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## 1 Introduction

- 1.1 This report is addressed to the Home Office. It is also being made available to the Firefighters' Pension Scheme Advisory Board in England as part of the consultation process relating to the actuarial valuation which is being carried out as at 31 March 2016.
- 1.2 Pension scheme membership data for the members of the 1992 Scheme, 2006 Scheme and 2015 Scheme, referred to collectively in this report as 'the Schemes' is required for the actuarial valuation of the Schemes as at 31 March 2016, carried out in accordance with The Public Service Pensions (Valuations and Employer Cost Cap) Directions 2014 (as amended) ('the Directions').
- 1.3 The membership data is used for the following:
- > To calculate valuation results including the uncorrected employer contribution rate, corrected employer contribution rate and past service liability (all valuation data);
  - > To assess the initial cost cap fund (membership data as at 31 March 2015).
  - > To assess elements of the Schemes' demographic experience in order to recommend assumptions for the valuation (movements data 31 March 2012 to 31 March 2016).
- 1.4 The results of the valuation are critically dependent on the quality and correctness of the data used.
- 1.5 The purposes of this report are:
- > to discuss and summarise the membership data provided, and any checks and adjustments made to the data;
  - > to enable users of the valuation report to understand the underlying membership data used in the valuation and any issues relating to it; particularly those issues that may impact on the valuation results; and
  - > to discuss and summarise the movements data provided and to be used to inform decisions around scheme specific assumptions to be used for the valuation.
- 1.6 All member data provided and discussed in this report was supplied to GAD either directly by the individual Fire and Rescue Authorities ('FRAs') or via their appointed administrators. Supplementary financial information for the Schemes was provided by the Home Office for independent checking purposes.
- 1.7 In preparing this report, GAD has relied on data and other information supplied by the FRAs as described in the report. Any checks that GAD has made on this data and information are limited to those described in the report, including any checks on the overall reasonableness and consistency of the data. These checks do not represent a full independent audit of the data supplied and do not by themselves confirm or guarantee the overall quality or correctness of the data. In particular, GAD has relied on the general completeness and accuracy of the information supplied without independent verification.



- 1.8 Summaries of the membership and movements data used for the valuation are provided in Section 2 of this report with further information in Appendices A and B of this report respectively.
- 1.9 A number of adjustments and assumptions were necessary to the data to enable the valuation to be completed. In our view these adjustments and assumptions are reasonable and appropriate for the purpose of this actuarial valuation. However, it should be noted that the valuation results might have been different if more complete and reliable data had been available. Given the potential impact of data deficiencies, we recommend that steps are taken to improve the valuation data, especially in respect of the data held for retained members and the data provided for the experience analysis.
- 1.10 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.
- 1.11 We are content for the Home Office 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.
- 1.12 Third parties whose interests may differ from those of the Home Secretary should be encouraged to seek their own actuarial advice where appropriate. Other than to the Home Secretary, 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.
- 1.13 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.

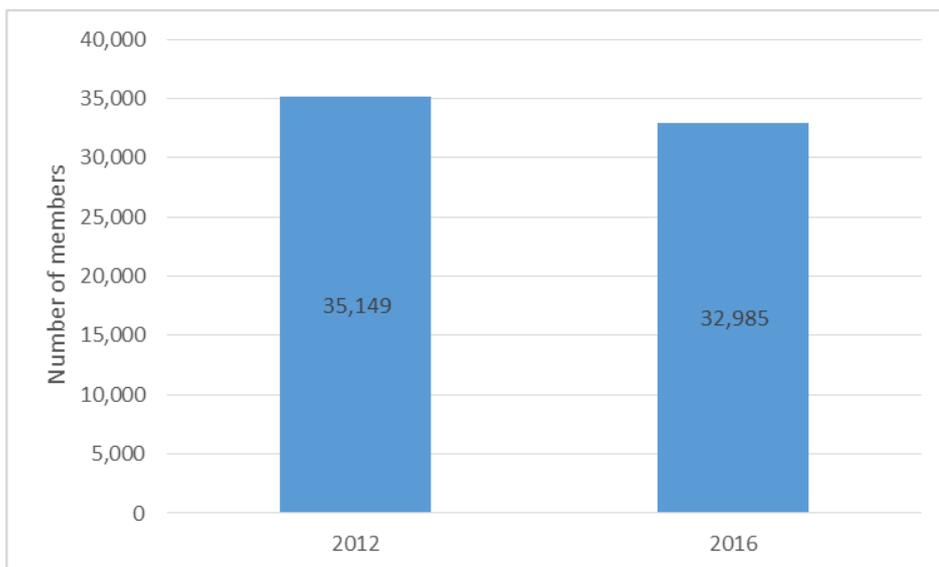


## 2 Summary of data used for the valuation

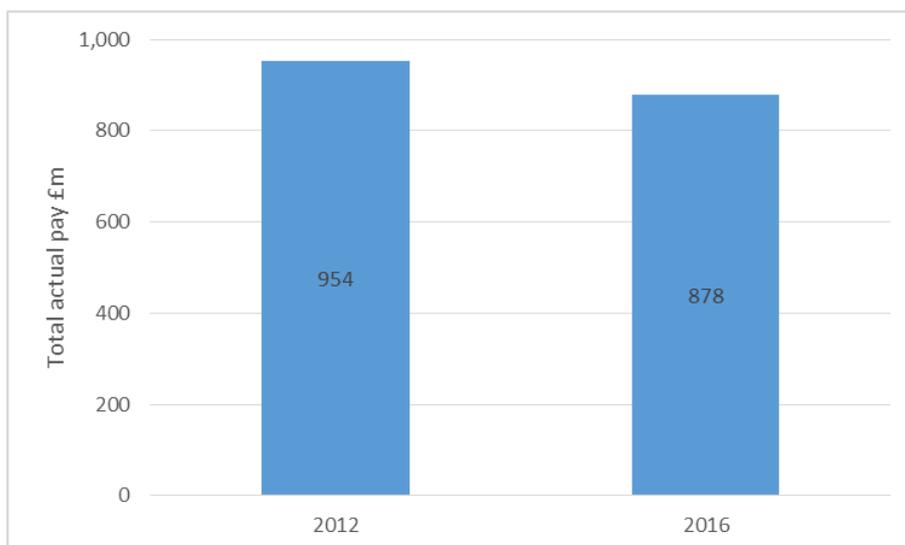
### Membership data at 31 March 2016

- 2.1 The membership data to be used for the purposes of the 2016 valuation is summarised below together with the data used for the 2012 valuation. Given the low proportion of female members<sup>1</sup> we have not provided a male/female split in the summarised data; full details can be found in the detailed tables set out in Appendix A.

**Chart 2.1: Number of active members**



**Chart 2.2: Active total actual pay<sup>2</sup>**

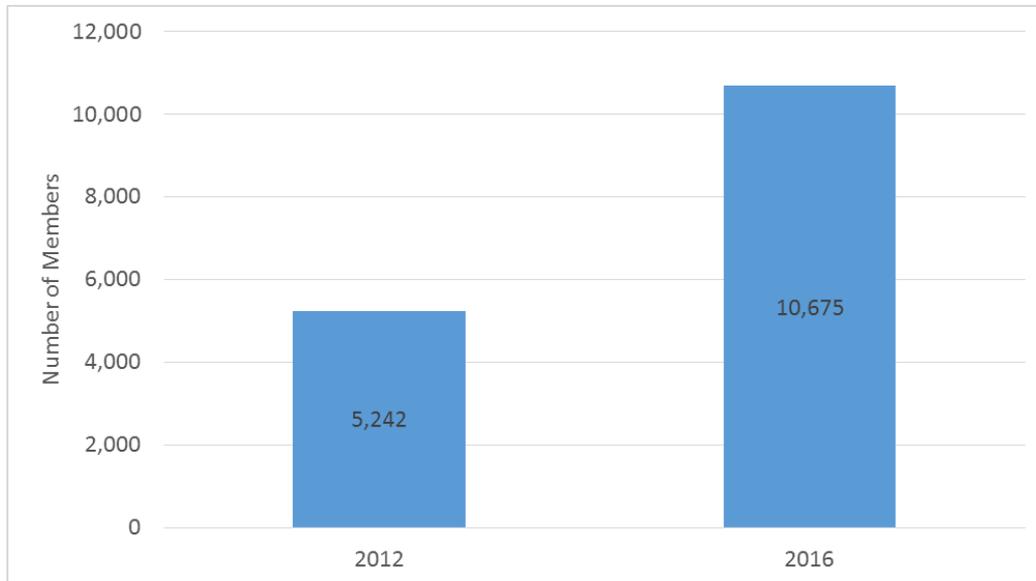


<sup>1</sup> Fewer than 1% of pensioner members and fewer than 5% of active members are female.

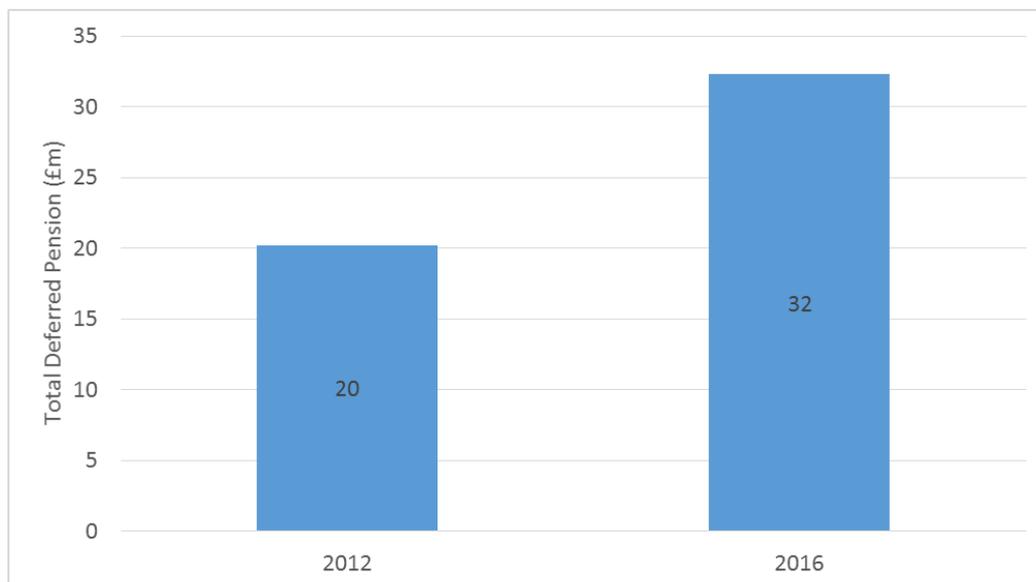
<sup>2</sup> This is the actual pensionable pay payable to members, ie it is not a full time equivalent.



**Chart 2.3: Number of deferred members**



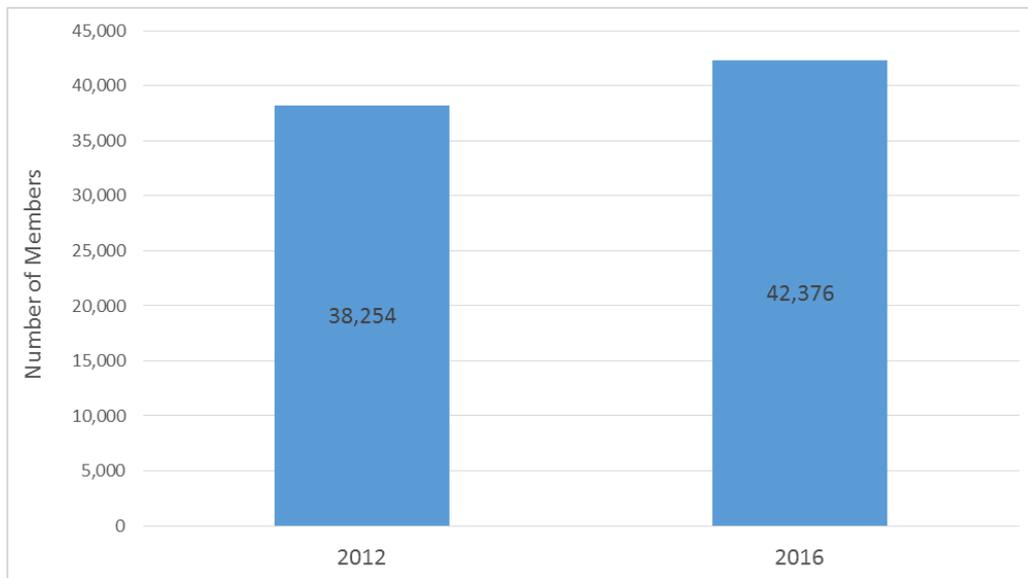
**Chart 2.4: Total deferred pension<sup>3</sup>**



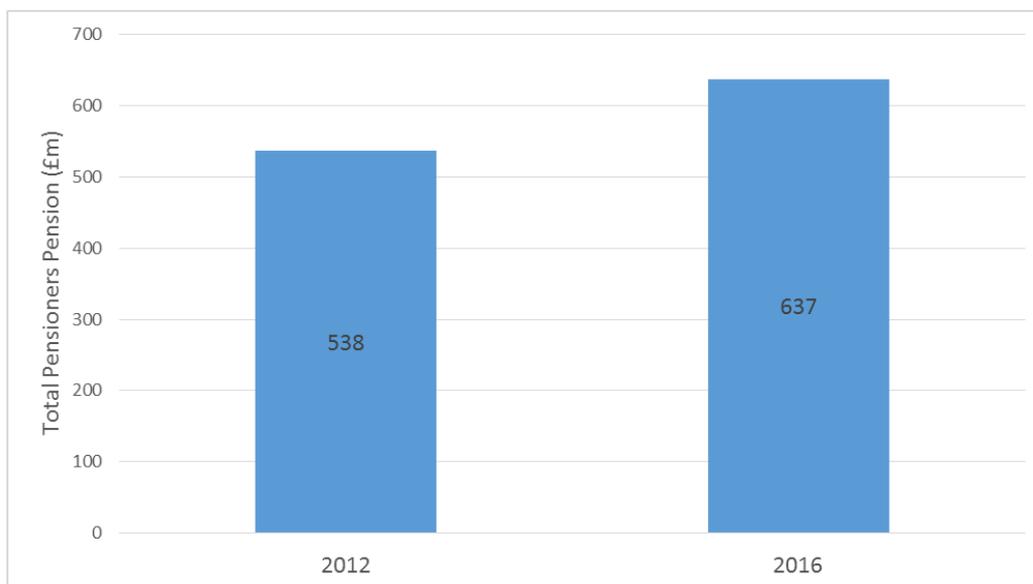
<sup>3</sup> Including pension increases awarded in April following extract date.



**Chart 2.5: Number of pensioners and dependants<sup>4</sup>**



**Chart 2.6: Total pension in payment (pensioners and dependants)<sup>4, 5</sup>**



2.2 The graphs above show a decrease between 2012 and 2016 in the active headcount and total salary roll. There has been an increase between 2012 and 2016 in the deferred, pensioner and dependant membership by both headcount and total pension.

<sup>4</sup> Dependant children pensions are not included in the figures shown. There were 351 of these pensions in 2016.

<sup>5</sup> Including pension increases awarded in April following extract date.



- 2.3 Around 86,000 records were provided to GAD across all three membership categories (active, deferred and pensioner) as at 31 March 2016. Checks were applied to these records to ensure key data items had been provided and were reliable for valuation purposes. Records with key data items either missing or unreliable were excluded and remaining data uprated, where appropriate. This approach implicitly assumes that the records with missing/unreliable data have the same average profile as the complete/reliable records. The derivation of the uprating factors and the checks and adjustments applied to the data are explained further in the next section of this report. The overall uprating factors applied to each category of member are shown below with the comparative factors at 2015.

**Table 2.1: Uprating factors**

	<b>Uprating factor</b>	<b>Uprating factor</b>
	<b>2016</b>	<b>2015</b>
Active members	1.06	1.05
Deferred members	1.01	n/a
Pensioners	1.01	n/a
<b>Total membership</b>	<b>1.03</b>	<b>1.05</b>

- 2.4 Making assumptions about missing data and allowing for known members with unusable data by uprating introduces uncertainty into the valuation results. Appendix G gives an indication of the potential level of uncertainty introduced by the approach taken to missing or unreliable membership data.

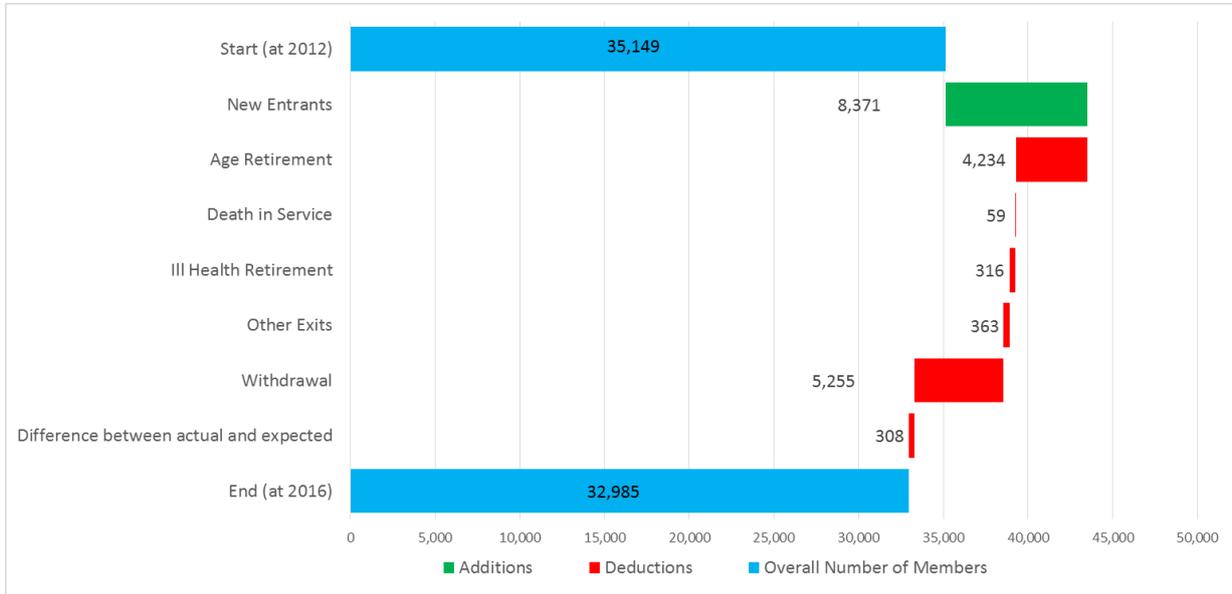
#### **Movements data 31 March 2012 to 31 March 2016**

- 2.5 The movements data is used for the purposes of informing the demographic assumptions to be used for the 2016 valuation. It is also used in conjunction with the membership data at both 2016 and 2015 to determine an element of the cost cap calculation called the Cost Cap Net Leavers Liability. The graphs below show a reconciliation of the movements between 2012 and 2016. The underlying numbers and some further information are set out in Appendix B. Appendix G gives an indication of the potential level of uncertainty introduced into the valuation results owing to missing or unreliable movements data.
- 2.6 The analysis of the movement data excluded data from FRAs for which the movement data either:
- > did not appear credible; or
  - > did not show a reasonable reconciliation with the membership data as at 2012 and 2016.

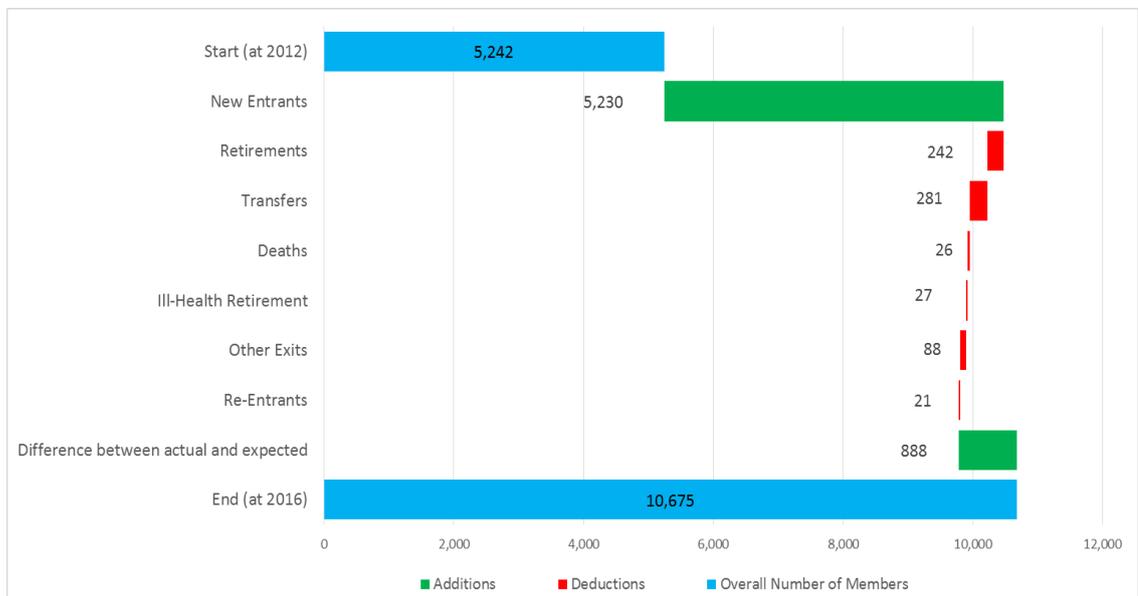
The graphs below show the movement data before these exclusions were made and further details are provided in Appendix B.



**Chart 2.7: Active membership reconciliation**



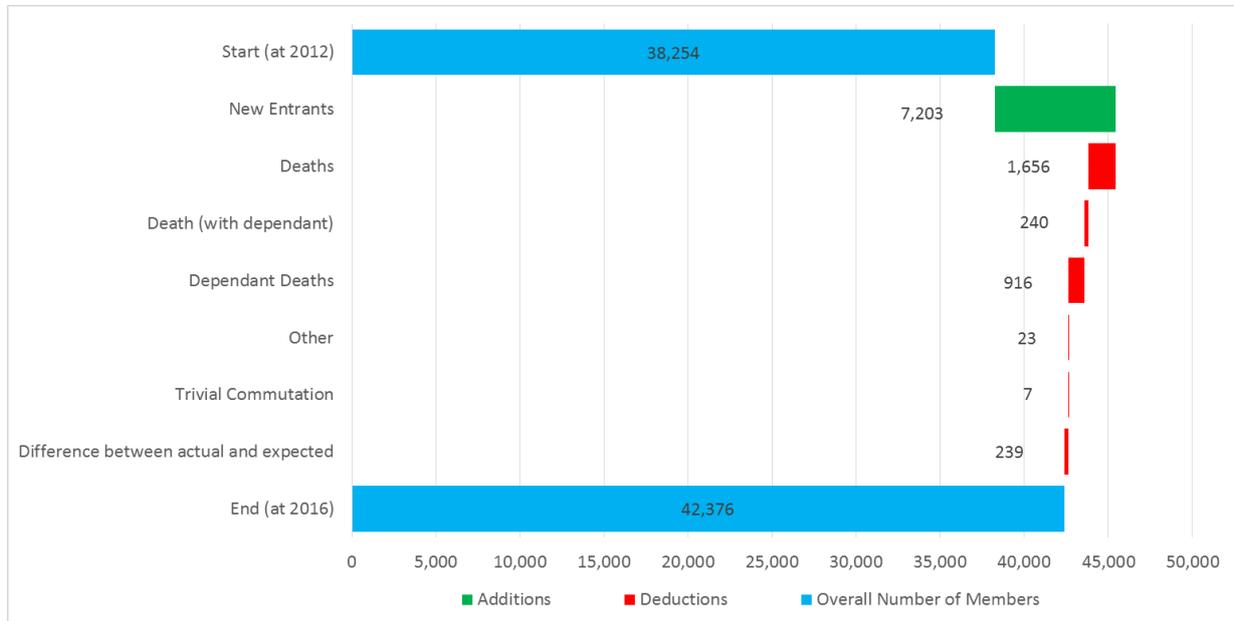
**Chart 2.8: Deferred membership reconciliation**



Some of the difference between the actual and expected numbers of members at 31 March 2016 is due to new Special Members of the 2006 Scheme, who are not all identified as new entrants in the above reconciliation.



**Chart 2.9: Pensioner (inc dependant) membership reconciliation<sup>6</sup>**



<sup>6</sup> Note that the number of children's pensions is excluded from the reconciliation.



### 3 Data provided and checks and adjustments made

#### Membership data at 31 March 2016 and 31 March 2015

- 3.1 Individual member data was supplied for all active members, deferred members and pensioner (including dependant) members of the Schemes at the valuation date. The individual data items supplied which are critical to the valuation calculations are summarised in Appendix C.
- 3.2 The graph below shows the total number of records provided, the number of valid records (ie the member was present at the valuation date), the number of records after records with missing or unreliable data were excluded and the number of records after rating up for the excluded data.

**Chart 3.1: Summary of data provided and excluded**



#### Checks made and adjustments applied

- 3.3 All key data items were checked against the specification requested for both completeness and consistency. Most FRAs were able to provide most of the data items requested.
- 3.4 The data provided in respect of one FRA was not in a readily accessible format. A global uprating factor of 0.35% was instead applied to all active, deferred and pensioner data to reflect the size of this data set. This explains why the number of records after rate up (in Chart 3.1 above) is higher than the number of records provided in some cases.
- 3.5 Based on the checks applied some records were excluded from the dataset for valuation purposes. Uprating factors were determined for each membership category equal to the ratio of known valid records and the number of records with adequate data. Implicitly this uprating approach assumes that excluded records have the same average profile (ie age, sex, pay, service) as included records. Tables 3.1 and 3.2 shows the derivation of the uprating factors<sup>7</sup>.

<sup>7</sup> In practice uprating factors are determined for each identifiable valuation group.



**Table 3.1: Derivation of uprating factors (31 March 2016)**

31 Mar 2016	Number of valid records (A)	Number of exclusions rated up	Number of members after exclusions (B)	Uprating factor (A/B)	Global Uprating Factor <sup>+</sup>	Number of members after rate ups
Active members	32,870	1,657	31,213	1.053	1.0035	32,985
Deferred members	10,638	100	10,533 *	1.010	1.0035	10,675
Pensioners	42,233	74	42,159	1.002	1.0035	42,376
<b>Total membership</b>	<b>85,741</b>	<b>1,831</b>	<b>83,905 *</b>	<b>1.022</b>	<b>1.0035</b>	<b>86,036</b>

+ The global uprating factor of 1.0035 was applied to all membership categories to adjust for the data in respect of one FRA which was not provided in a readily accessible format.

\* A further 5 deferred records were also excluded but not uprated as all records within their respective group were excluded and so no remaining record could be readily uprated. This is not expected to have a material impact on the valuation results.

**Table 3.2: Derivation of uprating factors (31 March 2015)**

31 Mar 2015	Number of valid records (A)	Number of exclusions rated up	Number of members after exclusions (B)	Uprating factor (A/B)	Global Uprating Factor <sup>+</sup>	Number of members after rate ups
Active members	33,601	1,495	32,106	1.047	1.000	33,601

+ A global uprating factor was not required for the data as at 31 March 2015, because all FRAs provided data in a readily accessible format at this date.

### **Movements data – 31 March 2012 to 31 March 2016**

- 3.6 The movements data is analysed and used to inform how assumptions of future members' behaviours should be set for the valuation. The key data items provided for member movements are set out in Appendix D.

### **Independent data check**

- 3.7 The Home Office provided financial data for the Schemes which has been used to perform independent checks on the dataset supplied. These checks and the data used are set out in Appendix E.

### **Benefit information**

- 3.8 A summary of the benefits provided to members of the Schemes is given in Appendix H. The only uncertainty about the form of benefits that the Schemes are liable to provide is the potential requirement for sex equalisation of GMPs. No allowance has been made for this in the valuation calculations.



## Appendix A: Summary of membership data

### Active members

**Table A1: Summary data for 1992 Scheme active members as at 31 March 2016: Split by protection status**

Protection (i)	Number of members	Total Pensionable Salary (FTE <sup>8</sup> ) £m	Average Pensionable Salary (FTE) £	Total Actual Pay £m	Average Age (ii)	Average Service (iii)	Total 2015 Scheme pension £000
Full protection	5,151	190.6	36,995	190.6	51.7	25.1	0
Tapered protection	4,481	161.1	35,952	160.9	47.1	22.0	177
Unprotected	7,548	255.0	33,786	256.7	40.0	15.6	4,188
<b>All 1992 Scheme Members</b>	<b>17,180</b>	<b>606.7</b>	<b>35,314</b>	<b>608.2</b>	<b>45.6</b>	<b>20.1</b>	<b>4,365</b>

- i. This table includes tapered protection and unprotected members who had moved to the 2015 Scheme by 31 March 2016. The final column shows the total 2015 Scheme pension accrued for these members.
- ii. Weighted by actual salary.
- iii. Active service up to the valuation date, including transferred in service.

<sup>8</sup> Full time equivalent.



**Table A2: Summary data for 2006 Scheme (Standard) active members as at 31 March 2016: Split by protection status**

Protection (i)	Status	Number of members	Total Pensionable Salary (FTE) £m	Average Pensionable Salary (FTE) £	Total Actual Pay £m	Average Age (ii)	Average Service (iii)	Total 2015 Scheme pension £000
Full protection	Regular	99	3.4	34,289	3.0	57.2	8.1	1
	Retained	290	9.1	31,469	2.8	57.3	2.8	0
	<i>Total</i>	<b>389</b>	<b>12.5</b>	<b>32,189</b>	<b>5.9</b>	<b>57.2</b>	<b>4.2</b>	<b>1</b>
Tapered protection	Regular	160	5.3	33,345	4.9	52.0	9.7	4
	Retained	366	11.2	30,696	3.2	51.8	2.7	5
	<i>Total</i>	<b>526</b>	<b>16.6</b>	<b>31,500</b>	<b>8.2</b>	<b>51.9</b>	<b>4.8</b>	<b>9</b>
Unprotected	Regular	5,219	163.9	31,399	160.6	35.8	7.6	2,593
	Retained	6,853	193.4	28,218	57.6	36.6	2.2	781
	<i>Total</i>	<b>12,072</b>	<b>357.3</b>	<b>29,593</b>	<b>218.2</b>	<b>36.0</b>	<b>4.5</b>	<b>3,374</b>
<b>All 2006 Scheme (Standard) Members</b>		<b>12,987</b>	<b>386.4</b>	<b>29,748</b>	<b>232.2</b>	<b>37.1</b>	<b>4.5</b>	<b>3,384</b>

- i. This table includes tapered protection and unprotected members who had moved to the 2015 Scheme by 31 March 2016. The final column shows the total 2015 Scheme pension accrued for these members.
- ii. Weighted by actual salary.
- iii. Active service up to the valuation date, including transferred in service.



**Table A3: Summary data for 2006 Scheme (Special) active members as at 31 March 2016: Split by protection status**

Protection (i)	Status	Number of members	Total Pensionable Salary (FTE) £m	Average Pensionable Salary (FTE) £	Total Actual Pay £m	Average Age (ii)	Average Service (iii)	Total 2015 Scheme pension £000
Full protection	Retained	671	21.4	31,903	7.0	55.1	5.3	0
Tapered protection	Retained	256	8.0	31,244	2.5	48.6	4.7	4
Unprotected	Retained	534	16.5	30,935	6.6	42.1	5.3	64
<b>All 2006 Scheme (Special) Members</b>		<b>1,461</b>	<b>45.9</b>	<b>31,434</b>	<b>16.1</b>	<b>48.7</b>	<b>5.2</b>	<b>68</b>

- i. This table includes tapered protection and unprotected members who had moved to the 2015 Scheme by 31 March 2016. The final column shows the total 2015 Scheme pension accrued for these members.
- ii. Weighted by actual salary.
- iii. Active service up to the valuation date, including transferred in service.



**Table A4: Summary data for 2015 Scheme active members (new joiners since 1 April 2015) as at 31 March 2016**

Protection	Status	Number of members	Total Pensionable Salary (FTE) £m (i)	Average Pensionable Salary (FTE) £ (i)	Total Actual Pay £m	Average Age (ii)	Average Service (iii)	Total 2015 Scheme pension £000
Unprotected	Regular	662	n/a	n/a	12.6	31.8	0.5	87
	Retained	695	n/a	n/a	8.4	36.8	0.5	38
<b>All 2015 Scheme Members</b>		<b>1,357</b>	<b>n/a</b>	<b>n/a</b>	<b>21.0</b>	<b>33.8</b>	<b>0.5</b>	<b>125</b>

- i. A full time equivalent pensionable salary is not used for the valuation of 2015 Scheme benefits.
- ii. Weighted by actual salary.
- iii. Active service up to the valuation date.



**Table A5: All active members split by protection status**

Protection	Status	Number of members	Total Pensionable Salary (FTE) £m (ii)	Average Pensionable Salary (FTE) £ (ii)	Total Actual Pay £m	Average Age (iii)	Average Service (iv)	Total 2015 Scheme pension £000
Full protection	Regular	5,250	194.0	36,949	193.6	51.8	24.8	1
	Retained	961	30.5	31,772	9.8	55.7	4.6	0
	<i>Total</i>	<i>6,212</i>	<i>224.5</i>	<i>36,147</i>	<i>203.4</i>	<i>52.0</i>	<i>21.7</i>	<i>1</i>
Tapered protection	Regular	4,640	166.4	35,862	165.9	47.2	21.6	182
	Retained	622	19.2	30,921	5.8	50.4	3.5	9
	<i>Total</i>	<i>5,262</i>	<i>185.6</i>	<i>35,278</i>	<i>171.6</i>	<i>47.3</i>	<i>19.4</i>	<i>191</i>
Unprotected (i)	Regular	13,430	418.9	32,810	429.9	38.2	11.7	6,868
	Retained	8,081	209.9	28,415	72.6	37.2	2.2	883
	<i>Total</i>	<i>21,511</i>	<i>628.8</i>	<i>31,198</i>	<i>502.5</i>	<i>38.1</i>	<i>8.2</i>	<i>7,751</i>
<b>All Members</b>	<b>Total</b>	<b>32,985</b>	<b>1,039.0</b>	<b>32,849</b>	<b>877.5</b>	<b>43.1</b>	<b>12.5</b>	<b>7,943</b>

- i. Including 2015 Scheme members who joined since 1 April 2015.
- ii. These figures exclude 2015 Scheme members who joined since 1 April 2015.
- iii. Weighted by actual salary.
- iv. Active service up to the valuation date, including transferred in service.



**Table A6: 1992 Scheme active data as at 31 March 2016: Comparison with data as at 31 March 2012**

	2012					2016						
	Number of members	Total Pensionable Salary (FTE) £m	Average Salary (FTE) £	Average Age (i)	Average Service (ii)	Number of members	Total Pensionable Salary (FTE) £m	Average Salary (FTE) £	Average Age (i)	Average Service (ii)	Total 2015 Scheme Pension £000	Total Actual Pay £m
Male	21,649	729.0	33,674	43.4	18.4	16,624	587.7	35,355	45.7	20.3	4,158	589.3
Female	647	20.7	31,994	38.6	12.4	556	18.9	34,097	42.3	15.9	207	18.9
<b>Total</b>	<b>22,296</b>	<b>749.7</b>	<b>33,625</b>	<b>43.3</b>	<b>18.2</b>	<b>17,180</b>	<b>606.7</b>	<b>35,314</b>	<b>45.6</b>	<b>20.1</b>	<b>4,365</b>	<b>608.2</b>

- i. Weighted by full-time equivalent pensionable pay
- ii. Active service up to the valuation date plus transferred-in service.



**Table A7: 2006 Scheme (Standard) active data as at 31 March 2016: Comparison with data as at 31 March 2012**

	2012					2016						
	Number of members	Total Pensionable Salary (FTE) £m	Average Salary (FTE) £	Average Age (i)	Average Service (ii)	Number of members	Total Pensionable Salary (FTE) £m (i)	Average Salary (FTE) £	Average Age (i)	Average Service (ii)	Total 2015 Scheme Pension £000	Total Actual Pay £m
Regular M	4,799	137.8	28,714	33.4	4.4	5,006	157.6	31,479	36.9	7.7	2,362	153.7
Regular F	500	14.1	28,200	32.3	4.1	472	15.0	31,812	35.6	7.5	237	14.9
Retained M	7,213	198.5	27,520	39.2	1.2	7,155	204.0	28,510	38.6	2.2	746	60.9
Retained F	341	8.7	25,513	35.7	1.1	354	9.8	27,546	36.2	2.1	40	2.8
<b>Total</b>	<b>12,853</b>	<b>359.0</b>	<b>27,939</b>	<b>36.6</b>	<b>2.5</b>	<b>12,987</b>	<b>386.4</b>	<b>29,748</b>	<b>37.7</b>	<b>4.5</b>	<b>3,384</b>	<b>232.2</b>

i. Weighted by full-time equivalent pensionable pay at the relevant date.

ii. Active service in the scheme, plus transferred-in service.



**Table A8: 2006 Scheme (Special) active data as at 31 March 2016: Comparison with data as at 31 March 2012**

	2012					2016						
	Number of members (i)	Total Pensionable Salary (FTE)	Average Salary (FTE)	Average Age	Average Service	Number of members	Total Pensionable Salary (FTE) £m	Average Salary (FTE) £	Average Age (ii)	Average Service (iii)	Total 2015 Scheme Pension £000	Total Actual Pay £m
Male	-	-	-	-	-	1,432	45.0	31,457	49.6	5.2	67	15.9
Female	-	-	-	-	-	29	0.9	30,271	46.6	4.2	1	0.2
<b>Total</b>	-	-	-	-	-	<b>1,461</b>	<b>45.9</b>	<b>31,434</b>	<b>49.5</b>	<b>5.2</b>	<b>68</b>	<b>16.1</b>

- i. There were no special members in 2012.
- ii. Weighted by full time equivalent pensionable pay
- iii. Active service up to the valuation date, including transferred in service.



**Table A9: 2015 Scheme actives data as at 31 March 2016 (new joiners since 1 April 2015): Comparison with data as at 31 March 2012**

	2012					2016						
	Number of members (i)	Total Pensionable Salary (FTE)	Average Salary (FTE)	Average Age	Average Service	Number of members	Total Pensionable Salary (FTE) £m (ii)	Average Salary (FTE) £ (ii)	Average Age (ii)	Average Service (iii)	Total 2015 Scheme Pension £000	Total Actual Pay £m
Retained M	-	-	-	-	-	641	n/a	n/a	n/a	0.5	36	7.8
Retained F	-	-	-	-	-	54	n/a	n/a	n/a	0.5	2	0.5
Regular M	-	-	-	-	-	619	n/a	n/a	n/a	0.5	80	11.8
Regular F	-	-	-	-	-	43	n/a	n/a	n/a	0.5	7	0.9
<b>Total</b>	-	-	-	-	-	<b>1,357</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>0.5</b>	<b>125</b>	<b>21.0</b>

- i. There were no 2015 Scheme members in 2012.
- ii. A full time equivalent pensionable salary is not used for the valuation of 2015 Scheme benefits, so figures are not shown for the FTE or average age weighted by FTE.
- iii. Active service up to the valuation date.



**Table A10: Summary data for all active members as at 31 March 2016: Comparison with data as at 31 March 2012**

	2012					2016						
	Number of members	Total Pensionable Salary (FTE) £m	Average Salary (FTE) £	Average Age (i)	Average Service (ii)	Number of members	Total Pensionable Salary (FTE) £m	Average Salary (FTE) £	Average Age (iii)	Average Service (ii)	Total 2015 Scheme Pension £000	Total Actual Pay £m
Male	33,661	1,065.1	31,643	41.3	12.7	31,476	994.4	32,907	43.0	12.7	7,450	839.4
Female	1,488	43.6	29,259	36.0	7.0	1,509	44.6	31,609	38.8	8.8	493	38.1
<b>Total</b>	<b>35,149</b>	<b>1,108.7</b>	<b>31,543</b>	<b>41.1</b>	<b>12.5</b>	<b>32,985</b>	<b>1,039.0</b>	<b>32,849</b>	<b>42.8</b>	<b>12.5</b>	<b>7,943</b>	<b>877.5</b>

- i. Weighted by full-time equivalent pensionable pay at the relevant date.
- ii. Active service in the scheme, plus transferred-in service.
- iii. Weighted by full time equivalent pay. Does not include 2015 scheme members.



**Table A11: Active membership as at 31 March 2015**

<b>All Members</b>		<b>Number of members</b>	<b>Total Pensionable Salary (FTE) £m</b>	<b>Average Pensionable Salary (FTE) £</b>	<b>Average age (i)</b>	<b>Average Reckonable Service (ii)</b>
1992 Scheme	Regular	18,680	650.7	34,835	45.1	19.8
2006 Scheme	Regular	5,764	177.0	30,715	36.3	6.3
	Retained	9,157	261.7	28,577	39.8	1.6
<b>All Members</b>	<b>Total</b>	<b>33,601</b>	<b>1,089.4</b>	<b>32,423</b>	<b>42.4</b>	<b>12.5</b>

- i. Weighted by full time equivalent pensionable pay.
- ii. Active service up to the valuation date, including transferred in service.



## Deferreds

**Table A12: 1992 Scheme deferred members as at 31 March 2016: Comparison with data as at 31 March 2012**

	2012				2016				
	Number of members	Total Deferred Pension (i) £000	Average Pension £	Average Age (ii)	Number of members	Total Deferred Pension (i) £000	Average Pension £	Average Age (ii)	Total 2015 Scheme Pension £000
Male	2,067	15,500	7,499	46.6	2,422	20,606	8,507	47.2	34
Female	525	3,400	6,476	49.2	449	3,113	6,938	49.3	101
<b>Total</b>	<b>2,592</b>	<b>18,900</b>	<b>7,292</b>	<b>47.1</b>	<b>2,871</b>	<b>23,720</b>	<b>8,262</b>	<b>47.5</b>	<b>135</b>

**Table A13: 2006 Scheme (Standard) deferred members as at 31 March 2016: Comparison with data as at 31 March 2012**

	2012				2016				
	Number of members	Total Deferred Pension (i) £000	Average Pension £	Average Age (ii)	Number of members	Total Deferred Pension (i) £000	Average Pension £	Average Age (ii)	Total 2015 Scheme Pension £000
Male	2,425	1,100	454	39.5	6,247	5,005	801	40.8	47
Female	225	200	889	39.2	801	2,575	3,213	49.3	9
<b>Total</b>	<b>2,650</b>	<b>1,300</b>	<b>491</b>	<b>39.5</b>	<b>7,048</b>	<b>7,580</b>	<b>1,075</b>	<b>43.7</b>	<b>56</b>

- i. Including pension increases awarded in April following the valuation date.
- ii. Weighted by deferred pension.



**Table A14: 2006 Scheme (Special) deferred members as at 31 March 2016: Comparison with data as at 31 March 2012**

	2012					2016				
	Number of members (i)	Total Deferred Pension	Average Pension	Average Age		Number of members	Total Deferred Pension (ii) £000	Average Pension £	Average Age (iii)	Total 2015 Scheme Pension £000
Male	-	-	-	-	-	697	937	1,344	51.0	0
Female	-	-	-	-	-	31	28	888	46.7	0
<b>Total</b>	-	-	-	-	-	<b>729</b>	<b>965</b>	<b>1,325</b>	<b>50.9</b>	<b>0</b>

**Table A15: 2015 Scheme deferred members (new joiners since 1 April 2015) as at 31 March 2016: Comparison with data as at 31 March 2012**

	2012					2016				
	Number of members (i)	Total Deferred Pension	Average Pension	Average Age		Number of members	Total Deferred Pension (ii) £000	Average Pension £	Average Age (iii)	Total 2015 Scheme Pension £000
Male	-	-	-	-	-	26	2	87	35.5	2
Female	-	-	-	-	-	1	0	96	33.0	0
<b>Total</b>	-	-	-	-	-	<b>27</b>	<b>2</b>	<b>87</b>	<b>35.4</b>	<b>2</b>

- i. There were no deferred members of the 2006 Scheme (Special) or 2015 Scheme in 2012.
- ii. Including pension increases awarded in April following the valuation date.
- iii. Weighted by deferred pension.



**Table A16: Summary data for all deferred members as at 31 March 2016: Comparison with data as at 31 March 2012**

	2012				2016				
	Number of members	Total Deferred Pension (i) £000	Average Pension £	Average Age (ii)	Number of members	Total Deferred Pension (i) £000	Average Pension £	Average Age (ii)	Total 2015 Scheme Pension £000
Male	4,492	16,600	3,695	46.2	9,393	26,551	2,827	46.1	83
Female	750	3,600	4,800	48.7	1,282	5,716	4,457	49.3	110
<b>Total</b>	<b>5,242</b>	<b>20,200</b>	<b>3,853</b>	<b>46.6</b>	<b>10,675</b>	<b>32,267</b>	<b>3,023</b>	<b>46.7</b>	<b>193</b>

- i. Including pension increases awarded in April following the valuation date.
- ii. Weighted by deferred pension.



## Pensioners

**Table A17: Summary data for all pensioner members as at 31 March 2016: Comparison with data as at 31 March 2012**

		2012				2016				
		Number of members	Total Pension (i) £m	Average Pension £	Average Age (ii)	Number of members	Total Pension (i) £m	Average Pension £	Average Age (ii)	Total 2015 Scheme Pension £000
Age Retirement	Male	17,254	309.8	17,955	62.3	20,508	378.5	18,457	63.3	0
	Female	36	0.2	5,556	66.7	44	0.4	8,924	59.4	0
	<i>Total</i>	<i>17,290</i>	<i>310.0</i>	<i>17,929</i>	<i>62.3</i>	<i>20,552</i>	<i>378.9</i>	<i>18,437</i>	<i>63.2</i>	<i>0</i>
Ill-Health Retirement	Male	15,418	192.1	12,459	64.4	15,903	213.8	13,444	67.0	1
	Female	52	0.3	5,769	49.7	85	0.6	6,848	53.3	0
	<i>Total</i>	<i>15,470</i>	<i>192.4</i>	<i>12,437</i>	<i>64.4</i>	<i>15,988</i>	<i>214.4</i>	<i>13,409</i>	<i>67.0</i>	<i>1</i>
Dependants (iii)	Male	218	0.7	3,211	34.1	17	0.1	6,504	66.5	0
	Female	5,620	35.4	6,299	72.3	5,819	43.8	7,521	73.6	6
	<i>Total</i>	<i>5,838</i>	<i>36.1</i>	<i>6,184</i>	<i>71.6</i>	<i>5,836</i>	<i>43.9</i>	<i>7,518</i>	<i>73.6</i>	<i>6</i>
<b>All</b>	<b>Male</b>	<b>32,890</b>	<b>502.6</b>	<b>15,281</b>	<b>63.0</b>	<b>36,428</b>	<b>592.4</b>	<b>16,263</b>	<b>64.6</b>	<b>1</b>
	<b>Female</b>	<b>5,708</b>	<b>35.9</b>	<b>6,277</b>	<b>72.1</b>	<b>5,948</b>	<b>44.7</b>	<b>7,521</b>	<b>73.3</b>	<b>6</b>
	<b>Total</b>	<b>38,598</b>	<b>538.5</b>	<b>13,952</b>	<b>63.6</b>	<b>42,376</b>	<b>637.2</b>	<b>15,036</b>	<b>65.3</b>	<b>7</b>

i. Including pension increases awarded in April following the valuation date, where applicable.

ii. Weighted by pension.

iii. Children are included in the 2012 data, but excluded from the 2016 data. There were 351 children at 2016.



Chart A1: Active Members full-time equivalent pensionable pay by age

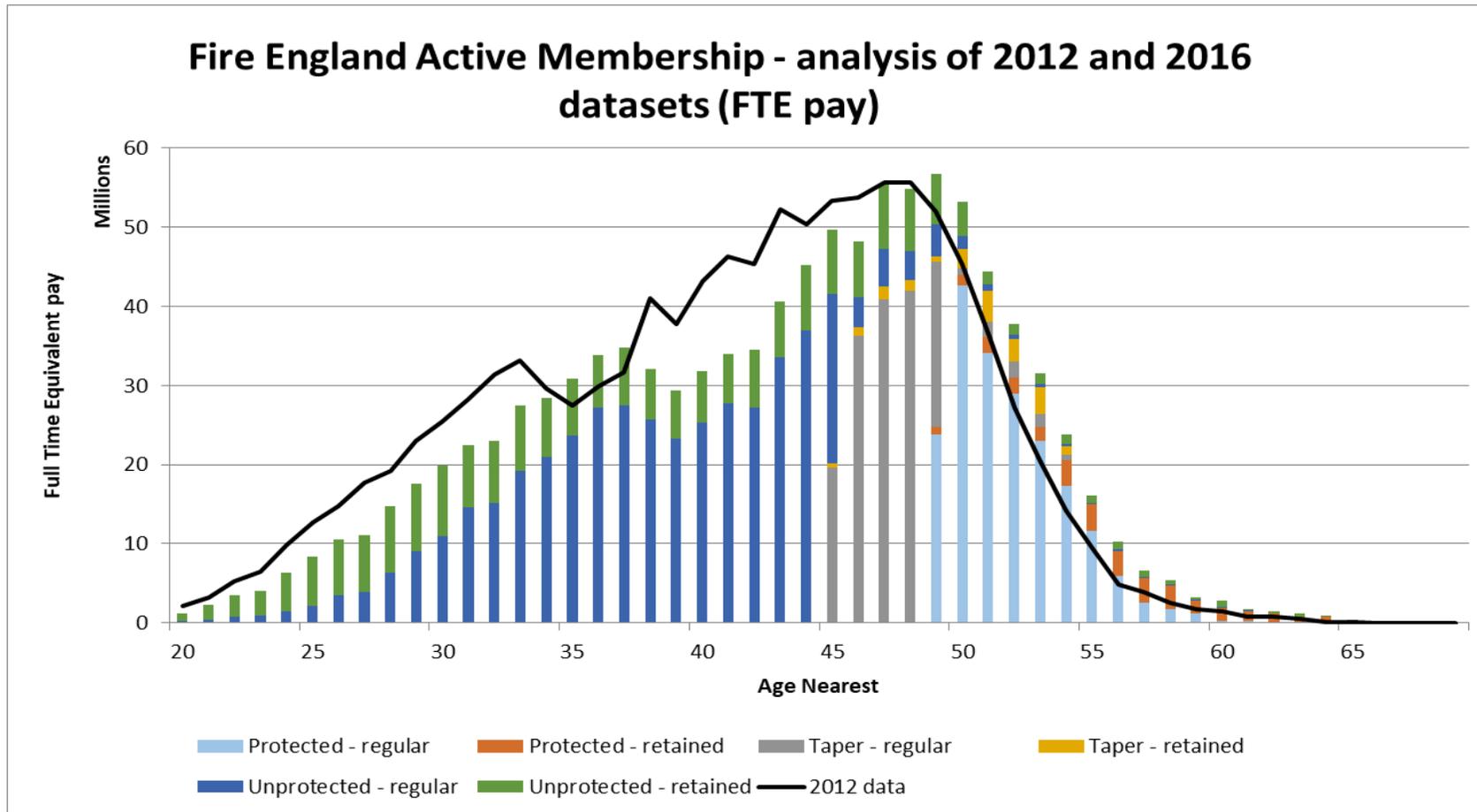




Chart A2: Deferred pension data by age

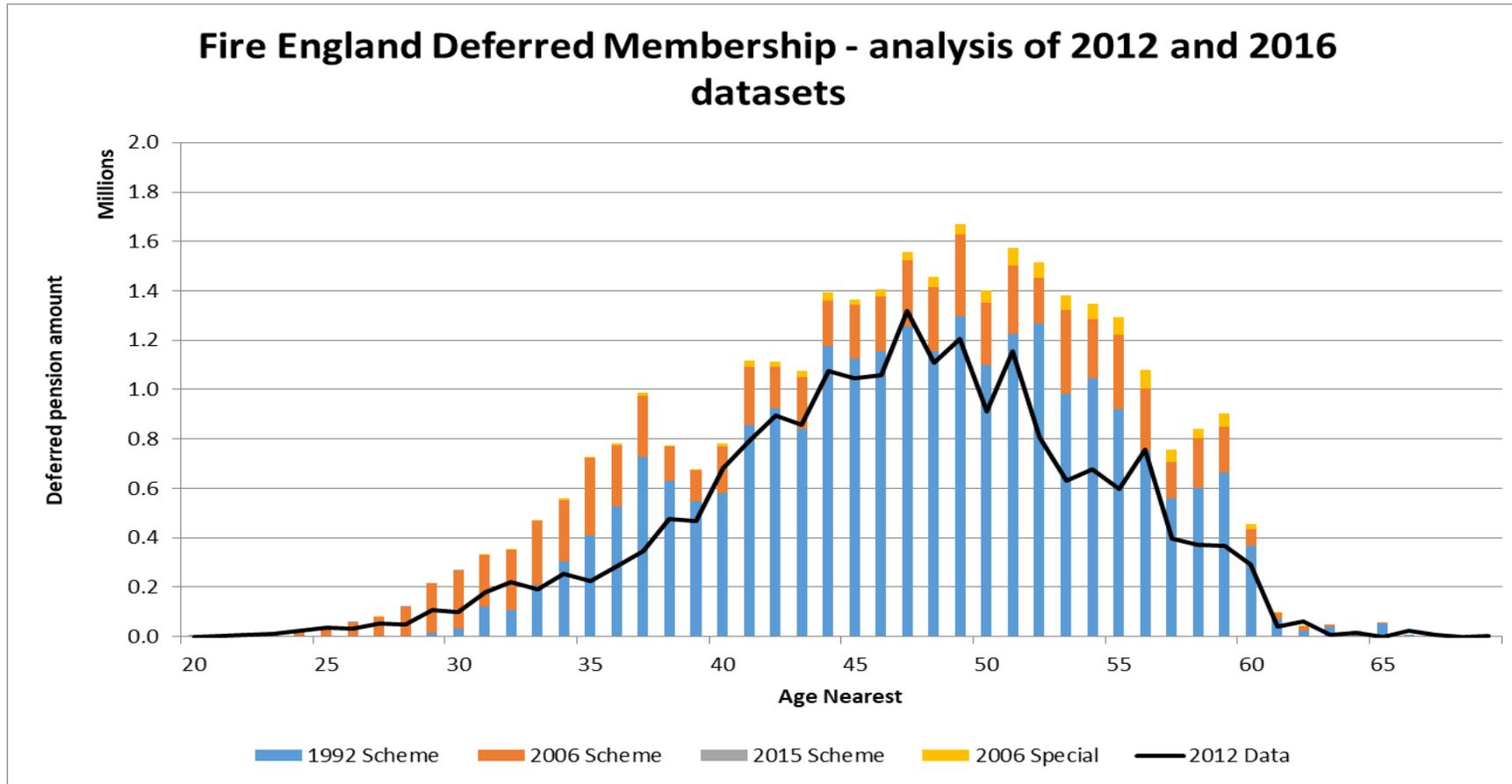




Chart A3: Summary of pension amount by age

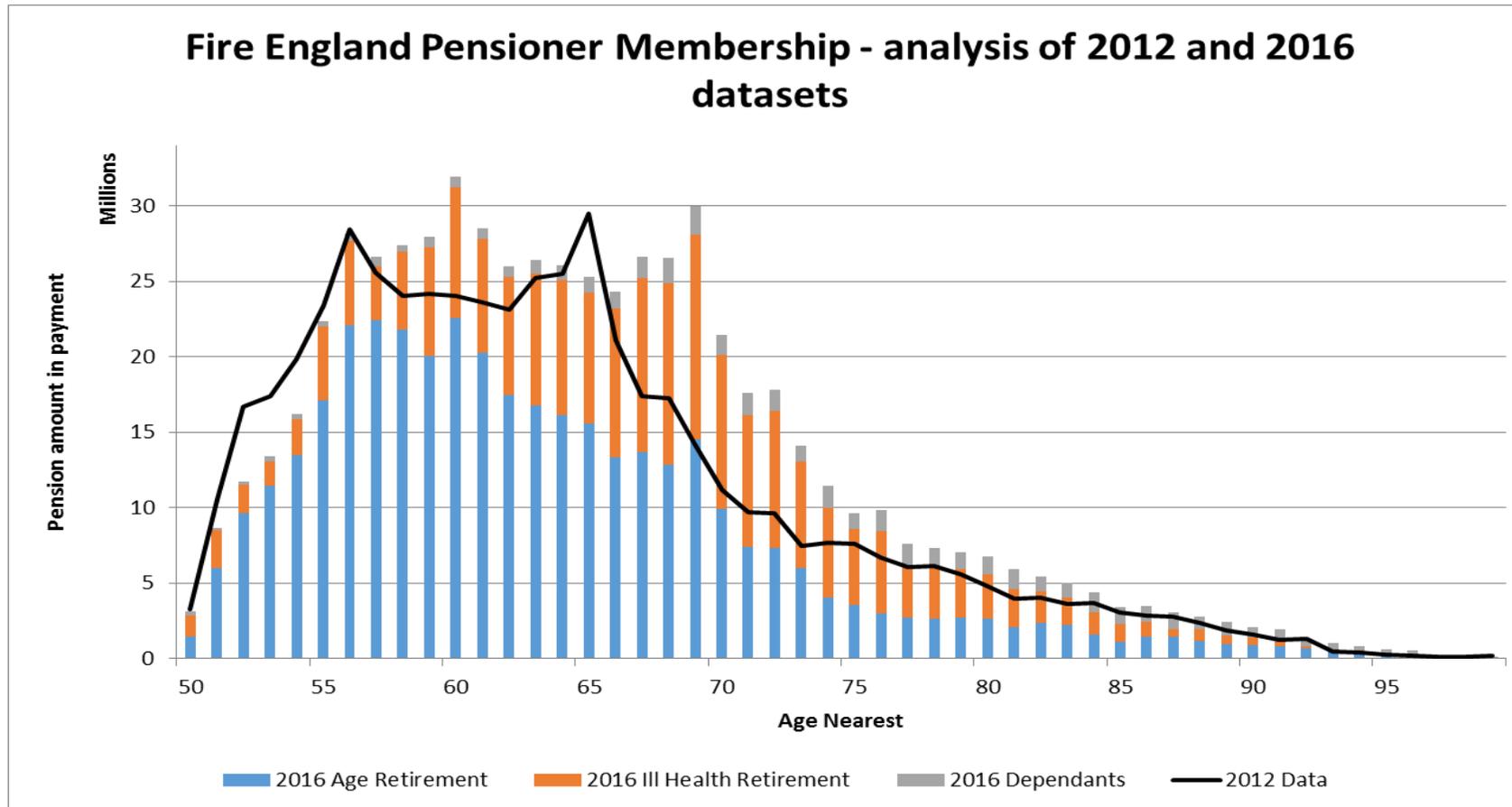
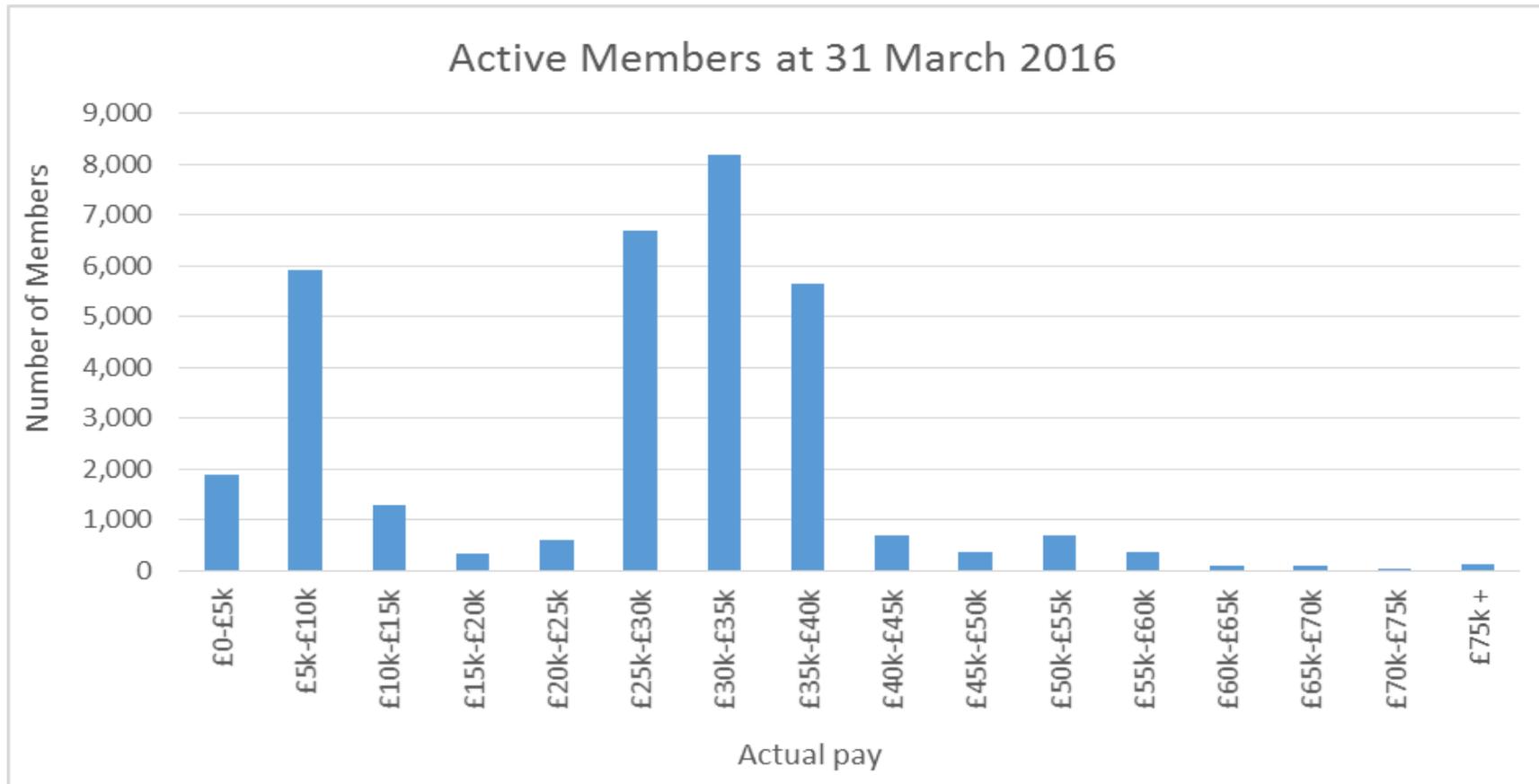


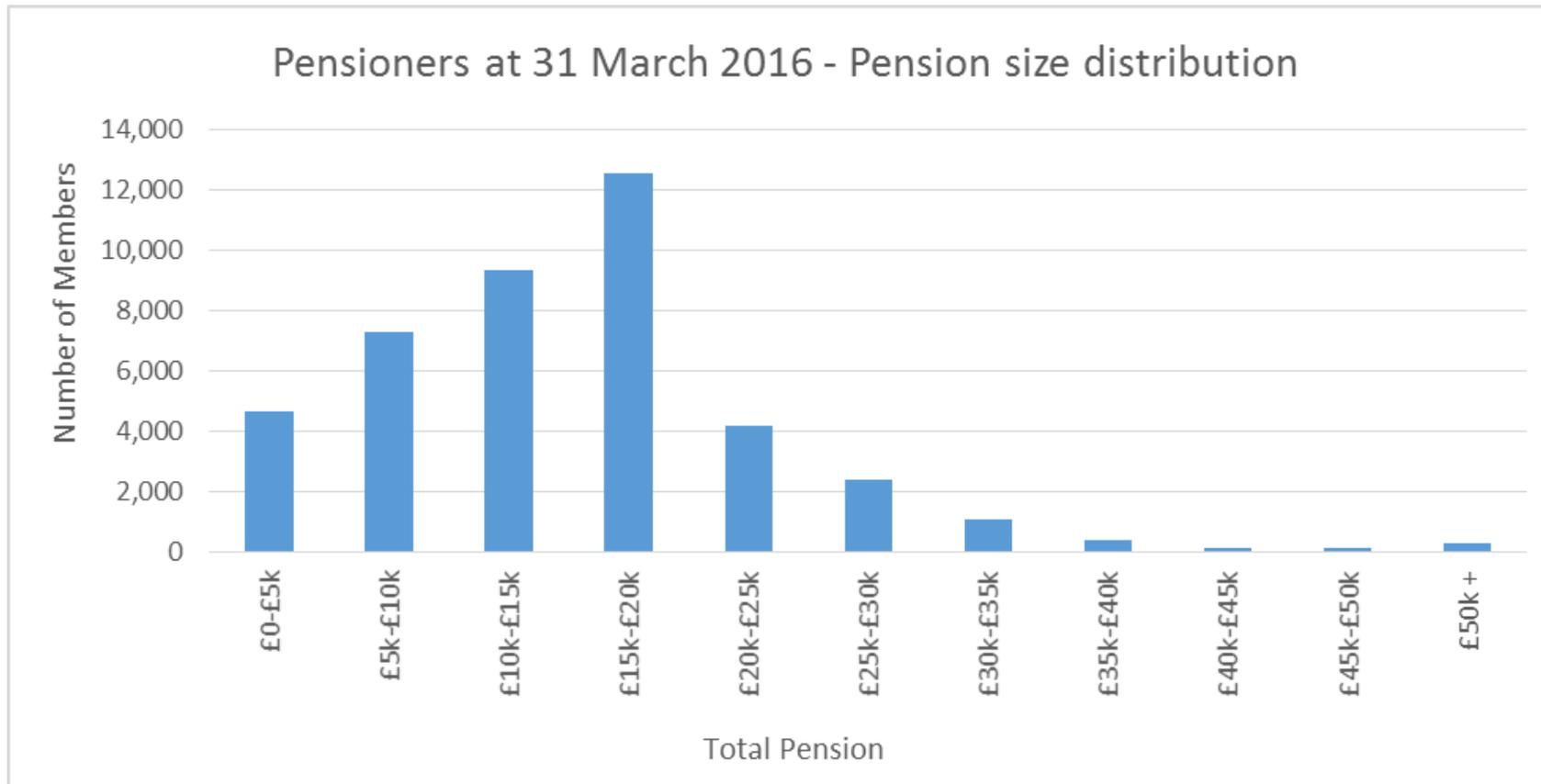


Chart A4: Active membership: Distribution of actual pay as at 31 March 2016





**Chart A5: Pensioner membership (excluding dependants): Distribution of pension in payment as at 31 March 2016**





## Appendix B: Summary of movements data

**Table B1: Reconciliation of membership over the intervaluation period (2012-16) and the prior intervaluation period (2007-12)**

	Reconciliation of membership over intervaluation period 2012-2016	Subset of 2012-16 movements used for experience analysis	Prior intervaluation period 2007-2012
<b>Actives</b>			
<b>Number at 31/3/12</b>	35,149	n/a	33,533
<b>Additions</b>			
• New entrants	8,371	n/a	*
<b>Deductions:</b>			
• Deaths	(59)	(47)	(75)
• Ill health retirements	(316)	(244)	(267)
• Age retirements	(4,234)	(2,668) 1992 Scheme (95) 2006 Scheme	(5,792)
• Withdrawals	(5,255)	(591) 1992 Scheme (1,790) 2006 Scheme <sup>1</sup>	(3,962)
• Other exits	(363)	n/a	(105)
<b>Number expected at 31/3/16</b>	33,293	n/a	*
<b>Valuation data at 2016</b>	32,985	n/a	35,149
<b>Deferreds</b>			
<b>Number at 31/3/12</b>	5,242	n/a	2,048
<b>Additions</b>			
• New deferreds	5,230	n/a	*
<b>Deductions:</b>			
• Deaths	(26)		(14)
• Retirements	(269)		(253)
• Rejoiners to active	(21)	n/a	(28)
• Transfers	(281)		(165)
• Other exits	(88)		(346)
<b>Number expected at 31/3/16</b>	9,787	n/a	*
<b>Valuation data at 2016</b>	10,675	n/a	5,242
<b>Pensioners and dependants</b>			
<b>Number at 31/3/12<sup>+</sup></b>	38,254	n/a	34,632
<b>Additions</b>			
• New pensioners	7,203	n/a	*
<b>Deductions:</b>			
• Deaths	(1,896)	(1,489)	(2,258)
• Dependant deaths	(916)	(500)	(1,097)
• Other cessations	(30)	n/a	(460)
<b>Number expected at 31/3/16<sup>+</sup></b>	42,615	n/a	*
<b>Valuation data at 2016</b>	42,376	n/a	38,254

\* Figures not available.

+ Excluding children.

<sup>1</sup> Excluding withdrawals by members with less than two years' service. There were 3,017 withdrawals from the 2006 Scheme within the subset of movements analysis when all service lengths are included.



The analysis of the movement data excluded data from FRAs for which the movement data either:

- > did not appear credible; or
- > did not show a reasonable reconciliation with the membership data as at 2012 and 2016.

The third column in Table B1 shows the numbers of movements that were included in the analysis after these exclusions. Further details of the exclusions that were made is shown in Appendix F.

The summary statistics in tables B2 to B4 below are based on the movement data for all FRAs.

**Table B2: Summary of Active Experience**

Movement Type	Number of movements	Average Age of movement
Entrant	8,371	34.4
Death	59	46.6
Ill Health Retirement	316	49.1
Normal Health Retirement	4,234	53.1
Withdrawal	5,255	37.0
Other	363	49.2

**Table B3: Summary of Deferred Pensioner Experience**

Movement Type	Number of movements	Average Age of movement
Entrants	5,230	37.3
CETV's	281	40.4
Death	26	47.7
Ill-Health Retirement	27	52.4
Ordinary/ Short Service Pension	242	59.4
Other	34	44.8
Pension Credits into payment	54	60.0
Re-entry to active service	21	35.0

**Table B4: Summary of Pensioner Experience**

Movement Type	Number of movements	Average Age of movement
Entrant	7,203	57.7
Death (no dependant)	1,656	76.6
Death (with dependant)	240	73.8
Death of dependant	916	87.4
Trivial Commutation	7	58.3
Other	23	67.5



## Appendix C: Data items – membership data

Key data items are shown below. These are the items where a valid and reasonable data value is required to determine a liability.

### Actives

- > NI number
- > Current scheme
- > Previous final salary scheme (if any)
- > Gender
- > Date of Birth;
- > Date Joined Scheme
- > Actual Pay over 12 months (final salary scheme)
- > Pensionable Pay (final salary scheme) (Full time equivalent (or reference) pensionable pay over the 12 months to the valuation date in respect of final salary benefits)
- > Rate of Pensionable Pay (final salary scheme) (Annual rate of full time equivalent pensionable pay payable at the valuation date in respect of final salary benefits)
- > Pensionable Service (final salary scheme) (Pensionable service in final salary scheme to valuation date excluding doubling, transferred-in service and added years).
- > Service on full-time basis (final salary scheme) (As for Pensionable service (final salary scheme), but without reduction for part-time hours)
- > Transferred-in Service (final salary scheme)
- > Part-time indicator
- > Part-time proportion
- > APB Accrued to Date
- > Actual pensionable earnings over year (2015 Scheme benefits)
- > Annual rate of pensionable earnings (2015 Scheme benefits)
- > Accrued 2015 scheme pension at extract date
- > Active service on full-time basis (2015 scheme)
- > Public Sector Transfer Club (PSTC) transfer in indicator
- > 2015 scheme (Club) pension subject to CPI + 0% increases
- > 2015 scheme (Club) pension subject to CPI + 1.25% increases
- > 2015 scheme (Club) pension subject to CPI +1.5% increases
- > 2015 scheme (Club) pension subject to CPI + 1.6% increases
- > 2015 scheme (Club) pension subject to earnings increases
- > Retained Option Completed Indicator
- > Settlement format of retained option (lump sum or periodic contributions)

### Notes

**Pensionable Salary:** Where an individual is in receipt of a lower level of remuneration for any reason (eg maternity leave, sick leave etc) FRAs were asked to provide a notional “normal” pensionable salary.



### Deferred pensioners

- > NI number
- > Scheme membership at leaving service
- > Previous final salary scheme (if any)
- > Gender
- > Date of Birth
- > Role
- > Current Deferred Pension (final salary scheme) (Includes pension from transfers in and added years)
- > Part time indicator
- > Current Deferred Pension (2015 Scheme) (Includes pension from transfers in service and added pension)
- > Retained Option Completed indicator
- > Settlement format of retained option (lump sum or periodic contributions)

### Pensioners

- > NI number
- > Scheme membership at leaving service
- > Previous final salary scheme (if any)
- > Gender
- > Date of Birth
- > Role
- > Date Joined Scheme
- > Date final salary pension began
- > Type of Pension
- > Member's Current Basic Pension (final salary scheme)
- > Part-time indicator
- > Abated Pension
- > Pension Increases
- > Injury Award
- > Member's pre-commutation pension (final salary scheme)
- > Member's current Basic Pension (2015 scheme)
- > Date 2015 scheme pension began
- > Retained Option Completed indicator
- > Settlement format of retained option (payment from scheme to member or from member to scheme)



### Dependants

- > NI number
- > Scheme membership when member left service
- > Previous final salary scheme membership (if any)
- > Gender
- > Date of Birth
- > Dependant Type
- > Dependant Date
- > Dependant's final salary pension
- > Dependant's Current Injury Award
- > Dependant's 2015 scheme pension

### Added years

- > NI number
- > Scheme contract relates to
- > Gender
- > Date of Birth
- > Purchase type
- > Purchase start date
- > Cessation date
- > Contract in force
- > Added years
- > Part-time indicator
- > Added 2015 scheme pension
- > Added 2015 scheme partner's pension

### Pension debit

- > NI number
- > Scheme for which debit applies
- > Gender
- > Date of Birth
- > Debit Type (divorce or tax)
- > Current pension debit



## Appendix D: Data items - movements data

### Actives

The following data was provided separately for each year of the inter-valuation period for active staff who left active status during that year:

- > NI number
- > Scheme membership at leaving
- > Previous final salary scheme (if any)
- > Gender
- > Date of Birth
- > Date Joined Scheme
- > Date Left
- > Reason Ceased
- > Part-time indicator
- > Service at Leaving
- > Total non-retirement related lump sum benefits payments from 2015 scheme
- > Total retirement related lump sum benefits payments from 1992 scheme
- > Total retirement related lump sum benefits payments from 2006 scheme
- > Total retirement related lump sum benefits payments from 2015 scheme

### Deferreds

The following data was provided separately for each year of the inter-valuation period for deferred members who left deferred status during that year:

- > NI number
- > Scheme membership at leaving
- > Gender
- > Date of Birth
- > Date Left
- > Date Ceased
- > Reason Ceased
- > Part-time indicator
- > Total non-retirement related lump sum benefits payments from 2015 scheme
- > Total retirement related lump sum benefits payments from 2015 scheme



## Pensioners

The following data was provided separately for each year of the inter-valuation period for pensioners who left pensioner status during that year:

- > NI number
- > Scheme
- > Gender
- > Date of Birth
- > Date Ceased
- > Reason Ceased
- > Type of Pension
- > Dependant Date of Birth
- > Dependant NI number
- > Pension payable at Date Ceased
- > Total pensioner related lump sum payments in 2015 scheme

## Dependants

The following data was provided separately for each year of the inter-valuation period for pensioners who left dependant status during that year:

- > NI number
- > Scheme
- > Gender
- > Date of Birth
- > Dependant Type
- > Date Ceased
- > Reason Ceased
- > Pension payable at Date Ceased



## Appendix E: Checks and adjustments applied to membership data

### Checks and exclusion

Exclusions and upratings were identified as follows.

**Table E1 – Active members as at 31 March 2016**

Reason for Exclusion	Number of exclusions
Duplicate records removed <sup>+</sup>	13
Age outside appropriate range (18 to 65) or missing	15
FTE pay missing or outside reasonable range (£20k to £215k)	786
Actual pay outside reasonable range (£100 to £215k)	820
Transfer-in service missing or outside reasonable range (0 to 20 years)	18
Service missing or outside reasonable range given the section	807
2015 Scheme pension outside reasonable range (over £3.6k) or missing	20
<b>Total number of exclusions*</b>	<b>1,670</b>
<b>Total exclusions for rating up</b>	<b>1,657</b>

<sup>+</sup> Indicates initial exclusions which are assumed to have no attaching liability and therefore we have not uprated for these members (i.e. invalid records).

\* If a record fails for more than one reason it is included multiple times in the breakdowns shown and therefore the total exclusions may not be exactly the same as the sum of the components shown.

**Table E2 – Active members as at 31 March 2015**

Reason for Exclusion	Number of exclusions
Duplicate records removed <sup>+</sup>	3
Date of joining the scheme after valuation date	12
FTE pay missing or outside reasonable range (£20k to £175k)	293
Transfer-in service missing or outside reasonable range (0 to 20 years)	17
Service missing or outside reasonable range given the section	1,337
Part time proportion outside reasonable range or missing	376
<b>Total number of exclusions*</b>	<b>1,510</b>
<b>Total exclusions for rating up*</b>	<b>1,495</b>

<sup>+</sup> Indicates initial exclusions which are assumed to have no attaching liability and therefore we have not uprated for these members (ie invalid records).

\* If a record fails for more than one reason it is included multiple times in the breakdowns shown and therefore the total exclusions may not be exactly the same as the sum of the components shown.



**Table E3 – Deferred members at 31 March 2016**

Reason for Exclusion	Number of exclusions*
Duplicate records removed <sup>+</sup>	3
Member pension missing or outside reasonable range (£0 to £100k)	105
<b>Total number of exclusions*</b>	<b>108</b>
<b>Total exclusions for rating up</b>	<b>100 **</b>

+ Indicates initial exclusions which are assumed to have no attaching liability and therefore we have not uprated for these members (ie invalid records).

\* If a record fails for more than one reason it is included multiple times in the breakdowns shown and therefore the total exclusions may not be exactly the same as the sum of the components shown.

\*\* 5 deferred records were excluded but not uprated as all records within their respective group were excluded and so no remaining record could be readily uprated. This is not expected to have a material impact on the valuation results.

**Table E4 – Pensioners (including dependants) at 31 March 2016**

Reason for Exclusion	Number of exclusions
Invalid scheme section	4
Age outside appropriate range or missing	2
Member pension missing or outside reasonable range (£0 to £200k)	56
Dependant pension missing or outside reasonable range (£0 to £100k)	12
Pension type missing	1
Children records <sup>+</sup>	351
<b>Total number of exclusions*</b>	<b>425</b>
<b>Total exclusions for rating up</b>	<b>74</b>

\* If a record fails for more than one reason it is included multiple times in the breakdowns shown and therefore the total exclusions may not be exactly the same as the sum of the components shown.

+ The data was not rated up for children's pensions. The valuation results will make allowance for the liability for children's' pensions by a small loading to the scheme's liabilities.



**Table E5 – Summary of total exclusions to as at 31 March 2016 data**

	Total number of excluded records (valid and no liability <sup>9</sup> )	Total number of valid records excluded and rated up
<b>Actives</b>	1,670	1,657
<b>Deferreds</b>	108	100
<b>Pensioners</b>	425	74
<b>Total exclusions</b>	<b>2,203</b>	<b>1,831</b>

**Table E6: Total data supplied (31 March 2016)**

31 March 2016	Total number of records provided	Immediate exclusions	Valid records
<b>Actives</b>	32,883	13	32,870
<b>Deferreds</b>	10,641	3	10,638
<b>Pensioners</b>	42,584	351	42,233

**Table E7: Total data supplied (31 March 2015)**

31 March 2015	Total number of records provided	Immediate exclusions	Valid records
<b>Actives</b>	33,616	15	33,601

**Table E8: Derivation of uprating factors (31 March 2016)**

31 March 2016	Number of valid records (A)	Number of exclusions rated up	Number of members after exclusions (B)	Uprating factor (A/B)	Global Uprating factor *	Number of members after rate ups
Active members	32,870	1,657	31,213	1.053	1.0035	32,985
Deferred members	10,638	100	10,533 <sup>+</sup>	1.010	1.0035	10,675
Pensioners	42,233	74	42,159	1.002	1.0035	42,376
<b>Total membership</b>	<b>85,741</b>	<b>1,831</b>	<b>83,905<sup>+</sup></b>	<b>1.022</b>	<b>1.0035</b>	<b>86,036</b>

<sup>+</sup> Five records could not be readily uprated for the deferred membership as all records within their respective group were excluded so no remaining record could be uprated. This is not expected to have a material impact on the valuation results.

\* The global uprating factor of 1.0035 was applied to all membership categories to adjust for the data in respect of one FRA which was not provided in a readily accessible format.

<sup>9</sup> This column list the number of valid records that were excluded plus the number of no liability records excluded (ie records with no attaching liability and therefore we have not uprated for these, ie invalid records).



**Table E9: Derivation of uprating factors (active membership 31 March 2015)**

31 March 2015	Number of valid records (A)	Number of exclusions rated up	Number of members after exclusions (B)	Uprating factor (A/B)	Global Uprating factor *	Number of members after rate ups
Active members	33,601	1,495	32,106	1.047	1.000	33,601

\* A global uprating factor was not required for the data as at 31 March 2015, because all FRAs provided data in a readily accessible format at this date.

### Checks on uprated dataset

Information taken from an independent source of data gathered by the Home Office was used to perform independent checks on the dataset supplied.

For actives, the total pensionable payroll in the adjusted actives data (£877.5m) was compared with pensionable pay (of £856.6m) derived from employer contribution payments over the years 2015/16 and 2016/17 as provided in the independent source of data gathered by the Home Office. The pensionable payroll from the data is 2.4% higher than that implied from employer contributions. There has been a fall in the membership over 2016-17 which is reflected in the independent data but not the valuation data as it mostly relates to leavers after the valuation date and therefore the valuation data does not look unreasonable.

For pensioners and dependants, the total pensioner payroll in the adjusted pensioner data (£637m) was compared with average of total pensions paid over 2015/16 and 2016/17, as recorded in the independent data sources gathered by the Home Office (£635m). The pensioner payroll provided in the data is around 0.3% higher than that implied by the independent data source. This result does not look unreasonable.

It was not possible to undertake any independent checks on the deferreds data.



## Appendix F: Checks and exclusions applied to the movements data

Checks were undertaken to ensure all records with sufficient information to assign the movement to the correct category for analysis were taken into account.

The active movements data is used to analyse experience of members who retire, die or leave active service. For these purposes only relevant records were used for analysis purposes. The number of initial exclusions is set out below.

**Table F1 – Active members**

Reason for Exclusion	Number of exclusions
Removed assumed duplicates and other multiple records	5
Removed records where movements dates do not fall within the intervaluation period or is missing	88
Removed records which were inter-authority transfers	82
<b>Total number of members removed *</b>	<b>174</b>

\* If a record fails for more than one reason it is included multiple times in the breakdowns shown and therefore the total exclusions may not be exactly the same as the sum of the components shown.

The pensioner movements data was used to analyse mortality experience and family statistics. For these purposes only relevant records were used for analysis purposes. The number of initial exclusions is set out below.

**Table F2 – Pensioners (including dependants)**

Reason for Exclusion	Number of exclusions
Removed records where either movements dates do not fall within the intervaluation period or had a missing movement date	19
<b>Total number of members removed</b>	<b>19</b>

After the records described above were removed, further exclusions were made for the purposes of the experience analysis to exclude data from FRAs for which the movement data either:

- > did not appear credible; or
- > did not show a reasonable reconciliation with the membership data as at 2012 and 2016.

The detail of the number of FRAs excluded from the analysis and the proportion of membership excluded is set out in Table F3.



**Table F3 – Number of FRAs excluded from each analysis**

<b>Movement data item</b>	<b>FRAs excluded</b>
Active movements – Deaths before retirement, Ill-health retirement and withdrawals	15 FRAs were excluded representing approximately 25% of the pensioner membership
Active movements – Age/normal health retirement *	18 FRAs were excluded representing approximately 30% of the pensioner membership
Pensioner movements - member deaths	17 FRAs were excluded representing approximately 25% of the pensioner membership
Pensioner movements - dependant deaths	28 FRAs were excluded representing approximately 50% of the pensioner membership

\* Service data was also required to analyse age retirements, meaning that more FRAs were excluded where this data was incomplete.

Deferred movements data was not used to inform the analysis of experience, so no adjustments were made.



## Appendix G: Uncertainty in valuation results arising from data deficiencies

### Membership data

The table below illustrates the potential impact if known data omissions are subsequently found to have been handled incorrectly. Since it is not possible to undertake independent checks for all categories of members and a full reconciliation has not been achieved against all prior datasets there is the potential for currently unidentified problems with the data to emerge in future. For example a group of deferred members could be identified where no liability has previously been determined. The impact of such unknowns emerging at subsequent valuations could be considerably more than the sensitivity indicated below.

The table below illustrates the potential impact on the results if the actual liability for each missing member is in fact under/overstated by 10%.

	Impact of error in assumption for missing data (as % of pay)	
	Uncorrected employer contribution rate	Employer contribution correction cost
Actives (uprating applied: 1.06 for 2016 data, 1.05 for 2015 data)	0.1%	0.1%
Deferreds (uprating applied: 1.01)	Not material	nil
Pensioners (uprating applied: 1.01)	0.1%	nil

More detail on the uncertainties arising from data deficiencies can be found in Appendix C of our report *Firefighters' Pension Schemes (England): Actuarial valuation as at 31 March 2016: Advice on assumptions*, dated today ('the Assumptions report').

### Movements data

#### Setting assumptions

Assumption setting relies on analysis of movements data in consideration with such other relevant information which is available. The setting of demographic assumptions is to some extent subjective and a matter of interpretation. Changes in assumptions may be expected at successive valuations as circumstances change even with full data. Thus the absence of fully complete movements data does not necessarily introduce uncertainty into the valuation results provided there is other relevant information available to inform those assumptions. Further commentary on assumption setting is provided in the Assumptions report.

#### Cost Cap Net Leavers Liability (CCNLL)

The CCNLL is a component part of the cost cap calculation and is a quantification of the amount of final salary liabilities which fall out of the cost cap fund at a valuation owing to members which have left service since the previous valuation (or since the initial cost cap fund was set in the case of the 2016 valuation), net of the additional liabilities in respect of members with final salary benefits who rejoined active membership during the inter-valuation period.



To accurately calculate the 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 2016 valuation. Further details on the approach taken to determining the CCNLL in the absence of fully complete data, and the potential impact on the valuation results, is provided in Appendix C of the Assumptions report.



## Appendix H: Summary of benefits

The Directions require the pre and post 2015 schemes to be taken into account in aggregate for the purposes of the current valuation. A summary of benefits provided from the pre and post 2015 schemes is shown separately below. The criteria by which scheme membership is determined after 31 March 2015 is also shown. The information shown is only a summary of the benefits and full details are set out in the relevant scheme regulations.

	1992 Scheme	2006 Scheme (Standard)	2006 Scheme (Special)	2015 Scheme
<b>1. Type of Scheme</b>	Final Salary	Final Salary	Final Salary	Career Average Revalued Earnings
<b>2. Contracted out/in prior to 2016</b>	Contracted out	Contracted out	Contracted out	Contracted out
<b>3. Employees Covered</b>				
Before 1 April 2015	Members who joined before 6 April 2006 (excluding retained members).	New entrants joining between 6 April 2006 and 31 March 2015 (including retained members).	Retained firefighters employed on or after 1 July 2000 and before 6 April 2006	N/A
On or after 1 April 2015	Protected 1992 Scheme members <sup>10</sup>	Protected 2006 Scheme (Standard) members <sup>10</sup>	Protected 2006 Scheme (Special) members <sup>10</sup>	New entrants joining on or after 1 April 2015 and unprotected members <sup>10</sup>

<sup>10</sup> Details of criteria for protection and tapered protection are set out at the end of this Appendix.



	1992 Scheme	2006 Scheme (Standard)	2006 Scheme (Special)	2015 Scheme
<b>4. Normal Pension Age (NPA)</b>	55 (or from age 50 after completion of 25 years' service)  NB: Deferred pension age 60	60 Early retirement from age 55 subject to benefits being actuarially reduced  NB: Deferred pension age 65	55  NB: Deferred pension age 60	60 Early retirement from age 55 subject to benefits being actuarially reduced  NB: Deferred pension age equal to State Pension Age (SPA) or 65 if later
<b>5. Pensionable Pay (PP)</b>	Basic Salary plus other permanent emoluments	Basic Salary plus other permanent emoluments  For retained members this is Reference Pay: whole time equivalent pensionable pay of a regular Firefighter employed in a similar role and with equivalent qualifying service	Whole time equivalent pensionable pay of a regular Firefighter employed in a similar role and with equivalent qualifying service	Basic Salary plus other permanent emoluments, including APB payments.
<b>6. Final Pensionable Pay (FPP)</b>	PP received in the last 12 months. Calculated as at date of leaving or retiring from the 2015 Scheme for those who move to the 2015 Scheme.  Either of the two previous 12 month periods may be used if this results in a higher FPP.	PP received in the last 12 months. Calculated as at date of leaving or retiring from the 2015 Scheme for those who move to the 2015 Scheme.  Either of the two previous 12 month periods may be used if this results in a higher FPP.	PP received in the last 12 months. Calculated as at date of leaving or retiring from the 2015 Scheme for those who move to the 2015 Scheme.  Either of the two previous 12 month periods may be used if this results in a higher FPP.	Not required

	1992 Scheme	2006 Scheme (Standard)	2006 Scheme (Special)	2015 Scheme
<b>7. Member's Contributions</b>	Contribution scale tiered by PP	Contribution scale tiered by PP	Contribution scale tiered by PP	Contribution scale tiered by PP
<b>8. Normal Retirement</b>				
Pension to Member	1/60 <sup>th</sup> for first 20 years of actual service plus 2/60 per year of service in excess of 20 years, subject to a maximum of 30 years of actual service.	1/60 <sup>th</sup> per year of actual service subject to a maximum of 45 years.	1/45 <sup>th</sup> per year of pensionable service. Includes additional service purchased by contributions.	1/59.7 <sup>th</sup> of earnings in each year, revalued in line with earnings as made by Treasury order (expected to be AWE) on 1 April each year.  No cap on service.
Lump Sum	By commutation at rates which vary by age  Generally option to commute up to 25% of pension; lower limits apply to some members	By commutation at £12:£1.  Limit of 25% of full pension	By commutation at fixed age related factors.  Limit of 25% of full pension	By commutation at £12:£1.  Limit of 25% of full pension
Spouse's Pension	50% of member's pension before commutation	50% of member's pension after commutation	50% of member's pension after commutation	50% of member's pension after commutation



	1992 Scheme	2006 Scheme (Standard)	2006 Scheme (Special)	2015 Scheme
<b>9. Pension Increases</b>	Governed by Pensions (Increase) Act 1971 (currently CPI, but deferred to age 55 for normal health retirements prior to age 55 and some ill health retirements from preserved status)	Governed by Pensions (Increase) Act 1971 (currently CPI)	Governed by Pensions (Increase) Act 1971 (currently CPI)	Governed by Pensions (Increase) Act 1971 (currently CPI)
<b>10. Early Retirement</b>	Unreduced pension from age 50 after completion of 25 years' service	Reduced pension payable from age 55, with reduction calculated so that the early retirement pension is actuarially equivalent in value to a deferred pension payable from age 65.	None.	Reduced pension payable from age 55, with reduction calculated so that the early retirement pension is actuarially equivalent in value to a deferred pension.  From active service, the reduction is based on the period to age 60, otherwise it is based on the period to SPA.
<b>11. Ill Health Retirement</b>	Two tier – payable after 2 years' service.  Lower tier – capable of undertaking alternative employment	Two tier – payable after 3 months qualifying service.  Lower tier – capable of undertaking alternative employment	As per 2006 Scheme (Standard).	Two tier <sup>11</sup> – payable after 3 months qualifying service.  Lower tier – capable of undertaking alternative employment

<sup>11</sup> In addition to the 2015 scheme benefits, former members of the 1992 Scheme or 2006 Scheme will receive ill health benefits under those schemes (based on service until they joined the 2015 Scheme) and so the ill health benefits will be the sum of the benefits from the two arrangements.



	1992 Scheme	2006 Scheme (Standard)	2006 Scheme (Special)	2015 Scheme
	<ul style="list-style-type: none"> <li>• 2-5 years' service: 1/60<sup>th</sup> per year of service (subject to a minimum of 1 years' service)</li> <li>• 5 or more years' service: unreduced accrued benefits</li> </ul> <p>Higher tier – incapable of undertaking other employment</p> <ul style="list-style-type: none"> <li>• 2-5 years' service: same as lower tier</li> <li>• 5-10 years' service: service doubled</li> <li>• 10-20 years' service: service enhanced by an additional 7 years, subject to a minimum enhanced total service of 20 years</li> <li>• Over 20 years' service: service enhanced by an additional 7 years plus the period in years by which service exceeds 20 years</li> </ul>	<ul style="list-style-type: none"> <li>• Unreduced accrued benefits</li> </ul> <p>Higher tier – subject to 5 years' qualifying service and incapable of undertaking other employment. Service calculated as:</p> <ul style="list-style-type: none"> <li>• Actual service plus an enhancement of 2% for each year of past service multiplied by prospective service to age 60</li> </ul>		<ul style="list-style-type: none"> <li>• Unreduced accrued benefits</li> </ul> <p>Higher tier – subject to 5 years' qualifying service and incapable of undertaking other employment. Pension calculated as:</p> <ul style="list-style-type: none"> <li>• Lower tier pension plus an enhancement of 2% of the lower tier pension (excluding any amount in respect of added pension and before any commutation) for each year of prospective service to NPA</li> </ul>
<b>12. Dependant's Pension on Death in Service</b>	<p>Payable after two years' service</p> <p>50% x Higher tier ill-health Pension</p>	<p>Payable after 3 months' qualifying service</p> <p>50% of Higher tier ill-health Pension</p>	<p>Payable after 3 months' qualifying service</p> <p>50% of Higher tier ill-health Pension</p>	<p>Payable after 3 months' qualifying service</p> <p>50% of Higher tier ill-health Pension</p>

	1992 Scheme	2006 Scheme (Standard)	2006 Scheme (Special)	2015 Scheme
<b>13. Dependant's Short Term Pension</b>	Generally payable without any minimum service requirement	Payable after 3 months' qualifying service	Payable after 3 months' qualifying service	Payable after 3 months' qualifying service
Death in Service	The difference between the member's weekly rate of pensionable pay when the member died and the children's or spouse's weekly pension is payable for 13 weeks following the death	The difference between the member's weekly rate of pensionable pay when the member died and the spouse's weekly pension is payable for 13 weeks following the death	The difference between the member's weekly rate of pensionable pay when the member died and the spouse's weekly pension is payable for 13 weeks following the death	The difference between the member's weekly rate of pensionable pay when the member died and the spouse's weekly pension is payable for 13 weeks following the death
Death after Retirement	The difference between the member's weekly rate of pension when the member died and the spouse's weekly pension is payable for 13 weeks following the death	The difference between the member's weekly rate of pension when the member died and the spouse's weekly pension is payable for 13 weeks following the death	The difference between the member's weekly rate of pension when the member died and the spouse's weekly pension is payable for 13 weeks following the death	The difference between the member's weekly rate of pension when the member died and the spouse's weekly pension is payable for 13 weeks following the death
<b>14. Lump Sum Death Benefits</b>				
Death in Service	2 x PP	3 x PP	2 x PP	3 x PP
Death after Retirement	If all payments made to the member and dependants plus the actuarial value of the dependant's pension are less	5 x pre commutation pension less amount already paid	5 x pre commutation pension less amount already paid	5 x post commutation pension less amount already paid

	1992 Scheme	2006 Scheme (Standard)	2006 Scheme (Special)	2015 Scheme
	than the member's total contributions then the balance of contributions is refunded			
<b>15. Children's Pensions</b>	<p>18.75% x member's current/deferred pension (enhanced if the member dies in service to the higher tier ill health pension) up to a maximum of 37.5% shared between the eligible children.</p> <p>Orphans: 25% of member's pension (enhanced if the member dies in service to the higher tier ill health pension) up to a maximum of 50% shared between the eligible children.</p>	<p>25% x member's current/deferred pension (enhanced if the member dies in service to the higher tier ill health pension) up to a maximum of 50% shared between the eligible children.</p> <p>Orphans: 50% of member's pension (enhanced if the member dies in service to the higher tier ill health pension) shared between the eligible children.</p>	<p>25% x member's current/deferred pension (enhanced if the member dies in service to the higher tier ill health pension) up to a maximum of 50% shared between the eligible children.</p> <p>Orphans: 50% of member's pension (enhanced if the member dies in service to the higher tier ill health pension) shared between the eligible children.</p>	<p>25% x member's current/deferred pension (enhanced if the member dies in service to the higher tier ill health pension) up to a maximum of 50% shared between the eligible children.</p> <p>Orphans: 50% of member's pension (enhanced if the member dies in service to the higher tier ill health pension) shared between the eligible children.</p>
<b>16. 'Dependant' provision</b>	Spouse or Civil Partner	Spouse, Civil Partner or nominated partner	Spouse, Civil Partner or nominated partner	Spouse, Civil Partner or co-habiting partner



	1992 Scheme	2006 Scheme (Standard)	2006 Scheme (Special)	2015 Scheme
<b>17. Withdrawal Benefits on Leaving</b>				
Less than 3 months' service	Refund of contributions	Refund of contributions	Refund of contributions	Refund of contributions
More than 3 months' service	Deferred pension is payable from 60	Deferred pension is payable from age 65	Deferred pension is payable from 60	Deferred pension is payable from State Pension Age or 65 if later
Preserved Benefits	Deferred pension is the lesser of: 1) 40 / 60 x PP; and 2) A x B / C, where: A: member's notional pension at NPA based on PP at date of leaving B: member's actual pensionable service C: member's notional service to age 55 subject to a maximum of 30 years	1/60 <sup>th</sup> per year of actual service subject to a maximum of 45 years	1/45 <sup>th</sup> per year of actual service.	1/59.7 <sup>th</sup> of earnings in each year, revalued in line with earnings as made by Treasury order (expected to be AWE) on 1 April each year while in service
Increases between date of leaving and retirement	Governed by Pensions (Increase) Act 1971	Governed by Pensions (Increase) Act 1971	Governed by Pensions (Increase) Act 1971	Governed by Pensions (Increase) Act 1971



	1992 Scheme	2006 Scheme (Standard)	2006 Scheme (Special)	2015 Scheme
Death before retirement	50% of member's deferred pension			
Transfer Value	Yes (some restrictions apply)			
<b>17. Cessation on remarriage or cohabitation</b>	Yes (in most cases)	No	No	No



### **Criteria for scheme membership after 31 March 2015**

Statutory based transitional protections exist for certain members as follows:

#### **Full protection members**

Active scheme members who, on 1 April 2012, were in one of the pre-2015 schemes and had 10 years or less to their Normal Pension Age, will remain in their pre-2015 scheme until they retire.

#### **Tapered protection members**

Active Scheme members who, as of 1 April 2012, were in one of the pre-2015 schemes and were within 4 years of qualifying for full protection will have limited protection so that on average for every month closer to qualifying for full protection they gain about 53 days of protection in their current scheme. At the end of their protected period they will transfer into the 2015 Scheme.

#### **Unprotected Members**

All other active members transferred to the 2015 Scheme on 1 April 2015.

For further details, see Schedule 2 of the 2015 Scheme regulations:

[https://www.legislation.gov.uk/ukxi/2014/2848/pdfs/ukxi\\_20142848\\_en.pdf](https://www.legislation.gov.uk/ukxi/2014/2848/pdfs/ukxi_20142848_en.pdf)