

The value to newly employed early career teachers of participation in the Single Public Service Pension Scheme

January 2017

1. Introduction and purpose of report

This report assesses the value to newly employed early career teachers of their participation in the Single Public Service Pension Scheme.

The Single Public Service Pension Scheme (“Single Scheme”) commenced with effect from 1 January 2013 and is applicable in general to all new entrants to pensionable public service employment on or after 1 January 2013.

The Single Scheme provides retirement benefits as summarised below, with the benefits being based on earnings throughout a public servant’s career rather than the traditional public service approach of basing benefits on the salary at or close to retirement.

Single Scheme	
Retirement age	State pension age
Pension earned in a year	0.58% of pensionable remuneration up to 3.74 times the State pension Plus 1.25% of any pensionable remuneration above 3.74 times the State pension
Lump sum earned in a year	3.75% of pensionable remuneration
Adjustment for inflation	The amounts accrued each year will be increased to reflect the CPI increase between that year and retirement.
Public servant’s contribution	3.5% of net pensionable remuneration ¹ plus 3.0% of pensionable remuneration

The impact of career average versus final salary is more severe for teachers than for certain other workers since teachers’ pay reaches a plateau after many years of modest increments with the full scale applying over a 27 year period. This compares to some other public servants whose earnings plateau much earlier.

Besides the contributions defined as part of the Single Scheme, public servants also pay a pension related deduction (PRD), which in 2017 is:

Earnings between €28,750 and €60,000	10.0%
Earnings over €60,000	10.5%

In addition, in common with other workers, Single Scheme contributors are entitled to the State Pension (Contributory) and they pay the same PRSI contributions as private sector workers towards this pension. The Single Scheme design incorporates allowance for the State Pension ensuring that there is no duplication of benefit.

¹ Pensionable remuneration less twice the State contributory pension

2. Funding of public sector pensions

Public sector pensions for teachers, including those participating in the Single Scheme, are funded on a pay as you go basis. This means that contributions in any year go into the general Exchequer and benefit payments come from the Exchequer.

When analysing the value of public sector pensions to public servants, we must arrive at an approach which adjusts monetary values in different years. I have assumed, as outlined below, a funded approach to pensions as the only realistic way of measuring their worth. Indeed in the absence of the provision of pensions, members saving for pensions would contribute to a group scheme and would earn an investment return on their contributions. Although there are various ways of deriving suitable assumptions, I have based my assumptions on the investment style of the National Pensions Reserve Fund but adapted the assumptions to acknowledge that the investment style of that fund was suited to long-term liabilities rather than the mix of long-term and short-term liabilities which would arise in the operation of a funded pension scheme for employees and existing pensioners.

I have grounded my assumptions on Society of Actuaries guidance where relevant and have stated any deviations from that guidance where justified.

3. Process of assessing value

There are a number of stages in the process of assessing the value of the Single Scheme to members:

- (1) We determine the sample teacher(s) to be assessed: current earnings and projected growth in career earnings allowing for current salary scales
- (2) We make assumptions with regard to the benefit and contribution structure, such assumptions including the following:
 - (a) The Single Scheme structure remains unchanged and in particular we ignore the possibility that the State pension age will increase to age 69 or a higher age.
 - (b) Future PRD
 - (c) Future inflation
 - (d) Future State pension growth
 - (e) Future growth in salaries over and above scale increments
 - (f) Life expectancy
 - (g) The factors which should be used to adjust monetary values in a particular year to a common year of assessment².

Some of these assumptions are straightforward but others require judgement. Where we have applied judgement, we have outlined the reasons for our choice of assumptions.

² This could be for instance adjustment to the present day or as we have done adjustment to values at the date of retirement.

4. Assumptions

We have assumed the following

- Current teachers' salary scale (earnings for entrant teacher at 1 September 2016 including scale changes due on 01/01/2017 and 01/01/2018) including typical allowances, per the Appendix to this report.
- PRD bands are increased in the future such that the percentage PRD of salary payable in the future is the same as would be payable in 2017 by a similarly experienced public servant.
- Future inflation is 1.5% p.a. on average³.
- Future State pension growth is 0.75% p.a. on average above inflation.
- Future growth in salaries over and above salary increments is 0.75% p.a. on average above inflation.

In relation to both State pension growth and growth in salaries above inflation, I have assumed that long-term (multi-decade) economic growth will be at least 1% p.a. above inflation and that the long-term growth in national wealth will be at least partly shared with workers and social welfare recipients through pay and pension increases of 0.75% p.a. on average above inflation.

- The possibility of death in service is ignored for the purposes of this paper. The cost of death in service would be significantly lower than historic estimates in line with observed mortality improvements. The effect of allowing for death in service would be to increase the expected cost of benefits by a small margin.
- Life expectancy is based on the tables underlying pension scheme leaving service transfer values. In terms of future mortality improvements, we show two scenarios, the first being no future mortality improvements and the second reflects future mortality improvements in line with the leaving service transfer value assumption. Our view is that it is misleading to blindly assume mortality improvement over many future decades in Ireland particularly against the background that the proportion of over 65s in the population is expected to more than double by 2050 and the unlikelihood that the amounts in taxation required to adequately fund the health service to cater for such a rapid expansion of over 65s would be forthcoming and hence that it is implausible for life expectancy to improve indefinitely. In practice, some improvements in medical technology and health awareness may be compensated by restrictions in access to services.

Ireland population projections are unanimous with regard to ageing but we have seen no credible analysis relating to the long-term health costs of supporting an ageing population and how the desirable supports should be funded.

³ Consistent with Society of Actuaries in Ireland Statement of Reasonable Projection (SORP) assumptions (see below).

Assuming no future mortality improvements, our projections allow for 21 years' life expectancy for a female at the age of 68 (to age 89) and 19 years for a male at the age of 68 (to age 87). When we allow for future mortality improvements, the female life expectancy increases to age 92 and males to age 90. Acknowledging that life expectancy of those with pension incomes is in excess of the life expectancy of the general population, it is nevertheless instructive to compare our assumptions with the CSO findings⁴ as follows:

CSO females aged 68	18.1 years	} Irish Life Tables No. 16 (2010-2012)
CSO males aged 68	15.4 years	

We are therefore assuming life expectancy for teachers of more than 3 years greater than that observed by the CSO in relation to the general population in their 2010-2012 study when we assume no future mortality improvements; this extends to 6 years with improvements allowed for.

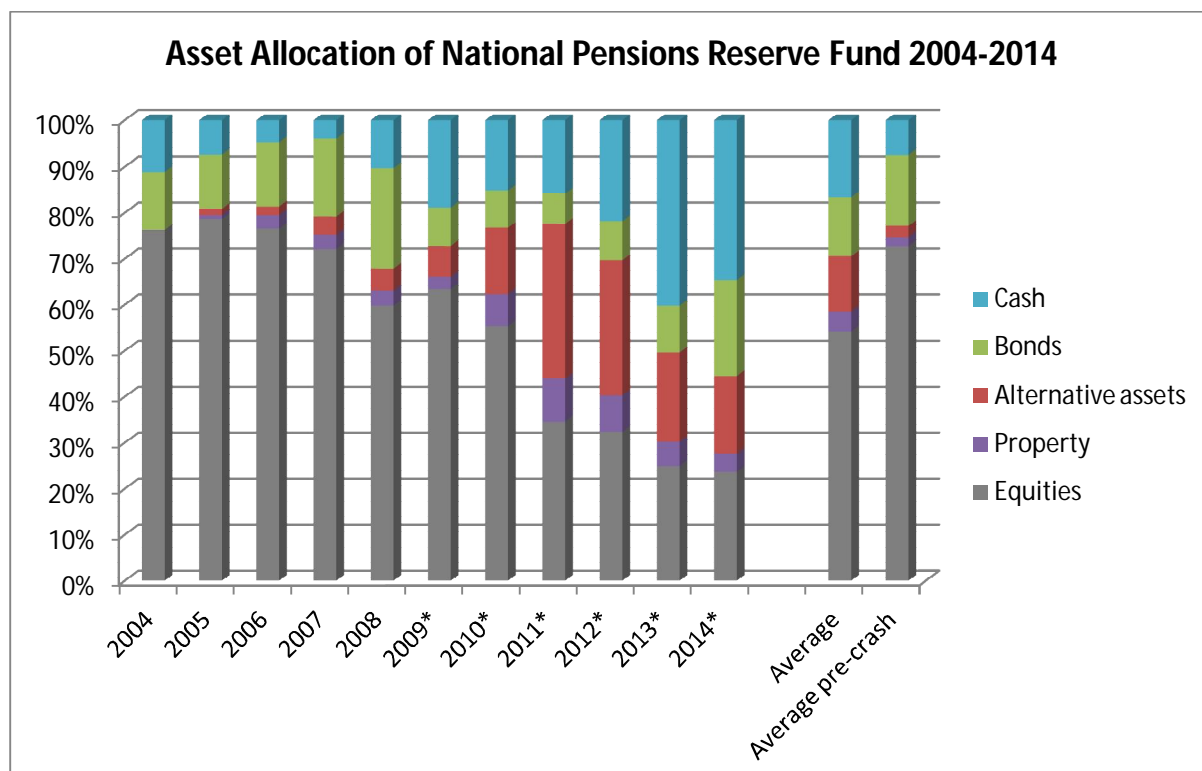
- Discount rates: as earlier noted, it is necessary to adjust money values in different years to a common base. There are many ways of making this adjustment.

From the State's perspective, it is securing the employment of public servants on the basis that part of their remuneration is deferred until retirement. This amounts to a deferral of obligations which could be accommodated in two ways:

- o By borrowing
- o By investing the amounts contributed by members (and if higher the full cost of the benefits) on a long-term basis

In the past, the State invested funds required for long-term commitments through the National Pensions Reserve Fund. This fund invested on an unrestricted basis up to 2008 but thereafter only part of its funds were invested on a long-term unrestricted mandate. The following information is derived from figures available on the NPRF website (<http://www.nprf.ie/Performance/selectYear.htm>).

⁴ <http://www.cso.ie/en/releasesandpublications/er/ilt/irishlifetablesno162010-2012/>



*discretionary portfolio only

Up to and including 2008, approximately 77% of assets on average were invested in return-seeking assets – equities, property and alternative assets. The balance was invested in cash and bonds. We assume this unrestricted asset allocation applies, when assessing appropriate assumptions below.

The costs of managing the NPRF assets was historically approx. 0.28% of assets invested.

Society of Actuaries guidance would suggest that the future return assumption underlying a portfolio akin to the NPRF would be 4.29% return p.a. from which the expected costs of 0.28% would have to be deducted resulting in a net return of 4.01%.

Actual historic returns have been higher. UK market returns⁵ over the last 116 years are as below.

⁵ These returns are shown for illustration and of course it is not suggested that a UK-centric investment approach would be appropriate.

UK real asset class returns (% per annum)

	2015	10 years	20 years	50 years	116 years
Equities (shares)	-0.1	2.3	3.7	5.6	5.0
Government bonds (Gilts)	-0.6	3.0	4.3	2.9	1.3
Corporate bonds	-0.5	1.8			
Index-linked bonds	-3.4	2.5	3.8		
Cash	-0.7	-1.1	0.9	1.4	0.8

Source: [Barclays](#) Capital Equity Gilt Study 2016 (where no data is available, there is a gap).

The table shows **real returns** – the annual rate at which the asset class grows (or shrinks) over any particular period **after inflation**.

Relative to our inflation assumption of 1.5%, if the experience of the last 116 years was mirrored in the future, the resulting asset returns would be equities 6.5%, bonds 2.8% and cash 2.3%. The NPRF portfolio would deliver a return of 5.57% p.a. before charges and 5.29% after charges.

The NPRF was investing for future pensioner commitments. It is generally accepted that the investment approach to current pensioner commitments should be more cautious. On the basis of investment per NPRF pre-retirement and investment in a portfolio of 67% bonds post-retirement, the resulting Society of Actuaries-based assumptions⁶ would be as below.

We have assumed that the costs of operating a largely bond-oriented portfolio for pensioners would be lower than the NPRF costs.

Asset category	Assumed long-term return	Pre-retirement mix	Assumed management costs	Assumed investment return contribution	Post-retirement mix	Assumed management costs	Assumed investment return contribution
Equities	5.00%	72.64%	0.33%	3.63%	28.30%	0.33%	1.42%
Property	5.00%	2.04%	0.33%	0.10%	0.80%	0.33%	0.04%
Alternative assets	3.75%	2.44%	0.33%	0.09%	1.00%	0.33%	0.04%
Bonds	2.50%	15.40%	0.11%	0.39%	67.00%	0.11%	1.68%
Cash	1.00%	7.48%	0.11%	0.07%	2.90%	0.11%	0.03%
		100.00%	0.28%	4.29%	100.00%	0.18%	3.20%
Deduction for costs				-0.28%			-0.18%
Net investment assumption pre/post retirement				4.01%			3.02%

For the purpose of our projections, we have assumed an investment return of 4% pre-retirement and 3% post-retirement after the costs of operating a long-term portfolio. These assumptions are therefore 2.5% above inflation pre-retirement and 1.5% above inflation post-retirement and reflect conditions at the time of writing which are significantly different from the historical situation.

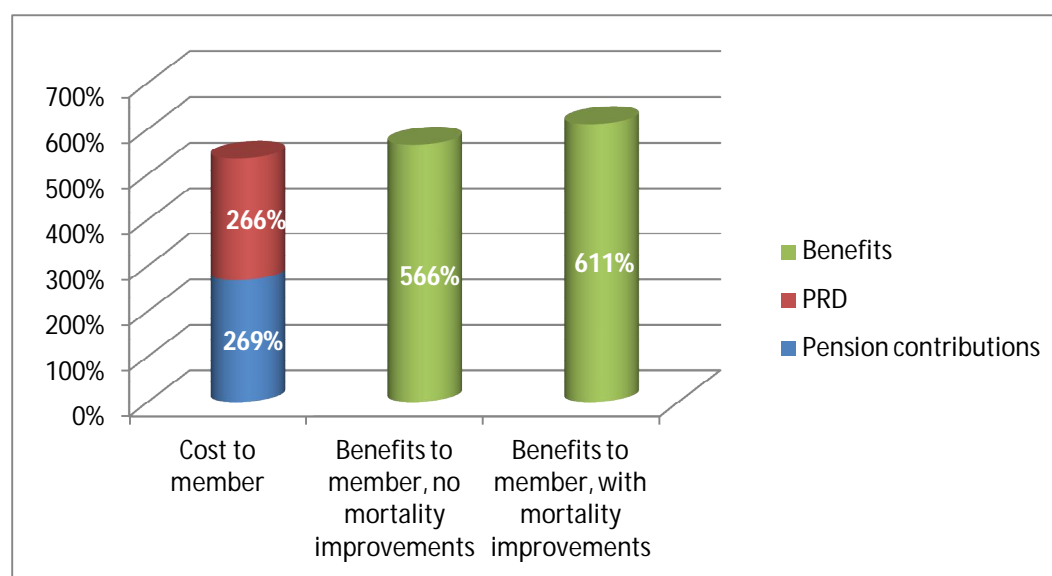
⁶ Assuming that the return for alternative assets (not specified under guidance) should be halfway between the returns for equities and bonds.

5. Results – joiner at age 23 retiring at age 68

After working for 45 years from age 23 to age 68, our figures show estimated retirement benefits as follows with the overall value of public servant contributions and benefits at the point of retirement as illustrated below:

Scheme pension as % of retiring salary	24%
State pension as % of retiring salary	18%
Total pension as % of retiring salary	42%
Lump sum gratuity as % of retiring salary	121%
Average scheme pension (%) per year worked	0.53%
Average lump sum gratuity (%) per year worked	2.69%

On our assumptions, and based on this example, a public servant will contribute 88% - 95% of the cost of the public service pension received. The figures below are adjusted to values at normal retirement date.



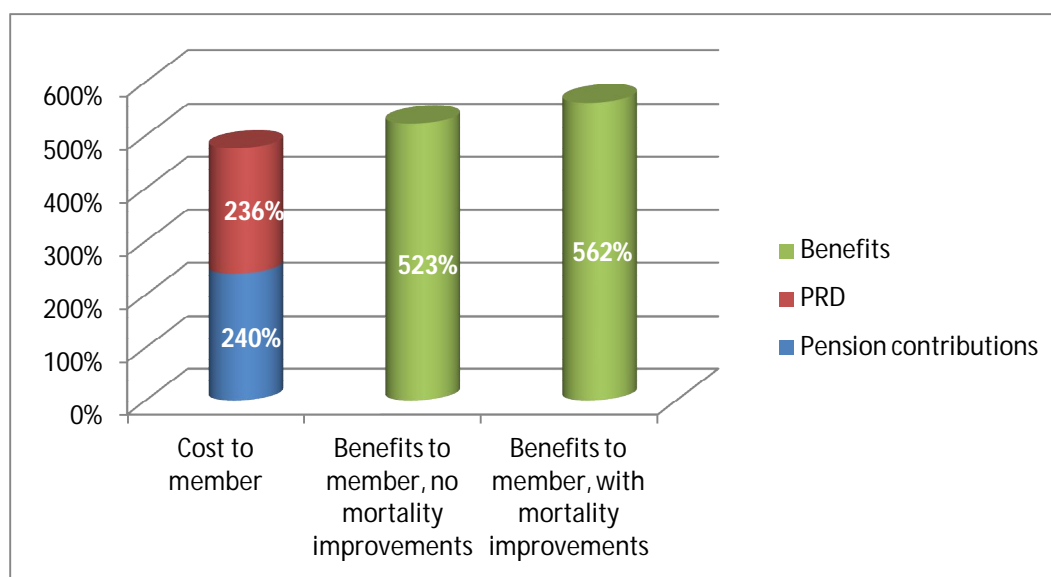
In order to fully provide for the benefits in this example based on the stated assumptions, an employer contribution of 0.6% p.a. of salary would be required in the event of no future mortality improvements; this increases to 1.4% of salary when improvements are allowed for.

6. Results – joiner at age 26 retiring at age 68

After working for 42 years from age 26 to age 68, our figures show estimated retirement benefits as follows with the overall value of public servant contributions and benefits at the point of retirement as illustrated below:

Scheme pension as % of retiring salary	22%
State pension as % of retiring salary	18%
Total pension as % of retiring salary	40%
Lump sum gratuity as % of retiring salary	113%
Average scheme pension (%) per year worked	0.52%
Average lump sum gratuity (%) per year worked	2.68%

On our assumptions, and based on this example, a public servant will contribute 85% - 91% of the cost of the public service pension received. The figures below are adjusted to values at normal retirement date.



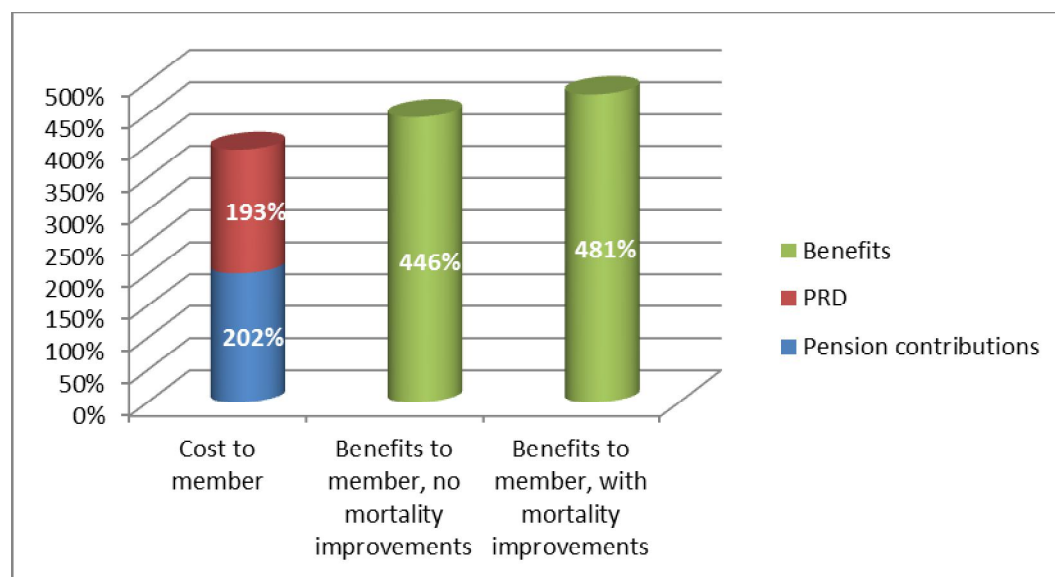
In order to fully provide for the benefits in this example based on the stated assumptions, an employer contribution of 1.0% p.a. of salary would be required in the event of no future mortality improvements; this increases to 1.8% of salary when improvements are allowed for.

7. Results – joiner at age 23 retiring at age 68 with 8 years’ total career break

After working for 38 years from age 23 to 30, 35 to 40 and 43 to age 68, our figures show estimated retirement benefits as follows with the overall value of public servant contributions and benefits at the point of retirement as illustrated below:

Scheme pension as % of retiring salary	19%
State pension as % of retiring salary	18%
Total pension as % of retiring salary	37%
Lump sum gratuity as % of retiring salary	97%
Average scheme pension (%) per year worked	0.51%
Average lump sum gratuity (%) per year worked	2.63%

On our assumptions, and based on this example, a public servant will contribute 82% - 88% of the cost of the public service pension received. The figures below are adjusted to values at normal retirement date.



In order to fully provide for the benefits in this example based on the stated assumptions, an employer contribution of 1.3% p.a. of salary would be required in the event of no future mortality improvements; this increases to 2.1% of salary when improvements are allowed for.

8. Conclusion

We have focused our results on early joiners (i.e. 23 and 26) as we understand the vast majority of teachers join at or around these ages and stay for their full career. For joiners at older ages, the member costs reduce as a percentage of overall costs, however we believe that the majority join as teachers at relatively young ages.

Based on the assumptions and methodology stated, the value to young early career teachers of their participation in the Single Scheme is very modest when the value of their own contributions are taken into account, as summarised in the table below.

Age of teacher joining the Single Scheme	23		26		23 with career break	
	N	Y	N	Y	N	Y
Mortality improvements?						
Assumed life expectancy for a male at age 68	Age 87	Age 90	Age 87	Age 90	Age 87	Age 90
Assumed life expectancy for a female at age 68	Age 89	Age 92	Age 89	Age 91	Age 89	Age 92
Years of service from date of joining until age 68	45		42		37	
Scheme pension as % of retiring salary	24%		22%		19%	
State pension as % of retiring salary	<u>18%</u>		<u>18%</u>		<u>18%</u>	
Total pension as % of retiring salary	42%		40%		37%	
Lump sum gratuity as % of retiring salary	121%		113%		97%	
Average scheme pension (%) per year worked	0.53%		0.52%		0.51%	
Average lump sum gratuity (%) per year worked	2.69%		2.68%		2.63%	
Total value of member Single Scheme contributions	269%		240%		202%	
Total value of member PRD	266%		236%		193%	
Total value of benefits at retirement age	566%	611%	523%	562%	446%	481%
Total value of employer contributions required	31%	76%	47%	85%	52%	87%
Equivalent annual employer contributions required	0.6%	1.4%	1.0%	1.8%	1.3%	2.1%
Average equivalent member Single Scheme cost	5.0%	5.0%	5.0%	5.0%	4.9%	4.9%
Average equivalent member PRD cost	<u>4.9%</u>	<u>4.9%</u>	<u>4.9%</u>	<u>4.9%</u>	<u>4.7%</u>	<u>4.7%</u>
Average equivalent annual member total cost	9.9%	9.9%	9.8%	9.8%	9.6%	9.6%
Employer cost	<u>0.6%</u>	<u>1.4%</u>	<u>1.0%</u>	<u>1.8%</u>	<u>1.3%</u>	<u>2.1%</u>
Total cost of benefits	10.5%	11.3%	10.8%	11.6%	10.9%	11.7%
Average percentage of cost paid by member	95%	88%	91%	85%	88%	82%
Annual employer cost required, disregarding PRD	5.5%	6.3%	5.9%	6.7%	6.0%	6.8%

Based on assumptions that are relevant to current circumstances and the methodology stated, member contributions (to the Single Scheme and the PRD) are not sufficient in themselves to pay for the value of the Single Scheme benefits. However, including the PRD, the member contributions represent the majority of the cost and do not fall that much short of the entire cost in some instances.

For completeness, the table above also contains a separate calculation of employer contribution if PRD is disregarded. However, while the PRD is not currently regarded by the State as a pension contribution, it resembles such a contribution in a number of aspects including that of tax relief. The deduction was introduced in the Financial Emergency Measures in the Public Interest Act (2009) which in its preamble concludes by placing the measure in a context where “the value of public service pensions is significantly and markedly more favourable than those generally available in other employment”.

Where public servants join later in their career, the overall cost of Single Scheme membership increases when expressed in annual contribution terms. As the member contribution is relatively fixed, this would result in an increased employer cost and therefore, the average percentage of cost paid by the member reduces.



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Appendix

Earnings of a September 2016 Entrant to Teaching before adjustment for future inflation and general salary increases in excess of inflation.

Point on scale	Total
1	€32,472
2	€36,843
3	€38,723
4	€39,482
5	€40,551
6	€41,843
7	€43,292
8	€44,752
9	€45,972
10	€48,150
11	€49,504
12	€51,122
13	€52,732
14	€54,354
15	€55,710
16	€57,506
17	€57,506
18	€57,506
19	€59,982
20	€59,982
21	€59,982
22	€59,982
23	€63,254
24	€63,254
25	€63,254
26	€63,254
27	€66,869

Long service allowance on completion of 10 years at the top of the salary scale has also been reflected in calculations within this report.