



Teachers' Pension Scheme Verification of cost of new scheme design

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1 Introduction

- 1.1 This report has been prepared by the Government Actuary's Department (GAD) in its capacity as actuarial advisor to the Department for Education (DfE) on the Teachers' Pension Scheme (TPS or "the scheme"). In carrying out this verification I have followed our normal quality processes for work conducted on public service pension matters¹.
- 1.2 This report contains our verification that the new scheme design is within the cost ceiling and sets out the data, methodology and assumptions used in determining the value of the Reference Scheme and the new scheme design.
- 1.3 I understand that DfE will forward this note to HM Treasury (HMT).
- 1.4 The data, methodology, assumptions and new scheme design described in this report have been approved by HMT.

¹ The GAD Statement of Understanding sets out the standards which the Department currently applies for any work carried out in this area.

http://www.gad.gov.uk/Documents/Occupational%20Pensions/GAD_Statement_of_Understanding_v_1.1_Dec_2011.pdf

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2 Verification Statement

2.1 The Chief Secretary to the Treasury set out in a paper to Parliament *Public Service Pensions: good pensions that last*, Cm8214, the gross cost ceilings for the main public service pension schemes. The gross cost ceiling is the scheme specific contribution rate required to provide the Government's preferred design (the "Reference Scheme") set out in that command paper. The command paper set out the following cost ceiling for the Teachers' Pension Scheme ("TPS"):

Gross cost ceiling	Employers	Employees
21.7%	12.1%	9.6%

- 2.2 Following scheme level discussions, the Secretary of State for Education has set out the new scheme design for the TPS for service from 1 April 2015. The new scheme design is described at Appendix A.
- 2.3 In its capacity as advisor to HMT, GAD provided advice to HMT on cost ceilings for scheme level discussions in the note of 7 October 2011: *Cost Ceilings for scheme level discussions: Advice on data, methodology and assumptions*. Section 8 of that note provided advice on verifying that proposed scheme designs are within the cost ceiling. This report has been prepared in accordance with the advice outlined in the 7 October 2011 report and subsequent HMT instructions (in particular, the treatment of Past Service costs as outlined in Appendix D).
- 2.4 I have compared the cost of the scheme design set out in Appendix A with the Reference Scheme, and concluded that this scheme design is within the required cost ceiling² (when assessed on the revised assumptions discussed in 3.4 and 3.6). This conclusion is subject to the comments below.
- 2.5 The conclusion in 2.4 is dependent on, and sensitive to, the data, methodology and assumptions adopted. These are set out in Section 3 and discussed in Section 4.
- 2.6 The data, methodology, assumptions and new scheme design described in this report are subject to approval by HMT, based on advice from GAD in its capacity as advisor to HMT. HMT has confirmed to DfE that it is content with the data, methodology, assumptions and new scheme design.
- 2.7 The costs of both the new scheme design and the Reference Scheme will change over time. HMT has specified that the comparison should allow for the likely increases in the average age of the scheme's membership due to the increased pension ages. I have considered the possible increase in the average age of the membership and conclude that, allowing for this effect, the cost of the new scheme design set out in Appendix A remains within the cost of the Reference Scheme when assessed on the revised assumptions discussed in 3.4 and 3.6. This comparison is discussed in section 5.
- 2.8 The Limitations on our advice are described in Section 6.

² GAD has calculated that an accrual rate of 1/57.1 is available within the revised cost ceiling. The Heads of Agreement specifies an accrual rate of 1/57.

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3 Data, methodology and assumptions

- 3.1 This section sets out the data, methodology and assumptions used for the purposes of comparing the Reference Scheme with the new scheme design.
- 3.2 The cost ceilings were set in accordance with the data, methodology and assumptions set out in GAD's notes:
- > *Review of the Teachers' Pension Scheme: Assessment of cost ceiling and scheme specific proposals: Draft cost ceilings – results dated 8 September 2011, which referred to:*
 - > *Review of the Teachers' Pension Scheme: Assessment of cost ceiling and scheme specific proposals: Data, methodology and assumptions dated 11 August 2011.*
- 3.3 As required in paragraphs 8.2 to 8.10 of the GAD advice of 7 October 2011, I have considered whether the data, methodology and assumptions used to calculate cost ceilings will be appropriate to provide a fair comparison between the costs of the new scheme design set out in Appendix A and the costs of the Reference Scheme.
- 3.4 The following changes have been made to the methodology and assumptions outlined in the above report of 11 August 2011:
- > The gross cost ceiling outlined in 2.1 above assumed that all members retired on reaching their State Pension Age. No allowance was made for early or late retirements. The new scheme design allows for (enhanced) early retirement terms between age 65 and State Pension Age.
 - > In order to provide a fair comparison it is necessary to allow for early retirement in assessing the cost of the proposed scheme design set out in Appendix A.
 - > Consequently the Reference Scheme will also be reassessed allowing for early retirement from age 65 (as outlined in Appendix C) on early retirement terms consistent³ with the current TPS scheme.
 - > As requested by HMT we have assumed that the introduction of the (enhanced) early retirement terms will result in all unprotected members retiring 7½ months earlier than they would have otherwise done.
- 3.5 These revised assumptions are used to assess the cost of the new scheme design set out in Appendix A and costs of the Reference Scheme. Note that the contribution rate required for the Reference Scheme using these revised assumptions will differ from the original cost ceiling, and so the cost ceiling outlined in 2.1 above does not play any direct role in the comparison.
- 3.6 The following additional assumptions are required to calculate the cost of the new scheme design:
- > All unprotected active members are assumed to take retirement 7½ months earlier on average than noted in the retirement pattern outlined in Appendix C to this report.
 - > Early retirements from active service between age 65 and State Pension Age will attract an enhanced early retirement reduction of 3% pa.

³ Early retirement factors in the current TPS are set in order to be broadly cost neutral on a deferred benefit approach.

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- > The early retirement factors for the existing scheme are set in order to be broadly cost neutral on a deferred benefit approach. This is assumed to continue for deferred pensioners and therefore all deferred members are assumed to retire at State Pension Age.
 - > Early retirement reductions applied on retirement from active service at ages younger than age 65 will be a combination of the enhanced early retirement reduction between State Pension Age and age 65 and the early retirement factors adopted in the existing final salary scheme for periods before age 65.
- 3.7 The new scheme design may lead to differences in member behaviour. As a result of the enhanced early retirement factors the liabilities may be expected to increase. As requested by HMT we have assumed that the past service liability will increase by an amount equivalent to assuming that all unprotected members will on average retire 7½ months earlier than they would have otherwise done. Allowing for this past service cost the cost of the new scheme remains within the revised cost ceiling.
- 3.8 Both the Reference Scheme and the new scheme are assumed to have the same contracted-out status.

Summary of data, methodology and assumptions

- 3.9 The membership data used to assess the cost of the Reference Scheme and the new scheme design outlined in Appendix A is the most recent full extract of membership data used for actuarial valuations of the scheme (data as at 31 March 2008) and is summarised in Appendix B.
- 3.10 The methodology used to determine the value of the Reference Scheme and the new scheme design is the standard actuarial methodology known as the Projected Unit Method with a one year control period.
- 3.11 The assumptions used to determine the relevant costs are:
- > a real discount rate of 3% pa in excess of CPI in line with the current SCAPE discount rate
 - > a nominal discount rate of 5% pa
 - > earnings increases of 4¼% pa
 - > CPI increases of 2% pa
 - > improvements in post-retirement life expectancy in line with the ONS 2008-based principal population projections
 - > proportion of pension commuted in exchange for a lump sum of 75% of HMRC limits
 - > all active members are assumed to retire in accordance with the rates outlined in Appendix C
 - > for other demographic assumptions, set as best estimates

Summary of HMT specified tests

- 3.12 HMT specified a number of tests which the new scheme design must satisfy. The details of these tests, which must be applied consistently across all schemes, are formally outlined in various letters and reports issued by HMT.

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3.13 For convenience, the following provides a succinct summary of the various tests:

3.14 *“Short-term”* test

The cost of the new scheme design cannot exceed the cost of the Reference Scheme over the 7 years from April 2015.

3.15 *“Long-term”* test

The assumed retirement patterns for new entrants mean that the relative costs of the new scheme design and the Reference Scheme vary in the longer term. HMT requires the cost of the new scheme design not to exceed the cost of the Reference Scheme in the longer term.

This test is discussed further in section 5.

3.16 *“Past Service Cost”* test

Any element of the new scheme design which is expected to lead to further costs relating to past service effects (“past service costs”) are required to be compensated by reductions in cost elsewhere. Past service costs are to be spread over the salaries of unprotected members over the 7 years from April 2015.

Further details on the Past Service Cost test are outlined in Appendix D.

3.17 The Past Service cost test requires the use of a “new reference cost”. The new reference cost is the cost of the new scheme design but with the accrual rate set at the maximum rate that will pass both the short-term and long-term tests above. HMT requires that the total cost of the new scheme and the Past Service costs is less than the new reference cost over the 7 years from April 2015.

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4 Sensitivity analysis

4.1 The conclusion in paragraph 2.4 is sensitive to the assumptions used. The key sensitivities in the assumptions are as follows⁴:

- Earnings growth relative to CPI: If earnings growth is assumed to exceed CPI by less than the current margin of 2.25% then the assessed cost of the new scheme design will be in excess of the cost of the Reference Scheme. The converse is also true.
- Age retirement assumptions: The figures provided in this report have been based on the assumption that all unprotected active members will retire approximately 7½ months earlier as a result of the introduction of the (enhanced) early retirement factors. If a different spread of early retirements were assumed between ages 65 and SPA then the affordable accrual rate may be higher or lower in each case.
- Withdrawal rates: The new scheme design is expected to be less favourable to those members who remain in service for long periods than to those who work for shorter periods relative to the Reference Scheme. Thus if we assumed a rate of withdrawals higher than assumed in the current assessments, then the cost of the new scheme design would be expected to exceed the cost of the Reference Scheme. Conversely, if we assume a rate of withdrawals lower than assumed in the current assessments, then the cost of the new scheme design would be expected to be lower than the cost of the Reference Scheme.

⁴ This paragraph discusses the impact of different assumptions on the cost of the new scheme design compared with the Reference Scheme. The actual cost of the new scheme, if experience is different from the assumptions used (as outlined in paragraph 3.11), may be different.

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5 Comparisons of costs in the longer term

- 5.1 Paragraphs 8.21 to 8.23 of GAD's note to HMT of 7 October 2011 provide that if any benefit design options are proposed in which the comparison of costs differs in the short term and the long term, then HMT could consider the issues arising on a case-by-case basis (paragraph 8.23).
- 5.2 The data used for the comparison is based on membership data as at 31 March 2008 when most members had a Normal Pension Age of 60. Hence this data includes relatively fewer active members aged over 60 (because of retirements) than might be expected in the future in the new scheme which has much later Normal Pension Ages.
- 5.3 HMT has specified that the comparison should allow for the likely increases in average member age due to the increased pension ages.
- 5.4 The future membership age profile is uncertain. For simplicity, I have performed a comparison for the current membership with average age increased by 3 years, which is approximately half the difference between 68, the assumed SPA in the long term, and the current average retirement age for those taking age retirement.
- 5.5 I have concluded that, allowing for this effect, the cost of the new scheme design set out in Appendix A does remain within the cost of the Reference Scheme when valued on the early retirement pattern discussed in 3.4 and 3.6 above.

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6 Limitations

- 6.1 A number of limitations apply to the comparisons made and the conclusions reached in paragraphs 2.4 and 2.7. These are described below.

Verification statement

- 6.2 The purpose of this report is to provide HMT with the requested statement verifying that the cost of providing the new scheme structure is within specified cost limits as discussed in paragraphs 3.12 to 3.17.
- 6.3 This report has been produced on the basis of the comparisons requested by HMT, namely:
- > On an ongoing basis comparing the Reference Scheme with the proposed scheme structure allowing for the proposed change in assumptions outlined in 3.4 and 3.6.
 - > On a long term basis comparing the impact of an increase in the average age of the scheme membership.
- 6.4 The costs compared for this report will inevitably differ from the ultimate costs of the new scheme and of the Reference Scheme, for reasons such as:
- > The membership data used to calculate the cost for the purposes of this report will differ from the actual scheme membership to which the new scheme will apply in future. The relative weighting of older and younger members in future may impact on how the new scheme design and Reference Scheme compare in the longer term.
 - > The outturn will differ from the assumptions made. In particular the current assumed gap between the revaluation rates in service of the Reference Scheme and the new scheme may not be maintained in practice resulting in the cost of the two scheme structures diverging over time.

The above list is not exhaustive.

Data, methodology and assumptions

- 6.5 The cost ceiling and the comparison is sensitive to the data, methodology and assumptions adopted.
- 6.6 HMT has agreed the data, methodology and assumptions for purposes of the comparison.

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Third party reliance and liability

- 6.7 This report has been prepared for DfE. I am content for the Department to release this note to third parties (including HMT, other public service schemes, trades unions and respective scheme actuaries), provided that:
- > it is released in full
 - > the advice is not quoted selectively or partially, and
 - > GAD is identified as the source of the note.
- 6.8 Third parties whose interests may differ from those of DfE should be encouraged to seek their own actuarial advice where appropriate.
- 6.9 This report has been provided to DfE for the purpose of providing HMT with verification of the cost of the new scheme design from 2015. No person other than DfE or any third party other than HMT is entitled to place any reliance on the contents of this report, except to any extent explicitly stated herein, and GAD has no liability to any other person or third party for any act or omission taken, either in whole or in part, on the basis of this report.

HMT assessments not considered in providing this report

- 6.10 *Cash-flow (OBR) assessment*
Government advised that public service workers who, as of 1 April 2012, have 10 years or less to their current pension age 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. Schemes were asked to determine the fairest way of achieving this while ensuring that costs to the taxpayer in each and every year do not exceed the Office for Budget Responsibility forecasts of public service pension costs. In addition, schemes may also design a taper over a period of 3 to 4 years, providing some protection to those close to being within 10 years of retirement as at 1 April 2012. Protection should reduce linearly over the taper period.
- 6.11 Within the new scheme design protection has been provided in line with the above with no additional protection being proposed. Consequently we have not considered the cash-flow test in respect of these protected members in providing this report.
- 6.12 *Low and Middle Earners*
Government gave its commitment that low and middle earners working a full public service career will receive broadly the same pension at normal pension age under the new scheme designs as they do under the current pension scheme.
- 6.13 In providing this report, I have had regard to the overall cost of the scheme design compared with the Reference Scheme only. The impact of the scheme design on individual members (and in particular low and middle earners) has not formed any part of my assessment and therefore this report cannot be considered as providing assurance that the above commitment has been met by the new scheme design.

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Appendix A: New scheme design (post 2015)

A.1 We have valued a Career Average Revalued Earnings (CARE) pension scheme with the following features:

- a) a normal pension age linked to State Pension Age (or 65, whichever is higher)
- b) Revaluation of past CARE service for active members in line with CPI + 1.6% pa
- c) Pensions accrue at a rate of $1/57.1^5$ for each year of service
- d) Improved early retirement reduction factors for retirement from active service between ages 65 and State Pension Age of 3% pa
- e) pensions in payment and in deferment indexed by CPI⁶
- f) no fixed lump sums, optional commutation, with a 12:1 factor for converting pension to lump sum
- g) ill-health benefits the same as those currently available to new members (i.e. a lower tier ill health pensioner receives an unreduced CARE pension)
- h) spouses'/partners' pension in accordance with current provisions that are currently available to new members (ie 37.5% of the member's pension)
- i) lump sum on death in service of 3 times full-time equivalent salary
- j) members rejoining after a period of deferment of less than 5 years can link new service with previous service, as if they had always been an active member (so previous accruals are indexed by CPI +1.6% pa for that period of deferment)
- k) phased retirement arrangements which reflect those in the current scheme with the additional option of a third drawdown of benefits after the member's 60th birthday

⁵ GAD has calculated that an accrual rate of $1/57.1$ is available within the cost of the Reference Scheme. The DfE Heads of Agreement specifies an accrual rate of $1/57$.

⁶ Pensions in payment and in deferment are assumed to be indexed in line with the Pensions Increase Act 1971.

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Appendix B: Data

B.1 This appendix contains summary statistics of the data used to value the Reference Scheme and the proposed scheme structure.

B.2 Table B1 contains the number of members in the scheme, their pensionable salaries and their average ages weighted by pensionable salaries.

Table B1 - Active members as at 31 March 2008

	Number (thousands)	Total Pensionable Salaries (£ million pa)	Average Age weighted by pensionable salaries
Males	209	7,990	45¼
Females	480	16,700	43¼
Total	689	24,690	44

B.3 Further details regarding this data can be found in our draft data note of 3 March 2010.

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Appendix C: Early Retirement Patterns

- C.1 HMT stated that all new scheme designs incorporating enhanced early retirement factors should assume a realistic pattern of early retirement as a baseline (ie not assuming that all members retire at SPA as per the cost ceilings).
- C.2 As outlined in paragraphs 3.4 and 3.6 the Reference Scheme has been reassessed on the following early retirement pattern, which shows the proportions of age retirements occurring at the relevant ages.

Assumed retirement age	State Pension Age 65	State Pension Age 66	State Pension Age 67	State Pension Age 68
65	1	0.5	0.25	0.167
66	0	0.5	0.25	0.167
67	0	0	0.50	0.167
68	0	0	0	0.500
Average age at retirement	65	65.5	66.25	67.0

- C.3 The above pattern of early retirements was set following discussions with HMT.
- C.4 HMT has stated that inclusion of enhanced early retirement factors within the new scheme design will lead to a behavioural effect resulting in members retiring earlier than they would otherwise have done (ie if early retirement factors continued to be calculated on the current basis). HMT specified the behavioural effect which must be included in our assessment.
- C.5 HMT has specified that the past service cost of the behavioural effect should be equivalent to the increase in the liabilities of all members (excluding those benefiting from 10 year protection) being drawn ½ year earlier. As there is no past service cost associated with members of the current NPA 65 scheme this is equivalent to assuming no past service costs for NPA 65 members but a behavioural effect for members in the NPA 60 scheme which is greater than ½ year on average.
- C.6 In line with the instructions from HMT above, we have assumed in the costs of the proposed scheme design that the introduction of the (enhanced) early retirement terms will result in all unprotected NPA 60 members retiring 7½ months earlier than they would have otherwise done.

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Appendix D: Treatment of Past Service costs

- D.1 A past service cost arises under this proposed scheme design in respect of unprotected TPS members. HMT policy on the treatment of this past service cost is set out below.
- D.2 Having determined a proposed scheme design that remains within the published cost ceiling when assessed across members of all ages (including those within 10 years of pension age) in the long term and the short term, schemes may offer protection for those within 10 years of their scheme's Normal Pension Age on 1 April 2012 and a taper of 3-4 years without any reduction to the accrual rate of proposed scheme design. Schemes may offer transitional arrangements over and above the 10 year protection and 3-4 year taper, but in this case the accrual rate must be reduced to allow for the extra costs of additional protection. The costs of the proposed scheme design with additional transitional protection and reduced accrual rate must not exceed the costs of the original proposed scheme design with the 10 year protection and 3-4 year taper.
- D.3 Note this requires an iterative process to set the cost limits:
- Firstly the accrual rate required for the proposed design (without additional transition) will need to be calculated – this is then used to set the cost limit for transition / past service costs
 - Then this accrual rate would need to be adjusted for transition / past service costs
- D.4 The 7 year averaging period still applies, and so the transition cost limit is as follows:

Average contribution rate required in 2015-2022 for proposed scheme design (including 10 year protection, taper, transition and adjusted accrual rate)	+	Past service costs spread over 7 years	≤	Average contribution rate required in 2015-2022 for original proposed scheme design (including 10 year protection and taper, but before allowance for transition and adjusted accrual rate)
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