service Transfer Club (PSTC)

4.7 Costs arise on final salary PSTC transfers because the transfer value received is usually less than the cost of providing the service credit granted. Most PSTC transfers over 2015-19 will be transfers of final salary benefits. Allowance has been made for the potential costs of these transfers by assuming that the level of transfers continues at recent levels and the cost of providing the service credit is about twice the transfer value received. Overall, the additional costs are equivalent to about 0.3% of pensionable pay. HMT has confirmed that these costs also apply to the calculation of the cost cap.

4.8 In the longer term, PSTC transfers will increasingly be transfers of career average benefits. The exact form of these transfers and distribution of the costs involved has yet to be determined. However, it is likely that PSTC costs to the Schemes will fall over time.

Expenses

4.9 No allowance has been made for expenses. Expenses are met from outside the Schemes' valuation framework.

General pay increases

4.10 General pay increases and promotional increases are assumed to occur on 1 July each year. For example, in accordance with Direction 17, this would mean an increase of 1.8% on 1 July 2012.

Final pensionable pay

4.11 We have assumed that firefighters' average pensionable pay for the purpose of calculating final salary benefits is their pay in the final year of service. No explicit allowance has been made for the impact of prior years' earnings resulting in higher final pensionable pay for particular members since this effect is not expected to impact a material number of members. This simplification has no impact on the calculation of the employer cost cap.

Promotional pay awards

4.12 No allowance has been made for the impact of any freeze on promotional/progression salary increases.

Dependants' pensions

4.13 No allowance has been made for short term dependant pensions or children's pension (other than those already in payment), on grounds of immateriality.

Early retirement factors

4.14 Firefighters who retire aged between 55 and 60 will have their 2015 scheme pension actuarially reduced to allow for early payment before normal retirement age. The pension is reduced so the capitalised value of future payments from retirement are equal to the value of the unreduced pension deferred until age 60. We have modelled these reductions using the factors that might be expected to apply at retirement.

Deferred members

4.15 We have assumed that all deferred members will claim their benefits. This includes former firefighters who are now older than their deferred pension age. If these members never claim their benefits a slight surplus would emerge in the notional fund over time. However there are few such members and allowance for this possibility would not have a material effect on the valuation results. This has no impact on the employer cost cap.

4.16 We have not made any allowance for current deferred members returning to active service. We do not expect this simplification to materially affect the results of the valuations.

State Pension Age

4.17 Where members have a state pension age which is not on their birthday, our calculations assume that the 2015 scheme benefits are payable from the birthday nearest their State Pension Age. We do not expect this simplification to materially affect the results of the valuation.

Added years

4.18 In certain circumstances firefighters can purchase additional years of pensionable service. These have been modelled in the same manner as other active member benefits.