

# Government Actuary's Department

# **Police Pension Schemes (Northern Ireland)**

Actuarial valuation as at 31 March 2016 Report on membership data

Date:11 March 2019Author:Dipak Hirani

# Contents

page	
page	

1	Introduction	3
2	Summary of data used for the valuation	5
3	Data provided and checks and adjustments made	11
Appen	dix A: Summary of membership data	13
Appen	dix B: Summary of movements data	26
Appen	dix C: Data items – membership data	28
Appen	dix D: Data items – movements data	31
Appen	dix E: Checks and adjustments applied to the membership	33
Appen	dix F: Checks and exclusions applied to the movements data	36
Appen	dix G: Uncertainty in valuation results arising from data deficiencies	37
Appen	dix H: Summary of benefits	38



# 1 Introduction

- 1.1 This report is addressed to the Department of Justice (Northern Ireland) ('the Department'). It is also being made available to the Police Pension Scheme Advisory Board in Northern Ireland 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 1988 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 (Northern Ireland) 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); and
  - 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 and supplementary accounting information provided and discussed in this report were supplied to GAD directly by the Police Service of Northern Ireland ("PSNI"). Supplementary financial information for the Schemes has been provided by PSNI for independent checking purposes.
- 1.7 In preparing this report, GAD has relied on data and other information supplied by the PSNI 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 In my opinion the data provided is adequate for the purposes of the valuation.
- 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 This report should not be reproduced or disseminated to other parties without prior consent. The Government Actuary's Department (GAD) does not accept any liability to third parties, whether or not it has agreed to the disclosure.
- 1.12 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 data used for the 2012 valuation. Detailed tables are set out in Appendix A.

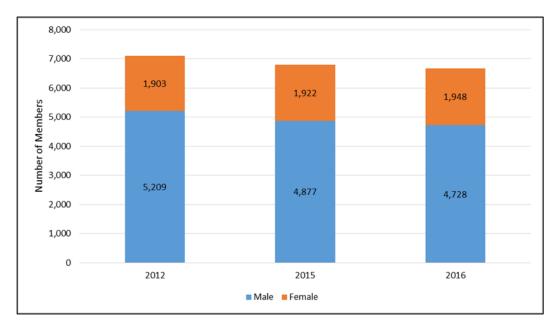
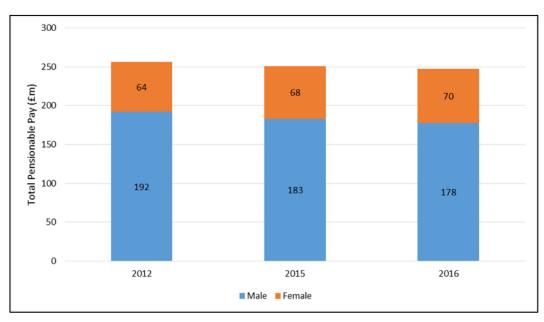
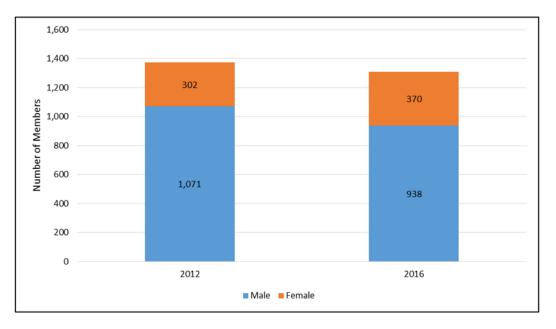


Chart 2.1: Number of active members

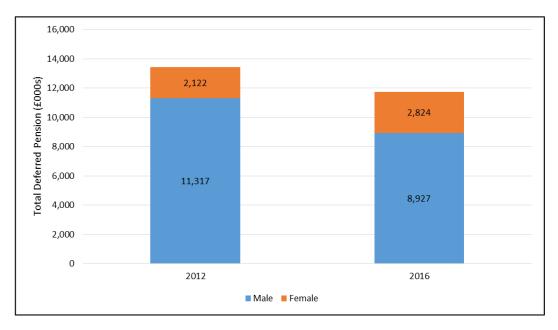






# Chart 2.3: Number of deferred members

# Chart 2.4: Total deferred pension<sup>1</sup>



<sup>&</sup>lt;sup>1</sup> Including pension increases awarded in April following extract date.

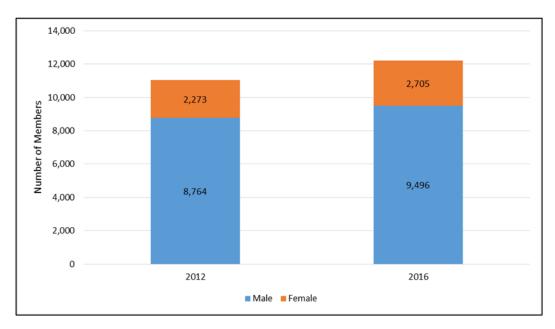
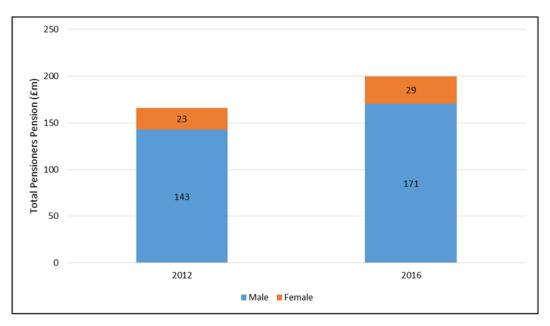


Chart 2.5: Number of pensioners and dependants





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

<sup>&</sup>lt;sup>2</sup> Including pension increases awarded in April following extract date.



2.3 Around 20,000 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 all key data items are provided and 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.

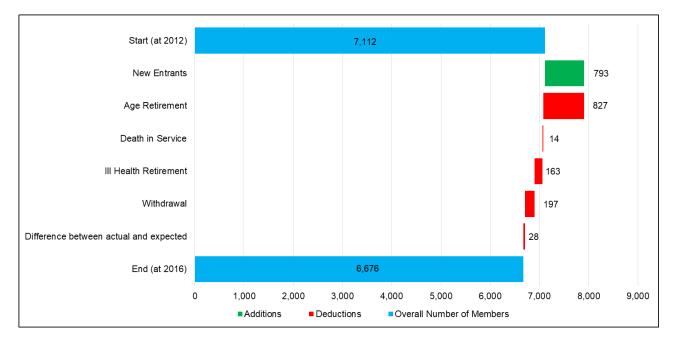
# Table 2.1: Uprating factors

	Uprating factor	Uprating factor
	2016	2015
Active members	1.003	1.002
Deferred members	1.001	n/a
Pensioners	1.011	n/a
Total membership	1.008	1.002

2.4 Making assumptions about missing data and allowing for known members with unusable data by uprating introduces uncertainty into the valuation results.

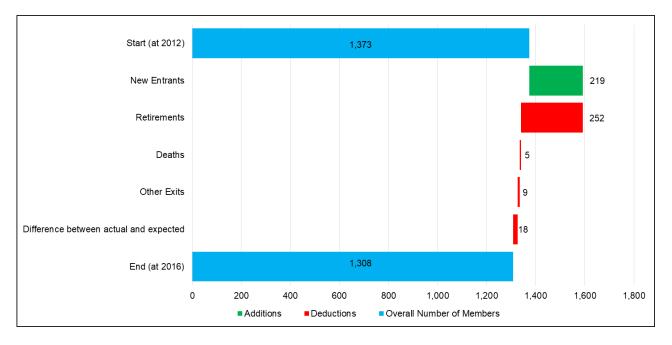
# Movements data 31 March 2012 to 31 March 2016

2.5 The movements data provided is used for the purposes of informing the demographic assumptions to be used for the 2016 valuation. 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.



# Chart 2.7: Active membership reconciliation

# Chart 2.8: Deferred membership reconciliation



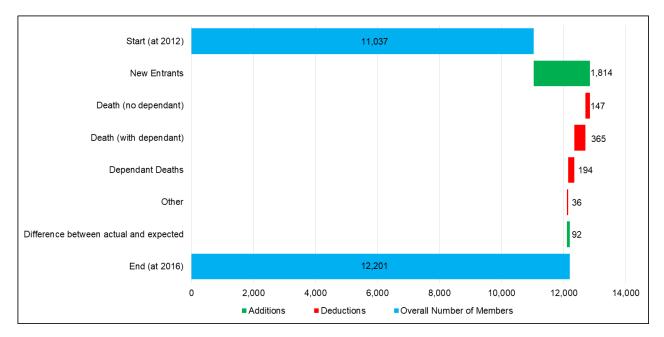


Chart 2.9: Pensioner membership reconciliation (includes Dependants)



Pensioner

Number of valid records

Number of records after rate ups

# 3 Data provided and checks and adjustments made

# Membership data at 31 March 2016 and 31 March 2015

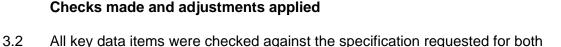
3.1 Individual member data was supplied for all active members, deferred members and current beneficiaries of the Schemes at the valuation date. The individual data items supplied which are critical to the valuation calculations are summarised in Appendix C. The graph below shows the total number of valid records (i.e. key data items are complete and appear to be reliable), the total number of records after exclusion and the total number of records after rate up.



1,308 1,308 1,307 1,308

Deferred

## Chart 3.1: Summary of data provided and excluded



- completeness and consistency.
- 3.3 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 (i.e. age, sex, pay, service) as included records. Tables 3.1 and 3.2 shows the derivation of the uprating factors<sup>3</sup>.

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

Active

Number of records provided

Number of members after exclusion

31 March 2016	Number of valid records (A)	Number of exclusions	Number of members after exclusions (B)	Uprating factor (A/B)
Active members	6,684	23*	6,661	1.003
Deferred members	1,308	1	1,307	1.001
Pensioners	12,201	134	12,067	1.011
Total membership	20,193	158	20,035	1.008

\* Eight records could not be uprated for actives membership – all records within their respective group were excluded so no remaining records could be uprated

<sup>&</sup>lt;sup>3</sup> In practice uprating factors are determined for each identifiable valuation group

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

31 March 2015	Number of valid records (A)	Number of exclusions	Number of members after exclusions (B)	Uprating factor (A/B)
Active members	6,799	16	6,783	1.002

# Movements data - 31 March 2012 to 31 March 2016

3.4 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

3.5 PSNI 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**

3.6 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

# Actives

Table A1: Summary data for 1988 Scheme active members as at 31 March 2016: split by protection status

Protection (i)	Gender	Number of members	Total Pensionable Salary (FTE⁴) £m	Average Pensionable Salary (FTE) £ pa	Total Actual Pay £m	Average Age (ii) Years	Average Service (iii) years	Total 2015 Scheme Pension £000
Protected	Male	1,354	58.0	42,845	58.0	50.4	26.2	-
	Female	293	12.4	42,416	12.3	50.3	24.5	-
	Total	1,647	70.4	42,769	70.3	50.4	25.9	-
Taper	Male	619	25.7	41,597	25.7	45.8	20.4	21.7
	Female	214	8.8	40,009	8.6	46.0	19.6	5.5
	Total	833	34.5	41,446	34.4	45.8	20.2	27.2
Unprotected	Male	1,041	41.7	40,008	41.7	39.4	13.1	742.7
-	Female	650	25.5	39,287	25.2	38.6	12.5	434.7
	Total	1,691	67.2	39,731	66.8	39.1	12.9	1,177.4
All 1988 Members	Total	4,171	172.1	41,273	171.5	45.1	19.5	1,204.6

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. Final salary service up to date of transition to the 2015 Scheme in calendar years, including transferred in service.

<sup>4</sup> Full time equivalent.

## Table A2: Summary data for 2006 Scheme active members as at 31 March 2016: split by protection status

Protection (i)	Gender	Number of members	Total Pensionable Salary (FTE) £m	Average Pensionable Salary (FTE) £	Total Actual Pay £m	Average Age (ii) years	Average Service (iii) years	Total 2015 Scheme Pension £000
Protected	Male	26	0.9	36,099	0.9	52.1	11.4	-
	Female	8	0.3	36,387	0.3	50.6	18.9	-
	Total	34	1.2	36,167	1.2	51.7	13.2	-
Taper	Male	75	2.6	34,719	2.6	46.7	9.9	3.0
	Female	19	0.7	35,292	0.7	46.9	12.5	1.1
	Total	94	3.3	34,836	3.3	46.8	10.4	4.2
Unprotected	Male	1,412	44.3	31,401	44.3	34.1	5.6	778.1
	Female	683	21.0	30,928	21.0	33.3	5.7	350.4
	Total	2,095	65.5	31,246	65.3	33.9	5.6	1,128.5
All 2006 Members	Total	2,223	69.9	31,473	69.8	34.8	5.9	1,132.7

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. Final salary service up to date of transition to the 2015 Scheme in calendar years, including transferred in service.

## Table A3: Summary data for 2015 Scheme active members (new joiners since 1 April 2015) as at 31 March 2016

Protection	Gender	Number of members	Total Pensionable Salary (FTE) £m (i)	Average Pensionable Salary (FTE) £ (i)	Total Actual Pay £m	Average Age (ii) years	Average Service (iii) years	Total 2015 Scheme Pension £000
New joiners	Male	202	n/a	n/a	4.3	28.9	0.5	36.3
-	Female	81	n/a	n/a	1.7	28.8	0.5	13.1
All 2015 Members	Total	283	n/a	n/a	6.0	28.9	0.5	49.4

i. A full time equivalent pensionable salary is not used for the valuation of 2015 Scheme benefits.

ii. Weighted by actual salary.

iii. Final salary service up to valuation date, including transferred in service.

#### Table A4: 1988 Scheme actives 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) years	Average Service (ii) years	Number of members	Total Pensionable Salary (FTE) £m	Average Salary (FTE) £	Average Age (iii) years	Average Service (iv) years	Total 2015 Scheme Pension £000	Total Actual Pay £m
Male	3,978	156.1	39,241	43.5	19.2	3,014	125.4	41,606	45.8	20.5	764.4	125.4
Female	1,282	47.6	37,129	39.8	13.8	1,156	46.7	40,398	43.1	16.8	440.2	46.1
Total	5,260	203.7	38,726	42.7	17.9	4,171	172.1	41,273	45.1	19.5	1,204.6	171.5

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 actual salary.

iv. Final salary service up to date of transition to the 2015 Scheme in calendar years, including transferred in service.



## Table A5: 2006 Scheme actives 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) years	Average Service (ii) years	Number of members	Total Pensionable Salary (FTE) £m	Average Salary (FTE) £	Average Age (iii) years	Average Service (iv) years	Total 2015 Scheme Pension £000	Total Actual Pay £m
Male	1,231	35.5	28,838	32.2	4.4	1,513	47.8	31,614	35.1	5.9	781.1	47.8
Female	621	17.8	28,663	30.4	4.1	710	22.1	31,127	34.0	6.1	351.5	21.9
Total	1,852	53.3	28,780	31.6	4.3	2,223	69.9	31,473	34.8	5.9	1,132.7	69.8

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 actual salary.

iv. Final salary service up to date of transition to the 2015 Scheme in calendar years, including transferred in service.

# Table A6: 2015 Scheme actives data (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 Pensionable Salary	Average Salary	Average Age	Average Service	Number of members	Total Pensionable Salary (FTE) £m (ii)	Average Salary (FTE) £ (ii)	Average Age (iii)	Average Service (iv)	Total 2015 Scheme Pension £000	Total Actual Pay £m		
Male	-	-	-	-	-	202	n/a	n/a	28.9	0.5	36.3	4.3		
Female	-	-	-	-	-	81	n/a	n/a	28.8	0.5	13.1	1.7		
Total	-	-	-	-	-	283	n/a	n/a	28.9	0.5	49.4	6.0		

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.

iii. Weighted by actual salary.

iv. Active service up to valuation date, including transferred in service.



#### Table A7: 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) years	Average Service (ii) years	Number of members	Total Pensionable Salary (FTE) £m (iii)	Average Salary £ (iii)	Average Age (iv) years	Average Service (v) years	Total 2015 Scheme Pension £000	Total Actual Pay £m
Male	5,209	191.6	36,782	41.4	15.7	4,728	177.6	37,563	42.5	15.5	1,581.8	177.5
Female	1,903	65.4	34,367	37.2	10.6	1,948	70.5	36,191	39.9	12.9	804.9	69.7
Total	7,112	257.0	36,136	40.4	14.3	6,676	248.1	37,163	41.8	14.7	2,386.6	247.3

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

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

iii. These figures exclude 2015 Scheme members who joined since 1 April 2015.

iv. Weighted by actual salary.

v. Active service up to valuation date in calendar years, including transferred in service.

# Table A8: 2015 Actives Data

Protection	Gender	Number of members	Total Pensionable Salary (FTE) £m	Average Pensionable Salary (FTE) £	Total Actual Salary £m	Average age (i) years	Average Service (ii) years
Protected (iii)	Male	2,367	98.4	41,567	98.3	48.3	23.4
	Female	567	23.0	40,576	22.8	47.7	21.2
	Total	2,934	121.4	41,376	121.0	48.2	23.0
Unprotected	Male	2,510	85.8	34,182	84.5	35.8	8.7
-	Female	1,355	46.8	34,536	45.5	35.4	9.0
	Total	3,865	132.6	34,306	130.1	35.6	8.8
All Members	Total	6,799	254.0	37,357	251.1	41.7	14.9

i. Weighted by actual salary.

ii. Final salary service up to valuation date, including transferred in service.

iii. Includes tapered members.

## Deferreds

 Table A9: 1988 Scheme deferred data 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) years	Number of members	Total Deferred Pension (i) £000	Average Pension £	Average Age (ii) years	Total 2015 Scheme Pension (iii) £
Male	1,052	11,277	10,741	47.5	854	8,712	10,205	49.7	75
Female	292	2,106	7,192	47.9	333	2,749	8,247	49.8	23
Total	1,344	13,383	9,970	47.5	1,187	11,461	9,655	49.7	98

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

ii. Weighted by deferred pension.

iii. Included in Total Deferred Pension.

## Table A10: 2006 Scheme deferred data 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) years	Number of members	Total Deferred Pension (i) £000	Average Pension £	Average Age (ii) years	Total 2015 Scheme Pension (iii) £
Male	19	40	2,082	41.4	84	215	2,562	38.2	1,402
Female	10	16	1,579	32.9	37	75	2,039	36.1	587
Total	29	55	1,908	38.9	121	291	2,402	37.7	1,989

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

ii. Weighted by deferred pension.

iii. Included in Total Deferred Pension.

# Table A11: 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) years	Number of members	Total Deferred Pension (i) £000	Average Pension £	Average Age (ii) years	Total 2015 Scheme Pension (iii) £
Male	1,071	11,317	10,551	47.5	938	8,927	9,520	49.4	1,477
Female	302	2,122	6,954	47.8	370	2,824	7,627	49.5	609
Total	1,373	13,439	9,760	47.5	1,308	11,752	8,984	49.4	2,087

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

ii. Weighted by deferred pension.

iii. Included in Total Deferred Pension.

# Pensioners

Table A12: 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) years	Number of members	Total Pension (i) £m	Average Pension £	Average Age (ii) years	Total 2015 Scheme Pension (iii) £
Age	Male	6,210	113.4	18,261	61.0	6,834	137.2	20,076	62.6	0
Retirement	Female	378	6.8	17,989	56.2	464	8.6	18,470	59.2	0
	Total	6,588	120.2	18,245	60.7	7,298	145.8	19,974	62.4	0
III-Health	Male	2,439	28.8	11,808	60.2	2,544	32.8	12,884	62.4	415
Retirement	Female	387	3.6	9,302	52.7	449	4.6	10,278	55.4	0
	Total	2,826	32.4	11,465	59.3	2,993	37.4	12,493	61.5	415
Dependants	Male	29	0.2	6,897	66.3	36	0.3	7,529	65.7	0
(iv)	Female	1,430	12.4	8,671	70.1	1,711	16.0	9,376	71.7	0
	Children	164	0.6	3,659	19.0	163	0.5	3,364	19.8	0
	Total	1,623	13.1	8,071	67.8	1,910	16.9	8,828	69.9	0
All	Male	8,764	142.7	16,283	60.8	9,496	170.5	17,959	62.5	415
	Female	2,273	23.0	10,119	62.7	2,705	29.5	10,902	65.1	0
	Total	11,037	165.7	15,013	61.0	12,201	200.0	16,394	62.9	415

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

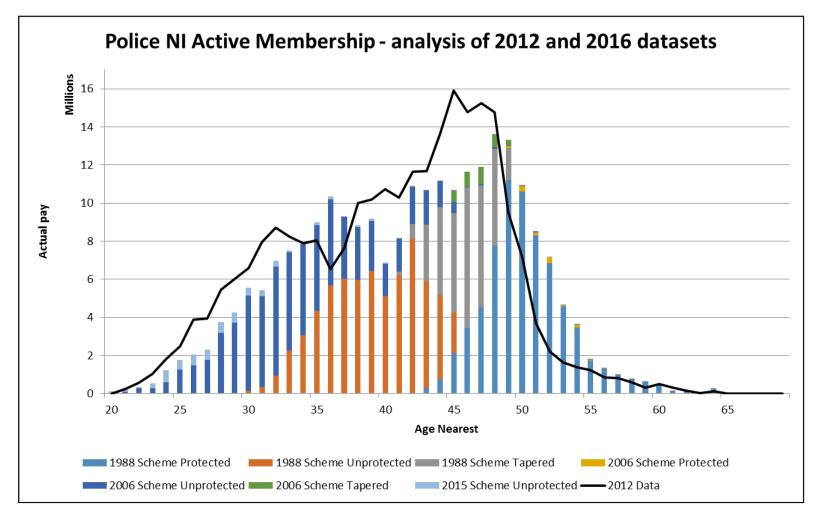
ii. Weighted by pension.

iii. Included in Total Pension.

iv. Including pension credit members.

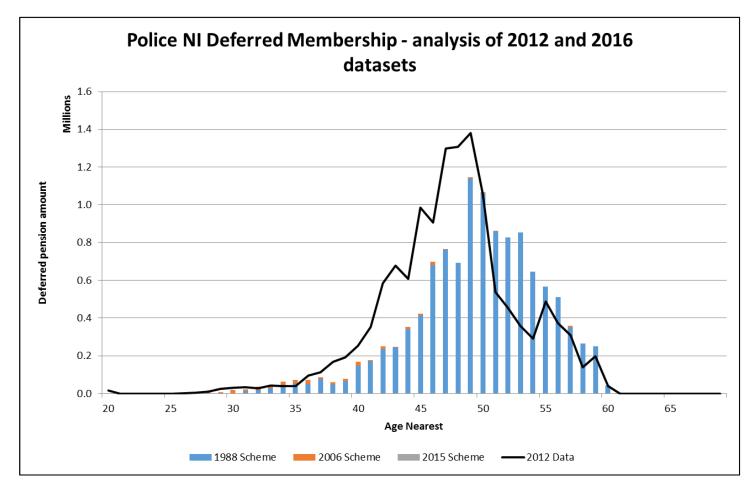






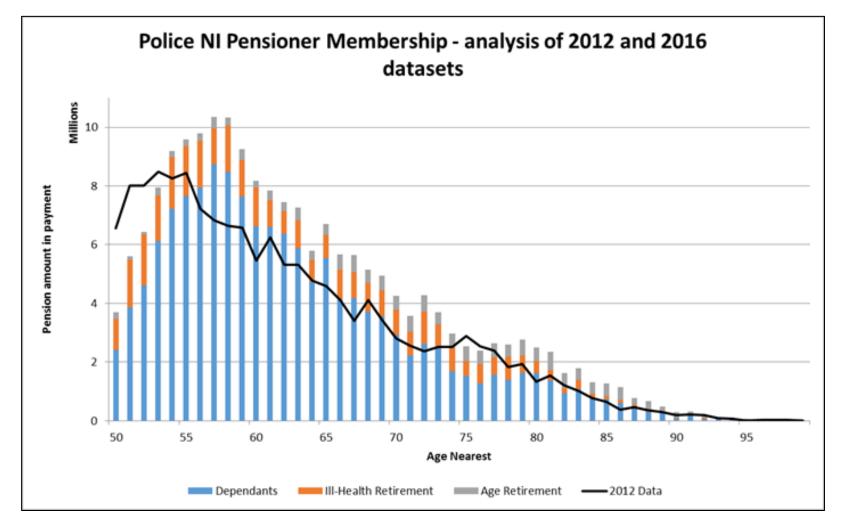


# Chart A2: Deferred pension data by age



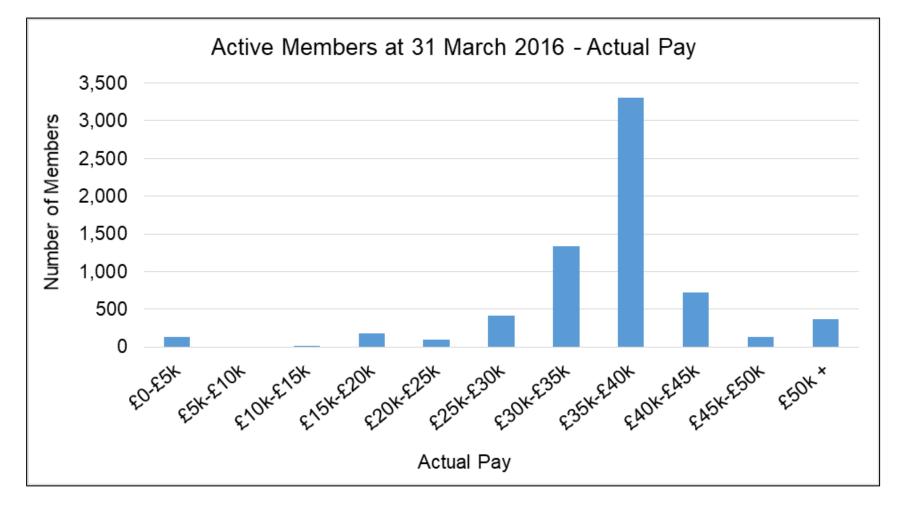


# Chart A3: Summary of pension amount by age





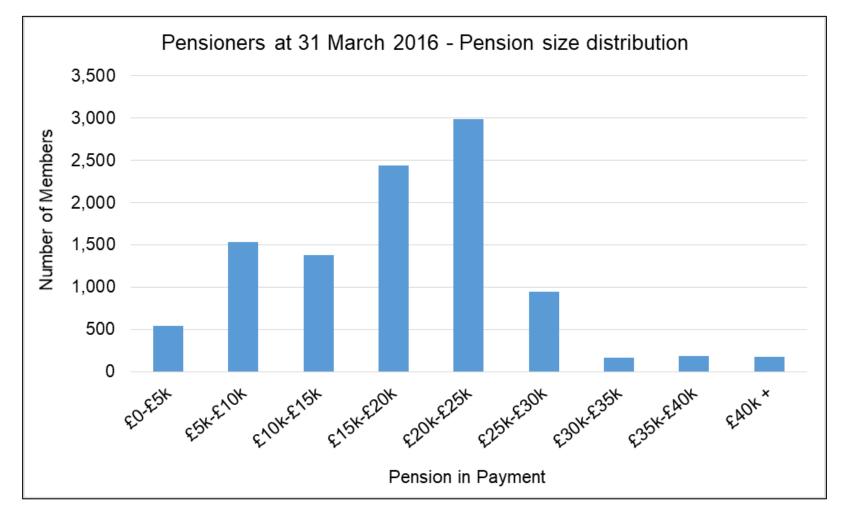
## Chart A4: Active membership: Distribution of actual pay as at 31 March 2016





Police pension schemes (Northern Ireland): Actuarial valuation as at 31 March 2016 Report on membership data

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



# Appendix B: Summary of movements data

Table B1: Reconciliation of membership over the inter-valuation period (2012-16) and the prior inter-valuation period (2008-12)

	Inter-valuation period 2012-2016	Prior inter-valuation period 2008-2012
	Actives	
Number at 31/3/12	7,112	8,014
Additions		-
New entrants	793	*
Deductions:		
Deaths	(14)	(18)
Retirements	(990)	(1,596)
Withdrawals	(197)	(480)
Number expected at 31/3/16	6,704	-
Valuation data at 2016	6,676	7,112
	Deferreds	, ,
Number at 31/3/12	1,373	1,054
Additions	· · · · · · · · · · · · · · · · · · ·	
New deferreds	219	*
Deductions:		
Deaths	(5)	*
Retirements	(252)	*
Other exits	(9)	*
Number expected at 31/3/16	1,326	-
Valuation data at 2016	1,308	1,373
	Pensioners	
Number at 31/3/12	9,414	8,031
Additions	,	*
New pensioners	1,287	^
Deductions:	,	-
Deaths	(512)	(382)
Number expected at 31/3/16	10,189	-
Valuation data at 2016	10,291	9,414
	Dependants	· · · · · · · · · · · · · · · · · · ·
Number at 31/3/12	1,623	1,463
Additions	·	
New dependants	527	*
Deductions:		
Deaths	(194)	(152)
Other cessations	(36)	(71)
Number expected at 31/3/16	1,920	-
Valuation data at 2016	1,910	1,623

\*Figures not available

# Table B2: Summary of Active Experience

Movement Type	Number of movements	Average age of movement
Entrant	793	31.3
Death	14	44.7
III Health Retirement	163	47.7
Normal Health Retirement	827	51.0
Withdrawal	197	36.3

# Table B3: Summary of Deferred Pensioner Experience

Movement Type	Number of movements	Average age of movement
Entrants	219	39.6
Retirement	252	55.1
Death	5	58.3
Other	9	39.3

# **Table B4: Summary of Pensioner Experience**

Movement Type	Number of movements	Average age of movement
Entrant	1,287	51.5
Death (no dependant)	147	75.1
Death (with dependant)	365	74.2

# Table B4: Summary of Dependant Experience

Movement Type	Number of movements	Average age of movement
Entrant	527	62.4
Death	194	85.6
Education Ceased	36	22.6

# 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
- > Previous final salary scheme (if any)
- > Gender
- > Date of Birth;
- > Date Joined Scheme
- Pensionable Salary (final salary scheme) (Annual rate of full-time equivalent pensionable pay in respect of final salary benefits at valuation date)
- > Average Pensionable Pay (Average full-time equivalent pensionable pay received in year to valuation date. Annualised equivalent for those not in service the full year)
- > Active Service (final salary scheme) (Pensionable service in final salary scheme to valuation date excluding doubling, transferred-in service and added years).
- > Active Service on full-time basis (final salary scheme) (As active service (final salary scheme), but part-time service reckoned as full-time)
- > Transferred-in Service (final salary scheme)
- > Part-time proportion
- > Current scheme (member is accruing benefits in)
- > Actual rate of pensionable earnings (Police 2015 scheme)
- > Annual rate of pensionable earnings (Police 2015 Scheme)
- > Accrued 2015 scheme pension at extract date
- > 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
- > Active service on full-time basis (2015 scheme)

# Notes

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

**Part time working:** For future service calculations we assume part-time staff will continue to work the same proportion of full time hours as they are working at 31 March 2016 (part-time proportion data item)



# **Deferred pensioners**

- > NI number
- > Previous final salary scheme (if any)
- > Gender
- > Date of Birth
- > Rank
- Current Deferred Pension (final salary scheme) (Includes transferred in service and added years)
- > Date Payable
- Current Deferred Pension (2015 Scheme) (Includes transferred in service and added years)

# Pensioners

- > NI number
- > Previous final salary scheme (if any)
- > Gender
- > Date of Birth
- > Rank
- > Date Joined Scheme
- > Date final salary pension began
- > Type of Pension
- > Member's Current Pension (final salary scheme)
- > Abated Pension
- > Pension Increases
- > Injury Award
- > Members Current Pension (2015 scheme)
- > Date 2015 scheme pension began
- > Member's pre-commutation pension (final salary scheme)

# Dependants

- > NI number
- > Final salary scheme (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
- > Added 2015 scheme pension
- > Added 2015 scheme partner's pension

# **Pension debit**

- > NI number
- > Scheme
- > Gender
- > Date of Birth
- > Current final salary pension debit
- > Current 2015 scheme 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 joined / rejoined left the Schemes during that year:

- > NI number
- > Scheme
- > Gender
- > Date of Birth
- > Date Joined Scheme
- > Date Left
- > Reason Ceased
- > Part-time
- > Service at Leaving
- > Previous final salary scheme (if any)
- > Total non-retirement related lump sum benefits payments from 2015 scheme
- > Total retirement related lump sum benefits payments from 1988 scheme
- > Total retirement related lump sum benefits payments from 2006 scheme
- > Total retirement related lump sum benefits payments from 2015 scheme

## Deferreds

For deferred pensioners whose pension started or ceased during each year in the intervaluation period, we were provided with the following details for each individual:

- > NI number
- > Scheme
- > Gender
- > Date of Birth
- > Date Left
- > Date Ceased
- > Reason Ceased
- > Total non-retirement related lump sum benefits payments from 2015 scheme
- > Total retirement related lump sum benefits payments from 2015 scheme



# Pensioners

For pensioners whose pension started or ceased during each year in the inter-valuation period, we were provided with the following details for each individual:

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

## Dependants

For dependants whose pension started or ceased during each year in the inter-valuation period, we were provided with the following details for each individual:

- > NI number
- > Scheme
- > Gender
- > Date of Birth
- > Dependant Type
- > Date Ceased
- > Reason Ceased
- > Total pension in payment at death

# Appendix E: Checks and adjustments applied to the 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+
Full-time service record inconsistent with scheme section	7
Full-time service record including transferred in service inconsistent with scheme section	6
Age at joining outside reasonable range (18-60)	24
Duplicate records	1
Total number of exclusions	32
Total exclusions for rating up	15

+ 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+
Date joined scheme missing	1
Date of birth missing	1
Age at joining outside reasonable range (18-120)	16
Service missing	1
Gender missing	1
Full time equivalent salary missing	1
Total number of exclusions	17
Total exclusions for rating up	16

<sup>+</sup> 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 as at 31 March 2016

Reason for Exclusion	Number of exclusions+
Date of leaving missing	1
Total number of exclusions	1
Total exclusions for rating up	1

\* 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 E4 – Pensioner and Dependant members as at 31 March 2016

Reason for Exclusion	Number of exclusions+
Pension was outside reasonable range (£0 - £155,000)	134
Duplicate records	3
Total number of exclusions	137
Total exclusions for rating up	134

\* 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 E5 – Summary of total exclusions as at 31 March 2016

	Total number of excluded records (valid and no liability <sup>5</sup> )	Total number of valid records excluded
Actives	32	23
Deferreds	1	1
Pensioners	137	134
Total exclusions	170	158

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

31 March 2016	Total number of records provided	Notified immediate exclusions	Valid records	Number of records after rate up
Actives	6,693	1	6,684*	6,676
Deferreds	1,308	0	1,308	1,308
Pensioners	12,204	3	12,201	12,201

\* Eight records could not be uprated for actives membership – all records within their respective group were excluded so no remaining records could be uprated

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

31 March 2015	Total number of records provided	Notified immediate exclusions	Valid records	Number of records after rate up
Actives	6,799	0	6,799	6,799

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

31 March 2016	Number of valid records (A)	Number of exclusions	Number of members after exclusions (B)	Uprating factor (A/B)
Active members	6,684	23*	6,661	1.003
Deferred members	1,308	1	1,307	1.001
Pensioners	12,201	134	12,067	1.011
Total membership	20,193	158	20,035	1.008

\* Eight records could not be uprated for actives membership – all records within their respective group were excluded so no remaining records could be uprated

31 March 2015	Number of valid records (A)	Number of exclusions	Number of members after exclusions (B)	Uprating factor (A/B)
Active members	6,799	16	6,783	1.002

<sup>&</sup>lt;sup>5</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).



# Checks on uprated dataset

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

For actives, the total pensionable payroll in the adjusted actives data as at 31 March 2016 (£247.3m) was compared with the estimated pensionable pay as at 31 March 2016 derived from employer contribution payments over 2015/16 and 2016/17 as provided in the independent source of data gathered by PSNI (£244.8m). The pensionable payroll from the data is fairly close (1% higher) to that implied from employer contributions. This check reconciles relatively closely.

For pensioners and dependants, the total pensioner payroll in the adjusted pensioner data (£200.1m) was compared with total pensions paid over 2015/16 as recorded in the independent data sources gathered by PSNI (£191.7m). This is a greater difference than we would normally expect. The administrators have explained that there are some members who opted out of the scheme on reaching 30 years' service prior to 31 March 2016 but had not yet claimed their pension. Pensions totalling £6.9m are included in the valuation data for these members as they are entitled to claim an immediate pension but it is not in the accounts data as it is not yet in payment. In addition there was £0.3m of pension included in the valuation for pensioners who had not received actual monetary payments in 2015-16 (and therefore were not reflected in the accounts).

Taken together, these amounts suggest the pensioner payroll data is around 0.6% higher than implied by the independent data source which reconciles relatively closely.

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 and those with reasonable critical data were used for analysis purposes. The subset of data used, checks applied and resulting numbers of exclusions are shown below.

## Table F1 – Active members

Reason for Exclusion	Number of exclusions <sup>+</sup>
Removed records where movements dates do not fall within the inter- valuation period or is missing	32
Removed records which were inter-force transfers	23
Total number of members removed	55

<sup>+</sup> 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 F2 – Deferreds

Reason for Exclusion	Number of exclusions <sup>+</sup>
Removed records where either movements dates do not fall within the inter-valuation period or had a missing movement date	10
Removed records which were inter-force transfers	3
Removed records where movements were duplicated	3
Total number of members removed	16

\* 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, family statistics and commutation of pension. For these purposes only relevant records and those with reasonable critical data were used for analysis purposes. The subset of data used, checks applied and resulting numbers of exclusions are shown below.

#### Table F3 – Pensioners and Dependants

Reason for Exclusion	Number of exclusions <sup>+</sup>
Removed records where either movements dates do not fall within the inter-valuation period or had a missing movement date	38
Removed records where movements were duplicated	1
Total number of members removed	39

\* 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.

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

The table below indicates the extent to which the valuation results might be incorrect owing to the approach taken to dealing with data deficiencies. For each category we illustrate the potential impact on the results were the adjustment applied, which assumes an average liability for each missing member, to prove incorrect and in fact under/overstates the actuarial liability for these members by 10%.

	Impact of error in assumption for missing data (as % of pay)		
	Uncorrected employer	Employer contribution	
	contribution rate	correction cost	
Actives (uprating applied: 0.3%)	Not material	Not material	
Deferreds (uprating applied: 0.1%)	Not material	Not material	
Pensioners (uprating applied: 1.1%)	0.1%	0.1%	

More detail on the uncertainties arising from data deficiencies can be found in Appendix C of our report *Police pension schemes (Northern Ireland) Actuarial valuation at 31 March 2016: Advice on assumptions* dated today.

## **Movements data**

# Setting assumptions

1. 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 our report *Police pension schemes (Northern Ireland) Actuarial valuation at 31 March 2016: Advice on assumptions* dated today.

# Cost Cap Net Leavers Liability (CCNLL)

- 2. The CCNLL is a component part of the cost cap calculation and is a quantification of the amount of pre-reformed 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 pre-reformed service who rejoined active membership during 2015-16.
- 3. To accurately calculate 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 CCNLL in the absence of fully complete data is provided in the Assumptions Report.
- 4. We expect that the uncertainty introduced by the approach above is not more than ¼% of pay. Although it should be noted that the deficiencies in the membership data discussed above could compound this scale of uncertainty.

Government	Police pension schemes (Northern Ireland):
Actuary's	Actuarial valuation as at 31 March 2016
Department	Report on membership data

# **Appendix H: Summary of benefits**

The Directions require the pre and post 2015 police pension 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.

		1988 Scheme	2006 Scheme	2015 Scheme
1.	Type of Scheme	Final Salary	Final Salary	Career Average Revalued Earnings
2.	Contracted out/in prior to 2016	Contracted out	Contracted out	Contracted out
3.	Employees Covered			
	Before 1 April 2015	Members who joined before 6 April 2006.	New entrants joining between 6 April 2006 and 31 March 2015	N/A
	On or after 1 April 2015	Protected 1988 Scheme members <sup>6</sup>	Protected 2006 Scheme members <sup>5</sup>	New entrants joining on or after 1 April 2015 and unprotected members <sup>5</sup>
4.	Normal Pension After 30 years' service at any age, or	55	60	
	Age (NPA)	after 25 years' service at age 50 and above, or otherwise at age 55 (some senior officers have higher retirement ages)		Flexible retirement from age 55 subject to benefits being actuarially reduced

<sup>&</sup>lt;sup>6</sup> Details of criteria for protection are set out at the end of this Appendix.

		1988 Scheme	2006 Scheme	2015 Scheme
		NB: Deferred pension age 60	NB: Deferred pension age 65	NB: Deferred pension age equal to State Pension Age
5.	Pensionable Pay (PP)	Basic Salary plus competency related threshold payment (but not including any other allowances)	Basic Salary plus competency related threshold payment (but not including any other allowances)	Basic Salary plus competency related threshold payment (but not including any other allowances)
6.	Final Pensionable Pay (FPP)	Highest of 1 year average of PP in last 3 years	<ul> <li>Highest of:</li> <li>1 year average of PP in last 3 years</li> <li>3 year average of PP in last 10 years</li> </ul>	Not required
7.	Member's Contributions	Contribution scale tiered by PP	Contribution scale tiered by PP	Contribution scale tiered by PP
8.	Normal Retirement			
	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.	1/70 <sup>th</sup> per year of actual service subject to a maximum of 35 years.	1/55.3 <sup>th</sup> of earnings in each year, revalued in line with the Consumer Prices Index (CPI) + 1.25%
				No cap on service
	Lump Sum	By commutation at actuarially neutral rates	4/70 <sup>th</sup> per year of actual service subject to a maximum of 35 years	By commutation at £12:£1.
		Generally option to commute up to 25% of pension	Option to exchange lump sum for additional pension	In accordance with HMRC limits and regulations

		1988 Scheme	2006 Scheme	2015 Scheme
	Spouse's Pension	50% of member's pre-commutation pension	50% of member's pension (excluding amounts awarded in place of lump sum)	50% of member's pre-commutation pension
		The pension paid to female officer's surviving spouses may be reduced in respect of periods of service before 1990 and for male officers in respect of service before 1972		
9.	Pension Increases	Governed by Pensions (Increase) Act	Governed by Pensions (Increase) Act	Governed by Pensions (Increase) Act
10.	III Health Retirement	Single tier – unable to perform ordinary duties	Two tier	Two tier <sup>7</sup>
		No reduction for early payment	Lower tier – unable to perform ordinary	Lower tier – unable to perform norma
		Service enhanced:	duties	duties
		< 5 years – no uplift	No reduction for early payment	No reduction
		5-10 years – pensionable service	No enhancement to service	No enhancement to service
		doubled	Higher tier – unable to engage in any	
		10-13 years – pensionable service increased to 20 years	regular employment	

<sup>&</sup>lt;sup>7</sup> In addition to the 2015 scheme benefits, former members of the 1988 scheme will receive ill health benefits under the 1988 scheme (based on service to 31 March 2015). Former members of the 2006 scheme will also receive a lower tier ill health pension under the 2006 scheme.

# Government Actuary's Department

Police pension schemes (Northern Ireland): Actuarial valuation as at 31 March 2016 Report on membership data

		1988 Scheme	2006 Scheme	2015 Scheme
		> 13 years – pensionable service	No reduction for early payment	Higher tier – unable to engage in any
		increased by 7 years (at 1/60 <sup>th</sup> accrual)	Service enhanced:	regular employment No reduction
			< 5 years – pensionable service plus the lower of:	
			<ul> <li>&gt; total accrued service multiplied by 3</li> <li>&gt; half of prospective service from date of retirement to earliest of NRA or 35 years' service</li> <li>&gt; 5 years – pensionable service increased by half prospective service from date of retirement to NPA or 35 years' service, whichever is the earlier</li> </ul>	Lower tier benefit plus half of prospective service to 60 multiplied by 1/55.3 of the members' annual full-time equivalent rate of PP
11.	Dependant's Pension on Death in Service	50% x III-health Pension	50% of Higher tier III-health Pension	50% of Higher tier III-health Pension <sup>8</sup>
		Maximum 33% x FPP	Maximum 25% x FPP	Maximum 25% x FPP
		Pension paid to female officer's surviving spouses may be reduced in respect of periods of service before 1990 and for male officers in respect of service before 1972		
12.	Dependant's			

Short Term

Pension

<sup>&</sup>lt;sup>8</sup> In addition to the 2015 scheme benefits, surviving eligible dependants of former members of the 1988 scheme will receive a pension based on ill health benefits under the 1988 scheme (based on service to 31 March 2015). Surviving eligible dependants of former members of the 2006 scheme will also receive a pension based on the lower tier ill health pension under the 2006 scheme.

		1988 Scheme	2006 Scheme	2015 Scheme
	Death in Service	13 weeks' full pay	None in excess of the long-term level of pension	None in excess of the long-term level o pension
	Death after Retirement	13 weeks' at member's rate	None in excess of the long-term level of pension	None in excess of the long-term level o pension
13.	Lump Sum Death Benefits			
	Death in Service	2 x PP	3 x PP	3 x PP
		In addition, there is an employee contributions underpin	In addition, there is an employee contributions underpin	In addition, there is an employee contributions underpin
	Death after Retirement	There is an employee contributions underpin	There is an employee contributions underpin	There is an employee contributions underpin
14.	Children's Pensions	Child must be under 16 years of age or under 23 and in full-time education or	Child must be under 19 years of age or under 23 and in full-time education	Child must be under 19 years of age or under 23 and in full-time education
	full-time training	0	25% x member's current/deferred	25% x member's current/deferred
		18.75% x member's current/deferred pension or ill-health pension, in the case of death in service, for up to 2 children*	pension or higher tier ill-health pension, in the case of death in service, for up to 2 children*	pension or higher tier ill-health pension in the case of death in service, for up to 2 children*
		*If there are more than 2 children then 37.5% will be shared equally	* If there are more than 2 children then 50% will be shared equally	* If there are more than 2 children then 50% will be shared equally

		1988 Scheme	2006 Scheme	2015 Scheme
15.	'Dependant' provision	Widow(er)	Widow(er)	Widow(er)
		Civil partners	Civil partners	Civil partners
		Children – including stepchildren/adopted children/other	Unmarried partners (subject to certain conditions)	Unmarried partners (subject to certain conditions)
		children dependant at time of death	Children – including stepchildren/adopted children/other children dependant at time of death	Children – including stepchildren/adopted children/other children dependant at time of death
16.	Withdrawal Benefits on Leaving			
	At least 2 Years' Total Reckonable Service	Deferred pension is payable from 60	Deferred pension is payable from age 65	Deferred pension is payable from State Pension Age
	Preserved Benefits	Generally proportionate to the pension based on service to age 55 – accrual between 1/60 and 1/45	1/70 + 4/70 lump sum	1/55.3 of earnings in each year, revalued in line with CPI + 1.25% in service
		If >25 years' service, accrued pension from age 50		
	Increases before retirement	Governed by Pensions (Increase) Act	Governed by Pensions (Increase) Act	Governed by Pensions (Increase) Act
	Death before retirement	50% of member's deferred pension	50% of member's deferred pension	50% of member's deferred pension
	Transfer Value	Yes	Yes	Yes

Police pension schemes (Northern Ireland): Actuarial valuation as at 31 March 2016 Report on membership data

		1988 Scheme	2006 Scheme	2015 Scheme
	Less than 2 Years' Total Reckonable Service	If the member has at least three months' service they may opt for a cash equivalent transfer value to be paid into another pension scheme. Otherwise, an immediate refund of their contributions (less the cost of reinstatement into S2P) is paid.	If the member has at least three months' service they may opt for a cash equivalent transfer value to be paid into another pension scheme. Otherwise, an immediate refund of their contributions (less the cost of reinstatement into S2P) is paid.	If the member has at least three months' service they may opt for a cash equivalent transfer value to be paid into another pension scheme. Otherwise, an immediate refund of their contributions (less the cost of reinstatement into S2P) is paid.
17.	Cessation on remarriage or cohabitation	No	No	No

# Criteria for scheme membership after 31 March 2015

# **Protected and tapered Members**

Statutory based transitional protections exist for certain members as follows:

- 1. All active 2006 Scheme members who, as of 1 April 2012, have 10 years or less to their current Normal Pension Age (i.e. age 55) will see no change in when they can retire, nor any decrease in the amount of pension they receive at their current Normal Pension Age. This protection will be achieved by the member remaining in their current scheme until they retire.
- 2. All active 1988 Scheme members who, as of 1 April 2012, have 10 years or less to age 55 or have 10 years or less to age 48 and are 10 years or less from a maximum unreduced pension, will see no change in when they can retire, nor any decrease in the amount of pension they receive at their current Normal Pension Age. This protection will be achieved by the member remaining in their current scheme until they retire.
- 3. There will be a further period of tapered protection for up to 4 years for scheme members. Members who are within 4 years of qualifying for transitional protection, as of 1 April 2012, will have limited protection so that on average for every month closer to qualifying for transitional protection they gain about 53 days of protection. The period of protected service for any member under these tapering arrangements will have finished by 31 March 2022. At the end of the protected period, they will be transferred into the 2015 scheme. These members fall into four categories:
  - (a) 1988 or 2006 Scheme members who on 1 April 2012 are aged 41 45 years with less than 20 years' service;
  - (b) 1988 Scheme members who on 1 April 2012 are aged 34 38 years with more than 20 years' service;
  - (c) 1988 Scheme members who on 1 April 2012 are aged over 38 years with 16 - 20 years' service; and
  - (d) 1988 Scheme members who on 1 April 2012 are aged 34 38 years with 16 20 years' service whose age plus service is at least 54 years.

Where a member falls into both categories (a) and (c), the greater number of days of protection will be given.

For further details, see

http://www.niassembly.gov.uk/globalassets/Documents/RalSe/Deposited-Papers/2014/dp1336.pdf