



## Investment Sub-Committee

A meeting of the Investment Sub-Committee will be held at the Court Room, The Guildhall, Northampton, NN1 1DE on Wednesday 22 June 2022 at 2.00 pm

### Agenda

1.	<b>Apologies for Absence</b>
2.	<b>Declarations of Interest</b> Members are asked to declare any interest and the nature of that interest that they may have in any of the items under consideration at this meeting.
3.	<b>Minutes of Previous Meeting</b> (Pages 5 - 6) To confirm the minutes of the previous meeting held on 22 February 2022.
4.	<b>Chair's Announcements</b> To receive communications from the Chair.
5.	<b>Quarterly Performance Report for the Period Ending 31 March 2022</b> (Pages 7 - 24) The Investment Sub-Committee to receive a quarterly performance update from Mercer for the period ending 31 March 2022.
6.	<b>Exclusion of Press and Public</b> The following report(s) contain exempt information as defined in the following paragraph(s) of Part 1, Schedule 12A of Local Government Act 1972.  Paragraph 3 – Information relating to the financial or business affairs of any particular person (including the authority holding that information).  Members are reminded that whilst the following item(s) have been marked as exempt, it is for the meeting to decide whether or not to consider each of them in private or in

	<p>public. In making the decision, members should balance the interests of individuals or the Council itself in having access to the information. In considering their discretion members should also be mindful of the advice of Council Officers.</p> <p>Should Members decide not to make a decision in public, they are recommended to resolve as follows:</p> <p>“That under Section 100A of the Local Government Act 1972, the public and press be excluded from the meeting for the following item(s) of business on the grounds that, if the public and press were present, it would be likely that exempt information falling under the provisions of Schedule 12A, Part I, Paragraph(s) 3 would be disclosed to them, and that in all the circumstances of the case, the public interest in maintaining the exemption outweighs the public interest in disclosing the information.”</p>
7.	<p><b>Private Minutes of the Investment Sub-Committee</b> (Pages 25 - 28)</p> <p>To confirm the private minutes of the previous meeting held on 22 February 2022.</p>
8.	<p><b>Review of the Action Log</b> (Pages 29 - 30)</p> <p>The Investment Sub-Committee to review the action log.</p>
9.	<p><b>Manager Presentation - Liontrust (Formerly Majedie)</b> (Pages 31 - 88)</p> <p>A presentation to be given to the Investment Sub-Committee by Investment Manager Liontrust (Formerly Majedie).</p>
10.	<p><b>Responsible Investment - Climate Aware Passive Equity Investing</b> (Pages 89 - 128)</p> <p>A presentation to be given on Climate Aware Passive Equity Investing by Mercer, the Fund's investment consultants.</p>
11.	<p><b>Private Equity Update</b> (Pages 129 - 162)</p> <p>To update the Investment Sub Committee on progress with the Fund's programme of Private Equity commitments and note the Private Equity Funds to which the Fund will subscribe in 2022.</p>
12.	<p><b>Asset Pooling Update</b> (Pages 163 - 168)</p> <p>To update the Investment Sub Committee on progress with the ACCESS asset pooling project.</p>
13.	<p><b>Any Other Business</b></p>

Catherine Whitehead  
Proper Officer  
14 June 2022

### **Investment Sub-Committee Members:**

Councillor Malcolm Longley (Chair)	Councillor Cathrine Russell
Councillor Charles Morton (Vice-Chair)	Peter Borley-Cox
Councillor Phil Bignell	Robert Austin
Councillor Graham Lawman	

## **Information about this Agenda**

### **Apologies for Absence**

Apologies for absence and the appointment of substitute Members should be notified to [democraticservices@westnorthants.gov.uk](mailto:democraticservices@westnorthants.gov.uk) prior to the start of the meeting.

### **Declarations of Interest**

Members are asked to declare interests at item 2 on the agenda or if arriving after the start of the meeting, at the start of the relevant agenda item

### **Local Government and Finance Act 1992 – Budget Setting, Contracts & Supplementary Estimates**

Members are reminded that any member who is two months in arrears with Council Tax must declare that fact and may speak but not vote on any decision which involves budget setting, extending or agreeing contracts or incurring expenditure not provided for in the agreed budget for a given year and could affect calculations on the level of Council Tax.

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If you have any queries about this agenda please contact Maisie McInnes, Democratic Services via the following:

Tel: 07391411365

Email: [democraticservices@westnorthants.gov.uk](mailto:democraticservices@westnorthants.gov.uk)

Or by writing to:

West Northamptonshire Council  
One Angel Square  
Angel Street  
Northampton  
NN1 1ED

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### Investment Sub-Committee

Minutes of a meeting of the Investment Sub-Committee held at The Court Room, The Guildhall, Northampton, NN1 1DE on Tuesday 22 February 2022 at 4.00 pm.

Present           Councillor Malcolm Longley (Chair)  
                       Councillor Graham Lawman  
                       Councillor Cathrine Russell  
                       Robert Austin  
                       Peter Borley-Cox

Also               Chris West – MERCER  
 Present:         Peter Gent - MERCER

Apologies       Councillor Charles Morton  
 for  
 Absence:

Officers         Richard Perry – Investment Manager, Pensions  
                       Tomasz Wardzala - Pension Services Financial Manager

#### 40. **Apologies for Absence**

Councillor Charles Morton

#### 41. **Declarations of Interest**

#### 42. **Minutes of the Previous Meeting**

Minutes agreed as true record

#### 43. **Chair's Announcements**

The Committee was advised that it was Richard Perry's last meeting with the Investment Sub-Committee.

#### 44. **Quarterly Performance Report for the period ending 31 December 2021**

Chris West and Peter Gent from Mercer presented the report.

Longview's performance was below benchmark for the quarter but better by 1.5% over 12 months. It was understood that Longview had lost some clients but there was no urgency to disinvest. Another ACCESS authority had requested an additional growth equity sub-fund which in the future might be a potential substitute for Longview.

The Baillie Gifford Long-Term Global Growth (LTGG) fund had experienced extreme volatility and was behind the global benchmark by 9.4% in the quarter and by 15.8% over 12 months, however this was to be expected over shorter periods from this very concentrated mandate. The LTGG had still returned 44.7% (28.5% above benchmark) since the Fund first invested. It was noted that the Fund had reduced its position marginally by selling when values were at a peak.

Members discussed the results and asked Mercer whether they considered the performance to be satisfactory to which the response was yes, as the Fund continued to perform better than the long-term target return provided by the Fund's actuary of 3.9% per annum.

Councillor Malcolm Longley queried what was expected in the next quarter.

Chris West from Mercer advised that the start of the quarter had seen falling values for growth equities and that market conditions were more favourable for defensive stocks. Although the headline trailing inflation measure was higher than expectations it was the forward-looking market expectation of inflation over, say, the next 15 years that would impact the funding position. The main issue was how would Central Bank policy responded to the threat of increased inflation. The committee was informed that the geopolitical risks arising from the Ukraine situation would have an impact on short-term investment performance.

The report was noted by the committee.

45. **Exclusion of Press and Public**

The meeting closed at 6.20 pm

Chair: \_\_\_\_\_

Date: \_\_\_\_\_

# Northamptonshire Pension Fund Monitoring Report Quarter to 31 March 2022

Chris West

May 2022



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- The value of investments can go down as well as up and you may not get back the amount you have invested. In addition investments denominated in a foreign currency will fluctuate with the value of the currency.
- The valuation of investments in property based portfolios, including forestry, is generally a matter of a valuer's opinion, rather than fact.
- When there is no (or limited) recognised or secondary market, for example, but not limited to property, hedge funds, private equity, infrastructure, forestry, swap and other derivative based funds or portfolios it may be difficult for you to obtain reliable information about the value of the investments or deal in the investments.
- Care should be taken when comparing private equity / infrastructure performance (which is generally a money-weighted performance) with quoted investment performance (which is generally a time-weighted performance). Direct comparisons are not always possible.

**Chris West**



## Executive Dashboard

### Funding

The present value of the Fund's liabilities decreased over the quarter (from £3,254m to £3,108m).

The Fund's assets (including cash) decreased over the quarter by £107.4m to £3,346.8m as at 31 December 2022. The Fund's assets (including cash) have increased by £265m over the last twelve months.

The estimated funding level at 31 March 2022 was c.108%, up from c.106% as at 31 December 2021. For comparison, the funding level at 31 March 2019 (the date of the last actuarial valuation) was 93%

### Performance

#### Short Term Performance

The Fund underperformed the benchmark over the quarter (returning -3.6% vs -1.2%)

#### Key Contributors to Relative Performance - Quarter

Underperformance by Baillie Gifford - Global Equity -22.1%  
 Underperformance by Baillie Gifford - DGF -7.2%

#### Longer Term Performance

	Fund	B'mark
1 Year (%)	8.2	10.8
3 Years (% p.a.)	9.6	9.2

### Asset Allocation

There were no material changes to the Fund's investment arrangements over the quarter.

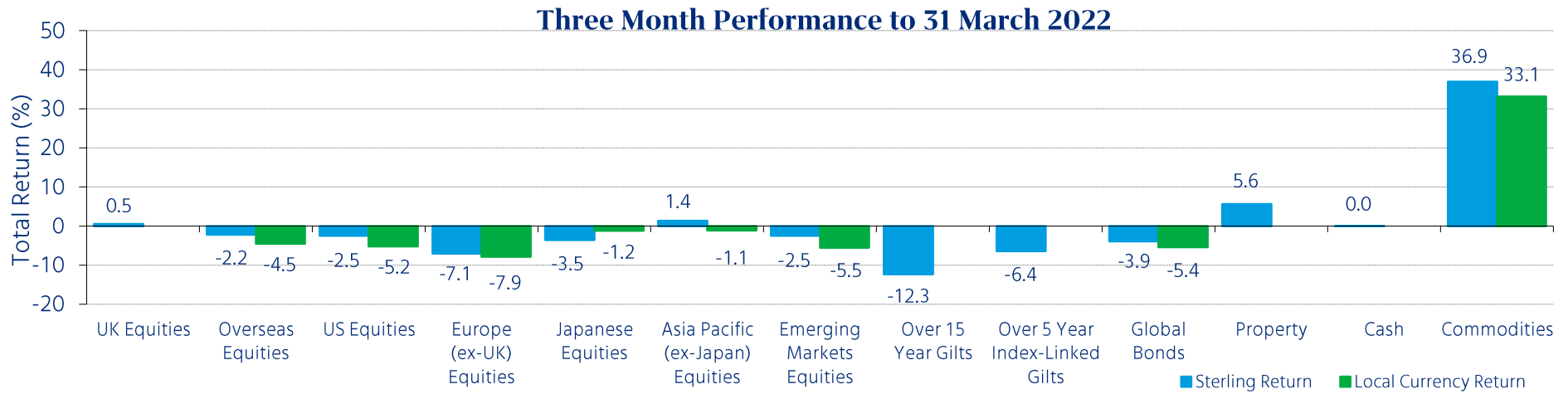
Overweight		Underweight	
Alternatives	+1.0%	Fixed Income	-0.8%
		Equities	-0.2%

### Manager Research

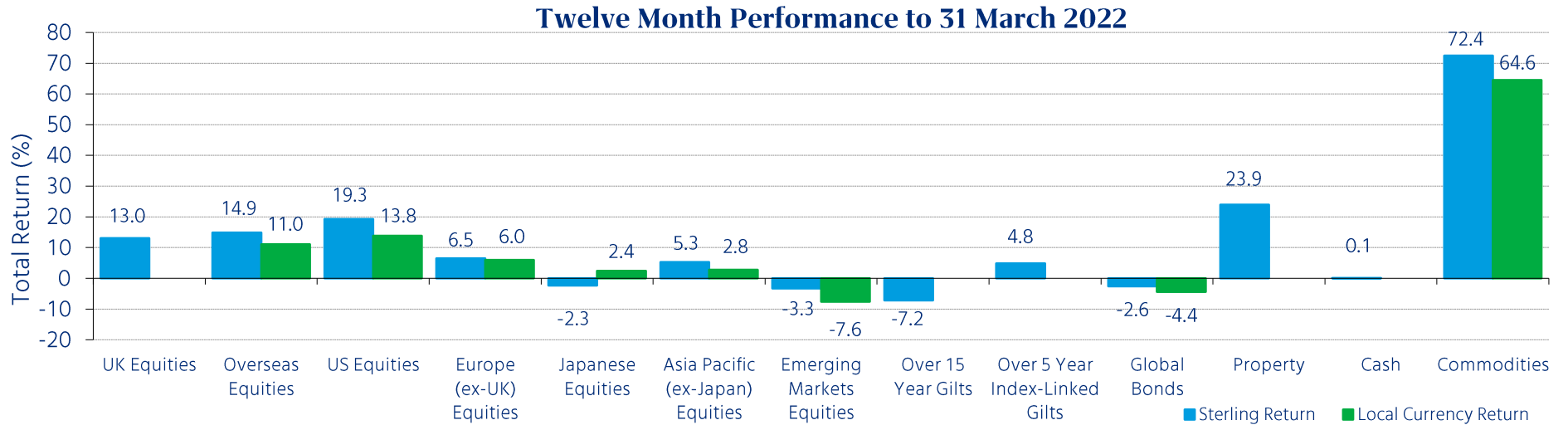
#### Rating Changes

*Redacted.*

## Market Index Performance



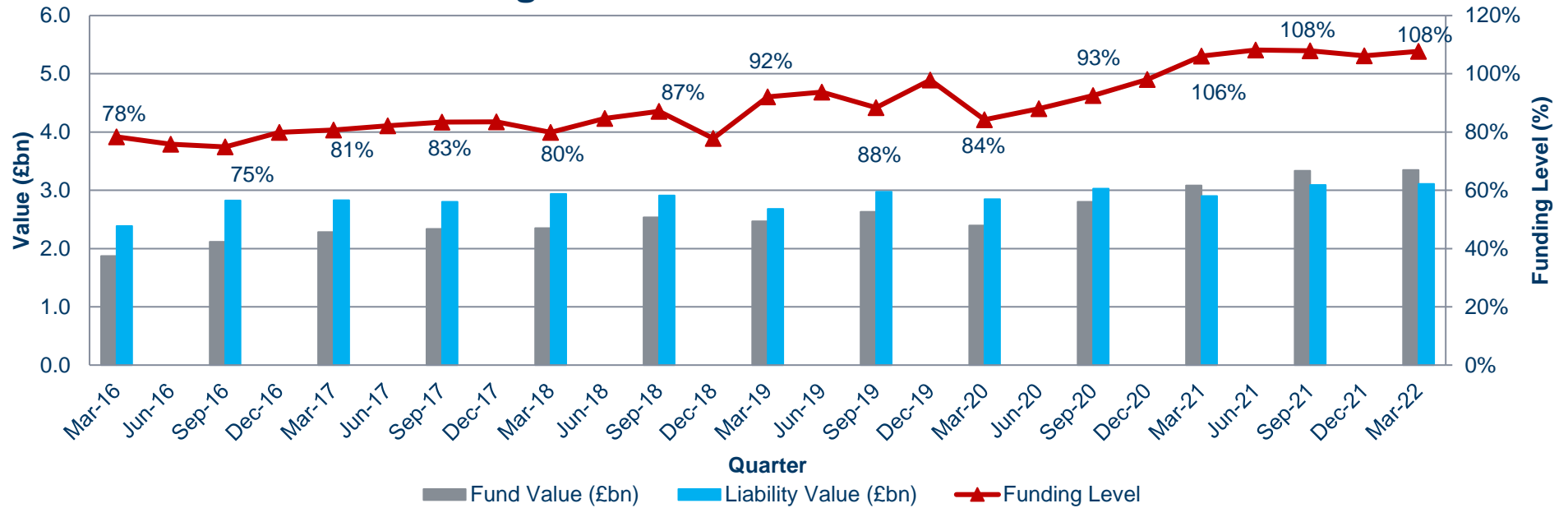
Source: Refinitiv.



Source: Refinitiv.

# Funding

## Funding Level since March 2016 Valuation



Source: Hymans Robertson & WM Performance Reports. Figures don't reconcile with the Hymans Robertson Funding report due to differences in the total asset value. The Funding Level is a ratio of assets to liabilities.

- There has been a general trend from 2016 of a rise in both liabilities and assets.
- There was an increase in funding level at the March 2016 and March 2019 valuations.
- The funding level as at 31 March 2022 was 108%, which is higher than the funding level as at 31 December 2021 as the liabilities decreased more than the assets over the quarter.

# Allocation

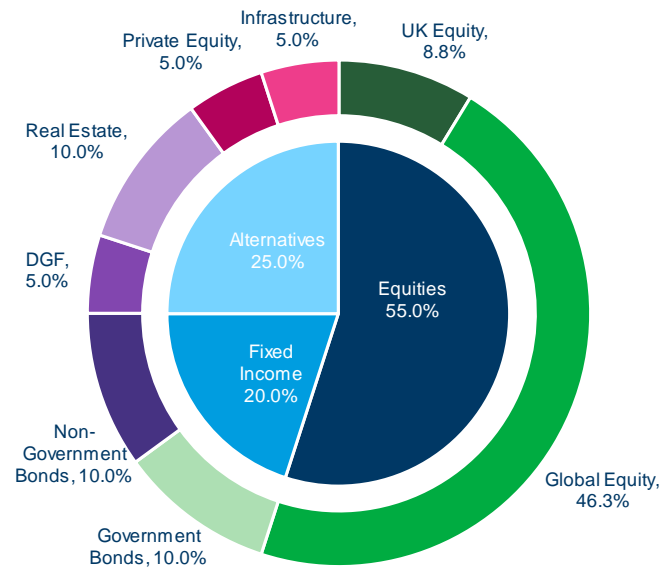
	31/12/2021 Market Value (£M)	31/03/2022 Market Value (£M)	31/12/2021 Allocation (%)	31/03/2022 Allocation (%)	31/03/2022 B'mark (%)	31/03/2022 B'mark Range (%)
<b>Total Invested Assets</b>	<b>3,439.2</b>	<b>3,325.8</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>--</b>
Equities	1,926.7	1,821.3	56.0	54.8	55.0	50.0 - 60.0
Fixed Income	659.5	638.8	19.2	19.2	20.0	15.0 - 25.0
Alternatives	853.0	865.6	24.8	26.0	25.0	20.0 - 30.0

Source: Investment Managers, Link Asset Services and Mercer.

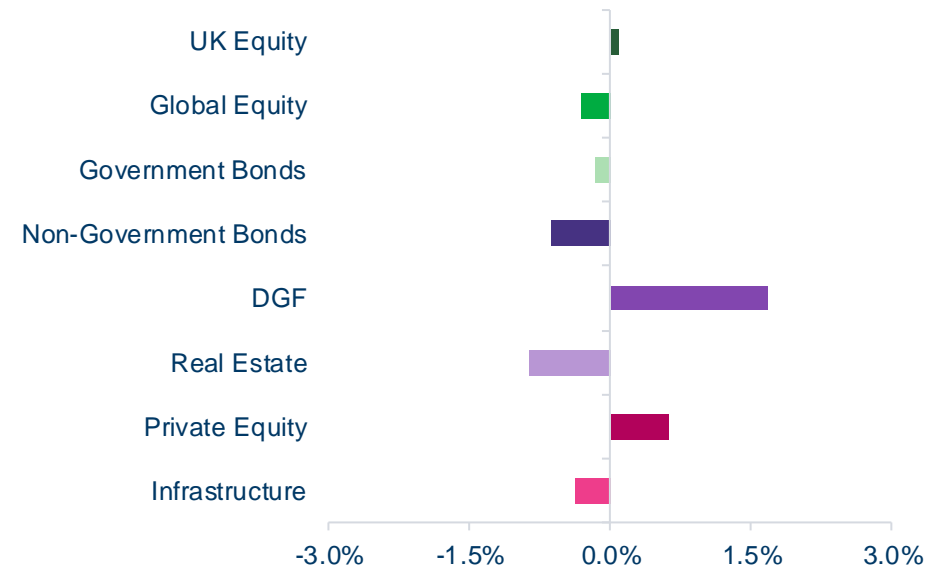
Figures may not sum to total due to rounding.

The total market value shown in the table above at quarter end excludes assets invested in Catapult's Private Equity (c. £0.5m at the start and end of the quarter) and cash (c. £15.0m at the start of quarter and c. £21.0 at the end of quarter).

## Benchmark Asset Allocation as at 31 March 2022



## Deviation from Benchmark Asset Allocation



## Manager Allocation (1/3)

	31/12/2021 Market Value (£M)	31/03/2022 Market Value (£M)	31/12/2021 Allocation (%)	31/03/2022 Allocation (%)	31/03/2022 B'mark (%)
<b>Total</b>	<b>3,439.2</b>	<b>3,325.8</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Equities</b>	<b>1,926.7</b>	<b>1,821.3</b>	<b>56.0</b>	<b>54.8</b>	<b>55.0</b>
<b>UK Equity</b>	<b>313.7</b>	<b>293.9</b>	<b>9.1</b>	<b>8.8</b>	<b>8.8</b>
Majedie - UK Equity	313.7	293.9	9.1	8.8	8.8
<b>Global Equity</b>	<b>1,613.0</b>	<b>1,527.5</b>	<b>46.9</b>	<b>45.9</b>	<b>46.3</b>
<b>Active Global Equity</b>	<b>889.7</b>	<b>823.5</b>	<b>25.9</b>	<b>24.8</b>	<b>26.3</b>
Newton - Global Equity	328.0	313.7	9.5	9.4	8.8
Baillie Gifford - Global Equity	277.5	223.3	8.1	6.7	8.8
Longview - Global Equity	284.1	286.5	8.3	8.6	8.8
<b>Passive Equity</b>	<b>723.4</b>	<b>704.0</b>	<b>21.0</b>	<b>21.2</b>	<b>20.0</b>
UBS - Passive Equity	723.4	704.0	21.0	21.2	20.0

Source: Investment Managers, Link Asset Services and Mercer. Figures may not sum to total due to rounding.

The total market value shown in the table above at quarter end excludes assets invested in Catapult's Private Equity (c. £0.5m at the start and end of the quarter) and cash (c. £15.0m at the start of quarter and c. £21.0m at the end of quarter).

The HarbourVest, Adams Street, AMP Capital, Allianz and JPM end of quarter valuations are provisional.

The total market value invested in ACCESS is c. £2,667.5m at the start of quarter and c. £2,524.8m at the end of quarter (shown in pink in the table above).

## Manager Allocation (2/3)

	31/12/2021 Market Value (£M)	31/03/2022 Market Value (£M)	31/12/2021 Allocation (%)	31/03/2022 Allocation (%)	31/03/2022 B'mark (%)
<b>Government Bonds</b>	<b>349.2</b>	<b>327.1</b>	<b>10.2</b>	<b>9.8</b>	<b>10.0</b>
UBS - Gilts	349.2	327.1	10.2	9.8	10.0
<b>Non-Government Bonds</b>	<b>310.3</b>	<b>311.8</b>	<b>9.0</b>	<b>9.4</b>	<b>10.0</b>
Bluebay - Multi-Asset Credit	154.7	157.1	4.5	4.7	5.0
M&G - Multi-Asset Credit	155.6	154.6	4.5	4.6	5.0
<b>Alternatives</b>	<b>853.0</b>	<b>865.6</b>	<b>24.8</b>	<b>26.0</b>	<b>25.0</b>
<b>DGF</b>	<b>236.0</b>	<b>221.7</b>	<b>6.9</b>	<b>6.7</b>	<b>5.0</b>
Baillie Gifford - DGF	236.0	221.7	6.9	6.7	5.0
<b>Real Estate</b>	<b>289.3</b>	<b>303.5</b>	<b>8.4</b>	<b>9.1</b>	<b>10.0</b>
CBRE - Property	230.0	243.3	6.7	7.3	7.0
M&G - Residential Property	45.6	46.4	1.3	1.4	1.5
M&G - Shared Ownership	13.7	13.7	0.4	0.4	1.5

Source: Investment Managers and Mercer. Figures may not sum to total due to rounding.

The total market value shown in the table above at quarter end excludes assets invested in Catapult's Private Equity (c. £0.5m at the start and end of the quarter) and cash (c. £15.0m at the start of quarter and c. £21.0m at the end of quarter).

The HarbourVest, Adams Street, AMP Capital, Allianz and JPM end of quarter valuations are provisional.

The total market value invested in ACCESS is c. £2,667.5m at the start of quarter and c. £2,524.8m at the end of quarter (shown in pink in the table above).

## Manager Allocation (3/3)

	31/12/2021 Market Value (£M)	31/03/2022 Market Value (£M)	31/12/2021 Allocation (%)	31/03/2022 Allocation (%)	31/03/2022 B'mark (%)
<b>Private Equity</b>	<b>175.0</b>	<b>186.5</b>	<b>5.1</b>	<b>5.6</b>	<b>5.0</b>
HarbourVest - Private Equity	97.0	104.2	2.8	3.1	--
Adams Street - Private Equity	78.1	82.3	2.3	2.5	--
<b>Infrastructure</b>	<b>152.6</b>	<b>154.0</b>	<b>4.4</b>	<b>4.6</b>	<b>5.0</b>
AMP Capital - Infrastructure Debt	35.2	33.8	1.0	1.0	--
Allianz - Infrastructure Debt	17.3	17.1	0.5	0.5	--
IFM - Infrastructure Equity	55.9	58.3	1.6	1.8	--
JPM - Infrastructure Equity	44.2	44.7	1.3	1.3	--

Source: Investment Managers and Mercer. Figures may not sum to total due to rounding.

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The total market value invested in ACCESS is c. £2,667.5m at the start of quarter and c. £2,524.8m at the end of quarter (shown in pink in the table above).

## Net Manager Performance (1/2)

	2022 Q1 (%)	B'mark (%)	1 Yr (%)	B'mark (%)	3 Yrs (%)	B'mark (%)	5 Yrs (%)	B'mark (%)
<b>Total</b>	<b>-3.6</b>	<b>-1.2</b>	<b>8.2</b>	<b>10.8</b>	<b>9.6</b>	<b>9.2</b>	<b>7.7</b>	<b>7.6</b>
<b>UK Equity</b>	<b>-6.4</b>	<b>0.5</b>	<b>5.6</b>	<b>13.0</b>	<b>3.1</b>	<b>5.3</b>	<b>2.5</b>	<b>4.7</b>
Majedie - UK Equity	-6.4	0.5	5.6	13.0	3.3	5.3	2.2	4.7
<b>Global Equity</b>	<b>-5.3</b>	<b>-2.7</b>	<b>6.9</b>	<b>11.6</b>	<b>15.2</b>	<b>12.6</b>	<b>12.1</b>	<b>10.3</b>
Newton - Global Equity	-4.4	-2.6	10.8	12.4	13.9	13.4	11.6	10.5
Baillie Gifford - Global Equity	-19.5	-2.6	-13.9	12.4	--	--	--	--
Longview - Global Equity	0.8	-2.6	14.6	12.4	--	--	--	--
UBS - Passive Equity	-2.7	-2.7	10.4	10.3	11.7	11.6	9.8	9.8
<b>Fixed Income</b>	<b>-4.0</b>	<b>-2.9</b>	<b>2.4</b>	<b>3.6</b>	<b>2.7</b>	<b>3.4</b>	<b>2.7</b>	<b>3.3</b>
UBS - Gilts	-6.3	-6.4	4.8	4.8	2.2	2.2	2.6	2.6
Bluebay - Multi-Asset Credit	-2.3	0.1	-0.8	0.1	--	--	--	--
M&G - Multi-Asset Credit	-0.6	1.1	0.3	4.1	--	--	--	--

Figures shown are net of fees and based on performance provided by the Investment Managers, Hymans, Mercer estimates and Refinitiv.

For periods over one year the figures in the table above have been annualised.

The HarbourVest, Adams Street, AMP Capital and Allianz quarterly returns are provisional.

Total Fund and Alternatives performances include quarterly performances for HarbourVest, Adams Street, AMP Capital, Allianz and JPM calculated by Mercer using a Modified Dietz approach based on data provided by these managers. Over the long term, performances are chain linked using quarterly Total Fund performances. Performance shown is net of illiquid mandates' fees. Performance for the underlying private equity and infrastructure mandates is shown in the fund currency with a quarter lag. Benchmark performance shown for the underlying private equity mandates is the rolling 3 year MSCI World Index return, averaged on a quarterly basis.

Totals include performance of terminated mandates.



## Net Manager Performance (2/2)

	2022 Q1 (%)	B'mark (%)	1 Yr (%)	B'mark (%)	3 Yrs (%)	B'mark (%)	5 Yrs (%)	B'mark (%)
<b>Alternatives</b>	<b>1.0</b>	2.1	<b>16.2</b>	13.4	<b>7.4</b>	8.2	<b>6.8</b>	7.2
Baillie Gifford - DGF	-6.2	1.0	3.4	3.7	3.7	3.9	3.3	4.0
CBRE - Property	5.8	5.6	19.4	23.1	4.8	8.1	5.9	7.8
M&G - Residential Property	2.0	1.5	4.4	6.0	2.4	6.0	--	--
M&G - Shared Ownership	0.0	1.5	4.4	6.0	--	--	--	--
HarbourVest - Private Equity	-0.2	5.0	6.6	19.8	92.2	19.8	-7.5	13.5
Adams Street - Private Equity	11.5	5.0	73.9	19.8	47.8	19.8	--	--
AMP Capital - Infrastructure Debt	3.5	2.5	11.7	10.0	5.1	10.0	--	--
Allianz - Infrastructure Debt	0.2	1.0	-7.3	4.0	3.0	4.0	--	--
IFM - Infrastructure Equity	4.3	2.5	21.2	10.0	--	--	--	--
JPM - Infrastructure Equity	1.5	2.5	3.9	10.0	--	--	--	--

Figures shown are net of fees and based on performance provided by the Investment Managers, Hymans, Mercer estimates and Refinitiv.

For periods over one year the figures in the table above have been annualised.

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Totals include performance of terminated mandates.

# Appendix

## Appendix A

### Benchmarks

Name	B'mark (%)	Performance Benchmark	Performance Target	Tracking Error Expectation
<b>Total</b>	<b>100.0</b>	-	-	-
Majedie - UK Equity	8.8	FTSE All-Share Index	+2.0% p.a. (gross of fees)	2.0% - 6.0% p.a.
<b>Global Equity</b>	<b>46.3</b>	-	-	-
Newton - Global Equity	8.8	MSCI AC World (NDR) Index	+2.0% p.a. (gross of fees)	2.0% - 6.0% p.a.
Baillie Gifford - Global Equity	8.8	MSCI AC World (NDR) Index	Capital growth, net of fees, over the long term	-
Longview - Global Equity	8.8	MSCI AC World (NDR) Index	Capital growth, net of fees, over the long term	-
UBS - Passive Equity	20.0	Composite	To match the benchmark	-
<b>Fixed Income</b>	<b>20.0</b>	-	-	-
UBS - Gilts	10.0	Composite	To match the benchmark	-0.1% - 0.1% p.a.
Bluebay - Multi-Asset Credit	5.0	SONIA	-	-
M&G - Multi-Asset Credit	5.0	SONIA +4% p.a.	-	-
Baillie Gifford - DGF	8.0	Bank of England UK Base Rate +3.5% p.a.	-	0.0% - 10.0% p.a.
<b>Real Estate</b>	<b>10.0</b>	-	-	-
CBRE - Property	7.0	MSCI All Balanced Property Funds Index	+1.0% p.a. (gross of fees)	0.0% - 3.0% p.a.
M&G - Residential Property	1.5	Absolute Return of 6.0% p.a.	-	-
M&G - Shared Ownership	1.5	Absolute Return of 6.0% p.a.	-	-
<b>Private Equity</b>	<b>5.0</b>	-	-	-
HarbourVest - Private Equity		MSCI World Index	+3.0% p.a. (gross of fees)	-

Name	B'mark (%)	Performance Benchmark	Performance Target	Tracking Error Expectation
Adams Street - Private Equity		MSCI World Index	+3.0% p.a. (gross of fees)	-
<b>Infrastructure</b>	<b>5.0</b>	-	-	-
AMP Capital - Infrastructure Debt		IRR of 10.0% p.a.	-	-
Allianz - Infrastructure Debt		IRR of 4.0% p.a.	-	-
IFM - Infrastructure Equity		IRR of 10.0% p.a.	-	-
JPM - Infrastructure Equity		IRR of 10.0% p.a.	-	-

# Appendix B

## Detailed Attribution Analysis - Quarter



Please note that the relative return and relative weight charts use unrounded performance and allocation figures to calculate the relative difference, hence the numbers are not directly comparable to the implied relative difference given in the performance and allocation tables. Figures shown for the private equity and infrastructure mandates (with the exception of IFM) are estimated.

## Explanation of Attribution Analysis Chart

The purpose of the attribution analysis chart is give a visual representation of the contribution of each portfolio to the relative performance of the Total Scheme against the Total Benchmark". The contribution is apportioned between "Manager Contribution" and "Allocation Contribution. Further explanation of the terms used in the chart is given below.

**Relative Weight** - This is the difference in percentage terms of the actual Scheme allocation and benchmark allocation at both the start and end of the period. A bar greater (less) than zero indicates that the Scheme was overweight (underweight) to that portfolio.

**Relative Performance** - This shows the relative performance of the portfolio against its benchmark performance. A bar greater than zero indicates there was outperformance, whereas a bar less than zero indicates underperformance.

**Quarterly Manager Contribution** - This shows the contribution at a total level of the relative performance achieved by the portfolio, taking into account the initial actual allocation. A larger allocation will lead to a greater contribution at a total level (all other things being equal).

Positive (negative) relative performance will result in positive (negative) manager contribution. Note that for passive mandates manager contributions should be close to zero, given its performance objective of tracking the benchmark. In calculation terms this is as follows:

$$\text{Manager Contribution} = (\text{Performance}_{pi} - \text{Performance}_{bi}) \times \text{Initial Actual Allocation}_{pi}$$

**Quarterly Allocation Contribution** - The allocation contribution shows whether a portfolio underweight / overweight position has had a positive or negative effect on the Total Scheme outperformance / underperformance in relation to the Total Scheme Benchmark.

For example, an overweight allocation to a portfolio whose benchmark performance was superior to that of the Total Scheme Benchmark would result in a positive contribution. In calculation terms this is as follows:

$$\text{Allocation Contribution} = (\text{Performance}_{bi} - \text{Performance}_{bT}) \times (\text{Actual Allocation}_{pi} - \text{Benchmark Allocation}_{bi})$$

Please note that the relative return and relative weight figures shown in the chart use unrounded performance and allocation figures to calculate the relative differences. Therefore, the numbers are not directly comparable to the implied relative differences given in the performance table and allocation tables.

*Key: pi = portfolio I; bi = portfolio I benchmark; bT = Total Fund benchmark*

**Attribution for Quarters with Significant Events** - In cases where there are significant events over the quarter (for example large cashflows, new or terminated portfolios), both manager and allocation contributions are first calculated for the underlying part periods. The quarterly contributions are then a sum of the part period contributions.



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