Government Actuary's Department

Police Pension Schemes (Northern Ireland)

Cost cap valuation as at 31 March 2016

Assumptions, methodology and data

Michael Scanlon FIA
Rob Fornear FIA

25 January 2022

Contents

At GAD, we seek to achieve a high standard in all our work. We are accredited under the Institute and Faculty of Actuaries' Quality Assurance Scheme. Our website describes the standards we apply.

Purpose

This report was commissioned by the Department of Justice (DoJ) and is addressed to them. We understand it will be made available to the Scheme Advisory Board.

The purpose of this report is to set out our proposed approach to the cost cap valuation as at 31 March 2016 and assist DoJ with their decision making. It is important that DoJ test the assumptions and methodology adopted for the 2016 valuation signed in early 2019 in light of the transitional protection remedy.

The report provides advice to DoJ on these matters, as required by Direction 55.

We would be pleased to provide advice on any alternative approaches which DoJ would like to consider in relation to any of the proposals in this report.

DoJ should consult with stakeholders as required on the contents of this report and confirm to GAD that it is content with the assumptions, methodology and approach to data that DoJ will adopt for the 2016 cost cap valuation.

Next steps

DoJ should consider the following recommendations and either confirm that they are content or instruct us to adopt alternative approaches:

1. No changes from the 2016 valuation assumptions, as set out in section 1
2. The calculation methodology we recommend, as set out in section 2
3. Derivation of member eligibility from available data, as set out in section 3

1. Assumptions

2016 assumptions

The assumptions set by DoJ used in the 2016 cost cap valuation report must be the same as those adopted in the 2016 valuation reports signed in early 2019, **unless those assumptions are not best estimates or are insufficient for the purpose as a direct result of the impact of the transitional protection remedy.** This may apply because the original 2016 assumptions:

1. May be insufficient for the 'better-of' calculations we need to perform to value the remedy
2. May not be best estimate because member behaviour may change in light of the remedy

DoJ should consider the following recommendation and either confirm that they are content or instruct us to adopt alternative assumptions:

Recommendation

We recommend no changes from the 2016 valuation assumptions.

In making the recommendations below in Appendices 1C to 1E we have tested that the possible impact of any potential changes driven by analysis of data described does not exceed the 0.25% materiality limit described on appendix 2A. We set out further details in Appendices 1A to 1F.

2. Methodology

Calculation methodology

DoJ should consider the following recommendations on calculation methodology and either confirm that they are content or instruct us to adopt alternative approaches:

Recommendations

- A materiality limit of 0.25% pay (DoJ may propose an alternative)
- Members choose the higher valued benefit at each mode of exit
- Remedy costs are assessed for the period 2015-2022, with costs in respect of 2015-16 assumed to be equal to the costs in 2016-17
- Allowance is made for differences in pre-2015 and post-2015 scheme member contributions
- DoJ should consider whether to make allowance for the cost of reinstating members who opted out of the pension scheme (provisional results do not include any such allowance)
- There is no allowance for the costs of protected members' post-2022 benefits accruing in the post-2015 scheme, rather than their pre-2015 scheme
- Tax and other impacts are excluded from the calculations

We set out further details in Appendices 2A to 2G.

Remedy cost - components

The Directions list five components of the transitional protection remedy costs. The following table sets out a summary of the calculation of each of these components, based on the methodologies above.

Remedy cost component	Calculation
Change in liabilities for the remedy period	Calculated based on Deferred Choice Underpin
Change in liabilities pre remedy period	Nil: no changes to assumptions
Change in liabilities post remedy period	Assumed nil: treatment of protected members' post-2022 benefits and no change to assumptions
Change in member contributions during the remedy period	Calculated based on projected salaries in the remedy period
Change in member contributions post remedy period	Assumed nil: treatment of protected members' post-2022 benefits and no change to assumptions

3. Data: Member eligibility for the transitional protection remedy

Determining members in scope for remedy

Summary

It is critical to identify members in the 2016 valuation data who are in scope for the transitional protection remedy. Broadly, as set out in the Department of Finance (DoF) consultation response, members in service before 1 April 2012 and on or after 1 April 2015 are in scope of the transitional protection remedy. We have identified the following members as being in scope of the transitional protection remedy:

- Date of Joining before 1 April 2012, or
- Protected or Taper Protected Status (even if recorded Date of Joining after 1 April 2012)

However, this will not always accurately identify members in scope, for the reasons set out in the Limitations box.

Following discussions with DoJ, we do not expect these limitations to have a material impact on the results and so we do not require any additional data to prepare the cost cap valuation report.

Limitations

We have identified the following potential sources of inaccuracy:

a. The Date of Joining is after 1 April 2012 and reflects the date joined current employment (or current FRA) but the member may have had previous qualifying employments which commenced prior to 1 April 2012.

b. The Date of Joining item is not always clearly defined and may not be correctly recorded by administrators.

c. To avoid the issues noted above, we have calculated Date of Joining by deducting the pensionable service recorded from the effective date of 31 March 2016

d. Date of Joining is before 1 April 2012 but the member may have had a disqualifying break in service (for example, five years or more) or was not an active member of the scheme as at 31 March 2012 or 31 March 2015.

e. The Date of Joining is after 1 April 2012 and reflects the date first joined scheme but the member may have had previous service in a different public sector scheme which brings them in scope for the transitional protection remedy.

f. We may be using a later than actual Date of Joining for part-time members.

Summary

Summary of active data as at 2016

6,676
Active members as at 31 March 2016

£247.3m
Active salary roll as at 31 March 2016

Members in scope for remedy

5,920
Active members in scope for remedy

94%
Of the active membership as at 31 March 2016 is in scope for remedy*

*Based on actual pay

Determining members in scope for remedy

Data used is that collected for the valuation as at 31 March 2016. We have not requested any further data since this is not expected to materially alter the results of the valuation and would be a significant undertaking.

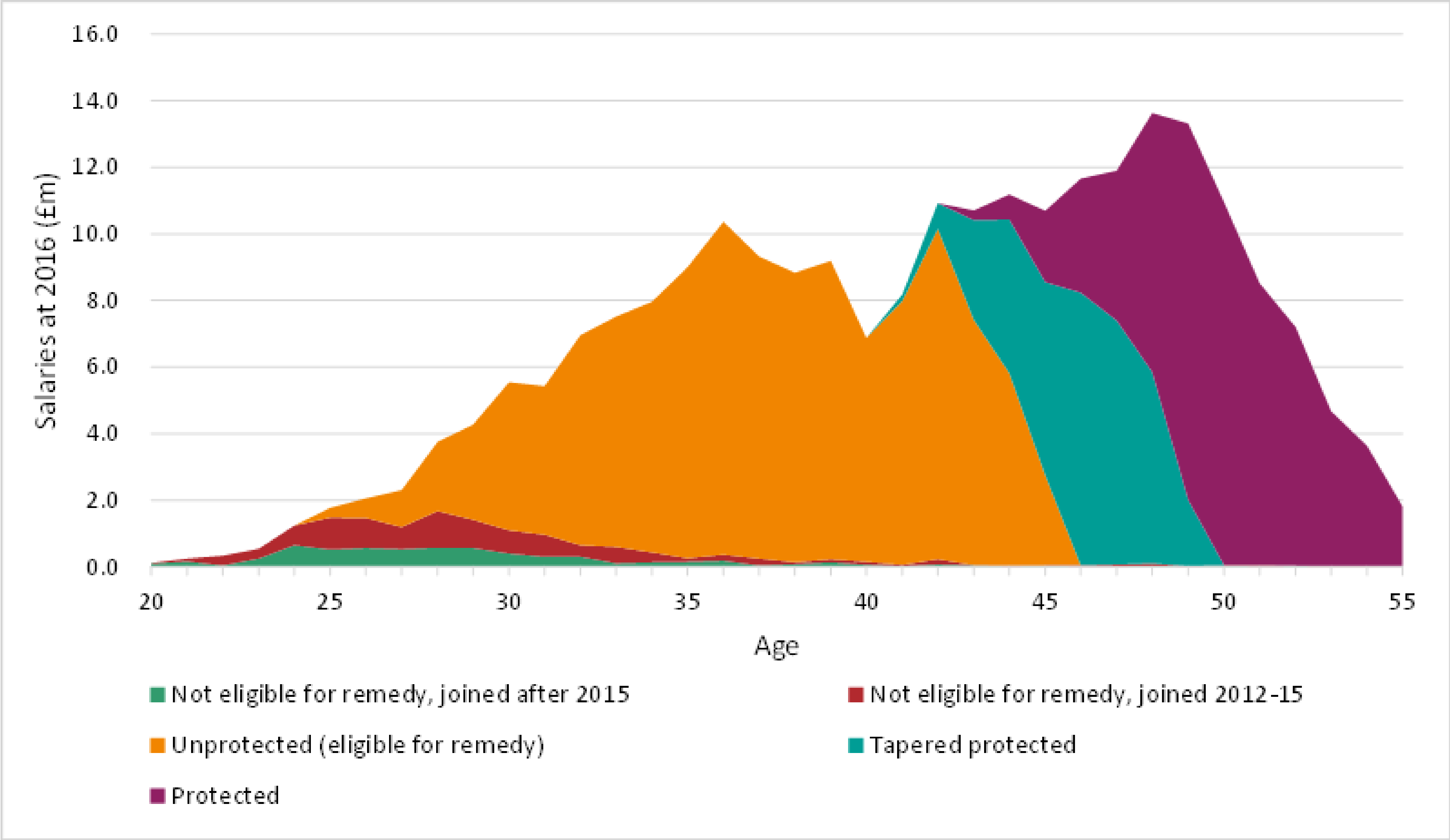
Data uncertainty

There is **residual data uncertainty** in relation to members in scope for remedy which could affect the valuation results.

An impact of between **-0.8% and +0.8%** on the cost cap contribution rate

The sensitivity to the left shows the impact on the cost cap cost of the scheme if 5% more or less active members are eligible for remedy than assumed.

Membership in scope for transitional protection remedy

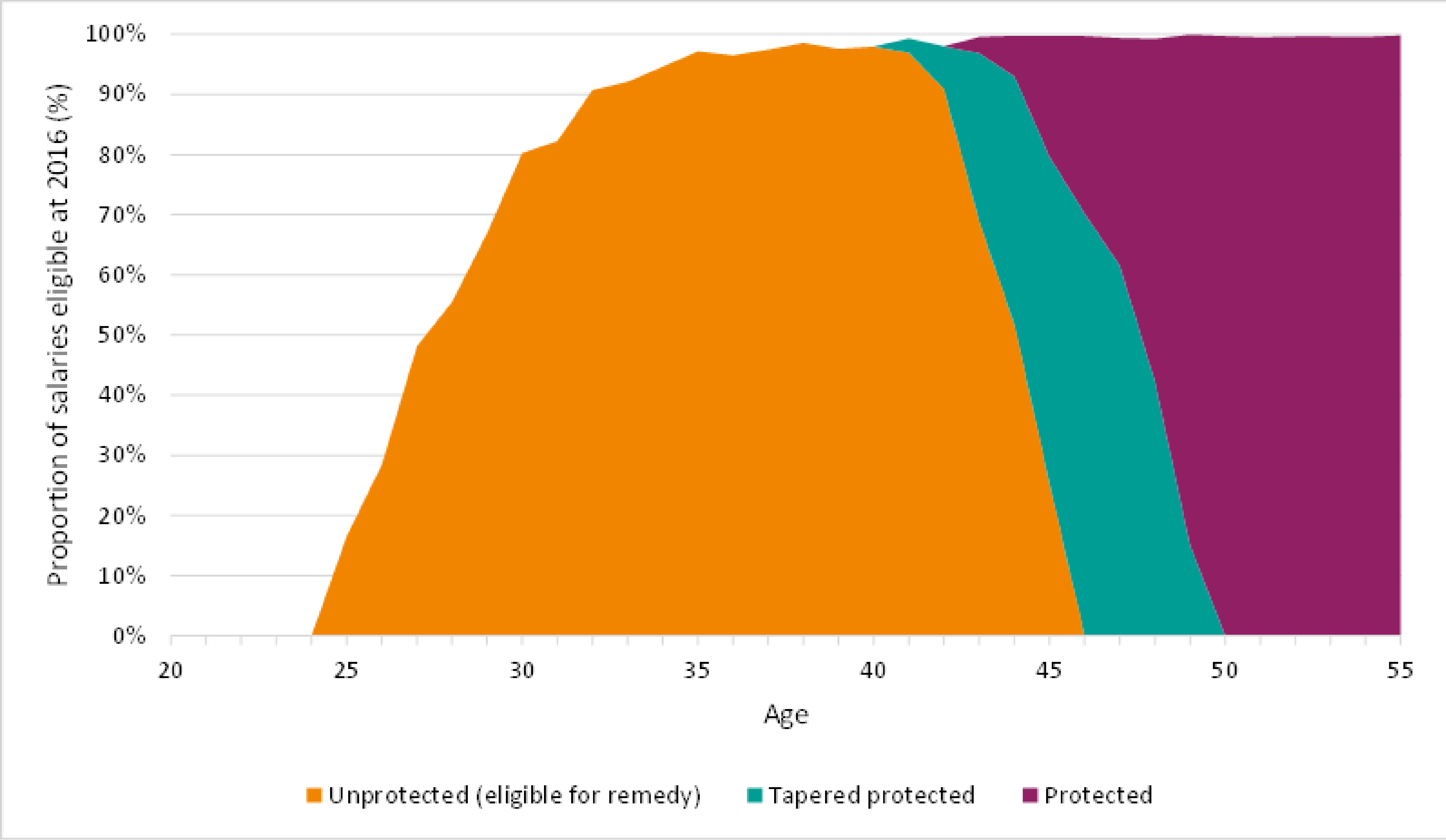


Summary statistics at 31 March 2016 – Actives

Protection status of members as at 31 March 2016

Section	Number of members	Salary £m
Protected members	1,681	71.5
Tapered protected members	927	37.6
Eligible unprotected members	3,313	122.5
Ineligible and joined between 2012-2015	473	9.6
Ineligible, joined on or after 1 April 2015	283	6.0
Total	6,676	247.3

Proportion of members eligible for the transitional protection remedy



4. 2016 data: quality and uncertainties

Active data as at 31 March 2016

Summary statistics

6,676 Actives	71:29 Male : Female membership	£247.3m actual salary roll	41.8 yrs average age*	£37,040 average salary

* Weighted by actual salary

Data quality

Who is responsible for data quality?

DoJ, as scheme manager, has responsibility for managing and administering the scheme. They are responsible for providing data to GAD in line with our specifications. This was generally reasonable for the purposes of the 2016 valuation calculations, however, some aspects of the data were incomplete and/or unreliable for certain elements of our calculations. The results of this valuation therefore rely on assumptions and adjustments in respect of incomplete and/or unreliable data. As stated in our reports dated 11 March 2019, in GAD's opinion these adjustments are reasonable and appropriate for the purpose of this actuarial valuation. However, it should be noted that the results in the 2016 valuation reports might have been different if more reliable data had been available. GAD have subsequently received data for the valuation as at 31 March 2020, and the process of checking that data and reconciling it with data as at 31 March 2016 is ongoing.

Where can I find out more?

Details of the 2016 valuation data provided including any checks and adjustments made to the data are set out in the 2016 valuation data report. Details of the assumptions made for data uncertainties are set out in Appendix C of the 2016 valuation assumptions report.

5. Reliance and limitations

Limitations

Data

As set out in the 2016 data report issued on 11 March 2019, GAD has relied on data and other information supplied by DoJ and PSNI as described in the report. GAD has not sought independent verification around its general completeness and accuracy.

Any checks that GAD has made are limited to those described in the report, including those relating to the overall reasonableness and consistency of the data. These checks do not represent a full independent audit of the data supplied.

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.

Macro-level risks

The Directions permit changes to the 2016 valuation data and assumptions only as a direct result of the impact of the transitional protection remedy. In preparing this advice, we have therefore not made any adjustments for material macro-level risks or uncertainties, such as climate-related risk.

Reliance

Reliance and sharing

This report has been prepared for the use of DoJ and will be made available to the Scheme Advisory Board.

No other person or third party is entitled to place any reliance on the contents of this report, except to any extent explicitly stated herein. GAD has no liability to any person or third party for any action taken or for any failure to act, either in whole or in part, on the basis of this report.

Compliance statement

This report has been prepared 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.

Appendix 1: Assumptions

Appendix 1A: Direction requirements

The Directions require that assumptions set by DoJ used in the 2016 cost cap valuation report must be the same as those adopted in the 2016 valuation reports signed in early 2019, **unless those assumptions are not best estimates or are insufficient for the purpose as a direct result of the impact of the transitional protection remedy** [Direction 55].

Where this applies, DoJ must determine new assumptions:

- having obtained advice from GAD
- following such consultation of such persons (or representatives of such persons) as DoJ considers appropriate
- that are best estimates, and do not include margins for prudence or optimism
- that have regard to:
  - previous valuation assumptions
  - the analysis of demographic experience in the 2016 valuation report
  - relevant data from any other source
  - any emerging evidence about historic long term trends or long term trends expected in the future

Appendix 1B: Assumptions not affected by remedy

The following summarises assumptions set by DoJ which we have not considered further as part of this work on the basis that we see no reason why they would be inappropriate as a direct result of the transitional protection remedy:

- Mortality before and after retirement
- Ill-health retirement
- Proportion married / partnered
- Age differences between spouses / partners
- Commutation of pension for a lump sum in excess of any defined lump sums

Appendix 1C: Age retirement

2016 retirement assumption

The original 2016 age retirement assumptions for the 1988 Scheme distinguished between members depending on protection status and service:

1988 Scheme Membership Group	Retirement Assumptions
Protected members and tapered members	Many members retire on reaching 30 years' service (all assumed to retire by age 60)
Unprotected members	No members retire before age 55, many at the later of age 55 or 30 years' service (all assumed to retire by age 60)

Potential member behaviour

As a result of the transitional protection remedy, those in scope for remedy have the option of taking 1988 Scheme benefits for service up to 2022. Therefore, unprotected members may retire with a greater proportion of 1988 Scheme benefits and might be expected to behave more like protected members and retire earlier.

Analysis

We recommend that the existing age retirement assumptions continue to be adopted.

We have considered adjusting retirement patterns for 1988 Scheme unprotected members to consider the impact of these members retiring when they reach 30 years' of service, regardless of age at this date.

Our analysis has shown the impact of a best estimate change in the retirement assumption would be immaterial to the results of this valuation. The increase in value for the final salary element of the pension being taken earlier is offset by the reduced cost of the 2015 Scheme pension element being taken before age 55 and therefore subject to a deferred normal retirement age of SPA. In the hypothetical scenario where all members change behaviour exactly when it increases the cost of remedy there may be a small but material increase in the cost, but this is the unique scenario that maximises costs and we do not regard it as best estimate.

For the 2006 Scheme there is a single retirement assumption which covers all protected, tapered and unprotected members. We recommend no change to this assumption.

Appendix 1D: Salary scales

For the purposes of an actuarial valuation, it can be appropriate to set a long-term assumption that reflects the ‘average’ expected experience of scheme members. However, this does not take account of more granular variations in pay growth, which may impact on the valuation of an underpin.

Analysis

We recommend retaining the original salary scale assumptions.

The original 2016 valuation assumptions did not differentiate between members.

We have therefore investigated whether adopting three alternative salary scales (low/medium/high) and applying these to the population in-scope of the transitional protection remedy of a typical scheme would materially impact on the transitional protection remedy cost.

Our analysis has shown the impact of such a change in the salary assumption would be immaterial to the results of this valuation.

Appendix 1E: Withdrawal

Like salary scales, different groups of members may have withdrawal rates that are higher or lower than the average adopted at the 2016 valuation. In theory, this could affect the cost of the transitional protection remedy.

Analysis

Although it would be possible to further refine the withdrawal assumption by splitting the population into groups (low withdrawal rates, medium withdrawal rates, high withdrawal rates), we would not suggest further work in this area because:

- The analysis we have carried out on salary scales indicates the impacts of changes to salary scale are immaterial. Sensitivity analysis indicates that the transitional protection remedy cost is less sensitive to withdrawals than salary scales.
- The existing withdrawal assumption provides for a probability distribution of withdrawals at each future age, which is more refined than the existing salary scale assumptions and therefore, should already better reflect differences between members than the salary scale assumptions.

Appendix 1F: Turnover

'Turnover' is a collective term for the set of assumptions we use to project a population of active members. As part of this valuation, we will project the number of members who are eligible for the transitional protection remedy from the data as at 31 March 2016 out to 31 March 2022. The original valuation assumptions are long-term assumptions set with the purpose of valuing the accrued liabilities at 31 March 2016, and allowed for decrements over all future service, not just for the period to 2022. It is therefore appropriate to consider whether the 2016 valuation assumptions are appropriate for projections over the period to 2022.

Analysis

We have considered the appropriateness of the projection of the 2016 data using our valuation assumptions for typical schemes, by comparing the projected run off in 2016-20 with the known run off from 2012 to 2016. Projected run offs in 2016-20 are generally below the known run off from 2012-16, but we think this outcome is reasonable because:

- Run off in 2012-16 would have included a high number of recent joiners leaving the scheme, we would expect lower turnover in the transitional protection remedy group after 2016 because (by definition) this group will have at least 4 years' service.

Analysis (cont)

- The number of withdrawals in 2012-16 was above assumptions. However, the withdrawals assumptions were not changed at the 2016 valuation, because it was assumed that withdrawals would not remain at their higher 2012-16 rates. This is consistent with the outcome in the projections: run offs in 2016-20 are generally below the known run off from 2012-16.

We are therefore content that the original long-term projection assumptions remain appropriate for the population in scope of the transitional protection remedy.

Appendix 2: Methodology

Appendix 2A: Materiality limits

In preparing the valuation results, we may adopt specific simplifications provided they are not expected in aggregate to have a material impact on the valuation results. In this context, we propose that an estimated aggregate **impact of less than 0.25% of pay** would be regarded as immaterial. DoJ should let us know if they would like us to work to an alternative materiality limit; in particular it may be appropriate to work to a tighter limit if the valuation results are close to the cost cap ceiling or floor.

Details

The impact of a simplification is the estimated difference between the valuation results (as calculated using the simplification) and the valuation results if calculated in full detail. Such simplifications may relate to the data requested, the form of assumptions adopted, or the calculations performed. For example, the liabilities in respect of historic added years contracts may be sufficiently small that it would be disproportionate to value them in the same level of details as other liabilities, so we may adopt simplifications.

Note that the data used and the assumptions adopted have a much greater impact on the valuation results. These impacts are discussed at chapter 4 of the 2016 valuation report, and for example a decrease in the discount rate of 0.25% pa would increase the employer contribution rate by 11.4% of pay.

Appendix 2B: Member choice

Under the Directions, eligible members accrue benefits in the pre-2015 final salary schemes, with the assumed right to choose on benefit crystallisation to have accrued pension benefits for the remedy period either in that pre-2015 schemes or in the post-2015 CARE scheme. We assume that on benefit crystallisation the member takes the higher valued benefit.

Details

We have valued the remedy benefits by projecting the member's benefits for the remedy period in both the pre-2015 final salary schemes and the post-2015 CARE scheme. Benefits are valued in each contingency (eg retirement or death) for each eligible individual, using the same demographic assumptions (eg retirement ages) for both the pre-2015 and post-2015 schemes. The higher valued benefits for each individual in each contingency are chosen.

Note that when choosing the pre-2015 and post-2015 schemes, exits at different ages (eg retirement between ages 55 and 60) are considered together, and no account is taken of any offsetting costs / savings (eg if the pre-2015 scheme were more valuable on retirement at 55, but the post-2015 scheme were more valuable on retirement at age 60). We are content that any such offsetting costs / savings are immaterial, given the design of the schemes.

Appendix 2C: Remedy benefits accrual period

The costs of remedy are assessed for the remedy period between 1 April 2015 and 31 March 2022, calculated as follows:

- 1 April 2016 to 31 March 2022: Costs are calculated prospectively based on membership data as at 31 March 2016.
- 1 April 2015 to 31 March 2016: Costs assumed to be in line with cost for service from 1 April 2016 to 31 March 2017.

Details

The direct calculation of costs for the period 2015 to 2016 is challenging both in terms of data requirements and calculation methodology. Since the data we would require is unlikely to be available and the overall impact of this period is small compared with the overall uncertainty in the calculation, the approach appears the most reasonable and practical.

Appendix 2D: Member contributions

The contribution rates in the pre-2015 and post-2015 schemes are different, with:

- the 1988 Scheme having higher rates than the 2015 Scheme
- the 2006 Scheme having lower rates than the 2015 Scheme

at all salary levels.

As part of the transitional protection remedy it will be necessary to make good any under or over payment of contributions by members who are currently in one scheme but opt for benefits in the other.

Analysis

We have estimated the potential under or over payment of contributions during the remedy period by projecting the 2016 active salary data to the end of the remedy period in 2022 and calculating the difference in contributions between the pre-2015 and post-2015 schemes (including allowance for 2015/16). We have made no allowance for tax.

Appendix 2E: Opt-outs

Some individuals would have been eligible for the transitional protection remedy but opted out of the scheme. We understand that members who opted out due to the changes to the pension scheme may be eligible to apply to have their opt-out reversed and benefits reinstated. This may lead to an additional cost for accrual prior to 2016 and may also affect on the cost of benefits accruing after 2016.

Analysis

We have little or no data on which to assess the number of members who would be eligible for this reinstatement, and it is not clear whether all those eligible will choose to be reinstated and pay their backdated member contributions. The limited evidence we do have suggest that the costs of reinstating all eligible members might be small but material.

Appendix 2F: Protected members: post-2022 benefits

Under the 2015 scheme reforms, protected members would accrue benefits in the pre-2015 schemes until retirement, which could be after 2022 if members work beyond their expected retirement date. These members will now be moved into the 2015 scheme from 2022.

Analysis

Our analysis shows that the costs associated with protected members working beyond 2022 would be immaterial.

Appendix 2G: Exclusions

The calculated costs of remedy make no allowance for the following:

- Any tax impact on members or HMRC, consistent with the treatment at the 2016 valuation
- Any impact of tax compensation schemes associated with the remedy
- Members' additional voluntary contributions or transfers-in, the value of which are assumed to be unchanged as a result of remedy
- Pension debits and credits on divorce, which are assumed to be cost neutral to the scheme
- Any adjustments made in respect of Public Sector Transfer Club transfers