

Barnett Waddingham

# **South Yorkshire Passenger Transport Pension Fund**

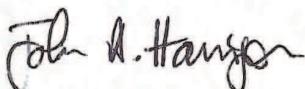
Actuarial Valuation at 31 March 2010

**J A Harrison  
Barnett Waddingham LLP**

**13 January 2011**

## 1 Summary

- 1.1 This report is addressed to the South Yorkshire Integrated Transport Authority ("the Authority") but it is intended that a copy of the report is also made available to First Group. It sets out the financial position of the South Yorkshire Passenger Transport Pension Fund ("the Fund") as at 31 March 2010 including sensitivity to changes in key assumptions.
- 1.2 The principal results are summarised below:
  - On the assumptions used, the Fund's liabilities were £26,546,000 more than the value of the Fund's assets, equivalent to a funding level of 86 per cent.
  - Using the same assumptions adopted for the calculation of the liabilities, the Employer's contribution rate required to cover the cost of accruing benefits and expenses was 21.5 per cent of Pensionable Pay.
- 1.3 The following decisions have been made since the Valuation Date:
  - The Employer has agreed to pay phased deficit reduction contributions over the next ten years to eliminate the deficit revealed at the valuation. The payments start at £1.5 million per annum (payable monthly) during the first year from 1 April 2011 and increase by £0.5 million per annum over the subsequent two years. Payments of £4.4 million per annum (payable monthly) then continue until 31 March 2021. This agreement will be reviewed at the next actuarial valuation.
  - The Employer will also pay 21.5 per cent of Pensionable Pay to fund future accrual in the Fund from 1 April 2011.
- 1.4 No liability to any third party is accepted in respect of this report. Figures required for other purposes, such as employer accounting or corporate mergers, acquisitions and other transfers of business assets should be calculated in accordance with the specific requirements for such purposes and it should not be assumed that the figures contained in this report are appropriate. The report may be disclosed to other parties with the consent of the Authority.
- 1.5 The next formal valuation of the Fund should be made as at 31 March 2013.



J A Harrison  
Fellow of the Institute and Faculty of Actuaries  
Partner, Barnett Waddingham LLP  
13 January 2011

## Contents

1	Summary.....	2
2	Valuation background .....	4
3	Fund background.....	6
4	The inter-valuation period.....	7
5	The valuation results.....	9
6	Comment on the results.....	11
7	Sensitivity analysis.....	13
8	Recovery Plan.....	16
9	Comments on investments .....	17
<b>Appendix 1</b>	Assumptions on which the valuation results are based .....	19
<b>Appendix 2</b>	Summary of the data used.....	24
<b>Appendix 3</b>	Summary of LGPS Benefits .....	25
<b>Appendix 4</b>	Rates and Adjustments Certificate.....	29

## 2 Valuation background

- 2.1 Acting on the instructions of the Authority an actuarial valuation of the Fund has been carried out as at 31 March 2010 ("the Valuation Date").
- 2.2 The valuation has been carried out in accordance with Regulation 36 of The Local Government Pension Scheme (Administration) Regulations 2008 ("the Regulations") as amended.
- 2.3 These results take into account all of the changes in the Regulations governing the Local Government Pension Scheme ("the LGPS") since the previous valuation, including the changes that have come into effect on 1 April 2008.

### Funding objective

- 2.4 The aim of a funded pension scheme is to build up reserves over the course of the members' employments which should be sufficient to meet the cost of providing benefits as they fall due. A scheme's "funding objective" sets out the rate at which these reserves are intended to be built up.
- 2.5 The Authority's funding objective is to achieve and then maintain assets equal to 100 per cent of projected accrued liabilities, assessed on an ongoing basis including allowance for projected final pay as set out in its Funding Strategy Statement.
- 2.6 The Fund's ongoing liabilities are a prudent estimate, made on actuarial principles, of the assets needed at any particular time to make provision for benefits already accrued under the Fund. These include pensions in payment (including those payable to survivors of former members) and benefits accrued by other members which will become payable in the future.

### The purpose of the valuation

- 2.7 The actuarial valuation is intended to satisfy a number of purposes having regard to the Authority's Funding Strategy Statement:
  - To compare the value of the assets with the value of the liabilities at the Valuation Date assuming that the Fund will continue. This allows the financial position of the Fund to be assessed in relation to its funding objective.
  - To set out a future contribution rate which, in my opinion, should be sufficient to cover the cost of any future benefit accrual, and if there is a shortfall in the Fund at the Valuation Date, target full compliance with the funding objective by the end of the Recovery Period
- 2.8 This report has been written in accordance with "Technical Actuarial Standard R: Reporting Actuarial Information" and "Technical Actuarial Standard D: Data" issued by the Board for Actuarial Standards and version 9.0 of actuarial guidance note "GN9: Funding Defined Benefits – presentation of actuarial advice", insofar as they apply to a report such as this. The following aspects of GN9 are not relevant to LGPS Funds in the current circumstances and we have not reported on them:
  - Paragraph 3.4.16 of GN9 requires the actuary to include the certification of technical provisions in relation to a valuation under Part 3 of the Pensions Act 2004. As Part 3 of the Pensions Act 2004 does not apply to the LGPS, this report does not comply with paragraph 3.4.16 of GN9; and
  - Part 3.5 of GN9 requires the actuary to report on the value of the liabilities that would arise had the Fund wound up on the Valuation Date (based on the cost of buying out the accrued benefits with insurance policies). As the LGPS is a statutory scheme, there is no regulatory provision for the Fund to wind up and the Fund members have a statutory right to their accrued benefits. Therefore the concept of solvency on a buy-out basis does not apply to the LGPS. Accordingly, this report does not comply with part 3.5 of GN9.

## Risks

2.9 It is important that the Authority considers the risks associated with their policy for meeting the funding objective.

2.10 The following risks are particularly important in the context of the Fund and the Authority needs to consider these when setting the liabilities:

2.11 **Employer covenant risk**

In agreeing the level of Employer contributions with the Employer (First South Yorkshire Limited) it is important that the Authority considers the ability of the Employer to make contributions to the Fund now and in the future. One of the greatest risks to the ability of the Fund to meet members' benefits in the future is that the Employer may be unable to fund the current and future deficits, although ultimately that cost would fall on the taxpayer in the event of failure of First South Yorkshire Limited.

2.12 **Investment risk**

The value of the Fund's assets may not move in line with the Fund's liabilities. For example, the Fund may invest in volatile assets such as equities whose value might fall, or changes in interest rates may affect the liabilities more than the assets. The funding level of the Fund can be very sensitive to the level of investment returns.

2.13 **Mortality**

It is not possible to predict with any certainty how long members of the Fund will live, and if members live longer than expected, further funding of the Fund may be required in the future. This is covered in greater detail in the Sensitivity Analysis section.

2.14 **Member Options**

There are a number of options which can be exercised by members which may impact on the funding position of the Fund.

## Valuation assumptions

2.15 The assumptions for calculating the Fund's ongoing liabilities should be chosen after considering detailed actuarial advice.

2.16 The actuarial method and assumptions do not determine the actual cost of benefits (which cannot be known in advance) – they just set the pace of funding i.e. the rate at which contributions are paid. The actual cost of the benefits will depend upon a number of factors including:

- The membership profile including the number of members, their age and earnings.
- The benefit structure of the Fund.
- Future experience, for example investment returns, salary growth and mortality experience.

2.17 However, the pace of funding does have an impact on the level of security of members' benefits, should the Employer fail.

2.18 A detailed description of the assumptions used is set out in Appendix 1.

## 3 Fund background

### Fund status

- 3.1 The Fund commenced on 15 November 1993.
- 3.2 The Fund is contracted out of the State Second Pension Scheme ("S2P").
- 3.3 The Fund is closed to new members.

### Scheme benefits

- 3.4 The benefits valued are those set out in the regulations governing the Local Government Pension Scheme. No allowance has been made for any other benefits. A summary of the benefits valued is attached as Appendix 3

### Scheme data

- 3.5 The Fund's administrators have supplied details of the membership of the Fund at the Valuation Date. A summary of the data is attached as Appendix 2.
- 3.6 I have undertaken various checks on the data supplied and, whilst this should not be considered to be an audit of the data, I am satisfied that it is sufficiently accurate for the purposes of the valuation.

### Scheme assets

- 3.7 Audited accounts for the Fund have been provided by the Fund's administrators for the period from 31 March 2007 to 31 March 2010.
- 3.8 The accounts show that the Fund's total assets have reduced from £162,078,000 at the previous valuation to £158,374,000 at the Valuation Date. This amount makes allowance for all debtors, creditors, prepayments, accounts and cash balances and excludes members' Additional Voluntary Contributions ("AVCs") which are invested in separately designated member accounts. For the purposes of this valuation, AVCs have been excluded from both the assets and liabilities of the Fund.
- 3.9 At the Valuation Date, the assets of the Fund were invested in funds operated by South Yorkshire Pensions Authority and Old Mutual Asset Managers.

## 4 The inter-valuation period

### Previous valuation

4.1 The previous valuation of the Scheme was carried out by me as at 31 March 2007. The results of that valuation were set out in full in the report to the Authority dated 27 March 2008 and are summarised below:

Results of valuation as at 31 March 2007	
	£000s
Value of past service liabilities	164,753
Value of assets	162,078
	—
Past service surplus/(deficit)	(2,675)
Funding level	98%
Employer contribution rate for future service benefits (as a percentage of Pensionable Pay)	19.4%

4.2 I understand that the Employer has paid contributions at the following rates during the inter-valuation period:

Contributions paid since 31 March 2007	
With effect from:	Percentage of Pensionable Pay
1 April 2007	17.7%
1 April 2008	19.4%

4.3 In addition the Employer made a deficit payment of £4,186,000 in March 2008.

### Changes to the LGPS

4.4 The most significant change has been the introduction of a new scheme from 1 April 2008. On 4 April 2007 the Department for Communities and Local Government ("DCLG") issued regulations for the LGPS in England and Wales to come into effect from 1 April 2008. Under these regulations benefits earned after 31 March 2008 will remain final salary benefits but will be payable from 65. Pensions will accrue at 60ths with no separate lump sum accrual, although scheme members will be able to exchange pension for lump sum benefits. Benefits earned before 31 March 2008 will be as before.

4.5 A number of other benefit changes also came in to force, along with variable levels of employee contributions.

4.6 The 2010 Emergency Budget announced that, in future, pension increase orders will be linked to the Consumer Price Index ("CPI") rather than the Retail Price Index ("RPI"). Also, it is anticipated that State Pension Age will be increased to 66 sooner than previously anticipated which may influence future retirement patterns.

- 4.7 A new independent pensions commission, led by Lord Hutton, has also been created to investigate pension reform across the public sector. We anticipate some changes to the LGPS in future although at this stage it is difficult to assess what they might be.
- 4.8 Full details of the current benefit and contribution structure are set out in Appendix 3.
- 4.9 The effect of the variation in experience from that assumed over the inter-valuation period is detailed in section 6.

## 5 The valuation results

### Funding method

- 5.1 The actuarial valuation method used for the purposes of this valuation is known as the “Projected Unit Method”. This is the same method that was used at the previous valuation.
- 5.2 A value has been placed on the liabilities of the Fund which arise in respect of service accrued before the Valuation Date. This value is calculated by projecting forward the accrued benefits to the expected dates of payment, according to the actuarial assumptions set out in this report. For members still in service this includes an allowance for expected future salary increases until each member’s expected date of retirement or earlier exit from the Fund. These projected benefits are then discounted back to the Valuation Date at the valuation rate of interest to allow for the fact that they do not become payable for some time and, during that time, the reserves held will earn interest.
- 5.3 I have taken the assets of the Fund into account at their market value. In doing so, it is important that I use assumptions to value the liabilities that are consistent with market indicators at the Valuation Date. This means that the funding position of the Fund will be sensitive to investment market volatility
- 5.4 The assumptions used to calculate the liabilities are set out in detail in Appendix 1, and the reader should take note of the comments made in that appendix.

### Results

- 5.5 The results of my valuation of the assets and liabilities of the Fund at the Valuation Date are summarised below:

Past service valuation results	
Present value of accrued liabilities in respect of:	£000s
Active members	54,675
Deferred pensioners	23,981
Pensioners (and dependants)	106,264
	_____
Total liabilities	184,920
Market value of assets	158,374
Surplus/ (Deficit)	(26,546)
Funding level	86%

- 5.6 The “funding level” is the ratio of assets to liabilities and this has reduced from 98 per cent at the previous valuation to 86 per cent at this valuation based on the assumptions used.

## Future service

5.7 I also consider the future service contributions needed to meet the cost of benefits accruing of active members of the Fund.

5.8 The Projected Unit Method with a three year control period is used to calculate the contribution rate necessary to support the benefits as they are earned in future years. First, the benefits arising in the three years following the Valuation Date are projected forward in the same way as for the Past Service Liabilities using the same assumptions. The value placed on these benefits is compared with the value of the Pensionable Pay expected to be paid over the same period. The ratio gives the relevant standard contribution rate.

5.9 If new members join the Fund and so maintain the current age and salary profile, then the Projected Unit Method produces a stable future contribution rate over the long term. If new members do not join in sufficient numbers, the age profile will rise. Pensions normally cost more for older members, so in this case the contribution rate would rise as a percentage of payroll (though the absolute cost will fall as the membership reduces) over the long term because of the closed nature of the Fund. I am satisfied that the method is appropriate for the Fund although it will be reviewed at the next valuation.

5.10 On the method and assumptions described, the Employer contribution rate required to finance future benefits as they are earned from year to year is 21.5 per cent of Pensionable Pay, effective as at 1 April 2011 and payable on a monthly basis. This contribution rate is made up as set out in the following table:

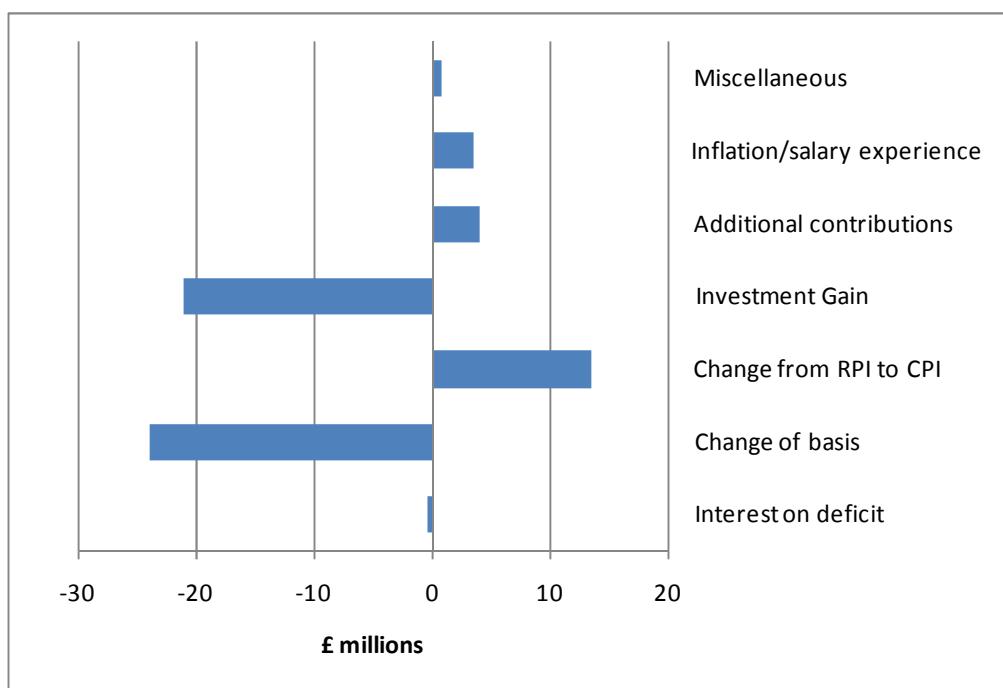
Future service contribution rate	
<i>As a percentage of Pensionable Pay:</i>	%
Retirement and contingent benefits	26.3
Expenses	1.5
Total contribution rate	27.8
Less average member contribution rate (exclusive of AVCs)	(6.3)
Employer contribution rate	21.5

5.11 The administrative and operational expenses of running the Fund are currently met by the Authority, but the Authority is subsequently reimbursed by the Fund. I have therefore made an allowance for expenses of 1.5 per cent of Pensionable Pay within the future service contribution rate. This is consistent with the allowance included in the last valuation.

## 6 Comment on the results

### Past service

- 6.1 As part of the valuation I have investigated the main influences on the valuation results during the three year inter-valuation period as explained below.
- 6.2 The previous valuation was carried out as at 31 March 2007 and revealed a deficit of £2.7 million. This compares with a deficit of £26.5 million at the Valuation Date. The corresponding funding level has reduced from 98 per cent to 86 per cent.
- 6.3 There are many factors which influence a pension scheme's finances, some of which lead to an increase in surplus and some of which lead to a reduction in surplus. The most financially significant factors have been quantified approximately where possible and are shown in the graph below. The Authority should bear in mind that this exercise can only ever be approximate as the precise interaction between the many factors can never be completely reconciled.



- 6.4 This analysis has been assessed by comparing the experience with the assumptions used at the previous valuation. The impact of the change in basis for the current valuation is added as a final component.
- 6.5 The change in basis item can be broken down as follows:

Breakdown of "change of basis"	
Change due to market conditions ( <i>lower discount rate, higher price inflation</i> )	(22.4)
Change due to amendment to risk premia	2.4
Change due to change to salary increase assumption	2.8
Change due to amendment to mortality and commutation assumption	(7.7)
	_____
	(24.9)

## Future service

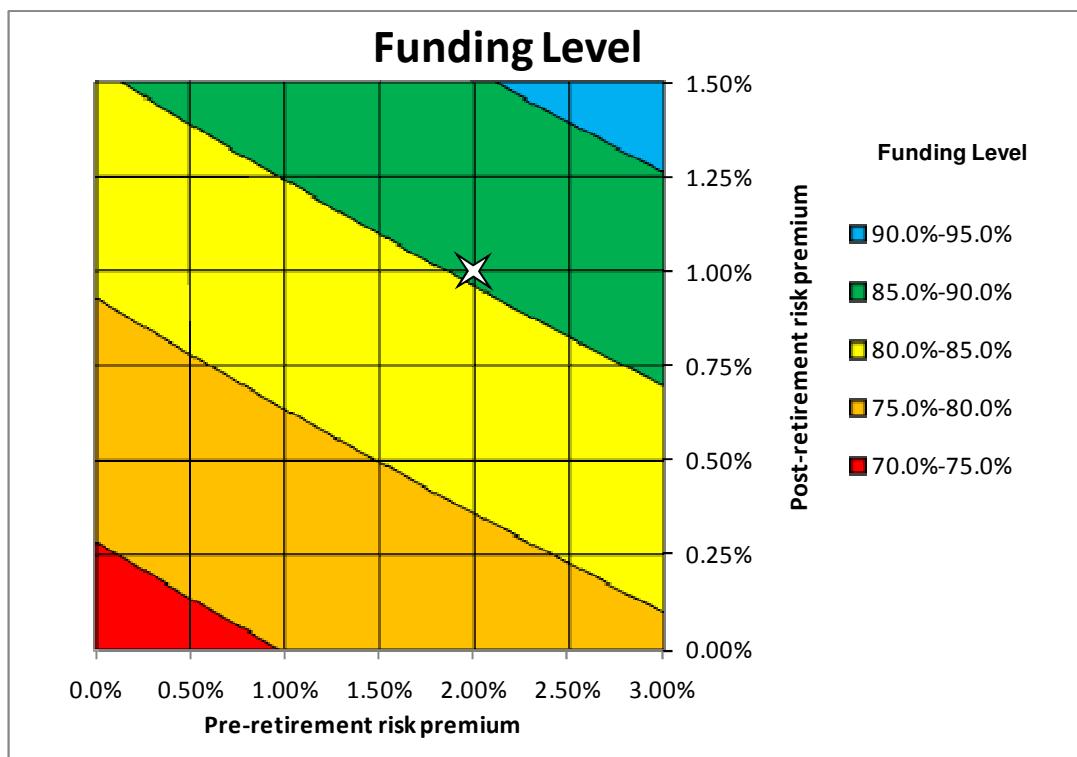
- 6.6 At the previous valuation the total contribution rate for the Fund excluding expenses was 23.9 per cent of Pensionable Pay. Using last time's valuation assumptions and calculation method, this has increased to 25.5 per cent of Pensionable Pay which reflects changes in the profile of the active membership during the inter-valuation period.
- 6.7 However, based on the assumptions outlined in this report the contribution rate has increased to 26.3 per cent of Pensionable Pay. This is due to the changes to the assumptions since the previous valuation.

## 7 Sensitivity analysis

- 7.1 The funding position of the Fund revealed in this report represents one of many possible views of the Fund's finances at the Valuation Date. It is important that the Authority understands that the finances of the Fund shown in this report are based on the assumptions used to determine the liabilities. Changes to the assumptions will affect the disclosed financial position of the Fund.
- 7.2 In order to illustrate this I have carried out a number of calculations to highlight the sensitivity of the disclosed financial position to the assumptions adopted. I have focused on those assumptions to which the financial position of the Fund is most sensitive.

### Financial assumptions

- 7.3 An important part of the funding basis is the allowance made for investment returns in excess of gilt yields, also known as the risk premium. Gilt yields are often used as a proxy for a "least risk" rate of return. The greater the risk premium the more optimistic the valuation basis and the lower the calculated value of liabilities.
- 7.4 The basis used in this report includes an allowance for assets to outperform fixed-interest government bonds (gilts) by around 2.0 per cent per annum before retirement and 1.0 per cent per annum after retirement. This means that the ongoing basis allows credit to be taken in advance for the expected future outperformance of the Fund's assets over gilts.
- 7.5 In order to demonstrate how investment returns affect the disclosed finances of the Fund I have calculated the liabilities of the Fund varying the investment return assumptions but with all other assumptions unchanged from the ongoing basis. The results of my calculations are shown in the graph below. The cross on the graph shows the position on the basis used in this report.



- 7.6 The graph above shows that removing the allowance for outperformance above gilts would reduce the funding level to around 73 per cent with a corresponding deficit of around £59 million.

7.7 To highlight the sensitivity of the Fund's finances to changes in equity market conditions I have considered the impact of equity markets changing by 10 per cent with no movement in the yields on corporate bonds or gilts. The results of this analysis are shown below:

Sensitivity to equity markets			
	Equities 10% lower	No change in equities	Equities 10% higher
Assets (£000s)	151,090	158,374	165,658
Liabilities (£000s)	184,920	184,920	184,920
Surplus/(Deficit) (£000s)	(33,830)	(26,546)	(19,262)
Funding level	82%	86%	90%

## Mortality

7.8 Another increasingly important aspect of the basis is the mortality assumptions adopted. In recent years, estimates of life expectancy have increased greatly and this has had an adverse impact on the funding of defined benefit pension schemes.

7.9 However, there has also been some evidence suggesting that self-administered pension schemes may suffer from slightly heavier mortality than that experienced by the life insurance industry (from which traditionally the mortality tables are compiled). There is also evidence suggesting that the North of England tends to experience higher mortality rates than the South.

7.10 The Fund's liabilities are based on mortality in line with the latest available statistics (S1PA Tables) adjusted to reflect the year of birth of non-pensioners and pensioners. An allowance is also made for future mortality improvements using the CMI projections with a long term improvement rate of 0.5 per cent per annum.

7.11 I have also adjusted the base mortality tables to allow for the fact that the membership is based in the South Yorkshire region. There is evidence to suggest that there are regional variations in mortality rates – with different parts of the country exhibiting significantly different mortality experience. This is likely to be a result of a combination of social, environmental and economic factors. For example there is evidence suggesting that mortality rates can vary significantly based on industry and earnings.

7.12 The table below sets out information on Standardised Mortality Ratios (SMR) in the South Yorkshire region as published by the Office of National Statistics based on deaths between 2004 and 2006. The SMR represents the number of deaths relative to the national average for England and Wales (an SMR of 100).

Standardised mortality ratios			
Area of usual residence	Persons	Male	Females
<b>South Yorkshire (Met County)</b>	<b>111</b>	<b>110</b>	<b>111</b>
Barnsley	119	120	118
Doncaster	113	112	113
Rotherham	112	110	114
Sheffield	105	105	106

7.13 For example, the combined SMR for South Yorkshire is 111. This means that mortality rates are heavier (i.e. a shorter life expectancy) than the UK national average.

7.14 Based on the fact that the majority of the membership is based in and around South Yorkshire, the information above would suggest an average SMR for the Fund above 100 which equates to slightly higher mortality (and therefore shorter life expectancy) than the national average. As the Fund exhibits mortality rates in excess of that suggested by the above, an uplift to mortality rates of 20% has been applied to reflect this.

7.15 It should be noted that this information is based on population statistics but, in my opinion, it would not be unreasonable to assume that the underlying patterns of regional mortality variations observed in the general population can be extended to pension scheme mortality.

7.16 To help the Authority understand the impact of mortality on the Fund's finances I have considered the impact of variations in the mortality assumptions on the funding position. The table below shows the difference in funding level if different mortality tables are chosen. It also includes the results based on the mortality assumptions used for the previous valuation.

Sensitivity to changes in mortality table and projection assumptions			
	Changes in mortality rates		
	130% PA92 tables (2007 mortality)*	120% S1PA tables CMI_2009 0.5% p.a. underpin**	120% S1PA tables Medium cohort 1% p.a. underpin
Assets (£000s)	158,374	158,374	158,374
Liabilities (£000s)	176,366	184,920	186,781
Surplus/(Deficit) (£000s)	(17,992)	(26,546)	(28,407)
Funding Level	90%	86%	85%

\* This basis allows for the 2007 mortality assumptions together with the 2010 financial assumptions

\*\* This is the 2010 mortality assumption

7.17 It is clearly very difficult to accurately predict long-term mortality trends and accordingly it will be necessary to review the allowance made for mortality at each future valuation.

## 8 Recovery Plan

- 8.1 There is a deficit revealed by the valuation of £26,546,000. Additional contributions are required from the Employer in order to fund this deficit.
- 8.2 A recovery plan has been agreed with the Authority to spread the deficit over a period of 10 years from 1 April 2011. Deficit payments are to be as follows:

Year	Annual deficit contributions (payable monthly)
	(£000)
1	1,500
2	2,000
3	2,500
4-10	4,351

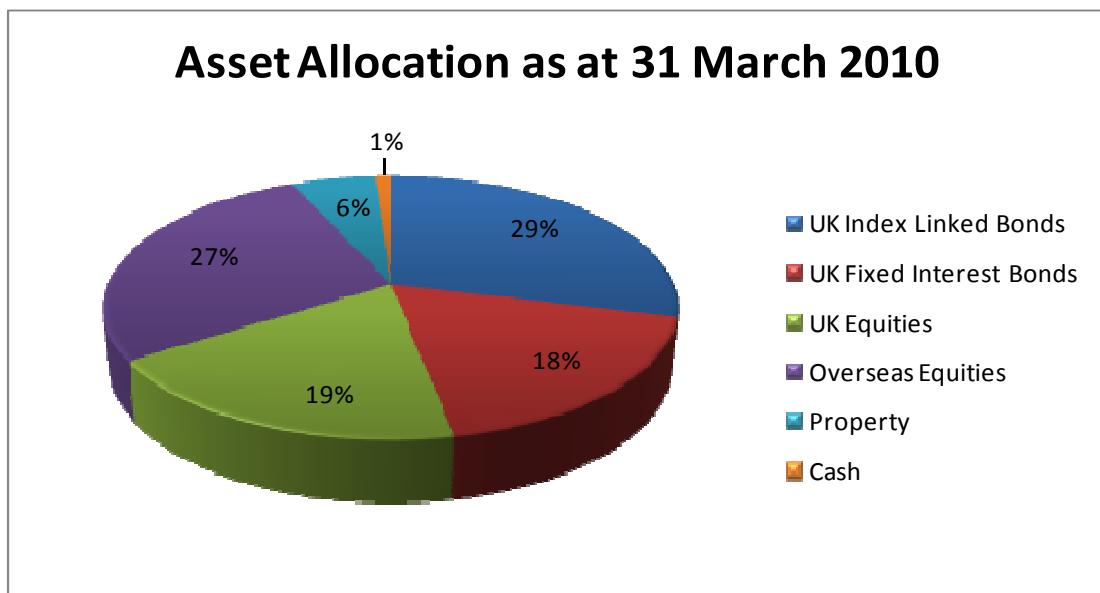
- 8.3 Note that the above contributions are in addition to the Employer's future service contribution rate of 21.5 per cent of Pensionable Pay.
- 8.4 The assumptions underlying the Recovery plan are the same as those used for calculating the liabilities.
- 8.5 The Scheme's funding position will be reviewed as part of the next formal actuarial valuation as at 31 March 2013 and the contribution rates may be amended to reflect any changes in the level of assets and liabilities. Some variation in contribution rates is likely as the market-related nature of valuations means that funding levels and contribution requirements can be volatile over time.

## 9 Comments on investments

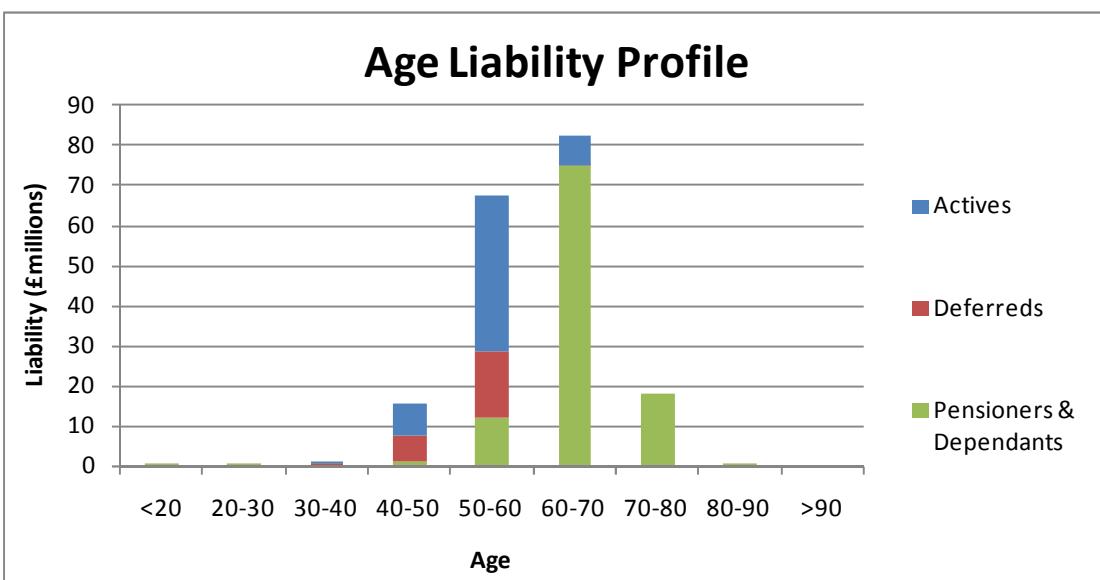
### Investment strategy

9.1 The valuation of the liabilities described in this report is based on market indications of long-term interest rates at the Valuation Date (amongst other factors). Under this methodology the liability values will change in future as interest rates change (in a similar way to the way in which the market value of long-term bond investments moves). However, the behaviour of the assets of the Fund will depend upon the performance of the actual investments held. The difference between the actual investments and the liability profile results in a "mismatch" between the assets and the liabilities. The volatility of the funding level for the liabilities will depend upon the extent of this mismatch.

9.2 At the Valuation Date the allocation of the Fund's assets (excluding AVCs) was as follows:



9.3 At the Valuation Date the breakdown of the liabilities between different age groups was as follows:



9.4 It is recognised that the Fund is invested in assets such as equities, which are expected to outperform bond investments over the long term. This means that equity market volatility may be expected to feed through to volatility in the valuation results in the short term.

- 9.5 To the extent that a proportion of the liabilities represent pensions that are not expected to be paid until a long time after the Valuation Date, then it is not necessarily inappropriate for the Fund to invest in assets such as equities that are expected to outperform bonds investments over the long term. However, the Authority should be aware that this will make the funding position volatile. The Authority should consider matching any short-term liabilities with investments such as bonds that are expected to move more closely in line with the liabilities.

## Appendix 1 Assumptions on which the valuation results are based

The Fund's liabilities are the benefits for members that will be paid in the future. We do not know what the level of the benefit will be, when it will be paid or for how long it will be paid. Similarly, we do not know what rate of return will be earned on the Fund's assets. We therefore make assumptions about future events in order to place a value on the liabilities.

A market-related valuation approach has been used, taking the assets of the Fund at their market value. The liabilities have been valued consistently, based on the financial returns that were available in the market place at the Valuation Date.

### Financial assumptions

The most significant assumptions are the financial ones dealing with the expected rates of return on the assets and the future levels of salary growth. These are summarised below:

Financial Assumptions	% per annum	
	2010 valuation	2007 valuation
Investment return pre-retirement	6.50	6.90
Investment return post-retirement	5.50	5.60
Salary increases	3.85	4.25
Price inflation – RPI	3.60	3.00
Price inflation - CPI	3.00	n/a

The financial assumptions underlying the liabilities are different from those used at the previous valuation.

A description of how the main assumptions have been derived is set out below together with details of the other assumptions used. A key part of this derivation is the level of long-term fixed-interest and index-linked gilt yields on the Valuation Date which were around 4.5 per cent and 0.7 per cent respectively.

#### Retail Price Inflation (RPI)

The starting point is a comparison of the average yield on these fixed-interest and index-linked gilts. This gives an indication of the level of price inflation expected by the market. However, it is expected that this will be slightly higher than actual future price inflation because there will be an inflation risk element in the fixed interest yields.

At the Valuation Date the comparison of fixed-interest and index-linked yields (as measured by the Bank of England's 20 year spot inflation rate) indicated that the market was anticipating long-term inflation of 3.8 per cent per annum. Allowing for the inflation risk element, an assumption of 3.6 per cent per annum for price inflation was agreed.

It should be noted that as at 31 March 2010 the Bank of England inflation curve was significantly upward sloping. This was not the case in 2007. In theory this justifies the use of a lower inflation assumption for current pensioners than for non-pensioners. However, the use of a single average inflation rate assumption has been maintained.

## Pension increases

Previously, pension increases and revaluation in deferment were assumed to be in line with the Retail Prices Index ("RPI"). The 2010 Emergency Budget announced that in the future, pension increase orders will be instead linked to the Consumer Prices Index ("CPI") which is similar to RPI but specifically excludes housing costs. I have valued future pension increases on this basis and have assumed that CPI will on average be 0.6 per cent per annum below RPI. This is based on observations of past data.

It has been assumed that pensions in excess of GMP increase in payment and in deferment in line with inflation using CPI as detailed above. CPI is assumed to be 3.0 per cent per annum.

The Guaranteed Minimum Pension (GMP) earned after 5 April 1988 increases at a rate of 3 per cent per annum or the increase in CPI if less. This is known as "3 per cent Limited Price Indexation" or "3% LPI". It has been assumed that these pensions also increase by 3.0 per cent per annum.

## Salary growth

Benefits are based on a member's salary at the time the member leaves active service. An assumption is therefore needed about future salary growth. Salary increases may result from price inflation and real economic growth as well as increases awarded on account of promotion and experience gained.

At the last valuation it was assumed that salaries would increase at 1.25 per cent per annum in excess of the assumption for price inflation (RPI). This resulted in an assumed increase of 4.25 per cent per annum at the last valuation.

It has been agreed that salaries will be assumed to increase at 3.85 per cent per annum which is 0.25 per cent in excess of the allowance for price inflation (RPI). The decision to reduce this assumption was taken after consideration of likely future pay progression.

## Investment return

An allowance needs to be made for the yield produced by investing the existing funds and future contributions.

It has been agreed to adopt an assumption for investment returns of 6.5 per cent annum before retirement and 5.5 per cent per annum after retirement. This assumes that overall the Scheme's assets will outperform the returns available on gilt-edged stocks by assuming a risk premium of around 2.0 per cent per annum prior to retirement and a risk premium of around 1.0 per cent per annum post-retirement at the Valuation Date.

At the last valuation it was assumed that the Fund's assets would out-perform gilts by 2.25 per cent per annum pre-retirement and 0.75 per cent per annum post-retirement.

## Demographic assumptions

### Mortality

The assumptions regarding the mortality of members and their spouses both before and after retirement are based on standard tables produced by the Actuarial Profession and I set out details of the assumptions used in the table below:

Mortality statistics		31 March 2010	31 March 2007
<b><i>Non-pensioners</i></b>			
Before retirement		S1PA, Year of Use, CMI_2009 long term rate of improvement of 0.5% Uplifted by 20%	A92
After retirement – normal health		S1PA, Year of Use, CMI_2009 long term rate of improvement of 0.5% Uplifted by 20%	PA92 Average Year of Birth Uplifted by 30%
After retirement – ill health		As per normal health but rated up 6 years	As per normal health but rated up 6 years
<b><i>Pensioners</i></b>		S1PA, Year of Use, CMI_2009 long term rate of improvement of 0.5% Uplifted by 20%	PA92 Average Year of Birth Uplifted by 30%

The base mortality table used is drawn from the study of self-administered pension schemes, rather than the insured lives population. The base mortality rates are in general heavier (with therefore lower life expectancy) for the "S1" series of tables. I have then applied a loading of 20 per cent to the base mortality rates to allow for the specifics of the Fund membership.

The allowance made for future improvements in mortality have been strengthened compared to 2007, reflecting a continuing weight of evidence of mortality improvements and an assumption that improvements will not fall away to zero. This is consistent with good practice in the private sector.

A simplified analysis of the Fund's actual mortality experience since the previous valuation showed that the Fund's experience was in line with that expected. The analysis showed that there were 57 deaths over the period compared to 58 deaths expected according to the assumptions used for the 2007 valuation. The analysis showed that experience was slightly heavier at older ages (ie there were more deaths than expected at older ages), but slightly weaker at younger ages so that overall the general shape of the mortality rates was consistent with the 2007 assumptions. It should be noted that any study over such a short period has limitations given the volume of the dataset.

### Withdrawals

An allowance is made for a certain proportion of active members to leave service each year before reaching Normal Retirement Date. I set out below some sample withdrawal rates which are the same as those used at the previous valuation:

Withdrawal statistics				
Age	Male excluding 5% contributors	Female excluding 5% contributors	Male 5% contributors	Female 5% contributors
20	0.1280	0.1300	0.1020	0.1900
25	0.0880	0.1540	0.1000	0.2020
30	0.0500	0.1380	0.0720	0.1720
35	0.0320	0.0840	0.0520	0.1340
40	0.0240	0.0540	0.0400	0.1000
45	0.0180	0.0380	0.0320	0.0720
50	0.0140	0.0260	0.0240	0.0480
55	0.0100	0.0160	0.0180	0.0280
60	0.0080	0.0080	0.0140	0.0140

An analysis of the Scheme's withdrawal experience since the last valuation supports using the same rates as used at the last valuation. Whilst experience was heavier than assumed (48 actual withdrawals compared to 33 expected), the general shape of the withdrawal rates was consistent with the above assumptions. It should be noted that any study over such a short period has limitations given the volume of the dataset.

## Retirements

For past service liabilities all members have been assumed to retire at age 65 or the age at which they meet the rule of 85 if earlier. For the future service contribution rate, all members born after 31 March 1960 have been assumed to retire at age 65, those born beforehand have been assumed to retire at the age at which they meet the rule of 85 if earlier than 65. Tapering has been applied to benefits earned after 1 April 2008 (and prospective benefits earned before 1 April 2020) for those members to whom it applies.

## III health retirements

50 per cent of the rates set out below:

III health statistics				
Age	Male excluding 5% contributors	Female excluding 5% contributors	Male 5% contributors	Female 5% contributors
19	0.0000	0.0000	0.0000	0.0000
24	0.0001	0.0001	0.0007	0.0005
29	0.0003	0.0005	0.0020	0.0010
34	0.0006	0.0011	0.0038	0.0018
39	0.0012	0.0021	0.0061	0.0032
44	0.0028	0.0038	0.0091	0.0060
49	0.0063	0.0079	0.0137	0.0110
54	0.0125	0.0169	0.0230	0.0200
59	0.0217	0.0316	0.0405	0.0340

On ill-health retirement of active members, members are assumed to be eligible for the higher tier of benefit with a 15 per cent probability. No allowance is made for the “third-tier” of benefit.

These are the same assumptions as used at the previous valuation.

## Cash commutation

Allowance has been made for a 70 per cent probability of members opting to take the maximum cash possible at retirement which is more reflective of the actual practice in the Fund since the last valuation. This is different to the assumption used at the previous valuation when allowance was made for a 50 per cent probability of members opting to take the maximum cash possible at retirement.

## Proportion entitled to dependant's benefits including loading for children

It is assumed that 90 per cent of males and 70 per cent of females will leave a dependant on death. Females are assumed to be 3 years younger than their male dependant. These are the same assumptions as was made for the previous valuation.

## Appendix 2 Summary of the data used

### Membership data

The membership data from the 31 March 2007 valuation is also shown for comparison.

Active Members		31 March 2010		31 March 2007	
	Number	Pensionable Salary (£000s per annum)	Number	Pensionable Pay (£000s per annum)	
Males	389	7,964	572	10,867	
Females	22	480	27	532	
	411	8,444	599	11,399	

Deferred Pensioners		31 March 2010		31 March 2007	
	Number	Pension at Valuation Date (£000s per annum)	Number	Pension at Valuation Date (£000s per annum)	
Males	462	1,491	494	1,411	
Females	64	145	67	138	
	526	1,636	561	1,549	

Pensioners and Dependants		31 March 2010		31 March 2007	
	Number	Pension at Valuation Date (£000s per annum)	Number	Pension at Valuation Date (£000s per annum)	
Males	1,051	5,908	895	4,547	
Females	202	567	176	447	
	1,253	6,475	1,071	4,994	

## Appendix 3 Summary of LGPS Benefits

LGPS Benefits																	
General Features																	
Type of Scheme	Final salary																
Relationship with S2P	Contracted-out																
Member Contributions	Banded Contributions based on full time pay as at 1 <sup>st</sup> April 2010																
<table border="1"> <thead> <tr> <th>Range</th><th>Cont Rate</th></tr> </thead> <tbody> <tr> <td>£0 - £12,600</td><td>5.50%</td></tr> <tr> <td>£12,601 - £14,700</td><td>5.80%</td></tr> <tr> <td>£14,701 - £18,900</td><td>5.90%</td></tr> <tr> <td>£18,901 - £31,500</td><td>6.50%</td></tr> <tr> <td>£31,501 - £42,000</td><td>6.80%</td></tr> <tr> <td>£42,001 - £78,700</td><td>7.20%</td></tr> <tr> <td>£78,700 and above</td><td>7.50%</td></tr> </tbody> </table>		Range	Cont Rate	£0 - £12,600	5.50%	£12,601 - £14,700	5.80%	£14,701 - £18,900	5.90%	£18,901 - £31,500	6.50%	£31,501 - £42,000	6.80%	£42,001 - £78,700	7.20%	£78,700 and above	7.50%
Range	Cont Rate																
£0 - £12,600	5.50%																
£12,601 - £14,700	5.80%																
£14,701 - £18,900	5.90%																
£18,901 - £31,500	6.50%																
£31,501 - £42,000	6.80%																
£42,001 - £78,700	7.20%																
£78,700 and above	7.50%																
	Bands to be increased annually in line with the Pension (Increase) Act 1971.																
	Transitional protection for manual and craft workers (old 5% members) until 01/04/2011.																
Benefit Accrual	<p>Pension = 1/60<sup>th</sup></p> <p>Lump Sum = By commutation 12:1 up to a maximum of 25% of lifetime allowance</p> <p>Spouse's Pension = 1/160<sup>th</sup></p>																
Final Pay	Best of last 3 years pensionable pay.																
Pensionable Pay	Normal salary plus any shift allowance, bonuses, contractual overtime, Maternity Pay, Paternity Pay, Adoption Pay and any other taxable benefit specified as being pensionable.																
Retirement Benefits																	
Normal Retiring Age	Age 65																
Early Retirement	From age 55 (employer consent required if below age 60)																

Flexible Retirement	From age 55 (employer consent required)
	<ul style="list-style-type: none"> <li>- Reduce hours or move to a lower graded post</li> <li>- Draw pension and salary</li> <li>- Employers discretion to waive any actuarial reduction</li> </ul>
Late Retirement	Continue to day before eve of 75 <sup>th</sup> birthday
	Benefits accrue to date of retirement
III Health Retirement	From any age
	<p>Based on an opinion from an independent specially qualified doctor, must be satisfied that the member is permanently unable to do their own job and that they have a reduced likelihood of being capable of obtaining gainful employment after they leave.</p> <p><b>Tier 1</b> – no reasonable prospect of being capable of undertaking gainful employment before age 65, membership enhanced by 100% of prospective service to age 65.</p> <p><b>Tier 2</b> – unlikely to be capable of undertaking gainful employment within 3 years of leaving, but maybe capable of doing so before age 65, membership enhanced by 25% of prospective service to age 65.</p> <p><b>Tier 3</b> – likely to be capable of undertaking gainful employment within 3 years of leaving, benefits are based on membership at date of leaving. Payment will be stopped after 3 years, or earlier, if member is in gainful employment or becomes capable of undertaking such employment.</p>

## Death and Survivor Benefits

Lump Sum Death Benefit	<p>Active = 3 x Final Pay</p> <p>Deferred = 5 x Current value of deferred annual pension</p> <p>Pensioner = 10 year guarantee less pension paid (for death before age 75)</p>
Dependants' Provision	<p>Widow(er)s</p> <p>Registered civil partners</p> <p>Nominated cohabiting partners</p>
Dependants' Pension (Death in Service)	1/160th x full prospective service to age 65 x Final Pay
Children's Pensions	<p><b>Surviving Parent</b></p> <p>1 child = 1/320th x full prospective service to age 65 x Final Pay</p> <p>2+ children = 1/160th x full prospective service to age 65 x Final Pay (divided by number of children)</p>

## No Surviving Parent

1 child = 1/240th x full prospective service to age 65 x Final Pay

2+ children = 1/120th x full prospective service to age 65 x Final Pay  
(divided by number of children)

## Increasing Benefits

In-House AVCs Maximum contributions – 50% of taxable earnings

Options available:

- Open market annuity
- LGPS Top Up Pension
- Tax Free Lump Sum (100% of fund up to max of 25% of Lifetime Allowance)
- LGPS Service Credit (if commenced AVCs prior to 13/11/2001)

Additional Regular Contributions (ARCs) Maximum purchase £5,000 extra pension (in multiples of £250).

## Leaving the Scheme

Options **Less than 3 months membership and no transfer in**

- Refund of contributions
- Transfer to a new pension arrangement
- Defer decision

**More than 3 months membership or transfer in**

- Transfer to a new pension arrangement
- Defer Benefits until NRA

## Members who joined the LGPS before 1 April 2008

Benefits	Membership built up to 31 March 2008, member will receive a pension based on $1/80^{\text{th}} \times \text{membership} \times \text{Final Pay}$ plus an automatic lump sum of 3 times their pension.
Early Payment - Reduction to Benefits (Rule of 85)	For members of the LGPS on 30 September 2006, some or all of their benefits paid early could be protected from reduction under what is called the Rule of 85.  The Rule of 85 is satisfied if their age at the date they draw their benefits plus their scheme membership (each in whole years) add up to 85 or more.  If they <b>could not satisfy the Rule of 85 by the time they are 65</b> , then all of their benefits are reduced, if they choose to retire before age 65.  If they <b>will be age 60 or over by 31 March 2016</b> and choose to retire before age 65, then <b>provided they satisfy the Rule of 85 when they start to draw their pension</b> , the benefits they build up to 31 March 2016 will not be reduced.  If they <b>will be under age 60 by 31 March 2016</b> and choose to retire before age 65, then <b>provided they satisfy the Rule of 85 when they start to draw their pension</b> , the benefits they have built up to 31 March 2008 will not be reduced. Also, if they will be aged 60 between 1 April 2016 and 31 March 2020 and meet the Rule of 85 by 31 March 2020, some or all of the benefits that they have built up between 1 April 2008 and 31 March 2020 will not have a full reduction.

## Appendix 4 Rates and Adjustments Certificate

### South Yorkshire Passenger Transport Pension Fund Local Government Pension Scheme (Administration) Regulations 2008 Rates and adjustments certificate in accordance with Regulation 36

In accordance with Regulation 36 of the Local Government Pension Scheme (Administration) Regulations 2008, I hereby certify that in respect of the period from 1 April 2011 to 31 March 2014 in my opinion

- (a) The amount of the Employer's common contribution rate should be 21.5 per cent per annum of Pensionable Pay.
- (b) The individual adjustment should be:
  - i. £1.5 million paid by monthly instalments in the year from 1 April 2011 to 31 March 2012;
  - ii. £2.0 million paid by monthly instalments in the year from 1 April 2012 to 31 March 2013;
  - iii. £2.5 million paid by monthly instalments in the year from 1 April 2013 to 31 March 2014; plus
  - iv. special contributions in accordance with actuarial advice where an early retirement occurs which is not allowed for in the actuarial assumptions adopted for the valuation.

The rate in (a) should be applied to the total remuneration on which contributions will be payable to the fund by employees of First South Yorkshire Limited who are pensionable employees of the South Yorkshire Passenger Transport Pension fund.

Hence the rate payable by First South Yorkshire Limited should be 21.5 per cent per annum plus the individual adjustment as required.

In respect of the period from 1 April 2011 to 31 March 2014

- (a) It is expected that there will be 22 retirements due to ill health and 163 retirements where the members meet the rule of 85 or who retire at age 65. No other retirements are anticipated.
- (b) The liabilities in respect of the members in (a) are expected to amount to £27,941,000 as at the valuation date.

Signature



Date: 13 January 2011

Qualification: Fellow of the Institute and Faculty of Actuaries

Name:

J A Harrison

Company:

Barnett Waddingham LLP

Address:

West Riding House  
67 Albion Street  
Leeds  
LS1 5AA