



Office of Manpower  
Economics

## **Comparative Pension Valuation for Review Body Remit Groups - Report on methodology and assumptions**

*Commissioned by:*  
***Office of Manpower Economics***

*Undertaken by:*  
***Towers Watson Limited***

**December 2014**

This work was commissioned to provide information about the value to illustrative individuals of the pension benefits provided by current public sector pension schemes and by their successor schemes from April 2015. This is intended to provide context for the Pay Review Bodies' deliberations. The detailed results should not be regarded as providing a comprehensive assessment of the changing value of pensions but, rather, as indicative of the impact of changes on illustrative career paths.

The work described in this report was carried out under contract as part of OME's research programme. The views and judgements expressed in this report are therefore those of the contractor and do not necessarily reflect those of OME.





**Office of Manpower Economics**

**Comparative Pension Valuation  
for Review Body Remit Groups -  
Report on methodology and  
assumptions**

22 December 2014



# Table of Contents

**To: the Office of Manpower Economics**

This Report sets out our approach to carrying out the comparative valuation of pension benefits for Review Body remit groups as requested by the Office of Manpower Economics (the OME).

The Report covers our understanding of the OME’s objectives, details of the principles underlying the methodology and assumptions we have used in meeting the OME’s objectives, the rationale for the approach and pros and cons of alternative approaches.

The results of the analysis are set out in a separate report dated 22 December 2014 titled “Comparative Pension Valuation for Review Body remit groups – Report on results of comparative pension valuation for illustrative individuals”.

- Section 1 : Executive Summary .....1**
- Section 2 : Introduction .....5**
- Section 3 : Key principles of methodology.....7**
- Section 4 : Key principles of assumptions required ..... 13**
- Section 5 : Comparator pension schemes..... 19**
- Appendix A : Valuation of pension benefits – defined benefit ..... 27**
- Appendix B : Valuation of pension benefits – defined contribution ..... 29**
- Appendix C : Comparison of pension valuation methodologies ..... 31**
- Appendix D : Financial assumptions ..... 35**
- Appendix E : Demographic assumptions ..... 43**
- Appendix F : Career paths analysed ..... 47**
- Appendix G : Worked example ..... 65**

This page is intentionally blank

## Section 1: Executive Summary

- 1.1 The purpose of this Report is to set out details of approach we have followed when carrying out the comparative valuation of the pension benefits provided to members of the relevant remit groups relative to the pension benefits offered in the wider public sector and in the private sector. The results of the analysis are set out in a separate report dated 22 December 2014 titled “Comparative Pension Valuation for Review Body remit groups – Report on results of comparative pension valuation for illustrative individuals”.
- 1.2 In this Report, we explain why we have adopted each element of the methodology and the relevant assumptions. We also discuss the pros and cons of alternative methodologies and assumptions.
- 1.3 The approach we have taken is based on our understanding of the OME’s objectives, as discussed in Section 2, and takes into account our discussions with OME. Alternative approaches are possible in a number of areas and we discuss those alternatives in this Report. However, in our opinion, the methodology and assumptions described in this Report are best suited to providing the Review Body members with a useful guide as to how the value of the pension arrangements available to their remit group members has changed in recent years and is expected to change in the near future, relative to the pension arrangements available to them with other employers.
- 1.4 The key underlying principle which we have followed is to focus on the relative value of the pension benefit and how this has changed due to changes in pension design – both in the remit group pension arrangements and elsewhere. Consequently our aim has been to keep as many variables fixed as possible, such as differences in career paths in comparator organisations and changes in financial conditions over time.
- 1.5 In Section 3 we discuss the methodology adopted, with additional detail covered in Appendices A, B, C and G.
- 1.6 In Section 4 we discuss the financial and demographic assumptions with additional detail covered in Appendices D and E.
- 1.7 Finally in Section 5 we discuss our approach to selecting appropriate comparator pension arrangements at each of the three reference points in time.
- 1.8 In Table 1.1 on the next two pages we summarise the key points of methodology and assumptions that we have followed.

Table 1.1

Element of methodology	Approach followed
Look at “illustrative” individuals or collect full data?	<p>“Illustrative” individuals</p> <ul style="list-style-type: none"> <li>- Illustrates variance across remit body members</li> <li>- Less data intensive</li> </ul> <p>(paragraphs 3.2 to 3.3)</p>
Selection of career paths	Use the career paths provided by OME, including some short-term careers (paragraphs 3.4 to 3.5)
Long term or market-related financial assumptions?	<p>Long-term financial assumptions</p> <ul style="list-style-type: none"> <li>- Avoids undue influence of market conditions</li> <li>- Ease of comparison across reference dates</li> </ul> <p>(paragraphs 4.12 – 4.15)</p>
Consistency of assumptions across career paths	<p>Use the same assumptions, other than promotion / progression pay increases, for all career paths</p> <ul style="list-style-type: none"> <li>- Focuses comparison on pension benefits only</li> </ul> <p>(paragraphs 4.4 – 4.11)</p>
Benefits built up before or after career path	<p>No allowance for benefits built up before or after career path starts or finishes</p> <ul style="list-style-type: none"> <li>- Avoids introducing additional complexity and assumptions</li> </ul> <p>(paragraph 3.6)</p>
Total pension benefit or net employee value only?	<p>Net employee value (net of member contributions)</p> <ul style="list-style-type: none"> <li>- Enables changes in member contributions to be taken into account</li> </ul> <p>(paragraph 3.7)</p>
Defined benefit scheme valuation methodology	<p>Adopt both value over next year of employment and whole career approach</p> <ul style="list-style-type: none"> <li>- Gives Review Bodies full range of information</li> </ul> <p>(paragraphs 3.8 to 3.12 and Appendices A and C)</p>
Defined contribution scheme valuation methodology	<p>Adjust employer contribution for expenses and cost of purchasing an annuity</p> <ul style="list-style-type: none"> <li>- Fairer comparison with defined benefit methodology</li> </ul> <p>(paragraphs 3.13 to 3.16 and Appendix B)</p>
Valuations at different reference dates	<p>Value the benefits allowing for appropriate pension design for past service</p> <p>(paragraphs 3.18 to 3.24)</p>
Best-estimate or prudent assumptions?	<p>Best-estimate assumptions</p> <ul style="list-style-type: none"> <li>- More suitable for comparative valuation (which differs from a funding valuation)</li> </ul> <p>(paragraphs 4.16 to 4.17)</p>



Element of methodology	Approach followed
Financial assumptions	<p>Key assumptions</p> <ul style="list-style-type: none"> <li>- Discount rate 5% pa</li> <li>- RPI price inflation 3% pa</li> <li>- CPI price inflation 2% pa</li> <li>- General salary increases 3% pa</li> <li>- Promotional salary increases – as individual career path (paragraphs 4.18 to 4.20 and Appendix D)</li> </ul>
Demographic assumptions	<p>Use consistent best-estimate assumptions for all career paths (paragraph 4.21 and Appendix E)</p>
Comparator pension schemes	<p>Consider an illustrative defined benefit scheme and an illustrative defined contribution scheme, together with relevant defined benefit/defined contribution proportions at each reference point.</p> <ul style="list-style-type: none"> <li>- Base on survey data</li> <li>- Use the same comparator data for all career paths</li> <li>- Consider executive comparators separately</li> <li>- Also consider specific quasi public sector comparators (Section 5)</li> </ul>
Dealing with member choice	<p>Assume members select highest available employer contributions where defined contributions matching is available</p> <ul style="list-style-type: none"> <li>- Reflecting most valuable benefit available (paragraph 3.17 and Appendix B)</li> </ul> <p>Assume members commute maximum possible pension</p> <ul style="list-style-type: none"> <li>- Reflecting most likely experience (Appendix E)</li> </ul>
Treatment of individual tax on pension benefits	<p>Value benefits gross of tax</p> <ul style="list-style-type: none"> <li>- Impact of tax depends on individual circumstances (paragraphs 3.25 to 3.26)</li> </ul>
The earnings cap on pensionable salary	<p>Apply where applicable to remit group schemes and assume applies in private sector comparators (paragraph 3.27)</p>
Contracting-out of State pension	<p>Allow for value of additional State benefits when not contracted out of State pension by adjusting for difference in employer NI contributions</p> <ul style="list-style-type: none"> <li>- Fair comparison between contracted in and out schemes (paragraphs 3.28 to 3.29)</li> </ul>
Sensitivities to be adopted	<p>Show sensitivity to discount rate and salary increase assumption</p> <ul style="list-style-type: none"> <li>- The discount rate is the single most sensitive assumption (paragraphs 4.19; 4.22 to 4.23)</li> </ul>

- 1.9 We look forward to discussing this Report with representatives from the OME and interested Review Body members in conjunction with our separate Report dated 22 December 2014 setting out the results of our analysis.



Sue Field  
Fellow of the Institute and Faculty of Actuaries

**Towers Watson Limited**  
**Watson House, London Road,**  
**Reigate, Surrey RH2 9PQ**

22 December 2014

**Phone: +44 (0)1737 274386**  
**Fax: +44 (0)1737 241496**

Authorised and regulated by the Financial Services Authority

Z:\Benefits Data Reigate CH\PENC\OME\Comparison of Pension Schemes - 2007\Comparative valuation 2013\Final report on methodology and assumptions v3.docx

### **Limitations and reliances**

We have prepared this Report under the terms of the Framework Agreement with the Office of Manpower Economics dated 1 April 2012. We have prepared it to provide guidance to the Office of Manpower Economics and the Review Bodies it supports with information on the methodology and assumptions which we have adopted for a comparative valuation of the pension benefits provided to typical members of the relevant remit groups relative to those provided elsewhere and how that valuation is changing over time. As such, it should not be used or relied upon by any other person for any other purpose. Towers Watson Limited does not accept any responsibility for any consequences arising from any third party relying on this report.

The investment and economic assumptions have been derived by Towers Watson Limited through a blend of economic theory, analysis and the views of investment managers. They inevitably contain an element of subjective judgement. There is no guarantee that the assumptions made will be borne out in practice.

## Section 2: Introduction

### Objectives of the pensions research

- 2.1 Over the last few years, there have been a number of changes to the pension benefits provided to members of the remit groups looked after by the public sector pay Review Bodies. Some of these changes have already taken place, others are expected to take place in the next year or two. These changes are expected to have a material impact on the value of those pension benefits to individuals and as pension comprises a significant component of individuals' total reward, this is a relevant factor for Review Bodies to take into account when setting recommendations on pay.
- 2.2 At the same time, there have been and are expected to be changes to the benefits provided to other pension arrangements elsewhere in the public sector and in the private sector. We understand that the key purpose of this research is to provide the Review Bodies with useful information to help them understand how the value of pension benefits available to members of their remit groups has changed and is expected to change relative to the value of the pension benefits provided in other organisations.

### Why methodology and assumptions are important?

- 2.3 Pension benefits are different to many other elements of the remuneration package. The benefits are payable many years in the future and the value depends on a number of factors which are unknown (for example, how long the individual lives and what inflation will be over a long period of time). Therefore, the value placed on pension benefits can differ significantly depending on the methodology and assumptions used. The purpose of this Report is to set out the methodology and assumptions that have been used for the project, along with possible limitations that users of the analysis should bear in mind and the pros and cons of alternative approaches.
- 2.4 The value of a pension benefit varies significantly from individual to individual. The designs of pension benefits (whether final salary, career average or defined contribution) are such that the benefits received are dependent on an individual's career path; particularly with regard to salary progression over that path and age at leaving/retirement. Choice of appropriate, illustrative individuals in the remit groups is therefore required to get an illustrative range of pension values. Pension benefits received also depend on a number of factors such as how long the member lives, how the pension increases in retirement. The value placed on those pension benefits depends on the methodology adopted and the assumptions used for discounting the expected future stream of pension payments. As a number of approaches are possible it is essential that the agreed methodology is fit for purpose, robust and defensible.

- 2.5 The pension research covers the pension benefits around a range of remit groups and considers three reference points:
- i. **Past:** A retrospective valuation at mid-September 2010, pre-dating the April 2011 changes to indexation (from RPI to CPI), but after the introduction of the career average schemes for Civil Service new entrants.
  - ii. **Present:** A present valuation at mid-September 2013, taking account of pension changes that have occurred up to that date.
  - iii. **Future:** A prospective valuation at April 2016 taking account of further pension changes that are currently known, including the implications of changes to contracting out of State benefits in April 2016.

A further comparison has been carried out against the value of the pension benefits individuals might receive in the wider public sector and in the private sector.

- 2.6 It is important that the approach adopted does not make so many different assumptions that the key purpose of identifying the relative impact of pension changes is lost. It would be possible to compare career paths in the remit groups with career paths in other organisations. However, in this case if the comparison were to be made against an organisation providing exactly the same pension benefits but a different career path, the value of pension benefits to an individual would be different. A general principle underlying our methodology, as discussed in the following sections, is to keep as many variables as possible fixed and focus on variations in pension benefits.
- 2.7 Finally in adopting the methodology set out in this Report, we have been cognisant of the need to take an approach that is transparent and easily repeatable so that the exercise can be carried out in future years, for example, if there were future changes to pension benefits and as the current changes progressively affect current members of the remit groups. This Report focuses on the principles of the methodology and why it has been chosen.

## Section 3: Key principles of methodology

- 3.1 The methodology adopted in the comparative valuation which is described in this Section has been adopted to meet the objectives set out in Section 2.

### **Career path approach**

- 3.2 The approach originally proposed by OME for this research was to focus on 'illustrative' individuals in the relevant remit groups, rather than to gather data on all individuals within the remit groups.
- 3.3 In our opinion, this is sensible in the context of the objective of this exercise which is to provide the OME and Review Bodies with comparative information on the pension benefits for individuals, illustrating the variance that can arise from different lengths of service and career paths, rather than to come up with a single value for each remit group (a single value would not illustrate the potentially wide variation in pension value between individuals that can arise due to differences in factors such as salary progression and length of service). An individual career path approach is far less data intensive than a full valuation of all individuals but does mean that the selection of such 'illustrative' individuals and their career paths is very important.
- 3.4 It is not possible to cover all potential career paths and to do so would make interpretation of the results more difficult. Instead, the career paths chosen should be broadly representative across the relevant remit groups.
- 3.5 The career paths that we have valued were provided to us by OME and cover a range of illustrative individuals, including those with long-term and short-term careers. Details of the career paths are set out in Appendix F.

### **Benefits built up before or after career path**

- 3.6 No allowance has been made in the comparative valuation for the benefits built up in other careers before or after the individual's career path commences or ends. This is most relevant for the short service career paths in all remit groups and for the judiciary. Including such benefits would not fit with the key principle of comparing the benefits available to the remit group members whilst in the remit group. It would not only be difficult to obtain information on what benefits were available but would involve introducing additional assumptions and further complexity which would obscure the key messages arising from the results.

## Dealing with member contributions

- 3.7 One of the key changes to the pension benefits available to the remit groups is the level of member contributions to the pension plans; in most cases these have increased and are expected to increase further in future; in many cases they vary by the member's level of pay. In order to reflect these changes and to focus on the impact of the level of remuneration provided by the employer, in the comparative valuation we have focused on the net employee value of the benefits by deducting the relevant employee contributions from the value of pension benefits calculated.

## Methodology for valuing defined benefit schemes

- 3.8 The choice of method has a major impact on the value placed on a defined benefit pension. We have shown the results using both the value of benefits building up over the next year of service (the projected unit method) and a whole career approach.
- 3.9 The projected unit method looks at the value of benefits arising over the next year of service, allowing for future pay increases prior to retirement or earlier exit. The value of benefits is expressed as a percentage of the pay expected to be received over that year. This is consistent with a common approach to looking at pay comparison which focuses only on the following year. Furthermore, looking at the progression of value along an individual's assumed career path, as calculated under this methodology, provides useful information on the variation in value of the individual's pension relative to pay throughout the career. For individuals of the same age and gender, with the same future career path, the value of benefits is affected by the benefit structure of the scheme only and not by the individual's past history.
- 3.10 However, this past history can also provide valuable information and therefore we also show the results of the aggregated position over an individual's past and future on a given career path, using a whole career approach. This looks at the value of benefits arising over the whole of an individual's career, both benefits built up in the past and expected to be built up in the future, allowing for future pay increases prior to retirement or earlier exit. The value is expressed as a percentage of the value of the individual's total salary over that career; the salary received to date and the salary expected to be received in the future.
- 3.11 We believe that the combination of the above two methods provides the Review Bodies with a full range of information to assess how the value of pension benefits for remit group members on different career paths and at different stages of those career paths.
- 3.12 The main actuarial valuation methods that are used in this assessment are described in Appendix C, together with their relative strengths and weaknesses.

### Methodology for valuing defined contribution schemes

- 3.13 The simplest interpretation of the value to an employee of a defined contribution benefit is the contribution paid by the employer. However, in order to compare the benefits offered by a defined contribution arrangement against those offered by a defined benefit arrangement, consideration needs to be given to what it would cost the employee to replicate a particular level of defined benefit; or to look at it another way what level of defined benefit an employee would receive as a result of a given level of employer contribution in a defined contribution scheme.
- 3.14 This requires assumptions to be made regarding the investment return that would be earned on the invested employer contributions up to the employee's retirement and on the terms for purchasing pension at retirement, where relevant.
- 3.15 Looking first at the terms for purchasing an annuity at retirement, these are generally more expensive than the value placed on such an annuity using assumptions suitable for valuing defined benefit pensions because of the expense, profit margins and buffers against adverse experience that are used by insurance companies. In order to provide a fair comparison of the relative value to a member of defined contribution and defined benefit arrangements, where we have considered an individual purchasing an annuity, we had made an adjustment to the employer defined contribution rate to reflect the relative value of an annuity on the terms available from an insurance company compared to the value of an equivalent annuity on our long-term assumptions. These adjustments have been made to the retrospective valuations as at September 2010 and September 2013 only. Note that the 2014 Budget includes measures to give defined contribution members greater flexibility over the way that they access pension savings, including an option to take 100% of defined contribution funds as a (taxed) cash sum. To allow for this additional flexibility, in the prospective April 2016 valuation we have not made the adjustment described above to allow for annuity terms, thereby implicitly assuming that members would either access defined contribution benefits as cash or by way of drawdown.
- 3.16 The investment return that would be earned on invested employer contributions is more subjective as there is a wide range of investments that members might select depending on factors such as their attitude to risk and how close they are to retirement. For ease of comparison and to avoid making undue assumptions which potentially distort the results we have assumed that the investment return (net of expenses) on employer contributions is, on average over a career, the same as our long-term discount rate for valuing defined benefit schemes.
- 3.17 In many defined contribution arrangements, the employer's contribution depends on the member's own contributions (this is often referred to as "matching"). Where matching applies, we have assumed that members will choose to contribute at the necessary rate in order to secure the maximum contribution from the employer.

### Valuations at different reference dates

- 3.18 The comparative valuation considers not only current pension benefit designs (using September 2013 as a reference point), but also the benefit designs that existed in 2010 and the benefits that are anticipated to apply in the future using 2016 as a reference point.
- 3.19 There are significant differences in public sector pension benefits between these three dates. Some changes (e.g. the change in indexation from RPI to CPI) affect the value of benefits which have already built up and benefits that will be built up in the future. Other changes (e.g. increases to member contributions and changes to accrual rates) only affect the value of benefits building up in the future.
- 3.20 The projected unit method focuses on benefits building up in the coming year and, therefore, can easily accommodate changing benefit structures.
- 3.21 However, benefit changes which only affect the value of future pension accruals (e.g. changes to member contributions) will have a different impact on the results using the whole career approach depending on the point at which the changes occur in an individual's career.
- 3.22 When considering the whole career approach, the comparison of benefits could be presented in various ways regarding the timing of the changes within the selected career paths. Two possible options are set out below.
- Option 1: Value the benefits:
    - i) At a valuation date of September 2010, assuming the 2010 design applied to past and future service (baseline)
    - ii) At a valuation date of September 2013, assuming the 2013 design applied to past and future service
    - iii) At a valuation date of April 2016, assuming the 2016 design applied to past and future service
  - Option 2: Value the benefits:
    - i) At a valuation date of September 2010, assuming the 2010 design applied to past and future service (baseline) (as Option 1)
    - ii) At a valuation date of September 2013, assuming that the 2010 design (but with CPI rather than RPI inflation) applied to past service, the 2013 design applies to future service (with no allowance made for changes to benefits or member contribution rates after this point)
    - iii) At a valuation date of April 2016, assuming that the 2010 design (but with CPI rather than RPI inflation) applied to service up to September 2013, then allowing for the implementation of the anticipated new remit group pension benefit designs from April 2015, the changes to contracting out in



2016 and finally assuming that the 2016 design applies for all future service.

By '2010 design' here we mean the benefits that applied as at September 2010; '2013 design' means the benefits that applied as at September 2013; '2016 design' means the benefits that are expected, based on information to date, to apply as at April 2016.

3.23 Option 1 offers the starkest comparison between the different benefit designs and, as the results are not dependant on a particular valuation date, they could continue to be used for a longer period into the future.

3.24 However, when considering the whole career approach, option 1 will tend to overstate the impact of the pension changes for existing employees. Therefore, on balance and following discussion with OME, option 2 has been adopted for the comparative valuation.

### **The treatment of individual tax on pension benefits**

3.25 Pensions paid from a registered pension scheme are taxed as income. Lump sum payments are tax free up to certain limits (typically around 25% of the total value of benefits). Additional tax can be incurred by individuals who have total benefits in excess of the Lifetime Allowance or who build up benefits in a particular year in excess of the Annual Allowance.

3.26 The impact of tax on pension benefits will vary depending on individual circumstances. For the purpose of the comparative valuation, we have presented gross values, before any adjustment for the various taxes referred to above.

### **The earnings cap on pensionable salary**

3.27 Where applicable, we have made allowance for the Earnings Cap that applied to post-31 May 1989 pension scheme joiners under the tax regime that applied prior to 6 April 2006. This is no longer a legal requirement for registered pension schemes but many have retained it. We have applied it where it is relevant based on the individual's career path, pension scheme and service. For private sector defined benefit scheme comparators we have also assumed it applies in the comparator pension schemes.

### **Comparison of contracted out and contracted in pension schemes**

3.28 All the defined benefit arrangements available to remit group members are currently contracted out of the State Second Pension (S2P). Private sector comparator pension arrangements may also be contracted out or may be contracted in. Typically defined benefit schemes have been contracted-out and defined contribution schemes contracted in. When a scheme is contracted out of S2P, the sponsoring employer and individual employee pay reduced National Insurance contributions but do not build up S2P during the period of contracting out. With effect from April 2016, when changes are made to the State pension arrangements, the option of contracting out will cease.

- 3.29 We have adjusted the comparative valuation to take account of this difference by including an allowance for the additional State pension built up alongside a contracted-in scheme, net of the additional National Insurance contributions payable by the individual (focussing on the employer financed component of the benefits). To avoid undue complexity, rather than placing a value on the additional State benefits using the assumptions adopted for the other benefits, we have allowed for them by simply adding the current additional National Insurance contributions payable by employers of defined benefit schemes to finance the additional State benefits to the value of the contracted-in schemes. After April 2016, when the option to contract out ceases, this distinction will no longer apply and so this is not an issue for the prospective 2016 valuation looking at benefits building up in future (although, as described in Section 5, there is a question as to what extent private sector schemes will be modified to offset additional National Insurance costs).

### **Presentation of results**

- 3.30 The value of pension benefits could be expressed as monetary values or as percentages of salary earned over the next year (project unit method) or entire career (whole career approach) as appropriate. As the purpose of this exercise is a comparative valuation of pension benefits, we have expressed the results as percentages of salary for ease of comparison.

## Section 4: Key principles of assumptions required

### Introduction

- 4.1 The value of a defined benefit pension depends not only on the pension scheme benefit rules and current salary, but also on:
- how the individual's salary will increase in the future
  - how long the member will remain in service
  - how long the member will live in retirement
  - whether the member has a dependant who is eligible to receive a dependant's pension on the death of the member and, if so, how long the dependant will live
  - what increases will be applied to the pension each year once it comes into payment
  - how we place a value on payments to be received at a point in the future (i.e. what "discount rate" is used)
- 4.2 Therefore, in carrying out the comparative valuation it has been necessary to make a number of financial assumptions (e.g. future levels of general salary growth) and demographic assumptions (e.g. future mortality rates). The values placed on pension scheme benefits can be very sensitive to these assumptions.
- 4.3 In this Section, we set out the pros and cons of different approaches that could be followed to set the assumptions, along with details of the assumptions that have been used for the comparative valuation.

### Assumption principles – consistency of assumptions across pension schemes

- 4.4 The comparative valuation considers the value of pension benefits offered to employees within the remit groups for sample career paths, but also for a range of comparator schemes in the private and wider public sector.
- 4.5 Consideration was therefore given as to whether the purpose of the comparative valuation is to identify differences in the value of pension benefits for each remit group and the comparator schemes:
- a allowing only for differences in the benefit design of the pension arrangements; or
  - b allowing for differences in the benefit design and other factors which might include:

- differences in expected career paths across the comparators, either in terms of length of service or salary progression
- differences in demographic expectations (e.g. longevity) across the comparators
- differences in the discount rate used to place a value on the pension benefits, either due to differences in the security of the benefits or the underlying investment strategy.

4.6 The first alternative would suggest applying consistent assumptions for both the remit group and the comparator schemes. Under the second alternative, different assumptions would be adopted for an illustrative individual when comparing different pension arrangements. As an extreme example, if the pension scheme benefit designs were identical across two comparators, under the first alternative, the values would also be identical whereas under the second alternative, the values placed on the two comparator schemes might be very different.

4.7 There are, of course, genuine differences that exist between the demographic and financial outlook for employees within the various remit groups and the comparator organisations that affect the value of pension benefits offered to employees. For example:

- Mortality rates are linked causally or otherwise to socio-economic factors including former occupation, wealth, income, socio-economic class and education (although other factors such as gender, smoker / non-smoker status and medical and genetic history can be more significant at an individual level)
- The security of pension benefits varies across specific schemes depending on the level of advance funding and the security of the sponsor (although this is offset to a certain extent by the existence of the Pension Protection Fund)
- Salary growth expectations differ, both in the short and long term, across industries and occupations (although, again, significant variation can be seen at the individual level, particularly in the private sector).

4.8 For these reasons, the assumptions used in valuations of pension schemes for funding or corporate reporting purposes, can differ significantly across different pension arrangements. However, in our view, making allowance for these differences in the comparative valuation would introduce additional subjectivity into the results and reduce transparency.

4.9 Therefore, we have used wherever possible, identical (unisex) assumptions to value the benefits for all remit groups and all comparators with:

- exactly the same assumptions being used to value the comparator schemes for each of the specified career paths being analysed
- the only differences in assumptions across different career paths relating to length of service and promotion / progression pay increases.

- 4.10 By using identical assumptions wherever possible, differences in the value placed on the remit group pension scheme and comparator schemes for a given career path can be directly attributed to differences in current age and pension benefit design rather than a combination of other factors which may or may not be relevant for any given individual.
- 4.11 There are still differences across career paths for different remit groups due to differences in length of service and salary progression. Therefore, caution is needed when comparing the resulting pension values across career paths, both within and across remit groups.

#### **Assumption principles – consistency of assumptions across reference dates and the use of long-term assumptions**

- 4.12 As discussed in Section 3, the comparative valuation considers the current benefit designs, the benefit designs that existed in 2010 and the benefits that are anticipated to apply in the future using 2016 as a reference point.
- 4.13 Different financial and demographic assumptions could be justified in relation to different reference points. For example, financial conditions today are different in many respects to the conditions that existed in 2010. Similarly, although less significant to the comparative pension values, views around future mortality improvements have changed since 2010.
- 4.14 However, following discussion with OME we have adopted identical assumptions to value the 2010, 2013 and 2016 benefits. By using identical assumptions, differences in pension value can be directly attributed to differences in benefits between the three reference dates, rather than differences in assumptions.
- 4.15 As we have used identical assumptions across the reference dates, we have also chosen long-term assumptions which are not unduly influenced by current market conditions. Taking a long-term view also increases the durability of the results.

#### **Assumption principles – best-estimate assumptions**

- 4.16 For the purpose of assessing the funding requirements for funded schemes in the private sector, the assumptions used by the actuary will typically build in a margin, either explicitly or implicitly, for prudence.
- 4.17 While such margins are appropriate for funding purposes, the comparative valuation forms one element of an overall comparison in the value of remuneration. In our view, this requires a best estimate value to be placed on the benefits and this is the approach that we have taken. (By best estimate, we mean that the assumptions are not intended to be deliberately cautious or optimistic, such that the chance of actual experience being more favourable than the assumptions is broadly the same as the change of experience being less favourable than the assumptions.)

## Financial assumptions

- 4.18 The financial assumptions relate to the level of benefits that might be paid in the future (for example, salary and pension increases) and how a value is placed on payments which will be made, in some cases, many years in the future (the discount rate).
- 4.19 The most significant assumption in terms of placing a value on pension benefits is the discount rate. A reduction in the discount rate of 0.1% pa could result in an increase of around 2% to 4% in the value placed on a pension benefit for a current employee depending on age. For a scheme with an average cost of, say, 25% of salary, this would translate into an increase in cost of around 0.5% of salary to 1.0% of salary for a 0.1% pa reduction in the discount rate. Other significant financial assumptions include the salary increase assumption (an increase of 0.1% pa in the assumption could result in an increase of around 0% to 2% in pension value depending on age and benefit design) and the pension increase assumption (for an indexed benefit, an increase of 0.1% pa in the assumption could result in an increase of around 2% in pension value).
- 4.20 The financial assumptions that we have adopted based on the principles agreed with OME (long-term, best-estimate assumptions that are consistent across comparator schemes) are described in detail in Appendix D and, for the key assumptions, summarised in Table 4.1 below both in nominal terms and 'real' terms (i.e. relative to CPI price inflation).

**Table 4.1 Summary of financial assumptions**

Assumption	Nominal (% pa)	Real relative to CPI (% pa)
CPI price inflation	2% pa	-
RPI price inflation	3% pa	1% pa
General salary increases	3% pa	1% pa
Promotional salary increases	Based on current pay scales for the relevant career paths	
Discount rate	5% pa	3% pa

## Demographic assumptions

- 4.21 The demographic assumptions adopted are discussed in Appendix E and are summarised in Table 4.2 below.

**Table 4.2 Summary of demographic assumptions**

Assumption	Approach followed
Post-retirement mortality	SAPS S2 all pensioner (amounts weighted) male and female tables, with allowance for future improvements based on the CMI model (2013, long-term trend of 1.25% pa)
Male:female ratio	50:50
Assumed age of retirement	As specified for each career path
Assumed age of leaving service	As specified for each career path
Proportion of members with an eligible dependant at retirement	80%
Age difference (husband-wives)	3 years
Allowance for commutation	For defined benefits schemes, 25% of pension commuted where no separate lump sum accrued. For private sector comparator schemes, the commutation terms are assumed to be cost-neutral. For remit group schemes the current commutation terms have been used. For defined contribution schemes, 25% of fund is taken as cash at retirement

### Sensitivity of the results

- 4.22 Pension values are very sensitive to the assumptions used. The most significant assumption is typically the real discount rate (i.e. the gap between the assumed investment return and assumed price inflation). However, the relative values placed on schemes with a similar design are less sensitive to changes in assumptions.
- 4.23 In order to help illustrate the sensitivity of the results of the comparative valuation to changes in the assumptions, we have presented results for the remit group schemes for each relevant career path based on a lower discount rate and a lower salary increase assumption, as well as discussing the impact of changing the assumption regarding the male:female split.

This page is intentionally blank



## Section 5: Comparator pension schemes

- 5.1 The purpose of this Section is to set out the approach that we have followed for the private sector comparators that have been used in the comparative review.
- 5.2 When carrying out the comparison of the benefits provided by the remit schemes against those provided in the private sector, the choice of comparator pension schemes is of key importance given that pension arrangements differ significantly from company to company.
- 5.3 In our experience, variation in pension arrangements depends much more on length of service (where legacy schemes exist), industry sector and individual company than on educational attainment or, with the exception of senior management levels, job grade.
- 5.4 Given this variance and also the wide range of career paths to be considered, our approach has been to present results based on an illustrative private sector defined benefit arrangement and an illustrative private sector defined contribution scheme, with a distinction drawn between general employees and senior management.
- 5.5 For each career path, we have also presented a combined private sector comparator which takes into account the likelihood that, based on length of service, the individual in question would be accruing further benefits in a defined benefit or a defined contribution arrangement at the valuation reference dates (2010, 2013 and 2016).
- 5.6 An alternative approach which could be considered would be to obtain individual level data for sample comparator employees. This information could be drawn from a pay comparison survey database. However, based on our experience, we believe that this approach would only be of limited use for this project as the data available at the individual level would typically not include full pension benefit details, thereby requiring further assumptions to be made, or would focus only on the benefits available to new hires.

### Sources of data

- 5.7 The main sources of information that we have used to determine the range of illustrative schemes are as follows:
- Towers Watson 2014 and 2012 “At a glance” flash surveys
  - The Towers Watson 2010 Pension Plan Design Survey (Towers Watson 2010 design survey)
  - The Towers Watson 2013 FTSE100 DC Survey (Towers Watson 2013 FTSE 100 DC survey)
  - The Towers Watson 2013 UK Top Executive Remuneration Survey (Towers Watson 2013 executive survey)

- The Association of Consulting Actuaries Pension trends survey 2013 (ACA 2013 survey) and 2009 (ACA 2009 survey)
- The Office for National Statistics Occupational Pension Schemes Survey 2010 (ONS 2010 survey) and 2012 (ONS 2012 survey)
- The NAPF Annual Survey 2012 (NAPF 2012 survey)
- Our general knowledge and experience of private sector senior management and executive pension arrangements.

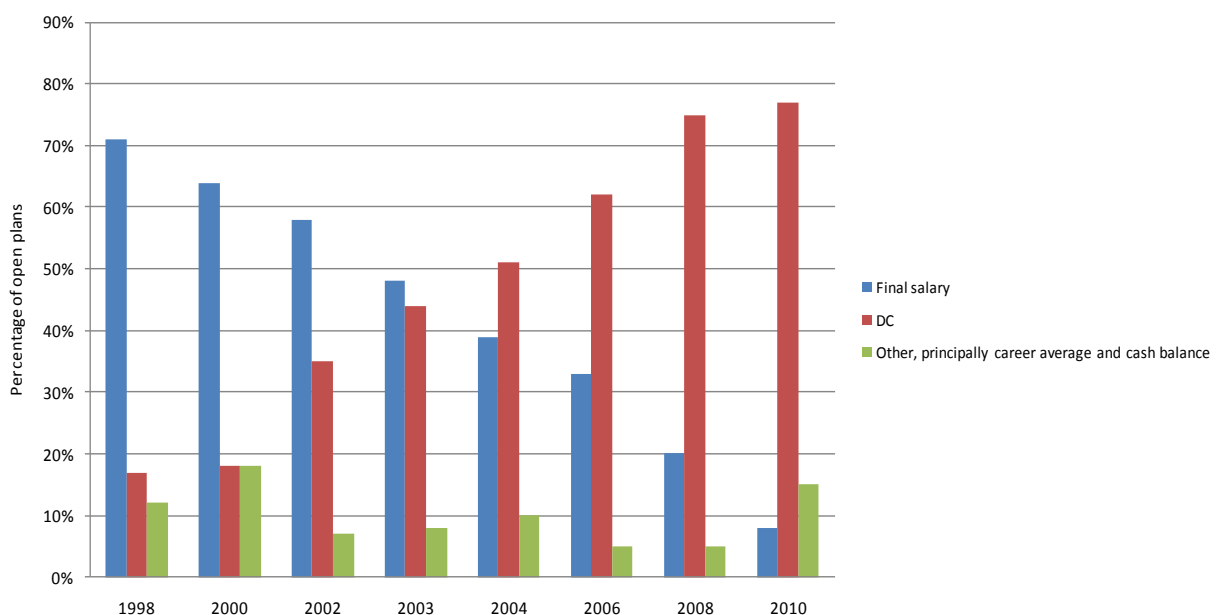
### Illustrative private sector schemes – types of scheme

5.8 The last 10-15 years has seen a significant and consistent move away from traditional final salary linked defined benefit pension plans in the United Kingdom. In the majority of cases the change has been to a defined contribution offering. This movement is illustrated by Chart 5.1 below which shows that by 2010 (the first reference date for the comparative valuation), fewer than 10% of employers in the private sector offered new hires the opportunity to join a final salary scheme.

5.9 Whilst there are a number of factors at work, the primary reason behind this change is the increased perceived cost and risk to employers of providing defined benefit pensions, reflecting a combination of regulatory changes, increasing life expectancy and volatile economic conditions. The opportunity to reduce both the level and volatility of pensions cost has led many employers towards defined contribution schemes, which provide a known cost to the employer at outset.

**Chart 5.1: Type of pension scheme open to new hires**

Towers Watson 2010 design survey



- 5.10 Defined contribution schemes were in many cases introduced by employers for new hires only, with defined benefit schemes remaining open for existing employees. This often created a two-tiered workforce in terms of pension provision. For example, the ONS 2012 survey showed that there were still 1.1 million active members of private sector defined benefit schemes that were closed to new entrants (compared to 0.6 million active members of open defined benefit schemes).
- 5.11 However over the past few years, we have seen an increase in the “full closure” of defined benefit schemes to all members. For example, the 2009 ACA survey showed that 18% of final salary schemes were closed to further accrual. By 2013, this had increased to 36% of final salary schemes.
- 5.12 Looking to the future, further closures of schemes to accrual seem highly likely. For example, a Towers Watson client survey covering just under 100 employers in Autumn 2013 found that within three years, 61% of private sector defined benefit schemes are expected to be closed to benefit accrual, rising to 73% after five years.
- 5.13 Based on the survey information and our broader experience, for the purpose of calculating a “representative mid-level scheme” as an illustrative combined private sector comparator for the comparative valuation, the split between accrual of defined contribution and defined benefit schemes has been assumed to be as follows in Table 5.1.

**Table 5.1: Assumed proportion of private sector employees accruing defined benefits for illustrative combined comparator**

Completed service at reference date (years)	Assumed illustrative proportion of private sector employees accruing defined benefits for service:		
	Up to 2010	From 2013	From 2016
0	15%	10%	5%
5	40%	20%	10%
10	65%	40%	20%
15	75%	55%	35%
20+	80%	60%	40%

#### Illustrative private sector schemes – middle of the range defined benefit arrangements

- 5.14 **2010 and 2013 defined benefits** - Based on the considerations above, we believe that the following specification represents an illustrative middle of the range defined benefit scheme in 2010 and 2013.

**Table 5.2: Specification of private sector schemes to be considered in the comparative valuation**

Scheme feature	Specification of private sector scheme in the valuation
Type of scheme	Final salary
Pension accrual rate	1/60 <sup>th</sup> of salary each year
Member contribution rate	5%
Normal retirement age	65
Spouse's benefit on death of member (% of member's pension)	50%
Pension increases in payment	Statutory (RPI with floor and caps for 2010 reference date) (CPI with floor and caps for 2013 and 2016 reference date)
Pension increases in deferment	Statutory (RPI with floor and caps for 2010 reference date) (CPI with floor and caps for 2013 and 2016 reference date)
Integration with State Second Pension	Contracted out (except for 2016 reference date)

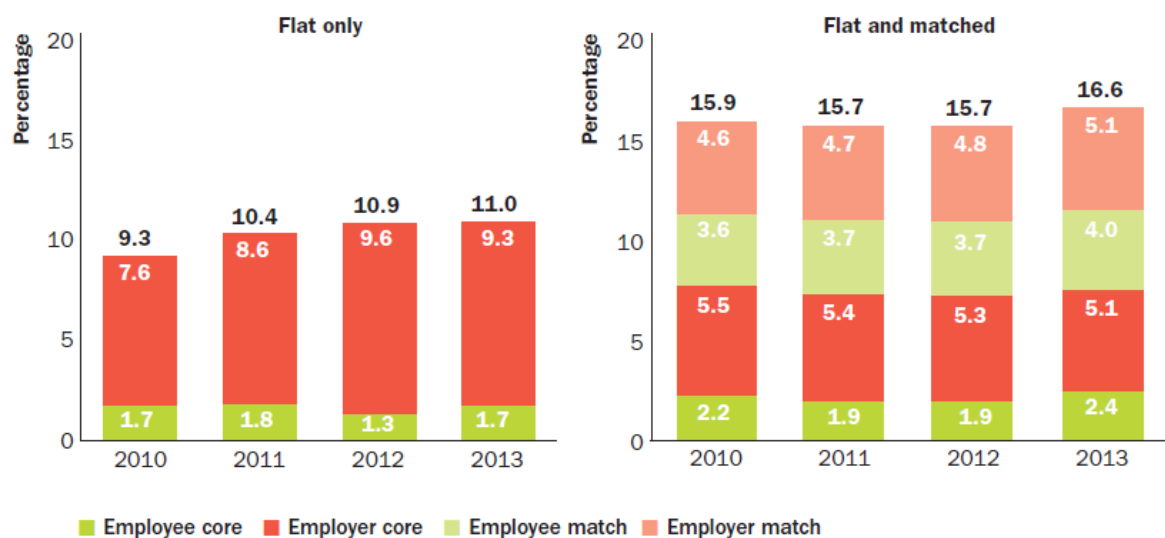
- 5.15 **2016 private sector defined benefits** - There were significant modifications made to many private sector defined benefit schemes between 2005 and 2010. Typical changes over that period included increases to member contributions, increases to normal retirement age and the implementation of caps on increases in pensionable salary.
- 5.16 However, since 2010 it has been more common for companies to simply close the defined benefit scheme to further accrual (as described in the paragraphs above) rather than modify the level of benefits. We expect this trend to continue in the future.
- 5.17 The introduction of a flat State benefit will bring with it the cessation of contracting out from defined benefit schemes from April 2016 and this could trigger some further modifications to benefit design, in addition to an acceleration of closure of defined benefit schemes.
- 5.18 As a result of the cessation of contracting out, employees in contracted-out schemes and their employers will see an increase in their National Insurance Contributions. The Pensions Bill 2013-14 confirms that employers will be given power to offset the cost, allowing them to increase member contributions or to reduce future service benefits without Trustee consent. This may not be possible under some employment contracts which have provisions protecting future accrual for existing members.
- 5.19 At this stage, it is unclear how the majority of employers will react to the cessation of contracting out as, based on our experience, many have not yet considered the impact of the change. In the absence of further data, we have assumed for the comparative valuation, that the typical defined benefit scheme will be modified in 2016 in such a way that the value of benefits is reduced to offset the additional employer National Insurance Contributions.
- 5.20 Another area where we may see some change is in relation to the Government's proposals to introduce a new type of pension – defined ambition. The idea of a defined ambition scheme is

to share the risk of pension provision between employers and employees. An example would be collective defined contribution schemes. At this stage, it is still unclear what style of defined contribution schemes will be permitted and what level of interest there will be among employers. Therefore, no allowance has been made for defined contribution schemes in the comparative valuation.

### Typical private sector schemes – middle of the range defined contribution arrangements

5.21 Chart 5.2 below, which is taken from the Towers Watson 2013 FTSE 100 DC survey, shows how average total maximum contribution rates to defined contribution schemes have changed over time for FTSE 100 companies.

**Chart 5.2: Average maximum contributions to defined contribution schemes (FTSE 100)**



Note: Under “flat only” contribution structures, the employer contribution does not depend on the employee’s contribution. “Flat and matched” contribution structures include cases where the employer’s contribution is linked (up to a maximum) to the contribution paid by the employee.

5.22 On average, the maximum available employer contribution rate was 7.6% of salary for schemes with a flat contribution structure and 10.1% of salary for schemes with a flat and matching structure in 2010 (most contribution structures in the private sector today are flat across service and age). These figures had risen to 9.3% and 10.2% of salary respectively in 2013. The ONS 2012 survey and the NAPF 2012 survey both reported lower average employer contributions (6.6% and 8.3% of salary respectively) reflecting a combination of employees not taking full advantage of contribution matching opportunities and lower contribution rates from smaller employers.

5.23 Based on the survey results and our own experience, in the comparative valuation, the illustrative middle of the range defined contribution scheme has been assumed to have a maximum employer contribution rate of 9% of salary.

5.24 Looking to the future, auto-enrolment may mean that some employers covered by the surveys need to increase contributions to meet the minimum requirements. However, the employer contributions required under auto-enrolment are, at the minimum level, well below the typical benefit levels described above. Furthermore, we are seeing a small drift upwards in employer contributions from larger employers over time; particularly when defined benefit arrangements are closed to future accrual and replaced with new or existing defined contribution arrangements. Therefore, on balance, in the comparative valuation the middle of the range defined contribution scheme in 2016 is assumed to be identical to 2013.

### **Benefits for senior management**

5.25 The Towers Watson 2013 UK Top Executive Remuneration Survey considered the value of pension provision for senior executives. Key results emerging from the survey were as follows:

- Just under 95% of new hire top executives (at all levels) participate in a defined contribution scheme or receive a cash allowance.
- For incumbents, around a third of top executives have a benefit promise that includes an element of defined benefit provision. This proportion has dropped rapidly in recent years reflecting a combination of the general move to close defined benefit schemes to further accrual and the reductions in the Annual Allowance which have made defined benefit pension accrual unattractive for many high earners.
- The chart below shows the median value of pension provision for new hires at various reporting levels in 2013 (at the median level, the 2010 survey results were identical). The chart combines defined contribution and defined benefit arrangements and cash allowances.

**Chart 5.3: Median value of pension provision for new hire executives (2010 and 2013)**

5.26 As noted above, it is becoming increasingly rare for executives to be offered defined benefits. Where defined benefits are provided, in our experience there is a very wide range of schemes on offer. These range from the standard benefits offered to all staff (the Towers Watson 2010 design survey reported that around 75% of companies provide senior managers with the same benefits as those for staff) up to very generous final salary schemes offering benefit accrual at twice the standard rate (in some cases through an unregistered arrangement so that the Annual Allowance is not breached).

5.27 Based on the information, in the comparative valuation, the illustrative private sector schemes for career paths that reach executive levels have been taken to be as shown below in Tables 5.3 and 5.4 (any design features not shown in the Tables will be assumed in the comparative valuation to be identical to those applicable to standard staff).

**Table 5.3: Assumed defined benefit schemes for executives**

Executive level	Pension accrual rate	Member contribution rate	Normal retirement age
Board level	1/45 <sup>th</sup> of salary each year	0%	60
Direct reports	1/60 <sup>th</sup> of salary each year	5%	60
Next level down	1/60 <sup>th</sup> of salary each year	5%	65

**Table 5.4: Assumed defined contribution schemes for executives**

Executive level	Employer contribution rate (% of salary)
Board level	20%
Direct reports	14%
Next level down	12%

**Other comparator schemes**

- 5.28 In addition to the illustrative private sector schemes described above, we believe that it will be useful for the OME and Review Bodies to have an understanding of how the remit group pension compare against other pension arrangements offered within the public sector and by other organisations that were either previously part of the public sector or have some similarities.
- 5.29 For this purpose, the comparative valuation also includes the Local Government Pension Scheme, the Firefighters' Pension Scheme, the Universities Superannuation Scheme, the BBC Pension Scheme, and the Royal Mail Pension Plan.



# Appendix A: Valuation of pension benefits – defined benefit

When calculating the “present net value” of a defined benefit we need to consider not just the level of that benefit but also when, and for how long, it is expected to be paid. This involves making assumptions about the probability of the timing of the payment of the benefits, the amount of each payment of that benefit and the rate of investment return.

In order to explain how we value benefits, we illustrate the process below with three examples, beginning with the simplest type of benefit - a lump sum payable from a fixed age.

### Example 1

Suppose, we want to calculate the difference in value of providing lump sum of £1,000 and a lump sum of £1,100, both payable today. The difference in value is clearly £100.

### Example 2

Suppose, we want to calculate the difference between the value of a lump sum of £1,000 payable today and a lump sum of £1,100 payable in five years’ time. The difference in value is not readily apparent since the two benefits are payable at different times. In order to compare them, we need to estimate how money needs to be set aside at the current time to meet the benefits. How much is £1,100 in five years’ time worth now? To calculate this, we need to make an assumption about the rate of investment return expected to be earned over the next five years on money set aside now.

Suppose we assume a rate of return of 10% per annum can be earned. Then in order to achieve a lump sum benefit of £1,100 in 5 years’ time, we need to set aside £683 since in 5 years’ time this amount plus investment returns is expected to equal £1,100 in 5 years’ time. Consequently the present net value of providing this benefit is £683 under the assumption adopted. This is shown in Table A.1 below.

Table A.1

Year	Amount held at start of year	Investment return added over the year	Amount held at end of year
1	£683	£68	£751
2	£751	£75	£826
3	£826	£83	£909
4	£909	£91	£1,000
5	£1,000	£100	£1,100

### Example 3

Suppose we want to calculate the difference in the value of a lump sum of £1,000 in 20 years' time and a lump sum of £1,100 payable in 25 years' time. Suppose, in addition, that the lump sum amounts increase in line with price inflation between now and the date of payment. Furthermore, suppose that the lump sums are only payable if the individual concerned is still alive at the date of payment.

For this example we need to make three assumptions:

- The expected rate of return – suppose this is assumed to be 10% pa.
- The expected rate of price inflation – suppose this is assumed to be 5% pa.
- The likelihood that the individual will be alive in 20 or 25 years' time - suppose these are assumed to be 90% and 85% respectively.

If the individual will definitely survive to the end of the 20 year period then at that time the benefit payable will be £2,653 (this is the £1,000 increased by 5% every year). Assuming investment returns of 10% a year means that the amount that would need to be invested if the benefit of £2,653 will definitely be payable is £394 (since this amount plus 10% every year will result in a lump sum of £2,653). However, there is only a 9 in 10 chance (90%) that the payment will be required and so investing 90% of £394 (i.e. £355) would be a sensible provision for the value of providing this benefit under the investment return and benefit increase assumptions adopted.

Following the same argument for the second lump sum payable in 25 years' time suggests that £292 would be a sensible provision for the value of providing this second benefits.

The difference in value is then £63, with the value of the first lump sum being greater since it is more likely to be paid and there is also less time on which investment returns can be achieved in excess of the rate at which the benefit increases.

A pension benefit can be thought of as a series of lump sum benefits and to value these we calculate the present value of each lump sum payable, making allowance for increases, the probability of each one being paid and the rate of investment return. The sum of the value of providing these individual lump sums represents the present net value of the pension.

## Appendix B: Valuation of pension benefits – defined contribution

The simplest interpretation of the net employee value of a defined contribution benefit is the contribution paid by that employer. In general this is the extent of an employer's obligation to providing the benefit since the accumulated pot of assets resulting from these contributions (and those made by employees) is typically used to provide a lump sum at retirement which may be converted to a pension on non-guaranteed conversion terms.

However, in order to compare the benefits offered by a defined contribution arrangement against those offered by a defined benefit arrangement, consideration needs to be given to what it would cost the employee to replicate a particular level of defined benefit; or to look at it another way what level of defined benefit an employee would receive as a result of a given level of employer contribution in a defined contribution scheme.

This requires assumptions to be made regarding the investment return that would be earned on the invested employer contributions up to the employee's retirement and on the terms for purchasing pension at retirement.

Looking first at the terms for purchasing an annuity at retirement, these vary over time but are generally more expensive than the value placed on such an annuity using assumptions suitable for valuing defined benefit pensions because of the expense, profit margins and buffers against adverse experience that are used by insurance companies offering to convert the cash sums arising from defined contribution arrangements to annuities.

In order to provide a fair comparison of the relative value to a member of defined contribution and defined benefit arrangements, we have in the 2010 and 2013 valuations made an adjustment to the employer defined contribution rate to reflect the relative value of an annuity on the terms available from an insurance company compared to the value of an equivalent annuity on our long-term assumptions.

In order to apply the adjustment, we have assumed that the annuities available to defined contribution members are priced in line with the assumptions which are currently mandated for use in the Statutory Money Purchase Illustrations (SMPI) provided to individuals with defined contribution benefits each year as this is an objective measure on which to estimate future open market conversion terms. We have adjusted the assumptions to be consistent with our other long-term financial assumptions (see Appendix D) and therefore used a discount rate of CPI plus 1% pa. An expense loading of 4% is also included.

The 2014 Budget includes measures to give defined contribution members greater flexibility over the way that they access pension savings, including an option to take 100% of defined contribution funds as a (taxed) cash sum. To allow for this additional flexibility, in the prospective 2016 valuation we have not made the adjustment described above to allow for annuity terms, thereby implicitly assuming that members would either access defined contribution benefits as cash or by way of drawdown.

Looking at the investment return that would be earned on invested employer contributions, this is more subjective as there is a wide range of investments that members might select depending on factors such as their attitude to risk and how close they are to retirement. For ease of comparison and to avoid making undue assumptions which potentially distort the results we have assumed that the investment return (net of expenses) on employer contributions is, on average over a career, the same as our long-term discount rate for valuing defined benefit schemes.

### **Matching contributions**

In many defined contribution arrangements, the employer's contribution depends on the member's own contributions (this is often referred to as "matching"). Where matching applies, we have assumed that members will choose to contribute at the necessary rate in order to secure the maximum contribution from the employer.

## Appendix C: Comparison of pension valuation methodologies

The choice of method has a major impact on the relative values of the pension benefits. The main actuarial valuation methods that could be used in this assessment are described below, together with their relative strengths and weaknesses. As discussed in Section 3 of this Report, in the comparative valuation we have looked at both the value of benefits building up over the next year of service (the projected unit method) and a whole career approach to calculate the relative values of the defined benefit pension schemes.

### **Projected unit method (considering benefits building up in the next year)**

The *projected unit method* looks at the value of benefits arising over the next year of service, allowing for future pay increases prior to retirement or earlier exit. The value of benefits is expressed as a percentage of the pay expected to be received over that year. It does not look at benefits that have arisen before that year, nor at benefits that are expected to arise in future years. This is the approach typically used for funding pension schemes and for assessing pension costs for accounting purposes.

#### *Advantages*

- This approach measures the additional benefit accrued over the following year and therefore captures the benefit being earned in addition to pay in the year in which it accrues.
- This is consistent with a common approach to looking at pay comparison which focuses only on the following year.
- For individuals of the same age and gender, with the same future career path, the value of benefits is affected by the benefit structure of the scheme only and not by the individual's past history.
- Looking at the progression of value along an individual's assumed career path, as calculated under this methodology, provides useful information on the variation in value of the individual's pension relative to pay throughout the career.

#### *Disadvantages*

- The results under this approach depend on the current status, particularly age, of the selected individual.
- The methodology does not take account of how benefits have built up in the past, thereby losing useful information in a direct comparison.
- For members who have already accrued their full benefit in a pension scheme, for example members of the Judiciary with over 20 years' service, no further benefit accrues and the value is effectively nil under this approach. Although they are continuing to benefit from an increase in

past service benefits as a result of pay increases, this approach implicitly assumes that full allowance for future pay increases on past benefits has already been provided for.

### Whole career approach

The *whole career approach* looks at the value of benefits arising over the whole of an individual's career, both benefits built up in the past and expected to be built up in the future, allowing for future pay increases prior to retirement or earlier exit. The value is expressed as a percentage of the individual's total salary over that career; the salary received to date and the salary expected to be received in the future.

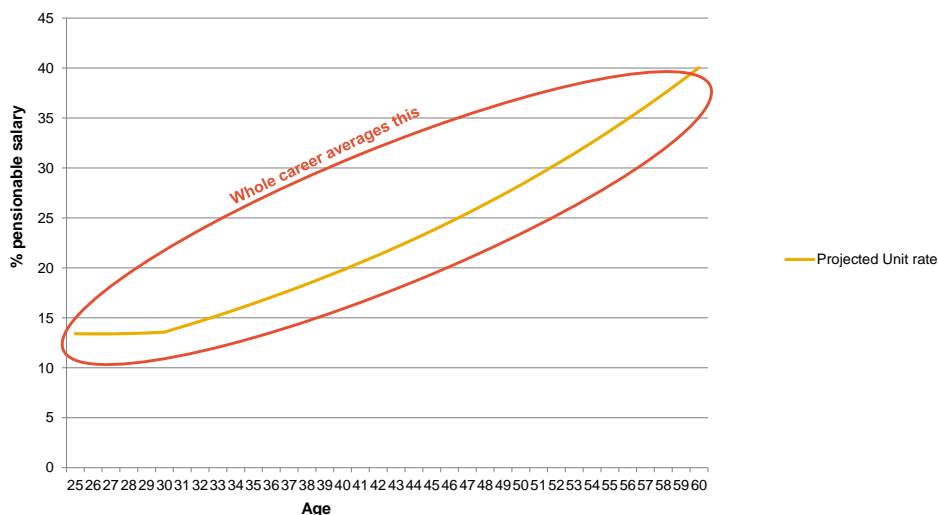
#### Advantages

- This approach takes into account the whole picture, by covering benefits built up over an individual's whole career.
- It is relatively easy to make comparisons across different career paths.

#### Disadvantages

- The methodology requires assumptions to be made about the past, such as past pay progression and how any defined contributions have been invested. Consideration also needs to be given to issues such as how to treat past changes in pension benefits.
- The results under this approach still depend on the current status, particularly age, of the selected individual.

**We believe that a combination of the above two methods provides the Review Bodies with a full range of information to assess how the value of pension benefits compares for remit group members on different career paths and at different stages of those career paths.**



For completeness, we set out below the other possible actuarial methods, each of which has their own merits but we do not believe that using any of these other methods would add further information to what the combination of the above two methods provide to the Review Bodies.

### **Entry age approach**

The *entry age approach* is a subset of the *whole career approach* which looks at the value of the benefits arising over the whole of an individual's career, but starts at the age at entry so that all benefits are future benefits. The value is expressed as a percentage of the individual's total salary over the whole future career. This is less useful for this exercise than the whole career approach because it does not look at the difference between past and future benefits.

### **Remaining future career approach**

The *remaining future career approach* looks at the value of benefits arising over the whole of an individual's remaining career, allowing for future pay increases prior to retirement or earlier exit. The value is expressed as a percentage of the individual's total salary over that future career. Unlike the whole career approach, it does not look at benefits built up in the past.

#### *Advantages*

- This approach looks at all future benefits being built up and averages out their value over future expected pay thereby capturing all future progression.
- It is relatively easy to make comparisons across different career paths.
- For individuals of the same age and gender, with the same future career path, the value of benefits is affected by the benefit structure of the scheme only and not by the individual's past history.
- Results are not distorted by individuals' past service histories.

#### *Disadvantages*

- This approach provides a subset of the information which the whole career approach provides.

### **Current salary approach**

The *current salary approach* is a variation of the projected unit method. It also looks at the value of benefits arising over the next year of service but, rather than allowing for future pay increases, it allows for increases linked to price inflation (the increases available if an individual left service) and in addition takes account of the impact of pay increases above price inflation on benefits accrued in respect of past years of service.

#### *Advantages*

- The approach is relevant to the current profiles of the remit groups.

- This captures both the additional accrual of benefits and the effect of pay increases on past pension benefits.

#### *Disadvantages*

- This does not capture the impact of future pay increases on benefits.
- Results are dependent on assumptions about individuals' past pension histories, in particular the age at which they join the scheme, as the length of past service is a key factor in the calculated value.
- Pension values rise steeply with increasing length of service.



## Appendix D: Financial assumptions

In this Appendix we discuss the financial assumptions that have been adopted for the comparative valuation.

### The rate of price inflation (CPI and RPI)

The Bank of England's Monetary Policy Committee has an inflation target of 2% pa on the Consumer Prices Index (CPI). This is broadly consistent with our own long-term expectations for CPI inflation (the Towers Watson Investment Model currently incorporates a 2.2% pa CPI inflation assumption) and, in our view, represents a reasonable best-estimate assumption.

Inflation on the Retail Prices Index (RPI) is expected to exceed CPI inflation over the longer term due to a formula effect (differences in the mathematical approach used to calculate the indices systematically lead to higher levels of inflation being reported based on RPI) and differences in the constituent components of the indices (among other differences, CPI excludes most owner occupier costs).

Taking these factors into account we believe that a reasonable best estimate is that over the longer term, RPI inflation will exceed CPI inflation by around 0.9% pa to 1.1% pa with a central assumption of 1.0% pa. Therefore, based on a CPI inflation assumption of 2.0% pa, we have used an RPI assumption of 3.0% pa.

### Increases to pensions in payment and in deferment

Pension increases vary between pension arrangements and for different tranches of pension depending on scheme rules and legislation.

Examples of common formulae for pension increases in payment include:

- RPI (0% floor) – applied to public sector pensions prior to 2011
- CPI (0% floor) – applies to public sector pensions since 2011
- RPI (0% floor, 5% maximum) – RPI with a minimum of 0% and a maximum of 5% each year – statutory minimum increases prior to 2011 for pensions built up between 6 April 1997 and 5 April 2005 and commonly specified in scheme rules.
- CPI (0% floor, 5% maximum) – CPI with a minimum of 0% and a maximum of 5% each year – statutory minimum increases since 2011 for pensions built up between 6 April 1997 and 5 April 2005.
- CPI (0% floor, 2.5% maximum) – CPI with a minimum of 0% and a maximum of 2.5% each year – statutory minimum increases since 2011 for pensions built up from 6 April 2005.

For the comparative valuation, a wide range of pension increase assumptions are required to allow for the remit group and comparator schemes and the different reference points (e.g. in 2010 RPI based formulae were predominant whereas today CPI based formulae are predominant).

The starting point for setting the pension increase assumptions is the CPI and RPI inflation assumptions. Allowance should then be made for the caps and floors that might apply depending on the scheme in question.

At the simplest level, the impact of caps and floors could be allowed for by directly applying the floor or cap to the RPI or CPI assumption as appropriate. For example, based on an RPI increase assumption of 3.0% pa, we could simply assume that pension increases based on RPI with a 0% floor and a 5% cap each year will also, on average, be 3.0%pa.

However, this simplistic approach ignores the variability of inflation over time. Even if on average RPI inflation is 3% pa, there will be years when it is higher than this and years when it is lower than this which is important when it comes to considering the impact of the caps and floors.

We have allowed for this variability by modelling inflation stochastically. Following this approach and based on an assumed long-term inflation volatility of 2.4% for RPI and 1.9% for CPI (the central assumption in the Towers Watson Investment Model), our assumptions for pension increases are set out below:

Pension increase formula (in payment increases)	Assumed long-term average pension increase (% pa)
RPI (0% floor)	3.15%
RPI (0% floor, 5% maximum)	2.85%
RPI (0% floor, 2.5% maximum)	1.85%
CPI (0% floor)	2.15%
CPI (0% floor, 5% maximum)	2.10%
CPI (0% floor, 2.5% maximum)	1.60%

Revaluation of pensions between the dates of leaving service and retirement also varies between pension arrangements and for different tranches of pension. Examples of common deferred pension revaluation formulae include:

- RPI (0% floor) – applied to public sector pensions prior to 2011
- CPI (0% floor) – applied to public sector pensions since 2011
- RPI (0% floor, 5% maximum; over whole period) – RPI with a minimum of 0% and a maximum of 5% pa measured over the entire deferred period – statutory minimum increases prior to 2011 for pensions built up before 6 April 2009
- CPI (0% floor, 5% maximum; over whole period) – CPI with a minimum of 0% and a maximum of 5% pa measured over the entire deferred period – statutory minimum increases since 2011 for pensions built up before 6 April 2009

- RPI (0% floor, 2.5% maximum; over whole period) – RPI with a minimum of 0% and a maximum of 2.5% pa measured over the entire deferred period – statutory minimum increases prior to 2011 for pensions built up after 5 April 2009
- CPI (0% floor, 2.5% maximum; over whole period) – CPI with a minimum of 0% and a maximum of 2.5% pa measured over the entire deferred period – statutory minimum increases since 2011 for pensions built up after 5 April 2009.

Since the caps and floors on deferred pension increases in the private sector normally apply over the whole period of deferment the impact of the caps and floors are less significant than for pension increases where the caps and floors are applied to the increase in each year.

For example, if inflation were -1% in year 1 and 10% in year 2

- the deferred pension increase with a 5% cap would be  $(1 - 1\%) \times (1 + 10\%) - 1 = 8.9\%$  or 4.4% pa
- whereas the increase to a pension in payment with a 0% floor and a 5% cap each year would be  $(1 + 0\%) \times (1 + 5\%) - 1 = 5\%$  or 2.5% pa.

Our assumptions for deferred pension increases are set out below.

Deferred pension increase formula	Assumed long-term average increase (% pa)
RPI (0% floor; floor applies each year)	3.15%
RPI (0% floor, 5% maximum; over whole period)	3.00%
RPI (0% floor, 2.5% maximum; over whole period)	2.50%
CPI (0% floor; floor applies each year)	2.15%
CPI (0% floor, 5% maximum; over whole period)	2.00%
CPI (0% floor, 2.5% maximum; over whole period)	2.00%

### Future investment returns (the discount rate)

The investment return assumption is used to discount the expected future benefit payments, and is the most significant assumption in determining the value placed on a pension benefit.

There are a number of approaches that could be followed to determine the discount rate. Considerations include:

- Is the value placed on the pension benefits intended to reflect the expected cost to the employer or Government of providing the benefits or the value to the employee of those benefits (e.g. what might it cost an individual to replicate the benefits in a defined contribution scheme)?
- What allowance, if any, should be made for the level of security attaching to the benefits?

- What investment strategy should be assumed to underpin the benefits and does this change over time?

Possible approaches for setting the discount rate include:

- a **By reference to gilt yields** – public sector pension liabilities (which have Government backing) could be viewed from a member’s perspective as offering a similar level of security as long-term index-linked gilts. However, in practice, the change in indexation from RPI to CPI and the inherent uncertainties around a pension benefit due to demographic factors means that, in our view, taking this approach would overstate the security and certainty of the future payments. From a cost perspective, gilt yields could also be argued to be a relevant benchmark as it represents the cost of Government borrowing. However, in practice, the majority of schemes being considered in the comparative valuation are unfunded, with benefits to be paid out of future revenues.

Index-linked gilt yields (which are measured relative to RPI inflation) are currently at historically low levels at around 0% pa (or 1% pa above CPI based on our assumed gap of 1% pa). Over the longer-term, however, gilt yields are expected to rise and we believe that a reasonable long-term assumption for returns on index-linked gilts would be around 1.5% pa above CPI.

- b **By reference to long-term discount rate used by the Government to assess pension costs** – since 2011, the Treasury has used a long-term discount rate of 3% pa above CPI for the purpose of calculating costs in relation to unfunded public sector pension schemes. This is intended to be based on a long-term expectation of GDP growth and is to be reviewed every five years.
- c **By reference to corporate pension accounting rules** – this approach implies the use of a high quality corporate bond yield. High quality corporate bond yields have been volatile over recent years, but we believe that a reasonable long-term assumption would be around 3% pa above CPI.

Whilst this approach offers a degree of objectivity and would provide an important measure of cost to a corporation considering pension benefits, we believe that it is of limited relevance to the current comparative valuation.

- d **By reference to the best estimate rate of return one might expect to achieve on a suitable portfolio of assets (which may include a combination of bonds, property and equity) were the scheme to invest over the long term to provide for the liabilities** – the discount rate following this approach reflects the expected long term cash cost to a company of funding the benefits through a funded pension scheme.

In our view, this approach has some attraction as a way of benchmarking employer costs. However, the resulting investment return assumptions depend heavily on the assumed investment portfolio, thereby introducing an element of subjectivity, particularly in today’s environment where we see much greater variation in investment strategy between pension schemes than was the case five or ten years’ ago.

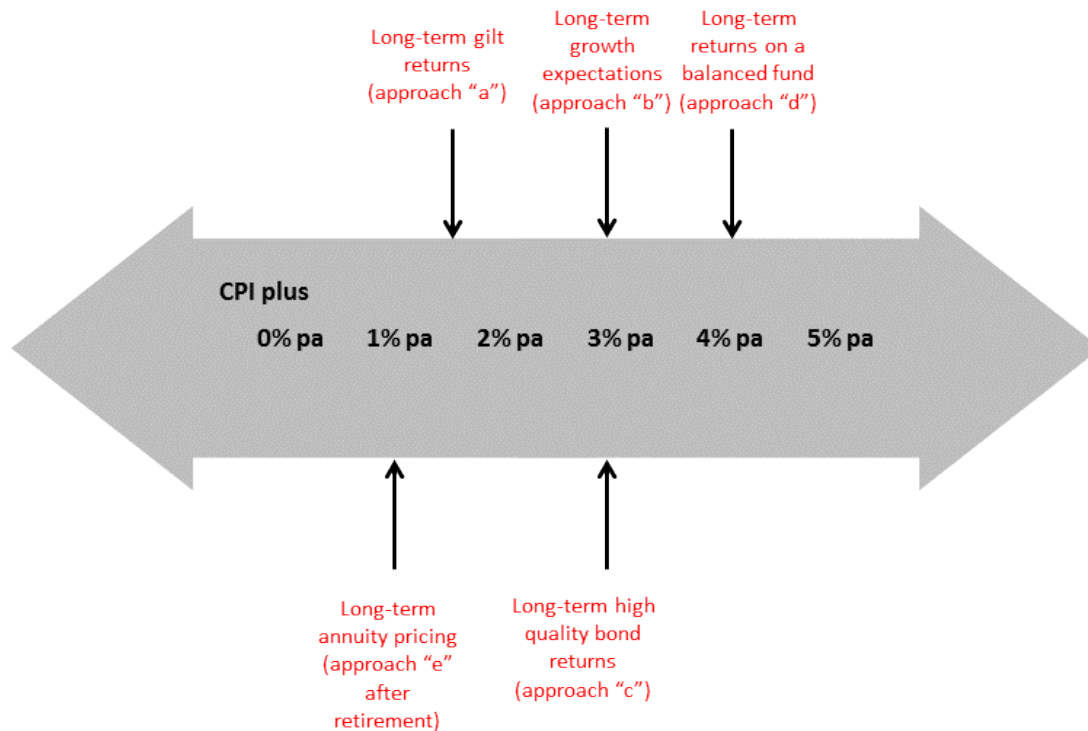
Based on the long-term assumptions in the Towers Watson Investment Model, this could vary between around 2% pa to 2.5% pa above CPI for a portfolio invested in a combination of gilts and corporate bonds up to around 4% pa above CPI for a balanced portfolio with an even split between bonds (gilts and corporate bonds) and equity and around 5.5% pa above CPI for a portfolio entirely invested in equities (although we would not see this as a realistic assumption).

- e **By reference to the investment returns an individual might expect to achieve in a defined contribution fund and through the purchase of an annuity at retirement** – under this approach, value would be considered from the perspective of what it might cost an employee to replicate the pension benefits on offer through a typical defined contribution scheme. This might, for example, involve investment in a “lifestyle” fund before retirement (i.e. gradually moving from return-seeking assets such as equities and property towards matching assets such as gilts as the member approaches retirement) and an open market annuity after retirement.

The advantage of this approach is that it focuses directly on value to the member. However, it does require additional subjective assumptions to be made (defined contribution investment choices could vary significantly from individual to individual ranging from 100% equities through to 100% cash depending on risk profile). Also, this approach has limitations when it comes to considering pension arrangements with different retirement ages – changing the age at which the individual is assumed to switch from the pre-retirement investment strategy to an annuity can significantly affect the value.

Under this approach, it is also necessary to make an assumption regarding annuity pricing terms. For this purpose, we have followed the same principles as are prescribed for Statutory Money Purchase Illustrations (SMPI), which must be provided to members of defined contribution schemes, adjusted for consistency with our other long-term economic assumptions. This results in an investment return assumption after retirement of CPI plus 1% pa (consistent with our long-term assumption for gilt returns less a margin of 0.5% pa) and the addition of an expense loading.

Based on the options described above, the range of real discount rates (i.e. above CPI inflation) which could be used for the comparative review are illustrated below:



On balance, we have adopted approach "b" for the comparative valuation (i.e. a discount rate of 3% pa above CPI corresponding to the discount rate currently used by the Government to assess pension costs for unfunded schemes). We believe that this approach offers a reasonable measure of value in relation to the remit group schemes (which are funded out of Government revenues over time) and it is not dependent on making additional subjective assumptions regarding the possible investment strategy that might be followed in a funded defined benefit arrangement (which, as described above, could vary substantially from scheme to scheme) or making additional subjective assumptions around the investment strategy an individual might choose in a defined contribution arrangement (which, as described above, could vary substantially from individual to individual).

### Pay increases

The pay increase assumption represents expected annual increases during a member's career in the remit group from:

- pay increases on promotion / progression as the individual moves through the relevant career bands and
- inflationary annual pay increases.

**Promotion / progression pay increases** - For the allowance for pay increases on promotion / progression, both the expected frequency of promotion / progression and the size of the pay increase on promotion / progression must be considered.

The frequency of promotion / progression is captured within the specification of the sample career paths and no further assumptions are required.

In the comparative valuation, the size of the pay increase on promotion / progression has been assumed to be in line with the most up to date published pay scales that are applicable to the relevant bands for each specified career path.

***Inflationary pay increases*** - As discussed above, for the comparative valuation we believe that it is appropriate to use long-term, best-estimate assumptions. Additionally, where it is possible we believe that there is merit in using a common assumption across all career paths to increase comparability. Based on these principles, we the inflationary pay increases for all career paths have been assumed to be in line with an overall assumption for increases in public sector pay.

Historically UK earnings, as measured by Average Earnings, have tended to increase by 1.5% to 2% pa in excess of price inflation over long periods. However, there has been a general trend downwards over time and in the recent past increases have been well below this range (for example, since 2008 average wages have increased below CPI price inflation each year).

Looking over the entire period since 1990, increases in public sector pay have on average been very close to increases in private sector pay (there are noticeable differences over shorter periods of time).

Over the short to medium term, the outlook for earnings growth remains low, both in the public sector and the economy as a whole. However, looking to the longer term, earnings growth is forecast to increase back towards more historic levels. Based on this, we believe that a long-term assumption for inflation pay increases of 1% pa above CPI is reasonable and this is what we have adopted in the comparative valuation.

***Allowance for historic pay experience in career path modelling*** - It would be possible to consider historic pay scales and actual inflationary pay increases when looking at past service for each career path. However, we believe that doing so would i) limit the usefulness of the results of the comparative valuation by linking it to a particular point in time, rather than being a long-term comparison of relative pension values and ii) would make comparisons between career paths more difficult due to impact of historic factors on the results. Therefore, we have used the same long-term assumptions for the entire career path analysis.

## Summary of financial assumptions

The financial assumptions we have used are summarised in the table below:

Assumption	Nominal (% pa)	Real relative to CPI (% pa)
CPI price inflation	2% pa	-
RPI price inflation	3% pa	1% pa
Revaluation for CARE schemes		
CPI based revaluation	2% pa	0% pa
Pension increases (in payment)		
RPI (0% floor)	3.15% pa	1.15% pa
RPI (0% floor, 5% maximum)	2.85% pa	0.85% pa
RPI (0% floor, 2.5% maximum)	1.85% pa	-0.15% pa
CPI (0% floor)	2.15% pa	0.15% pa
CPI (0% floor, 5% maximum)	2.10% pa	0.10% pa
CPI (0% floor, 2.5% maximum)	1.60% pa	-0.40% pa
Revaluation of deferred pensions		
RPI (0% floor; floor applies each year)	3.15% pa	1.15% pa
RPI (0% floor, 5% maximum; over whole period)	3% pa	1% pa
RPI (0% floor, 2.5% maximum; over whole period)	2.50% pa	0.50% pa
CPI (0% floor; floor applies each year)	2.15% pa	0.15% pa
CPI (0% floor, 5% maximum; over whole period)	2% pa	0% pa
CPI (0% floor, 2.5% maximum; over whole period)	2% pa	0% pa
General salary increases	3% pa	1% pa
Promotional salary increases	Based on current pay scales for the relevant career paths	
Discount rate	5% pa	3% pa



## Appendix E: Demographic assumptions

In this Appendix we discuss the demographic assumptions that we have adopted for the comparative valuation.

### Post-retirement mortality

The post-retirement mortality assumption has two parts:

- a base table which describes the current probability of dying at each age; and
- a set of future improvements which describes how mortality rates will develop into the future.

**Base table** - As described in Section 4, for the purpose of the comparative valuation we have used the same underlying mortality assumptions for all career paths and remit groups. This simplification means that any differences in comparative values can be attributed to differences in career path and pension benefit design rather than other demographic factors which could vary significantly from individual to individual.

Following this approach, we have used a standard base mortality table for the comparative valuation. The Self Administered Pension Schemes (“SAPS”) mortality tables were constructed based on data collected from a large number of “Self Administered Pension Schemes.” The original SAPS analysis was the first major study to rely on pension scheme data rather than data for insured lives. Consequently SAPS tables are generally a better fit for occupational pension scheme data than earlier tables which were based on insurance company data. The ‘Series 2’ SAPS tables were recently released and are based on data from 2004-11.

There are 18 ‘S2’ tables in all, split by gender, pension amounts, health status and type of pension (member or dependants). For the comparative valuation, given the wide range of individuals being considered we have used the “all pensioner” SAPS tables.

**Future improvements** - There are various approaches that can be used to project future mortality improvements. Broadly these fall into cause-based models (e.g. modelling specific disease diagnosis and mortality from those diseases under various scenarios) and extrapolation models which project forward based on historic mortality trends.

In recent years, it has been most common for pension schemes and insurers to use to the CMI projections model published by the Institute and Faculty of Actuaries. The model reflects the latest experience on trends in mortality and so we have used it for the comparative valuation.

A key decision is the model is the long-term rate of mortality improvement. Based on our analysis of historic trends in population mortality rates, Towers Watson’s disease-based mortality model, which uses historic data and expert views to predict how longevity risk factors and incidence of various diseases may change over time and the range of realistic assumptions typically used by insurers, we

believe that a reasonable long-term best estimate is that mortality rates will fall by around 1.25% pa in the long term. Accordingly, this is the assumption that we have used for the comparative valuation.

### **Assumed age of retirement and leaving service**

The assumed age of retirement and leaving service are specified in the career path profiles.

### **Male/female ratio**

We have assumed a 50:50 ratio of males to females. Whilst this may not be realistic for all remit groups, we believe that there are advantages in using a consistent assumption. We also note that the gap between male and female mortality rates has somewhat reduced in recent years and, particularly where a pension may be paid to a surviving dependant, the male:female ratio has a relatively small impact compared to some other assumptions. Our separate report on the results of the comparative valuation contains some comments on the sensitivity of the results to this assumption.

### **Proportion of members with a dependant and age difference**

These two assumptions are of less significance for the comparative valuation. Based on our analysis of population wide studies, we have assumed a proportion married at retirement of 80% and an assumption that husbands are, on average, 3 years older than their wives.

### **Allowance for commutation**

Under the current tax regime the maximum lump sum that can usually be paid tax-free is broadly the equivalent in value of 25% of pension, although not all members will choose to commute the maximum amount of pension.

For the comparative valuation we have assumed that, for all pension schemes in which a lump sum can be paid at retirement only through commutation of pension, 25% of pension is commuted, at the current commutation terms available or, where these are not publicly available (relevant for some of the private sector comparator schemes) assuming that the commutation factors offer fair value to members based on the assumptions used for the comparative valuation.

## Summary of demographic assumptions

The demographic assumptions that we have used for the comparative valuation are summarised below:

Assumption	Description
Post-retirement mortality	SAPS S2 all pensioner (amounts weighted) male and female tables, with allowance for future improvements based on the CMI model (2013, long-term trend of 1.25% pa).
Male:female ratio	50:50
Assumed age of retirement	As specified for each career path
Assumed age of leaving service	As specified for each career path
Proportion of members with an eligible dependant at retirement	80%
Age difference (husband-wives)	3 years
Allowance for commutation	For defined benefits schemes, 25% of pension commuted where no separate lump sum accrued. For private sector comparator schemes, the commutation terms are assumed to be cost-neutral. For remit group schemes the current commutation terms have been used.  For defined contributions schemes, 25% of fund is taken as cash at retirement

This page is intentionally blank

# Appendix F: Career paths analysed

## Introduction

This appendix summarises the career paths we have analysed.

Details of the career paths were provided by OME and we have included where relevant additional notes on career paths where we have been provided with further information on how individual career paths were determined.

All career paths are assumed to be on national pay rates and none are assumed to be in receipt of location allowances or discretionary pensionable allowances, with the exception of the local clinical excellence awards for career paths A1 and A2 and a Teaching and Learning Responsibility (TLR) allowance for career path E2.

**Remit group: Doctors and Dentists**

	A1	A2	A3
Remit group	D&D	D&D	D&D
Starting age	25	25	25
Current age	25	40	30
Leaving age	65	60	45
Retirement age	65	60	65
Grade on joining	Junior doctor (FHO1)	Junior doctor (FHO1)	Band A
Current grade	Junior doctor (FHO1)	Consultant	Band A
Grade on leaving	Consultant	Consultant	Band B

**Pension scheme for future service**

2010 and 2013	NHS 2008 section	NHS 1995 section	NHS 2008 section
2016	NHS 2015	NHS 2015	NHS 2015

Age	Pay point	Pay scale (£)	Pay point	Pay scale (£)	Pay point	Pay scale (£)
20						
21						
22						
23						
24						
25	FHO1	Min 22,636	FHO1	Min 22,636	Band A	Min 38,095
26	FHO2	Min 28,076	FHO2	Min 28,076	Band A	2 42,328
27	Spt Reg	Min 30,002	Spt Reg	Min 30,002	Band A	3 48,677
28	Spt Reg	1 31,838	Spt Reg	1 31,838	Band A	4 51,851
29	Spt Reg	2 34,402	Spt Reg	2 34,402	Band A	5 55,025
30	Spt Reg	3 35,952	Spt Reg	3 35,952	Band A	6 57,142
31	Spt Reg	4 37,822	Spt Reg	4 37,822	Band A	6 57,142
32	Spt Reg	5 39,693	Spt Reg	5 39,693	Band A	6 57,142
33	Spt Reg	6 41,564	Spt Reg	6 41,564	Band B	Min 59,259
34	Spt Reg	7 43,434	Spt Reg	7 43,434	Band B	2 61,375
35	Spt Reg	8 45,304	Spt Reg	8 45,304	Band B	3 64,550
36	Spt Reg	9 47,175	Spt Reg	9 47,175	Band B	4 66,137
37	Consultant	Min 75,249	Consultant	Min 75,249	Band B	5 67,724
38	Consultant	1 77,605	Consultant	1 77,605	Band B	6 69,311
39	Consultant	2 79,961	Consultant	2 79,961	Band B	6 69,311
40	Consultant	3 82,318	Consultant	3 82,318	Band B	6 69,311
41	Consultant	4 84,667	Consultant	4 84,667	Band B	6 69,311
42	Consultant	4 84,667	Consultant	4 84,667	Band B	6 69,311
43	Consultant	4 84,667	Consultant	4 84,667	Band B	6 69,311
44	Consultant	4 84,667	Consultant	4 84,667	Band B	6 69,311
45	Consultant	4 84,667	Consultant	4 84,667		
46	Consultant	5 90,263	Consultant	5 90,263		
47	Consultant	5 90,263	Consultant	5 90,263		
48	Consultant	5 90,263	Consultant	5 90,263		
49	Consultant	5 90,263	Consultant	5a 93,220		
50	Consultant	5 90,263	Consultant	5a 93,220		
51	Consultant	6 95,860	Consultant	6a 98,817		
52	Consultant	6 95,860	Consultant	6a 98,817		
53	Consultant	6a 98,817	Consultant	6b 101,774		
54	Consultant	6a 98,817	Consultant	6b 101,774		
55	Consultant	6a 98,817	Consultant	7b 107,365		
56	Consultant	7a 104,408	Consultant	7f 119,193		
57	Consultant	7a 104,408	Consultant	7f 119,193		
58	Consultant	7a 104,408	Consultant	7f 119,193		
59	Consultant	7a 104,408	Consultant	7f 119,193		
60	Consultant	7b 107,365				
61	Consultant	7b 107,365				
62	Consultant	7b 107,365				
63	Consultant	7b 107,365				
64	Consultant	7b 107,365				
65						

**Note:** Career paths A1 and A2 (both of which become consultants), no allowance has been made in the career paths for intensity payments/on-call payments. These amounts are currently pensionable, range from 1% to 8% of basic salary and will vary from consultant to consultant according to their job plans.

**Remit group: NHS**

	B1	B2
Remit group	NHS	NHS
Starting age	25	25
Current age	50	49
Leaving age	60	60
Retirement age	60	60
Grade on joining	Band 6	Band 6
Current grade	Band 6	Band 6
Grade on leaving	Band 6	Band 7

**Pension scheme for future service**2010 and 2013  
2016NHS 1995 section  
NHS 2015NHS 1995 section  
NHS 2015

Age	Pay point	Pay scale (£)	Pay point	Pay scale (£)
20				
21				
22				
23				
24				
25	Band 6	21 25,783	Band 6	21 25,783
26	Band 6	22 26,822	Band 6	22 26,822
27	Band 6	23 27,901	Band 6	23 27,901
28	Band 6	24 28,755	Band 6	24 28,755
29	Band 6	25 29,759	Band 6	25 29,759
30	Band 6	26 30,764	Band 6	26 30,764
31	Band 6	27 31,768	Band 6	27 31,768
32	Band 6	28 32,898	Band 6	28 32,898
33	Band 6	29 34,530	Band 6	29 34,530
34	Band 6	29 34,530	Band 6	29 34,530
35	Band 6	29 34,530	Band 6	29 34,530
36	Band 6	29 34,530	Band 6	29 34,530
37	Band 6	29 34,530	Band 6	29 34,530
38	Band 6	29 34,530	Band 6	29 34,530
39	Band 6	29 34,530	Band 6	29 34,530
40	Band 6	29 34,530	Band 6	29 34,530
41	Band 6	29 34,530	Band 6	29 34,530
42	Band 6	29 34,530	Band 6	29 34,530
43	Band 6	29 34,530	Band 6	29 34,530
44	Band 6	29 34,530	Band 6	29 34,530
45	Band 6	29 34,530	Band 6	29 34,530
46	Band 6	29 34,530	Band 6	29 34,530
47	Band 6	29 34,530	Band 6	29 34,530
48	Band 6	29 34,530	Band 6	29 34,530
49	Band 6	29 34,530	Band 6	29 34,530
50	Band 6	29 34,530	Band 6	29 34,530
51	Band 6	29 34,530	Band 7	30 35,536
52	Band 6	29 34,530	Band 7	31 36,666
53	Band 6	29 34,530	Band 7	32 37,921
54	Band 6	29 34,530	Band 7	33 39,239
55	Band 6	29 34,530	Band 7	34 40,558
56	Band 6	29 34,530	Band 7	34 40,558
57	Band 6	29 34,530	Band 7	34 40,558
58	Band 6	29 34,530	Band 7	34 40,558
59	Band 6	29 34,530	Band 7	34 40,558
60				
61				
62				
63				
64				
65				

**Note:** Career paths B1 to B4 are taken from the document “NHS Pension Scheme proposed changes: Illustrative examples of the effect on scheme members’ benefits” dated March 2012, with ages updated to be as at 2013 (rather than 2012) except for B1 where age has been amended so that transitional protection does not apply for the purpose of this analysis.

**Remit group: NHS**

	<b>B3</b>	<b>B4</b>	<b>B5</b>
Remit group	NHS	NHS	NHS
Starting age	25	25	30
Current age	41	26	36
Leaving age	60	65	60
Retirement age	60	65	60
Grade on joining	Band 5	Band 5	Band 2
Current grade	Band 5	Band 5	Band 3
Grade on leaving	Band 6	Band 8a	Band 3

**Pension scheme for future service**

2010 and 2013 2016	NHS 1995 section NHS 2015		NHS 2008 section NHS 2015		NHS 1995 section NHS 2015				
Age	Pay point	Pay scale (£)	Pay point	Pay scale (£)	Pay point	Pay scale (£)			
20									
21									
22									
23									
24									
25	Band 5	16	21,388	Band 5	16	21,388			
26	Band 5	17	22,016	Band 5	17	22,016			
27	Band 5	18	22,903	Band 6	21	25,783			
28	Band 5	19	23,825	Band 6	22	26,822			
29	Band 5	20	24,799	Band 6	23	27,901			
30	Band 5	21	25,783	Band 6	24	28,755	Band 2	1	14,294
31	Band 5	22	26,822	Band 6	25	29,759	Band 2	2	14,653
32	Band 5	23	27,901	Band 6	26	30,764	Band 2	3	15,013
33	Band 5	23	27,901	Band 6	27	31,768	Band 2	4	15,432
34	Band 5	23	27,901	Band 6	28	32,898	Band 2	5	15,851
35	Band 5	23	27,901	Band 6	29	34,530	Band 3	6	16,271
36	Band 5	23	27,901	Band 6	29	34,530	Band 3	7	16,811
37	Band 5	23	27,901	Band 7	30	35,536	Band 3	8	17,425
38	Band 5	23	27,901	Band 7	31	36,666	Band 3	9	17,794
39	Band 5	23	27,901	Band 7	32	37,921	Band 3	10	18,285
40	Band 5	23	27,901	Band 7	33	39,239	Band 3	11	18,838
41	Band 5	23	27,901	Band 8a	33	39,239	Band 3	12	19,268
42	Band 5	23	27,901	Band 8a	34	40,558	Band 3	12	19,268
43	Band 5	23	27,901	Band 8a	35	42,190	Band 3	12	19,268
44	Band 5	23	27,901	Band 8a	36	43,822	Band 3	12	19,268
45	Band 5	23	27,901	Band 8a	37	45,707	Band 3	12	19,268
46	Band 6	24	28,755	Band 8a	38	47,088	Band 3	12	19,268
47	Band 6	25	29,759	Band 8a	38	47,088	Band 3	12	19,268
48	Band 6	26	30,764	Band 8a	38	47,088	Band 3	12	19,268
49	Band 6	27	31,768	Band 8a	38	47,088	Band 3	12	19,268
50	Band 6	28	32,898	Band 8a	38	47,088	Band 3	12	19,268
51	Band 6	29	34,530	Band 8a	38	47,088	Band 3	12	19,268
52	Band 6	29	34,530	Band 8a	38	47,088	Band 3	12	19,268
53	Band 6	29	34,530	Band 8a	38	47,088	Band 3	12	19,268
54	Band 6	29	34,530	Band 8a	38	47,088	Band 3	12	19,268
55	Band 6	29	34,530	Band 8a	38	47,088	Band 3	12	19,268
56	Band 6	29	34,530	Band 8a	38	47,088	Band 3	12	19,268
57	Band 6	29	34,530	Band 8a	38	47,088	Band 3	12	19,268
58	Band 6	29	34,530	Band 8a	38	47,088	Band 3	12	19,268
59	Band 6	29	34,530	Band 8a	38	47,088	Band 3	12	19,268
60				Band 8a	38	47,088			
61				Band 8a	38	47,088			
62				Band 8a	38	47,088			
63				Band 8a	38	47,088			
64				Band 8a	38	47,088			
65				Band 8a	38	47,088			



**Remit group: NHS**

	<b>B6</b>	<b>B7</b>	<b>B8</b>
Remit group	NHS	NHS	NHS
Starting age	30	38	25
Current age	45	39	41
Leaving age	60	44	60
Retirement age	60	65	60
Grade on joining	Band 6	Band 8b	Band 5
Current grade	Band 8a	Band 8b	Band 5
Grade on leaving	Band 8d	Band 8b	Band 5

**Pension scheme for future service**2010 and 2013  
2016NHS 1995 section  
NHS 2015NHS 2008 section  
NHS 2015NHS 1995 section  
NHS 2015

Age	Pay point	Pay scale (£)	Pay point	Pay scale (£)	Pay point	Pay scale (£)
20						
21						
22						
23						
24						
25					Band 5 16	21,388
26					Band 5 17	22,016
27					Band 5 18	22,903
28					Band 5 19	23,825
29					Band 5 20	24,799
30	Band 6 21	25,783			Band 5 21	25,783
31	Band 6 22	26,822			Band 5 22	26,822
32	Band 6 23	27,901			Band 5 23	27,901
33	Band 6 24	28,755			Band 5 23	27,901
34	Band 6 25	29,759			Band 5 23	27,901
35	Band 6 26	30,764			Band 5 23	27,901
36	Band 7 27	31,768			Band 5 23	27,901
37	Band 7 28	32,898			Band 5 23	27,901
38	Band 7 29	34,530	Band 8b 37	45,707	Band 5 23	27,901
39	Band 7 30	35,536	Band 8b 38	47,088	Band 5 23	27,901
40	Band 7 31	36,666	Band 8b 39	49,473	Band 5 23	27,901
41	Band 7 32	37,921	Band 8b 40	52,235	Band 5 23	27,901
42	Band 7 33	39,239	Band 8b 41	54,998	Band 5 23	27,901
43	Band 8a 34	40,558	Band 8b 42	56,504	Band 5 23	27,901
44	Band 8a 35	42,190			Band 5 23	27,901
45	Band 8a 36	43,822			Band 5 23	27,901
46	Band 8a 37	45,707			Band 5 23	27,901
47	Band 8b 38	47,088			Band 5 23	27,901
48	Band 8b 39	49,473			Band 5 23	27,901
49	Band 8b 40	52,235			Band 5 23	27,901
50	Band 8b 41	54,998			Band 5 23	27,901
51	Band 8c 42	56,504			Band 5 23	27,901
52	Band 8c 43	59,016			Band 5 23	27,901
53	Band 8c 44	61,779			Band 5 23	27,901
54	Band 8c 45	65,922			Band 5 23	27,901
55	Band 8d 46	67,805			Band 5 23	27,901
56	Band 8d 47	70,631			Band 5 23	27,901
57	Band 8d 48	74,084			Band 5 23	27,901
58	Band 8d 49	77,850			Band 5 23	27,901
59	Band 8d 50	81,618			Band 5 23	27,901
60						
61						
62						
63						
64						
65						

**Remit group: Police**

	C1	C2	C3
Remit group	Police	Police	Police
Starting age	26	23	22
Current age	30	40	35
Leaving age	56	55	60
Retirement age	56	55	60
Grade on joining	Constable	Constable	Constable
Current grade	Constable	Inspector	Sergeant
Grade on leaving	Constable	Inspector	Superintendent

**Pension scheme for future service**2010 and 2013  
2016Police 2006  
Police 2015Police 1987  
Police 2015Police 1987  
Police 2015

Age	Pay point	Pay scale (£)	Pay point	Pay scale (£)	Pay point	Pay scale (£)
20						
21						
22					Constable	0 23,493
23			Constable	0 23,493	Constable	1 26,223
24			Constable	1 26,223	Constable	2 27,747
25			Constable	2 27,747	Constable	3 29,439
26	Constable	0 23,493	Constable	3 29,439	Constable	4 30,366
27	Constable	1 26,223	Constable	4 30,366	Constable	5 31,341
28	Constable	2 27,747	Constable	5 31,341	Constable	6 32,235
29	Constable	3 29,439	Constable	6 32,235	Constable	7 33,030
30	Constable	4 30,366	Constable	7 33,030	Constable	8 34,092
31	Constable	5 31,341	Constable	8 34,092	Constable	9 36,153
32	Constable	6 32,235	Constable	9 36,153	Sergeant	0 36,885
33	Constable	7 33,030	Sergeant	0 36,885	Sergeant	1 38,145
34	Constable	8 34,092	Sergeant	1 38,145	Sergeant	2 39,426
35	Constable	9 36,153	Sergeant	2 39,426	Sergeant	3 40,266
36	Constable	10 36,885	Sergeant	3 40,266	Sergeant	4 41,451
37	Constable	10 36,885	Sergeant	4 41,451	Sergeant	4 41,451
38	Constable	10 36,885	Sergeant	4 41,451	Sergeant	4 41,451
39	Constable	10 36,885	Sergeant	4 41,451	Inspector	0 47,256
40	Constable	10 36,885	Inspector	0 47,256	Inspector	1 48,588
41	Constable	10 36,885	Inspector	1 48,588	Chief Inspector	1 52,308
42	Constable	10 36,885	Inspector	2 49,923	Chief Inspector	2 53,358
43	Constable	10 36,885	Inspector	3 51,258	Chief Inspector	3 54,459
44	Constable	10 36,885	Inspector	3 51,258	Chief Inspector	3 54,459
45	Constable	10 36,885	Inspector	3 51,258	Superintendent	1 62,922
46	Constable	10 36,885	Inspector	3 51,258	Superintendent	2 65,517
47	Constable	10 36,885	Inspector	3 51,258	Superintendent	3 68,112
48	Constable	10 36,885	Inspector	3 51,258	Superintendent	4 70,713
49	Constable	10 36,885	Inspector	3 51,258	Superintendent	5 73,311
50	Constable	10 36,885	Inspector	3 51,258	Superintendent	5 73,311
51	Constable	10 36,885	Inspector	3 51,258	Superintendent	5 73,311
52	Constable	10 36,885	Inspector	3 51,258	Superintendent	5 73,311
53	Constable	10 36,885	Inspector	3 51,258	Superintendent	5 73,311
54	Constable	10 36,885	Inspector	3 51,258	Superintendent	5 73,311
55	Constable	10 36,885			Superintendent	5 73,311
56					Superintendent	5 73,311
57					Superintendent	5 73,311
58					Superintendent	5 73,311
59					Superintendent	5 73,311
60						
61						
62						
63						
64						
65						

**Notes:**

C1 – Starting age set as 26 (Winsor Final Report Volume 1, page 100, paragraph 3.1.127 – average age of successful candidates in 2009/10 was 26.89. Average entry age for a Constable was also 26 in the 2011/12 PNB Census.)

Assume will retire as a Constable at earliest retirement age after 30 years' service at age 56.

C2 – Starting age as a Constable set as 23 (average entry age for those reaching Inspector in the 2011/12 PNB Census).

Spent median length of service in rank of 10 years before promotion to Sergeant, then 7 years before promotion to Inspector (Winsor Final Report Volume 1, page 202, paragraph 4.1.21 – median length of service for officers new to rank).

Assume will retire at age 55.

C3 - Starting age as a Constable set as 22 (average entry age for those reaching Superintendent in the 2011/12 PNB Census).

Spent median length of service in rank of 10 years before promotion to Sergeant, then 7 years before promotion to Inspector, then 2 years before promotion to Chief Inspector, then 4 years before promotion to Superintendent (Winsor Final Report Volume 1, page 202, paragraph 4.1.21 – median length of service for officers new to rank).

Assume will retire at age 60.

**Remit group: Prison Service**

	<b>D1</b>		<b>D2</b>		<b>D3</b>	
Remit group	Prison E&W		Prison E&W		Prison E&W	
Starting age	25		25		25	
Current age	45		26		50	
Leaving age	60		65		60	
Retirement age	60		65		60	
Grade on joining	Prison officer		Prison officer band 3		Prison officer	
Current grade	Prison officer		Prison officer band 3		Senior manager	
Grade on leaving	Prison officer		Prison officer band 5		Senior manager	
<b>Pension scheme for future service</b>						
2010 and 2013	Civil Service classic		Civil Service nuvos		Civil Service classic	
2016	Civil Service 2015		Civil Service 2015		Civil Service 2015	
Age	Pay point (old scale)	Pay scale (£)	Pay point (Fair & Sustainable scale)	Pay scale (£)	Pay point (old scale)	Pay scale (£)
20						
21						
22						
23						
24						
25	Prison officer 1	18,635	Band 3 1	18,860	Prison officer 1	18,635
26	Prison officer 2	20,754	Band 3 2	19,802	Prison officer 2	20,754
27	Prison officer 3	21,561	Band 3 3	20,592	Prison officer 3	21,561
28	Prison officer 4	22,671	Band 3 4	21,411	Prison officer 4	22,671
29	Prison officer 5	23,872	Band 3 5	22,265	Prison officer 5	23,872
30	Prison officer 6	25,915	Band 3 5	22,265	Prison officer 6	25,915
31	Prison officer 7	28,930	Band 3 5	22,265	Senior officer	31,169
32	Prison officer 7	28,930	Band 3 5	22,265	Senior officer	31,169
33	Prison officer 7	28,930	Band 4 1	23,546	Senior officer	31,169
34	Prison officer 7	28,930	Band 4 2	24,722	Principal officer 1	31,762
35	Prison officer 7	28,930	Band 4 3	26,144	Principal officer 2	33,537
36	Prison officer 7	28,930	Band 4 4	27,647	Manager F 1	35,214
37	Prison officer 7	28,930	Band 4 5	28,419	Manager F 2	36,229
38	Prison officer 7	28,930	Band 4 5	28,419	Manager F 3	37,274
39	Prison officer 7	28,930	Band 4 5	28,419	Manager E 1	38,864
40	Prison officer 7	28,930	Band 4 5	28,419	Manager E 2	40,229
41	Prison officer 7	28,930	Band 4 5	28,419	Manager E 3	41,954
42	Prison officer 7	28,930	Band 5 2	29,788	Manager D 1	51,229
43	Prison officer 7	28,930	Band 5 3	30,642	Manager D 2	56,159
44	Prison officer 7	28,930	Band 5 4	31,520	Manager D 3	56,806
45	Prison officer 7	28,930	Band 5 5	32,421	Manager D 4	58,489
46	Prison officer 7	28,930	Band 5 5	32,421	Manager D 5	62,124
47	Prison officer 7	28,930	Band 5 5	32,421	Manager D 6	66,567
48	Prison officer 7	28,930	Band 5 5	32,421	Manager C 5	67,710
49	Prison officer 7	28,930	Band 5 5	32,421	Manager C 6	72,458
50	Prison officer 7	28,930	Band 5 5	32,421	Manager B 6	75,195
51	Prison officer 7	28,930	Band 5 5	32,421	Manager B 7	80,458
52	Prison officer 7	28,930	Band 5 5	32,421	Manager B 7	80,458
53	Prison officer 7	28,930	Band 5 5	32,421	Manager B 7	80,458
54	Prison officer 7	28,930	Band 5 5	32,421	Manager B 7	80,458
55	Prison officer 7	28,930	Band 5 5	32,421	Manager B 7	80,458
56	Prison officer 7	28,930	Band 5 5	32,421	Manager B 7	80,458
57	Prison officer 7	28,930	Band 5 5	32,421	Manager B 7	80,458
58	Prison officer 7	28,930	Band 5 5	32,421	Manager B 7	80,458
59	Prison officer 7	28,930	Band 5 5	32,421	Manager B 7	80,458
60			Band 5 5	32,421		
61			Band 5 5	32,421		
62			Band 5 5	32,421		
63			Band 5 5	32,421		
64			Band 5 5	32,421		
65						

**Remit group: Prison Service**

	D4	D5
Remit group	Prison E&W	Prison NI
Starting age	35	25
Current age	35	45
Leaving age	40	60
Retirement age	65	60
Grade on joining	Prison officer band 3	Main grade officer
Current grade	Prison officer band 3	Main grade officer
Grade on leaving	Prison officer band 3	Main grade officer

**Pension scheme for future service**2010 and 2013  
2016Civil Service nuvos  
Civil Service 2015Civil Service classic  
Civil Service 2015

Age	Pay point (Fair & Sustainable scale)	Pay scale (£)	Pay point (pre 02 scale)	Pay scale (£)		
20						
21						
22						
23						
24						
25			Main grade officer	54	19,538	
26			Main grade officer	75	21,696	
27			Main grade officer	93	23,733	
28			Main grade officer	110	25,833	
29			Main grade officer	126	27,978	
30			Main grade officer	139	29,853	
31			Main grade officer	154	32,172	
32			Main grade officer	166	34,156	
33			Main grade officer	166	34,156	
34			Main grade officer	166	34,156	
35	Band 3	1	18,860	Main grade officer	166	34,156
36	Band 3	2	19,802	Main grade officer	166	34,156
37	Band 3	3	20,592	Main grade officer	178	36,263
38	Band 3	4	21,411	Main grade officer	178	36,263
39	Band 3	5	22,265	Main grade officer	178	36,263
40			Main grade officer	184	37,364	
41			Main grade officer	184	37,364	
42			Main grade officer	184	37,364	
43			Main grade officer	184	37,364	
44			Main grade officer	184	37,364	
45			Main grade officer	184	37,364	
46			Main grade officer	184	37,364	
47			Main grade officer	184	37,364	
48			Main grade officer	184	37,364	
49			Main grade officer	184	37,364	
50			Main grade officer	184	37,364	
51			Main grade officer	184	37,364	
52			Main grade officer	184	37,364	
53			Main grade officer	184	37,364	
54			Main grade officer	184	37,364	
55			Main grade officer	184	37,364	
56			Main grade officer	184	37,364	
57			Main grade officer	184	37,364	
58			Main grade officer	184	37,364	
59			Main grade officer	184	37,364	
60						
61						
62						
63						
64						
65						

**Remit group: Prison Service**

	<b>D6</b>	<b>D7</b>
Remit group	Prison NI	Prison NI
Starting age	25	25
Current age	26	50
Leaving age	65	60
Retirement age	65	60
Grade on joining	Custody prison officer	Main grade officer
Current grade	Custody prison officer	Prison governor 4
Grade on leaving	Prison governor 5	Prison governor 2

**Pension scheme for future service**2010 and 2013  
2016Civil Service nuvos  
Civil Service 2015Civil Service classic  
Civil Service 2015

Age	Pay point (post 02 scale)	Pay scale (£)	Pay point (pre 02 scale)	Pay scale (£)
20				
21				
22				
23				
24				
25	Custody prison officer	Entry	Main grade officer	54
26	Custody prison officer	Training	Main grade officer	75
27	Custody prison officer	Trained	Main grade officer	93
28	Custody prison officer	1	Main grade officer	110
29	Custody prison officer	2	Main grade officer	126
30	Custody prison officer	3	Senior officer (pre 2002)	
31	Custody prison officer	4	Senior officer (pre 2002)	
32	Custody prison officer	4	Principal officer (pre 2002)	
33	Custody prison officer	4	Principal officer (pre 2002)	
34	Custody prison officer	4	Governor 5	226
35	Prison officer offender supervisor	Entry	Governor 5	230
36	Prison officer offender supervisor	1	Governor 5	234
37	Prison officer offender supervisor	2	Governor 5	240
38	Prison officer offender supervisor	3	Governor 5	244
39	Prison officer offender supervisor	4	Governor 5	244
40	Prison officer offender supervisor	5	Governor 5	244
41	Prison officer offender supervisor	5	Governor 5	244
42	Prison officer offender supervisor	5	Governor 5	244
43	Prison officer offender supervisor	5	Governor 5	244
44	Senior officer		Governor 5	244
45	Senior officer		Governor 4	247
46	Senior officer		Governor 4	249
47	Senior officer		Governor 4	251
48	Senior officer		Governor 4	254
49	Governor 5	221	Governor 4	257
50	Governor 5	226	Governor 4	260
51	Governor 5	230	Governor 4	263
52	Governor 5	234	Governor 3	275
53	Governor 5	240	Governor 3	277
54	Governor 5	244	Governor 3	280
55	Governor 5	244	Governor 3	283
56	Governor 5	244	Governor 3	286
57	Governor 5	244	Governor 2	304
58	Governor 5	244	Governor 2	307
59	Governor 5	244	Governor 2	310
60	Governor 5	244		
61	Governor 5	244		
62	Governor 5	244		
63	Governor 5	244		
64	Governor 5	244		
65				

**Remit group: School teachers**

	<b>E1</b>	<b>E2</b>
Remit group	School Teachers	School Teachers
Starting age	23	23
Current age	28	33
Leaving age	65	60
Retirement age	65	60
Grade on joining	Primary classroom teacher	Secondary classroom teacher
Current grade	Primary classroom teacher	Secondary classroom teacher
Grade on leaving	Primary classroom teacher	(top of upper pay scale, TLR payment)

**Pension scheme for future service**2010 and 2013  
2016Teachers Post 2007  
Teachers 2015Teachers Pre 2007  
Teachers 2015

Age	Pay point	Pay scale (£)	Pay point	Pay scale (£)
20				
21				
22				
23	Main	1 21,804	Main	1 21,804
24	Main	2 23,528	Main	2 23,528
25	Main	3 25,420	Main	3 25,420
26	Main	4 27,376	Main	4 27,376
27	Main	5 29,533	Main	5 29,533
28	Main	6 31,868	Main	6 31,868
29	Main	6 31,868	Main	6 31,868
30	Break		Upper	1 41,920
31	Break		Upper	2 43,199
32	Break		Upper	3 44,521
33	Break		Upper	3 44,521
34	Break		Upper	3 44,521
35	Main	6 31,868	Upper	3 44,521
36	Main	6 31,868	Upper	3 44,521
37	Main	6 31,868	Upper	3 44,521
38	Main	6 31,868	Upper	3 44,521
39	Main	6 31,868	Upper	3 44,521
40	Main	6 31,868	Upper	3 44,521
41	Main	6 31,868	Upper	3 44,521
42	Main	6 31,868	Upper	3 44,521
43	Main	6 31,868	Upper	3 44,521
44	Main	6 31,868	Upper	3 44,521
45	Main	6 31,868	Upper	3 44,521
46	Main	6 31,868	Upper	3 44,521
47	Main	6 31,868	Upper	3 44,521
48	Main	6 31,868	Upper	3 44,521
49	Main	6 31,868	Upper	3 44,521
50	Main	6 31,868	Upper	3 44,521
51	Main	6 31,868	Upper	3 44,521
52	Main	6 31,868	Upper	3 44,521
53	Main	6 31,868	Upper	3 44,521
54	Main	6 31,868	Upper	3 44,521
55	Main	6 31,868	Upper	3 44,521
56	Main	6 31,868	Upper	3 44,521
57	Main	6 31,868	Upper	3 44,521
58	Main	6 31,868	Upper	3 44,521
59	Main	6 31,868	Upper	3 44,521
60	Main	6 31,868	Upper	3 44,521
61	Main	6 31,868		
62	Main	6 31,868		
63	Main	6 31,868		
64	Main	6 31,868		
65				

**Remit group: School teachers**

	<b>E3</b>	<b>E4</b>
Remit group	School Teachers	School Teachers
Starting age	25	25
Current age	45	26
Leaving age	60	30
Retirement age	60	65
Grade on joining	Primary teacher	Classroom teacher
Current grade	Primary head teacher	Classroom teacher
Grade on leaving	Leadership pay spine, 31	Classroom teacher

**Pension scheme for future service**

2010 and 2013	Teachers Pre 2007	Teachers Post 2007
2016	Teachers 2015	Teachers 2015

Age	Pay point	Pay scale (£)	Pay point	Pay scale (£)
20				
21				
22				
23				
24				
25	Main 1	21,804	Main 1	21,804
26	Main 2	23,528	Main 2	23,528
27	Main 3	25,420	Main 3	25,420
28	Main 4	27,376	Main 4	27,376
29	Main 5	29,533	Main 5	29,533
30	Main 6	31,868		
31	Upper 1	34,523		
32	Upper 2	35,802		
33	Upper 3	37,124		
34	Leadership 6	42,803		
35	Leadership 7	43,957		
36	Leadership 17	56,109		
37	Leadership 18	57,520		
38	Leadership 19	58,946		
39	Leadership 20	60,408		
40	Leadership 21	61,901		
41	Leadership 22	63,440		
42	Leadership 28	73,480		
43	Leadership 29	75,300		
44	Leadership 30	77,174		
45	Leadership 31	79,081		
46	Leadership 32	81,047		
47	Leadership 32	81,047		
48	Leadership 32	81,047		
49	Leadership 32	81,047		
50	Leadership 32	81,047		
51	Leadership 32	81,047		
52	Leadership 32	81,047		
53	Leadership 32	81,047		
54	Leadership 32	81,047		
55	Leadership 32	81,047		
56	Leadership 32	81,047		
57	Leadership 32	81,047		
58	Leadership 32	81,047		
59	Leadership 32	81,047		
60				
61				
62				
63				
64				
65				



**Remit group: Senior Civil Service**

	F1	F2	F3
Remit group	SCS	SCS	SCS
Starting age	23	44	25
Current age	30	45	50
Leaving age	60	50	60
Retirement age	60	65	60
Grade on joining	Fast stream	SCS band 1	Fast stream
Current grade	Grade 7	SCS band 1	SCS band 2
Grade on leaving	SCS band 1	SCS band 1	SCS band 3

**Pension scheme for future service**2010 and 2013  
2016Civil Service premium  
Civil Service 2015Civil Service nuvos  
Civil Service 2015Civil Service classic  
Civil Service 2015

Age	Pay point	Pay scale (£)	Pay point	Pay scale (£)	Pay point	Pay scale (£)	
20							
21							
22							
23	Fast stream	Min	25,800				
24	Fast stream	2	26,800				
25	Fast stream	4	27,800				
26	Fast stream	6	28,800		Fast stream	Min	25,800
27	Fast stream	8	29,800		Fast stream	2	26,800
28	Grade 7	Min	40,686		Fast stream	4	27,800
29	Grade 7	2	41,950		Fast stream	6	28,800
30	Grade 7	4	43,214		Fast stream	8	29,800
31	Grade 7	6	44,278		Grade 7	Min	40,686
32	Grade 7	8	45,742		Grade 7	2	41,950
33	Grade 7	10	47,006		Grade 7	4	43,214
34	Grade 7	12	48,270		Grade 7	6	44,278
35	Grade 7	14	49,534		Grade 7	8	45,742
36	Grade 7	15	50,166		Grade 7	10	47,006
37	Grade 7	16	50,798		Grade 7	12	48,270
38	Grade 7	17	51,430		Grade 7	14	49,534
39	SCS 1		60,000		Grade 7	15	50,166
40	SCS 1		60,000		Grade 7	16	50,798
41	SCS 1		60,000		SCS 1		60,000
42	SCS 1		60,000		SCS 1		60,000
43	SCS 1		60,000		SCS 1		60,000
44	SCS 1		60,000	SCS 1	75,000	SCS 1	60,000
45	SCS 1		60,000	SCS 1	75,000	SCS 1	60,000
46	SCS 1		60,000	SCS 1	75,000	SCS 1	60,000
47	SCS 1		60,000	SCS 1	75,000	SCS 2	84,000
48	SCS 1		60,000	SCS 1	75,000	SCS 2	84,000
49	SCS 1		60,000	SCS 1	75,000	SCS 2	84,000
50	SCS 1		60,000			SCS 2	84,000
51	SCS 1		60,000			SCS 2	84,000
52	SCS 1		60,000			SCS 2	84,000
53	SCS 1		60,000			SCS 2	84,000
54	SCS 1		60,000			SCS 3	115,000
55	SCS 1		60,000			SCS 3	115,000
56	SCS 1		60,000			SCS 3	115,000
57	SCS 1		60,000			SCS 3	115,000
58	SCS 1		60,000			SCS 3	115,000
59	SCS 1		60,000			SCS 3	115,000
60							
61							
62							
63							
64							
65							

**Note:** F2 is recruited externally so has a starting salary 25% higher than the SCS 1 salary for F1 and F3.

**Remit group: Judiciary**

	<b>G1</b>	<b>G2</b>	<b>G3</b>
Remit group	Judiciary	Judiciary	Judiciary
Starting age	54	40	45
Current age	60	50	55
Leaving age	70	65	70
Retirement age	70	65	70
Grade on joining	High court judge	District judge	Employment judge
Current grade	High court judge	District judge	Employment judge
Grade on leaving	High court judge	District judge	President

**Pension  
scheme for  
future service  
2010 and 2013  
2016**

JPS93	JPS93	JPS93
JPS93	JPS 2015	JPS93

Age	Pay point	Pay scale (£)	Pay point	Pay scale (£)	Pay point	Pay scale (£)
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40			District Judge	7 103,950		
41			District Judge	7 103,950		
42			District Judge	7 103,950		
43			District Judge	7 103,950		
44			District Judge	7 103,950		
45			District Judge	7 103,950	Employment Judge	7 103,950
46			District Judge	7 103,950	Employment Judge	7 103,950
47			District Judge	7 103,950	Employment Judge	7 103,950
48			District Judge	7 103,950	Employment Judge	7 103,950
49			District Judge	7 103,950	Employment Judge	7 103,950
50			District Judge	7 103,950	Employment Judge	7 103,950
51			District Judge	7 103,950	Employment Judge	7 103,950
52			District Judge	7 103,950	Employment Judge	7 103,950
53			District Judge	7 103,950	Employment Judge	7 103,950
54	High Court Judge	4 174,481	District Judge	7 103,950	Employment Judge	7 103,950
55	High Court Judge	4 174,481	District Judge	7 103,950	Employment Judge	7 103,950
56	High Court Judge	4 174,481	District Judge	7 103,950	Employment Judge	7 103,950
57	High Court Judge	4 174,481	District Judge	7 103,950	Employment Judge	7 103,950
58	High Court Judge	4 174,481	District Judge	7 103,950	Employment Judge	7 103,950
59	High Court Judge	4 174,481	District Judge	7 103,950	Employment Judge	7 103,950
60	High Court Judge	4 174,481	District Judge	7 103,950	Employment Judge	7 103,950
61	High Court Judge	4 174,481	District Judge	7 103,950	President	5 139,933
62	High Court Judge	4 174,481	District Judge	7 103,950	President	5 139,933
63	High Court Judge	4 174,481	District Judge	7 103,950	President	5 139,933
64	High Court Judge	4 174,481	District Judge	7 103,950	President	5 139,933
65	High Court Judge	4 174,481			President	5 139,933
66	High Court Judge	4 174,481			President	5 139,933
67	High Court Judge	4 174,481			President	5 139,933
68	High Court Judge	4 174,481			President	5 139,933
69	High Court Judge	4 174,481			President	5 139,933
70						

**Remit group: Senior Military**

	H1	H2	H3
Remit group	Senior Military	Senior Military	Senior Military
Starting age	22	22	22
Current age	40	35	40
Leaving age	55	60	55
Retirement age	55	60	55
Grade on joining	Lieutenant	Lieutenant	Lieutenant
Current grade	Lt Colonel	Lt Colonel	Lt Colonel
Grade on leaving	2 star general	4 star general	2 star general

**Pension scheme for future service**

2010 and 2013	AFPS 75	AFPS 75	AFPS 75 to 2006, AFPS 05 thereafter
2016	AFPS 2015	AFPS 2015	AFPS 2015

Age	Pay point	Pay scale (£)	Pay point	Pay scale (£)	Pay point	Pay scale (£)
20						
21						
22	Lieutenant 5	24,971	Lieutenant 5	24,971	Lieutenant 5	24,971
23	Lieutenant 6	30,014	Lieutenant 6	30,014	Lieutenant 6	30,014
24	Lieutenant 7	30,807	Lieutenant 7	30,807	Lieutenant 7	30,807
25	Lieutenant 8	31,596	Lieutenant 8	31,596	Lieutenant 8	31,596
26	Lieutenant 9	32,381	Lieutenant 9	32,381	Lieutenant 9	32,381
27	Captain 1	38,463	Captain 1	38,463	Captain 1	38,463
28	Captain 2	39,493	Captain 2	39,493	Captain 2	39,493
29	Captain 3	40,536	Captain 3	40,536	Captain 3	40,536
30	Captain 4	41,583	Captain 4	41,583	Captain 4	41,583
31	Captain 5	42,617	Major 1	48,450	Captain 5	42,617
32	Captain 6	43,660	Major 2	49,646	Captain 6	43,660
33	Major 1	48,450	Major 3	50,834	Major 1	48,450
34	Major 2	49,646	Major 4	52,039	Major 2	49,646
35	Major 3	50,834	Lt Colonel 1	67,999	Major 3	50,834
36	Major 4	52,039	Lt Colonel 2	68,900	Major 4	52,039
37	Major 5	53,231	Lt Colonel 3	69,793	Major 5	53,231
38	Major 6	54,436	Lt Colonel 4	70,687	Major 6	54,436
39	Lt Colonel 1	67,999	Colonel 1	82,381	Lt Colonel 1	67,999
40	Lt Colonel 2	68,900	Colonel 2	83,402	Lt Colonel 2	68,900
41	Lt Colonel 3	69,793	Colonel 3	84,427	Lt Colonel 3	69,793
42	Lt Colonel 4	70,687	Colonel 4	85,448	Lt Colonel 4	70,687
43	Colonel 1	82,381	Brigadier 1	98,172	Colonel 1	82,381
44	Colonel 2	83,402	Brigadier 2	99,165	Colonel 2	83,402
45	Colonel 3	84,427	Brigadier 3	100,157	Colonel 3	84,427
46	Colonel 4	85,448	2 star 1	109,369	Colonel 4	85,448
47	Brigadier 1	98,172	2 star 2	111,506	Brigadier 1	98,172
48	Brigadier 2	99,165	2 star 3	113,687	Brigadier 2	99,165
49	Brigadier 3	100,157	2 star 4	115,911	Brigadier 3	100,157
50	2 star 1	109,369	3 star 1	127,253	2 star 1	109,369
51	2 star 2	111,506	3 star 2	133,491	2 star 2	111,506
52	2 star 3	113,687	3 star 3	140,041	2 star 3	113,687
53	2 star 4	115,911	3 star 4	145,542	2 star 4	115,911
54	2 star 5	118,179	3 star 5	149,834	2 star 5	118,179
55			4 star 1	166,937		
56			4 star 2	171,110		
57			4 star 3	175,389		
58			4 star 4	179,773		
59			4 star 5	183,369		
60						
61						
62						
63						
64						
65						

**Remit group: NHS Very Senior Manager**

	I1		I2	
Remit group	NHS Very Senior Managers		NHS Very Senior Managers	
Starting age	22		22	
Current age	30		40	
Leaving age	60		45	
Retirement age	60		60	
Grade on joining	Band 5		Band 5	
Current grade	Band 7		ALB HR Director	
Grade on leaving	ALB Chief Executive		ALB HR Director	
<b>Pension scheme for future service</b>				
2010 and 2013	NHS 1995 section		NHS 1995 section	
2016	NHS 2015		NHS 2015	
<b>Age</b>	<b>Pay point</b>	<b>Pay scale (£)</b>	<b>Pay point</b>	<b>Pay scale (£)</b>
20				
21				
22	Band 5	16 21,388	Band 5	16 21,388
23	Band 5	18 22,903	Band 5	17 22,016
24	Band 5	20 24,799	Band 5	18 22,903
25	Band 6	22 26,822	Band 6	21 25,783
26	Band 6	24 28,755	Band 6	22 26,822
27	Band 6	26 30,764	Band 6	23 27,901
28	Band 7	28 32,898	Band 7	26 30,764
29	Band 7	30 35,536	Band 7	27 31,768
30	Band 7	32 37,921	Band 7	28 32,898
31	Band 8A	34 40,558	Band 8A	33 39,239
32	Band 8A	35 42,190	Band 8A	34 40,558
33	Band 8A	36 43,822	Band 8A	35 42,190
34	Band 8A	37 45,707	Band 8B	37 45,707
35	Band 8A	38 47,088	Band 8B	38 47,088
36	Band 8D	45 65,922	Band 8B	39 49,473
37	Band 8D	46 67,805	Band 8B	40 52,235
38	Band 8D	47 70,631	Band 8D	45 65,922
39	Band 8D	48 74,084	Band 8D	46 67,805
40	Band 9	49 77,850	ALB HR Director	100,000
41	Band 9	50 81,618	ALB HR Director	100,000
42	Band 9	51 85,535	ALB HR Director	100,000
43	Band 9	52 89,640	ALB HR Director	100,000
44	Band 9	53 93,944	ALB HR Director	100,000
45	Band 9	54 98,453		
46	ALB Chief Operating Officer	105,000		
47	ALB Chief Operating Officer	105,000		
48	ALB Chief Operating Officer	105,000		
49	ALB Chief Operating Officer	105,000		
50	ALB Chief Operating Officer	105,000		
51	ALB Chief Operating Officer	105,000		
52	ALB Chief Operating Officer	105,000		
53	ALB Chief Operating Officer	105,000		
54	ALB Chief Operating Officer	105,000		
55	ALB Chief Exec	150,000		
56	ALB Chief Exec	150,000		
57	ALB Chief Exec	150,000		
58	ALB Chief Exec	150,000		
59	ALB Chief Exec	150,000		
60				
61				
62				
63				
64				
65				

**Remit group: NHS Very Senior Managers**

	I3	I4
Remit group	NHS Very Senior Managers	NHS Very Senior Managers
Starting age	40	40
Current age	44	50
Leaving age	45	60
Retirement age	65	60
Grade on joining	ALB Finance Director	ALB Finance Director
Current grade	ALB Finance Director	ALB Finance Director
Grade on leaving	ALB Finance Director	ALB Chief Executive

**Pension scheme for future service**2010 and 2013  
2016NHS 2008 section  
NHS 2015NHS 1995 section  
NHS 2015

Age	Pay point	Pay scale (£)	Pay point	Pay scale (£)
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				
36				
37				
38				
39				
40	ALB Finance Director	95,000	ALB Finance Director	95,000
41	ALB Finance Director	95,000	ALB Finance Director	95,000
42	ALB Finance Director	95,000	ALB Finance Director	95,000
43	ALB Finance Director	95,000	ALB Finance Director	95,000
44	ALB Finance Director	95,000	ALB Finance Director	95,000
45			ALB Finance Director	95,000
46			ALB Finance Director	95,000
47			ALB Finance Director	95,000
48			ALB Finance Director	95,000
49			ALB Finance Director	95,000
50			ALB Finance Director	95,000
51			ALB Finance Director	95,000
52			ALB Finance Director	95,000
53			ALB Finance Director	95,000
54			ALB Finance Director	95,000
55			ALB Chief Executive	150,000
56			ALB Chief Executive	150,000
57			ALB Chief Executive	150,000
58			ALB Chief Executive	150,000
59			ALB Chief Executive	150,000
60				
61				
62				
63				
64				
65				

This page is intentionally blank

## Appendix G: Worked example

This worked example illustrates how the value of pension as a percentage of salary changes with age and salary in a final salary scheme.

Member's salary at age 30 = £20,000 pa

Member's salary at retirement at age 60 (based on assumed salary progression in career path) in current terms = £60,000 pa

Accrual rate (rate at which pension is building up each year) = 1/60 of final salary

Value of £1pa of pension at retirement = £20

Discount rate = 5% pa; General rate of salary escalation = 3% pa

### **At current age 30**

At retirement, amount of pension over next year of service built up is 1/60 of salary inflated to age 60:

$$= 1/60 \times 60,000 \times 1.03^{(60-30)} = \text{£}2,427$$

At retirement, value of pension built up at age 60 is:

$$= 2,427 \times 20 = \text{£}48,540$$

At member's current age of 30, value of pension, is:

$$= 48,540 \times 1.05^{(30-60)} = \text{£}11,231$$

Value of pension expressed as a percentage of current salary at 30 is:

$$= 11,231 \div 20,000 \times 100\% = \textbf{56\% at age 30}$$

### **One year later – large promotional salary increase at age 31 (15%)**

Member's salary at age 31 = £23,000 pa – before inflationary increase

Member's salary at age 31 = £23,000 x 1.03 = £23,690 pa – after inflationary increase

At retirement, amount of pension built up is 1/60 of salary at age 60:

$$= 1/60 \times 60,000 \times 1.03^{(60-30)} = \text{£}2,427$$

At retirement, value of pension built up at age 60 is:

$$= 2,427 \times 20 = \text{£}48,540$$

At member's current age of 31, value of pension, is:

$$= 48,540 \times 1.05^{(31-60)} = \text{£}11,793$$

Value of pension expressed as a percentage of current salary at 31 is:

$$= 11,793 \div 23,690 \times 100\% = \textbf{50\% at age 31}$$

**Value as percentage of salary at age 31 has fallen to 50% compared to 56% at age 30**

### **One year later – no promotional salary increase at age 32**

Member's salary at age 32 = £23,690 x 1.03 = £24,401 pa

At retirement, amount of pension built up is 1/60 of salary at age 60:

$$= 1/60 \times 60,000 \times 1.03^{(60-30)} = \text{£}2,427$$

At retirement, value of pension built up at age 60 is:

$$= 2,427 \times 20 = \text{£}48,540$$

At member's current age of 32, value of pension, is:

$$= 48,540 \times 1.05^{(32-60)} = \text{£}12,382$$

Value of pension expressed as a percentage of current salary at 32 is:

$$= 12,382 \div 24,401 \times 100\% = \textbf{51\% at age 32}$$

**Value as percentage of salary at age 32 has increased to 51% compared to 50% at age 31**