

# London Borough of Croydon Pension Fund

Actuarial valuation report  
as at 31 March 2010

March 2011

London Borough of Croydon  
Pension Fund  
Actuarial valuation as at 31 March 2010

**MERCER**

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## Summary

An actuarial valuation of the London Borough of Croydon Pension Fund has been carried out as at 31 March 2010.


The key conclusions from the valuation are:

- The Fund showed a deficit of £301m at the valuation date based on the assumptions made for calculating its funding target. This measure compares the Fund's assets with the value of the past service benefits at 31 March 2010. It represents a funding level of 66% relative to the Fund's funding target.
- Based on the assumptions made for assessing the cost of future accrual, the Common Contribution Rate (i.e. the average employer contribution rate in respect of future service only) was 13.1% of Pensionable Pay.
- If the actuarial assumptions were to be based purely on the returns available on conventional and index-linked gilts (a so-called "least risk" basis) the deficiency would have increased to £604m.
- If the deficit is recovered through additional employer contributions over a 24 year period then the total employer contribution rate required to meet the deficit emerging from the valuation is 9.9% of Pensionable Pay per annum.
- The required overall average employer contribution rate is 23.0% of Pensionable Pay subject to any transitional phasing arrangements in accordance with the Funding Strategy Statement (FSS). Contributions for each separate employer will be levied as a combination of a percentage of payroll in respect of future accrual of benefits and £ amounts in respect of deficit contributions under the recovery plan. These contributions will commence from 1 April 2011.
- The recommended employer contributions for the period 1 April 2011 to 31 March 2014 are set out in Appendix I to this report. Employee contributions are payable in addition to the employer contributions. These contributions are adequate to meet the funding objective based on the actuarial assumptions detailed in this report. No

additional contributions are required from employers to meet normal scheme expenses since allowance for these are included in the recommended contributions.

- Additional capital contributions will be paid on top of the rates shown in respect of non-ill health early retirements.
- Any further possible adjustments to contributions for employers in the inter-valuation period are noted in the Certificate in Appendix H.

Signature



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Fund Actuary

John Livesey

Date of signing

31 March 2011

Qualification

Fellow of the Institute and Faculty of Actuaries

## Compliance Statements

This report is addressed to the Administering Authority and has been prepared in accordance with the version of the Board for Actuarial Standards' 'Guidance Note 9: Funding Defined Benefits – Presentation of Actuarial Advice' current at the date this report is signed. Technical Actuarial Standard R: Reporting Actuarial Information and Technical Actuarial Standard D: Data issued by the Board for Actuarial Standards also apply to this report and the report complies with their requirements, where relevant.

However the following aspects of GN9 are not relevant to the LGPS in the current circumstances and so have not been reported on:

- 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
- Paragraph 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 scheme wind up and the scheme members have a statutory right to their accrued benefits. Therefore the concept of solvency on a buy-out basis does not apply. Accordingly, this report does not comply with paragraph 3.5 of GN9.

The calculations in the report use methods and assumptions appropriate for reviewing the financial position of the Scheme and determining the appropriate contribution rate for the future. Mercer does not accept liability to any third party in respect of this report; nor does Mercer accept liability to the Administering Authority if the advice is used for any purpose other than that stated (for example for accounting disclosures or corporate mergers/acquisitions).

The data for the actuarial valuation was provided by the Administering Authority and its accuracy has been relied upon. Whilst reasonableness checks on the data have been carried out, they do not guarantee the completeness or the accuracy of the data. Consequently Mercer does not accept any liability in respect of its advice where it has relied on data which is incomplete or inaccurate.

The report may be disclosed to participating employers and others who have a statutory right to see it. It may also be disclosed, if the Administering Authority and Mercer consent, to any other third parties.

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## Introduction

- 1.1 This report sets out the results of the actuarial valuation of the London Borough of Croydon Pension Fund ('the Fund') as at 31 March 2010. The valuation has been carried out on the instructions of Croydon Council (the "Administering Authority") in accordance with the requirements of Regulation 36 of the Local Government Pension Scheme (Administration) Regulations 2008, as amended (the "Administration Regulations").

### Purpose of valuation

- 1.2 The primary aims of the valuation are to review the financial position of the Fund and to determine appropriate employer contributions to the Fund for the future.
- 1.3 In particular, the valuation aims:
- to assess the Fund's funding position relative to its funding objective;
  - taking the above into account, to determine the appropriate future level of employer contributions.
- 1.4 Under the provisions of the Administration Regulations employer contributions are calculated by the actuary having regard to the assumptions and methodology set out in the Fund's Funding Strategy Statement (FSS). In accordance with the LGPS Regulations, the FSS has been determined by the Fund's Administering Authority, having taken the advice of the Fund's Actuary and after consultation with those parties as it considers appropriate.

### Funding objective

- 1.5 The Administering Authority has reviewed its approach to funding strategy and this is published in the Funding Strategy Statement. Consistent with the FSS the funding objective for the valuation is to achieve and then maintain assets equal to the funding target. The funding target is the present value of 100% of projected

accrued liabilities, including allowance for projected final pay. This approach is also considered appropriate to comply with the requirement of the Administration Regulations to secure the solvency of the Fund.

- 1.6 The funding objective is the same as at the previous valuation.
- 1.7 The methodology and assumptions by which the funding target and contribution rates are calculated have also been determined in accordance with the Fund's FSS.
- 1.8 The FSS specifies a maximum period for achieving full funding of 24 years. This compares to a maximum period of 25 years adopted at the 2007 valuation in accordance with the then published FSS. The maximum deficit recovery period is therefore now one year shorter than at the 2007 valuation. For each individual employer, the funding objective, method and assumptions depend on the particular employer's circumstances and different approaches have been adopted where applicable, in accordance with the FSS. The FSS also specifies any transitional arrangements ("phasing") for the implementation of revised employer contribution requirements.

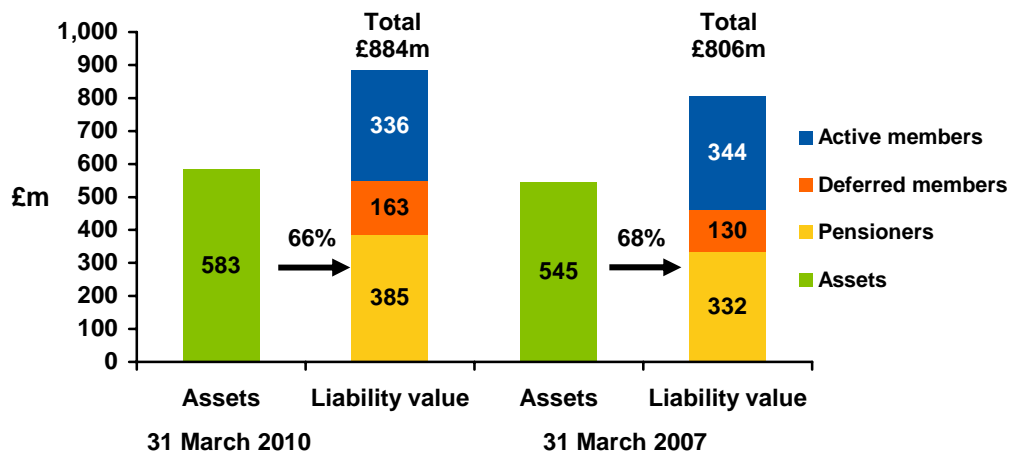
#### **Previous actuarial valuation**

- 1.9 The previous actuarial valuation of the Fund was carried out as at 31 March 2007 by ourselves.
- 1.10 At the previous valuation an average employer contribution rate of 23.2% of Pensionable Pay was determined, made up of a normal contribution rate for benefits and expenses of 14.1% plus deficiency recovery contributions of 9.1%. The report on the 2007 actuarial valuation sets out the agreed contribution rates for individual employers for the period 1 April 2008 to 31 March 2011 (the corresponding rates for the year to 31 March 2008 being shown in the 2004 actuarial valuation report). Appendix F includes the amounts of employer contributions which have actually been paid since the last actuarial valuation.



## Funding results – funding target

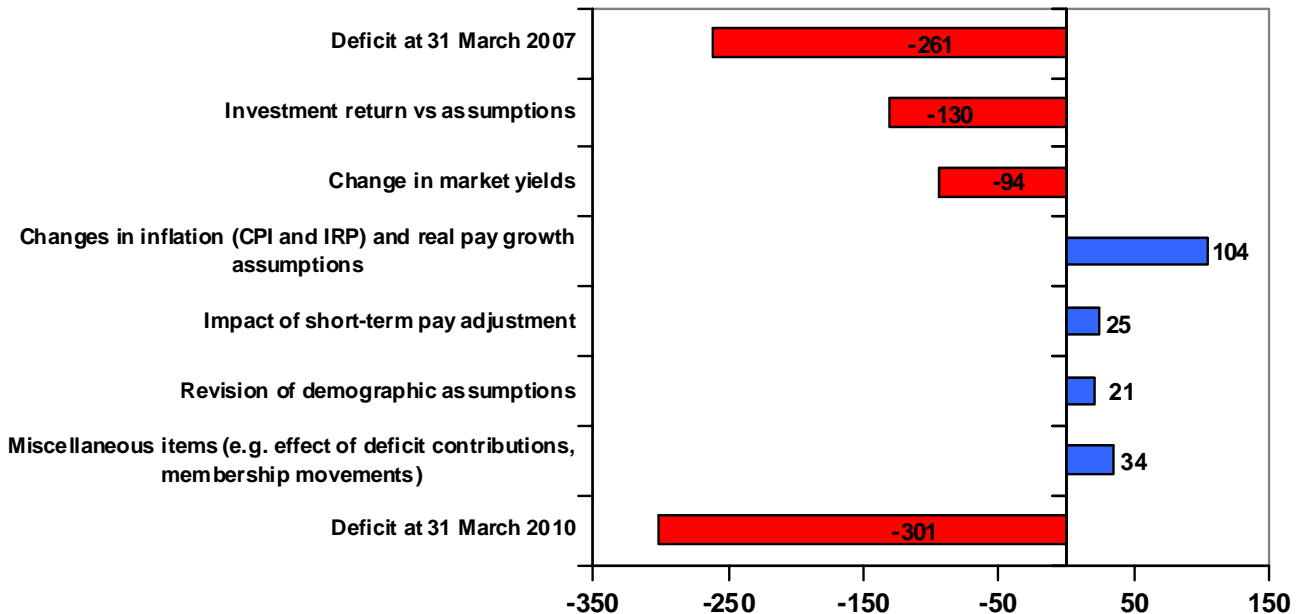
2.1 The market value of the Fund’s assets at the valuation date is compared with the value of the Fund’s past service liabilities (the funding target) below. The funding position at the previous valuation is shown for comparison.



- 2.2 The shortfall against the funding target at the valuation date was £301 million (£261 million as at the 2007 valuation). This represents a funding level of 66% (68% at 2007) relative to the funding target.

### Analysis of change in funding position

- 2.3 The key factors influencing the change in the value of the liabilities since the previous valuation are shown below (figures in £m):



- 2.4 The above analysis highlights a number of material developments affecting the Fund since the previous valuation:

- Liabilities have increased due to changes in market yields.
- The change from RPI to CPI indexation for pension increases has beneficially impacted funding.
- Allowance for an increased Inflation Risk Premium (IRP) (compared to the 2007 valuation) into the determination of the pension increase assumption used for the valuation has offset to a degree the adverse impact of the falls in real yields since the last valuation. Indeed the effect of the increased IRP in conjunction with the change from RPI to CPI indexation more than offsets the negative impact of the yields change.

- Revision of the demographic assumptions adopted for the 2010 valuation, specifically mortality, ill health retirements, and allowance for dependants' benefits, has overall acted to place a lower value on liabilities and so acted to improve the funding position.
- Allowance for lower-levels of pay growth in the short-term in line with the pay restraint proposals by Government, compared to the overall long-term pay growth assumptions has acted to place a lower value of the liabilities and so acted to improve the funding position.

2.5 It also highlights the key difference between what was assumed at the previous valuation and experience since then:

- Investment returns have been below the level required to keep pace with the assumptions adopted at the previous valuation.

# 3

## Funding results – contribution requirements

- 3.1 This section provides details of the contribution requirements assessed for the Fund as a whole. The contributions payable by the employers for the period 1 April 2011 to 31 March 2014, and the timing and frequency of the contributions, have been certified in Appendices I and H respectively, as is required in accordance with the Administration Regulations.
- 3.2 These contributions have been determined using the funding objective described in Section 1, and are made up of the following elements:
- a contribution to cover the cost of the future service accrual (including death benefits and expenses), known as the “Common Contribution Rate”;
  - an adjustment to address any imbalance of assets relative to the funding target.
- 3.3 In practice, each employer’s position is separately assessed. The individual rates shown in Appendix I take into account the differing circumstances of each employer and the funding plan, as laid down in the Funding Strategy Statement, in particular in relation to deficit recovery period, assumed level of investment returns over the deficiency recovery period, and implementation of changes in employer contributions where these are required.

### Common Contribution Rate (CCR)

- 3.4 The table below shows the first of these elements. This cost is calculated as the value of benefits expected to accrue to the membership in respect of one year’s service based on projected salaries. To this is added an allowance for expenses. The figures are expressed as percentages of Pensionable Pay (as defined in Appendix H) and apply for the period to the next formal actuarial valuation.

	2010 %	2007 %
Normal contribution rate for retirement and death benefits	18.6	20.4
Allowance for administrative expenses	1.1	0.4
Total normal contribution rate	19.7	20.8
Average member contribution rate	6.6	6.7
Employer normal contribution	13.1	14.1

### Analysis of change in Common Contribution Rate

- 3.5 The key factors influencing the change in the CCR since the previous valuation in 2007 are shown below.

Analysis of movement in normal contribution	%
Employer's normal contribution at 31 March 2007 valuation	14.1
Change in demographic assumptions	-1.6
Change in membership profile/expenses/miscellaneous	0.6
Employer's normal contribution at 31 March 2010 valuation	13.1

### Contributions to address shortfall

- 3.6 The funding objective is to achieve and maintain a funding level of 100% of liabilities (the funding target). Adopting the same method and assumptions as used for calculating the funding target, the deficit of £301 million could be eliminated by an average contribution addition of 9.9% of Pensionable Pay for 24 years. This would imply an average employer contribution rate of 23.0% (23.2% at the previous valuation) of Pensionable Pay.
- 3.7 The Schedule to the Rates and Adjustments Certificate (attached as Appendix I) sets out the contributions for each employer over the three year period to 31 March 2014 towards the shortfall against the funding target, the deficit contributions being expressed as £ amounts increasing at 4.75% p.a., in accordance with the Funding Strategy Statement. The corresponding figures for 2010/11 are set out in the report on the actuarial valuation of the Fund as at 31 March 2007. Contribution requirements for the period from 1 April 2014 onwards will be revised as part of the next actuarial valuation as at 31 March 2013 and will be confirmed in the Rates and Adjustments Certificate and Schedule accompanying that valuation report.

# 4

## Method and assumptions

### Funding method

- 4.1 The funding method adopted is known as the projected unit method under which the salary increases assumed for each member are projected until the member is assumed to leave active service.
- 4.2 Under the projected unit method, if the membership profile remains stable in terms of age and sex, and the assumptions are borne out, then the normal future service contribution rate (as a percentage of salaries) will remain stable. The method therefore implicitly allows for new entrants replacing leavers.
- 4.3 For those employers which are closed to new entrants an alternative method is adopted, known as the attained age method. This method makes advance allowance for the anticipated future ageing of the current closed membership group.
- 4.4 The method as specified above is the same as was used at the previous valuation.

### Assumptions

- 4.5 The financial and demographic assumptions used to assess the funding target, the normal cost of benefit accrual and the recovery plan are set out in Appendix D. A number of changes have been made to the assumptions used, compared with the previous valuation, as noted below and in Appendix D.
- 4.6 The table below sets out a summary of the market (gilts) yields at the valuation date, implied inflation and inflation adjustment assumptions, together with the equivalent details at the date of the previous valuation:

	31 March 2010	31 March 2007
Long-dated gilt yield	4.5%	4.4%
Long-dated index-linked gilt yield	0.7%	1.3%
Market expectation for long-term inflation (RPI basis)	3.8%	3.1%
Adjustment for Inflation Risk Premium (IRP) and CPI indexation	-0.8%	0.15%
Adjusted CPI inflation (RPI at 2007)	3.0%	2.95%

4.7 The assumptions to which the valuation results are particularly sensitive are shown below.

	2010 funding target	2010 normal cost	2007 funding target	2007 normal cost
Investment return pre-retirement	6.0% p.a.	6.75% p.a.	5.9% p.a.	6.5% p.a.
Investment return post-retirement	6.0% p.a.	6.75% p.a.	5.9% p.a.	6.5% p.a.
Long-term Salary increases*	4.75% p.a.	4.75% p.a.	4.75% p.a.	4.5% p.a.
Pension increases in payment	3.0% p.a.	3.0% p.a.	3.0% p.a.	2.75% p.a.
Retired members' mortality – base tables	CMI Self Administered Pension Schemes (SAPS) tables with scheme and member category specific adjustments (as per Appendix D)		PA92 YoB tables + 1 year	
Retired members' mortality – future improvements	CMI 2009 model methodology with 1% p.a. long term trend		CMI Medium Cohort model	

\* See 4.9 below also.

4.8 The mortality rates shown above relate to members retiring in normal health. At this valuation, members retiring in ill-health are assumed to be 3 years older than the above tables (5 years older assumed at the 2007 valuation).

4.9 In determining the Funding Target at this valuation a short-term pay growth adjustment has also been applied. This adjustment was in line with the format of

the proposed public sector pay restraints as announced by the Government and differs from the approach adopted to determine the Funding Target at the last valuation.

- 4.10 At this valuation, it has been assumed that, on average, 50% of retiring members will take the maximum tax-free cash available at retirement and 50% will take the standard 3/80ths cash sum. The option which members have to commute part of their pension at retirement in return for a lump sum is a rate of £12 cash for each £1 p.a. of pension given up. This assumption is unchanged from the last actuarial valuation.
- 4.11 The contributions payable under the recovery plan are calculated using the same assumptions as those used to calculate the funding target.
- 4.12 As an illustration of the mortality rates adopted for the valuation, the future life expectancies for a male/female at age 65 are shown in the table below:

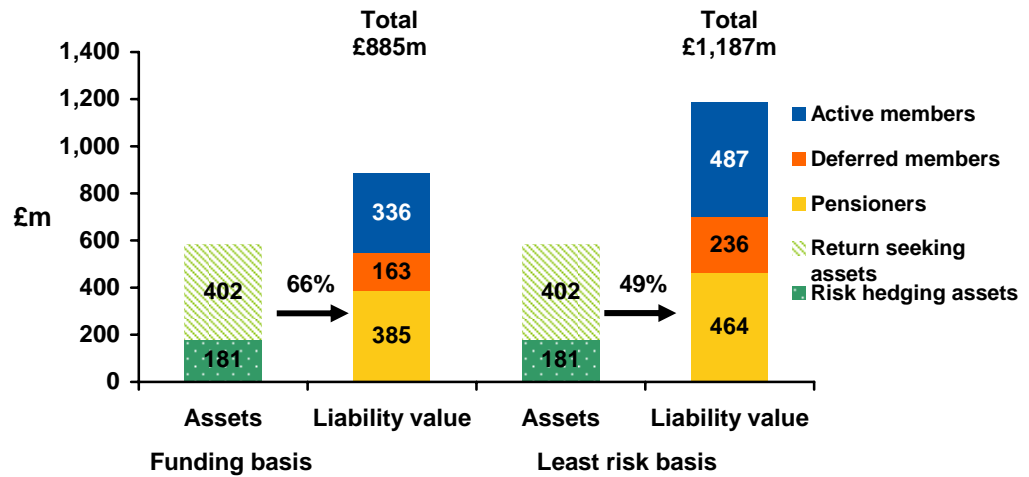
Pensioners	Life expectancy currently aged 65	
	2007 valuation assumption	2010 valuation assumption
Males normal health	21.2	21.5
Female normal health	24.1	24.1
Males ill health	17.1	19.1
Female ill health	19.8	21.6
Male dependants	21.2	19.8
Female dependants	24.1	23.1

- 4.13 The basis of valuing the assets (market value) is consistent with the assumptions used in assessing the funding target liabilities and the recovery plan.

5

## Least risk funding results

- 5.1 The results of the 2010 valuation show the funding target to be 66% covered by the current assets.
- 5.2 In assessing the value of the Fund's liabilities (the funding target), allowance has been made for asset out-performance as described in Section 4, taking into account the investment strategy adopted by the Fund, as set out in the Fund's Statement of Investment Principles (SIP).
- 5.3 It is not possible to construct a portfolio of investments which produces a stream of income exactly matching the expected liability outgo. However, it is possible to construct a portfolio which closely matches the liabilities and represents the least risk investment position. Such a portfolio would consist mainly of a mixture of long-term index-linked and fixed interest gilts. Investment of the Fund's assets in line with the least risk portfolio would minimise fluctuations in the Fund's ongoing funding level between successive actuarial valuations.
- 5.4 If, at the valuation date, the Fund had been invested in this portfolio, then in carrying out the valuation it would not be appropriate to make any allowance for out-performance of the Fund investments. On this basis of assessment, the assessed value of the Fund's liabilities at the 2010 valuation would have been significantly higher, by approximately 34% and the declared funding level would be correspondingly reduced to approximately 49%. This is illustrated in the following chart, which also shows the assets of the Fund broken down into return seeking and risk hedging classes (based on the current target asset distribution), giving a broad indication of the degree to which a risk based investment strategy is being adopted in funding for the liabilities.



On a least risk basis the deficiency at the valuation date is £604 million which compares to a deficit on the ongoing basis of £301 million.

- 5.5 Departure from a least risk investment strategy, in particular to include equity and other risk based return seeking investments, gives the prospect that out-performance by the assets will, over time, reduce the contribution requirements. The funding target might in practice therefore be achieved by a range of combinations of funding plan, investment strategy and investment performance.

## 6

## Variability and risks

- 6.1 The employer contributions set out in the Schedule to the Rates and Adjustments Certificate have been determined as described in section 3 of this report. These in turn depend on the financial and demographic assumptions used as described in section 4.
- 6.2 The funding of defined benefits is by its nature uncertain. When actual experience is not in line with the assumptions adopted a surplus or shortfall will emerge at the next actuarial assessment and will require a subsequent contribution adjustment to bring the funding back into line with the target.
- 6.3 It is likely, especially in the short-term, that the assumptions will not be borne out in practice. It is therefore important to consider the potential impact on the employer contribution rates of actual experience differing from what has been assumed. The details in this section do this, based on the valuation results for the Fund as a whole.

### Sensitivity to key assumptions

- 6.4 Real investment return, salary increase and life expectancy assumptions impact significantly on the funding position and the following table illustrates the sensitivity to variations in these key assumptions over the long term. The base point is the funding level of 66%. Each row of the table considers one change in isolation, with all other assumptions being unaltered. An equivalent change in the assumption in the opposite direction would change the funding level value by the equivalent amount in the opposite direction.

Change in assumption	Revised funding level at 31 March 2010
Pre and post-retirement return increased by 0.25%	69%

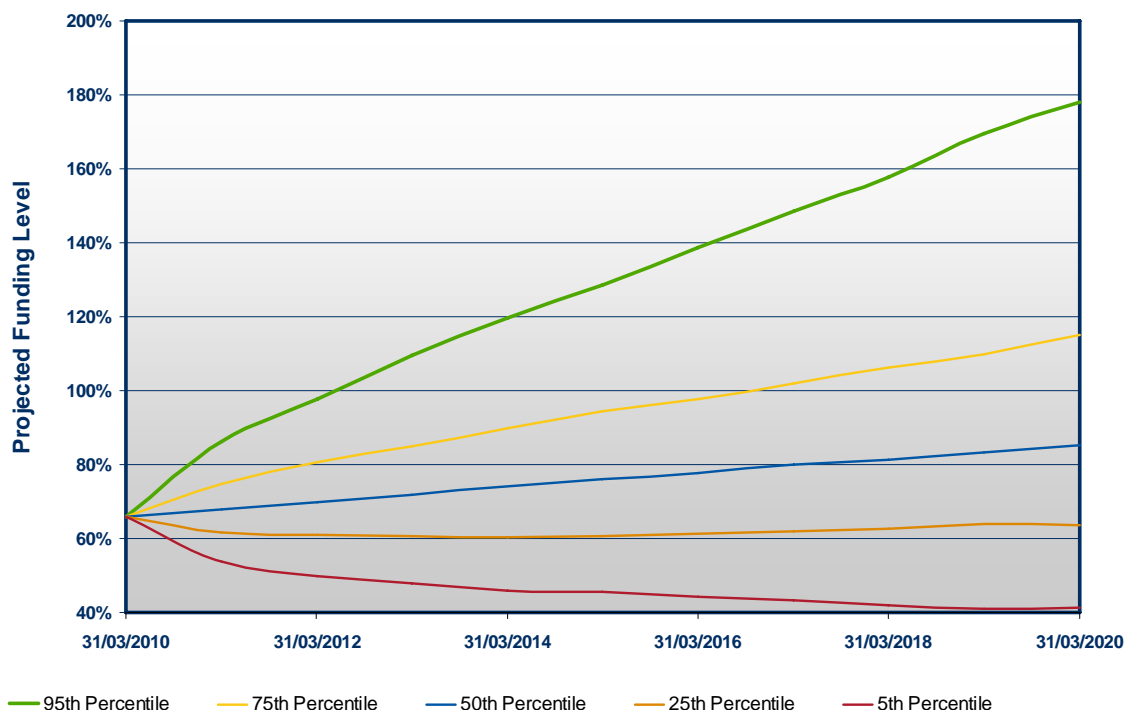
Change in assumption	Revised funding level at 31 March 2010
Real salary growth reduced by 0.25%	67%
Life expectancy increased by 1 year	65%

- 6.5 Similarly these assumptions impact significantly on the cost of the benefits accruing over the year. The following table illustrates the sensitivity to variations in these key assumptions over the long term. The starting point is the normal contribution rate of 13.1% of Pensionable Pay. Each row of the table considers one change in isolation, with all other assumptions being unaltered. As before, a change in the assumption in the opposite direction would give rise to a change in the employer normal contribution rate of an equivalent amount in the opposite direction.

Change in assumption	Revised employer normal contribution rate at 31 March 2010 (% of Pensionable Pay)
Real salary growth reduced by 0.25% p.a.	12.6
Life expectancy increased by 1 year	13.4

### Funding level sensitivity to investment markets

- 6.6 The chart overleaf shows a “funnel of doubt” funding level graph. This illustrates the range and uncertainty in the future progression of the funding level, relative to the funding target adopted at the valuation, due to possible changes in various risk factors such as investment markets and interest rates.
- 6.7 Using a simplified model, the chart shows the probability of exceeding a certain funding level over a 10 year period from the valuation date. For example, the top line shows the 95th percentile level (i.e. there is a 5% chance of the funding level at each point in time being better than the funding level shown, and a 95% chance of the funding level being lower).
- 6.8 The chart adopts the 2010 actuarial valuation results as a starting point, and allows for the planned contributions into the Fund based on the valuation and funding strategy. The chart assumes median investment returns in line with “best estimate” market expectations and variability of those returns broadly in line with historic experience. It assumes continuation of the Fund’s current investment strategy, over the projection period.



### Risks that the funding objective will not be met

- 6.9 The Administering Authority's policy for meeting the funding objective carries a number of risks outside of the Administering Authority's control. The following paragraphs comment on some potentially material risks.
- 6.10 If any employer becomes unable to pay contributions or to make good deficits in the future, the Fund's assets will be lower than expected and the funding level will be worse than expected. If the reason for the employer not paying the agreed contributions is one of financial difficulties, then the Administering Authority's focus would switch to the need to secure as far as possible that any debt from the employer on it exiting the fund can be recovered. This risk can be mitigated by regular employer covenant review, strengthening of covenant as appropriate, and monitoring of changes in employer covenant. In the ultimate default of an employer any shortfall would then become the responsibility of a guarantor or all employers in the Fund.
- 6.11 If the future investment return on assets falls short of the rates assumed in the calculation of the funding target and recovery plan, the funding position will be worse than expected. It is likely that an increase in future employer contributions will be required. The analysis shown earlier in this section illustrates the potential volatility of contribution rates and funding levels to future investment returns.
- 6.12 If market levels and/or gilt yields change such that the liability values increase by more than the assets, or decrease by less than the assets, the funding position would be worse than expected. An increase in employer contributions would be

expected as a result. The same comments would apply if general population mortality studies and analysis of the Fund show that pensioners are living longer, or if improvements in mortality are found to be at a faster rate than allowed for. The analysis shown earlier in this section illustrates the quantitative impact of such changes.

- 6.13 If members make decisions around their options such that those decisions increased the Fund's liabilities (e.g. by not commuting pensions for cash to the extent assumed), the funding position would be worse than expected. As a result, future employer contributions might then need to be increased.
- 6.14 There is a specific investment matching risk that is particularly relevant for the Fund. This is the risk inherent in the predominantly equity-based strategy, such that actual asset out-performance between successive valuations could diverge significantly from the investment return assumptions made, as set out in Appendix D.
- 6.15 As mentioned in Section 5, alternative investment strategies could be followed that would minimise the risk of deterioration in the funding position assessed relative to the funding target, for example by raising the proportion of bond investment. Such a strategy would reduce the risk that changing economic conditions would cause deterioration in the Fund's funding position. It would also tend to produce a more stable contribution rate but at a higher overall level than indicated in Section 3.

## Appendix A

### Summary of benefits

#### Local Government Pension Scheme Regulations

The benefits and contributions payable under the Fund are set out in the Local Government Pension Scheme (Benefits, Membership and Contributions) Regulations 2007 (as amended). These regulations have replaced the Regulations as were in force at the previous valuation, except for a number of saved regulations as specified by the Local Government Pension Scheme (Transitional Provisions) Regulations 2008.

With effect from 1 April 2008 new rules were introduced replacing the 1997 scheme, under the provisions of the Local Government Pension Scheme (Benefits, Membership and Contributions) Regulations 2007 (SI2007/1166). The principal changes were: the replacement, for future service, of the existing benefits structure based on a pension of 1/80th of Pensionable Pay for each year of pensionable service plus an automatic lump sum of three times this amount by one based on 1/60th of Pensionable Pay for each year of pensionable service; and an increase in the average level of employee contributions from that date. These changes were taken into account at the 2007 valuation.

The following supplementary Regulations have also been laid in relation to the new scheme:

- The Local Government Pension Scheme (Transitional Provisions) Regulations 2008 (SI2008/238)
- The Local Government Pension Scheme (Administration) Regulations 2008 (SI2008/239)
- The Local Government Pension Scheme (Management and Investment of Funds) Regulations 2009 (SI2009/3150)

The following further amendments to the above Regulations have subsequently been issued:

- The Local Government Pension Scheme (Benefits, Membership and Contributions) (Amendment) Regulations 2011 Statutory Instrument No. 561
- The Local Government Pension Scheme (Miscellaneous) Regulations 2010 Statutory Instrument No. 2090
- The Local Government Pension Scheme (Amendment) Regulations 2010 Statutory Instrument No. 528
- The Local Government Pension Scheme (Miscellaneous) Regulations 2009 Statutory Instrument No. 3150
- The Local Government Pension Scheme (Amendment) Regulations 2009 Statutory Instrument No. 1025
- The Local Government Pension Scheme (Administration) (Amendment) Regulations 2009 Statutory Instrument No. 447
- The Local Government Pension Scheme (Administration) (Amendment) Regulations 2008 Statutory Instrument No. 3245
- The Local Government Pension Scheme (Amendment) (No.2) Regulations 2008 Statutory Instrument No. 2989
- The Local Government Pension Scheme (Miscellaneous) Regulations 2008 Statutory Instrument No. 2425
- The Local Government Pension Scheme (Amendment) Regulations 2008 Statutory Instrument No. 1083 (including amendments as per Correction Slip issued in September 2009)

We have made no allowance for other changes which may be introduced in the future.

Benefits recharged to individual employers on a £ for £ basis have been excluded from the calculation of the valuation liabilities.

The benefits arising from the award of compensatory added years (CAY) of service on premature retirement have been treated as follows, depending on when retirement took place:

- Retirements prior to 1 April 1991 and retirements after 31 March 1999 – benefits are fully funded within the Fund.
- Retirements from 1 April 1991 to 31 March 1999 are recharged to the relevant employer. These benefits are therefore excluded from the valuation.

The benefits that will emerge from money purchase AVCs paid by members, and SCAVCs paid by employers, and the corresponding invested assets in respect of these AVCs and SCAVCs, have been excluded from the valuation.

UK and European law requires pension schemes to provide equal benefits to men and women in respect of service after 17 May 1990 (the date of the “Barber” judgement) and this includes providing equal benefits accrued from that date to reflect the differences in GMPs. There is no consensus or legislative guidance as to what adjustments have to be made to scheme benefits to correct these inequalities for ongoing schemes (i.e. for schemes other than those which are in the Pension Protection Fund). The valuation makes no allowance for removal of these inequalities. It is consequently possible that additional funding will be required for equalisation once the law has been clarified. It is recommended that the Administering Authority seek further professional advice if it is concerned about this issue.

The Government announced in June 2010 that the rate of increase and revaluation that applies to pensions in payment and deferment in the LGPS and the other public sector schemes will in future be determined by reference to the Consumer Price Index (CPI) rather than the Retail Prices Index (RPI). Historically, CPI increases have on average been lower than RPI increases and, due to the nature of the two calculations, they are expected to remain so over the long term. The change is expected, therefore, to lead to lower increases to pensions, both in deferment and once in payment. This change has been taken into account in determining the financial assumptions adopted at this valuation.

Appendix B

## Summary of membership data

### Pensionable Employees

	At 31 March 2007	At 31 March 2010	Increase (%)
Number	6,101	6,708	9.9
Annual Pensionable Pay <sup>1</sup> (£000s)	129,882	142,824	10.0
Average Pensionable Pay (£)	21,289	21,292	0.0
Average Age <sup>2</sup> (years)	50.4	51.3	N/A
Average Pensionable Service <sup>3</sup> (years)	10.9	10.4	-4.6

Notes: 1 - Pensionable Pay figures include actual pay for part-time employees.

2 - Weighted by accrued pension.

3 - Weighted by salary.

**Preserved Pensioners\***

	At 31 March 2007	At 31 March 2010	Increase (%)
Number	5,156	6,415	24.4
Annual Pensions inclusive of Pension Increase (£000s)	8,472	10,551	24.5
Average Pension including Pension Increase (£)	1,643	1,645	0.1
Average Age <sup>2</sup> (years)	48.2	49.5	N/A

\* including frozen refunds and leaver options pending

**Current Pensioners**

	At 31 March 2007	At 31 March 2010	Increase (%)
Number	4,360	4,843	11.1
Annual Pensions inclusive of Pension Increase (£000s)	22,105	26,466	19.7
Average Pension including Pension Increase (£)	5,070	5,465	7.8
Average Age <sup>2</sup> (years)	69.2	69.8	N/A

**Current Widow/Widower Pensioners etc.**

	At 31 March 2007	At 31 March 2010	Increase (%)
Number	828	902	8.9
Annual Pensions inclusive of Pension Increase (£000s)	2,035	2,437	19.8
Average Pension including Pension Increase (£)	2,458	2,702	9.9
Average Age <sup>2</sup> (years)	76.7	77.5	N/A

In addition there were 46 current dependant pensioners as at 31 March 2010 with pensions in payment totalling £73,000 per annum.

## Appendix C

### Distribution of membership by employing bodies

Employing Body	Pensionable Employees	Preserved Pensioners	Pensioners <sup>1</sup>
Apetito	2	0	0
BRIT School	32	25	7
Courier Cars Limited	3	0	0
Eldon Housing PFI	3	0	0
Fairfield	18	33	52
Fusion	34	4	0
Harris Academy Purley	38	2	0
Harris Academy South Norwood	29	8	0
Harris City Academy At Crystal Palace	38	3	4
Interserve	56	6	10
London Borough Of Croydon And Grouped Scheduled Bodies <sup>2,3</sup>	6,177	6,121	5,589
Oasis Academy Coulsdon	32	3	0
Oasis Academy Shirley Park	89	3	1
Olympic South Ltd	27	1	1
Other Grouped Bodies <sup>3</sup>	116	160	89
Veolia	11	6	5
Wallington Cars	3	0	0
Former Employers with no Active Members	0	40	33
<b>Totals</b>	<b>6,708</b>	<b>6,415</b>	<b>5,791</b>

#### Notes:

1. Including widow/widower pensioners etc and dependents
2. Including schools
3. See Appendix I for details.



## Appendix D

### Actuarial assumptions used

#### Funding target and recovery plan assumptions

##### Financial assumptions

##### **Investment return (discount rate)**

A yield based on market returns on UK Government gilt stocks and other instruments which reflects a market consistent discount rate for the profile and duration of the Scheme's accrued liabilities, plus an Asset Out-performance Assumption ("AOA") of 1.5% p.a.

The asset out-performance assumption represents the allowance made, in calculating the funding target, for the long term additional investment performance on the assets of the Fund relative to the yields available on long dated gilt stocks as at the valuation date. The allowance for this out-performance is based on the liability profile of the Scheme, with a higher assumption in respect of the "pre-retirement" (i.e. active and deferred pensioner) liabilities than for the "post-retirement" (i.e. pensioner) liabilities. This approach thereby allows for a gradual shift in the overall equity/bond weighting of the Fund as the liability profile of the membership matures over time.

##### **Individual Employers**

It is important to consider how the financial assumptions in particular impact on individual participating employers. The general Fund practice, as set out in the FSS, is to allocate investment performance pro rata across all employers based on a "mirror image" investment strategy to the whole Fund. In completing the calculations for individual employers therefore the same actuarial assumptions have been adopted regardless of the individual employer liability profiles.

## **Inflation (Consumer Prices Index)**

The inflation assumption will be taken to be the investment market's expectation for RPI inflation as indicated by the difference between yields derived from market instruments, principally conventional and index-linked UK Government gilts as at the valuation date, reflecting the profile and duration of the Scheme's accrued liabilities but subject to the following two adjustments.

- An allowance for supply/demand distortions in the bond market is incorporated and
- Due to retirement pensions being increased annually by the change in the Consumer Price Index rather than the Retail Price Index, as announced in June 2010. This change will apply from April 2011 and the assumptions make due allowance for this revision as advised by the Actuary.

The overall reduction to market implied RPI inflation at the valuation date is 0.8% per annum.

## **Salary increases – Long Term**

The assumption for real salary increases (salary increases in excess of price inflation) will be determined by an allowance of 1.75% p.a. over the CPI inflation assumption as described above. This includes allowance for promotional increases. This has been modified from the assumption at the previous valuation (of 1.75% above the RPI inflation assumption) to reflect future expectations, averaged over the long-term, for real salary increases, and the change in inflation assumption from RPI to CPI.

## **Salary increases – Short Term**

Where the Administering Authority considered it warranted, a short-term pay growth assumption has also been applied for certain employers in the Fund in line with the format of the expected public sector pay restraints as announced by the Government.

## **Pension increases**

Increases to pensions are assumed to be in line with the inflation (CPI) assumption described above. The pension increase assumption is modified appropriately to reflect any benefits which are not fully indexed in line with inflation (e.g. Guaranteed Minimum Pensions in respect of service prior to April 1997).

## **Demographic assumptions**

### **Mortality**

The mortality assumptions will be based on the most up-to-date information in relation to self-administered pension schemes published by the Continuous Mortality Investigation CMI, making allowance for future improvements in longevity and the experience of the scheme. The mortality tables used reflect the Fund's membership profile, and are set out in the summary section below. Members who retire on the grounds of ill health are assumed to exhibit average mortality equivalent to that for a good health retiree at an

age 3 years older. For all members, it is assumed that the accelerated trend in longevity seen in recent years will continue in the longer term and as such, the assumptions build in a minimum level of longevity 'improvement' year on year in the future in line with the CMI projections subject to a minimum rate of improvement of 1% per annum.

### Early retirement

Some members are entitled to receive their benefits (or a part of their benefits) unreduced from an age prior to the Fund's normal pension age under the "Rule of 85" provisions of the Regulations. This age will be at some point between ages 60 and 65, depending on the length of a member's pensionable service. The calculations in respect of the relevant service to which these terms apply (basically pre April 2008 service but with transitional protections for certain members) allow for a proportion of the active membership to retire in normal health prior to age 65, as set out below.

Age	% retiring per annum	
	Males	Females
60	24	41
61	15	20
62	21	20
63	22	19
64	26	23

For post April 2008 service (other than protected service) the situation is different since the "Rule of 85" rule has been removed (and for post October 2006 service for new entrants to the Scheme from that date). For this service we have assumed the earliest age at which unreduced benefits become an entitlement is 65, except for those members who have protected status under the transitional provisions.

No allowance has been made for non-ill health early retirements prior to the ages specified above. Additional capital contributions will be paid by employers in respect of the cost of these retirements.

### Ill health retirement

A small proportion of the active membership has been assumed to retire owing to ill health. As an example of the rates assumed, the following is an extract from the decrement table used:

Age	% leaving per annum	
	Males	Females
35	0.03	0.02
45	0.07	0.07
55	0.31	0.27

The proportion of ill health early retirements falling into each tier category, split by males and females, has been assumed to be as set out below:

	Tier 1	Tier 2	Tier 3
Males	72%	9%	19%
Females	73%	14%	13%

### Withdrawals

This assumption relates to those members who leave the scheme with an entitlement to a deferred pension or transfer value. It has been assumed that active members will leave the Scheme at the following sample rates:

Age	% leaving per annum	
	Males	Females
25	13.50	14.92
35	3.39	4.18
45	1.69	2.59

### Commutation

It has been assumed that, on average, 50% of retiring members will take the maximum tax-free cash available at retirement and 50% will take the standard 3/80ths cash sum. The option which members have to commute part of their pension at retirement in return for a lump sum is a rate of £12 cash for each £1 p.a. of pension given up.

### Proportion married/in civil partnership and age difference

It has been assumed that the proportions of members below will on death give rise to a spouse's/civil partner's/dependant's pension, and that spouses/partners of female (male) members are three years older (younger), on average than the member.

Age	% spouse/partner	
	Males	Females
25	45	25
35	45	47
45	54	55

## **Expenses**

Expenses are met out of the Fund, in accordance with the Regulations. This is allowed for by adding 1.1% of Pensionable Pay to the contributions as required from participating employers. This addition is reassessed at each valuation. Investment expenses have been allowed for implicitly in determining the discount rates.

## **Discretionary Benefits**

The costs of any discretion exercised by an employer in order to enhance benefits for a member through the Fund will be subject to additional contributions from the employer as required by the Regulations as and when the event occurs. As a result, no allowance for such discretionary benefits has been made in the valuation.

## Assumptions used in calculating the cost of future accrual

The cost of future accrual (the common contribution rate) has been calculated using the same actuarial assumptions as used to calculate the funding target as set out above except that the financial assumptions adopted are as described below.

The financial assumptions for assessing the future service contribution rate should take account of the following points:

- contributions will be invested in market conditions applying at future dates, which are unknown at the effective date of the valuation, and which are not directly linked to market conditions at the valuation date; and
- the future service liabilities for which these contributions will be paid have a longer average duration than the past service liabilities.

The financial assumptions in relation to future service are not specifically linked to investment conditions as at the valuation date itself, and are based on an overall assumed real return (i.e. return in excess of price inflation) of 3.75% per annum, with a long term average assumption for price inflation of 3.0 % per annum. These two assumptions give rise to an overall discount rate of 6.75% p.a.

Adopting this approach the future service rate is not subject to variation solely due to different market conditions applying at each successive valuation, which reflects the requirement in the Regulations for stability in the common rate of contributions. In market conditions at the effective date of the 2010 valuation this approach gives rise to a somewhat more optimistic stance in relation to the cost of accrual of future benefits compared to the market related basis used for the assessment of the funding target.

At each valuation the cost of the benefits accrued since the previous valuation will become a past service liability. At that time any mismatch against gilt yields and the asset out-performance assumptions used for the funding target is fully taken into account in assessing the funding position.

## Summary of key assumptions used for calculating funding target recovery plan and cost of future accrual for the 2010 actuarial valuation

Long-term gilt yields	
Fixed interest	4.5% p.a.
Index linked	0.7% p.a.
Past service Funding Target financial assumptions	
Investment return pre-retirement	6.0 % p.a.
Investment return post-retirement	6.0 % p.a.
CPI price inflation	3.0% p.a.
Salary increases	4.75% p.a.
Pension increases	3.0 % p.a.
Future service accrual financial assumptions	
Investment return	6.75% p.a.
CPI price inflation	3.0% p.a.
Salary increases	4.75% p.a.
Pension increases	3.0 % p.a.

### Post retirement mortality

	Table	Adjustment*
Males normal health pensioners	S1PMA CMI_2009_M [1%]	103%
Female normal health pensioners	S1PFA CMI_2009_F [1%]	96%
Males ill health pensioners	As for male normal health pensioners +3 years	
Female ill health pensioners	As for female normal health pensioners +3 years	
Male dependants	S1PMA CMI_2009_M [1%]	127%
Female dependants	S1DFA CMI_2009_F [1%]	106%
Male future dependants	S1PMA CMI_2009_M [1%]	109%
Female future dependants	S1DFA CMI_2009_F [1%]	101%

\* An **age rating** applied to an actuarial table has the effect of assuming that beneficiaries have a life expectancy equal to those older (or younger) than their actual age.

For example, a "+1 year" rating would mean beneficiaries are assumed to have the mortality of someone one year their senior which has the effect of reducing their life expectancy and hence reducing the assessed value of the corresponding liabilities.

A **weighting** applied to an actuarial table has the effect of increasing or reducing the chance of survival at each age, which increases or reduces the corresponding life expectancy.

For example, a "106%" weighting would mean beneficiaries have mortality rates 6% higher than the unadjusted table which reduces the assessed value of the corresponding liabilities.

---

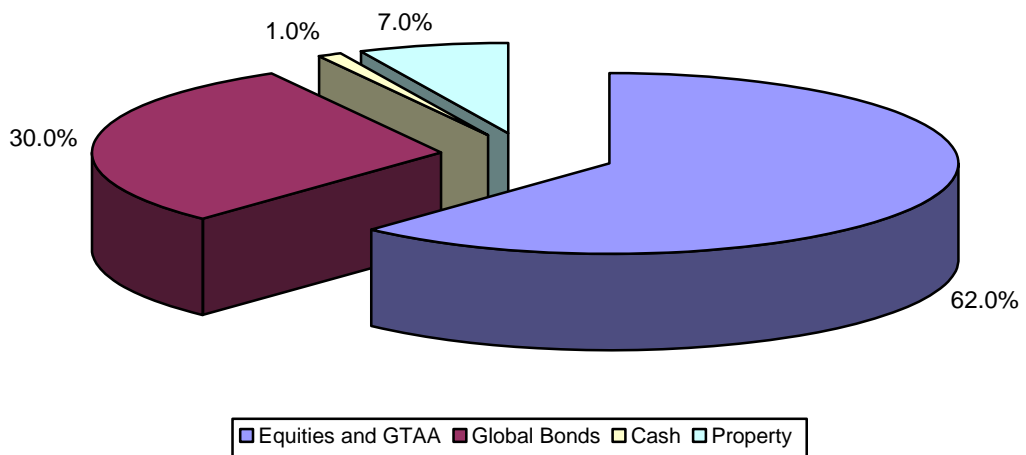
#### Other Demographic assumptions

Pre-retirement mortality	PA92 MC YoB tables + 1 year
Commutation	One half of members take maximum lump sum, others take 3/80ths
Ill health retirement and proportions married/civil partnerships	Revised at the 2010 valuation based on up to date detailed analysis of general LGPS experience
Withdrawal and other demographics	As for 2007 Valuation



### Summary of assets

Based on the information supplied, the market value of the assets of the Fund (excluding those additional voluntary contribution funds (AVCs) which are separately invested) was £583 million on the valuation date. The target distribution of assets by asset class as per the Fund’s Statement of Investment Principles was as follows:-



The details of the assets at the valuation date and the financial transactions during the inter-valuation period (as summarised in Appendix F) have been obtained from the audited accounts for the Scheme.

## Appendix F

## Summary of income and expenditure

<b>INCOME</b>	<b>Year ending 31 March</b>			<b>Total</b>
	<b>2008</b>	<b>2009</b>	<b>2010</b>	
	£000s	£000s	£000s	£000s
Fund at beginning of year	544,653	527,619	417,044	544,653
Contributions to Fund:				
Employees	7,761	9,206	9,479	26,446
Employers	23,813	30,670	32,730	87,213
Transfer Values received	4,742	5,697	9,877	20,316
Investment income	13,987	12,706	9,203	35,896
Change in market value of investments	-33,737	-128,244	151,219	-10,762
<b>TOTAL:</b>	<b>561,219</b>	<b>457,654</b>	<b>629,552</b>	<b>703,762</b>
<b>EXPENDITURE</b>	<b>Year ending 31 March</b>			<b>Total</b>
	<b>2008</b>	<b>2009</b>	<b>2010</b>	
	£000s	£000s	£000s	£000s
Pensions for members/spouses/partners/dependants	22,207	25,737	28,026	75,970
Lump sum benefits	6,313	7,302	9,088	22,703
Refunds on withdrawal	9	4	61	74
Transfer values paid	3,553	5,834	6,324	15,711
Investment expenses	514	674	1,095	2,283
Administration expenses	1,004	1,059	1,497	3,560
Fund at end of year	527,619	417,044	583,461	583,461
<b>TOTAL:</b>	<b>561,219</b>	<b>457,654</b>	<b>629,552</b>	<b>703,762</b>

Appendix G

## Experience analysis of the membership of the Fund for the period 1 April 2007 to 31 March 2010

The analysis below compares the actual experience over the 3 year period with the assumptions used for the 2010 valuation.

### III Health Retirements

	Actual	Expected	%
Males	7	13	54
Females	21	24	88
Total	28	37	76

In considering the above it should be noted that the introduction of the 2008 scheme included substantial changes to the eligibility criteria for ill health retirement and so the experience over the period is not expected to be representative of that going forward. The ill health assumptions for this 2010 valuation are in accordance with the analysis and advice reported separately to the Administering Authority, based on observed experience across all Mercer LGPS clients.

## Withdrawals

	Actual	Expected	%
Males	488	122	400
Females	1,516	426	356
Total	2,004	548	366

Note that actual withdrawals include members moving to another LGPS Fund, bulk transfers and also transfers under the special transfer club terms.

## Pensioner Deaths

### a. Based on amounts of pension payable

	Actual (£000s)	Expected (£000s)	%
Males	1,080	1,306	83
Females	781	988	79
Total	1,861	2,294	81

### b. Based on number of pensions in payment

	Actual	Expected	%
Males	213	199	107
Females	257	310	83
Total	470	509	92



Appendix H

## Rates and Adjustments Certificate issued in accordance with Regulation 36 of the Administration Regulations

**Name of Fund**

**London Borough of Croydon Pension Fund**

### Primary Contribution Requirements

I hereby certify that, in my opinion, the common rate of employers' contributions payable in each year of the period of three years beginning 1 April 2011 should be at the rate of 13.1 per cent of Pensionable Pay.

I hereby certify that, in my opinion, the amount of the employers' contributions payable in each year of the period of three years beginning with 1 April 2011, as set out above, should be individually adjusted as set out in the attached schedule.

Contributions will be payable monthly in arrears with each payment normally being due by the 19th of the following month. Pensionable Pay is pay as determined under the LGPS regulations for the calculation of employee contributions.

### Further Adjustments

A further individual adjustment shall be applied in respect of each non-ill health early retirement occurring in the period of three years covered by this certificate. This further individual adjustment will be calculated in accordance with methods agreed from time to time between the Fund's actuary and the Administering Authority.

The contributions set out in the attached schedule represent the minimum contribution which may be paid by each employer. Additional contributions may be paid if requested by the employer concerned.

The contributions may be varied as agreed by the Actuary and Administering Authority to reflect any changes in contribution requirements as a result of any benefit costs being insured with a third party.

In cases where an element of an existing Scheme employer's deficit is transferred to a new employer on its inception, the Scheme employer's deficit recovery contributions, as shown on the schedule to this Certificate in Appendix I, may be reallocated between the Scheme employer and the new employer to reflect this, on advice of the Actuary and as agreed with the Administering Authority.

### Regulation 36(8)

No allowance for non-ill health early retirements has been made in determining the results of the valuation, on the basis that the costs arising will be met by additional contributions. Allowance for ill health retirements has been included in each employer's contribution rate, on the basis of the method and assumptions set out in the report.

**Signature**



---

**Name**

John Livesey

**Date of signing**

31 March 2011

**Qualification**

Fellow of the Institute and Faculty of Actuaries

## Appendix I

## Schedule to the Rates and Adjustment Certificate dated 31 March 2011

	2011/14		Additional payment (surplus adjustment)  2011/12	Additional payment (surplus adjustment)  2012/13	Additional payment (surplus adjustment)  2013/14
	Individual Adjustment  % of pay	Total Contribution Rate  % of pay			
Other Grouped Bodies (See table 1)	1.0	14.1	£211,000	£221,000	£231,000
London Borough Of Croydon And Grouped Scheduled Bodies (See note 1, table 1)	0.0	13.1	£14,971,000	£15,682,000	£16,427,000
BRIT School	-0.8	12.3	£8,000	£8,000	£8,000
Harris City Academy At Crystal Palace	-1.7	11.4	(£9,000)	(£9,000)	(£9,000)
Fairfield	3.9	17.0	£169,000	£177,000	£185,000
Veolia	2.3	15.4	£1,000	£1,000	£1,000
Interserve	3.2	16.3	£19,000	£20,000	£21,000
Fusion	0.5	13.6	£2,000	£2,000	£2,000
Harris Academy South Norwood	-2.1	11.0	£7,000	£7,000	£7,000
Oasis Academy Coulsdon	1.2	14.3	£45,000	£47,000	£49,000
Eldon Housing PFI	1.3	14.4	(£1,000)	(£1,000)	(£1,000)
Oasis Academy Shirley Park	-0.5	12.6	£86,000	£90,000	£94,000
Harris Academy Purley	0.2	13.3	£38,000	£40,000	£42,000
Olympic South Ltd	4.9	18.0	(£3,000)	(£3,000)	(£3,000)

	2011/14		Additional payment (surplus adjustment)  2011/12	Additional payment (surplus adjustment)  2012/13	Additional payment (surplus adjustment)  2013/14
	Individual Adjustment  % of pay	Total Contribution Rate  % of pay			
Apetito	3.4	16.5	(£1,000)	(£1,000)	(£1,000)
Wallington Cars	3.6	16.7	(£1,000)	(£1,000)	(£1,000)
Courier Cars Limited	3.7	16.8	(£1,000)	(£1,000)	(£1,000)

**Table 1**

<p><b>Grouped Scheduled Bodies</b>  Croydon College  Coulsdon College  John Ruskin College  St Joseph's College</p>	<p><b>Other Grouped Bodies</b>  Age Concern (Croydon)  Croydon Voluntary Action  Cabrini  Croydon Citizens Advice Bureau  Croydon Community Mediation  Croydon Environmental Networks  Croydon Welcare  Croydon Meals Agency  Croydon Youth Development Trust</p>
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Note:

1. Includes the former Grant Maintained Schools.
2. In cases where an element of an existing Scheme employer's deficit is transferred to a new employer on its inception, the Scheme employer's deficit recovery contributions shown in the table may be reallocated between the Scheme employer and the new employer to reflect this, on advice of the Actuary and as agreed by the Administering Authority.
3. The total annual contributions payable by each employer will be subject to a minimum of zero

# MERCER

Argentina

Australia

Austria

Belgium

Brazil

Canada

Chile

China

Colombia

Czech Republic

Denmark

Finland

France

Germany

Hong Kong

India

Indonesia

Ireland

Italy

Japan

Malaysia

Mexico

Netherlands

New Zealand

Norway

Philippines

Poland

Portugal

Saudi Arabia

Singapore

South Korea

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Turkey

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