Willis Towers Watson

Guinness Ireland Group Pension Scheme

Report on the Actuarial valuation as at 31 December 2018

6 September 2019

Table of Contents

This page is intentionally blank

Section 1: Introduction

To the Trustee of the Guinness Ireland Group Pension Scheme

Report on the valuation of the Guinness Ireland Group Pension Scheme as at 31 December 2018

We have pleasure in presenting my formal report to the Trustee of the Guinness Ireland Group Pension Scheme ("the Scheme") on my valuation of the Scheme as at 31 December 2018. The previous valuation of the Scheme was carried out by Willis Towers Watson as at 31 December 2015.

The purposes of this valuation are:

- To advise on the future funding arrangements to be made in light of the Scheme's funding position as at the valuation date under an assumption that the Scheme continues as a going concern, and
- To assess the position of the Scheme under the Funding Standard, including the Funding Standard Reserve requirements, laid down by the Pensions Act.

This report has been prepared to fulfil the requirements of Clause 7 of the Trust Deed and Rules governing the Scheme and to satisfy your obligations under Section 56 of the Pensions Act 1990 ("the Pensions Act").

The report complies with the Actuarial Standards of Practice ASP PEN-1 and ASP PA-2 current at the date of signing, issued by the Society of Actuaries in Ireland and we confirm that the signing Actuary holds a current Scheme Actuary Practising Certificate issued by the Society of Actuaries in Ireland.

We are not aware of any subsequent events which have taken place between the effective date of this report and the date of signing that would materially affect the recommendations made.

Derek Hunter
Willis Towers Watson
Signing Actuary
Fellow of the Society of Actuaries in Ireland
Scheme Actuary Certificate: PO32

Conor O'Donovan
Willis Towers Watson
Support Actuary
Fellow of the Society of Actuaries in Ireland

6 September 2019

This page is intentionally blank

Section 2: Limitations of the Investigation

This report has been prepared by Willis Towers Watson for the Trustee of the Scheme. It has been prepared to satisfy the requirements of the Trust Deed and Rules and to satisfy the Trustee obligations under Section 56 of the Pensions Act 1990. It has not been prepared for any other purpose. As such, it should not be used or relied upon by any other person for any other purpose, including, without limitation, by individual members of the Scheme for individual investment or other financial decisions, and those persons should take their own professional advice on such investment or financial decisions. Neither the signing actuary, nor Willis Towers Watson accepts any responsibility for any consequences arising from any third party relying on the report. Except with the written consent of Willis Towers Watson, the recipient may not reproduce, distribute or communicate (in whole or in part) this report to any other person, except as required by statute.

This report is based on data relating to the valuation date. The report is based only on the data which was made available to the actuary prior to the date on which the report was signed. The Trustee bears the primary responsibility for the accuracy of the information provided. They will have relied on others for the maintenance of accurate data, including the employer and administrators who must provide and update the membership information. Nevertheless it is the Trustee responsibility to ensure the adequacy of these arrangements. The signing actuary has taken reasonable steps to confirm that the data provided is of adequate quality for the purposes of the investigation, including carrying out basic tests to detect obvious inconsistencies. As stated in the report, these checks give no clear reason to doubt the correctness of the information supplied. However, it is not possible within the scope of an actuarial investigation to confirm that each detailed item of information provided, including that in respect of individual members and the assets, is correct.

The assumptions on the basis of which the funding target and future contributions have been calculated are not predictions or guarantees and it is not expected that the future experience of the Scheme will precisely follow those assumptions.

This page is intentionally blank

Section 3: Conclusions and Recommendations

Recommended contribution structure

3.1 The contributions payable in the period to the next actuarial review are as follows:

- Joint regular contributions (i.e. inclusive of employee contributions) of 51.5% of Emoluments with effect from 1 January 2019. These contributions should be payable monthly.
- An annual lump sum of €22.5 million payable on or before 31 December each year. The objective of the Trustee is to eliminate the ongoing funding deficit in the Scheme on or before 31 December 2027. If the assumptions set out in this report are borne out in practice, eight annual payments of this lump sum would be sufficient to eliminate the ongoing funding deficit.
- An annual payment of €1.5m to cover the operating expenses of the Scheme, payable on or before 31 December each year.

3.2 In summary, therefore the joint contributions to be payable until the next actuarial review are as follows: -

	2019 €m's	2020 €m's	2021 €m's
Deficit contribution	22.50	22.50	22.50
Expense contribution	1.50	1.50	1.50
Total monetary contribution commitments	**24.00**	**24.00**	**24.00**

	% of Emoluments	% of Emoluments	% of Emoluments
Ongoing cost of benefit accrual	**51.5**	**51.5**	**51.5**

3.3 Emoluments are defined in Appendix A.

3.4 The Company contribution rate includes the cost of providing death in service benefits from the Scheme.

3.5 Employee contributions of 5.0% of Emoluments should be paid from 31 December 2018 for members of the Contributory Section of the Scheme. These contributions should be payable no less frequently than monthly. AVC contributions are excluded from the recommended contribution rate.

3.6 The results of the ongoing valuation of the Scheme are set out in summary form in Section 12 of this report.

3.7 We have been advised that the Company is currently in negotiations regarding the benefit structure of the Scheme. If this gives rise to any changes before the date of the next actuarial valuation, we will issue a revised contribution recommendation.

Funding Standard and Funding Standard Reserve

3.8 The value of the Scheme's assets exceeded the value of the accrued benefit entitlements of the members by reference to the Funding Standard as at 31 December 2018. The Scheme therefore satisfied the Funding Standard as at 31 December 2018.

3.9 The Scheme's assets were also sufficient to meet the Funding Standard Reserve requirement as at 31 December 2018.

Section 4: Background to the valuation

Background

4.1 This report represents a formal statement of the results of the valuation of the Scheme as at 31 December 2018 and serves to record the outcome of the valuation.

Previous Recommended Contributions

4.2 The last valuation was carried out as at 31 December 2015. That valuation disclosed a deficit of €331.5m between the market value of the Scheme's assets and the Scheme's past service liabilities as measured on the ongoing valuation basis.

4.3 At that time, the recommended contribution rate for the three intervaluation years was as set out in the following table:

Recommended Contribution Schedule	Effective Dates		
	31/12/15 to 31/12/16	31/12/16 to 31/12/17	31/12/17 to 31/12/18
Regular Contributions (inclusive of employee contributions)			
% of Emoluments	30.0%	50.0%	50.0%
Payable monthly			
Contribution under early retirement agreement			
Amount €	€22.9m	€0.0m	€0.0m
Payable on or before	31/12/16	31/12/17	31/12/18
Contribution under conditional contribution agreement			
Amount €	€9.33m	€9.33m	€9.33m
Payable on or before	31/12/16	31/12/17	31/12/18
Deficit contribution			
Amount €	€22.5m	€22.5m	€22.5m
Payable on or before	31/12/16	31/12/17	31/12/18

4.4 The contribution rate included the cost of providing death in service benefits from the Scheme and included the expenses associated with running the Scheme.

Opinion on contribution payments

4.5 We are satisfied that, over the inter-valuation period, the Company paid contributions equal to the recommended contributions outlined above.

This page is intentionally blank

Section 5: Benefits valued

Benefits valued – ongoing valuation

5.1 The valuation is based on the benefits provided by the Scheme as set out in the Trust Deed and Rules. Appendix A includes a summary of the benefits.

5.2 For the purposes of the ongoing valuation, we have allowed for the non-discretionary benefits due to members and contingent beneficiaries in the following events:

- Normal retirement
- Early retirement and ill-health early retirement
- Death in service, in retirement or during deferment
- Withdrawal from service

5.3 The Scheme's benefit structure at the effective date of the valuation is unchanged from the benefit structure as at the previous valuation date.

Discretionary practices

5.4 The ongoing valuation makes allowance for the continuing provision of discretionary pension increases. Under the Rules of the Scheme, the increase to pensions is at the discretion of the Company.

5.5 Historically the practice of granting such discretionary pension increases has been as follows:

- Increases have been awarded on pensions in payment at 1 January each year;
- Increases have been granted to reflect the rise in the cost of living, within limits, and in line with stated Company policy, the most recent of which was circulated to members in November 2012.

5.6 It is prudent to assume, for funding purposes, that the Company and Trustee will continue to fund for increases in pensions in line with the discretionary pension increase policy that the Company communicated to members in November 2012.

5.7 We are not aware of any other discretionary practices that warrant inclusion in the benefits valued for the purposes of this valuation

This page is intentionally blank

Section 6: Membership information

Data validation

6.1 Information about the membership of the Scheme on the valuation date was provided to us by the Scheme's administrator on behalf of the Trustee.

6.2 We have performed reasonableness checks on this data and, insofar as it is possible to determine, are satisfied that the data is appropriate for the purposes of this valuation. However please note that the reasonableness checks are limited in scope. They do not amount to an audit of the data and we have relied on the accuracy of the information provided.

Membership data

6.3 A summary of the membership data at the valuation date is set out in the table below.

As at 31 December 2018		
	Membership	**Average Ages**
Actives	345	47
Deferred Pensioners	1,050	47
Pensioners	3,331	75
Full-time equivalent salaries (€m)		28.3
Deferred Pensions revalued to valuation date (€m)		10.3
Pensioner Payroll (€m)		78.3

Life-only members

6.4 There are no life assurance only members in the Scheme.

Membership movements

6.5 The movement of members over the inter-valuation period is set out in the table below.

Movements in membership	Actives	Deferred Pensioners	Pensioners
Members at 31 December 2015	**444**	**1,096**	**3,523**
New Entrants/Adjustments		2	
Retirements	-17	-113	130
Withdrawals with deferred pensions	-78	78	
Transfers out	-2	-7	
Deaths	-2	-6	-437
Spouses come into payment			123
Child pensions ceased			-8
Members at 31 December 2018	**345**	**1,050**	**3,331**

Pensions in deferment

6.6 When a member leaves employment, they are advised of their benefits. Up until June 2002, the portion of their benefit that has special protection under the Pensions Act 1990 was identified as part of this process. For those leaving after 1 June 2002 with two or more years Scheme service, their entire deferred benefit enjoys this protection. This protected benefit is referred to as the Statutory Preserved Pension. Prior to deferred pensions coming into payment this Statutory Preserved element attracts, as a minimum, statutory revaluation increases. The rates of increases applied during the inter valuation period were as follows:

Date	Statutory Revaluation	General Scheme Increase
1 January 2017	0.00%	0.00%
1 January 2018	0.40%	0.00%
1 January 2019	0.50%	0.00%

6.7 At retirement, a calculation is carried out to give the deferred members the greater of the deferred pension increased in line with the general Scheme increases since date of leaving subject to an underpin of the deferred pension increased in line with statutory revaluation increases since date of leaving.

Pensions in payment

6.8 The rates of discretionary pension increases granted to pensions in payment during the period were as follows:

Date	Pension Increase
1 January 2017	0.00%
1 January 2018	0.00%
1 January 2019	0.00%

Section 7: Financial information

Accounts

7.1 The Trustee has provided us with audited trustee accounts covering the three inter-valuation years. Appendix D presents a consolidated revenue account that was drawn up from this data.

Investment information

7.2 The audited trustee accounts as at 31 December 2018 set out details of the Scheme's investments under management as at the valuation date.

7.3 The asset distribution at the valuation date is set out below.

Assets as at 31 December 2018	Market Value €m	Allocation
Equities	211.10	12.9%
Diversified growth funds	43.60	2.7%
Hedge Funds	77.80	4.8%
Infrastructure	33.80	2.1%
Property	84.20	5.2%
Corporate bonds	374.80	22.8%
Sovereign bonds	268.80	16.5%
Liability hedging programme	106.80	6.5%
European loans	124.80	7.6%
Multi asset credit	96.10	5.9%
Insight - cash plus	123.80	7.6%
Illiquid credit	78.60	4.8%
Cash and cash equivalent	12.50	0.8%
Net current assets/(liabilities)	- 2.70	-0.2%
Total	**1,634.0**	**100%**

Treatment of Additional Voluntary Contributions and transfers in

7.4 Additional Voluntary Contributions and transfers in are accepted from members on a strictly defined contribution basis and invested with Irish Life. Accordingly, the assets and the corresponding, identically matching, liabilities in respect of Additional Voluntary Contributions and transfers in have been excluded from consideration for the purposes of the ongoing valuation.

7.5 As required under legislation, Additional Voluntary Contributions and transfers in have been included as an asset and liability for the purposes of the Funding Standard valuation.

Treatment of Contingent Asset

7.6 The Contingent Asset was put in place in 2010 as part of the Funding Proposal. The full detail of the Contingent Asset, its term, the permitted asset classes and valuation of these assets is set out in a separate legal agreement which has been signed by the Trustee and Company coincident with the signing of the Funding Proposal.

7.7 The Contingent Asset agreement will end on 31 December 2027 unless the Scheme Actuary formally advises that the ongoing funding and the Funding Standard deficits have been eliminated prior to this date.

7.8 The enforcement events in relation to the Contingent Asset are also set out in that agreement and in the Funding Proposal. On occurrence of any of the enforcement events, the Trustee will be able to recover the "Secured Amount" from the collateral providing the security.

7.9 The Secured Amount will be equal to the lower of:

- the higher of the Funding Standard deficit and the ongoing deficit as measured at the most recent triennial valuation date; and
- €200m.

7.10 The Contingent Asset has been allowed for in the assets when assessing the Scheme's position relative to the Funding Standard but has been excluded from consideration for the purposes of the ongoing valuation.

7.11 The value of the Contingent Asset and the secured assets making up the Contingent Asset is determined at regular intervals by the Company who make use of external experts to place a value on these assets. The methods of determination of these values are also specified in the separate legal agreement.

7.12 As at the date of the valuation the Contingent Asset[1], as advised by the Company, consisted of the following assets:

Asset Type	Value (€ million)
Receivables	250
Property	23
Total	**273**

7.13 As at the current valuation date, the Contingent Asset value has been capped at €196.5m as this is the higher of the of the Funding Standard deficit and the ongoing deficit as measured at the current triennial valuation date.

Insurance

7.14 There are no insurance arrangements in place as the Scheme's benefits are self-insured.

[1] The values are quoted after allowance for the net discount of 15% and the reduction in the property value by €10m to allow for clearance and environmental costs

7.15 The following risk benefits are self-insured by the Scheme:

- Lump sum on death in service
- Dependent's (spouse and children) death in service benefits for active members

7.16 Given the size of the Scheme, the overall percentage funding level should not be materially affected by the death of a single member. The assumptions make allowance for an anticipated level of deaths and as a result the Scheme should be well positioned to deal with the death rates within normal ranges (i.e. excluding a catastrophic event).

Asset valuation

7.17 The following table summarises the assets of the Scheme that have been taken into account for the purposes of each of the valuation tests performed:

	Ongoing Valuation 31 December 2018 €m	Funding Standard valuation 31 December 2018 €m
Assets related to defined benefit liabilities:		
Investments under management	1,634.0	1,634.0
Contributions due	0	0
Adjustment due to illiquid asset holdings	n/a	(13.7)
Contingent Asset	n/a	196.5
Total assets related to defined benefit liabilities	**1,634.0**	**1,816.8**
Money purchase assets (AVCs and transfers in)	n/a	19.3
Assets for valuation purposes	**1,634.0**	**1,836.1**

7.18 In relation to the above please note that:

- All investments are shown at quoted bid valuations.
- The money purchase assets arise from transfers in and AVCs. These money purchase assets are similarly taken into account as both liability and matching asset for Funding Standard purposes but are disregarded for purposes of the ongoing valuation.
- We have examined the makeup of the assets and are comfortable that there are no amounts constituting investment in the business of the employer or concentration (i.e. over 10% of the assets on one asset or stock) of investments.

This page is intentionally blank

Section 8: Scheme experience

Investment experience

8.1 The average rate of investment return achieved by the Scheme's assets over the 3 year period was higher than that assumed in the previous valuation.

Pension increases

8.2 Pensions in payment did not increase over the inter-valuation period.

Deferred pension increases

8.3 Deferred pensions were revalued in line with statutory revaluation over the inter-valuation period.

8.4 The average rate of such increases was 0.3% per annum. This is lower than the assumption, adopted for the purposes of the previous valuation.

Salary growth

8.5 Our analysis of the salary experience of those members of the Scheme who were present at the current and previous valuation dates indicates that, on average, salary increases were lower than expected during the inter-valuation period.

Statistical experience

8.6 We have reviewed the Scheme's experience against the various statistical assumptions made in the previous valuation and our key findings are outlined below:

- The mortality experience of recipients of pensions under the Scheme was lighter than expected (i.e. less deaths than expected). This had a negative effect on the Scheme's finances.
- In other areas, the Scheme's observed experience was not sufficiently significant to give any reliable indication about the suitability or otherwise of the assumptions made at the last valuation.

This page is intentionally blank

Section 9: Funding objectives and method

Funding objectives

9.1 The benefits set out under the rules of the Scheme are funded in advance of becoming due for payment. This means that regular contributions are made which are expected to be sufficient, if the underlying actuarial assumptions are borne out in practice, to pay the benefits ultimately payable in respect of the accruing service of members of the Scheme.

9.2 As at the valuation date, the primary funding objective of the Trustee was to enable the Scheme to meet benefit payments, from its own resources, as they fall due to be paid. This objective reflects a long-term view of the Scheme's finances and implies that contribution rates should be determined using an ongoing valuation approach. It also implies relative stability of contribution rates, if the funding assumptions underlying the valuation are borne out in practice.

9.3 There is a secondary funding objective which is, subject to the above, to meet the Funding Standard and Funding Standard Reserve requirements. This objective could lead to increased contributions becoming payable if the Scheme failed to meet its statutory funding obligations.

9.4 These funding objectives are unchanged from those applying at the last valuation date.

Contribution rules

9.5 The contributions payable to the Scheme are "such contributions as the Actuary advises to be necessary in order to maintain the solvency of the Fund" and such further sums as the Company may decide.

Purpose of the valuation

9.6 The main purpose of the valuation is to determine the rates of contribution which should be paid to enable the Scheme to meet its liabilities, taking into account the current value of the assets. In practice this question is approached by considering:

- The extent to which the assets accumulated to date will be sufficient, according to the assumptions made, to meet the benefits promised, with allowance for future increases in pensionable emoluments and deferred pension revaluation, in respect of **past** periods of service.
- The future contribution rates needed to provide for the continuing accrual of benefits for members in service.

To investigate these matters, projections are made of benefits earned in respect of service before and after the valuation date. The future contribution rates are then subject to a past service adjustment to allow for any imbalance at the valuation date between the value of the assets held in the Scheme and the value of the past service liabilities.

Funding method

9.7 The approach to deriving the future service contribution rate is known as the Projected Unit Method of funding.

9.8 Under the Projected Unit method, the value of the pension benefits which will accrue in respect of the year of service following the valuation date is established and the value expressed as a

percentage of the relevant salaries. If the age profile of the membership remains relatively constant, the Projected Unit method will result in contribution rates which remain relatively stable over time.

9.9 Given the closure of the Scheme to new entrants the contribution rate may rise slowly over time. It is difficult at this point to assess the rate at which the Scheme will mature and as a result we believe it is reasonable to maintain the existing funding method. It will however be necessary to monitor the rate at which the liability profile matures over the coming years with a view to perhaps changing the funding methodology.

9.10 The Projected Unit method of funding was also used in the previous valuation.

The valuation assumptions

9.11 The Projected Unit Method requires us to make various assumptions which enable us to estimate the amount of the benefits which will become payable in the future and to value those benefits. These assumptions fall under two main headings, the “statistical assumptions” and the “financial assumptions” and are examined in more detail in the later sections.

9.12 For the purposes of our ongoing valuation, we have adopted a market value approach. This means that:

- assets are taken into account at their market valuation as at the valuation date;
- liabilities are measured using market-related assumptions that we believe reflect reasonable expectations taking account of market conditions as at the valuation date.

9.13 Use of a market value approach therefore means that the valuation of assets will be consistent with the valuation placed on liabilities.

Section 10: Funding assumptions – statistical

Statistical assumptions adopted

10.1 The statistical assumptions made relate to:

- Rates of mortality for active members before retirement
- Rates of mortality of active and deferred members after retirement
- Rates of mortality of pensioners and of other beneficiaries
- Voluntary rates of withdrawal of active members
- Voluntary early retirement and ill-health early retirement of active and deferred members
- Family statistics such as proportions of members who are married at death and the relative ages of spouses
- Rates of commutation of pension for cash at retirement

10.2 We have reviewed the statistical assumptions made at the previous valuation in the light of the Scheme's experience and wider trends and have decided to update the mortality assumption and retain all other previous statistical assumptions.

Mortality assumption

10.3 At the previous valuation, the pre and post-retirement mortality assumptions used were:

Previous Valuation Mortality	Actives	Deferred Pensioners	Pensioners
Males	117.5% of ONMAC00 tables with 1.5% p.a. improvements from 2000	117.5% of ONMAC00 tables with 1.5% p.a. improvements from 2000	117.5% of ONMAC00 tables with 1.5% p.a. improvements from 2000
Females	117.5% of ONFAC00 tables with 1.5% p.a. improvements from 2000	117.5% of ONFAC00 tables with 1.5% p.a. improvements from 2000	117.5% of ONFAC00 tables with 1.5% p.a. improvements from 2000

The mortality tables used for the current valuation are outlined in the table below:

Current Valuation Mortality	Actives	Deferred Pensioners	Pensioners
Males	114.5% of ONMAC00 tables with 1.5% p.a. improvements from 2000	114.5% of ONMAC00 tables with 1.5% p.a. improvements from 2000	114.5% of ONMAC00 tables with 1.5% p.a. improvements from 2000
Females	114.5% of ONFAC00 tables with 1.5% p.a. improvements from 2000	114.5% of ONFAC00 tables with 1.5% p.a. improvements from 2000	114.5% of ONFAC00 tables with 1.5% p.a. improvements from 2000

10.4 We examined the Scheme's mortality experience over the inter-valuation period and there were less deaths than expected. In light of this, we have revised the multiplier that we apply to the base mortality table from 117.5% to 114.5%. This increases the liabilities by circa 1%.

10.5 The mortality assumption will be kept under review at future valuations. In particular it is noted there are limitations to the experience analysis so we have not fully reflected the mortality experience in our revised assumption and we do not want to over-react to a single study. Further Scheme and population studies will assist us with increasing our confidence level in our mortality assumption.

10.6 The mortality tables include an explicit allowance for improvements in mortality rates. In the previous valuation, we included an allowance for annual improvements in longevity of 1.5% p.a. The CSO "Population and Labour Force Projections 2017 – 2051", project an annual rate of improvement of 2.5% for males (2% for females) reducing on a phased basis to 1.5% from 2041. We are proposing to retain the current assumption as it reflects the long-term trend in annual improvement

10.7 Both aspects of the mortality assumption will be kept under review at future valuations in light of trends in the mortality of the Scheme's pensioners and the trends in the general population

Life Expectancies

10.8 The following tables set out the life expectancies of members aged 60 at the valuation date and aged 60 in 15 years' time under the current post-retirement mortality tables.

10.9 When allowance is made for mortality improvements included in the basis adopted, the life expectancies for a 60 year old member are as follows:

Sex	Life expectancy
Male	26.4
Female	29.4

10.10 The following table shows the impact of anticipated mortality improvements on the life expectancy of an active member at age 60, who is currently aged 45:

Sex	Life expectancy
Male	28.8
Female	31.7

In-Service decrements

10.11 The probability of a member withdrawing at sample ages is set out in the table below:

Age	Male	Female
25	23.0%	14.0%
30	11.0%	14.0%
35	3.0%	14.0%
40	0.0%	14.0%
45	0.0%	13.0%
50	0.0%	12.0%
55	0.0%	10.0%
60	0.0%	7.0%

10.12 The probability of a member retiring due to ill health at sample ages is set out in the table below:

Age	Male	Female
25	14.0%	5.0%
30	14.0%	4.0%
35	14.0%	4.0%
40	14.0%	4.0%
45	13.0%	4.0%
50	12.0%	3.0%
55	10.0%	3.0%
60	7.0%	2.0%

10.13 The probability of an active member retiring early is set out in the table below:

Age	Early retirement rates - Contributory Section	Early retirement rates - Non–Contributory Section
<60	0%	0%
60	30%	0%
61	10%	0%
62	10%	100%
63	10%	n/a
64	10%	n/a
65	100%	n/a

Family Statistics:

10.14 We have adopted the following family statistics:

- For existing pensioners, we have used their actual marital status where known. For married pensioners, we have assumed that a spouses pension is payable in respect of each pensioner. For single pensioners we have assumed that a spouses pension will be payable in respect 40% of these pensioners. This reflects the fact that a spouses pension is still payable in certain circumstances in respect of a member who is not married (e.g. financial dependency) so marital status is not the only status used to determine the payment of a spouses pension
- For non-pensioners, we have assumed that that 90% of male pensioners and 60% of female pensioners are married
- Where known, we have used actual spouse's date of birth. Where spouse dates of birth are unknown, we have assumed that married males are 3 years older than their spouses

10.15 The marital statistics referred to above are unchanged from the last valuation.

Member options

10.16 We have not made allowance for the exercise of any options by members (e.g. commutation of pension or transfer payment to a new pension arrangement).

Section 11: Funding assumptions – financial

11.1 The financial assumptions relate to:

- the rate of general price inflation,
- the rate of return earned by the investments (i.e. the discount rate),
- salary growth,
- increases in state pensions,
- the provision to be made for discretionary increases to pensions in payment,
- the provision to be made for increases to deferred pensions prior to retirement.

11.2 These items are inter-related and should be considered as a whole rather than separately.

11.3 A summary of the financial assumptions used in the current valuation is shown below in nominal terms, along with the assumptions adopted for the previous valuation:

	31 December 2018 valuation %	31 December 2015 valuation %
Price inflation (CPI)	Derived from nominal and real swap curves	Derived from nominal and real swap curves
General increases in salaries	CPI + 1.00%	CPI + 1.00%
Increases in the state pension	CPI	CPI
Discretionary increases in pensions	CPI with allowance for a 3% p.a. cap	CPI
Investment return for past service liability	Nominal swap curve plus margin. Margin begins at 1.25% and then reduces uniformly to 0.85% by 2027.	Nominal swap curve plus margin. Margin remains at 1.58% for 4 years and then reduces uniformly to 0.85% by 2027.
Investment return for future service accrual	Pre-retirement: nominal swap curve + 1.85% Post-retirement: nominal swap curve + 0.85%	Pre-retirement: nominal swap curve + 2.26% Post-retirement: nominal swap curve + 0.85%

11.4 The rationale behind the key assumptions is set out in the following paragraphs.

Price Inflation

11.5 This is a term dependent inflation assumption derived from the difference between Eurozone nominal and real swap curves. The inflation curve is set out in the table in Appendix C.

11.6 This is an important assumption as many of the other assumptions are determined relative to inflation.

11.7 This assumption is based on Eurozone inflation as there is a limited issuance of Irish inflation linked bonds. There is a risk that Irish inflation will not be consistent with Eurozone inflation but we have not adjusted the inflation assumption to take account of this risk.

Salary increases

11.8 The long-term level of salary increases is assumed to be 1.00% above price inflation. This does not include an allowance for promotional increases as there is a separate promotional salary scale in place. This assumption will be kept under review at each valuation.

11.9 In additional to the general salary increases above there is an allowance for a promotional salary scale. Outlined below are the salary scale increases applied at sample ages assuming members stay in service to 65. The rates are expressed as the cumulative increases that are assumed if the members stay in service until age 65.

	Salary Scale	
Age	Men	Women
25	2.09	1.73
30	1.70	1.46
35	1.46	1.31
40	1.30	1.21
45	1.19	1.14
50	1.12	1.09
55	1.07	1.05
60	1.02	1.02

11.10 The Company has advised that some employees will not receive a salary increase until their existing salary falls below 125% of a market benchmark. We have been provided with a list of these employees and the estimated period of the salary freeze. We have allowed for this salary freeze in our assumptions.

11.11 A backdated 2.5% salary increase was awarded by the WRC in 2019. In light of this, we have assumed that in the calender year 2019 salaries will increase by 2.5% in excess of inflation.

Deferred pension increases

11.12 We have assumed pensions in deferment will increase by in line with price inflation. Under statutory legislation, preserved pensions increase each year in line with price inflation but subject to a cap of 4.00% p.a.

Pension increases

11.13 Pensions in payment are not guaranteed to increase in the Trust Deed and Rules but there is an established practice of granting discretionary pension increases.

11.14 The Company issued a pension increase policy document to members in November 2012. This policy document stated that the Company would consider the funding position of the Scheme and the extent to which the Funding Proposal is on-track when deciding whether to grant a discretionary pension increase.

11.15 Where a discretionary pension increase is granted, it will be at the lower of the rate of price inflation since the last increase was granted and 3%. In periods of deflation, there will be no

reduction in the level of pension, although the effects of the deflation may be taken into account in deciding on the appropriate level of increase to be given when inflation re-emerges.

11.16 For the purposes of the valuation results, we assumed that pension increases are granted in line with the current pension increase policy.

11.17 In the current valuation, we have reduced the pension increase assumption below inflation to take account of the 3% cap.

11.18 In the previous valuation we did not make an explicit allowance for the stated 3% cap on annual discretionary pension increases.

Investment return – past service

11.19 For the purposes of this valuation, we have used a swap curve to determine the investment return assumption. This methodology allows for the full shape of an implied market yield curve (Eurozone swap curve) in determining the assumptions for future investment returns (i.e. discount rate).

11.20 The discount rate includes an allowance for additional return in excess of the swap curves to reflect the risk contained in the investment strategy and the expected asset allocation in each future year. This approach means that the discount rate should more accurately reflect the term dependent nature of future investment returns.

11.21 In developing the investment return assumption, we have made allowance for a de-risking journey plan and a target asset benchmark at 2027. We have assumed a portfolio at the end of the journey plan consisting 80% of matching assets and 20% of growth assets.

11.22 We have assumed that the assets will transition from the current asset allocation to the target asset portfolio, with de-risking taking place on a pro-rata basis between the valuation date and December 2027.

11.23 The Scheme's growth assets (e.g. equities, property, diversified growth funds) are assumed to generate investment returns of 1.85% in excess of the Euro swap curve yields. The Scheme's 'matching assets' (e.g. bonds, LDI) are assumed to generate investment returns of 0.75% in excess of the Euro swap curve yields in the current year but this will reduce to 0.5% by 31 December 2027. These assumptions are the investment returns assumed to be achieved over the long-term based on the Willis Towers Watson Investment Model and make allowance for investment manager expenses.

11.24 The asset model allows us to measure the perceived "confidence level" associated with an investment return assumption and based on the model, we would assess the return on growth assets as having a 66% chance of being achieved over the next 15 years. The fact that 66% rather than 50% has been used reflects a degree of prudence which is desirable in a pension plan funding programme and this approach is consistent with the approach which was adopted for the last valuation.

11.25 Based on the investment journey and assumptions above, the total investment return assumed in the valuation is 1.25% per annum in excess of the yield curve, reducing to 0.85% by 31 December 2027

11.26 It should be noted that no economic model could be expected to capture future uncertainty perfectly or to be precise about the risk of extreme events. In particular, it should be noted that our timeframe in establishing our asset model and the assumptions used in this investigation are intentionally long-term, and are not meant to be reflective of the likely or even possible, course of the investment markets in the short term.

Investment return – future service

11.27 The current investment strategy contains 68% of "matching assets" as a consequence of the maturity of the Scheme (i.e. a large proportion of the liabilities are made up of pensioners). If the Scheme was less mature, the investment strategy would be likely to contain a larger allocation to growth assets which would result in a higher investment return assumption.

11.28 The consequence of this is that if we calculated the future service accrual rate for active members using the investment return assumption for the past service liability, the rate would look artificially high due to the maturity of the Scheme. As a result, we have calculated a future service accrual rate which we believe is a more representative cost of future service accrual.

11.29 In calculating the future service accrual rate, we have assumed that the Scheme's assets are invested 100% in growth assets prior to members' retirement dates. On the members' retirement, we have assumed that the Scheme's assets are invested in line with the ultimate target investment strategy of 20% growth assets and 80% matching assets.

11.30 We have assumed that the investment return earned pre-retirement is 1.85% in excess of swap yields and the investment return earned post-retirement is 0.85% in excess of swap yields.

11.31 If the assumptions are borne out in practice, the combination of the future service contribution rate and the deficit contributions will result in the deficit being eliminated by 31 December 2027.

Sensitivity to the Assumptions

11.32 The financial assumptions are generally considered to have a more significant effect on the valuation results than the statistical assumptions. Of these assumptions, those made in relation to investment returns and pension increases are the most significant financially.

11.33 The impact of variations from experience in these areas can be expected to be as follows:

- If future investment returns fall short of the assumption adopted for the purposes of the valuation, then future funding levels will be lower than expected and contribution rates emerging from future valuations will be higher than would otherwise have been the case.

- If discretionary pension increases in excess of the assumption are granted in the future then future funding levels will be lower than expected and contribution rates emerging from future valuations will be higher than would otherwise have been the case.

Allowance for expenses

11.34 Expenses are payable from the assets of the Scheme. In previous valuations, we funded for this through the regular contribution rate as a percentage of salaries. The active membership has declined significantly over the inter-valuation period and will continue to reduce. This results in the full expense allowance not being paid to the Scheme

11.35 Following discussion with the Trustee, we will continue to fund for expenses on a pay as you go basis but have changed the methodology so that expenses are payable as a fixed annual lump sum rather than as a percentage of salaries. This methodology is more robust given the declining number of active members

11.36 We are recommending an annual payment of €1.5m from the Company to the Trust over the next 3 years to meet the expected cost of expenses during this period

Assumptions and pace of funding

11.37 The assumptions affect the rate at which the benefits are funded. More conservative assumptions will result in higher initial contributions and a lower disclosed level of funding in the Scheme. However, the higher contributions result in improved security for members. Due to the uncertainty of future experience, it is typical in funding valuations such as this to incorporate implicit or explicit margins in the assumptions to protect against potential adverse experience. The impact of these margins is to place a higher value on the liabilities and increase the funding requirements compared to that which would apply if best estimate assumptions were used.

This page is intentionally blank

Section 12: Results of the ongoing valuation

Ongoing valuation results

12.1 The key results with comparators from the previous valuation can be summarised as follows:

Past service funding level on Ongoing Valuation basis	31/12/18 €m	31/12/15 €m
Past service assessment		
Actives	281.0	281.8
Deferred Pensioners	259.3	246.0
Pensioners	1,290.2	1,366.9
Total past service liabilities:	1,830.5	1,894.7
Total assets at market value:	1,634.0	1,563.2
Past service surplus/(deficit)	(196.5)	(331.5)
Ongoing funding level	**89.3%**	**82.5%**

12.2 The current ongoing valuation results determine that joint contributions should be in line with the following structure:

	2019 €m's	2020 €m's	2021 €m's
Deficit contribution	22.50	22.50	22.50
Expense contribution	1.50	1.50	1.50
Total monetary contribution commitments	**24.00**	**24.00**	**24.00**

	% of Emoluments	% of Emoluments	% of Emoluments
Ongoing cost of benefit accrual	**51.5**	**51.5**	**51.5**

12.3 The contribution recommendation is being made to ensure that, if the assumptions are borne out in practice, the ongoing valuation deficit will be eliminated by 31 December 2027. This is consistent with the recommendation at the previous valuation.

12.4 In calculating the deficit contribution due, we have projected the development of the liabilities of the Scheme to 31 December 2027 in line with the assumptions set out in the report. The assets of the Scheme have been projected for the same period but assuming the same investment returns as the liabilities plus an additional return of 0.35% per annum. The excess return of 0.35% has been agreed between the Trustee and the Company on the basis that the Company will pay additional "conditional contributions" if target deficits are not achieved at future valuation dates. If the additional investment return of 0.35% is not achieved, payment of the conditional contributions will be sufficient to eliminate the deficit by December 2027 assuming that all assumptions are borne out in practice and all contributions are paid in line with the contribution recommendation.

12.5 The conditional contribution agreement specifies target deficits for each three year period until 31 December 2027. If these target deficits are not achieved at the date of the triennial valuations, the Company will pay additional contributions to an Escrow account over the subsequent three year period (or one year after 31 December 2027). The target deficit amounts and the maximum additional contributions are set out in the table below:

	2018	2021	2024	2027
Target Deficit	€232m	€169m	€93m	€0
Maximum Conditional Contribution	€29m	€32m	€35m	€39m

12.6 Conditional contributions are not payable for the next 3 years as the deficit is lower than €232m at 31 December 2018.

Analysis of movement in surplus/shortfall

12.7 The main factors impacting on the Scheme's finances over the inter-valuation period are set out in the following table:

Analysis of Movement in Surplus /(Deficit)	€m
Surplus/(Deficit) at 31 December 2015	(331.5)
Interest on surplus/shortfall	(16.6)
Investment Performance	114.5
Change in Assumptions - mortality	(24.5)
Change in Assumptions - inflation	36.8
Change in Assumptions - discount rates	(168.6)
Change in Assumptions - salary increases	8.0
Change in Assumptions - pension increases	46.3
Expenses	(2.6)
Emoluments Increases	14.8
Pension Increases	22.8
Deferred Pension Increases	3.0
Deficit Contributions	82.6
Mortality	(6.1)
Withdrawals	17.1
Retirees, transfers and refunds	0.7
Miscellaneous	6.8
Surplus/(Deficit) at 31 December 2018	(196.5)

Section 13: Discontinuance / Funding Standard

Funding Standard and Funding Standard Reserve Valuations

13.1 The final stage in the valuation process is to assess the Scheme's position under the statutory Funding Standard and Funding Standard Reserve at 31 December 2018.

Assumptions

13.2 In carrying out the Funding Standard and Funding Standard Reserve calculations, the benefits for different categories of member have been valued in accordance with ASP PEN-3 as follows:

- Liabilities for active and deferred members were valued under the standard transfer value basis contained in ASP PEN-2 issued by the Society of Actuaries in Ireland. The transfer value is based on the benefits accrued before the valuation date, with allowance for subsequent statutory revaluation on all benefits.
- Pensioner liabilities were valued using our estimates of the costs of buying out pensions in payment at the valuation date using appropriate annuity products.
- Allowance has been made for winding-up expenses in accordance with actuarial guidance.
- In determining the value of the liabilities for active members, deferred pensioners and pensioners, no allowance has been made for future pension increases which are not guaranteed and therefore granted on a discretionary basis.
- Assets were taken at their bid value.

Results

13.3 The results of the Funding Standard and Funding Standard Reserve valuations are set out in tabular form below and confirm that the Scheme met both the Funding Standard and the Funding Standard Reserve. The funding level of the Scheme on a Funding Standard basis (including Funding Standard Reserve) was 109% at the formal certification date of 31 December 2018.

13.4 The basis of calculation for active and deferred members differs considerably from that used in the case of pensioners, with that for pensioners being based on the buy-out cost of the current level of pension which typically results in higher liability values. A consequence of this is that future retirements of active and deferred members will result in the creation of a strain on the Funding Standard position of the Scheme.

13.5 The value of liabilities for active and deferred members does not represent the cost required to buy out the accrued benefits on a guaranteed "deferred annuity" basis. The cost on this guaranteed basis would be significantly higher.

13.6 The value placed on liabilities that arise in the event of an actual wind up may be higher than the Funding Standard liabilities, which in most circumstances, are likely to be regarded as a minimum value of the wind up liabilities. In practice, the liability measure adopted on wind up and any resulting additional funding payment from the sponsor will be the subject of negotiations between the Trustee and the sponsor. The negotiations will reflect a number of

key considerations including the balance of powers under the Trust Deed and Rules, evolving pension legislation and case law and the sponsoring employer's ability to provide additional funding. As a result, the value placed on the liabilities on wind up will be dependent on individual circumstances and market conditions at that time and will vary on a case by case basis. It is important to note that the value placed on the liabilities on wind up could significantly exceed the Funding Standard liabilities. As a result any additional funding payment payable to the Scheme could also significantly exceed the Funding Standard deficit at that time.

13.7 While it is not possible to accurately estimate in advance the liabilities on wind up, it is possible to illustrate a broad range that may apply based on current market conditions. In most circumstances, the value placed on liabilities on wind-up will range from a minimum of the Funding Standard liabilities up to full buy-out cost which includes the provision of deferred annuities for active and deferred members and immediate annuities for pensioners.

13.8 It is not possible to accurately determine the full buy-out cost without getting quotations from insurance companies. In practice, these quotations will reflect market conditions at the point of purchase and also the appetite amongst insurance companies to write this type of business. Given the fact that the preparation and collation of quotations is a time consuming and potentially expensive process, we have calculated an illustrative estimate based on our broad understanding of how insurance companies price this business. This broad estimate, which is solely for the purpose of highlighting the significant difference between Funding Standard liabilities and full buy-out of liabilities on a guaranteed basis, suggests that the full buy out cost at the valuation date could be in the region of €2,020m resulting in a shortfall of €400m.

13.9 On that basis we have estimated that an additional contribution of between zero and €400m could have been required if the Scheme had discontinued. We have made no allowance for the payment of pension increases in this calculation. Given the very approximate nature of this calculation, no reliance should be placed on the above. If any decisions are to be taken that require an estimate of full buy out cost, it would be necessary to seek formal quotations from the insurance companies.

Funding Proposal

13.10 A Funding Proposal was submitted to and subsequently approved by the Pensions Authority in 2010. This Funding Proposal was designed to ensure that, if the assumptions were borne out in practice, the Scheme would meet the Funding Standard, without reliance on the Contingent Asset, by 31 December 2021.

13.11 We can confirm that, as at the valuation date, the Funding Proposal was on target to meet its original target of satisfying the Funding Standard by 31 December 2021 without allowance for the Contingent Asset.

13.12 The statutory funding requirement to meet the Funding Standard Reserve came into effect on 1 January 2016. When allowance is made for the Contingent Asset, the Scheme has sufficient resources to meet the Funding Standard Reserve requirement.

Certification

13.13 An Actuarial Funding Certificate confirming that the Scheme satisfied the Funding Standard as at 31 December 2018 will be submitted to the Pensions Authority.

13.14 A Funding Standard Reserve Certificate confirming that the Scheme satisfied the Funding Standard Reserve as at 31 December 2018 will be submitted to the Pensions Authority.

13.15 An Actuarial Statement confirming that the Funding Proposal is on-track to eliminate the deficit by 31 December 2021 was signed by the Actuary and included in the Trustee Annual Report

Funding Standard

13.16 The Funding Standard balance sheet as at the valuation date is set out in the table below.

Value of	31 December 2018 €m	31 December 2015 €m
AVCs	19.3	19.2
Expenses of winding up	5.0	5.0
Accrued benefits for active members	96.5	87.4
Deferred pensions	104.3	114.3
Pensioners	1,367.3	1,542.4
Total Funding Standard liabilities	1,592.4	1,768.3
Assets taken into account	1,836.1	1,757.5
Funding Standard excess/(deficit)	243.7	(10.8)
Funding Standard funding level	115%	99%

Funding Standard Reserve

Value of	31 December 2018 €	31 December 2015 €
Funding Standard Reserve Requirement	88.7	162.0
Excess/(deficit) relative to Funding Standard Reserve	155.0	(172.8)
Funding Standard Reserve Funding Level	109%	91%
i.e. assets / (Funding Standard liabilities + Funding Standard Reserve)		

This page is intentionally blank

Section 14: Investment strategy

14.1 This section of the report considers the investment strategy adopted by the Trustee and the risk implications for the Scheme of maintaining the current strategy. This analysis is by no means a comprehensive examination of investment strategy, which is beyond the scope of this report. Rather, the intention is to highlight the nature of the risks being taken by the Scheme in its current investment strategy and the corresponding variability in possible outcomes for future valuations.

Investment strategy

14.2 As at the valuation date the Scheme's investment strategy benchmark was as set out in the table below:

	Benchmark Weighting
Matching assets	**68%**
Government Bonds	12%
"Cash Plus" Government Bonds	6%
Absolute Return Credit	25%
Asset Return Swap	5%
Illiquid Credit	5%
Bank Loans	8%
Multi-Asset Credit	7%
Growth assets	**32%**
Equity	19%
Alternatives	8%
Property	5%

14.3 The Scheme's investment managers have each been given mandates. The performance objectives for each investment manager are set out in the table below.

Investment Manager	Asset Class	Performance Objective
Indexed Fundamental Equity Fund	Equity	Benchmark +/-0.05% p.a. over rolling 3 year periods
Indexed Fundamental Equity Fund Hedged	Equity	Benchmark +/-0.05% p.a. over rolling 3 year periods
Indexed Global Equity Fund	Equity	Benchmark +/-0.05% p.a. over rolling 3 year periods
Indexed Global Equity Fund Hedged	Equity	Benchmark +/-0.05% p.a. over rolling 3 year periods
Mercer Private Markets	Infrastructure	Target net returns (IRR) of 7% - 10%
IPUT	Property	Outperform the Benchmark
Morgan Stanley	Global Credit	Cash Benchmark +1.0% p.a.
M&G	European Loans	Cash +4.0% p.a.
M&G	Illiquid Credit	Cash +5.0% p.a.
Oak Hill	Multi-Asset Credit	Cash + 5.0% p.a.
BlackRock	Absolute Return	Cash Benchmark +3% - 5% p.a.
Aviva	AIMS Target Return	Cash +5.0% p.a.
Insight	Asset Swapped French Bonds	Cash + 0.63% p.a.
Insight	Cash Plus	3 Month Euribor
Insight	Sovereign Bonds	N/A
Insight	LDI Assets	To achieve the required interest rate and inflation hedging

14.4 Performance is evaluated against these objectives on at least an annual basis, with a critical review every three years.

14.5 The Scheme also has interest and inflation rate hedges in place which protect the Scheme's assets to a certain extent when interest rates reduce and inflation increases.

Form and incidence of liabilities

14.6 The liabilities of the Scheme are made up of obligations to pay benefits due in the future to pensioners, active members and to deferred pensioners. There are also various contingent obligations (such as the obligation to pay benefits to a spouse on the death of a member).

14.7 These liabilities have different characteristics:

- The amount of the initial benefits due to active members depends on future salary growth rates, career advancement, and on various demographic factors.
- The amount of the initial benefits due to deferred members depends on future rates of benefit revaluation.
- Pensions in payment increase on a discretionary basis. While there is a Company policy, the exact percentage increases are not known in advance therefore the amount of future payments is unknown, along with the term for which the payments will be due, which depend on the survival of the member and the spouse, if there is one.
- The amount of future pension payments depends on survival of the member and the spouse, if there is one.

14.8 The Scheme is currently cash flow negative (i.e. cash outflows, in the form of benefits and expenses, exceed cash inflows in the form of contributions) and while the availability of investment income offsets this negative cash flow position to some degree, the Scheme is therefore a net seller of investments.

14.9 The implications for investment policy of these features of the liabilities can be summarised as follows:

- Liabilities in respect of current and future pensioners could be described as more 'bond-like' than 'equity-like'. These liabilities could be best matched by medium and long term fixed interest bonds.
- Liabilities in respect of active members might be most securely matched by some combination of (very) long-dated fixed interest and index-linked bonds.

Risks associated with mismatched investment

14.10 Given that growth assets (e.g. equities, property, diversified growth funds) have more limited liability matching characteristics than appropriate bonds, it can be appreciated that there is a higher level of investment risk being adopted as part of the long-term funding strategy than if the Scheme were invested largely in bonds. This higher level of investment risk gives rise to the following possibilities:

- The ongoing valuation results are derived using an investment assumption that allows for the expected out-performance from growth assets compared to bonds;
- It follows that if a more conservative investment policy, with more of the Scheme's assets invested in bonds, were currently being pursued, the initial funding level revealed by the ongoing valuation would be lower, and the ongoing valuation would imply higher contribution rates;
- It also follows that if the expected growth assets out-performance is not achieved, or if growth assets under-perform bonds, future valuations may show a lower than expected funding level and recommend higher than expected contribution rates. The extent to which adverse outcomes may emerge from future valuations will depend on the severity of the experience, if the experience proves to be unfavourable compared to the assumptions;
- On the other hand, if the expected growth assets out-performance materialises and the assumptions made are borne out in practice, then in the long term, future funding levels can be expected to tend towards 100% and future contribution rates can be expected to

tend towards the future service cost of benefit accrual for active members from time to time.

Financial impact of investing in matching assets – self-sufficiency basis

14.11 Although investing in bonds and/or index linked stocks of an appropriate duration is likely to reduce funding cost volatility, it is also likely to result in higher contribution rates going forward. This is referred to as being self-sufficient as you are no longer relying on the covenant of the sponsor to underwrite the risk that is being taken in the investment strategy.

14.12 The discount rate for the self-sufficiency basis is derived from the nominal swap curve plus a 0.5% margin.

14.13 All the other assumptions for the self-sufficiency basis are identical to the assumptions used for the ongoing funding valuation.

14.14 The following table illustrates the impact on the ongoing funding position of moving to a self-sufficiency basis

Discount Rate	Funding Level %	Deficit €m	Future Service benefit accrual cost
Swap Curve plus margin. Margin reduces from 1.25% in 2018 to 0.85% in 2027	89	196.5	51.5%
Swap Curve plus margin of 0.5%	83	344.6	66.7%

14.15 While this table reveals that adoption of a self-sufficiency investment strategy would cause the Scheme's funding level to fall and the associated contribution rates to rise, it should be noted that the Scheme would be expected thereafter to benefit from significantly reduced volatility of its funding level at future valuations, compared to the degree of volatility possible under its current investment strategy. We would also expect that there would be corresponding reductions in the degree of variability of the contribution rates emerging from future valuations.

Scenario Testing

14.16 In order to examine some of the risks inherent in the investment strategy being pursued we have carried out some approximate sensitivity analysis which looks at how the statutory funding position of the Scheme would be affected by market movements in interest rates and asset values.

14.17 We have based our scenario analysis on the position of the Scheme on the Funding Standard (including the Funding Standard Reserve requirements), based on assumptions applicable at the valuation date.

14.18 We have examined the following scenarios:

- Equity markets fall by 20.0% and bond yields fall by 0.5 % pa.
- Equity markets fall by 10.0% and bond yields fall by 0.25% pa.
- Equity markets rise by 10.0% and bond yields rise by 0.5 % pa.

14.19 The following table highlights the significant volatility of the Funding Standard (including the Funding Standard Reserve requirement) position under the above scenarios. In calculating the figures, we have assumed that the change in market conditions implied by the different

scenarios was effective from 31 December 2018 and that the changes in asset values and bond yields did not result in any changes to the pre or post-retirement discount rate in the standard transfer value basis.

Scenario	FS Surplus €m [Funding Standard assets less Funding Standard liabilities]	FS Funding Level [Funding Standard assets / Funding Standard liabilities]	FSR Funding Level [Funding Standard assets / (Funding Standard liabilities + FS Reserve)]
Status quo	243.7	115%	109%
Equities fall by 20%	142.5	109%	103%
Bond yields fall by 0.50% p.a.			
Equities fall by 10%	194.2	112%	106%
Bond yields fall by 0.25% p.a.			
Equities rise by 10%	291.6	120%	114%
Bond yields rise by 0.50% p.a.			

14.20 The table above includes an allowance for the Contingent Asset within the assets.

14.21 At the valuation date, the Scheme satisfied the Funding Standard and Funding Standard Reserve requirements. From the above table it is clear that there is scope for the funding level to vary considerably in different investment market conditions. In respect of the scenarios above:

- The first scenario reflects a situation where real asset values fall while at the same time bonds (and the bond-like liabilities of the Scheme) increase in value. The severity of the outcome is related to the proportion of assets held in bonds and the Scheme's exposure could be reduced if it held a higher proportion in bonds.
- The second scenario is simply a less severe instance of the first.
- The third shows the upside that may emerge if market events are favourable.

Other investment risks

14.22 The Scheme may carry exposure to investment risks beyond those mentioned above:

- There are risks associated with investing in bonds such as:
  - The duration of the bonds may not match the duration of the liabilities which means that the assets and liabilities will not move in a consistent manner when interest rates change;
  - The bond issuer could default on payments due;
  - Any inflation linked bonds held are not likely to be based on the inflation experience of Ireland while the liabilities will move in line with the inflation experience of Ireland;
- The Scheme invests globally. To the extent that these investments are denominated in currencies other than the Euro and are un-hedged, there are currency risks that are additional to the other investment risks being taken;
- To the extent that investments are concentrated in one asset, there are risks associated with a sudden decline in the value of that particular asset.

This page is intentionally blank

Appendix A: Summary of conditions and benefit provisions

The definitions below are only a guide and the formal Trust Deed and Rules which legally govern the Scheme or overriding contractual agreements will always prevail in the event of any special or complex situations arising.

NON CONTRIBUTORY MEMBERS	
Emoluments	Basic annual pay plus such other allowances deemed by the Company to be pensionable
Pensionable Emoluments	Emoluments less a deduction equal to 1.5 times the annual amount of the State pension payable to a single person.
Pensionable Service	Period of employment after age 18 plus credit of supplementary years by reference to a defined formula. Maximum credit is 3 years. Aggregate Pensionable Service restricted to 40 years.
Retiring Age	62
Pension at Retiring Age	1/60th × Pensionable Emoluments × Pensionable Service. In addition a temporary supplement is paid until State pension age to bring this pension up to the equivalent figure based on Emoluments rather than Pensionable Emoluments.
Pension on early retirement after age 50 with Company consent	Accrued pension actuarially reduced for early payment.
Pension on Ill Health Retirement	Accrued pension without reduction incorporating credit for the additional period of Pensionable Service which would have been completed at Retiring age
Death after Retirement	Spouse pension of 50% of the member's pension before commutation plus children's allowances. In addition, if death occurs within five years of retirement, the excess of outstanding member's pension over the spouse pension is paid as a lump sum.
Death in Service	Lump sum of 2 times Emoluments for married persons and 1 times Emoluments for single persons. Plus Spouse pension of 50% of full pension expectation plus children's allowances.
Withdrawal	Deferred pension based on Pensionable Emoluments and completed Pensionable Service at date of withdrawal.
Pension Increases	Not guaranteed.
Option at Retirement	Part exchange of pension for tax free lump sum.
Member Contributions	Nil

CONTRIBUTORY MEMBERS		
	In respect of Pensionable Service up to 30 June 2000	**In respect of Pensionable Service post 30 June 2000**
Emoluments	Basic annual pay plus such other allowances deemed by the Company to be pensionable.	Basic annual pay plus such other allowances deemed by the Company to be pensionable.
Pensionable Emoluments	Emoluments less a deduction equal to 1.5 times the annual amount of the State pension payable to a single person.	Emoluments.
Pensionable Service	Period of employment after age 18 up to 30 June 2000.	Period of employment after age 18 and after 30 June 2000.
Retiring Age	Age 65.	Age 65.
Pension at Retiring Age	$1/60^{th} \times$ Pensionable Emoluments $\times$ Pensionable Service.	$1/60^{th} \times$ Emoluments $\times$ Pensionable Service.
Pension on early retirement after age 50 with Company consent	Accrued pension actuarially reduced for early payment.	Accrued pension subject to concessionary reduction factors: - 3% pa reduction for each year between ages 50 and 60 with a nil reduction from age 60.
Pension on Ill Health Retirement	Accrued pension without reduction.	Accrued pension without reduction incorporating credit for the additional period of Pensionable Service which would have been completed at Retiring Age.
Death after Retirement	Spouse pension of 50% of the member's pension before commutation plus children's allowances. In addition, if death occurs within five years of retirement, the balance of the pension payable for the unexpired portion of the five year period is paid as a lump sum.	Spouse pension of 50% of the member's pension before commutation plus children's allowances. In addition, if death occurs within five years of retirement, the balance of the pension payable for the unexpired portion of the five year period is paid as a lump sum.

Death in Service	Spouse's pension of 50% of accrued pension. Plus A refund of member contributions.	Spouse's pension of 50% of expected pension incorporating credit for the additional period of Pensionable Service which would have been completed at Retiring Age Plus Lump sum of 4 times Emoluments together with a refund of member contributions.
Withdrawal	Deferred pension based on Pensionable Emoluments and completed Pensionable Service at date of withdrawal.	Deferred pension based on Emoluments and completed Pensionable Service at date of withdrawal.
Pension Increases	Not guaranteed.	Not guaranteed.
Option at Retirement	Part exchange of pension for tax free lump sum.	Part exchange of pension for tax free lump sum.
Member Contributions	Nil	5% of Emoluments.

This page is intentionally blank

Appendix B: Wider risks

The Trustee has a Risk Register in place which identifies the various risks to which the Scheme is exposed. The following are those risks that in our opinion are significant in relation to the likely future development of the Scheme.

Risk	Comments
Regulatory or legislative change	Regulatory or legislative changes can be expected to arise in the future. The nature of those changes cannot easily be predicted in advance and accordingly there is uncertainty. Such changes could in principle lead to changes to the benefits that must be provided by the Scheme, changes in the manner in which liabilities must be measured, or to requirements or restrictions regarding the timeframes for funding or the investments that can be used. Other changes might also arise. Depending on the nature of future regulatory changes, reduced funding levels may result, leading to increased subsequent funding requirements.
Covenant failure	There is a reliance on the sponsor to continue contributing to meet the benefits that have been promised. The risks that arise in relation to this include risks that the sponsor may, at some point in time: ■ become unable to satisfy the funding obligations; ■ become insolvent or enter a winding up ■ serve notice of termination of its contribution obligations
Market collapse	Failures of any of the investment markets in which the Scheme participates could lead to significant losses on asset values, and to reduced funding levels and to requirements for significant additional funding.
Assumptions risk	Funding is monitored in valuations (such as this) that are dependent upon the assumptions made. It is certain that future experience will deviate from those assumptions and accordingly there is a risk that such deviations will be unfavourable, leading to emergence of deficit at future valuations of the Scheme and therefore a need for increased subsequent funding. In the key areas of the assumptions, the following variations of experience from the assumptions made would be unfavourable to funding: ■ investment returns that are overall lower than assumed ■ inflation that is higher than assumed ■ mortality experience in retirement that is lighter (fewer deaths) than assumed ■ salary increases that are higher than assumed ■ other demographic risks also exist

Risk	Comments
Administration risk	The Scheme is exposed to a wide range of operational risks. For example, inaccuracies in administration can lead to emergence of previously unknown liabilities, under or overpayment of benefits, ineffective management of cash, unintended retention of insurable risks, amongst other items.
Scheme members live longer than assumed	The Trustee adopts mortality assumptions that are regarded as a prudent estimate of the life expectancy of members. This assumption is kept under review at each valuation.

Appendix C: Swap Curves

Year	Nominal Euro Swap Rate	Inflation Rate	Pension Increase rate
2019	-0.233%	0.756%	0.708%
2020	-0.175%	0.949%	0.883%
2021	-0.077%	1.022%	0.949%
2022	0.054%	1.071%	0.993%
2023	0.198%	1.123%	1.039%
2024	0.337%	1.169%	1.080%
2025	0.469%	1.219%	1.123%
2026	0.593%	1.267%	1.164%
2027	0.708%	1.311%	1.202%
2028	0.811%	1.354%	1.238%
2029	0.903%	1.392%	1.269%
2030	0.986%	1.424%	1.296%
2031	1.055%	1.450%	1.318%
2032	1.117%	1.471%	1.336%
2033	1.170%	1.494%	1.355%
2034	1.207%	1.519%	1.375%
2035	1.250%	1.545%	1.396%
2036	1.279%	1.579%	1.423%
2037	1.304%	1.626%	1.458%
2038	1.327%	1.673%	1.492%
2039	1.341%	1.705%	1.517%
2040	1.353%	1.727%	1.534%
2041	1.361%	1.742%	1.546%
2042	1.367%	1.755%	1.556%
2043	1.373%	1.769%	1.568%
2044	1.374%	1.786%	1.581%
2045	1.376%	1.803%	1.594%
2046	1.378%	1.818%	1.606%
2047	1.379%	1.831%	1.616%
2048	1.377%	1.839%	1.623%
2049	1.376%	1.841%	1.625%
2050	1.378%	1.839%	1.624%
2051	1.380%	1.834%	1.620%
2052	1.383%	1.829%	1.617%
2053	1.384%	1.828%	1.616%
2054	1.384%	1.830%	1.618%
2055	1.384%	1.834%	1.622%
2056	1.383%	1.839%	1.626%
2057	1.381%	1.844%	1.630%
2058	1.380%	1.849%	1.634%
2059	1.378%	1.853%	1.637%
2060	1.375%	1.857%	1.640%
2061	1.372%	1.860%	1.644%
2062	1.369%	1.864%	1.647%
2063	1.367%	1.869%	1.651%

Year	Nominal Euro Swap Rate	Inflation Rate	Pension Increase rate
2064	1.365%	1.874%	1.655%
2065	1.363%	1.879%	1.659%
2066	1.362%	1.885%	1.663%
2067	1.360%	1.891%	1.668%
2068	1.359%	1.898%	1.673%
2069	1.359%	1.898%	1.673%
2070	1.359%	1.898%	1.673%
2071	1.359%	1.898%	1.673%
2072	1.359%	1.898%	1.673%
2073	1.359%	1.898%	1.673%
2074	1.359%	1.898%	1.673%
2075	1.359%	1.898%	1.673%
2076	1.359%	1.898%	1.673%
2077	1.359%	1.898%	1.673%
2078	1.359%	1.898%	1.673%
2079	1.359%	1.898%	1.673%

Appendix D: Consolidated Revenue Account

	€ m's	€ m's
Market Value (including AVCs) at 31 December 2015		**1,559.5**
Income:		
Regular Company Contributions	32.7	
Deficit Funding	118.3	
Members' Contributions	3.9	
Additional Voluntary Contributions	2.7	
Transfers In	0.1	
Members' insured benefits	0.2	
Investment Income	107.1	265.0
Expenditure:		
Pensions in payment and retirement lump sums	244.4	
Death benefits and gratuities	1.9	
Transfers outward and refunds of contributions	3.6	
Investment Management Expenses	16.3	
Sundry Expenses	4.1	(270.3)
Net increase in market value of assets		99.1
Market Value (including AVCs) at 31 December 2018		**1,653.3**