

DEPARTMENT OF PUBLIC EXPENDITURE AND REFORM TECHNICAL PAPER

ACTUARIAL REVIEW OF PENSION PROVISION IN THE IRISH PUBLIC SERVICE AND A COMPARISON WITH THE PRIVATE SECTOR

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1. Executive Summary

1.1 Introduction and Background

- 1.1.1 This is a technical paper which has been prepared by the Actuary to Department of Public Expenditure and Reform (the “Department”). This paper has been peer reviewed by KPMG in Dublin. Appendix 1 contains an extract of a letter from KPMG confirming that KPMG has reviewed the paper and that it contains their comments and feedback.
- 1.1.2 The purpose of this technical paper is to provide an actuarial review of the ongoing cost of pension provision in the Irish public service so that it can be valued as part of a public service employee’s remuneration. This paper has been prepared to provide the Department and the Public Service Pay Commission (the “Commission”) with information in relation to the cost of public service pensions in Ireland.
- 1.1.3 Earnings compensation for public service employees is made up of two primary components:
- Annual salary
 - Cost of retirement benefit provision
- 1.1.4 As annual salary is a highly visible component of earnings compensation and is easily understood by employees; this element of earnings compensation is not considered in this paper. This paper deals only with the second element of earnings compensation above, namely, the cost of retirement benefit provision.
- 1.1.5 The value of retirement benefit provision is not easily understood and can be difficult to evaluate; nonetheless, retirement benefit provision is a significant employee benefit for public service employees and hence a significant cost to the Exchequer. In 2016, the cost of pension payments to former public service employees alone totalled €3.3 bn¹.
- 1.1.6 Public service employees continue to enjoy Defined Benefit (DB) pension accrual, with the majority of employees in final salary DB pension schemes where pension indexation (i.e. pension increases in retirement) has traditionally been based on pay parity.
- 1.1.7 Post 1st January 2013, new entrants to the public service join the Single Public Service Pension Scheme (the “Single Scheme”) which is a career average revalued earnings scheme with a retirement age in line with the State Pension Age (66 currently rising to 68 in 2028). Single Scheme members’ benefits are indexed with increases in the Consumer Price Index.
- 1.1.8 In the public service, minimum pension age varies significantly between sectors and by time-of-entry cohort, but in the main is age 60 for pre-2004 joiners, 65 for joiners between 2004 and 2012 and State Pension Age (66 currently rising to 68 in 2028) for post-2013 joiners. The ability of those who joined pre-2004 to retire aged 60 on an unreduced pension is unusual by comparison with the private sector, where a normal retirement age of 65 is typical.

1.2 High Level Results of Review – Public Sector Costs

- 1.2.1 As in previous exercises, there are wide variations in value by sector largely due to the fact that full pensions can be earned over relatively shorter working lifetimes in certain areas of the public service. Due to the significant differences in costs arising, the results in respect of “standard accrual” and “fast accrual” public service employees have been shown separately below.
- 1.2.2 Pre-2013 entrants reflect a mix of pre- and post-2004 entrants (who enjoy different benefit structures and minimum retirement ages) and the overall rate reflects a weighted average of the number of public service employees in each group, broadly 67% pre-2004, 33% post-2004. Within the pre-2004² cohort there are some differences due to integration with the State Pension (Contributory) which are discussed further in the body of the paper.

¹ Includes Exchequer and Local Authority payments to pensioners in payment.

² Largely the difference has been ignored as was the case for the previous (2007) benchmarking exercise. This relates to the fact that the pre-1995 entrants receive no State Pension (Contributory) but a higher pension from their employment with the public service, whereas post 1995 entrants’ public service pensions are lower due to integration of their pensionable salary with the State Pension (Contributory). The corollary is that the post-1995 entrants do receive the State Pension (Contributory) in addition. There are also differences in superannuation and PRSI contributions required across the two groups. Pre-1995 civil servants are said to make an implicit pension contribution as their pay scales are generally 5% lower than those of civil servants recruited after 6th April 1995.

1.2.3 Post-2013 entrants are shown separately given the different benefit structure which applies to these members.

1.2.4 ***In each table that follows the overall notional employer rate is calculated as a percentage of pensionable salary and is net of employee contributions but not Pension Related Deduction (“PRD”). PRD, which operates progressively, equates to approximately 5% of pensionable salary for the average public service employee. For higher earners e.g. Hospital Consultants and Judges, the average PRD is higher and increases to circa 9% of pensionable salary.***

1.2.5 **Standard Accrual Categories:** Cost of Pension less Normal Employee Contributions. No Deduction has been made for PRD.

| Pre-2013 Cohorts | Average ¹ | Civil Servant | Teacher | Nurse | Engineer | Hospital Consultant |
|--|----------------------|---------------|------------|------------|------------|---------------------|
| Base Case | 29% | 27% | 29% | 28% | 33% | 46% |
| <i>Base Case with CPI Link for Pension Increases</i> | 25% | 23% | 25% | 24% | 29% | 39% |

| Post-2013 Cohorts | Average ¹ | Civil Servant | Teacher | Nurse | Engineer | Hospital Consultant |
|--|----------------------|---------------|-----------|-----------|------------|---------------------|
| Base Case | 9% | 8% | 9% | 8% | 10% | 14% |
| <i>Base Case with CPI Link for Pension Increases</i> | 9% | 8% | 9% | 8% | 10% | 14% |

¹ An average notional employer contribution rate was calculated for public service employees with broadly similar benefit structures and salary progression i.e. Civil Servants, National School Teachers, Nurses and Engineers. Hospital Consultants were excluded from the averages as their average cost of accrual is higher due to their faster than average salary progression.

1.2.6 An average notional employer contribution rate of 29% of pensionable salary³ was calculated for pre-2013 entrants in public service posts with broadly similar benefit structures and salary progression i.e. Civil Servants, National School Teachers, Nurses and Engineers.

1.2.7 An average notional employer contribution rate of 9% of pensionable salary was similarly calculated for post-2013 members in this same vocational cohort of Civil Servants, National School Teachers, Nurses and Engineers.

1.2.8 A notional average employer contribution rate of 46% of pensionable salary for pre-2013 members and 14% of pensionable salary for post-2013 members was calculated for Hospital Consultants. The pre-2013 rate in particular is higher than for other vocational groups in the public service. This largely stems from Hospital consultants' faster than average rate of salary increase [detailed in Section 5.6 of this paper] over the course of a typical career, since they otherwise have broadly the same benefit structure as other public service employees.

1.2.9 **Fast Accrual Categories:** Cost of Pension less Normal Employee Contributions. No Deduction has been made for PRD.

| Pre-2013 Cohorts | Garda | High Court Judge |
|--|------------|------------------|
| Base Case | 53% | 71% |
| <i>Base Case with CPI Link for Pension Increases</i> | 45% | 63% |

| Post-2013 Cohorts | Garda | High Court Judge |
|--|------------|------------------|
| Base Case | 14% | 39% |
| <i>Base Case with CPI Link for Pension Increases</i> | 14% | 39% |

³ Pensionable Salary / Pensionable Remuneration: Basic salary plus pensionable allowances. Throughout this paper, pensionable remuneration, pensionable salary and salary are used interchangeably.

1.2.10 A significantly higher than average notional employer contribution rate was also calculated for “fast accrual” pre-2013 members such as Gardaí and High Court Judges, at 53% and 71% of pensionable salary, respectively. A higher than average notional employer contribution rate was also calculated for post-2013 Gardaí and High Court Judges, at 14% and 39% of pensionable salary, respectively. This can be largely attributed to the shorter time periods (with associated higher accrual rates) over which members of An Garda Síochána and Judges (and indeed constitutional, ministerial and judicial office holders) can accrue their retirement benefits than is standard amongst public service employees. Members of An Garda Síochána and the Security Forces can also receive their retirement benefits from an earlier age⁴ than most other public service employees.

1.3 Private Sector DB Schemes Employer Costs

1.3.1 The average Private Sector employer cost is summarised below and discussed further in Section 7 of this paper.

1.3.2 The cost of pension provision in the private sector tends to be significantly more visible due to the pre funded nature of the arrangements, financed by employee and employer contributions to occupational pension funds. Public service retirement benefits are in the main, unfunded or paid out of taxation as and when the cost arises with employee contributions being used to offset pension benefits in the first instance.

1.3.3 Nearly all private sector DB schemes are closed to new entrants with Defined Contribution (DC) pension provision being the replacement for most employers who are providing pension benefits to their employees. Recent years have seen many of the private sector DB schemes close to new entrants, close to future accrual of service and/or wind up. Most recent statistics published by the Pensions Authority show that there are 522 DB schemes continuing which is a reduction of over 50% over the last 10 years.

1.3.4 Of the remaining DB schemes, many have now removed post retirement pension increases as a design feature as can be seen from a review of statistics on Section 50 orders made by the Pensions Authority over the last number of years.

1.3.5 DB pensions are increasingly onerous to fund and many private sector firms are having difficulty in meeting their obligations to current and former staff. It is estimated that approximately 70% of DB schemes in Ireland meet the statutory minimum Funding Standard basis at present. The primary reasons for this are as follows:

- Increasing liabilities: historically low bond yields as well as increasing longevity;
- Lower than expected asset performance: poor equity market returns over the periods 2002- 2003, 2007-2009 as well as low expected future returns from traditional asset classes.

1.3.6 Using the same methodology and assumptions employed to value the public service DB pensions, the notional employer contribution rate for private sector equivalents was calculated as approximately 22% of salary. The concept of a private sector “equivalent” or “peer” is discussed in Section 7.

1.3.7 Private Sector DC Scheme Employer Costs

1.3.7.1 In relation to DC schemes in the private sector, the value of employer contributions is more readily identifiable as the contribution rate is defined. While some examples of significant DC employer contributions are available, the available data sources indicate the following:

- In respect of the Pensions Authority data, the employer contribution rate to occupational pension schemes (excluding one member DC schemes) was deemed the most appropriate comparator given the present purpose of analysing the pension costs for employees in the private sector. Accordingly, a contribution of 7% of salary was used.
- This rate is consistent with the findings of CSO, which show an average employer pension contribution of 6% of salary and the IAPF’s 2014 DC Rates Survey which shows an average employer pension contribution to a DC Scheme of 5.7% of salary.

1.3.8 Private Sector - Employer Costs (reflecting those peers in a DB or DC scheme)

1.3.8.1 Reflecting the long standing policy of pension provision within the public service, it was deemed appropriate to compare the pension costs of the public service with private sector employees who do receive some form of occupational pension provision. Clearly if a wider comparison with provision (or the absence thereof) right across the private sector was reflected, the cost differential indicated here between

⁴ Members of An Garda Síochána who joined before 31st March 2004, can retire from age 50, while new entrants after 1st April 2004 can retire from age 55. More detail is provided in Appendix 3.

public and private sector workers would be significantly greater reflecting the fact that significant numbers of private sector workers are not in any pension scheme.

1.3.8.2 By way of background, according to the Central Statistics Office (CSO) Quarterly National Household Survey (QNHS) Q4 2015 Special Module on Pensions, 46.7% of those in employment between the ages of 20 and 69 have an occupational or private pension. With c.100% occupational pension coverage in the public service, the coverage in the private sector is considerably less. Based on the QNHS results, and using certain assumptions, the Department of Social Protection estimate that private sector occupational pension coverage is in the region of 35%.

1.3.8.3 Private sector DB schemes are now largely closed to new entrants, as evidenced in the IAPF surveys and Pensions Authority statistics. Using statistics provided by the Pensions Authority, 30% of private sector employees who are members of an occupational pension scheme are in a DB scheme while 70% are in a DC scheme. [The pre-2013 government schemes are also closed to new entrants].

1.3.8.4 Accordingly, for comparative purposes, the pre-2013 cohorts in the public service were analysed in relation to a weighted average private sector employer rate of c.11% of salary, which reflects a cost of 22% attributed to those in the private sector in a typical DB scheme (circa 30%) and a cost of 7% pertaining to the 70% of the private sector in a DC scheme

1.3.8.5 Post-2013 entrants (“Single Scheme” members) were analysed by reference to average private sector workers in DC schemes only, reflecting the fact that since 2013 virtually all new schemes being set up in the private sector are on a DC basis.

1.3.9 Differential in costs arising – Public Sector and Private Sector

1.3.9.1 The differential in the net Employer contribution towards public and private sector pension provision was calculated as 18% of salary for pre-2013 entrants. The differential was significantly lower, at 2%, for Single Scheme members, as displayed in the table below.

| Notional Employer Rate | Pre-2013 entrants | Post-2013 entrants |
|---|-------------------|--------------------|
| Average Public Service Employer Notional Rate | 29% | 9% |
| Private Sector | <u>11%</u> | <u>7%</u> |
| Differential [% of pensionable salary] | 18% | 2% |

1.3.9.2 *In the table above, the overall notional employer rate for the public service employee is calculated as a percentage of pensionable salary and is net of employee contributions but not PRD. PRD, which operates progressively, equates to approximately 5% of pensionable salary for the average public service employee.*

1.3.9.3 For reference purposes, the differential revealed as part of the 2007 Public Service Benchmarking exercise was 12% of pensionable salary (20% in the public service less 8% across the private sector) for pre-2013 entrants which compares with the 18% of pensionable salary revealed at this review (29% in the public service less c.11% across the private sector). There are some differences in the presentation of the summary or “headline” figures as compared with the previous exercise which are explained further in this paper (sections 6, 7, and 8).

1.3.9.4 The post-2013 cohort was not contemplated previously.

2. Introduction

- 2.1 This is a technical paper which has been prepared by the Actuary to Department of Public Expenditure and Reform (the “Department”). The purpose of this paper is to provide an actuarial review of the ongoing cost of pension provision in the Irish public service so that it can be valued as part of a public service employee’s remuneration. This technical paper has been prepared to provide the Department and the Commission with information in relation to the cost of public service pensions in Ireland.
- 2.3 Earnings compensation for public service employees is made up of two primary components:
- Annual salary
 - Cost of retirement benefits provision
- 2.4 The first element of this remuneration is highly visible and easily understood by members. The annual salary element of earnings compensation is not considered in this paper. This paper deals only with the second component of earnings above, namely: the cost of retirement benefit provision. Within scope is the cost of retirement benefit provision in the public service and how that compares with the cost for equivalents in the private sector.
- 2.5 The cost of retirement benefit provision is not easily understood and is not easily identified; nonetheless, the cost of retirement benefit provision is significant.
- 2.6 In order to identify the cost of retirement benefit provision, an actuarial assessment is required to place a value on the retirement benefits accruing to public service employees. The cost of retirement provision in this paper is shown as a percentage of each sample member’s pensionable salary.
- 2.7 The cost of pensions in the private sector is significantly more visible as pension benefits must be funded in advance by way of employee and employer contributions to a fund. On the other hand, public service retirement benefits are in the main unfunded or paid out of taxation as and when the cost arises i.e. the Government is said to operate a “Pay As You Go” Scheme (PAYG).
- 2.8 Public service employees continue to enjoy DB pension accrual, with the majority of employees in final salary DB pension schemes where indexation has traditionally been linked to pay parity. Post-2013 entrants’ benefits are indexed to increases in the Consumer Price Index.
- 2.9 DB pensions are increasingly onerous to fund and many private sector firms are having difficulty in meeting their obligations to current and former staff. It is estimated that approximately 30% of DB schemes in Ireland are in deficit on the statutory minimum Funding Standard basis at present. The primary reasons for this are as follows:
- Increasing liabilities: historically low bond yields as well as increasing longevity;
 - Lower than expected asset performance: poor equity market returns over the periods 2002- 2003, 2007-2009 as well as low expected future returns from traditional asset classes.
- 2.10 This paper has been peer reviewed by KPMG in Dublin. Appendix 1 contains an extract of a letter from KPMG confirming that KPMG has reviewed the paper and that it contains their comments and feedback.
- 2.11 This is a technical paper provided solely for use by the Commission and the Department for the specific purposes indicated above. It may not be suitable for use in any other context or for any other purpose.
- 2.12 The calculations in this paper are prepared based on methods and assumptions appropriate to the purposes set out above. Figures required for other purposes should be calculated based on the specific nature of those requirements. The paper may not be disclosed or provided to any third party without the approval of the Department. The Department will not accept liability to any third parties in respect of the contents of this paper.
- 2.13 Appendix 2 contains a glossary explaining some of the technical terms used in the paper.
- 2.14 Appendix 3 contains a summary of the main provisions of public service pensions.

3. Methodology

- 3.1 Benefits under most public service occupational pension schemes are primarily statutorily provided. Some 155,000 pensioners are in receipt of pension payments and, at 31st December 2016, benefits had accrued for c.300,000 serving staff. In 2016, the cost of pension payments to former public service employees totalled €3.3 bn.
- 3.2 A public service retirement benefit consists of two primary elements, namely:
- A lump sum at retirement (“gratuity”); and,
 - A pension payable for life from retirement date.
- 3.3 Public service pension benefits vary by start date of employment and also there is some variation by sector. Accordingly, the cost of the various benefits accrued by employees in the various sectors depending on when they joined the public service was analysed.
- 3.4 The calculations were carried out using an actuarial costing methodology known as the “Entry Age Method”. This method was chosen for consistency with the Public Service Benchmarking Body Report 2007 and the 2009 special report on Public Service Pensions produced by the Comptroller and Auditor General. In addition, identification of the change in cost over the period was one of the key considerations for this updated review.
- 3.5 There are several possible alternative approaches to calculating the cost of retirement entitlements. The glossary contains a description of the “Entry Age Method”.
- 3.6 Actuarial valuation methods typically vary by “point in time” snapshots used, for example, for balance sheet purposes or more “smoothed” / long term approaches used in assessing costs and funding requirements.
- 3.7 **COST OF RETIREMENT BENEFITS:**
The methodology underlying the present actuarial review is set out below:
- 3.7.1 The approach adopted in this paper involves firstly calculating the notional contribution, expressed as a percentage of pensionable salary⁵, which would be required to be paid throughout the working life of an average employee in order to generate the pension and gratuity accrued by the member.
- 3.7.2 From this gross notional contribution, prevailing employee pension scheme contributions are deducted to obtain the net value of the State’s contribution to the employee’s pension.
- 3.7.3 Public service employees pay various contributions / charges in respect of their public service pension benefits:
- A Superannuation contribution; and,
 - A Spouse’s/Civil Partner’s and Children’s Pension scheme contribution.
- 3.7.4 In addition, under Financial Emergency Measures in the Public Interest (“FEMPI”) legislation, there currently exists a Pension Related Deduction (“PRD”) from public service employees’ pay. The impact of the PRD is shown in this review for completeness i.e. it is shown as a separate line item on each of the costing tables shown in Section 6. It is not, however, deducted from the overall cost to arrive at the net notional employer contribution rate as it is not a pension contribution under legislation.
- 3.7.5 These are notional contributions since public service occupational pension schemes are PAYG.
- 3.8 In proceeding to determine this net notional employer contribution rate, the calculation methodology was as set out below:
- 3.8.1 The cost of providing retirement benefits to public service employees differs depending on date of joining the public service, reflecting key pension rule changes in 1995, 2004 and 2013. The cost also varies at times by vocational sector, for example, some members (e.g. Gardaí, Military personnel) accrue their pension benefits over a shorter working career and can draw those benefits earlier than others.

⁵ Pensionable Salary / Pensionable Remuneration: Basic salary plus pensionable allowances. Throughout this paper, pensionable remuneration, pensionable salary and salary are used interchangeably.

- 3.8.2 Various cohorts of individuals differentiated by date of joining were analysed, as set out below. For analytical purposes the retirement benefit terms of the following three itemised groups can be regarded as separate pension schemes:
- A member who joined the public service before 31st March 2004
 - A member who joined the public service between 1st April 2004 and 31st December 2012
 - A member who joined the public service on or after 1st January 2013.
- 3.8.3 The different benefits applicable to these different time-separated membership cohorts and also those applicable across various posts in the public service were analysed. Section 5 of this paper sets out typical member details for the sample members considered in this paper, namely:
- Civil Servant
 - National School Teacher
 - Nurse
 - Hospital Consultant
 - Engineer
 - Garda
 - High Court Judge
- This list of vocational groups is not intended to be exhaustive; however, it is intended to demonstrate the value of the retirement benefit for the majority of public service employees.
- 3.8.4 Each member's pensionable salary and the State Pension (Contributory) was projected to their expected retirement date. This results in a projected pensionable salary and net pensionable salary (pensionable salary minus twice the State Pension (Contributory)) at retirement date. [Note that the concept of net pensionable salary would not apply to pre-1995 joiners but this group have been excluded for the purposes of this analysis as explained in Section 6.]
- 3.8.5 Using the projected pensionable salary figures the expected pension and lump sum awards for each sample member were calculated.
- 3.8.6 Pension and gratuity benefits were calculated based on the terms of the relevant pension scheme and assumed retirement ages.
- 3.8.7 The capital value of the retirement benefits at retirement was calculated by applying an annuity factor to the projected pension. The annuity factor allows for mortality, expected pension increases, and contingent spouses' pensions on death in retirement. The expected gratuity payment was then added to this capital value.
- 3.8.8 The annual notional total contribution rate, expressed as a percentage of pensionable salary, that would be required over the assumed working lifetime of the member was calculated such that the accumulated value of the contributions at retirement is equivalent to the capital value of the benefits above.
- 3.8.9 From this figure the regular employee contribution rate was deducted to arrive at the overall annual net notional employer contribution, expressed as a percentage of pensionable salary.

4. Assumptions

4.1 A “smoothed” approach to assumption setting rather than a “point in time” assessment has been used here given that the purpose of this paper is to review the cost of public service pensions. It should be noted that given current bond yields, a “point in time” assessment reflecting market yields using, for example, a discount rate required under the International Accounting Standards 19 (“IAS 19”) or indeed the International Public Sector Accounting Standards 25 (“IPSAS 25”) would involve the assessment of significantly higher costs than those set out in this paper.

4.2 The assumptions set out below should be considered in the totality and any one element should not be considered in isolation.

4.3 The individual assumptions used in conducting the present analysis are set out below.

4.4 DISCOUNT RATE:

4.4.1 A discount rate is required for the calculation of the present value of accrued retirement benefits. Specifically, the real discount rate [i.e. the nominal discount rate less impact of expected inflation] is critical to the determination of the value of retirement benefits.

4.4.2 The approaches considered when setting the discount rate to value the benefits are as follows:

4.4.2.1 Approach A – Borrowing Costs of the Irish Government

Where an individual earns retirement benefits, the person is effectively securing an amount of pension and gratuity. One could argue that, the Irish Government is deferring the future cost of retirement benefits (i.e. a gratuity and annual pension payments) until the member’s retirement date. Accordingly, one approach to setting the discount rate would be to reflect the current and expected long term borrowing costs of the Irish Government.

In this regard, the Irish Government issues a bond which matures in 2045 and has a yield to maturity of 1.66% p.a. as at 30th December 2016⁶. The Irish Government issues a range of long term bonds with average yields of c.1.75% p.a. currently.

The value of liabilities at a future date will depend on the prevailing yields on long dated bonds at the effective date of that valuation. In accordance with related professional guidance issued by the Society of Actuaries in Ireland, Actuarial Standards of Practice, it may be appropriate for an actuary to assume that different yields will apply in future, provided that the alternative rate(s) can be justified either by examination of the relevant yield curves or by reference to historic norms.

4.4.2.2 Approach B – Use an approach which is consistent with the accounting standards that govern the valuation of pension liabilities for the accounts of private sector companies [Financial Reporting Standards No 102 (“FRS 102”) for local GAAP or International Accounting Standard 19 (“IAS 19”)]

For the discount rate, FRS 102 and IAS 19 specify that this assumption should be set based on the yield available on high quality corporate bonds (i.e. AA rated) of the same duration and currency as the liabilities as at the measurement date.

The typical duration of retirement benefits for new entrants to pension schemes is of the order of 40-50 years. The average duration of pension scheme liabilities is approximately 25 years. A discount rate of c.2.0% p.a. would be considered appropriate for FRS102 purposes for a scheme with duration of 25 years as at December 2016. Given that the present study is looking at new entrants whose liabilities are significantly longer, a discount rate of up to 2.5% p.a. under this approach to reflect the longer duration of these liabilities was proposed.

⁶ The Irish Government issued a 100 year bond in March 2016 at a yield of 2.35% p.a. However, this was a small bond issuance which has a longer duration than required for these purposes.

4.4.2.3 Approach C – Use an approach which is consistent with the approach adopted by funded schemes in the private sector

Under this option, the discount rate reflects the assumed investment return on the assets used to provide these pension liabilities. As at 30th December 2016, Eurozone Government AAA Bonds (Merrill Lynch AAA 15+ year index) were yielding 0.79% p.a.

The value of liabilities at a future date will depend on the prevailing yields on long dated bonds at the effective date of valuation. In accordance with related professional guidance issued by the Society of Actuaries in Ireland, Actuarial Standards of Practice, it may be appropriate for an actuary to assume that different yields will apply in future, provided that the alternative rate(s) can be justified either by examination of the relevant yield curves or by reference to historic norms.

It was assumed that yield reversion of 0.75% will take place over time and that expected long term yields on Eurozone Government AAA bonds will be 1.54% p.a.

The discount rate is a critical assumption for funding purposes and interlinked with investment strategy. The baseline is a 100% bond / Liability Driven Investment (“LDI”) strategy (the ‘least risk’ portfolio) which gives a discount rate of 1.54% p.a.

Trustees in funded schemes are often amenable to holding a sizeable proportion of return seeking / growth assets particularly for schemes with long maturity and strong employer covenants. The reasons cited for holding return seeking / growth assets include the long term nature of the promise and confidence in the employer covenant. Many actuaries use a dual discount rate model incorporating a pre-retirement discount rate reflecting an initial investment strategy (with a significant allocation to return seeking assets) and a lower post retirement discount rate reflecting anticipated increase in risk reducing / matching assets as schemes mature / members retire.

In relation to the setting of the equity risk premium (“ERP”), the Finance and Investment Committee of the Society of Actuaries have provided the following guidance:

“The actuary may decide to use an ERP to allow for the additional expected return from taking on the relatively higher risk of the equity market. To help inform the setting of the equity ERP, the Society has prepared a database of historical economic data. However, it is not clear yet which specific parts of it have the most value and credibility and, therefore, how the database should be used for the purpose of determining a reasonable ERP assumption. Using different historical data—either different stock markets or different periods—produces significantly different estimates for the ERP, and there appears to be no fundamental reason to choose a particular market or period over any other. Using different assumptions or analysis would also lead to different ERPs. This means there is considerable uncertainty about what an appropriate ERP is. Because of this, we think it sensible to recommend a range for the ERP rather than a central estimate.

Using reasonably long periods and large economies (as observed today), high-level analysis of the database could support an ERP anywhere from 2.0% to 5.5% p.a. in excess of the lowest-risk return, that is, 2.0% to 5.5% p.a. in excess of the return expected on low-risk cash over the projection period, so we recommend using an ERP within this range, recognising both the range of outcomes observed historically and the variety of portfolio structures an assumption may be applied to. Please also note that ERPs near the extremes of the above range have not been very common in the past, so before using such an ERP, actuaries should consider whether they expect such historically atypical economic conditions to prevail over the relevant investment horizon. Actuaries should consider reducing (or increasing) the ERP following successive years of equity returns above (or below) long term averages.”

In keeping with the above, an ERP of 3.75% p.a. was considered reasonable.

Using a long term investment strategy of 67% equities and 33% long dated euro area government bonds with an assumed investment return of 4.54% p.a. on equities and 1.55% p.a. on bonds, a long term discount rate of 3.5% p.a. was calculated.

A higher discount rate pre-retirement and a lower discount rate post retirement could alternatively have been used here; however, a single discount rate is used in this review for simplicity. See 4.4.4 below.

4.4.2.4 Approach D – Use an approach which is consistent with the accrued liability project which is required by EU Regulation 549/2013

The valuation of the State's total accrued retirement benefit liability in respect of the public service pensions is currently being calculated as at 31st December 2015 as required by EU Regulation 549 / 2013. The accrued retirement benefit liability represents the present value of the future pension and gratuity cash flows that have been accrued by employees and former employees as at the valuation date.

Under this option, the discount rate is prescribed in Eurostat's Technical Compilation Guide for Pension Data in National Accounts, which states:

“For government-managed pension schemes, it is generally agreed that central government debt securities provide a suitable basis for the discount rate. Furthermore, the choice of the discount rate should be based on the following criteria:

In order to obtain a suitable proxy for a risk-free interest rate, it is advisable to base it not on central government debt securities of one single country but on a basket of e.g. European central government debt securities.

The maturity of these debt securities should be similar to that of pension entitlements, i.e. at least 10 years, but preferably longer.

In order to guarantee comparability across countries, the same discount rate should be applied to all EU countries and all government-managed pension schemes (including social security pension schemes) at whatever level of government.

A stable discount rate should be applied to avoid the noise resulting from frequent changes.

In line with the above criteria, it is recommended to set the discount rate at 5% p.a.”

However, this Technical Guide was prepared in 2011. As at 31st December 2010, AAA Euro Government Bonds with a long duration were yielding 3.725% p.a.

As at 31st December 2016, this yield had reduced to 0.8% p.a. However, it is stated that the discount rate should be stable, a reflection of a yield reversion of 0.75% as above giving an overall discount rate of 1.55% p.a.

Furthermore, it should be noted that Eurostat are currently reviewing the assumptions in the Technical Guide in an attempt to reflect current market conditions; however, these assumptions will not be released until later this year.

4.4.3 While a number of approaches are valid, a “smoothed” discount rate is used which would otherwise be plausibly used for funding purposes (one of a range of plausible discount rate assumptions for funding), **i.e. Approach C above or 3.5% p.a.**

4.4.4 It should be noted that although a single discount rate of 3.5% p.a. has been used for pre- and post-retirement⁷, this broadly equates to a pre-retirement discount rate of 5.0% and a post retirement discount rate of 2.0%. A single asset-based discount rate was deemed appropriate to use reflecting the fact that the State as sponsor of a notional funded scheme would not need to de-risk assets as individuals approach retirement in the same way as a typical pre-funded private sector scheme.

⁷ Further discussion on the variety of approaches which could be taken to deriving a discount rate in unfunded public sector pension plans is included in the OECD's Working Papers on Finance, Insurance and Private Pensions No. 8 “Funding in Public Sector Pension Plans: International Evidence”.

4.5 INFLATION:

4.5.1 The long term inflation assumption should reflect the best estimate of future inflation in Ireland. Either a bond or swap approach can be used to determine a market-based measure for the assumed price inflation.

4.5.1.1 Bond approach:

Due to the lack of an appropriate market that could be used to benchmark Irish inflation and derive a market-based assumption, it is necessary to set assumptions with reference to a Euro-inflation market that is both liquid and transparent.

The market-implied, or break-even, inflation rate should be based on the differential between the yield on a Euro nominal bond and that on a Euro inflation-linked bond of similar duration from the same issuer. French government bonds are typically referenced in Actuarial Standards of Practice issued by the Society of Actuaries in Ireland primarily because they are euro denominated and are of sufficient scale and term.

4.5.1.2 Swap approach:

The Euro-inflation swap market may provide an equally valid estimate of market-implied inflation. The inflation swap curve provides spot inflation rates across a wide range of terms. A swap based approach has a number of subtle advantages over a bond approach:

- The inflation swap market provides spot estimates of inflation over a specific term and may be preferable to inflation expectations derived from the gross redemption yields on nominal and real bonds (i.e. average yields based on the bonds' cash flows). The latter approach can be sensitive to arbitrary factors such as the size of the relevant bonds' coupon payments.
The term of liquid inflation swap instruments is longer than that currently available in the bond market and therefore swaps may provide more realistic estimates of long-term inflation. Market-implied, inflation derived from the swap market may additionally reflect an inflation risk premium and a credit risk premium which may make this measure more reliable.
- Consumer Price Index (CPI) is the official measure of inflation in Ireland while Harmonised Index of Consumer Prices (HICP) is the measure of price changes calculated by each Member State of the European Union.
- Market inflation-linked assets are indexed with reference to Euro HICP ex-tobacco and therefore the basis risk between a CPI-linked liability and HICP ex-tobacco liability should be noted and understood.
- Both indices are calculated using the same basic price data and the methodology underlying their compilation and aggregation is also the same. The HICP differs from the CPI in its coverage of goods and services and the treatment of insurance. The most significant difference is the exclusion of mortgage interest from the HICP due to the fact that owner-occupied housing is not within its scope. Given the tendency for people in Ireland to secure mortgages for home ownership, CPI is a more representative measure of inflation in an Irish context while HICP is appropriate for intra EU comparisons.
- Currently, there is just under 19 years of Irish HICP and CPI data. Over this period Irish CPI has exceeded Irish HICP by approximately 0.2% pa. This modest differential does not reflect the considerable deviations observed from year-to-year, with the two measures having differed by over 2% in certain 12-month periods.

4.5.2 While both a swap and bond approach are valid, expected inflation was assumed to be 2% p.a. in the long term. This reflects the long duration of the liabilities, the fact that the ECB stated target for long term inflation remains at, or just below, 2% p.a. and the fact that market indicators in 2017 for long term price inflation indicate a rate of 2% p.a. as being appropriate.

4.6 **GENERAL INCREASES:**

4.6.1 General salary increases of 1.0% p.a. above inflation are assumed. This is the current pay parity assumption which is underlying “Prescribed Guidance in Relation to Section 34 of the Pensions Act, 1990, Version 2” dated October 2016, issued by the Pensions Authority. This guidance sets out the minimum transfer value basis that actuaries adopt in calculating transfer values for funded pension schemes.

4.6.2 This is a very subjective and Employer / sponsor-specific assumption and a range of general salary increase rates are likely to be appropriate. A previous review of costs of public service pensions conducted by the Comptroller and Auditor General in 2009, for example, used a real general salary increase rate of 1.75% p.a.

4.7 **PROMOTIONAL SALARY / SCALE INCREASES:**

4.7.1 Section 5 of this paper sets out the individual expected pensionable salary progression [including allowance for any promotional increases] of the categories of members to be considered in this paper.

4.8 **STATE PENSION (CONTRIBUTORY) INCREASES:**

4.8.1 State Pension (Contributory) increases are related to price inflation and Government policy. The State Pension (Contributory) is assumed to increase at the same rate as inflation i.e. 2.0% p.a.

4.8.2 No allowance has been made for the Supplementary Pension in this review. Including an allowance for the Supplementary Pension would increase the cost of integrated members’ benefits whose retirement age is less than the State Pension Age, i.e. pre-Single Scheme cohorts.

4.8.3 No allowance for the cost of the State Pension (Contributory) has been made in this review as it is assumed that this has been provided for via the PRSI system.

4.9 **STAFF TURNOVER:**

4.9.1 Allowance was made for staff turnover albeit this is not expected to have a significant impact on the results. This reduces assessed contribution rates by approximately 1% of pensionable salary.

4.10 **POST-RETIREMENT PENSION INCREASES:**

4.10.1 Pension increases are a discretionary benefit and require Ministerial consent. Historically pensions increased in line with increases to pay for pre-2013 cohorts. While discretionary, it is assumed that future pension payments will be indexed in line with general salary increases for the purposes of this review. For completeness, the notional employer contribution is also shown on the basis that pensions in payment are assumed to be indexed in line with increases in the Consumer Price Index.

4.10.2 Post-2013 cohorts, i.e. Single Scheme members’ benefits are indexed in line with increases in the Consumer Price Index.

4.11 **MORTALITY:**

4.11.1 An assumption as to how long members are expected to live in retirement was required.

4.11.2 A standard mortality table which is recommended by the Society of Actuaries in Ireland has been used in this analysis. However, this table is expected to reflect the mortality experience of public service pensioners in payment. A mortality investigation carried out by the Society of Actuaries in Ireland over 2013 considered mortality data from large private sector and public sector pension schemes in Ireland which lead to the Society of Actuaries in Ireland recommending this mortality table.

4.11.3 Mortality is based on 58% of ILT15 for males and 62% of ILT15 for females, with a compounded annual increase from 2014 to the annuity value of:

- 0.36% (males with no spouse’s pension)
- 0.30% (females with no spouse’s pension)
- 0.30% (males with a spouse’s pension)
- 0.25% (females with a spouse’s pension)

4.11.4 The mortality basis explicitly allows for improvements in life expectancy over time, so that life expectancy at retirement will depend on the year in which a member attains minimum retirement age (e.g. age 55, 60, 65, 66, 67, and 68). The life expectancy of a 65 year old in 2016 and 2036 is set out below.

| Year of attaining age 65 | 2016 | 2036 |
|--------------------------|------------|------------|
| Life expectancy – male | 21.1 years | 23.6 years |
| Life expectancy – female | 23.6 years | 25.7 years |

4.11.5 This is the current mortality basis which is underlying “Prescribed Guidance in Relation to Section 34 of the Pensions Act, 1990, Version 2”, issued by the Pensions Authority. This guidance sets out the minimum transfer value basis that actuaries adopt in calculating transfer values for funded pension schemes.

4.11.6 This mortality basis is widely used by Irish pension actuaries for a variety of purposes including funding valuations.

4.12 PROPORTION MARRIED:

4.12.1 90% of members are assumed to be married at retirement.

4.13 AGE DIFFERENCE:

4.13.1 Males are assumed to be three years older than females.

4.14 DEATH IN SERVICE BENEFITS / ILL-HEALTH BENEFITS:

4.14.1 Death in service / ill health benefits are assumed to cost circa 1% of pensionable salary.

4.15 EARLY RETIREMENT ALLOWANCE:

4.15.1 No allowance has been made for early retirement. Early retirement from the vast majority of private sector schemes is no longer permitted due to the funding implications of doing so. However, cost neutral early retirement is permitted in the public service schemes.

4.16 EXPENSES:

4.16.1 The cost of administration has not been factored into the cost of providing the benefits.

4.17 PENSION RELATED DEDUCTION (“PRD”):

4.17.1 The public service Pension Related Deduction is a deduction from the salary (pay) of pensionable public service employees. It is implemented under the terms of the Financial Emergency Measures in the Public Interest (FEMPI) Acts 2009-2015, forming a part of a wider set of financial emergency measures affecting public service pay and pensions directed at securing a stabilisation in the public finances. The most recent FEMPI Act of 2015 provided for an easing of the PRD burden on affected public service employees by way of revised thresholds applying from 1st January 2016 and 1st January 2017.

4.17.2 The impact of PRD is shown in the results section for completeness. The current PRD rates are set out below:

| Amount of Remuneration: | Rate of Deduction: |
|---|--------------------|
| UP TO €28,750 | Nil |
| ANY EXCESS OVER €28,750 BUT NOT OVER €60,000 | 10% |
| ANY AMOUNT OVER €60,000 | 10.5% |

4.17.3 PRD does reduce the notional employer annual contribution rate; however, this has not been deducted from the notional employer contribution rates shown in Section 6 of this paper but rather shown as a separate line item for completeness.

5. Grades Selected and their Details

- 5.1 This section presents the details surrounding the assumptions made in relation to salary levels, ages, treatment of special benefits etc. for each profession/grade under consideration.
- 5.2 The representative vocational groups used in this review is not intended to be exhaustive; however, it is intended to demonstrate the value of the retirement benefit for the majority of public service employees.
- 5.3 **Civil Servant**

| Civil Servant | Pre-2004 | Post-2004 | Post-2013 ⁸ |
|---------------------------------------|----------|-----------|------------------------|
| Age at Entry | 24 years | 25 years | 28 years |
| Age at Retirement | 60 years | 65 years | 68 years |
| Starting Pensionable Salary | €32,100 | | |
| Retirement Pensionable Salary | €56,800 | | |
| Professional Added Years ⁹ | Nil | Nil | Nil |

- 5.3.1 A file of 33,517 in force civil service employees as at the end of 2015 was analysed to arrive at the above assumptions. The file provided member details including:
- Date of birth
 - Salary
 - Pension scheme
 - Length of service
- 5.3.2 The assumptions for ages at entry were based on the 27,511 permanent, full-time civil servants in the following grades:
- Clerical Officer
 - Executive Officer
 - Higher Executive Officer
 - Administrative Officer
 - Assistant Principal
 - Principal
 - Assistant Secretary
 - Deputy Secretary
 - Secretary General
- 5.3.3 The assumption for pensionable salary at entry was based on the 2,785 permanent, full-time civil servants in the above grades with a length of service less than 2 years.
- 5.3.4 The assumption for pensionable salary at retirement was based on the 4,251 permanent, full-time civil servants in the above grades with a length of service greater than 35 years.
- 5.3.5 The assumption for age at retirement for the pre-2004 cohort is based on current pensioner in payment data for 23,300 pensioners in payment. For the post-2004 and post-2013 cohorts, the minimum normal retirement ages were used as there have not been a significant number of retirements from these cohorts.

⁸ New entrants to the public service since 1st January 2013 are members of the Single Public Service Pension Scheme.

⁹ Professional Added Years may be granted for pre-2013 entrants where certain professional, technical, specialist qualification or experience is required for the appointment.

5.4 National School Teacher

| Teacher | Pre-2004 | Post-2004 | Post-2013 |
|-------------------------------|----------|-----------|-----------|
| Age at Entry | 22 years | 25 years | 25 years |
| Age at Retirement | 60 years | 65 years | 68 years |
| Starting Pensionable Salary | €33,800 | | |
| Retirement Pensionable Salary | €63,900 | | |
| Professional Added Years | Nil | Nil | Nil |

- 5.4.1 In accordance with input received from the Department of Education and Skills, the assumed age of entry for the pre-2004 cohort was taken to be 22 years of age.
- 5.4.2 The Department of Education and Skills advised that the age of entry for post-2004 and post-2013 would be higher and accept that 25 is more appropriate.
- 5.4.3 The assumptions for pensionable salary at entry and retirement were taken as the first and last point of the 1st April 2017 national school scale.
- 5.4.4 The assumption for age at retirement for the pre-2004 cohort was based on the Department of Education and Skills Teacher Retirement Statistics 2015, as published on the Department's website. For the post-2004 and post-2013 cohorts, the minimum normal retirement ages was used given that there has not been a significant number of retirements from these cohorts.

5.5 Nurse

| Staff Nurse | Pre-2004 | Post-2004 | Post-2013 |
|-------------------------------|----------|-----------|-----------|
| Age at Entry | 22 years | 24 years | 25 years |
| Age at Retirement | 60 years | 65 years | 68 years |
| Starting Pensionable Salary | €29,500 | | |
| Retirement Pensionable Salary | €59,800 | | |
| Professional Added Years | Nil | Nil | Nil |

- 5.5.1 The assumptions for ages at entry were based on data provided by the Health Service Executive (the "HSE").
- 5.5.2 The assumptions for pensionable salary at entry were taken from the staff nurse scale from the INMO website.
- 5.5.3 The assumptions for retirement pensionable salary for a nurse were provided by the HSE on the basis of recent HSE retirements.
- 5.5.4 The assumption for age at retirement for the pre-2004 cohort is based on data provided by the HSE. For the post-2004 and post-2013 cohorts, the minimum normal retirement ages were assumed as there has not been a significant number of retirements from these cohorts.

5.6 Hospital Consultant

| Hospital Consultant | Pre-2004 | Post-2004 | Post-2013 |
|-------------------------------|----------|-----------|-----------|
| Age at Entry | 25 years | 26 years | 27 years |
| Age at Retirement | 60 years | 65 years | 68 years |
| Starting Pensionable Salary | €31,900 | | |
| Retirement Pensionable Salary | €184,200 | | |
| Professional Added Years | Nil | Nil | Nil |

- 5.6.1 A file of 84,754 records of HSE employees as at the end of 2015 was analysed to arrive at the above age of entry assumptions for medical interns.
- 5.6.2 The assumption for pensionable salary at entry was taken as the first point of the scale for an Intern's salary from the Department of Health's consolidated salary scale effective since 1st January 2016.
- 5.6.3 The assumptions for retirement pensionable salary for a Hospital Consultant were provided by the HSE on the basis of recent consultant retirements from the HSE.
- 5.6.4 The assumption for the retirement ages for the pre-2004 cohort was based on data received from the HSE's records for pensioners in payment. For the post-2004 and post-2013 cohorts, a minimum normal retirement age was assumed as there are not a significant number of retirements from these cohorts.

5.7 Engineer

| Engineer | Pre-2004 | Post-2004 | Post-2013 |
|-------------------------------|----------|-----------|-----------|
| Age at Entry | 28 years | 28 years | 28 years |
| Age at Retirement | 60 years | 65 years | 68 years |
| Starting Pensionable Salary | €46,700 | | |
| Retirement Pensionable Salary | €78,500 | | |
| Professional Added Years | 7 years | 3 years | Nil |

- 5.7.1 Entry age was identified on the basis of data received from Dublin City Council of 5,475 current employees.
- 5.7.2 The assumption for pensionable salary at entry was taken as the first point on the Executive Engineer's salary scale, in accordance with data on IMPACT's website.
- 5.7.3 The assumption for retirement pensionable salary was taken as the last point on the Senior Executive Engineer's salary scale, in accordance with data on IMPACT's website.
- 5.7.4 The assumption for age at retirement for the pre-2004 cohort was based on retirement data provided by the local authorities. For the post-2004 and post-2013 cohorts, the minimum normal retirement ages was assumed as there has not been a significant number of retirements from these cohorts.
- 5.7.5 Details on the average professional added years are based on data received from Dublin City Council.

5.8 Garda

| Garda | Pre-2004 | Post-2004 | Post-2013 |
|-------------------------------|----------|-----------|-----------|
| Age at Entry | 24 years | 25 years | 25 years |
| Age at Retirement | 54 years | 55 years | 55 years |
| Starting Pensionable Salary | €28,400 | | |
| Retirement Pensionable Salary | €60,000 | | |
| Professional Added Years | Nil | Nil | Nil |

- 5.8.1 The assumption for pensionable salary at entry was taken to the first point on the new-recruits pay scale effective 1st January 2017.
- 5.8.2 The assumption for retirement pensionable salary was provided by the Department of Justice on the basis of recent retirements.
- 5.8.3 The assumption for the retirement age of the pre-2004 cohort was based on data received from the Department of Justice. For the post-2004 and post-2013 cohorts, a minimum normal retirement age was assumed as there are not a significant number of retirements from these cohorts.

5.9 High Court Judge

| High Court Judge | Pre-2004 | Post-2004 | Post-2013 |
|-------------------------------|----------|-----------|-----------|
| Age at Entry | 50 years | 50 years | 50 years |
| Age at Retirement | 68 years | 68 years | 68 years |
| Starting Pensionable Salary | €191,300 | | |
| Retirement Pensionable Salary | €191,300 | | |
| Professional Added Years | Nil | Nil | Nil |

- 5.9.1 The assumptions for starting and retirement pensionable salary were taken as the final point on the High Court Judge pay scale effective 1st January 2017.
- 5.9.2 The assumption for the retirement age of the pre-2004 cohort was based on data available to the Department. For the post-2004 and post-2013 cohorts, we have used a retirement age of 68 also.

6. Value of Public Service Benefits

- 6.1 The value of the retirement benefits to the employee as represented by the notional employer contribution is displayed below. This is the notional contribution rate that would be required to be paid in order to fund the member's retirement benefits, in accordance with the assumptions outlined in Section 4 and 5 of this paper.
- 6.2 The methodology employed is set out in Section 3 of this paper.
- 6.3 The presented calculations make no allowance for tax. The impact of tax should be broadly the same for public and private sector employees.
- 6.4 The results have been divided into three cohorts, namely:
- Pre-2004
 - Post-2004
 - Post-2013
- 6.5 All results below are expressed as a percentage of pensionable salary.
- 6.6 The primary difference between the pre-2004¹⁰ and post-2004 cohort is the later retirement age for new entrants to the public sector post 1st April 2004. Broadly, the retirement age for the majority of public service employees changed from a minimum retirement age of 60 to a minimum retirement age of 65 at that stage. Accordingly, the value of the member's retirement benefits was reduced for employees with a later retirement age as accrued pensions are paid for a shorter period of time starting from a later retirement age. [The impact of this was partially offset as members would have more time to accrue additional benefits].
- 6.7 ***In each table that follows the overall notional employer rate is calculated as a percentage of pensionable salary and is net of employee contributions but not Pension Related Deduction ("PRD"). PRD, which operates progressively, equates to approximately 5% of pensionable salary for the average public service employee. For higher earners e.g. Hospital Consultants and Judges, the average PRD is higher and increases to circa 9% of pensionable salary.***

6.8 Civil Servant

| Civil Servant | Pre-2004 | Post-2004 | Post-2013 |
|--|------------|------------|-----------|
| Total Cost [% of Pensionable Salary] | 34% | 29% | 13% |
| Notional Employer Contribution Rate p.a. [After normal employee contribution] | 29% | 24% | 8% |
| Normal Employee Contribution p.a. | 5% | 5% | 5% |
| Pension Related Deduction (PRD) | 5% | 5% | 5% |

- 6.8.1 The notional employer contribution rate for a Civil Servant is 29% of pensionable salary for the pre-2004 cohort and 24% of pensionable salary for the post-2004 cohort.
- 6.8.2 The post-2004 members' retirement benefits are less valuable than the pre-2004 members as their retirement age is higher than the pre-2004 joiner (typically a minimum retirement age of 60 applies to the pre-2004 cohort whereas it is 65 for the post-2004 entrants).
- 6.8.3 The notional employer contribution rate for a Civil Servant is 8% of pension for the Single Scheme. The employer contribution under the Single Scheme is lower than the pre-existing schemes as the Single Scheme has a later retirement age than the pre-existing pension schemes and also, the retirement benefits are based on the member's career average salary, rather than their final salary.
- 6.8.4 While PRD is set out in legislation with progressive rates for higher paid employees, the typical Civil Servant pays approximately 5% of pensionable salary in respect of PRD.

¹⁰ There are also differences within the pre-2004 cohort between those who joined pre-and post-1995. As in the previous review differences were ignored based on the fact that the pre-1995 entrants receive a higher pension from the state (as Employer) but no State Pension, whereas post-1995 entrants receive a lower occupational pension but a State Pension (Contributory) in addition. There are also differences in the rate of PRSI paid by the two groups and in the level of employee contributions required.

6.9 National School Teacher

| National School Teacher | Pre-2004 | Post-2004 | Post-2013 |
|--|------------|------------|-----------|
| Total Cost [% of Pensionable Salary] | 35% | 31% | 14% |
| Notional Employer Contribution Rate p.a. [After normal employee contribution] | 30% | 26% | 9% |
| Normal Employee Contribution p.a. | 5% | 5% | 5% |
| Pension Related Deduction | 5% | 5% | 5% |

- 6.9.1 The notional employer contribution rate for a National School Teacher is 30% of pensionable salary for the pre-2004 cohort and 26% of pensionable salary for the post-2004 cohort.
- 6.9.2 The pre-2004 cohort of teachers have an additional option of early retirement from age 55, without actuarial reduction for early payment, provided they have more than 35 years of service. This option has not been accounted for in the above calculations. There is some evidence to suggest that teachers who joined service before 31st March 2004, retire before age 60 which would have the impact of increasing the above estimate.
- 6.9.3 The notional employer contribution rate for a National School Teacher is 9% of pensionable salary for the Single Scheme cohort.
- 6.9.4 While PRD is set out in legislation with progressive rates for higher paid employees, the typical National School Teacher pays approximately 5% of pensionable salary in respect of PRD.

6.10 Nurse

| Nurse | Pre-2004 | Post-2004 | Post-2013 |
|--|------------|------------|-----------|
| Total Cost [% of Pensionable Salary] | 35% | 30% | 13% |
| Notional Employer Contribution Rate p.a. [After normal employee contribution] | 30% | 25% | 8% |
| Normal Employee Contribution p.a. | 5% | 5% | 5% |
| Pension Related Deduction | 5% | 5% | 5% |

- 6.10.1 The notional employer contribution rate for a Nurse is 30% of pensionable salary for the pre-2004 cohort and 25% of pensionable salary for the post-2004 cohort.
- 6.10.2 The notional employer contribution rate for a Nurse is 8% of pensionable salary for the Single Scheme cohort.
- 6.10.3 While PRD is set out in legislation with progressive rates for higher paid employees, the typical Nurse pays approximately 5% of pensionable salary in respect of PRD.

6.11 Hospital Consultant

| Hospital Consultant | Pre-2004 | Post-2004 | Post-2013 |
|--|------------|------------|------------|
| Total Cost [% of Pensionable Salary] | 56% | 45% | 20% |
| Notional Employer Contribution Rate p.a. [After normal employee contribution] | 50% | 39% | 14% |
| Normal Employee Contribution p.a. | 6% | 6% | 6% |
| Pension Related Deduction | 9% | 9% | 9% |

- 6.11.1 The notional employer contribution rate for a Hospital Consultant is 50% of pensionable salary for the pre-2004 cohort and 39% of pensionable salary for the post-2004 cohort.
- 6.11.2 The notional employer contribution rate for a Hospital Consultant is greater than other categories of membership within the public service as their salary progresses at a faster rate than other categories within the public service. The Hospital Consultants broadly have the same benefit structure as other categories of membership in the public service.
- 6.11.3 The notional employer contribution rate for a Hospital Consultant is 14% of pensionable salary for the Single Scheme cohort.

6.11.4 While PRD is set out in legislation with progressive rates for higher paid employees, the typical Hospital Consultant pays approximately 8-9% of pensionable salary in respect of PRD.

6.12 Engineer

| Engineer | Pre-2004 | Post-2004 | Post-2013 |
|--|------------|------------|------------|
| Total Cost [% of Pensionable Salary] | 41% | 35% | 15% |
| Notional Employer Contribution Rate p.a. [After normal employee contribution] | 36% | 29% | 10% |
| Normal Employee Contribution p.a. | 5% | 5% | 5% |
| Pension Related Deduction | 6% | 6% | 6% |

6.12.1 The notional employer contribution rate for an Engineer is 36% of pensionable salary for the pre-2004 cohort and 29% of pensionable salary for the post-2004 cohort.

6.12.2 The notional employer contribution rate for an Engineer is 10% of pensionable salary for the Single Scheme cohort.

6.12.3 While PRD is set out in legislation with progressive rates for higher paid employees, the typical Engineer pays approximately 6% of pensionable salary in respect of PRD.

6.13 Garda

| Garda | Pre-2004 | Post-2004 | Post-2013 |
|--|------------|------------|------------|
| Total Cost [% of Pensionable Salary] | 58% | 57% | 19% |
| Notional Employer Contribution Rate p.a. [After normal employee contribution] | 54% | 53% | 14% |
| Normal Employee Contribution p.a. ¹¹ | 4% | 4% | 5% |
| Pension Related Deduction | 4% | 4% | 4% |

6.13.1 The notional employer contribution rate for a member of An Garda Síochána is 54% of pensionable salary for the pre-2004 cohort and 53% of pensionable salary for the post-2004 cohort.

6.13.2 The notional employer contribution rate for a member of An Garda Síochána is 14% of pensionable salary for the Single Scheme cohort.

6.13.3 While PRD is set out in legislation with progressive rates for higher paid employees, the typical Garda pays approximately 4% of pensionable salary in respect of PRD. This is lower than other categories of membership within the public service as Gardaí are assumed to retire earlier than other public service employees; accordingly, their contributions are assumed to be paid for a shorter time period than other members of the public service.

6.13.4 The primary reasons why the cost of retirement benefits for Gardaí are higher than for other public service employees are as follows:

- Gardaí accrue their pension benefits over 30 years of service instead of a 40 year career which is implicit within other public service employees' retirement benefits
- Gardaí have lower retirement ages than other public service employees.¹²

6.13.5 The above notional employer contribution rates are expected to be similar to other fast accrual categories of membership within the public service, i.e. certain categories of Military Personnel / the security forces.

¹¹ Members of An Garda Síochána who joined before 5th April 1995, pay a lower contribution of 1.75% of pensionable salary. Members of An Garda Síochána who joined after 31st December 2012, pay a higher contribution of 3.3% of pensionable salary and 4.2% of net pensionable salary.

¹² Members of An Garda Síochána who joined before 31st March 2004, can retire from age 50, while new entrants after 1st April 2004 can retire from age 55.

6.14 High Court Judge

| High Court Judge | Pre-2004 | Post-2004 | Post-2013 |
|--|------------|------------|------------|
| Total Cost [% of Pensionable Salary] | 75% | 75% | 52% |
| Notional Employer Contribution Rate p.a. [After normal employee contribution] | 71% | 71% | 39% |
| Normal Employee Contribution p.a. | 4% | 4% | 13% |
| Pension Related Deduction | 9% | 9% | 9% |

- 6.14.1 The notional employer contribution rate for a High Court Judge is 71% of pensionable salary for the pre-2004 and post-2004 cohorts.
- 6.14.2 The notional employer contribution rate for a High Court Judge is 39% of pensionable salary for the Single Scheme. The employee contribution in the Single Scheme for a High Court Judge is 13% of pensionable salary.
- 6.14.3 The primary reason for the higher than average cost of retirement benefits for High Court Judges is their entitlement to accrue maximum retirement benefits, including half-salary pension over a shorter time period than other categories of public service employees. For example, a High Court Judge could accrue their full pension over 15 years in the pre-Single Scheme pension schemes. This has increased to 20 years in the Single Scheme.
- 6.14.4 While PRD is set out in legislation with progressive rates for higher paid employees, the typical High Court Judge pays approximately 9% of pensionable salary in respect of PRD.
- 6.14.5 The above notional employer contribution rates are expected to be similar to other fast accrual categories of membership within the public service, i.e. constitutional, ministerial and judicial office holders.

6.15 Conclusion on the Value of Public Service Pension Benefits

- 6.15.1 *In each table that follows the overall notional employer rate is calculated as a percentage of pensionable salary and is net of employee contributions but not PRD. PRD, which operates progressively, equates to approximately 5% of pensionable salary for the average public service employee. For higher earners e.g. Hospital Consultants and Judges, the average PRD is higher and increases to circa 9% of pensionable salary.*
- 6.15.2 **Standard Accrual Categories:** Cost of Pension less Normal Employee Contributions. No Deduction has been made for PRD.

| Notional Employer Contribution Rate [% of Pensionable Salary] | Pre-2013 | | Post-2013 |
|---|----------|-----------|---------------|
| | Pre-2004 | Post-2004 | Single Scheme |
| Civil Servant | 29% | 24% | 8% |
| National School Teacher | 30% | 26% | 9% |
| Nurse | 30% | 25% | 8% |
| Engineer | 36% | 29% | 10% |
| Hospital Consultant | 50% | 39% | 14% |

- 6.15.3 **Fast Accrual Categories:** Cost of Pension less Normal Employee Contributions. No Deduction has been made for PRD.

| Notional Employer Contribution Rate [% of Pensionable Salary] | Pre-2013 | | Post-2013 |
|---|----------|-----------|---------------|
| | Pre-2004 | Post-2004 | Single Scheme |
| Garda | 54% | 53% | 14% |
| High Court Judge | 71% | 71% | 39% |

- 6.15.4 The Department publishes employee numbers at the end of each quarter. The latest available numbers at the time of drafting this paper were Q3 2016, which are set out below:

| Sector | Numbers |
|----------------------------|----------------|
| Civil Servant | 37,524 |
| Education | 98,450 |
| Health | 105,886 |
| Defence | 9,550 |
| Justice | 13,262 |
| Local Authorities | 27,188 |
| Non Commercial Semi States | 12,616 |
| Totals | 304,476 |

- 6.15.5 The vast majority of public service employees are employed in the Civil Service, Health, Education, Local Authorities, Garda Síochána and Defence.
- 6.15.6 In order to analyse the various sectors, a combined average notional employer contribution rate for pre- and post-2004 cohorts has been calculated as well as a separate notional employer contribution rate for post-2013 members.
- 6.15.7 As in previous exercises, there are wide variations in value by sector largely due to the fact that full pensions can be earned over relatively shorter working lifetimes in certain areas of the public service. Due to the significant differences in costs arising, the results in respect of “standard accrual” and “fast accrual” public service employees have been shown separately below.
- 6.15.8 An average notional employer contribution rate was calculated for public service employees with broadly similar benefit structures and salary progression i.e. Civil Servants, National School Teachers, Nurses and Engineers. Hospital Consultants were excluded from the averages as their average cost of accrual is higher due to their faster than average salary progression.
- 6.15.9 Pre-2013 entrants reflect a mix of pre- and post-2004 entrants (who enjoy different benefit structures and minimum retirement ages) and the overall rate reflects a weighted average of the number of public service employees in each group, broadly 67% pre-2004, 33% post-2004. Within the pre-2004 cohort there are some differences due to integration with the State Pension Contributory¹³.
- 6.15.10 Largely the difference between pre-1995 entrants and those joining between 1995 and 2004 been ignored as was the case for the previous (2007) benchmarking exercise. This relates to the fact that the pre-1995s receive no State Pension but a higher pension from their employment with the public service, whereas post-1995 entrants’ public service pensions are lower due to integration of their pensionable salary with the State Pension (Contributory). The corollary is that these individuals do receive the State Pension Contributory in addition. There are also differences in superannuation and PRSI contributions required across the two groups. Pre-1995 civil servants are said to make an implicit pension contribution as their pay scales are generally 5% lower than those of civil servants recruited after 6th April 1995.
- 6.15.11 Post-2013 entrants are shown separately given the very different benefit structure which applies to these members.
- 6.15.12 ***In each table that follows the overall notional employer rate is calculated as a percentage of pensionable salary and is net of employee contributions but not PRD. PRD, which operates progressively, equates to approximately 5% of pensionable salary for the average public service employee. For higher earners e.g. Hospital Consultants and Judges, the average PRD is higher and increases to circa 9% of pensionable salary.***

¹³ There are also differences within the pre-2004 cohort between those who joined pre-and post-1995. As in the previous review differences were ignored based on the fact that the pre-1995 entrants receive a higher pension from the state (as Employer) but no State Pension, whereas post-1995 entrants receive a lower occupational pension but a State Pension (Contributory) in addition. There are also differences in the rate of PRSI paid by the two groups and in the level of employee contributions required.

6.15.13 **Standard Accrual Categories: Cost of Pension less Normal Employee Contributions. No Deduction has been made for PRD.**

| Pre-2013 Cohorts | Average ¹ | Civil Servant | Teacher | Nurse | Engineer | Hospital Consultant |
|--|----------------------|---------------|------------|------------|------------|---------------------|
| Base Case | 29% | 27% | 29% | 28% | 33% | 46% |
| <i>Base Case with CPI Link for Pension Increases</i> | 25% | 23% | 25% | 24% | 29% | 39% |

| Post-2013 Cohorts | Average ¹ | Civil Servant | Teacher | Nurse | Engineer | Hospital Consultant |
|--|----------------------|---------------|-----------|-----------|------------|---------------------|
| Base Case | 9% | 8% | 9% | 8% | 10% | 14% |
| <i>Base Case with CPI Link for Pension Increases</i> | 9% | 8% | 9% | 8% | 10% | 14% |

¹ An average notional employer contribution rate was calculated for public service employees with broadly similar benefit structures and salary progression i.e. Civil Servants, National School Teachers, Nurses and Engineers. Hospital Consultants were excluded from the averages as their average cost of accrual is higher due to their faster than average salary progression.

6.15.14 An average notional employer contribution rate of 29% of pensionable salary was calculated for pre-2013 entrants in public service posts with broadly similar benefit structures and salary progression i.e. Civil Servants, National School Teachers, Nurses and Engineers.

6.15.15 An average notional employer contribution rate of 9% of pensionable salary was similarly calculated for post-2013 members in this cohort of Civil Servants, National School Teachers, Nurses and Engineers.

6.15.16 A notional average employer contribution rate of 46% of pensionable salary for pre-2013 members and 14% of pensionable salary for post-2013 members was calculated for Hospital Consultants. The pre-2013 rate in particular is significantly higher than for other vocational groups in the public service. This largely stems from Hospital consultants' faster than average rate of salary increase [detailed in Section 5.6 of this paper] over the course of a typical career, since they otherwise have broadly the same benefit structure as other public service employees.

6.15.17 **Fast Accrual Categories: Cost of Pension less Normal Employee Contributions. No Deduction has been made for PRD.**

| Pre-2013 Cohorts | Garda | High Court Judge |
|--|------------|------------------|
| Base Case | 53% | 71% |
| <i>Base Case with CPI Link for Pension Increases</i> | 45% | 63% |

| Post-2013 Cohorts | Garda | High Court Judge |
|--|------------|------------------|
| Base Case | 14% | 39% |
| <i>Base Case with CPI Link for Pension Increases</i> | 14% | 39% |

6.15.18 A significantly higher than average notional employer contribution rate was also calculated for "fast accrual" pre-2013 members such as Gardaí and High Court Judges, at 53% and 71% of salary, respectively. A higher than average notional employer contribution rate was also calculated for post-2013 Gardaí and High Court Judges, at 14% and 39% of salary, respectively. This can be largely attributed to the shorter time periods (with associated higher accrual rates) over which members of An Garda Síochána and Judges can accrue their retirement benefits than is standard amongst public service employees. Members of An Garda Síochána and the Security Forces can also receive their retirement benefits from an earlier age¹⁴ than most other public service employees.

6.16 Comparison with costs attributed to public sector employees in the 2007 Benchmarking Exercise

6.16.1 The 2007 benchmarking exercise revealed a headline net Employer cost of public service pensions of 20%. This has increased to 29% on average at this review reflecting a like for like methodology of

¹⁴ Members of An Garda Síochána who joined before 31st March 2004, can retire from age 50, while new entrants after 1st April 2004 can retire from age 55. More information can be found in Appendix 3.

calculating the employer cost net of ongoing employee superannuation contributions and expressed as a % of pensionable salary.

6.16.2 The main reasons for the differences arising are as follows:

- The headline figure from the previous review reflected the cost of the post-2004 cohort only (this has increased from 20% to 26% of pensionable salary at this review).
- The 2017 analysis and result presented reflects an average cost across the pre- and post-2004 cohorts weighted by the population in each groups [broadly 66%, 33%].
- The reason the 20% has increased to 26% at this review reflects the different underlying cost of the same public sector benefit structure in respect of this cohort – lower net interest rates and higher longevity expectations primarily.

6.16.3 Costs for the post-2013 entrants have been shown separately given the very different benefit structure and a net cost of 9% is revealed for this group. Costs in respect of post-2013 entrants were not contemplated as part of the previous exercise.

7. Private Sector Pension Benefits

7.1 Background

- 7.1.1 In order to place a value on private sector pensions, a breakdown of private sector employees into the following groups is required;
- Employees with DB Pensions;
 - Employees with DC Pensions;
 - Employees with no pension.
- 7.1.2 The different sources of information considered for the present analysis of private sector pension coverage in Ireland are outlined in section 7.2 below.
- 7.1.3 A value was then placed on private sector DB schemes and employer contribution levels to DC schemes was determined.
- 7.1.4 Data received from the Pensions Authority data is considered in section 7.3, data received from the Central Statistics Office is considered in section 7.4 and 7.5 summaries industry surveys which were used to estimate the average private sector contribution.
- 7.1.5 All of the above was taken into account in the calculation of an appropriate aggregate value of pension benefits, as outlined in section 7.6.

7.2 Data Sources

- 7.2.1 The following sources for details on the average cost of private sector pensions were considered, namely:
- Pensions Authority Data
 - Central Statistics Office
 - Industry Surveys from Irish Association of Pension Funds

7.3 Pensions Authority Data

- 7.3.1 All occupational pension schemes in Ireland are registered with the Pensions Authority. Each year, schemes are required to make an Annual Scheme Information return to the Pensions Authority. The Authority has provided the Department with statistics, based on their Annual Scheme Information records.
- 7.3.2 The active membership and scheme totals do not include the majority of the public service.

| Scheme type | Schemes analysed | Active members | Average employer contributions [% of Pensionable salary] |
|------------------------------------|------------------|-----------------------|--|
| DB Schemes | 522 | 125,268 ¹⁵ | 28% |
| DC Schemes | 52,145 | 335,409 | 9% |
| DC Excluding One Member DC Schemes | 7,055 | 290,319 | 7% |

7.3.3 DB Environment

- 7.3.3.1 As at December 2016, there are 522 DB schemes subject to the Funding Standard. This category of schemes comprises funded schemes (i.e. pay as you go schemes for Government employees such as civil servants, Gardaí, teachers etc. are not included).
- 7.3.3.2 The membership of these schemes is broken down as follows:

¹⁵ This comprises funded schemes only (i.e. pay as you go schemes for public service employees such as civil servants, Gardaí, teachers etc. are not included).

| Category | Membership |
|------------|------------|
| Active | 125,000 |
| Deferred | 435,000 |
| Pensioners | 100,000 |

- 7.3.3.3 It should be noted that schemes which have not wound-up include both schemes where members are still accruing benefits and where accrual has ceased.
- 7.3.3.4 The total assets of these schemes stands at approximately €50 bn.
- 7.3.3.5 By contrast, at the end of 2000, the number of DB schemes subject to the funding standard was 2,031 with 225,000 active members.
- 7.3.3.6 Since 2009, the Pensions Authority has granted 128 approvals / orders to reduce benefits under section 50 of the Pensions Act (this may include a very small number of schemes which have received more than one such approval). This section (Section 50) of the Pensions Act is used to reduce accrued benefits where the scheme continues; it does not apply in the case of schemes in deficit winding up.
- 7.3.3.7 The Pensions Authority does not retain statistics on the value of the reductions under section 50. The majority of such orders are used to remove attaching post-retirement pension increases, with no change to the nominal accrued pension benefit. However, this structural change effects a material difference to the liabilities of the scheme.
- 7.3.3.8 Statistics on the number of schemes closed to new entrants are not available from the Pensions Authority as schemes are not obliged to inform the Pensions Authority when they close to new members.
- 7.3.3.9 Informally, the Authority understands that over 90% of all schemes are closed to new entrants. Of the largest 50 schemes, no more than three are open to new members. [The pre-2013 government pension schemes are also closed to new entrants].
- 7.3.3.10 In early 2016, by contrast, 75% of DB schemes were still accruing benefits.

7.3.4 DC Environment

- 7.3.4.1 As at December 2016, the Pensions Authority records indicate that there are 53,086 DC pension schemes in Ireland with 335,409 active members. The average employer contribution for all DC pension schemes is 9% of salary.
- 7.3.4.2 There are a significant number of one member DC pension schemes that would not be expected to represent large employers' contributions to occupational pension schemes. Accordingly, by removing the one member DC pension schemes from the total DC scheme data, the total number of occupational DC pension schemes reduces to 7,055 with a total active membership of 290,319 with an average contribution rate of 7% of salary.
- 7.3.4.3 The average employer's contribution rate excluding one member DC schemes was considered the more appropriate comparator, for the present purpose.

7.4 Central Statistics Office ("CSO") Data

- 7.4.1 The CSO provided the Department with data on total employer pension contributions by sector as well as pension coverage statistics in Ireland.

7.4.2 Average Employer Pension Contribution

- 7.4.2.1 The CSO have provided the Department with information on total employer pension contributions by sector. This data has been sourced from the Quarterly Earnings, Hours and Employment Costs Survey and covers private sector companies and commercial semi-state bodies.
- 7.4.2.2 The data only refers to enterprises that have made an employer pension contribution.

7.4.2.3 The data in the table below reflects average Employer contributions which have been calculated using the data provided by the CSO.

| Employer Pension Contribution as a Percentage of Salary ¹⁶ | | | | | | |
|---|-----------|-----------|-----------|-----------|-----------|-----------|
| Private Sector | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
| Overall Employer Pension Contribution [% of Salary] | 7% | 6% | 6% | 6% | 6% | 6% |
| Industry | 8% | 7% | 7% | 8% | 9% | 8% |
| Construction | 4% | 4% | 4% | 4% | 3% | 3% |
| Wholesale and retail trade; repair of motor vehicles and motorcycles | 5% | 5% | 4% | 4% | 4% | 4% |
| Transportation and storage | 9% | 9% | 10% | 8% | 9% | 9% |
| Accommodation and food services | 1% | 1% | 1% | 1% | 1% | 1% |
| Information and communication | 6% | 6% | 6% | 6% | 6% | 6% |
| Financial, insurance and real estate | 13% | 12% | 11% | 10% | 10% | 10% |
| Professional, scientific and technical activities | 6% | 6% | 6% | 5% | 5% | 5% |
| Administrative and support services | 3% | 2% | 2% | 3% | 2% | 2% |
| Education | 4% | 4% | 7% | 6% | 5% | 4% |
| Human health and social work | 4% | 4% | 4% | 4% | 4% | 4% |
| Arts, entertainment, recreation and other service activities | 5% | 5% | 5% | 5% | 6% | 5% |

7.4.2.4 By considering the average pension contribution made by employers who make a pension contribution, an average employer contribution of 6% of salary (excluding overtime and bonus) is calculated.

7.4.2.5 The Finance, insurance and real estate sectors provide the highest average employer contributions at 10% p.a. of salary. The accommodation and food services sector pays the lowest average employer contribution at an average 1% of salary p.a.

7.4.3 Pensions Coverage

7.4.3.1 According to the CSO QNHS Q4 2015 Special Module on Pensions, 46.7% of those in employment between the ages of 20 and 69 have an occupational or private pension.

7.4.3.2 With 100% occupational pension coverage in the public service, the coverage in the private sector is considerably less. Based on the QNHS results, and using certain assumptions, the Department of Social Protection estimate that private sector occupational pension coverage is in the region of 35%.

7.4.3.3 Groups least likely to have an occupational pension include: young; self-employed; part-time; workers in the accommodation and food service activities sector; workers in sales and customer service.

7.5 Industry Surveys

7.5.1 IAPF Surveys

7.5.1.1 The Irish Association of Pension Funds (the "IAPF") has produced a number of surveys which have been referenced below, for the purposes of this paper, namely:

- 2015 DB Survey

¹⁶ Salary refers to regular earnings excluding overtime, irregular and bonus payment or payments in kind

- 2014 DC Rates Survey
- 2007 Benefits Survey

7.5.1.2 The 2015 DB Survey indicates that where a DB Plan ceases or where future accrual of benefits is ceased, a DC Plan is the most likely replacement scheme.

7.5.1.3 In 2014, a major survey of 6,430 DC pension schemes throughout Ireland was undertaken by the IAPF. The findings of the survey indicate that the average total contribution being paid in amounts to just 11.1% of salary – with an average of 5.7% coming from the employer and 5.4% from employees.

7.5.1.4 There is evidence that some multinational employers provide substantially more beneficial DC rates than set out above.

7.5.1.5 The 2007 Benefits Survey indicates that the average private sector DB Plan in Ireland has the following benefits:

| DB Pension Details | Assumed Norm |
|--|---|
| Retirement Age | 65 |
| Pensionable Salary | Basic Annual Salary |
| Pension Accrual Rate | 1/60 th for each year of service |
| Integrated with the State Pension Contributory | Yes |
| Retirement Lump Sum | Optional |
| Pension Increases | 1.0% p.a. ¹⁷ |
| Employee Contributions | 5% |

7.5.1.6 The above typical benefit structure relates to 2007 with the exception of the pension increases which have been amended to reflect a revised 2017 estimate of the level of pension increases prevailing in remaining DB schemes. A number of other actions which have not been costed for the purpose of this exercise across many schemes have been taken by trustees and employers since 2007 in light of increasing funding deficits including:

- Freezing schemes for further accrual of benefit; future accrual switched to DC
- Increased employee contributions
- Capping future DB accrual to a certain level of pensionable salary
- Increasing Normal Retirement Age in line with increase in State Pension Age, for integrated schemes.

7.6 Overall value placed on Private Sector Retirement Benefits

7.6.1 DB Schemes

7.6.1.1 Using the same methodology and assumptions as used to value the public sector DB pensions, the average notional employer contribution rate for private sector equivalents for each of the posts considered in section 6 is approximately 22% of salary. This notional cost reflects the typical DB benefit structure described at 7.5.1.5 reflecting the ‘Entry Age’ Method of calculation and adopting the same assumptions as described in Section 4. By contrast with the 2007 Benchmarking exercise, no allowance for “commutation” was made in costing the private sector benefits at this review.

An additional assumption required for the valuation of private sector benefits which is not required for public sector benefits is that for “commutation” i.e. the amount of pension that members are assumed to “commute” in exchange for tax-free cash. This assumption is not required in public sector schemes as the lump sum is a separate benefit to the annual pension. At this review a nil commutation assumption has been adopted for the typical private sector DB scheme. This reflects the reality that, with the majority of DB schemes having ceased

¹⁷ The 2007 survey showed that the majority of schemes feature some form of post retirement pension increase provision. It is assumed that the majority of schemes with discretionary or guaranteed post retirement pension increases were significantly reduced or removed (by way of Section 50 order in the case of guaranteed pension increases) and accordingly, the average private sector DB Plan in 2017 is assumed to provide for 1.0% p.a. pension increases.

accrual of future service as well as increased coverage of Additional Voluntary Contributions (AVCs) amongst members, most members will not commute their DB pension for tax free cash. Their maximum tax free cash is instead typically taken from their DC retirement account.

7.6.2 DC Schemes

7.6.2.1 The private sector DC schemes, the value of employer contributions is more easily identifiable. While there are some examples of significant DC employer contributions in certain sectors, particularly amongst multi-national employers, the data sources which we have chosen as representative indicate the following:

- Given that this review is considering the pension costs in respect of employees of employers' pension schemes, the employer's contribution rate (excluding one member DC schemes) is the most appropriate comparator, i.e. an employer contribution of 7.0% of salary as per Pensions Authority data.
- This figure is consistent with the findings of the CSO and the IAPF's 2014 DC Rates Survey.

7.7 Conclusion on the Value of Private Sector Pension Benefits

7.7.1 As is evidenced in the IAPF surveys and in general within the press over recent years, private sector DB schemes are closed to new entrants.

7.7.2 Based on statistics provided by the Pensions Authority, 30% of private sector employees who are in an occupational pension scheme are in a DB scheme with 70% in a DC plan.

7.7.3 At this review a cost of 11% has been attributed to a private sector employee. This comprises a cost of 22% for DB schemes and 7.0% for DC schemes and a weighting of 70%, 30% attributed to these scheme types reflecting the profile of the post-2004 cohort equivalents in the public sector expected to be members of these schemes at the current time.

7.7.4 Post-2013 entrants in the Single Scheme are being compared with employer contribution rates being paid in respect of employees in DC schemes only, reflecting the fact schemes set up since 2013 have virtually all been on a DC basis. Therefore a cost of 7% has been attributed to equivalent private sector employees for this cohort.

7.8 Comparison with costs attributed to private sector employees in the 2007 Benchmarking Exercise

7.8.1 The previous 2007 exercise attributed an 8% p.a. cost to a comparable private sector employee in the post-2004 cohort. This comprised a cost of 14% p.a. for DB schemes and 6.8% p.a. for DC schemes and a weighting of, 25% / 75% attributed to these reflecting the profile of the post-2004 cohort equivalents in the public sector expected to be members of these schemes at that time.

7.8.2 The costs attributable to DC schemes has remained broadly unchanged between reviews.

7.8.3 Differences in costs attributable to private sector employees arise between reviews due to:

7.8.3.1 The higher cost attributed to DB in the private sector as compared with the previous review (22% versus 14%) which reflects a combination of:

- Increasing liabilities due to the low bond yield environment as well as increasing longevity;
- The assumption for commutation (i.e. the propensity for members to exchange pension for tax free cash which usually results in a windfall for the scheme where this option is exercised), having been removed. The assumption was removed as it reflects the reality that with the vast majority of DB schemes in the private sector closed to accrual as well as increased coverage of AVCs, members typically take their revenue maximum tax-free cash from their DC retirement account and do not opt to commute their DB pension.

7.8.3.2 Different weighting at this review given to DC schemes as compared with the previous review. At the previous review the ratio of DC: DB schemes was 75:25 and in 2017 is 70:30. The 70:30 reflects statistics available from the Pensions Authority in 2017.

8. Differential between Public and Private Sector

- 8.1 Following on from Sections 6 and 7 above, see below analysis below which concludes that the differential in the cost of public and private sector pension provision is 18% of pensionable salary for pre-2013 cohorts; however, is significantly lower at 2% for post-2013 entrants.

| Notional Employer Contribution Rate | Pre-2013 entrants | Post-2013 entrants |
|---|-------------------|--------------------|
| Average | 29% | 9% |
| Private Sector | 11% | 7% |
| Differential [% of pensionable salary] | 18% | 2% |

*In the table above, the overall notional employer rate for the public service employee is calculated as a percentage of pensionable salary and is net of employee contributions **but not PRD**. PRD, which operates progressively, equates to approximately 5% of pensionable salary for the average public service employee.*

- 8.2 The differential revealed as part of the 2007 Public Service Benchmarking exercise was 12% of pensionable salary (20% in the public sector less 8% across the private sector) for pre-2013 entrants which compares with the 18% of pensionable salary revealed at this review (29% in the public sector less 11% across the private sector). The post-2013 cohort were not contemplated previously.
- 8.3 An average notional employer contribution rate of 29% of pensionable salary was calculated for pre-2013 cohorts in public service posts with broadly similar benefit structures and salary progression i.e. Civil Servants, National School Teachers, Nurses and Engineers.
- 8.4 An average notional employer contribution rate of 9% of pensionable salary was similarly calculated for post-2013 members in this group of Civil Servants, National School Teachers, Nurses and Engineers.
- 8.5 A notional annual employer contribution rate of 46% of pensionable salary for pre-2013 members and 14% of pensionable salary for post-2013 members was calculated for Hospital Consultants. This rate is significantly higher than for other categories of membership within the public service. This largely stems from Hospital consultants' faster than average rate of salary progression as they otherwise have broadly the same benefit structure as other categories of membership in the public service.
- 8.6 A significantly higher than average notional employer contribution rate was also calculated for pre-2013 Gardaí and High Court Judges, at 53% and 71% of pensionable salary, respectively. A higher than average notional employer contribution rate was also calculated for post-2013 Gardaí and High Court Judges, at 17% and 39% of pensionable salary, respectively. This can be largely attributed to the shorter time period over which members of An Garda Síochána, Judges can accrue their retirement benefits than is standard amongst public service employees. Members of An Garda Síochána can also receive their retirement benefits from an earlier age than other public service employees.
- 8.7 Estimates of the long term costs of pensions have been rising as the assumptions underlying the critical factors affecting costs have become more conservative as a consequence of experience over time.
- 8.8 The primary reasons for this are as follows:
- Increasing liabilities: historically low bond yields as well as increasing longevity;
 - Lower than expected asset performance: poor equity market returns over the periods 2002- 2003, 2007-2009 as well as low expected future returns from traditional asset classes.
- 8.9 The increased cost of DB pensions has caused a significant number of private sector employers to move to DC pension provision for future service only or for both past and future service (in the case of schemes which have wound up) - a trend which is likely to continue. Of the surviving private sector schemes many are operating with much curtailed benefit structures incorporating reduced (where any) attaching pension increases. Other curtailments in schemes include capped pensionable salary, higher employee contributions and a normal retirement age which automatically increases in line with changes to the State Pension Age.

9. Sensitivity Analysis

- 9.1 The assumptions used in this paper are set out in Section 4. The results from Section 6 of this paper are sensitivity tested below to changes in the discount rate, general salary increases including post retirement indexation and life expectancy. The parameters stressed as part of this sensitivity analysis were chosen to allow an informed reader understand the main areas of inherent subjectivity and judgement in the calculations.
- 9.2 ***In each table that follows the overall notional employer rate is calculated as a percentage of pensionable salary and is net of employee contributions but not PRD. PRD, which operates progressively, equates to approximately 5% of pensionable salary for the average public service employee. For higher earners e.g. Hospital Consultants and Judges, the average PRD is higher and increases to circa 9% of pensionable salary.***
- 9.3 As in previous exercises, there are wide variations in value by sector largely due to the fact that full pensions can be earned over relatively shorter working lifetimes in certain areas of the public service. Due to the significant differences in costs arising, the results in respect of “standard accrual” and “fast accrual” public service employees have been shown separately below.
- 9.4 Pre-2013 entrants reflect a mix of pre- and post-2004 entrants (who enjoy different benefit structures and minimum retirement ages) and the overall rate reflects a weighted average of the number of public service employees in each group, broadly 67% pre-2004, 33% post-2004. Post-2013 entrants are shown separately given the very different benefit structure which applies to these members.
- 9.5 ***Standard Accrual Categories: Cost of Pension less Normal Employee Contributions. No Deduction has been made for PRD.***

Pre-2013 Cohort:

| Sensitivity testing - Pre-2013 Cohorts | Average ¹ | Civil Servant | Teacher | Nurse | Engineer | Hospital Consultant |
|--|----------------------|---------------|------------|------------|------------|---------------------|
| Life Expectancy +1 year | 31% | 28% | 30% | 30% | 35% | 48% |
| General Salary Increases +0.5% p.a. | 37% | 34% | 36% | 36% | 41% | 54% |
| Discount rate -0.5% p.a. | 35% | 32% | 34% | 34% | 39% | 53% |
| BASE CASE | 29% | 27% | 29% | 28% | 33% | 46% |
| Discount rate +0.5% | 25% | 23% | 24% | 24% | 28% | 39% |
| General Salary Increases -0.5% | 23% | 21% | 22% | 22% | 26% | 38% |
| Life Expectancy -1 year | 28% | 26% | 27% | 27% | 31% | 43% |
| BASE CASE WITH CPI LINK FOR PENSION INCREASES | 25% | 23% | 25% | 24% | 29% | 39% |

Post-2013 Cohort:

| Sensitivity testing - Post-2013 Cohorts | Average ¹ | Civil Servant | Teacher | Nurse | Engineer | Hospital Consultant |
|--|----------------------|---------------|-----------|-----------|------------|---------------------|
| Life Expectancy +1 year | 9% | 9% | 9% | 9% | 11% | 15% |
| General Salary Increases +0.5% p.a. | 9% | 8% | 9% | 8% | 10% | 14% |
| Discount rate -0.5% p.a. | 11% | 10% | 11% | 10% | 12% | 16% |
| BASE CASE | 9% | 8% | 9% | 8% | 10% | 14% |
| Discount rate +0.5% | 7% | 7% | 7% | 7% | 8% | 11% |
| General Salary Increases -0.5% | 9% | 8% | 9% | 8% | 10% | 14% |
| Life Expectancy -1 year | 8% | 8% | 8% | 8% | 9% | 13% |
| BASE CASE WITH CPI LINK FOR PENSION INCREASES | 9% | 8% | 9% | 8% | 10% | 14% |

¹ An average notional employer contribution rate was calculated for public service employees with broadly similar benefit structures and salary progression i.e. Civil Servants, National School Teachers, Nurses and Engineers. Hospital Consultants were excluded from the averages as their average cost of accrual is higher due to their faster than average salary progression.

9.6 **Fast Accrual Categories: Cost of Pension less Normal Employee Contributions. No Deduction has been made for PRD.**

Pre-2013 Cohort:

| Sensitivity testing - Pre-2013 Cohorts | Garda | High Court Judge |
|--|--------------|-------------------------|
| Life Expectancy +1 year | 55% | 74% |
| General Salary Increases +0.5% p.a. | 65% | 79% |
| Discount rate -0.5% p.a. | 62% | 78% |
| BASE CASE | 53% | 71% |
| Discount rate +0.5% | 45% | 64% |
| General Salary Increases -0.5% | 42% | 63% |
| Life Expectancy -1 year | 50% | 67% |
| BASE CASE WITH CPI LINK FOR PENSION INCREASES | 45% | 63% |

Post-2013 Cohort:

| Sensitivity testing - Post-2013 Cohorts | Garda | High Court Judge |
|--|--------------|-------------------------|
| Life Expectancy +1 year | 14% | 41% |
| General Salary Increases +0.5% p.a. | 14% | 39% |
| Discount rate -0.5% p.a. | 16% | 44% |
| BASE CASE | 14% | 39% |
| Discount rate +0.5% | 11% | 34% |
| General Salary Increases -0.5% | 14% | 38% |
| Life Expectancy -1 year | 13% | 36% |
| BASE CASE WITH CPI LINK FOR PENSION INCREASES | 14% | 39% |

10. Conclusion

- 10.1 This technical exercise sets out the notional employer contribution rate required to provide benefits for various cohorts of public service employees for use by the Department and the Commission. Within scope is the cost of retirement benefit provision for various representative (albeit not an exhaustive listing of) groups in the public service and how that cost compares with equivalents in the private sector.
- 10.2 Following on from sections 6 and 7 above, see analysis below which concludes that the differential in the cost of public and private sector pension provision has increased to 18% of pensionable salary for pre-2013 cohorts; however, is significantly lower at 2% of pensionable salary for post-2013 members.

| Notional Employer Contribution Rate | Pre-2013 entrants | Post-2013 entrants |
|---|-------------------|--------------------|
| Public Service | 29% | 9% |
| Private Sector | 11% | 7% |
| Differential [% of pensionable salary] | 18% | 2% |

In the table above, the overall notional employer rate for the public service employee is calculated as a percentage of pensionable salary and is net of employee contributions but not PRD. PRD, which operates progressively, equates to approximately 5% of pensionable salary for the average public service employee.

- 10.3 In the table above, the overall notional employer rate is calculated as a percentage of pensionable salary and is net of employee contributions but not PRD.
- 10.4 Estimates of the long term costs of pensions have been rising as the assumptions underlying the critical factors affecting costs have become more conservative as a consequence of experience over time.
- 10.5 The primary reasons for this are as follows:
 - Increasing liabilities: historically low bond yields as well as increasing longevity;
 - Lower than expected asset performance: poor equity market returns over the periods 2002- 2003, 2007-2009 as well as low expected future returns from traditional asset classes.
- 10.6 The increased cost of DB pensions has caused a significant number of private sector employers to move to DC pension provision which is a trend which is likely to continue. Of those employers continuing to operate DB schemes pension benefits are often on much curtailed. Actions taken in recent years in light of increasing accounting and funding deficits include, amongst others: removal or reduction of pension increases attaching to accrued rights, capping pensionable salary, increased employee contributions, changes in normal retirement age in line with increases in the State Pension Age (66 currently rising to 68 in 2028).
- 10.7 Members of An Garda Síochána, Military personnel / security forces, Judges and a small number of other public service employees (e.g. constitutional and ministerial office holders) accrue their pension benefits over a shorter time period than is standard amongst public service employees. Members of An Garda Síochána (and military personnel) can also receive their retirement benefits from an earlier age. There is limited evidence of private sector equivalents.
- 10.8 In conclusion, it is recommended that the Commission reflects the increased cost of retirement benefit provision in the public service and increased value of these retirement benefits relative to private sector retirement benefits in any findings published by the Commission.

11. Appendix 1 – Extract of Letter from KPMG

The agreed scope of our actuarial peer review of the work performed by John Pender, (“the Actuary”), Remuneration, Pensions and Industrial Relations Division, Department of Public Expenditure and Reform (“DPER”) and his Paper to the Public Service Pay Commission reflecting an actuarial review of Pension Provision in the Irish Public Service and a high level comparison with the private pensions sector dated 23 March 2017 (“Paper”) is set out in an engagement letter of 25 January 2017. The review comprised a 2 stage peer review process:

Stage 1: Review of methodology and assumptions to be used as part of the review;

Stage 2: Review of the calculations and Paper including an overview and comparison with the private sector pension landscape.

The full scope is set out overleaf.

The peer review exercise was undertaken by Joanne Roche FSAI, KPMG and Brian Morrissey FSAI, KPMG.

The **Stage 1 review** undertaken in late January / early February 2017 comprised the following activities:

- An initial “sounding board” discussion with the Actuary on the range of potential methodologies and assumptions which could be employed in an exercise of this nature taking into account the variety of approaches actuaries typically employ when assessing pension costs;
- A review of the proposed methodology and assumptions to be used in the calculations as set out in a draft letter from the actuary dated 30 January 2017;
- Checks performed on calculations prepared at that point for one vocational cohort which was intended to form the template model for other vocational sectors at a later stage;
- Discussion with the Actuary on the reasonableness of the movement in the cost (for the one vocational sector calculated at that stage) versus the Public Service Benchmarking exercise undertaken in 2007 and a high level reconciliation of and rationalisation for the movement observed;
- In advance of work commencing on stage 2, a discussion with the Actuary around sources of private sector benchmarking information and potential approaches to be adopted for the comparison, cognisant of the time-separated different cohorts of the public service.

The **Stage 2 review over** a 2 - 3 week period in March reflected:

- Comprehensive checking on the model used for each vocational sector and cohort (reflecting different terms based on various changes made in 2004 and 2013). Our review of the model included:
 - discussions with the Actuary around the appropriateness of inputs used (salary scales, professional added years, average entry ages, retirement ages), reflecting the various idiosyncrasies in benefit structure across sectors and cohorts;
 - independently checking all of the calculations performed for each vocational sector and each cohort in order to ensure the model used is robust and that all of calculations are materially accurate.
 - Review of three drafts of the paper of 5 March, 8 March, and a final draft of 16 March.
 - The objective of our review of the draft provided on 5 March (with subsequent detail provided in the draft of 8 March) was to feedback substantive comments.
 - A detailed review of the final draft which followed on the 16 March (reflecting KPMG’s substantive comments on the earlier draft of 8 March and further comments / edits following the Actuary’s own internal review process).
 - Discussions with the Actuary in relation to a number of aspects of the review including:
 - the reasonableness of the results, reconciliation with the costs emerging from the Paper of the Public Service Benchmarking Body in 2007, and rationalisation for differences arising.
 - the comparative private sector information used vis-a-vis the range of typical pension schemes operated by Irish clients of KPMG in order to “sense check” the private sector benchmarking information used and resulting costs attributed to the private sector “peers”.

On the basis of the approach set out above, the peer reviewers have concluded that in their opinion:

The paper of 23 March 2017 is comprehensive and provides sufficient detail to allow an informed reader:

- readily review and understand the results emerging
- understand the work performed to generate these results including methodologies and assumptions employed, key data inputs used, the main judgments made

The extent to which the Actuary has employed judgement in selecting a number of the key assumptions is addressed in section 4 of the paper and further illustrated as part of the sensitivities shown in the Paper. The sensitivities illustrated (discount rate, salary increase, pension increase and life expectancy) are sufficiently broad to capture the main areas of inherent subjectivity and judgement in the calculations.

- the methodology that has been used is appropriate. Specifically the review is based on a commonly accepted actuarial methodology known as the “Entry Age Method” (which is one of a number of methods which may be deemed appropriate for assessing costs in a “pay as you go” system);
 - the actuarial basis and assumptions that have been made are reasonable;
 - No issues arose from independent checking of the calculations;
- Substantive comments made by us relating to the technical content of the drafts received on 5 March, 8 March, and 16 March were largely reflected in the final paper of 23 March 2017.

Reliances and Limitations

We have performed some reasonableness checks on the data received but otherwise have assumed that the factual material and information provided to us, both in written and verbal form, provides an accurate representation of the facts.

The values in the Paper are based on 2017 estimates of the cost of providing pension benefits reflecting prevailing economic conditions, actuarial guidance, and the in-force pension benefit structures in the Irish public and comparator private sectors.

The results are influenced by the underlying assumptions as indicated by the sensitivities shown in the Paper. In practice, the actual costs will not be known with certainty until the last beneficiary in the public and private sectors forming part of this review has died. Actual costs emerging are likely to differ from estimates due to factors such as changes in demographics / life expectancies and economic factors such as actual salary increases granted and the rate at which pensions will actually be indexed into the future. It must therefore be recognised that actual results will differ from those inherent in the values given. We caution therefore that the eventual outcome is likely to vary, perhaps materially, from the projected costs.

Our peer review opinion should be read in its entirety and in conjunction with the Paper, as individual sections, if read in isolation, may be misleading.

This peer review letter is delivered subject to the agreed written terms of KPMG's engagement. Any party who chooses to rely on our letter (or any part of it) will do so at its own risk. To the fullest extent permitted by law, KPMG will accept no responsibility or liability in respect of our letter to any other party.

Judgements as to the conclusions drawn in this letter and Paper should be made only after studying both the letter and the Paper in their entirety. We assume that users of this letter and Paper will seek explanation and/or amplification of any parts which are not clear.

Scope of peer review – Detail in an Appendix of the Engagement letter between DPER and KPMG dated 25 January 2017

Phase 1 – Public Sector: Review of methodology and assumptions to be used in the actuarial assessment of the value of public sector pensions

The methodology proposed for calculating the effective contribution rate, required to be paid through the working life of an employee in order to generate the pension and lump sum entitlements, is to be reviewed.

The methodology is expected to involve:

- Projection of typical entrant level salaries from typical entrant age to the typical retirement age, allowing for inflation and promotional increases
- Projection of the State Pension and calculation of Pensionable Earnings for each year and at retirement
- Calculations of Pension and lump sum benefit entitlements
- Placing a capital value on these benefits by discounting the future pension payments and adding the lump sum payment
- Calculation of an equivalent contribution rate as a percentage of salary that would be required over the working life of an employee so that the present value of contributions is equal to the present value of the capital value of the benefits
- Deduction of employee contributions to give a net required employer contribution

This calculation is to be carried out for the following groups of public sector employees:

- Civil Servants
- Engineers
- Staff nurses
- National school teachers
- Gardaí
- Possibility another category of membership [TBC]

Pensions are to be valued for each grade with each of the following pension cohort arrangements:

- Joiners prior to 5 April 1995 (not integrated with the State Pension)
- Joiners between 6 April 1995 and 31 March 2004 (integrated with the State Pension)
- Joiners between 1 April 2004 and 31 December 2012 (reforms including increased retirement age and removal of some special terms and added years)
- Joiners from 1 January 2013 onwards (members of the Single Public Service Pension Scheme using career average earnings and increased retirement ages)

The derivation of the following assumptions, needed for the calculation, is to be reviewed:

- Discount rate
- Post retirement interest rate
- Inflation
- General salary increases
- Increases in State Pension

- Promotional / salary scale increases
- Mortality and mortality improvements
- Expenses
- Gender and marriage proportions
- Staff turnover
- For each grade: age at entry and retirement and salary plus pensionable allowances at entry and retirement, notional added years
- For each cohort: expected retirement year and age.

Phase 1 – Private Sector: Review of methodology and assumptions to be used in the actuarial assessment of the value of private sector pensions

The following categories of private sector employees are to be covered:

- those with Defined Benefit pensions
- those with Defined Contribution pensions
- those with a private pension or PRSA
- those with no pension

The successful consultancy will need to be able to assist with defining of private sector norms above. The proposed split of private sector employees into each of these categories is to be reviewed.

The proposed private sector Defined Benefit pension scheme is also to be reviewed. The assumed contribution rates for Defined Contribution pensions and private pensions will be reviewed and survey information available to the successful consultancy to be shared.

Phase 2: Review of calculations and paper

The employer effective contribution rate calculated for each group and cohort of public sector employees is to be reviewed. The equivalent rates calculated for private sector employees is required to be reviewed.

The results calculated for any sensitivities to changes in assumptions (up to approximately ten sensitivities) are to be reviewed.

The outcome of the review will be a paper setting out the findings.

12. Appendix 2 - Glossary¹⁸

- 12.1 **Accrual rate**
The rate at which pension benefit is built up as pensionable service is completed in a defined benefit scheme. Often expressed as a fraction of pensionable salary e.g. 1/80th of pension and 3/80ths of gratuity for each year of service.
- 12.2 **Active member**
A member of a pension scheme who is in "reckonable service", i.e. currently in the employment to which the scheme relates, and who is included in the scheme for a pension benefit.
- 12.3 **Actuarial assumptions**
In a defined benefit scheme the set of assumptions made by the actuary as to rates of investment return, inflation, increase in earnings, mortality, etc. which form the basis of an actuarial valuation or other actuarial calculation.
- 12.4 **Actuarial value**
Actuarial value is a mathematical calculation, often of the financial condition of a pension plan. It includes the computation of the present monetary value of benefits payable to present members, and the present monetary value of future employer and employee contributions, factoring in mortality among active and retired members and also to the rates of disability, retirement, withdrawal from service, salary and interest. It is the value of cash, investments, and other property belonging to a pension plan, as used by the actuary for the purpose of an actuarial valuation. The actuarial value of assets may represent an average value over time, and normally differs from the amount reported in the financial statements, which is a measurement as of the date of the statement of net assets.
- 12.5 **Actuary**
The individual appointed by the trustees of an occupational pension scheme to carry out valuations and advise on funding matters.
- 12.6 **Added years**
A provision of some defined benefit schemes for building extra pensionable service in return for additional contributions.
- 12.7 **Additional voluntary contributions (AVCs)**
Additional contributions paid by a member of an occupational pension scheme in order to secure benefits over and above those set out in the rules of the scheme. Where an occupational pension scheme does not provide access to an AVC facility, a standard PRSA must be offered for this purpose.
- 12.8 **Average earnings scheme (also known as "career average scheme")**
A defined benefit scheme where pensionable salary is defined by the average of your earnings throughout your career rather than the final years earning
- 12.9 **Closed scheme**
A pension scheme that does not accept new members.
- 12.10 **Co-ordination**
A term used in the public sector to indicate that the benefits payable under the social welfare system are taken into account in the occupational pension scheme. Co-ordination is generally required as a matter of policy where social welfare retirement benefits are payable. However, the calculation of the gratuity payable on retirement or death is not normally affected by co-ordination. See also "integration".
- 12.11 **Defined benefit scheme (also known as "final salary scheme")**
Defined benefit schemes provide members with retirement and death benefits based on formulae set out in the rules of the scheme. Benefits are often based on a members' salary close to retirement and

¹⁸ Source: Pensions Authority with the exception of the definition of the "Entry Age Method"

on his or her pensionable service. For this reason these schemes are sometimes known as “final salary” schemes.

12.12 Defined contribution scheme (also known as "money purchase plan")

Provides a pension based on the accumulated value of contributions paid to a pension scheme and the investment returns earned on those contributions.

12.13 Early retirement

The retirement of a member, with immediate retirement benefit, before normal pensionable age. The benefit may be reduced because of early payment. See also "ill-health early retirement".

12.14 Entry Age Method

The aim of the Entry Age Method is to establish the level contribution rate that, when payable over the active lifetime of the employee, is sufficient to finance the benefits being provided.

$$\text{Present value of future contributions at entry} = \text{Present value of future benefits at entry}$$

The calculation will normally be made by reference to projected benefits. Contributions are deemed to be payable only in respect of active members. Where benefits are projected and are salary dependant then contributions will normally be projected to increase in line with salaries (i.e. “level” implies level as a percentage of salary when a projected basis is used).

12.15 Escalation

A system whereby pensions in payment and/or preserved benefits are increased regularly at a fixed or variable percentage rate. The percentage increase applied may be limited to the increase in a specified index. Escalation may be promised and paid for in advance of, or may be granted on a discretionary basis after the pension has commenced.

12.16 Funding method

The approach used by an actuary in an actuarial valuation. A variety of methods can be used, but whatever method is employed should be adequately described in the valuation report.

12.17 Funding standard

The funding standard ensures that a defined benefit scheme has sufficient funds to secure the pension rights that members have built up should the scheme have to be wound up at any stage. To comply with the funding standard, a defined benefit scheme must be able to meet certain liabilities, as set down in the Pensions Act.

12.18 Gratuity

A tax free lump sum payment, payable at pension age or on death, which may be subject to abatement. See also "short service gratuity" and "marriage gratuity".

12.19 Indexation

A system whereby pensions in payment and/or preserved benefits are increased automatically at regular intervals by reference to a specified index of prices or earnings.

12.20 Integration

The system of designing scheme benefits to take into account all or part of the benefits payable by the State under the social welfare arrangements. Known in public sector schemes as "co-ordination".

12.21 Liabilities

The obligations of a scheme to pay amounts of money either immediately or in the future. Liabilities whose payment is dependent on unpredictable future events (such as the death of a member) are called “contingent liabilities”.

12.22 Minimum retirement age

The earliest age at which the pension scheme allows a member to retire with an immediate pension other than on the grounds of incapacity or ill-health.

- 12.23 **Money purchase scheme**
Another name for a defined contribution scheme.
- 12.24 **Net pensionable salary**
Pensionable salary [also referred to as pensionable remuneration], less twice the annual rate of the maximum contributory old age pension payable under the social welfare system to a person with no dependants, calculated on the last day of service. See also "co-ordination"
- 12.25 **Notional service**
Members of civil or public sector pension schemes who are likely to have less than 40 years' service by their minimum retirement age, can top up their benefits through notional service purchase (NSP). This means buying back missing years of service by lump sum or a regular payment which would be a percentage of their salary.
- 12.26 **Occupational pension scheme**
A pension scheme set up by an employer to provide retirement and/or other benefits for employees. It is sometimes called a "company pension scheme"
- 12.27 **Offset**
An amount of salary which is disregarded under the rules of a scheme, to take account of a social welfare pension. Can also be applied to a deduction from the member's pension to take account of a social welfare pension. See also "integration".
- 12.28 **Pay parity**
A term used to describe the system of increasing pensions in payment and deferred pensions in line with the pay for the post held by the scheme member before retirement or leaving service, as appropriate.
- 12.29 **Pay-as-you-go**
Often abbreviated to PAYG, this is the method of financing pension promises out of the current income of the employer, there being no advance funding of the pension liabilities. It is used for social welfare schemes and for many (though not all) public sector occupational schemes.
- 12.30 **Pension plan**
Another term for pension scheme.
- 12.31 **Pension scheme**
An arrangement, other than accident insurance, to provide pension and/or other benefits for members on leaving service or retirement and for the member's dependants in the event of death.
- 12.32 **Pensionable salary / pensionable remuneration**
The earnings on which benefits and/or contributions are calculated. In the public sector, pensionable remuneration at retirement is normally the salary payable on the last day of reckonable service plus the average of the best three consecutive years' pensionable emoluments and allowances in the final ten years of service. In the private sector pensionable salary at retirement is normally the three year average of basic salary in the lead up to retirement. Note the above two definitions of pensionable remuneration / pensionable salary are before allowance for integration with the State Pension (Contributory).
- 12.33 **Pensions Authority**
The statutory body set up under the Pensions Act to monitor and supervise the operation of the Pensions Act and pension developments generally.
- 12.34 **PRSI**
A shortened name for Pay Related Social Insurance, whereby workers earning an income pay contributions to the Social Insurance Fund. In return, they are covered for certain benefits, such as a State pension.
- 12.35 **Public sector pension scheme**
An occupational pension scheme for employees of central or local government, statutory and other semi-state bodies. Many of these schemes are not funded and pension benefits are paid as they fall due by the State from current spending.

12.36 **Revenue**

The organisation charged by Government with the collection of tax revenues and which, through Financial Services (Pensions), monitors the operation of pension schemes which are granted tax approval.

12.37 **Scheme**

Scheme means an occupational benefit scheme.

12.38 **Spouses' & children's pension scheme**

A scheme usually separate from the main superannuation scheme in a public sector body, designed to supplement the superannuation scheme and to provide only pensions payable to spouses and children of deceased members. The pensions are payable on death before, or after, retirement. Such schemes are almost always contributory. When these schemes were first introduced, entry was voluntary but became compulsory for subsequent entrants to service.

12.39 **State pension age**

The age from which pensions are normally payable by the social welfare scheme, currently, 66 (old age pension) for both men and women. This is increasing to age 67 from 2021 and age 68 from 2028.

12.40 **The Pensions Authority**

The Pensions Authority is a statutory body set up under the Pensions Act, 1990. The Authority regulates:

- occupational pension schemes
- trust RACs
- Personal Retirement Savings Accounts in Ireland.

This is done as part of the statutory role to monitor and supervise the operation of the Pensions Act. The Authority also protects the interests of pension scheme members and encourages pension provision. The Authority provides advice to the Minister for Social Protection on pension matters generally.

13. Appendix 3 – Main Benefit Provisions

13.1 Public service pension benefits

The term “public service pensions” refers to a range of different pension arrangements covering the following various groups of public service employees:

- Civil Service
- Education
- Health
- Security, i.e. Gardaí, Defence Forces and Prison Officers
- Constitutional, Ministerial and Judicial office holders
- Local Government
- Non-commercial State sponsored bodies.

13.2 Coverage

There is generally 100% pension coverage of employees and part time/fixed term contract employees whose normal hours of work constitute at least 20% cent of the normal hours of work of a comparable full time employee.

13.3 Retirement benefits

In broad terms those who entered the public service before 6th April 1995 are provided with final salary DB retirement benefits payable at their minimum retirement age of:

- 1/80th of pensionable salary¹⁹ at retirement for each year of reckonable service, to a maximum pension of 40/80ths of pensionable salary. 50% of this pension is payable to a surviving spouse or civil partner where the pensioner predeceases his or her spouse/civil partner, and
- A gratuity of 3/80ths of pensionable salary at retirement for each year of reckonable service, to a maximum gratuity of 120/80ths of pensionable salary. In effect the gratuity is 3 times the annual pension.

13.4 Integration with State Pension entitlement

The pension entitlement (but not the gratuity) of those who joined the public service *after* 6th April 1995 is integrated with their State Pension entitlement so that their total pension is made up partly by a public service pension and the balance by their State Pension.

The integration is accomplished by providing a lower rate of pension accrual, 1/200th instead of 1/80th for each year of reckonable service, for that part of pensionable salary which falls below 3.333333 x the maximum annual rate of State Pension (Contributory) payable to a single person without dependents.

This switch to integrated pensions in 1995 coincided with:

- Such employees being required to pay PRSI at the higher Class A rate, instead of the lower ‘modified’ Class B, C or D rates of PRSI paid by those recruited before 6th April 1995.
- The introduction of an explicit Superannuation contribution for those sectors that had not previously paid such a contribution, e.g. civil service, and the increase in the contribution for those who had previously paid a reduced contribution, e.g. Gardaí.
- A compensating increase in the pay scales for those sectors required to make a Superannuation contribution for the first time (Civil Service) or to pay an increased rate of contribution (Gardaí). The increase in pay scales was 20/19 for the Civil Service and 20/19 x 98.25% for Gardaí.

13.5 Example – Civil Servant

Take an example of a civil service employee on a grade salary of, say, €50,000 p.a. (pre 6th April 1995 entrant level). The table below compares their salary and superannuation contribution and benefit entitlements, assuming 40 years’ reckonable service at minimum retirement age and the current rate of State Pension (Contributory):

¹⁹ Pensionable salary is normally the salary payable on the last day of reckonable service plus the average of the best three consecutive years’ pensionable emoluments and allowances in the final ten years of service.

| | Recruited <i>before</i> 6 th April 1995 | Recruited <i>after</i> 6 th April 1995 |
|------------------------------------|--|---|
| Salary scale point | €50,000 | €50,000 x 20/19 = €52,631 |
| Superannuation contribution | Implicit contributions as lower salary $1.5\% \times (\text{€}50,000 - 2 \times \text{€}12,174) =$ $= 0.8\%$ of salary | $3.5\% \times (\text{€}52,631 - 2 \times \text{€}12,174) +$ $3.0\% \times \text{€}52,631$ $= 4.8\%$ of salary |
| PRSI employee rate | 0.9% | 4.0% |
| Gratuity | $120/80 \times \text{€}50,000 = \text{€}75,000$ (150%) | $120/80 \times \text{€}52,631 = \text{€}78,947$ (150%) |
| Public Service Pension | $40/80 \times \text{€}50,000 = \text{€}25,000$ p.a. | $40/200 \times (3.333333 \times \text{€}12,174) +$ $40/80 \times (\text{€}52,631 - 3.333333 \times$ $\text{€}12,174) =$ $\text{€}14,143$ |
| State Pension | Nil | €12,174 |
| Total pension | €25,000 (50%) | €26,316 (50%) |

The post 6th April 1995 civil servant's retirement benefits are circa 5% higher in monetary terms than those of the corresponding pre 6th April 1995 employee, as a result of the 5% increase in salary scale provided to post 6th April 1995 new entrants.

The integration of public service pension entitlements for employees recruited after 6th April 1995 means that the State's pension liability for these employees is split between:

- The payment of public service pension funded by the Exchequer, and
- The State Pension paid from the Social Insurance Fund (SIF) and funded by employer and employee PRSI contributions and, if PRSI contribution income is insufficient to meet SIF outgoings, an Exchequer subvention to the SIF.

13.6 Added years/fast accrual

Some professional and technical grades have traditionally been entitled to "added" or "notional years" service of up to 10 years, for reckonable service purposes. This was reduced to a maximum of 5 years added service for new entrants post 1st April 2005 and to 0 years for new entrants from 1st January 2013.

Some sectors and grades are entitled to 'fast accrual', i.e. they can achieve the maximum pension and gratuity entitlement with less than 40 years actual service¹.

There is a separate Purchase of Notional Service (PNS) scheme whereby public service employees can, in return for an additional contribution (which is eligible for income tax relief within statutory limits), buy missing years of service required to bring them to their maximum reckonable service by their minimum retirement age. Public service employees can also contribute AVCs in addition to or in conjunction with PNS.

13.7 Minimum retirement age

Public service superannuation benefits are payable without actuarial reduction when an employee reaches their *minimum* retirement age, which varies between certain sectors and by date of entry into service.

- Employees recruited before 1st April 2004 generally have a minimum retirement age of 60 and a maximum of 65;
- Employees recruited after 1st April 2004 and before 31st December 2012 generally have a minimum retirement age of 65 but no maximum.
- Employees recruited after 1st January 2013 have a retirement age in line with the State Pension retirement age [i.e. age 66, increasing with the State Pension (Contributory) age to 67 in 2021 and to age 68 in 2028. Security: Current earlier minimum retirement ages for the security sector continue to apply.]
- Staff may retire at an earlier age but with an actuarial reduction applied to their pension and

gratuity to allow for earlier payment.

However security and education sectors have earlier minimum retirement ages in certain cases:

| Sector | Minimum Years' Service Required to earn Maximum Retirement Benefits | | Minimum Age for Payment of Pension | | |
|-------------------------|---|-----------|------------------------------------|------------------------|-----------------------------|
| | Pre-2004 | Post-2004 | Pre-2004 | Post-2004 ¹ | Single Scheme |
| Garda Síochána | 30 | 30 | 50 | 55 | 55 |
| Permanent Defence Force | 31 | 31 | – ² | 50 | 50 |
| Fire Fighters | 30 | 30 | 55 | 55 | 55 |
| Prison Officers | 30 | 30 | 50 | 55 | 55 |
| Teachers | 40 | 40 | 55 | 65 | 66,67,68 [as applicable] |

1. Pension terms amended by the Public Service Superannuation (Miscellaneous Provisions) Act 2004.

2. Previous to 1 April 2004, retirement ages were linked to service and rank.

- For example, a member of the Gardaí recruited before 1st April 2004 can retire on full pension and gratuity from age 50 onwards (with no actuarial reduction), if they have 30 years reckonable service completed at that time;
- However a teacher recruited after 1st April 2004 can only retire on full pension and gratuity from age 65 onwards (with no actuarial reduction), if they have completed 40 years reckonable service.

13.8 The Single Public Service Pension Scheme (the “Single Scheme”)

The Public Service Pensions (Single Scheme and Other Provisions) Act 2012 provided for a new single public service pension scheme for all new public service employees recruited on or after 1 January 2013. The Act does not impact on existing public service pension arrangements for current employees and pensioners except potentially in relation to the operation of pension increases.

The main changes in the new single scheme compared to current post April 2004 entrants are:

- Retirement benefits based on career average pensionable salary, adjusted by CPI increases, rather than final salary.
- A later minimum pension age, linked to the State Pension age (currently 66, increasing to 68 by 2028).
- Less favourable fast accrual for security sectors, i.e. longer term to accrue maximum retirement benefits as compared to 30 years currently; however these grades retain their right to retire without actuarial reduction to their benefits from 55 (50 for PDF).
- Higher superannuation contributions for security and other specialist sectors who benefit from fast accrual, and
- Consumer Price Index linking for pensions in payment, rather than current pay parity increases.

| | Pre 6 th April 1995 entrant | 6 th April 1995 – 31 st March 2004 entrant | Current post 1 st April 2004 entrant | Single Public Service Pension Scheme entrant |
|---|---|--|--|---|
| Minimum retirement age (when benefits can be taken without actuarial reduction) | <i>Standard</i> : 60 <i>Security</i> : 50 <i>Teachers</i> : 55 | <i>Standard</i> : 60 <i>Security</i> : 50 <i>Teachers</i> : 55 | <i>Standard</i> : 65 <i>Security</i> : 55 (50 for Permanent Defence Force) | <i>Standard</i> : 66, increasing with the State Pension (Contributory) age to 67 in 2021 and to age 68 in 2028. <i>Security</i> : Current earlier minimum retirement ages for the security sector continue to apply. |
| Employee contribution | <i>Civil Servants</i> : Implicit :1.5% net pensionable salary <i>Gardaí</i> : 1.75% of pensionable salary <i>Teachers</i> : 5% of pensionable salary. + Spouses/Civil Partners and Children's Scheme : 1.5% of salary + PRD + PRSI Class B/D: 0.9% + 3.1% on excess over €75,000. | 3.5% of net pensionable salary ²⁰ + 3.0% of gross salary. + Spouses/Civil Partners and Children's Scheme : 1.5% of salary + PRD + PRSI Class A : 4.0% | 3.5% of net pensionable salary + 3.0% of gross salary. + Spouses/Civil Partners and Children's Scheme : 1.5% of salary + PRD + PRSI Class A : 4.0% | <i>Standard</i> : 3.5% of net pensionable salary + 3.0% of gross salary. <i>Security</i> : 4.2% of net pensionable salary + 3.3% of gross salary. President, Ministers, members of the Oireachtas, the judiciary: 13% of pensionable salary. + PRD + PRSI Class A : 4.0% |
| Employee retirement benefits | Final salary pension <i>Standard</i> : 1/80 th x pensionable salary for each year of reckonable service Max 40 years reckonable service | Final integrated salary pension <i>Standard</i> : Pensionable salary up to 3.33 x State Pension : 1/200 th for each year of reckonable service Pensionable salary in excess of 3.33 x State Pension: 1/80 th for each year of reckonable service Max 40 years reckonable service | Final integrated salary pension <i>Standard</i> : Pensionable salary up to 3.33 x State Pension : 1/200 th for each year of reckonable service Pensionable salary in excess of 3.33 x State Pension: 1/80 th for each year of reckonable service Max 40 years reckonable service | Career average integrated salary pension: adjusted by CPI, upward only. <i>Standard</i> : Career average pensionable salary up to 3.74 x State Pension : 0.58% (1/172 th) for each year of reckonable service Career average pensionable salary in excess of 3.74 x State Pension : 1/80 th for each year of reckonable service |

²⁰ i.e. Pensionable salary less twice the maximum annual rate of State Pension (Contributory) payable to a person with no child or adult dependents

| | Pre 6 th April 1995 entrant | 6 th April 1995 – 31 st March 2004 entrant | Current post 1 st April 2004 entrant | Single Public Service Scheme entrant |
|----------------------------|---|--|---|---|
| | <p><i>Gratuity</i> : 3/80th x pensionable salary for each year of reckonable service : max 120/80^{ths}</p> <p><i>Gardaí</i>: Double reckonable service for each year of reckonable service over 20 years; e.g. 30 years actual = 40 years reckonable.</p> | <p><i>Gratuity</i> : 3/80th x pensionable salary for each year of reckonable service: max 120/80^{ths}</p> <p><i>Gardaí</i>: Double reckonable service for each year of reckonable service over 20 years; e.g. 30 years actual = 40 years reckonable.</p> | <p><i>Gratuity</i> : 3/80th x pensionable salary for each year of reckonable service : max 120/80^{ths}</p> <p><i>Gardaí</i>: Double reckonable service for each year of reckonable service over 20 years; e.g. 30 years actual = 40 years reckonable.</p> | <p><i>Gratuity</i>: 3/80th x career average Pensionable salary for each year of reckonable service.</p> <p><i>Gardaí</i> : Career average pensionable salary up to 3.74 x State Pension : 0.58% for each year of reckonable service Career average pensionable salary in excess of 3.74 x <i>State Pension</i>: 1.43% (1/70th) for each year of reckonable service</p> <p><i>Gratuity</i>: 4.29% (3/70th) career average pensionable salary for each year of reckonable service.</p> |
| Pensions in payment | Pay parity Under Single Pension Scheme Act, CPI linking 'may' be applied by Minister to existing pensions of pre-operative date retirees, instead of pay parity. | Pay parity Under Single Pension Scheme Act, CPI linking 'may' be applied by Minister to existing pensions of pre-operative date retirees, instead of pay parity. | Pay parity Under Single Pension Scheme Act, CPI linking 'may' be applied by Minister to existing pensions of pre-operative date retirees, instead of pay parity. | CPI linking; upward only for new entrants' post-operative date. |