

Ofwat

Targeted Review of Defined Benefit Pensions and Financial Resilience

Barnett Waddingham LLP

4 October 2018

Contents

Executive Summary	3
1. Introduction.....	5
2. Approach to defined benefit pension valuations.....	8
3. Actions taken to manage pension risk	19
4. Changes to inflation measures used to determine benefits	23
5. Managing the pension deficit	25
6. Impact of pension cost on broader financial resilience.....	27
7. Pension liabilities and administration pursuant to the Water Industry Act 1991	30
8. Conclusions and next steps	33
Appendix 1 Data sources	36
Appendix 2 Template questionnaire	37
Appendix 3 Glossary and common acronyms	Error! Bookmark not defined.

Executive Summary

The information supplied and discussions conducted indicate that all the water and waste water companies within scope of this report are mindful of the long-term nature of their pension obligations and are looking to manage the risks associated with these obligations appropriately. In doing so the companies are mindful of the various stakeholders (consumers, Regulators, members and shareholders) and the impact on different generations of each group of stakeholder.

The companies approach to managing (or mitigating) pension risk varies, as does the circumstances of each scheme and hence the range of interventions available. In general the range of interventions typically seen in the private sector have been explored and a number of these either implemented or are currently under discussion. Those schemes whose increases are directly linked to the relevant statutory orders have benefitted from an automatic change to CPI at the start of the period under consideration which has resulted in an improved funding and latterly pension scheme solvency position.

The assumptions adopted by the company directors for accounting purposes and by the trustees for funding purposes whilst varied are within ranges we would consider appropriate for such purposes. Whilst the period under consideration shows mixed fortunes for the two measures of funding, the underlying trend is masked by changes in investment strategy, driven by de-risking activity, over the period.

The lowest funding level at the most recent valuation was 77% and the highest was 109%, with 11 companies underfunded in aggregate and 6 with an overall surplus. The average funding level indicated in data collated by the Pensions Regulator (albeit now slightly outdated) shows the average for the companies to be in line with or marginally better than that of the wider universe of pension schemes.

There is evidence that all schemes have considered investment, interest and inflation risks and have taken steps to hedge these as and when they consider it affordable to do so. Longevity risk remains for all despite a small number having investigated either hedging this risk via a longevity swap or transferring the liability to a third party as part of a buy-out.

Only one of the companies has used an alternative funding solution to address the deficit with all others using conventional recovery plans, albeit some of these plans incorporate escalation or triggers to increase or decrease the payments due. Typically the recovery plans extend across two pricing periods giving a sustained level of contribution and reflecting the assessed covenant of the associated water company. Where de-risking activity has been undertaken which has resulted in a release of reserves, this has typically been used to improve the security of members' pension benefits rather than reduce company contribution requirements.

The information supplied does not suggest that the pension obligations are overly onerous for the companies concerned. The perceived intention of the Water Industry Act 1991, as confirmed by discussions with Ofwat, is to ensure that creditors, including the pension scheme, are not prejudiced in the event of the appointment of a special administrator of one of the regulated entities. In most circumstances the pension scheme would move to new owners or to a new company and continue to be funded in the normal ongoing way without consideration of, or recourse to, insolvency or admission to the PPF. At the date of the latest actuarial valuations none of the schemes were in a position to afford to secure the member benefits with an insurance company (we are aware that some of the schemes may now be in a position to take this action).

It is clear from the analysis that pension risk is a key concern for each of the companies and in turn Ofwat and the regulated industry. We recommend continued monitoring of the position and review by the respective companies as part of their ongoing approach to funding and risk management.

We would be happy to meet and discuss this report.

Jane Ralph, FIA

Barnett Waddingham LLP

1. Introduction

1.1. Background

Defined Benefit schemes and deficits

Water companies have operated defined benefit (DB) pension schemes for their employees since privatisation. Within DB schemes, the benefits are defined, by means of a formula linked to service and salary with accrued benefits increasing over time in line with inflation or other measures as set out in the governing documentation (the Trust Deed). Whilst the benefits are defined, the cost to provide the benefits are not known in advance. The cost to deliver the benefits depends on how long members live and inflation, as well as the investment returns that can be earned on the assets held by the scheme.

Accordingly, there are risks in running DB schemes as the actual cost to deliver the benefits can be different to that expected. Over time, increasing life expectancy as well as falling yields have pushed up the cost of delivering the benefits and many employers across many industries have acknowledged the challenges of such DB schemes. The risk could be passed to an insurance company although the associated premium is often too high a hurdle.

Assuming the liabilities of schemes are not moved to an insurance company, the trustees of the schemes work with the water and waste water companies to adopt prudent assumptions on which to fund the benefits based on the specific circumstances of the scheme. Based on current asset levels and current funding assumptions, most DB schemes have a funding shortfall. Additional contributions (deficit repair contributions) by the individual water company or other interventions are needed to close or remove these deficits. These costs are dealt with separately from the company's ongoing costs of contributing to pension (be that defined benefit or defined contribution), which Ofwat deal with in the same way as normal operating and capital costs (Totex) in setting price controls.

The 2009 and 2013 Ofwat reviews

In 2009 Ofwat set a pension deficit recovery period for each company. For some companies, the recovery period extends into 2020-25, and for one to 2031-32. Companies are generally allowed to recover 50% of the allowances established in 2009 from customers. However companies will not be allowed to recover remaining deficits from customers after this time and it will be wholly up to management and shareholders to find ways to deal with these amounts efficiently.

In August 2013 companies sent information to help Ofwat to prepare to set their price controls for 2015-20. Overall, Ofwat found that companies had not made the full deficit repair contributions that they had originally forecast they would during 2010-15. For the sector as a whole payments were greater than the level assumed in price limits – so shareholders bore some costs during 2010-15 – possibly reflecting in part the impact on liabilities of the fall in Gilt yields (typically the reference point for the principles underlying actuarial valuations). However the total level recovered amounted to only about 70% of the expected deficit repair contributions in the period.

Ofwat is aware that some companies have made changes to the level of benefits that their pension schemes offer. These changes may have resulted in a decrease in the level of contributions they need to make towards their ongoing costs and deficit repair contributions. Ofwat wish to continue to encourage companies to act innovatively and seek cost efficiencies.

In other sectors of the economy shareholders pay deficit reduction contributions regardless of whether they are recovered from customers. One might argue this provides a greater incentive to find innovative solutions to

manage their funding position and reduce their pension deficit. The water sector however is expected to continue to deliver significant investment over the coming years and therefore, mindful of the covenant of these essential service providers, it is important that the cost of raising finance is not unnecessarily heightened potentially increasing bills.

1.2. Project scope and objectives

The aim of this report is to provide commentary to Ofwat who are looking to:

- Take a balanced view of long-term pension costs whilst ensuring consumers do not bear unnecessary costs or pay for these costs for longer than is necessary.
- Gain confidence that the companies are successfully managing, mitigating or reducing their pension deficit.
- Over time bring the sector more into line with the broader economy where management and shareholders deal with deficit reduction costs.

The scope of the review is to consider both published information on all 17 English and Welsh water and waste water companies' pension schemes together with data received from these companies in relation to scheme specific funding and pension risk mitigations taken (or considered) for the period from 2011 to end 2017. In addition the report considers comparator data obtained from the published accounts of FTSE350 companies with defined benefit pension schemes over the same period and the universe of defined benefit pension schemes as reported in the Purple Book published by The Pensions Regulator.

In order to better understand the key drivers for managing pension risk across the sector and to consider if the approach differs dependent on company structure the data above has been supplemented with subsequent discussions to contextualise the data supplied.

1.3. Specific areas of consideration

In the following sections of this report, based on the information collated and our knowledge of the wider defined benefit pension market, we:

- Provide commentary on the differences and similarities of UK accounting (IFRS) deficits with funding deficits. This includes detailed analysis of the implications of these differences for the water and waste water companies and quantification of the impact in terms of monetary amount and variability. (see section 2)
- Provide commentary on the actions generally taken to manage pension risk and how these have been adopted by the water and waste water companies under consideration. (see section 3)
- Identify which water and waste water companies have moved or have considered moving to either CPI or CPIH supported by commentary as appropriate. This experience is compared to that in the wider pension scheme population highlighting the complexities of rule interpretation and legal challenge. (see section 4)
- Provide commentary on the approach to pension deficit management in the sector versus the wider universe of similarly sized pension schemes. (see section 5)
- Provide insights into the impact of pension costs on the financial resilience of the corresponding company focused on the specific nature of the service provided by water and waste water companies and their economic regulation underpin. This includes a general commentary on the treatment of deficits when

assessing a company's financial resilience including consideration of the approach to determining deficit and risk mitigation steps taken to limit variability. (see section 6)

- Provide insights into the hypothetical treatment of pension liabilities under special administration pursuant to the Water Industry Act 1991. (see section 7)

1.4. Methodology/Approach

Pension disclosure information for the 17 water and waste water companies has been collated for each of the financial years from 2010/11 to 2016/17 from published report and accounts obtained via Companies House.

To supplement the published data, a bespoke questionnaire was issued to all 17 water and waste water companies and the responses show that there are a total of 25 pension schemes sponsored by these companies. The requested data considers the funding position at each of the last 3 actuarial valuations, investment strategy adopted and risk mitigation actions taken (or considered) since 2010. In addition it seeks to understand the approach adopted with regard to RPI versus other forms of indexation. This additional data was consolidated with the information from the report and accounts to form the main data set common across all the companies under consideration.

We have not checked the data collected and provided by the companies against other sources of information or via independent calculations, and have therefore relied on the data presented being of appropriate quality and completeness. Due to the overview nature of this report, we believe the accuracy of the base data is sufficient for the high level analysis that has been carried out. Where data is incomplete or not comparable for some companies or schemes, we have excluded it from our analysis and highlighted this with an explanatory note.

This base data was analysed to identify trends and outliers. In addition, we undertook comparisons with data collated from FTSE350 companies with defined benefit pension schemes from their company accounts in 2016/17 and with the latest edition of the Purple Book and associated appendices issued by the Pensions Regulator. We held conference calls with 5 companies identified by Ofwat to explore why they had or had not followed specific courses of action in order to identify if these approaches could have wider application across the sector. This enabled us to shape the next steps and recommendations section of this report.

This report complies with Technical Actuarial Standards issued by the Financial Reporting Council – in particular TAS 100: Principles for Technical Actuarial Work, where this is applicable.

2. Approach to defined benefit pension valuations

Key conclusions

- A range of assumptions have been adopted for accounting purposes at each year end. The assumptions adopted are within an acceptable range and there are no consistent outliers year on year.
- Typically accounting funding levels have improved over the period under consideration. There has been a decrease in reported funding level over the last financial year as a result of falls in corporate bond yields which drive the discount rate which has partially been offset by investment returns.
- There are notable differences in the approaches to scheme funding adopted by the different schemes. This is as expected given the scheme specific funding regime is trustee led and each scheme has a particular profile and nuances. From the responses to the questionnaires and subsequent discussions with a selection of companies there is evidence that the companies are fully engaged in the valuation process, cooperating and negotiating with the trustees at an appropriate level.
- The period under consideration shows mixed progress for the various pension schemes. The trend is slightly opaque as a number of the schemes have undertaken de-risking activity over the period and as a result are now using more conservative assumptions than at the start of the period. In addition individual circumstances including the range of corporate actions available to them differ between the schemes.
- For the majority of companies the accounting funding level is higher than the scheme funding level. A few, who typically remain invested in growth assets and reflecting this higher level of expected return in their valuation assumptions, have a higher scheme funding level than their corresponding accounting position.

2.1. Accounting assumptions

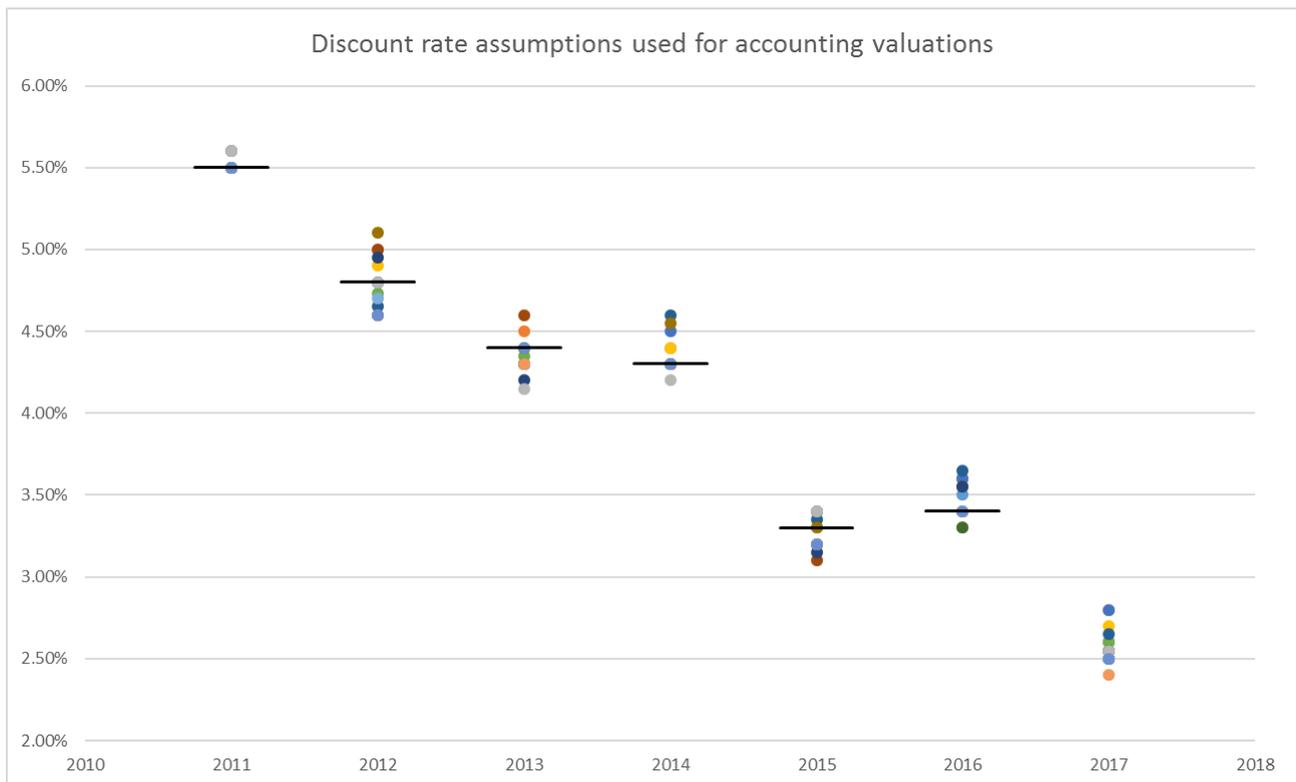
Under UK accounting standards, pension liabilities are determined by projecting the expected benefit payments (pensions and lump sums) using the chosen assumptions and then discounting the resulting cashflows back to the accounting date. The assumptions used in the calculations are ultimately the responsibility of the Company. They should be mutually compatible and represent a best estimate (i.e. neither imprudent nor excessively conservative) of the future cashflows of the Scheme. The projected cashflows are then discounted based on the yields on long-dated high quality corporate bonds (usually taken as AA rated) at the accounting date.

Whilst the accounting standard provides a framework for establishing the assumptions to be adopted it is not prescriptive and consequently different approaches are adopted by different organisations. We have illustrated this variability across the water and waste water companies by looking at the key assumptions of discount rate and inflation (RPI for consistency) showing the average assumption, upper and lower bounds, and average “comparator” assumptions from FTSE350 companies reporting at the same date. A full graphical analysis of these assumptions is shown below each table with each company represented by a dot and the average comparator as a line.

*Note: data for Wessex Water and data for Northumberland Water before 2015 has been excluded as they have a year-end different to 31 March, and data for South Staffordshire Water was not available in their accounts.

2.1.1 Accounting discount rate

Accounting year end	Average	Upper	Lower	Comparator
31/3/17	2.60%	2.80%	2.40%	
31/3/16	3.50%	3.65%	3.30%	3.40%
31/3/15	3.25%	3.40%	3.10%	3.30%
31/3/14	4.25%	4.55%	4.20%	4.30%
31/3/13	4.35%	4.60%	4.15%	4.40%
31/3/12	4.80%	5.10%	4.60%	4.80%
31/3/11	5.50%	5.60%	5.50%	5.50%



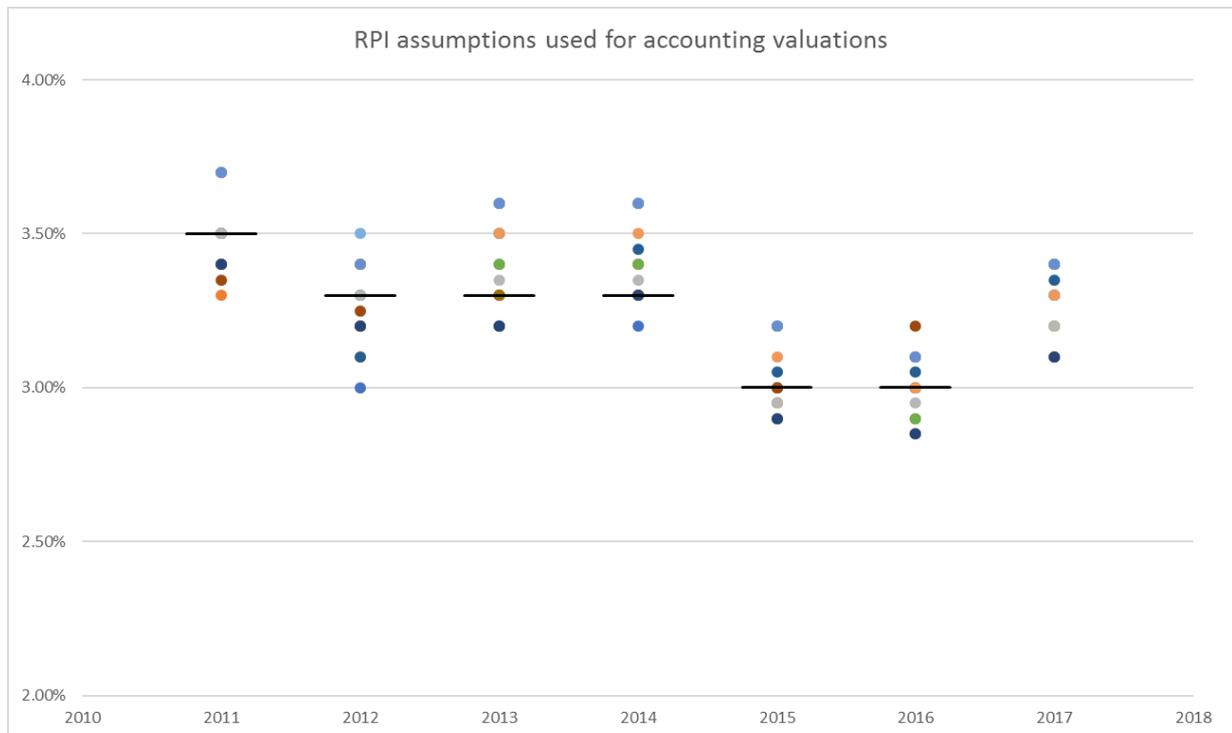
The noticeable trend here is the decrease of discount rate assumption over time, which is a function of falling gilt and corporate bond yields over the period.

The spread of discount rate assumptions at each accounting date has varied over the period, just 0.1% at its lowest but never more than 0.5%, however the average assumption is consistently close to the comparator and therefore although the companies are using different assumptions to each other, these appear to be within a reasonable range.

There is no discernible pattern indicating any one of the water and waste water companies is consistently overly prudent or conservative. In any event if the liability profiles of the companies' pension liabilities differed significantly this might have resulted in a wider spread of assumptions than would otherwise have been the case. Liabilities with a longer duration may be expected to be valued with a higher discount rate due to the shape of the corporate bond yield curve, where yields are higher at longer terms. The durations quoted in the accounting information are all relatively similar (in the range 17 years to 21 years) and this confirms why there is no clear trend here.

2.1.2 Accounting RPI inflation

Accounting year end	Average	Upper	Lower	Comparator
31/3/17	3.25%	3.40%	3.10%	
31/3/16	3.00%	3.20%	2.85%	3.00%
31/3/15	3.05%	3.20%	2.90%	3.00%
31/3/14	3.40%	3.60%	3.20%	3.30%
31/3/13	3.40%	3.60%	3.20%	3.30%
31/3/12	3.25%	3.50%	3.00%	3.20%
31/3/11	3.50%	3.70%	3.30%	3.50%



The spread of assumptions used for RPI inflation has been relatively consistent across the years, again at a maximum of around 0.5% and the comparator figure is always well within the range. There is little overall change in the assumptions used and this is to be expected because market expectations for inflation have been fairly stable, other than a small drop in 2015 and 2016.

2.2. Accounting funding level

The funding level at the 2016 and 2017 accounting dates is shown in the graph below for all 17 water and waste water companies:



The graph typically shows a slight reduction in funding level from 2016 to 2017 reflecting the use of a lower discount rate which has only partially been offset by investment returns exceeding expectations. In 2016 the maximum funding level was 130% and the minimum was 77%, with the average falling at 103%. Whilst in 2017 the maximum funding level was 127% and the minimum was 75%, with the average falling at 100%. Across the sector in aggregate in 2017 the funding level was 92% (97% in 2016), which suggests that the companies with a deficit are generally those with the larger schemes and the smaller schemes may be better funded. The averages quoted above are simple averages, taking any other approach would be over sophisticated given the reported positions are on scheme specific assumptions and have not been normalised.

Looking back further to the start of the period under consideration typically funding levels have improved by 3%, however there is a wide range of individual changes from -22% to +29%. As with the choice of assumptions the funding level progress on an accounting basis does not highlight any particular outliers.

2.3. Scheme funding assumptions

Scheme funding valuations similarly project the benefit payments using the chosen assumptions and then discount the resulting cashflows back to the valuation date. However, these assumptions are determined by the trustees of the pension scheme (although in some instances the Rules may also impose some level of responsibility on the Scheme Actuary). Regulations require the trustees to adopt assumptions which are prudent and in determining the degree of prudence to consider the investment strategy and covenant of the sponsoring employer. Covenant assessment is outside the scope of this report however it is our understanding from the information supplied that this has typically been assessed as 'strong'.

2.3.1 Investment strategies

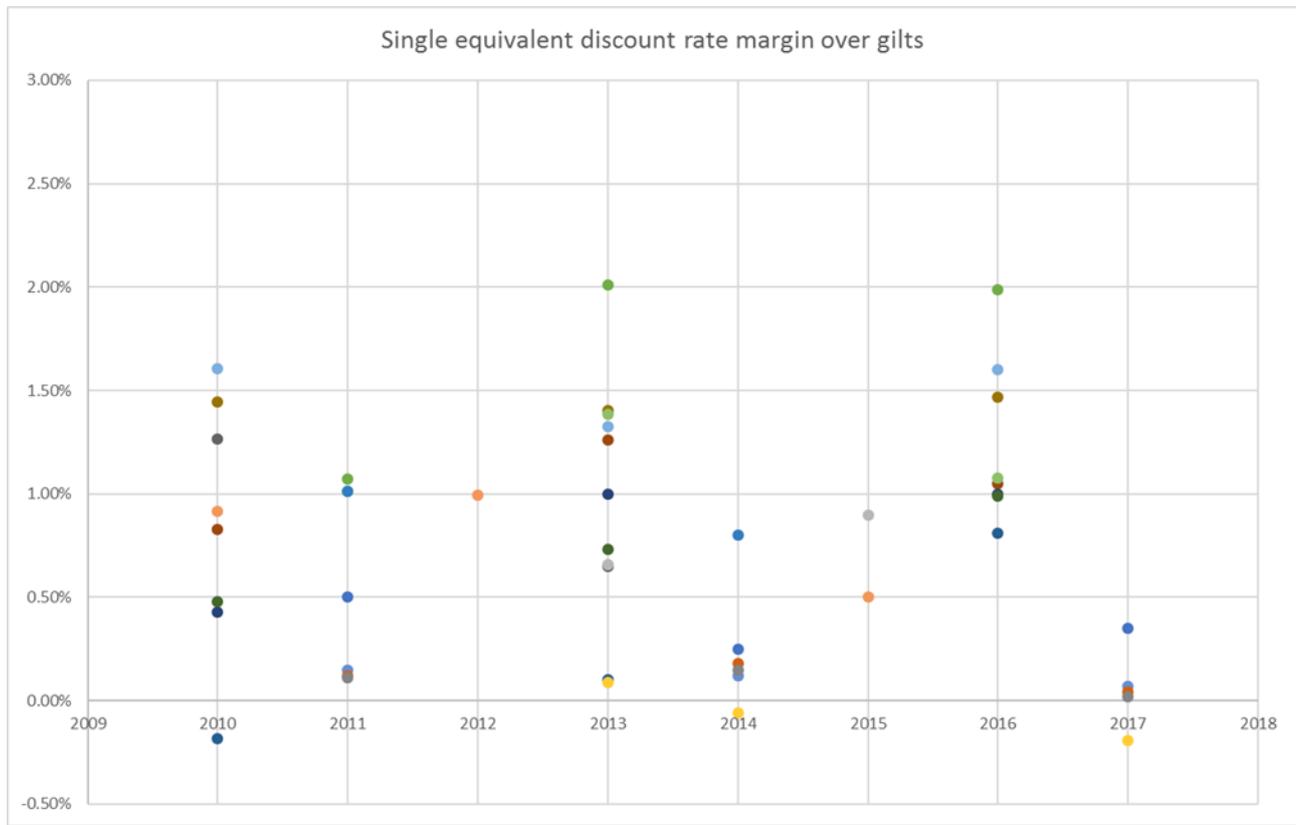
Given the link between scheme funding assumptions and investment strategies, it is important to understand the strategies being adopted. Whilst for reasons of prudence we would not expect a scheme fully invested in growth assets to reflect all the anticipated outperformance when setting assumptions, we would not expect a fully matched portfolio to result in an allowance for outperformance.

2.3.2 Discount rates

There are many different methods for applying a discount rate to the projected cashflows, including a fixed single rate, different rates pre- and post-retirement, and yield curve approaches to reflect different expected returns over different future terms. In addition and as noted above the different investment strategies and, to the extent they differ, covenant assessments would result in different approaches for different schemes. Even if all factors were equal there remains an acceptable range of assumptions rather than a prescribed approach.

A selection of these different methods has been used by the water and waste water companies for scheme funding valuations and therefore the information provided in the questionnaires is not directly comparable across all schemes. To compare them we have, where necessary, applied a method used by The Pensions Regulator (in its report titled "Scheme funding statistics" published in June 2017) to produce a single equivalent discount rate (SEDR) relative to a chosen gilt yield – here the Bank of England nominal gilt curve 20 year spot yield. This should strip out some of the variation over time due to gilt yield movements and allow commentary on the differences between the approaches taken.

The chart overleaf illustrates the results of this analysis:



*Note: only the assumptions for the largest pension scheme for each water company are shown and each pension scheme carries out a valuation only every few years, so the schemes represented in each year differ.

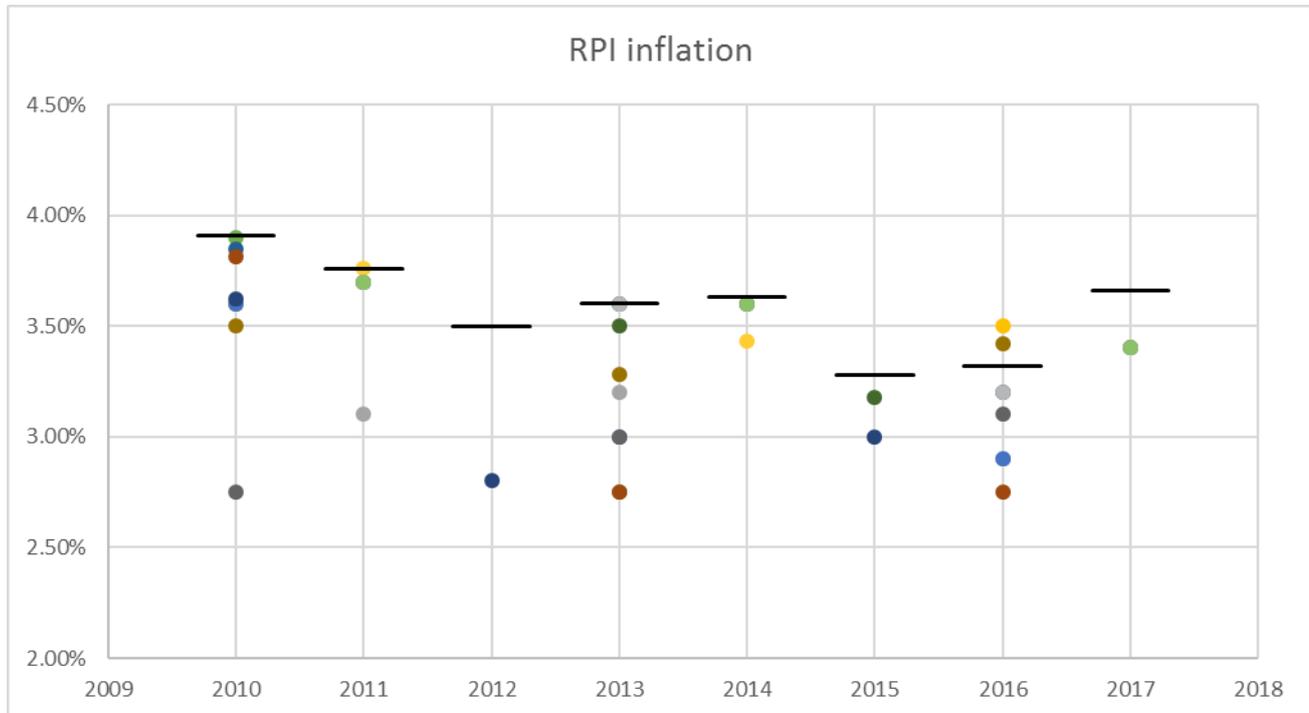
The chart shows that the excess return over gilts assumed in the scheme funding valuations does vary significantly across the water companies. This is to be expected as each pension scheme and employer will be in a different position and this will influence the amount of additional return that the valuation allows for.

For example, a scheme that is in a strong funding position may choose to de-risk its investment strategy to better match its liabilities, sacrificing some additional return, and the discount rate will likely be reduced to reflect this. The water companies with single equivalent rates at a deduction to gilt yields are likely to be in this de-risked position.

On the other hand, schemes may wish to retain their growth assets to seek additional return as this could help improve the funding position in future. As a rough guide data produced by the Pensions Regulator (which considers valuation dates up to September 2015) indicates an average single equivalent discount rate above a 20 year gilt spot rate would be around 1% p.a. with a figure above 1.4% falling in the upper quartile (and only 5% of schemes with a rate over 2% p.a.). Whilst there is also variation in the maturity of the schemes, for example the scheme assuming a higher return above gilts is, by comparison, less mature this appeared from the Pension Regulator's data to have limited impact. However it is worth noting that, from our rough analysis, if the scheme with a higher level of outperformance were reduced by 0.5% p.a. the funding level would not be out of line with that of other schemes under consideration.

2.3.3 RPI inflation

The chart below shows the RPI inflation assumptions used in scheme funding valuations (single equivalent rates where appropriate), with the Bank of England implied inflation 20 year spot rate for comparison:



*Note: only the assumptions for the largest pension scheme for each water company are shown and each pension scheme carries out a valuation only every few years, so the schemes represented for each year differ.

As the chart shows, the spread is much larger than for the accounting assumptions used and in comparison to the Bank of England implied inflation, the assumptions used are generally lower. The main reasons for this are likely to be as follows:

- Some schemes have used a yield curve approach, which allows for the full shape of inflation curve at each future term.
- Some schemes have implemented an internal inflation funding mechanism, where the inflation assumption is fixed at a low level (commonly 2.75% p.a. or 3% p.a. in recent years). When inflation experience exceeds this, the company will pay additional contributions to reflect this, effectively hedging the inflation risk.
- It is not uncommon for assumptions to allow for an inflation risk premium (IRP), which is designed to allow for the fact that implied inflation based on the difference between fixed and inflation-linked gilt yields may be skewed by the relative sizes and demand in these markets. Typically this would reduce the inflation assumption by 0.1%-0.5% p.a.

2.3.4 Mortality/life expectancy



*Note: Two companies have not provided information about the life expectancy based on scheme funding assumptions, so have been excluded. One company does not provide information on life expectancy in their accounts, so this data point is not shown.

From the information supplied the majority of the relevant pension schemes have considered the impact of scheme specific membership on the longevity assumption selected for their actuarial valuations. The respective companies have typically then adopted these tables for the purposes of their accounting disclosures less any explicit prudence margin adopted for the actuarial valuation.

The range of expected longevity for current 65 year olds is a little under 1½ years (this increases to about 2½ years when considering the life expectancy from 65 of a current deferred member). This reflects a relatively small range of assumptions being used to project future improvements in mortality, in particular the floor applying to the selected tables.

The assumptions used for accounting disclosures are shown for comparison where available, and show that there is only slight variation between the two assumptions, although accounting life expectancy is generally lower as a result of less prudence. Some of the differences may be due to later adoption of new tables or projections in the accounting assumptions, due to normal time lags in completion of a full actuarial funding valuation reflecting these new assumptions. The accounting ranges are comparable to those used across the FTSE350, which will similarly reflect different geographical and social economic influences on longevity.

2.3.5 Other assumptions

Discount rate, inflation and mortality assumptions are generally considered the most important assumptions and will have the biggest influence on the funding level.

Other assumptions often considered for valuations such as allowances for commutation or early retirement, proportion married and age of spouse's are often very scheme-specific and second order. Therefore given the limited value that could be added by considering them across all schemes/companies, they have not been considered in this report.

2.4. Scheme funding level

Whilst the majority of companies have shown an improvement in funding level between the previous and current valuations, a few have not. There could be many reasons for this including actual asset (manager) performance, changes to investment strategy and changes in assumptions due to financial conditions between the valuation dates, which has been a common cause of reduced funding levels as gilt yields have been continually reducing.

Over the period since 2010, 6 companies' aggregate pension position have deteriorated (although one of these is still over 100% funded), while 9 have improved their funding level and the remaining 2 have maintained a similar level.

The lowest funding level at the most recent valuation was 77% and the highest was 109%, with 11 companies underfunded in aggregate and 6 with an overall surplus. Whilst slightly outdated the average funding level indicated in data collated by the Pensions Regulator shows the average for the companies to be in line with or slightly better than that of the wider universe of pension schemes.

2.5. Comparison of scheme funding level with accounting funding level

As a result of the different purposes of the two valuations, and therefore assumptions used, it is unlikely that the two reported deficits will be the same at a specific point in time, nor will they necessarily change in the same way over time.

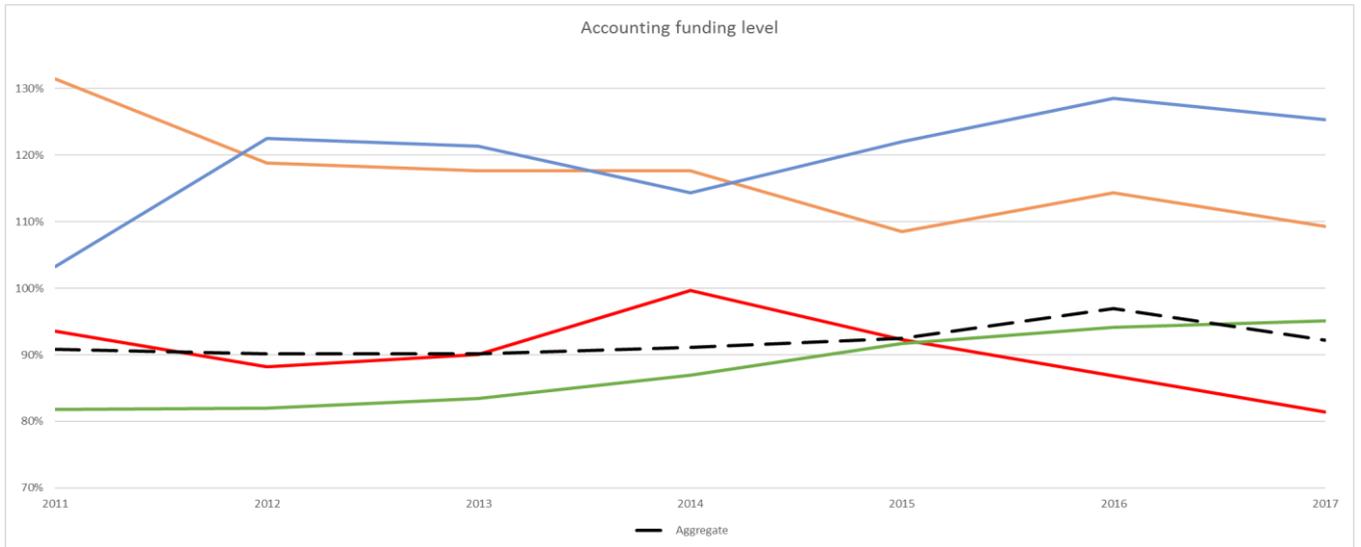
For the majority of companies, the accounting funding level is higher than the scheme funding level. In theory, this might be expected as a result of the prudence required when valuing liabilities for scheme funding valuations compared to the best estimate approach used for accounting purposes. This relationship is particularly clear for companies whose schemes are targeting a more matched investment strategy, resulting in a low expected return being used for the scheme funding valuation and a therefore a high value placed on the liabilities. Assets are likely to have been taken at a consistent market value for both valuations and therefore this will not have had an impact on the difference between the funding levels.

Those where the scheme funding level is higher are likely to be companies with schemes that are seeking high investment return in their investment strategy and reflecting this by using a higher discount rate for funding than is reasonable for accounting, which specifies that discount rates should be based on high quality (usually AA-rated) corporate bond yields.

It is also important to note that the scheme funding basis drives contribution requirements and this needs to be borne in mind when considering pension disclosures in company accounts.

Whilst one might expect the scheme specific funding regime to show an improvement in the funding position over time this is not necessarily the case as the valuation reflects market conditions at the effective date. Similarly accounting valuations can vary over time.

This is illustrated in the chart overleaf, which shows how a selection of companies' pension funding level has progressed over time on the accounting basis with a trend line showing the aggregate position across all the schemes:

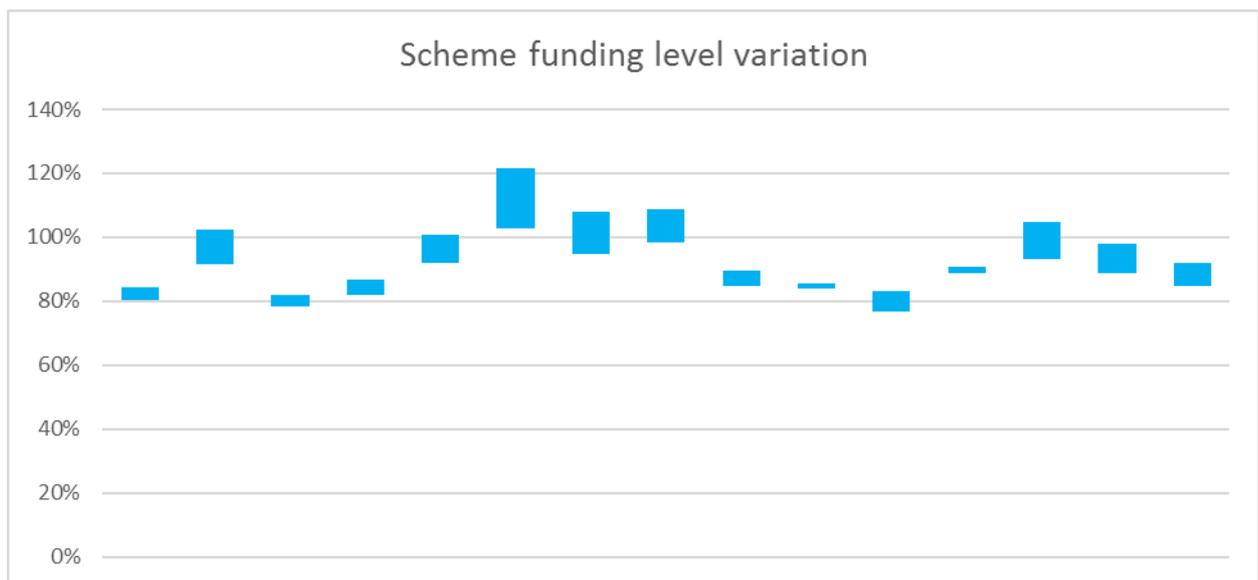


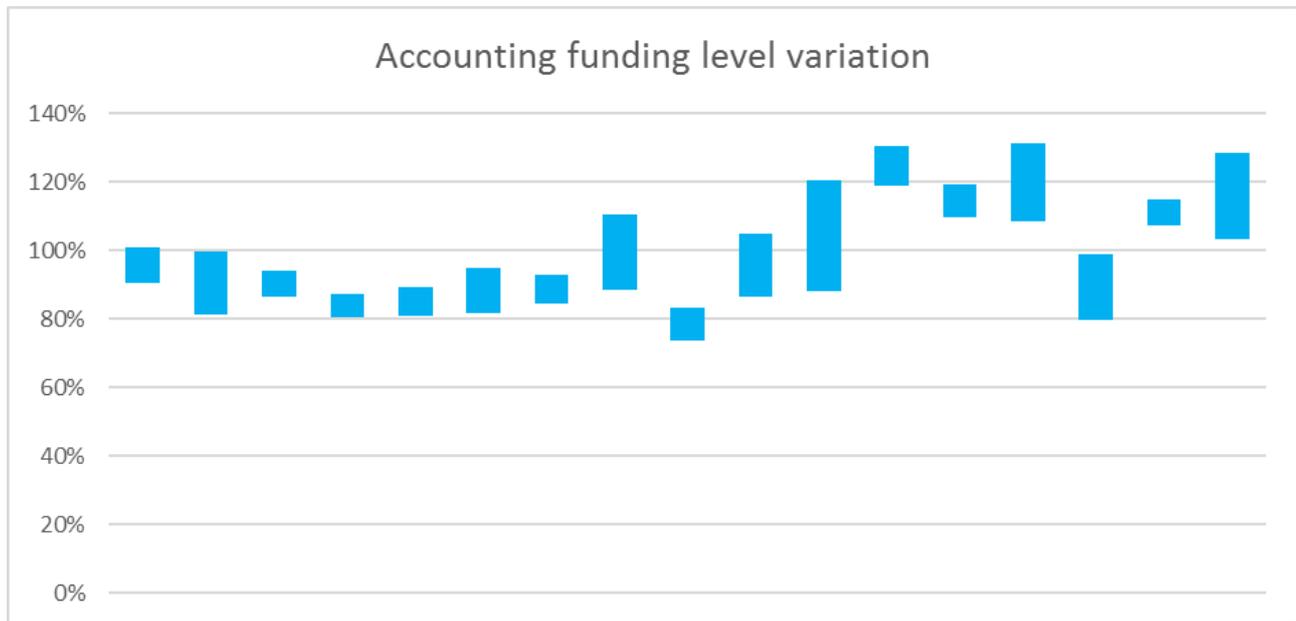
Here we can see the difference in progression between the companies shown, compared with the aggregate accounting funding level over the period.

The orange line shows a significant deterioration in funding level, although it remains above 100%, and the red line shows a company with a similar fall ending up at around 80% funding. The blue and green lines show examples of schemes that have shown improvements in funding level.

The scheme funding level shows the same trends of improvements and deterioration as the accounting, although the actual funding levels are lower as a result of the prudence included in the assumptions.

To assist in understanding the variability of the funding level, the following charts show the range of funding levels on the scheme funding and accounting basis over the period since 2010.





Based on these charts, variability in the funding level appears to be greater on the accounting basis than scheme funding basis. This is a reflection of the steps taken by the schemes under consideration to better match their investment strategy to the scheme liabilities resulting in more consistent movements of assets and liabilities.

In addition, as the valuation assumptions allow a degree of prudence, the scheme funding level is less reactive to periods of adverse experience, whereas the funding level on a best estimate accounting basis is more likely to be affected negatively as a result of experience being worse than expected.

However, the fact that accounting valuations are done annually, rather than every 2 or 3 years, could be increasing the apparent volatility of the funding level, as changes in market movements each year will have an impact on the valuations, whereas less frequent scheme funding valuations may smooth out some of the fluctuations in market movements.

3. Actions taken to manage pension risk

Key conclusions

- The information supplied indicates that all companies are aware of the risks associated with their respective pension schemes. As a result there are clear trends across the companies under consideration to manage these risks using a variety of approaches to the extent these are accessible by each company or scheme.
- In particular it is apparent that in aggregate the water and waste water companies have sought to reduce their exposure to growth assets and adopt a more matched investment strategy addressing the key investment risk.
- In addition there is a clear trend to hedge both interest and inflation risk. This has typically been achieved by use of specific investment strategies using matching assets and derivatives. However a small number of companies have hedged inflation risk internally given the historic RPI price relationship for regulated services. Over the more recent past the use of this internal inflation mechanism has reduced reflecting changes to the customer pricing approach.
- Whilst all the companies are mindful of the longevity risk and have sought to better understand their exposure to date none of the companies under consideration have taken action in this area. This is not out of line with the wider universe of pension schemes, who are not yet in a position to buy-out their liabilities, where relatively few longevity hedges are in place.

3.1. General comments on pension risk

Defined benefit pension schemes expose their sponsors to a number of risks the key ones of which are listed below.

Investment risk

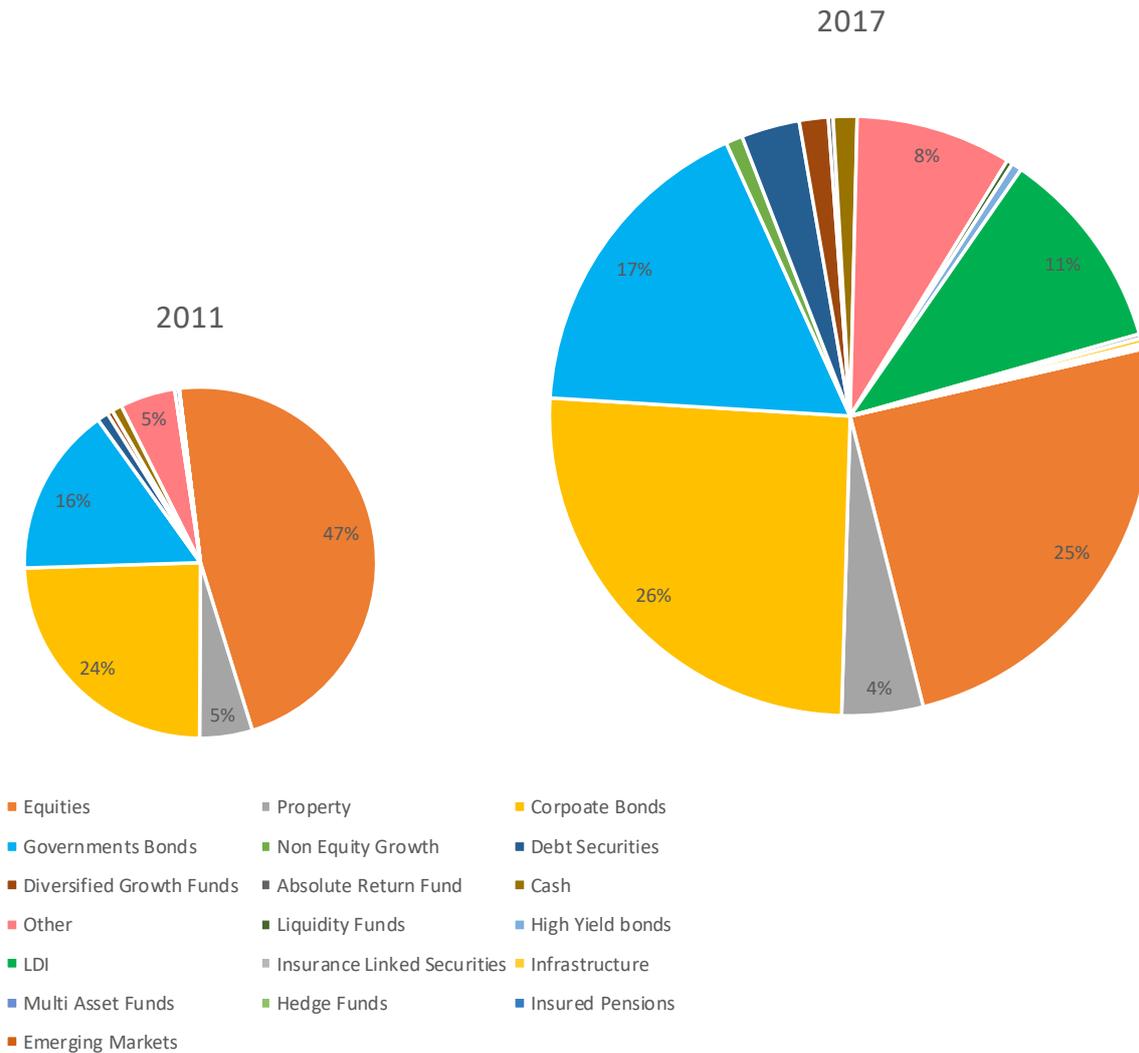
Investment risk can be considered in two ways: (1) in relation to the volatility in the asset value and (2) how the assets and liabilities move in relative terms. Risk (1) can typically be controlled through diversification and manager/market selection. Approach (2) can often be a key issue and links to the funding basis used for the scheme.

Given liability valuations typically take gilt/bond yields into account, a risk management approach for (2) can be investing fully in gilts and bonds – much the way an insurer would for annuity policies. However, non-bond assets such as equities are expected to provide higher return over the long term to help manage the cost of delivering benefits.

The split between growth assets (e.g. equities) and matching assets (e.g. gilts) is a fundamental decision – reflecting the balance between holding assets with an aim to deliver additional return and assets held to mirror movements in the corresponding liabilities. Typically as the investment timeframe is shorter for more mature schemes (i.e. those with more pensioners and no further accrual) such schemes will have a greater allocation to matching assets (all other things being equal). Across larger schemes in general (FTSE100 analysis) the general picture is one of mature schemes which are looking to wind-down their past service liabilities which is not the case for all the water and waste water companies. This will usually involve a gradual move from growth assets into gilts to better match pensioner liabilities (or with some explicit buy-out goal in mind).

It is also noteworthy that investment strategies have developed allowing further sophistication. For example leveraged bond positions enable greater hedging with fewer assets potentially freeing up assets for targeting additional returns. It is also apparent that non-traditional assets are being incorporated within investment mandates. This might include anything from infrastructure to high-yielding debt instruments.

Such use of non-traditional assets is reflected in the investment strategies of the water and waste water companies, whose aggregate asset mixes (and relative sizes) in 2010 and 2017 are as shown:



While some asset classes have remained relatively stable, such as government and corporate bonds, the allocation to equities has almost halved and this allocation has been moved into a much more diverse range of asset classes. Some of this has been a result of diversification of the growth-seeking assets being used to reduce volatility.

Together with the move away from traditional growth assets, many companies and schemes have altered their asset allocations to match their assets to their liabilities more closely, for examples using bespoke asset allocations to hedge risks to specific levels, or through Liability Driven Investment (LDI) products (i.e. an approach to investment in which all or part of the strategy is designed to match a scheme’s liabilities).

Interest rate risk

Typically pension schemes look to reduce interest rate risk by investing in a portfolio of assets which match their exposure to movements in interest rates. An important consideration in doing so is to consider the duration of both the liabilities and the proposed matching asset. Where these are not aligned exposure to interest rate changes, whilst typically dampened, will still occur.

The downside of hedging the risk would be removing the opportunity to gain from favourable interest rate movements and also limiting the ability to invest in assets where the risk is expected to be rewarded. It is possible to overcome these issues through use of more sophisticated asset portfolios using derivatives and a leveraged approach to protection mechanisms which facilitates continued investment in “growth” assets at the same time.

From the data supplied we have summarised below the techniques being used by the various water and waste water companies to address these issues. As they are often used in combination and have fairly complex mechanisms it is not easy to compare these directly and they will typically respond differently to different economic scenarios.

Information is included in both the accounting information and valuation information supplied regarding sensitivity of the liabilities to changes in assumed discount rates (which in turn reflect underlying interest rate changes) however this doesn't capture the overall impact of market changes which would alter the value of both liabilities and assets. Anecdotally and from conversations with the selected companies we are aware that measurement of the level of risk and appropriate mitigation in place is a key consideration for the companies under consideration.

Inflation risk

In a similar way to interest rate risk described above, typically pension schemes look to reduce inflation rate risk by investing in a portfolio of assets which match their exposure to movements in inflation. Here, whilst traditional tools and approaches are evident, a number of the larger water and waste water companies have sought to consider this scheme risk in the wider context of the Regulated Business. These companies have noted that the risk to the pension scheme is of higher than anticipated inflation (now, typically, a combination of RPI and CPI) however the business would generate greater income during a period of high inflation given customer pricing is also inflation linked.

As a result these companies agreed actuarial funding solutions which cover part or all of the inflation exposure directly with the company concerned. Over 80% of companies have noted they have external (i.e. market) mechanisms in place to hedge their inflation risk whilst 4 have an internal inflation mechanism. Information is included in both the accounting information and valuation information supplied regarding sensitivity of the liabilities to changes in assumed inflation however this doesn't capture the overall impact of market changes which would alter the value of both liabilities and assets.

Longevity risk

All the companies are mindful of the longevity risk inherent in the provision of defined benefit pensions and many have sought to undertake analysis to better understand the most appropriate scheme specific assumptions to adopt. Whilst a number have considered longevity hedging at a conceptual level none have undertaken a more detailed feasibility nor put a longevity hedge in place. Around a third of the companies see annuity purchase as the most likely way to counter this risk (along with the other risks listed above) albeit this may be a medium to long rather than short-term aim, and some have considered longevity swaps but concluded that they are not yet affordable.

3.2. Risk mitigation action taken by water and waste water company pension schemes

From the data obtained from the 17 water and waste water companies it appears that the majority have considered which specific actions are suitable and cost effective for them to adopt. This has resulted in the risk mitigations in the table below being adopted for each company. More detail on each of the key risk areas and the approaches adopted is detailed below:

Risk mitigation action	Comments
Closure to new entrants	The majority of schemes were closed to new entrants prior to 2010. 3 companies have closed their schemes to new entrants since 2010. The 2017 Purple Book reports just 12% of schemes (including hybrid arrangements) are open to new members.
Closure to future accrual	5 companies have ceased future accrual in their schemes since 2010, with another intending to do so in the next year. The 2017 Purple Book reports 39% of schemes (including hybrid arrangements) are closed to new benefit accrual.
Changes to benefits	<p>12 of the companies have reduced the benefits for future accrual in their ongoing scheme through actions such as:</p> <ul style="list-style-type: none"> • Moving from Final Salary to Career Average Revalued Salary (CARE) benefits • Capping pensionable salary increases • Reducing accrual rates (or increasing member contributions to retain higher accrual rate) • Increasing retirement age <p>Of these, 4 companies have removed the salary link for past service benefits</p>
Member options exercises	<p>6 companies' schemes have carried out such exercises, including trivial commutation, pension increase exchange or transfers at retirement.</p> <p>A further 4 have considered similar actions as well as flexible retirement options and enhanced transfer values, and are expecting to implement these in the next year.</p> <p>The remaining 7 companies have considered but discounted such actions.</p>

4. Changes to inflation measures used to determine benefits

Key conclusions

- The majority of companies have investigated the wording of their trust deed and rules in relation to the definition of inflation. For some, particularly those schemes or sections which are “mirror-image” arrangements, a change to CPI is automatic. The others range between clear advice that RPI must be retained and others where the wording is less clear.

4.1. General comments on inflation linkage

As you will be aware, in 2010 the UK government announced that future statutory minimum rates of pension increases and revaluation for UK pension schemes would be based on the Consumer Prices Index (CPI) as opposed to the Retail Prices Index (RPI) that had been used previously. However, there was no statutory override that allowed an automatic change from RPI to CPI for private sector schemes where non-statutory increases applied.

For a number of private sector pension schemes, the wording of their trust deed and rules was such that trustees were able to adopt CPI for future increases or the change to CPI was effectively automatic. However, for many pension schemes the rules specifically referred to RPI as the suitable measure for inflationary increases or were worded in such a way that prevented the trustees from adopting CPI or were open to interpretation which has resulted in a number of legal challenges to date.

As such, after 2010, RPI continues to be used for inflation linked increases for a large number of UK pension schemes despite the fact that RPI tends to be higher than the government’s statutory minimum of CPI.

4.2. Inflation actions taken by water and waste water company pension schemes

The table below summarises the possible actions that could have been taken by the 25 schemes in respect of making changes to inflation measures used to determine benefits:

Possible inflation action	Number of schemes	Comment
RPI moved to CPI for all inflation benefit increases given wording or link to statutory minimum benefits	7	Many companies report the change has happened automatically for their schemes, for at least some of the members – in particular those with Mirror Image schemes or sections and those that participate in the Water Companies Pension Scheme
RPI moved to CPI for increases automatically for some benefits only (other inflation increases remain linked to RPI given the rules)	3	
RPI moved to CPI (at least in part) due to an amendment to the rules	2	Two separate companies report that their scheme has successfully changed increases by means of a deed of

Possible inflation action	Number of schemes	Comment
		amendment. Others have made the change for future benefit accrual and combined this with the other changes discussed above
Considered legal advice and may change in the future	3	A few of the companies are in the position where favourable advice has been given and discussions are ongoing between the company and trustees
Considered legal advice and cannot change	4	For these companies, there was consideration but there is no option to make changes as the rules are hard coded with RPI or worded such that no change is possible
Not considered	6	For some of the companies with multiple schemes, they reported that actions have been considered for some schemes but not all.

The majority of schemes, covering all but two of the water and waste water company employers, have given attention to the issue of indexation, following the change to statutory minimum benefits. The change to CPI can have a material reduction in the value of the liabilities. For some the matter is not in the power of the company but others have seen a benefit due to different wording on this matter in the trust deed.

5. Managing the pension deficit

Key conclusions

- Of the 25 schemes supported by companies under consideration 10 are in surplus whilst the remaining 15 have a variety of plans in place to address the deficit. All bar one of the companies simply make cash contributions over a set period albeit some of the schedules are increasing or include triggers for additional payments in the event of specific circumstances arising. The remaining company has supplemented their deficit contribution approach with asset backed funding via 2 Scottish Limited Partnerships – this is not uncommon amongst the wider universe of pension scheme of this size.

5.1. General commentary on funding deficit

When a scheme is underfunded on the agreed funding basis, the trustees are required to set / agree a Recovery Plan with the scheme sponsor. The trustees will generally want the deficit funded quickly, although they will take into account employer covenant and other employer commitments.

Should a longer recovery plan be required or requested by the employer, the trustees will consider mitigation for the risks of a longer recovery plan. This may include:

- Higher overall contributions than would otherwise be the case
- Contingent assets (traditional or through an asset backed funding structure)
- Confirmation that the covenant strength supports the proposed period (i.e. the trustees feel further investigation is needed)
- Contingent payments (e.g. profit sharing arrangements)

Employers and trustees may also consider liability management transfer exercises (for example) to help manage the deficit. We commented earlier on such exercises (please see section 3)

5.2. Deficit recovery actions taken by water and waste water company pension schemes

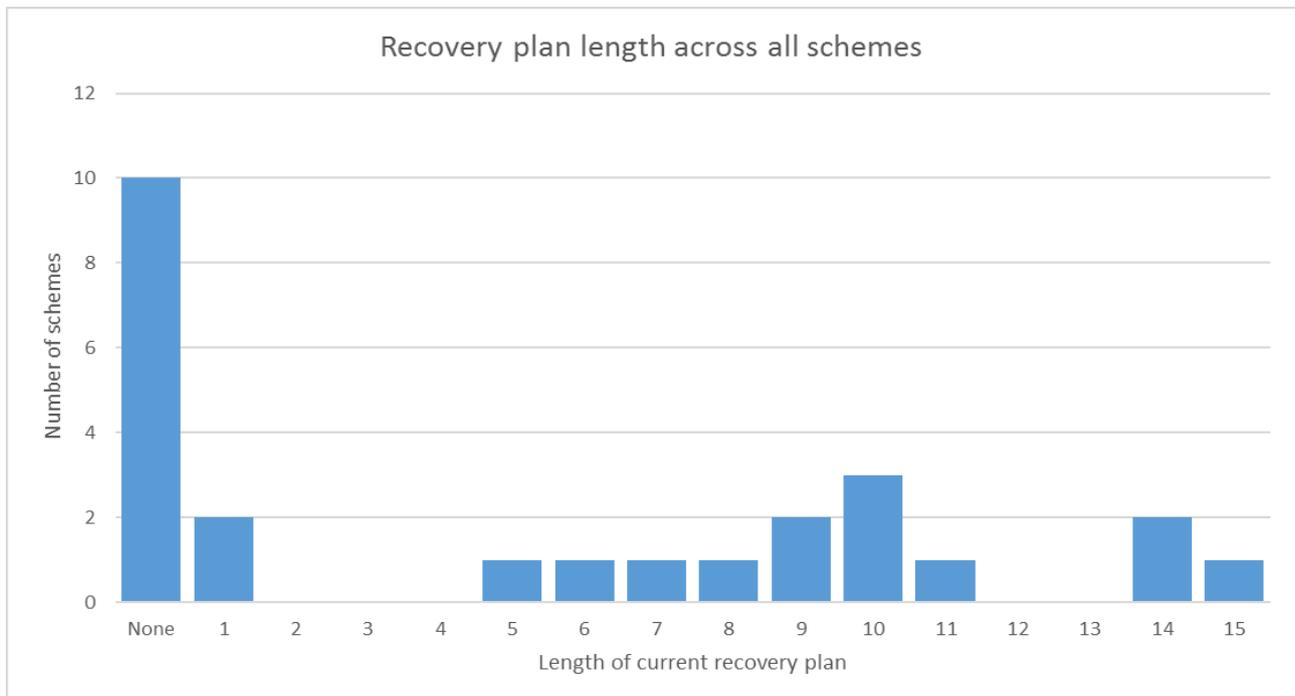
Of the 25 schemes supported by the companies, 10 were in surplus at the most recent valuation and therefore have no recovery plan. The remaining 15 schemes (covering 12 employers) show a variety of approaches to deficit funding through the structure of their recovery plans. These approaches are summarised in the following table:

Recovery plan structure	Comment
Flat level of contributions over the recovery period	A few companies are using this approach, which ensures known cashflows for the company.
Contributions increasing annually in line with an inflation index	The majority of companies with recovery plans have some sort of inflation link. The increasing contributions mean that the initial

Recovery plan structure	Comment
Specific pattern of contributions	contribution is normally lower than under the flat approach, so the contributions are effectively back-end loaded.
Cash contributions supplemented by asset-backed funding arrangements	A couple of companies have put in place a more bespoke contribution structure, for example a higher contribution in the first year or additional payments conditional on a set funding level not being reached at a set time
Cash contributions supplemented by asset-backed funding arrangements	One company in particular has acquired an interest in assets that are expected to pay regular contributions to the scheme, separately from cash contributions from the company, and this income stream has been allowed for when estimating when the deficit will be removed.

The majority of recovery plans allow for additional investment return above the discount rate assumed when calculating the valuation liabilities, removing some of the prudence that is built in to the valuation assumptions. This is not unusual as it means that a best estimate of investment returns is used to determine more cost effective contribution structures.

Although the length of recovery plans is only one consideration when assessing deficit recovery, all other things being equal a shorter recovery plan offers greater security of scheme benefits, as the scheme will be returned to full funding sooner. The graph below shows the number of schemes in the sector with each length of recovery plan as at the most recent valuation, for comparison the average quoted by the Pensions Regulator is around 6 years:



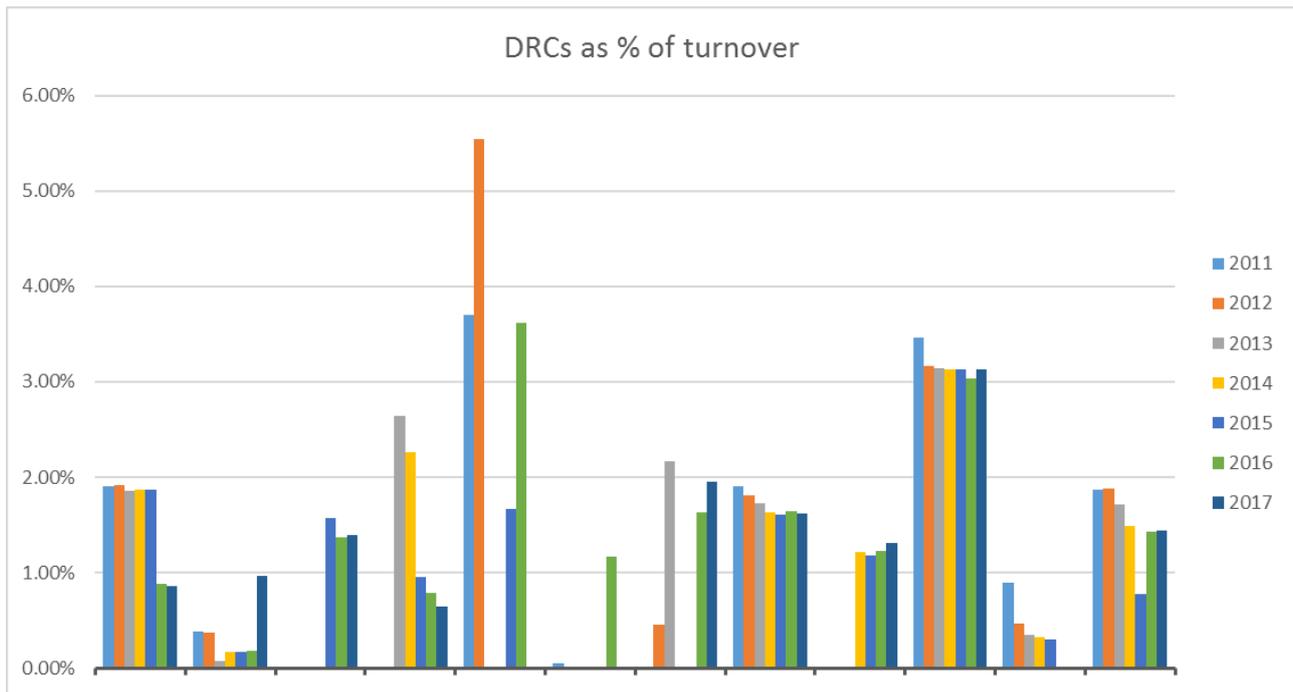
6. Impact of pension cost on broader financial resilience

Key Conclusions

- The level of agreed deficit reduction contributions for those water and waste water companies whose schemes are in deficit are at levels which are not significant compared to turnover. Whilst there is variation between companies and over time, all companies are looking to minimise, to the extent possible, pension risk and hence reduce the volatility of deficit contribution requirements.
- Those companies whose accounting pension obligation exceeds 150% of their regulated equity are all currently reporting surpluses which provides a margin against adverse movements in the liabilities. The schemes currently reporting deficits are likely to be able to withstand this adverse experience either by extending their recovery plans or increasing their deficit reduction contributions – both of which look affordable based on current information.

6.1. Deficit Reduction Contribution payments compared to turnover

To illustrate the relative size of the deficit reduction contributions paid each year we show below these contributions (as reported in company accounts) expressed as a percentage of reported turnover:



*Note: One company only shows the total deficit reductions paid to a group pension scheme in its accounts, so we have adjusted the amounts to represent the approximate allocation of the scheme to the regulated company

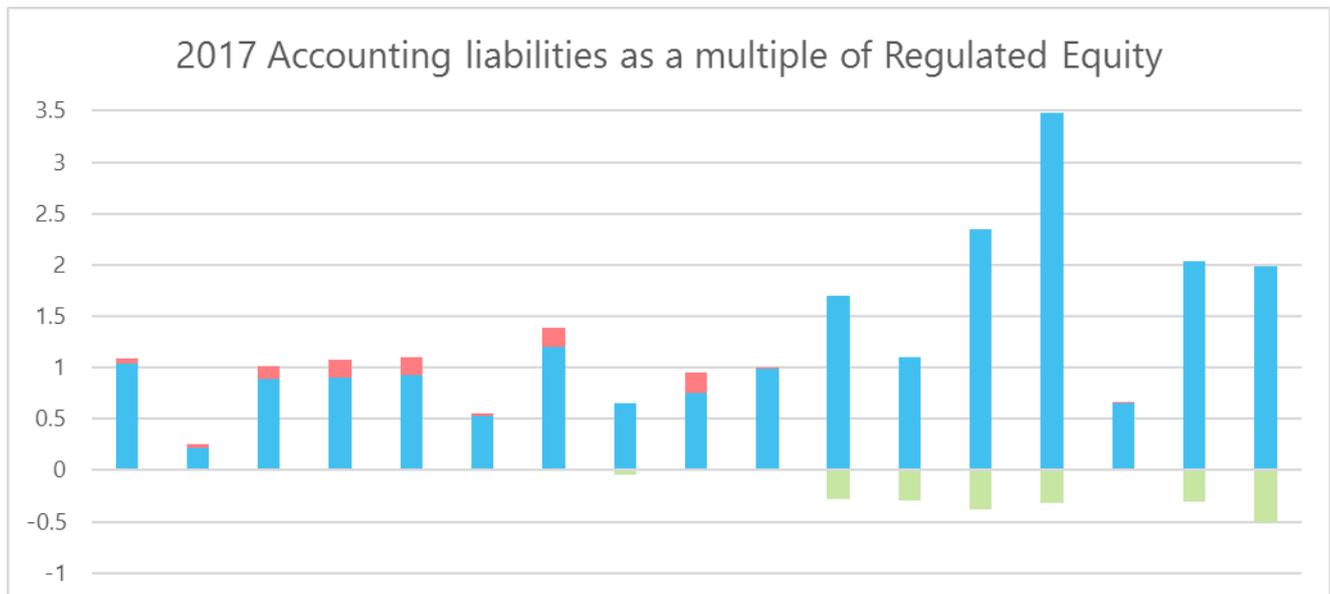
Whilst, as expected, there is variation in this relationship both from year to year and between water and waste water companies, the overall level of deficit reduction contributions (where these are in payment) versus turnover

has averaged between 1% and 2% over the period under consideration. With one or two exceptions the level of deficit reduction contribution as a proportion of turnover has typically reduced over the period.

We would not expect the deficit reduction contributions at current (and recent) levels to impact on the individual companies' financial resilience. However it should be noted that economic scenarios could develop whereby recovery plans become more onerous and turnover could come under pressure. Based on our understanding of the information provided the water companies have sought to minimise this risk to the extent possible and many actively manage the pension risk at board level.

6.2. Deficit impact on regulated equity

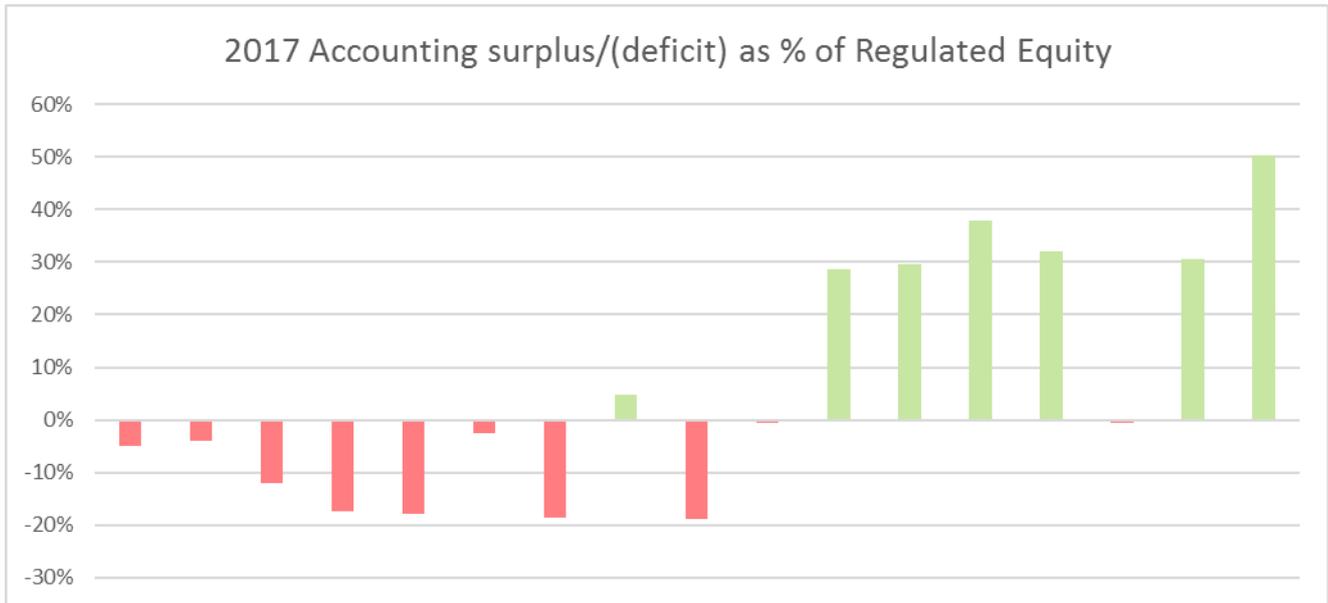
Similarly we illustrate below the relationship between the aggregate scheme size and deficit for each company and their regulated equity value as at 31 March 2017. For those companies reporting a deficit the bar comprises a blue bar representing the assets and a red addition representing the deficit (the two elements equating to the pension obligation). For those companies reporting an accounting surplus the blue bar represents the reported pension obligation and the green (below the line) addition represents the additional assets held (or surplus).



Note: Two companies participate in a group pension scheme in its accounts, so we have adjusted the amounts to represent the approximate allocation of the scheme to the regulated company

The chart shows there is a significant range of reported pension accounting obligations relative to the size of the regulated equity of each company, as we would expect from a group of companies with different backgrounds including some who are not solely focused on regulated activities.

It is clear from the chart that some companies are supporting schemes with much larger liabilities than their regulated equity. This means that even a relatively small deterioration in the funding position could result in a proportionately much larger obligation on the company, especially if the scheme moves into deficit. However all of the companies whose pension obligation is greater than 1.5 times their regulated equity show an aggregate pension surplus, of between 28% and 51% of regulated equity, and this would suggest that the financial resilience of the company is not as likely to be impacted significantly by the pension scheme as would otherwise be the case.



As illustrated in the graph above, for those companies with an aggregate deficit, the size of this is up to 20% of regulated equity. This is a significant proportion, especially where the liabilities of the scheme are of comparable size to (or marginally greater than) the regulated equity of the company, and therefore could have a notable impact on the finances of the company unless the funding position is improved sufficiently to provide a margin of comfort. In our view whilst there is a concern that market movement could impact adversely on the companies whose pension obligations are at or around the same level as their regulated equity they are likely to be able to withstand this adverse experience either by extending their recovery plans or increasing their deficit reduction contributions – both of which look affordable based on the information in the previous sub-section.

7. Pension liabilities and administration pursuant to the Water Industry Act 1991

Key Conclusions

- The perceived intention of the Water Industry Act 1991, as confirmed by discussions with Ofwat, is to ensure that creditors, including the pension scheme, are not prejudiced in the event of the appointment of a special administrator to one of the regulated entities. In most circumstances the pension scheme would move to new owners or to a new company and continue to be funded in the normal ongoing way without consideration of, or recourse to, insolvency or admission to the PPF.
- In the event of financial insolvency and no special administration (an extremely remote possibility), only around a third of the water and waste water companies (including all the companies who participate in the multi-employer Water Companies Pension Scheme) might be able to secure PPF (or better than PPF) benefits and the remainder would, in this highly unlikely theoretical scenario, be expected to enter the PPF. This is based on the position at the last valuation for each of the companies and ignoring any additional assets which might be made available to the schemes.
- The interaction of the PPF and the Water Industry Act 1991 is as yet untested.

7.1. Details of anticipated treatment

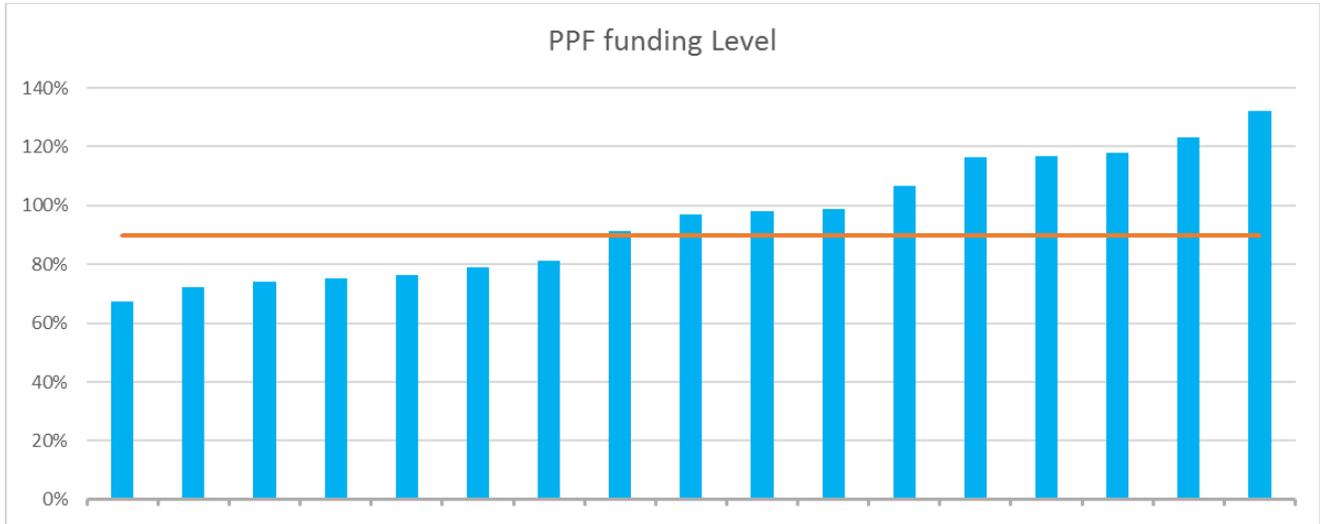
There are special rules in the water sector to ensure continuity of supply for customers if a company found itself in serious financial or operational difficulties. It would not follow the normal rules for financial insolvency. A special administrator would be appointed and his main duty is “to help ensure that water and sewage services continue to be provided to customers should a water company become insolvent or otherwise be failing to meet its statutory obligations, pending the transfer of the water company’s business to another company (or more than one company).

The treatment of pension liabilities under administration pursuant to the Water Industry Act 1991 is, as yet, untested. If the position were to be tested it would involve legal interpretation of the interaction of the various legislative requirements and we are neither qualified to give nor have sought to obtain a definitive legal opinion at this stage. In the following section we provide an overview of the position based on our actuarial knowledge of the relevant legislation, the Pension Protection Fund and experience of other situations.

If a special administrator is appointed, it is likely that the water company will continue to trade. This would not be a qualifying insolvency event under s128 of the Pensions Act 2004. If this were not to be the case for whatever reason, and the water and waste water company concerned ceases to trade, we would anticipate this would be considered by the PPF to be a qualifying insolvency event under Section 128 of the Pensions Act 2004. There is no information to suggest that any of the water and waste water companies are not eligible schemes and therefore we would expect such an, albeit unlikely, insolvency event to trigger the beginning of an assessment period during which time the PPF will assess whether or not it must assume responsibility for the scheme (or section in the case of companies participating in the Water Companies Pension Scheme).

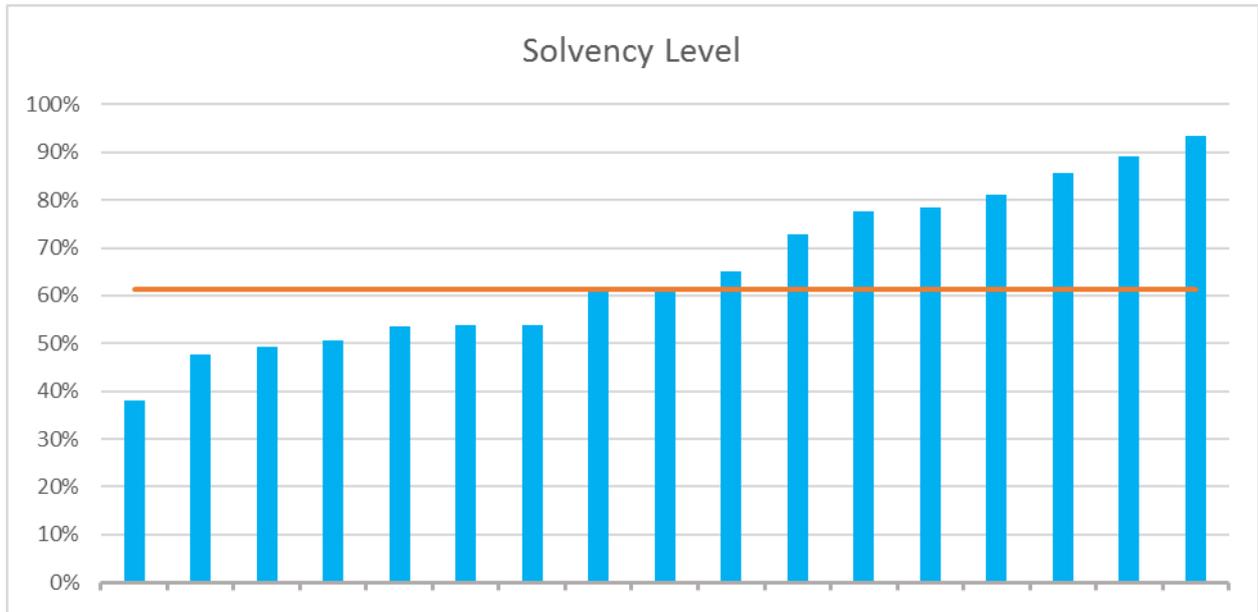
In the unlikely event of the water company ceasing to trade, and in the absence of a scheme rescue, broadly the consideration at this stage will be whether or not the assets of the scheme plus any amounts recovered from the employer are sufficient for the scheme to purchase benefits at the level of the PPF compensation (or above) with an insurance company. The following graph shows the funding position for each of the companies of the PPF

benefits as assessed in line with the statutory assumptions specified by the PPF, which gives a guide to whether or not this might be achievable. In practice the actual market pricing will differ from the assumptions used for this statutory assessment.



Based on the position at the last valuation for each of the companies and ignoring any additional assets which might be made available to the schemes in the event of a water company ceasing to trade and no scheme rescue, only around a third (including all the companies who participate in the multi-employer Water Companies Pension Scheme) might be able to secure this reduced level of benefits outside of the PPF. To put this in context we have also shown on the chart the unweighted average PPF funding level reported for schemes with valuation dates between September 2014 and September 2015 ("Tranche 10 valuations") (source: The Purple Book 2017 published by the Pension Protection Fund). More recently the PPF have noted that 65% of schemes were in deficit on the PPF funding basis as at June 2018.

However even fully funded schemes on this measure would, in the absence of other assets, be unable to secure the benefits as specified in the respective scheme rules with an insurance company (referred to as the Solvency funding position). The estimate of this position from the latest actuarial valuation reports of the respective water and waste water companies are illustrated in the following chart, which indicates reductions to benefits ranging from just below 10% to just over 20% for schemes with a PPF funding level over 100%. In the event that benefits above PPF levels can be secured with an insurance company, legislation and the scheme rules will dictate how such assets are applied to provide specific member benefits. As in the previous chart, we have included a line to illustrate the Solvency (also referred to as buyout) funding level reported for Tranche 10 valuations (source: The Purple Book 2017 published by the Pension Protection Fund).



8. Conclusions and next steps

Approach to defined benefit pension valuations

- The range of accounting assumptions adopted by the water companies under consideration are within an acceptable range and there are no consistent outliers year on year. Accounting funding levels have typically improved over the period under consideration, however there has been a decrease in reported funding level over the last financial year. This was a result of falls in corporate bond yields which drive the assumed discount rate partially offset by investment returns.
- There are notable differences in the approaches to scheme funding adopted by the different schemes. This is as expected given the scheme specific funding regime is trustee led and each scheme has a particular profile and nuances. From the responses to the questionnaires and subsequent discussions there is evidence that the companies are fully engaged in the valuation process, cooperating and negotiating with the trustees at an appropriate level.
- The lowest funding level at the most recent valuation was 77% and the highest was 109%, with 11 companies underfunded in aggregate and 6 with an overall surplus. The average funding level indicated in data collated by the Pensions Regulator (albeit now slightly outdated) shows the average for the companies to be in line with or slightly better than that of the wider universe of pension schemes.
- The period under consideration shows mixed progress for the various pension schemes. The trend is distorted slightly as a number of the schemes have undertaken de-risking activity over the period and as a result are now using more conservative assumptions than at the start of the period. In addition individual circumstances, including the range of interventions available to them, differ between the schemes.
- As might be expected for mature de-risked pension schemes the accounting funding level is higher than the scheme funding level for many of the water companies. A few (typically those still invested in growth assets and reflecting this higher level of expected return in their valuation assumptions) have a higher scheme funding level than their corresponding accounting position.

Actions taken to manage pension risk

- The information supplied indicates that all companies are aware of the risks associated with their respective pension schemes and shows clear trends to manage these risks. In particular it is apparent that in aggregate the water and waste water companies have sought to reduce their exposure to growth assets and adopt a more matched investment strategy addressing the key investment risk. Further there is a clear trend to hedge both interest and inflation risk, typically through use of specific investment strategies comprising matching assets and derivatives. A small number of companies have historically hedged inflation risk internally (given the historic RPI price relationship for regulated services) but this trend appears to be reducing and is being replaced by market hedging strategies.
- Whilst all the companies are mindful of the longevity risk and have sought to better understand their exposure to date none of the companies under consideration have taken action in this area. This is not out of line with the wider universe of pension schemes, who are not yet in a position to buy-out their liabilities, where relatively few longevity hedges are in place.

Changes to inflation measures used to determine benefits

- The majority of companies have investigated the wording of their trust deed and rules in relation to the definition of inflation. For some, particularly those schemes or sections which are “mirror-image” arrangements, a change to CPI is automatic whilst for others they have received clear advice that RPI must be retained. There remains some uncertainty (despite seeking legal advice) for the balance of schemes.

Managing the pension deficit

- For the 60% of the 25 schemes considered in this report with a deficit revealed by their actuarial valuation, all bar one of the companies simply make cash contributions over a set period to recover the shortfall. Some of the schedules are increasing or include triggers for additional payments in the event of specific circumstances arising. One company has supplemented their deficit contribution approach with asset backed funding via 2 Scottish Limited Partnerships – this is not uncommon amongst the wider universe of pension scheme of this size but is dependent on suitable underlying security or assets being available.

Impact of pension cost on broader financial resilience

- The level of agreed deficit reduction contributions for those water companies whose schemes are in deficit are at levels which are not significant compared to turnover. Whilst there is variation both between companies and over time, all companies are looking to minimise, to the extent possible, pension risk and hence deficit contribution requirements. Based on the analysis undertaken it would appear, in isolation, that the exposure to volatility in pension contribution requirements has reduced over the period.
- The relative size of schemes and sponsoring companies, together with the size of the deficit, is a consideration when assessing the impact on financial resilience both now and as a result of potential changes in the future. Those companies with pension obligations which are significant in comparison to their regulated equity are typically in surplus providing a cushion against adverse experience.

Pension liabilities and administration pursuant to the Water Industry Act 1991

- The information supplied does not suggest that the pension obligations are overly onerous for the companies concerned. The perceived intention of the Water Industry Act 1991, as confirmed by discussions with Ofwat, is to ensure that creditors, including the pension scheme, are not prejudiced in the event of the appointment of a special administrator of one of the regulated entities. In most circumstances the pension scheme would move to new owners or to a new company and continue to be funded in the normal ongoing way without consideration of, or recourse to, insolvency or admission to the PPF. At the date of the latest actuarial valuations none of the schemes were in a position to afford to secure the member benefits with an insurance company (we are aware that some of the schemes may now be in a position to take this action).
- It is important to note however that the interaction of the PPF and the Water Industry Act 1991 is as yet untested.

Next steps

The analysis has identified that whilst a range of approaches, interventions and reporting apply across the sector, the companies under consideration are all mindful of the pension risk and the impact on the underlying business. Consideration of the pension risk and the potential to impact on an essential regulated industry is a legitimate concern for Ofwat and we recommend Ofwat continue to review the position and engage with schemes

supporting their discussions with the Pensions Regulator to ensure funding solutions reflect the specific circumstances of the water and waste water companies.

It is apparent that comparator analysis of the funding positions of the schemes is difficult given the variety in assumptions adopted for reporting on accounting, funding and solvency measures and range of dates at which these are undertaken. Further analysis could be undertaken to normalise these funding measures to facilitate a more direct comparison. We would be happy to advise further regarding this if required.

Appendix 1 Data sources

We have drawn much of the information illustrated in this report from publically available information obtained from the companies' annual report and accounts with particular focus on the pensions note. In addition we have used our knowledge of wider company accounting information and information on pension scheme experience issued by the Pensions Regulator e.g. the Purple Book and Scheme Funding Appendix 2017.

In preparing this report we have received copies of the following documents. Not all information from all documents has been taken into account – we have focused on the key issues from these documents for the points raised in this report.

- Actuarial valuation report
- Statement of Funding Principles
- Schedule of Contributions
- Recovery Plan
- Statement of Investment Principles
- Actuarial update report
- PPF levy invoice
- Other documents relating to scheme management that each company considered might be of interest

In addition to the above documents, we provided a template questionnaire for each of the companies to complete. A copy of this template questionnaire is show in Appendix 2.

Appendix 2 Template questionnaire

Pension Scheme Information Request

As you will be aware, Barnett Waddingham are supporting Ofwat with an information gathering exercise in relation to defined benefit pension schemes as part of the current price review process. Ofwat have asked that we consider scheme specific funding information and actions taken to manage and mitigate pension risk.

Please complete the tables below with the information requested and provide appropriate supporting documents, where indicated, by Monday 12 March (or sooner if possible). Please return to Anthony Milanese at Ofwat (anthony.milanese@ofwat.gsi.gov.uk), who will pass your responses to Barnett Waddingham via a secure portal.

If you have any questions then please contact Anthony Milanese at Ofwat (email above) or Jane Ralph at Barnett Waddingham (jane.ralph@barnett-waddingham.co.uk).

General information

The following data is required in respect of all defined benefit (DB) pension schemes or scheme sections (where you participate in multi-employer schemes) that are sponsored by the company. If the company sponsors more than one DB scheme then please complete one form for each scheme. Please do not include information relating to any defined contribution schemes sponsored by the company.

If there is any information concerning the scheme that is not covered explicitly by the points in this request but may, in your view, be useful to our analysis of pension scheme risk management over the last 10 years, please use the additional notes section to provide details of this.

Please state the name of the schemes to which the information provided relates:

Scheme name

--

Scheme Funding Valuation

1. Please provide the following results and assumptions from the last 3 formal actuarial valuations:

Date of valuation	[most recent]	[previous]	[oldest]
Results			
Value of scheme assets			
Value of scheme liabilities, split: <ul style="list-style-type: none"> • Actives • Deferred pensioners • Non-insured pensioners (including spouses and dependants) • Insured pensioners (including spouses and dependants) • Expenses (if applicable) Total liabilities			
Assumptions			
Pre-retirement discount rate			
Post-retirement discount rate			
RPI inflation			
CPI inflation			
Salary increases			
Pension increases: <ul style="list-style-type: none"> • [Specify e.g. RPI max 5%] • [Specify e.g. RPI min 3%] • [Specify e.g. CPI max 5%] 			
Mortality base table			

<ul style="list-style-type: none"> • Males • Females 			
Mortality projections <ul style="list-style-type: none"> • Males • Females 			
Life expectancy of members age 65 now <ul style="list-style-type: none"> • Males • Females 			
Life expectancy at age 65 of members age 45 now <ul style="list-style-type: none"> • Males • Females 			
Recovery Plan (if applicable)			
Length of recovery plan			
Amount of recovery plan contributions in first year			
Describe the structure of recovery plan (e.g. fixed annual contributions, fixed increase, increases in line with an index, etc.)			

2. Please describe any significant changes in the approach to setting scheme funding assumptions between these valuations, and explain the reasons for each change:

3. Please describe how the employer covenant was reflected in the discount rate assumptions set for each valuation:

4. Please provide copies of the following for the most recently completed valuation to support this information:
- Scheme Funding Report
 - S179 valuation (if not included in the Scheme Funding Report)
 - Statement of Funding Principles (if not included in the Scheme Funding Report)
 - Recovery Plan (if not included in the Scheme Funding Report)
 - Schedule of Contributions (if not included in the Scheme Funding Report)
5. Please also supply copies of any subsequent updates to these documents.
6. If there have been additional scheme funding updates since the previous full valuation, or initial results from an ongoing valuation are available, then please describe below any changes to the underlying basis used at these updates from the basis at the previous formal valuation:

--

7. Please provide a copy of any relevant reports to support the information in 6. above (e.g. Annual Actuarial Reports and other funding updates).
8. Please provide the results of the most recent solvency and PPF (section 179) valuations

	Solvency	PPF (section 179)
Date of valuation		
Results		
Value of scheme assets		
Value of scheme liabilities		
Assumptions		
Pre-retirement discount rate		Assumed statutory
Post-retirement discount rate		Assumed statutory
RPI inflation		Assumed statutory
Mortality base table		Assumed statutory
Mortality projections		Assumed statutory

9. Please provide a copy of the 2017/18 PPF levy invoice for the scheme.
10. Please provide details of any unfunded defined benefit arrangements:

--

Investment Strategy

11. Please describe the current investment strategy of the scheme, including a numerical breakdown of the target allocation to different asset classes:

12. Please provide a copy of the current Statement of Investment Principles to support this information.

13. Please provide details of any pre-determined investment switches - for example time, market or funding dependent triggers:

14. Please provide details of any insured contracts entered into since 2010 including details of the rationale for such activity and the value of the liability extinguished or represented by the associated insurance policy asset:

15. Please describe how the approach to risk has been reflected in the current investment strategy, including details of any liability hedging or other risk reduction strategies used (e.g. mortality hedging through longevity swaps) to the extent not covered above:

16. Please highlight any major changes to the investment strategy since 2010, and explain why these changes were made:

17. Please outline the structure and working of any asset backed funding arrangements, contingent assets, guarantees or negative pledges (or other such assets or agreements) that are in place in connection with the scheme:

Liability management

18. Has the scheme closed to new entrants and/or future accrual since 2010? YES/NO
19. If yes, please give details of when these events occurred and what was done, together with an explanation of why this approach was taken and any information on the impact on scheme funding:
-
20. Has the scheme undergone any one-off exercises or started to offer any new member options since 2010? (e.g. enhanced transfer values, trivial commutation, pension increase exchange, flexible retirement options etc.) YES/NO
21. If yes, please give details of the nature of each exercise, when these events took place and provide any information on member uptake or impact on scheme funding:
-
22. If no, and these options been considered and discounted OR considered and will be implemented at a future date; please provide details:
-
23. Has the scheme considered making changes to the inflation measures used to determine benefits since 2010? YES/NO
24. If yes, please give details of when possible changes were discussed, any changes that were adopted and why this approach was taken:
-
25. Has the scheme made any other changes to benefits since 2010? YES/NO
26. If yes, please give details of what benefits were changes, when the changes were made and why this approach was taken:
-
27. Has the scheme undertaken any form of mortality review or analysis since 2010?
28. If yes, please describe the analysis done and explain how this has been reflected in the scheme funding plan:
-
29. Please state the date of the most recent review of actuarial factors and provide example commutation factors at age 65:
-

Additional notes

30. Please provide any additional information concerning the scheme that may, in your view, be useful to our analysis of pension scheme risk management over the last 10 years:

Appendix 3 Glossary and common acronyms

Title	Definition
Accrual rate	The rate at which rights build up for each year of service in a Defined Benefit scheme. (Commonly 1/60 th .)
Accrued benefits	The benefits for service up to a given point in time, whether vested rights or not. They may be calculated in relation to current earnings or projected earnings.
Active member	A member of a benefit scheme who is at present accruing benefits under that scheme.
Actuarial valuation	A calculation of the funding status (assets compared to technical provisions) of a pension scheme, typically carried out every three years.
Annuity	A stream of pension payments made periodically.
Average earnings scheme (or career average scheme)	A scheme where the benefit for each year of membership is related to the pensionable earnings for that year (as opposed to final earnings in a final salary scheme).
Basis	A set of assumptions used in actuarial calculations (e.g. future inflation, investment returns, mortality etc).
Bonds	<p>A bond is a form of debt issued by organisations, with the purpose of raising finance. They sell (or issue) a bond and, in return, they agree to pay a regular series of interest payments, known as coupons and a lump sum at the end of the term (i.e. on maturity) of the bond. So a bond is effectively a loan from the bond holder (the investor) to the organisation that issued the bond.</p> <p>Bonds may be issued by companies, governments, international institutions and supra-nationals. Bonds issued by the British Government are known as gilts and those issued by individual companies are known as corporate bonds. Bonds can either be fixed or index-linked.</p> <p>A fixed bond pays an income stream and redemption payment at maturity that is fixed in monetary terms. High inflation will erode the real value of these payments.</p> <p>Index-linked bonds provide a secure investment in real terms, as the coupon payments and the redemption proceeds are linked to movements in inflation (typically the Retail Prices Index).</p>
Bulk Annuities	A method used by schemes to de-risk their pension schemes. In exchange for a premium/ lump sum payment, this will involve passing the responsibility of financing future benefit payments to an insurance company. These are either buy-out or buy-in arrangements.
Buy-in	The purchase of an insurance contract by a pension scheme to meet pension payments as they fall due. The liabilities remain in the scheme and the policy is an asset of the scheme. A buy-in policy is typically used to cover a portion of the scheme's liabilities e.g. pensioners. This contrasts to a buy-out in which the

contract is between individual members and the insurance company. As a result, in a buy-in, if the insurance company is not able to pay members, the trustees still have an obligation to pay members pension when they fall due (see also Buy-out).

Buy-out

The purchase of an insurance contract by trustees to cover the benefits due to members of a pension scheme. The liabilities of the scheme are transferred to the insurance company who pays members' pensions when they fall due. A buy-out policy may cover the entire liabilities of the scheme with the scheme subsequently being wound up (see also Buy-in).

Corporate Bonds

Corporate bonds are generally much less secure than government bonds. The level of security does however depend on the company that has issued the bond and the type and term of the bond. As corporate bonds generally have a higher risk of default than government bonds, investors require a higher return to compensate for this increased risk, and hence yields are usually higher on corporate bonds than they are on gilts.

Corporate bonds are assigned a credit rating by credit rating agencies (such as Moody's, Standard & Poor's) to allow investors to assess the security of the investment. It is analogous to credit ratings for individuals. These ratings have letter designations: the prime rating is AAA, with other high/ medium grade ratings being AA and A. Bond ratings below BBB are considered to be not investment grade and are colloquially called junk bonds. These ratings are much used and generally highly reliable.

Corporate bonds can either be fixed or index-linked but are typically fixed.

Closed Scheme

A scheme can either be closed to new entrants or closed to future accrual. In both cases the scheme is no longer open to new employees. For a scheme closed to new entrants, current active members will continue to accrue benefits but for a scheme closed to future accrual, current active members will become preserved members and no further benefits are accrued.

Deferred member

A member no longer accruing benefits (primarily due to leaving employment) but who has accrued benefits that will be payable at a future date.

Defined benefit scheme

A scheme where the benefits are defined independently of the contributions payable, and benefits are not directly related to the investments of the scheme. The scheme may be funded or unfunded.

Defined contribution scheme

A scheme providing benefits on a money purchase basis. The contributions are known in advance. The benefits will only be known at the time of retirement and will be whatever can be bought by the accumulated contributions.

Diversified growth

A form of target return fund in which the portfolio is a broad portfolio of different asset classes rather than being based on a single asset class.

Employer Covenant

The ability and willingness of an employer to support a pension scheme. This can be seen as the financial strength of the sponsoring employer.

Equities

Equities are the principal way in which most companies are financed. When a company wants to raise money they can sell shares for which they receive a lump

sum. In return the shareholder (buyer) has a share in the equity capital (or ownership) of the company. This differs from bonds in that the shareholder is not loaning the company money but is buying a share in the ownership of the company.

The shareholder is entitled to receive a share in the net profits of the company. This income is paid in the form of dividends. The dividend payments are not guaranteed to be paid and the amount is uncertain. Shareholders also have the right to attend and vote at general meetings of the company.

Equities offer investors high potential returns for high risk. In the long run, dividend payments are expected to grow with inflation and real growth in the company. However, as equities are not redeemable there is a high risk of capital loss should the company run into financial trouble.

Equity Risk Premium (ERP)

The expected outperformance of equities over that of another investment with a risk-free return (usually gilts), expressed as a percentage.

Final salary scheme

A defined benefit scheme where the benefit is calculated only by reference to the final earnings of the member, usually also based on pensionable service.

Government Bonds

Bonds issued by the governments of developed countries are typically the most secure long-term investment available. As they are low risk they have a low expected return with yields typically lower than other types of bond.

Bonds can either be fixed or index-linked.

Index-linked bonds provide a secure investment in real terms, as the coupon payments and the redemption proceeds are linked to movements in inflation (typically the Retail Prices Index).

Guaranteed Minimum Pension (GMP)

The minimum pension which an occupational pension scheme must provide as one of the conditions of contracting out for post 5 April 1978 and pre 6 April 1997 service (unless it is contracted-out on a "protected rights basis"). These benefits must be provided from GMP payment age and delivered in a specific form, with minimum increases as set out in legislation.

Hedge Fund

A loosely regulated investment fund which uses a variety of investment strategies, products and positions (such as short selling) in order to generate returns.

Hybrid scheme

A scheme which offers both defined benefit and defined contribution sections or benefits which are the better of a defined benefit and a benefit on a defined contribution basis.

Income Drawdown

The case where an individual defers buying an annuity, instead taking an income directly from his pension fund.

LDI – Liability Driven Investment

An investment strategy approach where asset allocation is linked to the liabilities of the scheme. In practice, all strategies should be "driven" by the "liabilities". The term is often used by fund managers to describe swap overlay strategies.

Liabilities

See Technical Provisions.

Limited Price Indexation (LPI)	The statutory inflation measurement with an upper limit used by pension schemes for pension increases and revaluation. Statutory increases referred to RPI up to April 2011 and changed to CPI from April 2011 onwards.
Matching	An investment term meaning to invest in assets which will produce cash flows equal to, and at the same time as, the cash flows required to make liability payments. In practice this is difficult to do exactly, so pension schemes will try to match as closely as possible. For example, this might mean investing in index-linked gilts to meet the payments of index-linked pensions. The best match for salary increases (i.e. for active liabilities) is generally thought to be equities. A scheme might decide to mis-match deliberately if, say, it was very well funded and it expected that it could achieve a better return by doing so.
Pensioner member	A member of the scheme who is receiving benefits.
Pension Ombudsman	An independent, levy funded individual who determines complaints by scheme members and beneficiaries about the way a pension scheme is run by scheme trustees, managers, administrators and employers.
Recovery Plan	If a valuation shows a scheme is not meeting its statutory funding objective, the trustees must put in place a recovery plan showing how the objective will be met and over what time period.
Revalued average earning scheme (or revalued career average scheme)	A scheme in which the benefits accrue in relation to an individual's earnings indexed from the year of receipt to the year when the benefits become due.
Schedule of Contributions	The trustees of an occupational defined benefit pension scheme are required to prepare, and from time to time review, and if necessary revise, a schedule of contributions. The schedule sets out the rates of the contributions payable to the scheme and the dates by when those contributions should be paid. It enables the trustees to monitor whether the contributions due to the scheme have been paid.
Scheme Specific Funding	The current regime and successor to the minimum funding requirement. A defined benefit scheme is required to have sufficient and appropriate assets to meet its technical provisions.
Statement of Funding Principles	Trustees are also required to have in place a Statement of Funding Principles. This statement sets out their policy for meeting the statutory funding objective.
Statement of Investment Principles	A statement by the trustees of UK occupational schemes which is required under law. This sets out the trustees' attitude to certain specified investment issues, including such varied matters as risk and ethical investment.
Statutory Funding Objective (SFO)	Introduced by the Pensions Act 2004, the statutory funding objective (SFO) requires that an occupational pension scheme must have sufficient assets to cover its technical provisions. If a scheme does not meet the SFO, its trustees must agree a recovery plan with the scheme's principal employer. ³

Technical Provisions

The value of the benefits that the pension scheme has agreed to pay in the future – usually quoted in Present Values. Also known as liabilities.

Transfer value

When a member leaves employment, they may choose to transfer their pension to the scheme offered by their new employer (or another suitable arrangement). The amount of the transfer payment which is made from one pension scheme to another is called a transfer value.

Trustee

An individual or company appointed to carry out the purposes of a trust in accordance with the provisions of the trust instrument and general principles of trust law.

Common Acronyms

Acronym	Definition
CARE	Career Average Revalued Earnings
CETV	Cash Equivalent Transfer Value
CPI	Consumer Prices Index
DWP	Department for Work and Pensions
ERP	Equity Risk Premium
ETV	Enhanced Transfer Value
FRS	Financial Reporting Standard
IAS	International Accounting Standard
IRP	Inflation Risk Premium
LDI	Liability Driven Investment
LPI	Limited Price Indexation
MND	Member Nominated Director
MNT	Member Nominated Trustee
PA95	Pension Act 1995
PA04	Pensions Act 2004
PPF	Pension Protection Fund
RPI	Retail Prices Index
SEDR	Single equivalent discount rate
SFO	Statutory Funding Objective
SOFP/SFP	Statement of Funding Principles
SoC	Schedule of Contributions
SOIP/SIP	Statement of Investment Principles
TPR	The Pensions Regulator