

# Northern LGPS

## Investment Benchmarking Results

For the 8-year period ending the 31<sup>st</sup> March 2022

Version 1

06-04-2023



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# This benchmarking report provides an independent assessment of value-for-money.

We compare your costs with other pension funds, inside and outside LGPS. To provide context, we also compare your investment performance, asset mix, risk, funding etc. What emerges is a narrative about your fund, how it compares with others and why your investment outcomes compare as they do.

## Cost

- How do our costs compare and why?
- Where are we paying more / less than others?
- What is the trend in our costs?

## Performance

- Costs need to be seen in the context of performance.
- How do our returns compare with others and why?
- Are our active management decisions being rewarded?

## Risk

- How does the risk in our portfolio compare with others?
- How does risk relate to relative funding levels?

## Value-for-Money

- If we are paying more then are we getting more?
- How does our net value add compare with others?

The report is accompanied by an on-line dashboard. The dashboard allows your management team to drill-down on key metrics and access detailed comparisons of cost, performance and value at an asset class and mandate level.

This report reflects a 8-year time period since 2015 to align with the Department of Leveling Up Housing and Communities (DLUHC) baseline for measuring the success of pooling within LGPS.

Care is taken to validate the data contained in the report. This includes automated validations on outlying or unusual data as it is submitted, and an additional manual data 'clean' where our analysts interact with fund personnel to ensure the data is fit for purpose. Detailed notes and definitions are included as an appendix to the report.

## We compare your costs with 20 global peer funds ranging from £17.6 bn to £106.3 bn.

The peer group is selected to answer a key question:

*Are your costs reasonable for a fund of your size and with your assets?*

Peers are therefore selected:

- Based on size - because size impacts costs.
- To include both LGPS and non-LGPS funds globally.
- Because they hold similar assets to you.
- For stability and validity:
  - Regular participants mean consistent year-on-year results.
  - To deliver a stable statistical sample.

The median size in the peer group is £58.4 bn (versus your average assets of £54.6 bn).

The names of peers are confidential and should not be disclosed to third parties.

<sup>1</sup> The data is aggregated for all of the funds within the pool, i.e., it includes both pooled and non-pooled assets (not just the assets managed by the pools on behalf of the funds).

<sup>2</sup> The data is aggregated from a sub-set of the funds within the pool (because not all of the individual funds benchmark with CEM).

## We are benchmarking investment costs of £202.9m or 37.1 bps in 2022.

Asset class	Internal costs <sup>1</sup> £000s	External management costs			Total		Trans. costs <sup>2</sup> £000s	Other expenses <sup>3</sup> £000s
		Passive fees £000s	Active base fees £000s	Active perf. fees £000s	£000s	bps		
Equities, Bonds, Cash and Multi-Asset Strategies	5,185	1,550	31,661	5,573	43,968			
Global property	239		733	1,579	973	6.1		
Global property - LP	84		14,834	18,199	14,918	174.0		
Global property - FoFs								
Top Layer Fees			273	52	273	160.4		
Underlying Fees			107	124	107	62.8		
Infrastructure	3,096				3,096	21.9		
Infrastructure - LP	511		26,304	40,230	26,815	146.2		
Natural resources - LP			128	22	128	154.9		
Domestic property - Evergreen	253		6,938	92	7,191	36.6		
Domestic property - Internal	87				87			
Other listed real assets - External active			235		235	297.5		
Other real assets			6,475	21,071	6,475	132.1		
Hedge funds - External active			2,251	658	2,909	119.7		
Hedge funds - FoFs								
Top Layer Fees	41		696	510	1,247	100.3		
Underlying Fees			1,567	1,741	3,308	266.0		
Private equity - Diversified - LP	411		52,993	169,775	53,404	182.5		
Private equity - Diversified - Co-invest.			898	6,250	898	49.2		
Private equity - Diversified - FoFs								
Top Layer Fees	167		3,515	11,210	3,682	38.4		
Underlying Fees			11,194	27,556	11,194	116.8		
Private credit - LP	170		9,753	7,734	9,923	89.1		
Private equity - Other - LP	337		5,963	6,901	6,300	93.0		
Derivatives/Overlays			369		369	0.1		
	10,581	1,550	176,888	8,482	197,501	36.1	4,755	
Oversight, custody and other costs <sup>4</sup>					5,370	1.0		
Total benchmarked costs <sup>5</sup>					202,871	37.1	16,057	

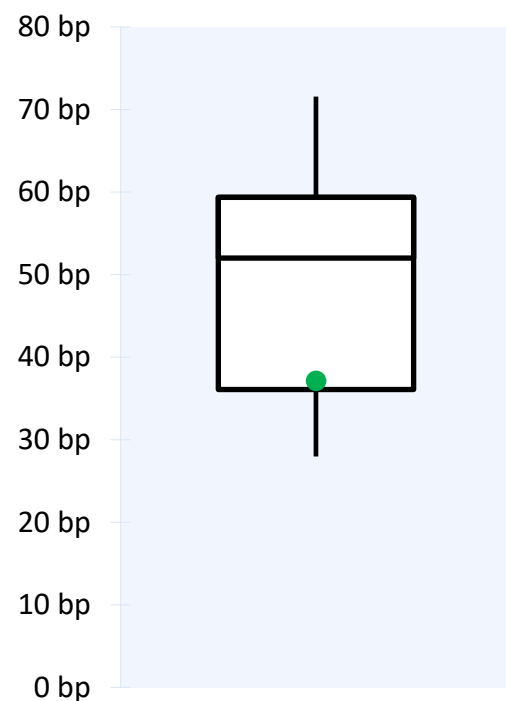
Numbers shaded in grey are excluded from the analysis that follows. Numbers shaded in blue include defaults for one or more mandates, please see appendix 1 to check the defaults used. Please see appendix 3 for any further notes.

# Your cost of 37.1 bps was below your benchmark cost of 40.5 bps.

## Comparison of costs *before adjusting for asset mix* :

Before adjusting for differences in asset mix, your costs of 37.1 bps were 14.9 bps below the peer median of 52.0 bps.

**Your cost versus peers**  
(before adjusting for asset mix differences)



## Comparison of costs *after adjusting for asset mix* :

To calculate a benchmark cost we apply peer median costs at an asset class level to your asset mix (i.e., we adjust for differences in asset mix).

**Your cost versus benchmark**  
(after adjusting for asset mix differences)

	£000s	bps
Your investment cost	202,871	37.1
Your benchmark cost	221,076	40.5
Difference	(18,205)	(3.3)

The difference is explained by two factors:

	£000s	bps
1. Implementation style	43,759	8.0
2. Paying less for similar assets	(61,964)	(11.3)
Total	(18,205)	(3.3)

These factors are quantified in the pages overleaf.

**Your fund was slightly low cost because it paid less than peers for similar services. These savings were mostly offset by a higher cost implementation style.**

### Reasons for your low cost status

	Excess Cost/ (Savings)	
	£000s	bps
<b>1. Higher cost implementation style</b>		
• More external active management (vs. lower cost passive and internal)	32,085	5.9
• More partnerships for private assets (vs. funds)	11,044	2.0
• Less fund of funds	(859)	(0.2)
• Less co-investment as a percentage of LP/Co	3,716	0.7
• Less overlays	(2,227)	(0.4)
	<u>43,759</u>	<u>8.0</u>
<b>2. Paying less than peers for similar services</b>		
• External investment management costs	(48,773)	(8.9)
• Internal investment management costs	(7,408)	(1.4)
• Oversight, custodial & other costs	(5,782)	(1.1)
	<u>(61,964)</u>	<u>(11.3)</u>
<b>Total savings</b>	<b>(18,205)</b>	<b>(3.3)</b>

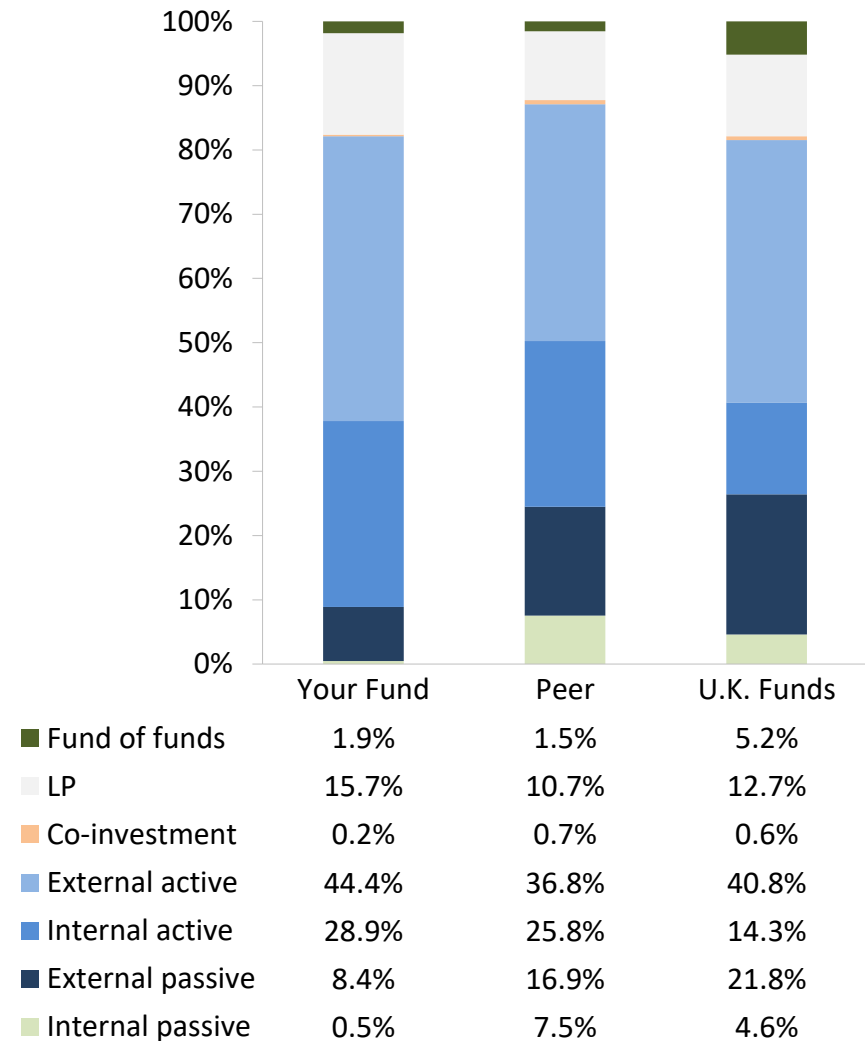
# Your implementation decisions cost you 8.0 bps relative to peers.

Implementation choice is about structural differences in how funds implement strategy, e.g. more or less active or passive.

Your implementation choices versus peers	Impact bps	Impact £000s
Less fund of funds	(0.2)	(859)
More LPs (less evergreen)	2.0	11,044
More LPs (less co-investment)	0.7	3,716
More external (less internal)	3.1	16,875
More active (less passive)	2.8	15,210
Less overlays	(0.4)	(2,227)
<b>Total impact</b>	<b>8.0</b>	<b>43,759</b>

1. Typically, more internal than external is lower cost. But your mix of internal and external by asset class increased your cost. Specifically, your fund has more internal in public assets while peers have more internal in private assets. The difference between internal and external cost is larger in private assets, outweighing the benefit of your public assets advantage.

## Implementation style



## Changes in your asset mix increased your cost by 19.9 bps since 2015.

All other things being equal, changes in your asset mix influence your total cost. If you invest more in higher cost assets, particularly private assets, your costs increase (and vice versa).

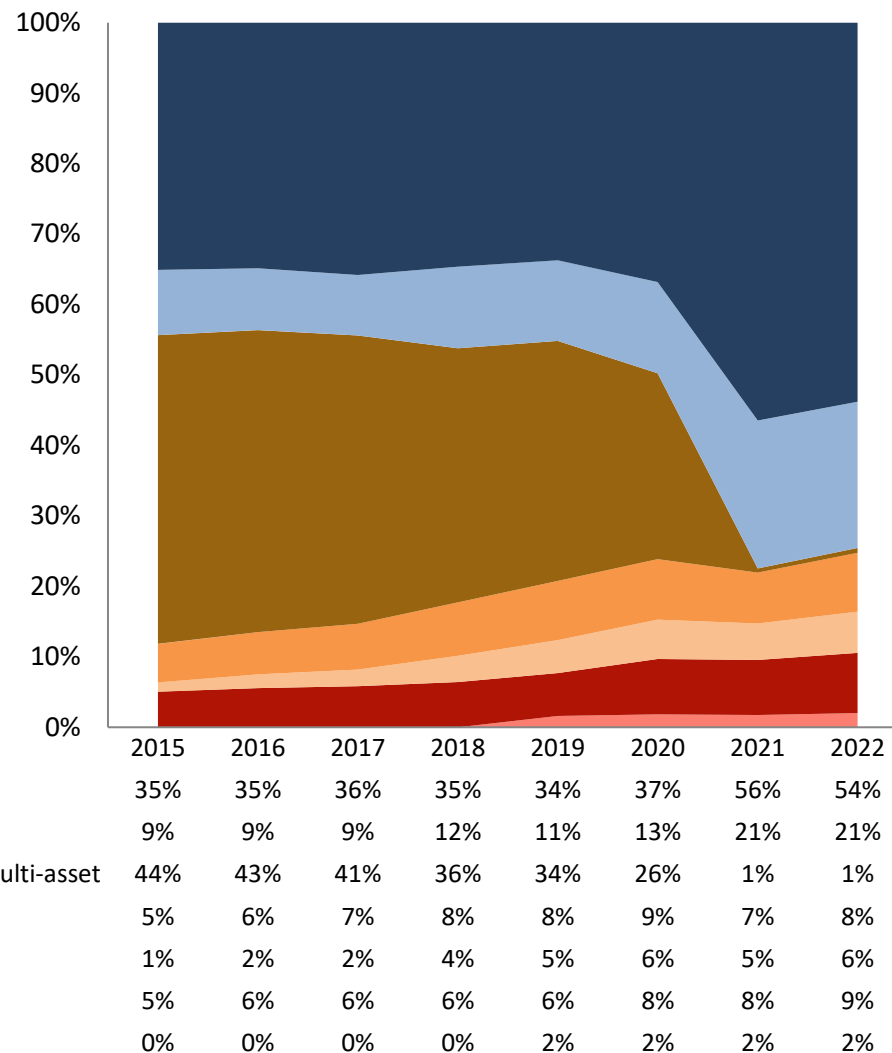
Asset classes that tend to have lower costs are denoted in blue and asset classes that tend to have higher cost assets are denoted in red colours.

The asset mix impact is the predicted change of your costs based on asset mix alone. It assumes that what you paid for each mandate and how you implemented your strategy was unchanged from the baseline year.

	Since last year	8-year
<b>Start cost (bps)</b>	<b>35.7</b>	<b>34.7</b>
Impact of:		
Asset mix	1.6	19.9
Implementation	0.3	(2.9)
Pay more/less	(0.5)	(14.6)
<b>End cost (bps)</b>	<b>37.1</b>	<b>37.1</b>

■ Equities
■ Bonds
■ Hedge funds & multi-asset
■ Property
■ Infrastructure <sup>1</sup>
■ Private equity
■ Private debt

8-year trend in your actual asset mix





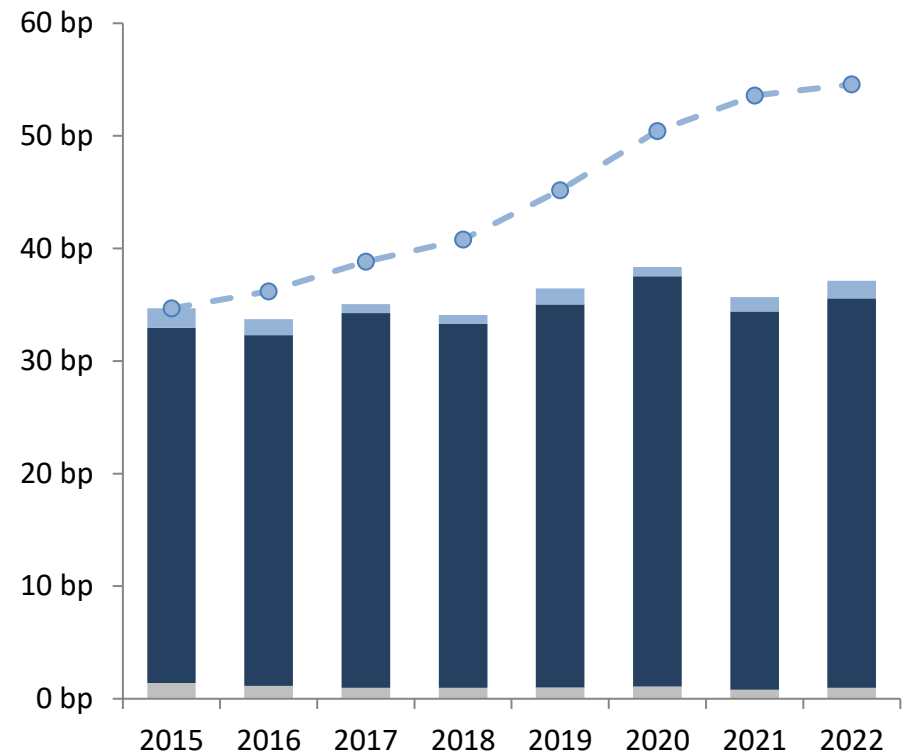
# Your benchmarked costs increased from 34.7 bps in 2015 to 37.1 bps in 2022.

Your costs change over time because:

1. Your asset mix changes.
2. Your implementation approach changes, e.g., moving from active to passive or external to internal (or vice versa).
3. What you pay for mandates changes over time because:
  - Performance fees (if applicable) are variable.
  - Your line-up of managers and mandates changes.
  - Some mandates have cost bands that vary with assets.

The asset mix impact line on the graph shows the predicted change of your costs based on asset mix alone. It assumes that what you paid for each mandate and how you implemented your strategy was unchanged from the baseline year.

Investment cost changes (bps)

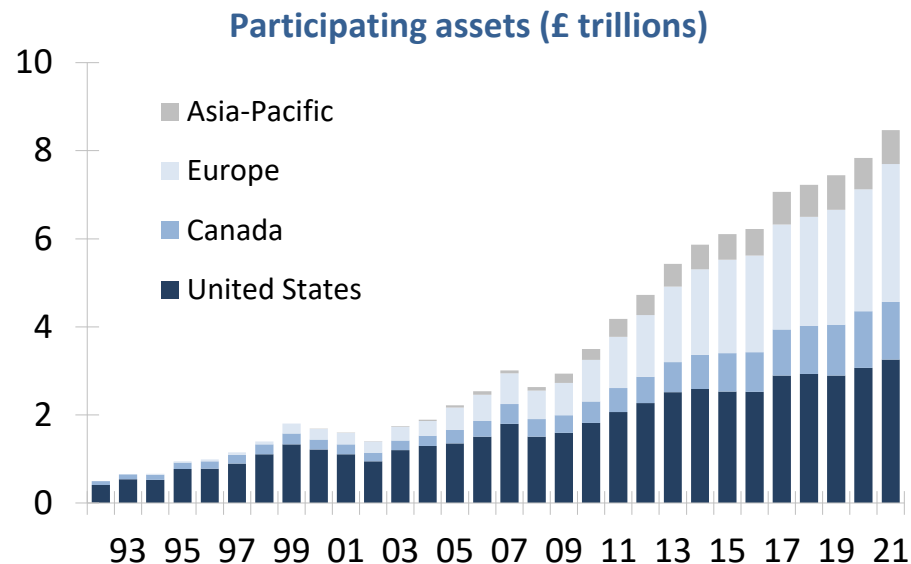


Performance	1.7	1.4	0.8	0.8	1.4	0.8	1.3	1.6
Base and internal	31.5	31.1	33.3	32.3	34.0	36.5	33.6	34.6
Oversight	1.4	1.1	1.0	1.0	1.0	1.1	0.8	1.0
Total	34.7	33.7	35.0	34.1	36.5	38.3	35.7	37.1
Asset mix impact	34.7	36.2	38.8	40.8	45.2	50.4	53.6	54.6

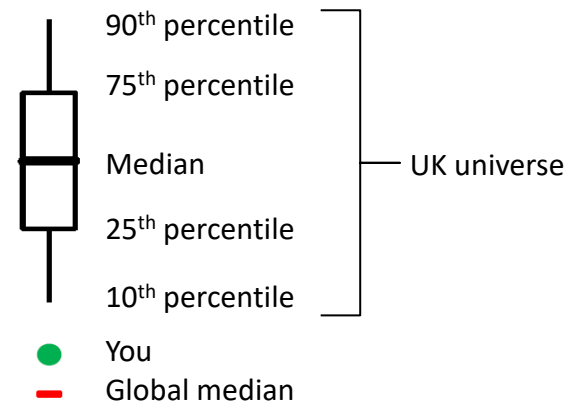
## Costs need to be seen in the context of performance.

The CEM database contains data from 285 global funds with combined assets of £9 trillion. We are comparing your performance with the 23 UK funds within that universe with combined assets of £450 billion. These comparisons need to be interpreted cautiously because:

- Performance relative to liabilities is more important than performance relative to peers.
- Different funds have different liabilities, objectives, funding levels, employer covenants etc.
- Corporate funds that are de-risking have a very different risk appetite to open funds with a long time horizon (and so very different returns).
- Performance comparisons in this report are primarily with a domestic UK universe which contains both corporate and LGPS funds.



Key: Performance comparisons are presented in the form of 'bar and whisker' charts, as follows:

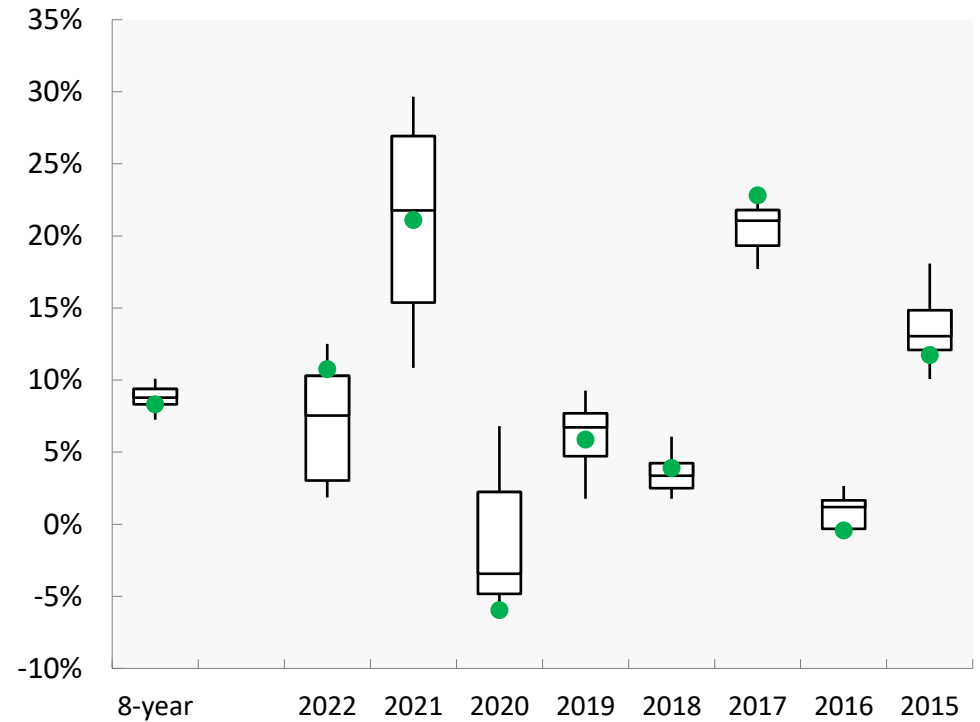


## Your 8-year net total return of 8.3% was below the UK median of 8.8%.

In the pages that follow, we help you to understand why your returns compare as they do by separating total return into its more meaningful components:

- *Benchmark return* : The return from strategic asset allocation decisions. These decisions are typically made by the local Pensions Committee.
- *Value added* : A function of active management decisions, including tactical asset allocation, manager selection, stock selection, etc. These 'implementation' decisions tend to be made by management.

UK net total returns - quartile rankings



Q3	9.4	10.3	26.9	2.2	7.7	4.2	21.8	1.7	14.8
<b>Median</b>	<b>8.8</b>	<b>7.5</b>	<b>21.8</b>	<b>-3.4</b>	<b>6.7</b>	<b>3.4</b>	<b>21.1</b>	<b>1.2</b>	<b>13.0</b>
Q1	8.3	3.0	15.4	-4.8	4.7	2.5	19.3	-0.3	12.1
<b>Your fund</b>	<b>8.3</b>	<b>10.8</b>	<b>21.1</b>	<b>-6.0</b>	<b>5.9</b>	<b>3.9</b>	<b>22.8</b>	<b>-0.4</b>	<b>11.7</b>
UK %ile	25%	82%	45%	8%	36%	67%	92%	21%	20%

## Your 8-year benchmark return of 7.8% was below the UK median of 8.7%.

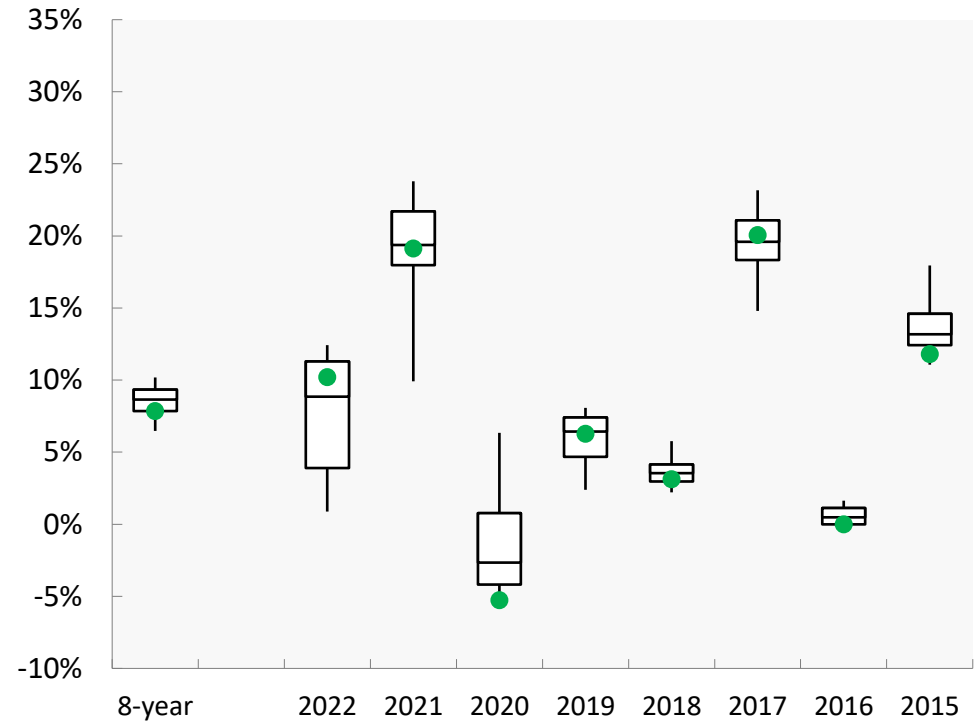
The benchmark return is the return you could have earned by implementing your strategy passively, i.e., by indexing your portfolio in line with your strategic asset allocation.

You have selected a strategic asset allocation based on your funding position, long-term market expectations, liabilities, employer covenant and appetite for risk.

These factors are different in each fund and it is unsurprising that benchmark returns (and total returns) often vary widely.

The following page looks at how your strategic asset allocation and choice of benchmarks compare with other LGPS funds.

UK benchmark returns - quartile rankings



Q3	9.3	11.3	21.7	0.8	7.4	4.1	21.1	1.1	14.6
<b>Median</b>	<b>8.7</b>	<b>8.9</b>	<b>19.4</b>	<b>-2.7</b>	<b>6.4</b>	<b>3.5</b>	<b>19.6</b>	<b>0.5</b>	<b>13.2</b>
Q1	7.8	3.9	18.0	-4.2	4.7	3.0	18.3	0.0	12.4
<b>Your fund</b>	<b>7.8</b>	<b>10.2</b>	<b>19.1</b>	<b>-5.3</b>	<b>6.3</b>	<b>3.1</b>	<b>20.1</b>	<b>0.0</b>	<b>11.8</b>
UK %ile	25%	59%	40%	13%	41%	33%	56%	25%	15%

## Benchmark returns are driven by strategic asset mix and choice of benchmarks.

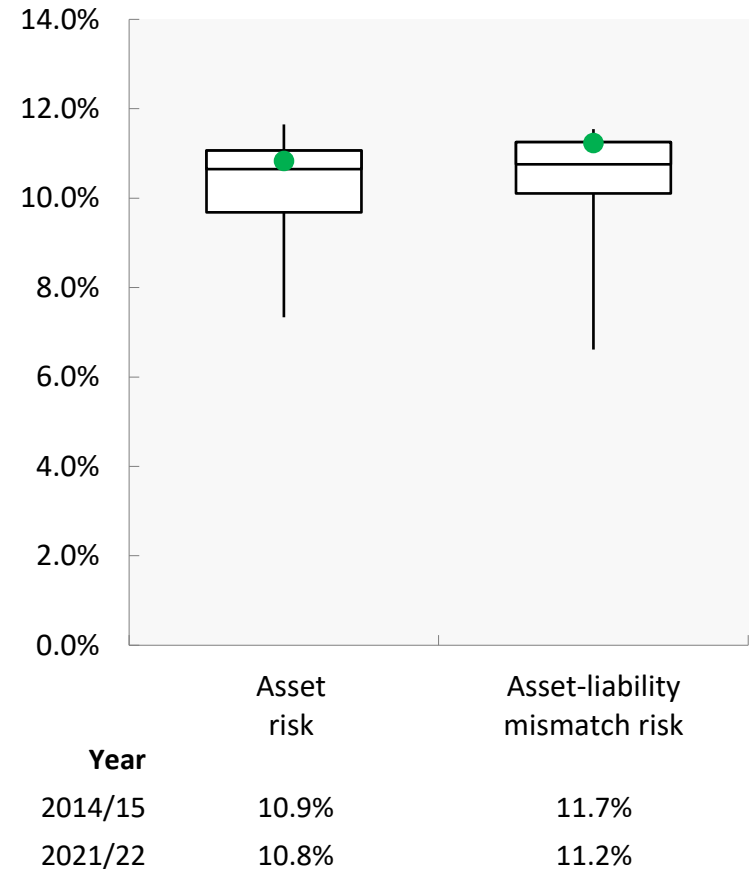
Strategic asset mix	You		Actual asset mix	8-year benchmark return	
	2015	2022	2022	You	U.K. Avg.
Equities - Asia-Pacific ex-Japan	4%	3%	3%	8.0%	8.4%
Equities - Japan	5%	4%	4%	9.6%	10.1%
Equities - UK	28%	18%	20%	6.0%	5.9%
Equities - Europe ex-UK	10%	8%	8%	8.2%	8.1%
Equities - U.S.	10%	7%	6%	17.0%	14.6%
Equities - Emerging	5%	5%	4%	8.9%	7.7%
Equities - Global	0%	5%	10%	10.4%	12.1%
Equities - Other	0%	5%	0%	n/a <sup>1</sup>	n/a <sup>1</sup>
<b>Total equities</b>	<b>61%</b>	<b>53%</b>	<b>55%</b>	<b>9.2%</b>	<b>10.6%</b>
Bonds - UK	1%	2%	3%	4.2%	4.0%
Bonds - UK gov't	4%	2%	2%	3.9%	3.9%
Bonds - UK credit	4%	3%	2%	4.4%	4.0%
Bonds - Inflation indexed	5%	3%	3%	6.7%	7.1%
Bonds - Global	3%	4%	4%	5.3%	2.9%
Bonds - Bundled LDI	0%	0%	0%	n/a <sup>1</sup>	n/a <sup>1</sup>
Bonds - Other	5%	5%	7%	n/a <sup>1</sup>	n/a <sup>1</sup>
<b>Total bonds</b>	<b>22%</b>	<b>20%</b>	<b>21%</b>	<b>4.4%</b>	<b>5.0%</b>
Global TAA	0%	0%	0%	n/a <sup>1</sup>	1.7%
Hedge funds	3%	1%	1%	2.7%	3.3%
Infrastructure	2%	6%	6%	4.0%	3.9%
Real estate incl. REITs	8%	8%	8%	7.7%	8.4%
Other Real Assets	0%	1%	1%	n/a <sup>1</sup>	n/a <sup>1</sup>
Private equity	5%	9%	9%	4.4%	14.4% <sup>2</sup>
Private debt	0%	2%	2%	n/a <sup>1</sup>	2.5%
<b>Total alternatives</b>	<b>17%</b>	<b>26%</b>	<b>26%</b>		

# Your strategic asset mix is largely a function of your appetite for risk.

It is interesting and helpful to compare the overall expected level of volatility in your portfolio. Each fund has its own risk model, but we calculate risk on a standard basis in order to compare funds. It is your position relative to others that is helpful.

- Asset risk - A higher asset risk is indicative of a higher weighting to more volatile assets and/or more concentration in the portfolio (and vice-versa). Your asset risk of 10.8% was above the U.K. median of 10.7%.
- Asset-liability mismatch risk - A lower asset-liability mismatch risk means you are closer to a 'fully-matched' position. A higher asset-liability mismatch risk is indicative of a willingness to take more risk relative to liabilities. Your asset-liability risk of 11.2% was above the U.K. median of 10.8%.

UK risk levels at 31<sup>st</sup> March 2022



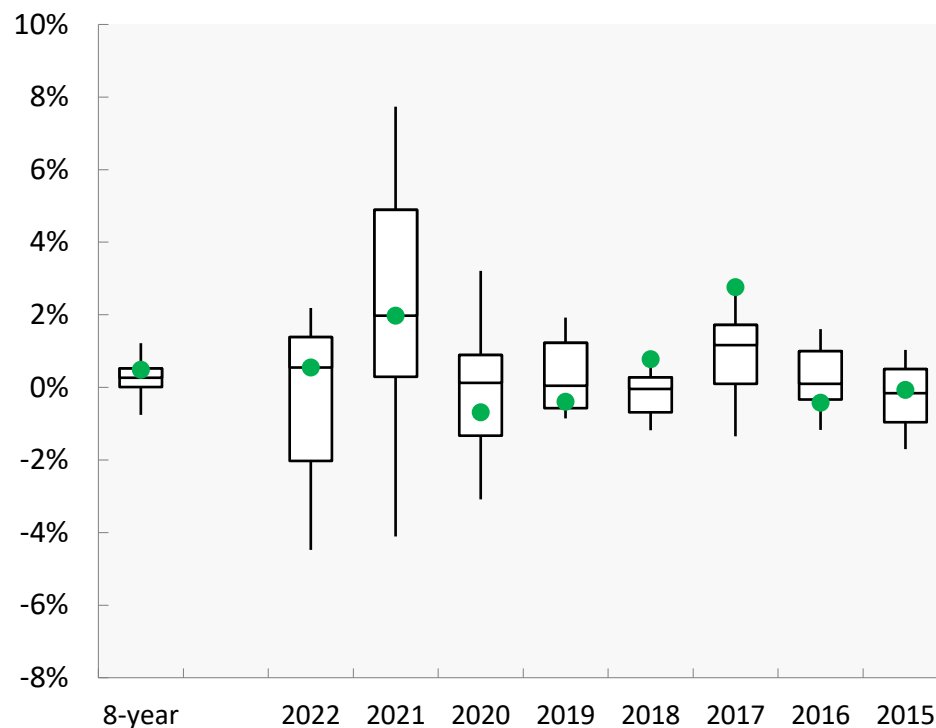
## Your 8-year net value added of 0.5% was above the UK median of 0.3%.

Net value added is outperformance from active implementation decisions. It equals total net return minus benchmark return. It is a function of active management decisions made in the implementation of your strategy including tactical asset allocation, manager selection, stock selection, choice of benchmarks, hedging, overlays, etc.

Your average 8-year net value added of 0.5% compares to a median of 0.3% for the U.K. universe.

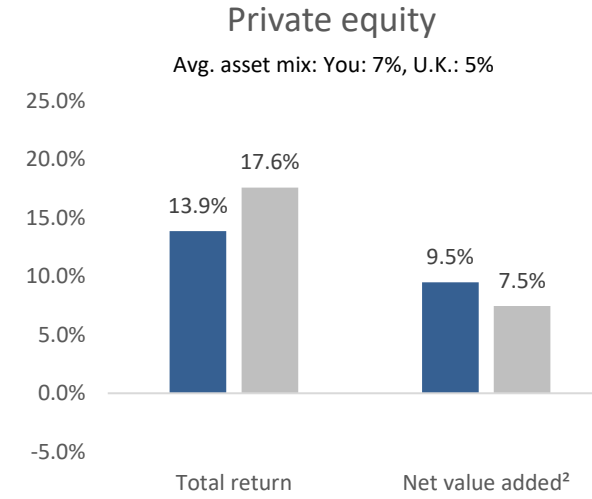
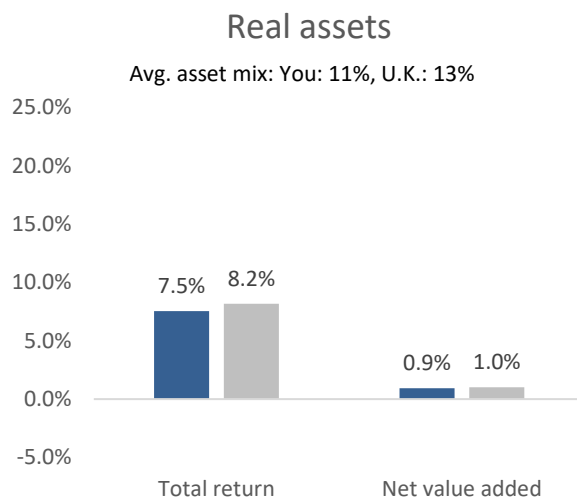
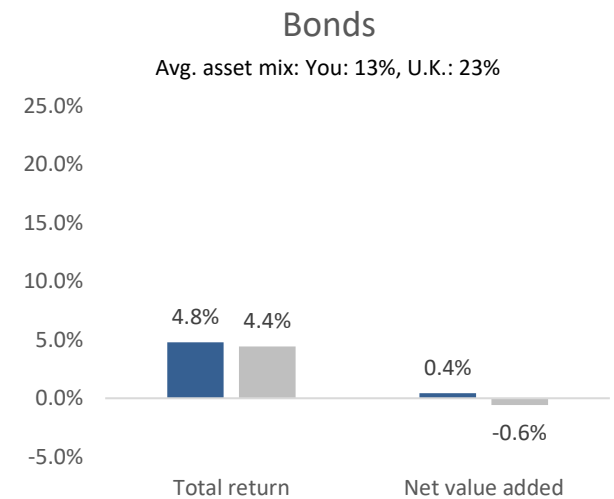
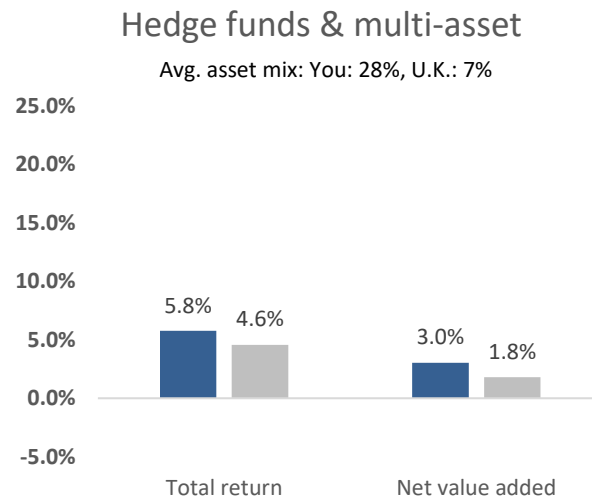
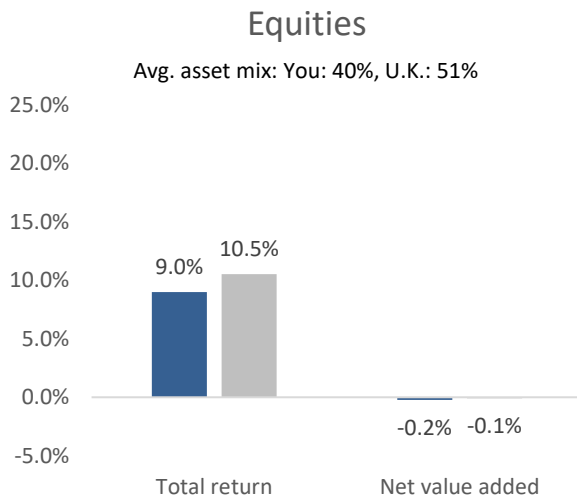
Year	Assets (£m)	Net value add (%)	Approx. net value add (£m)
2015	32,183	-0.1%	-23
2016	36,630	-0.4%	-154
2017	40,395	2.8%	1,115
2018	43,483	0.8%	339
2019	45,042	-0.4%	-180
2020	44,206	-0.7%	-305
2021	48,491	2.0%	960
2022	54,636	0.6%	300
<b>Total</b>		<b>0.5%</b>	<b>2,053</b>

UK net value added<sup>1</sup> - quartile rankings



Q3	0.5	1.4	4.9	0.9	1.2	0.3	1.7	1.0	0.5
<b>Median</b>	<b>0.3</b>	<b>0.6</b>	<b>2.0</b>	<b>0.1</b>	<b>0.0</b>	<b>0.0</b>	<b>1.2</b>	<b>0.1</b>	<b>-0.2</b>
Q1	0.0	-2.0	0.3	-1.3	-0.6	-0.7	0.1	-0.3	-1.0
<b>Your fund</b>	<b>0.5</b>	<b>0.6</b>	<b>2.0</b>	<b>-0.7</b>	<b>-0.4</b>	<b>0.8</b>	<b>2.8</b>	<b>-0.4</b>	<b>-0.1</b>
UK %ile	67%	50%	50%	33%	36%	85%	88%	21%	54%

# 8-year average net returns and net value added by major asset class



■ You    ■ U.K.

1. We do not have sufficiently detailed historic data to compare returns for 8 years.

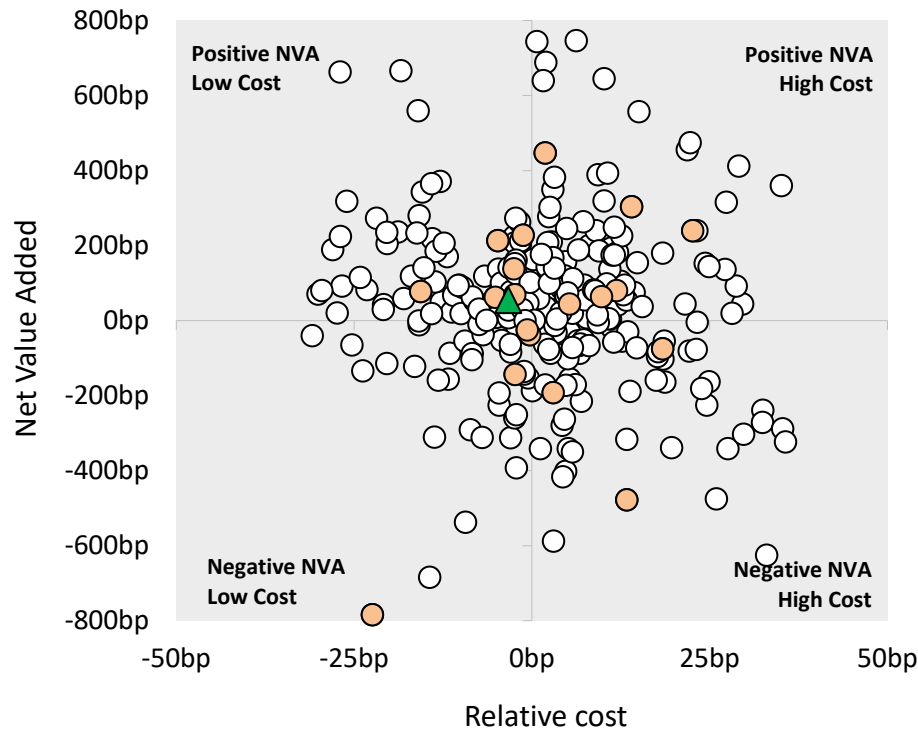
2. To enable fairer comparisons, the private equity benchmarks of all participants, except your fund, were adjusted to reflect lagged, investable, public-market indices. If CEM used this same adjustment for your fund, your fund's 8-year private equity net value added would have been 2.4%.



# Value-for-Money (VfM)

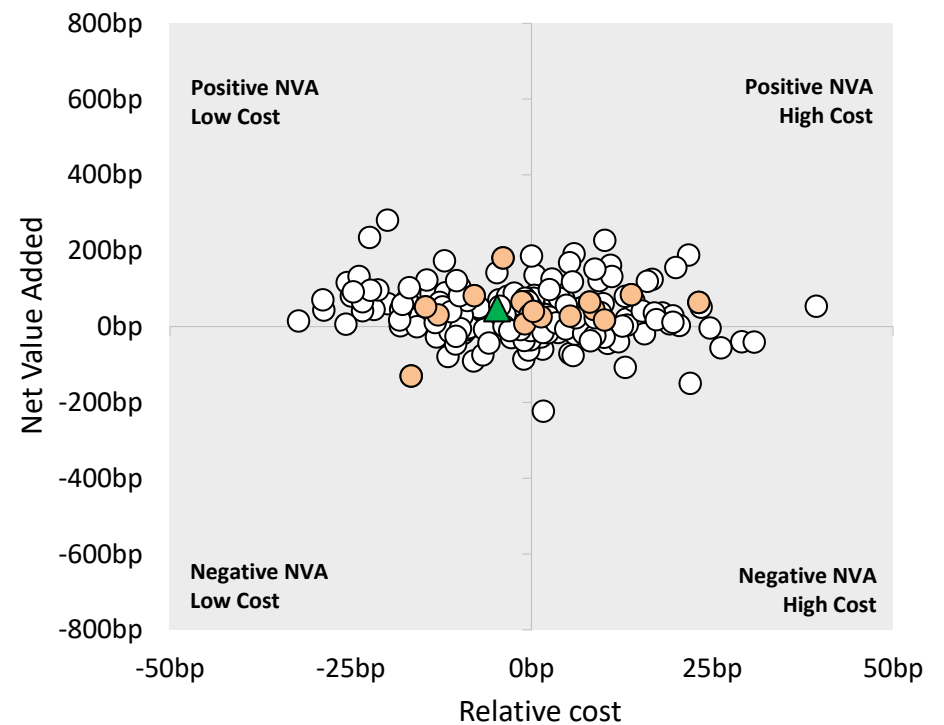
Your 2022 performance placed in the positive value added, low cost quadrant of the VfM chart.

(Your 2021/22: net value added 55.0 bps, cost savings 3.3 bps)



Your 8-year performance placed in the positive value added, low cost quadrant of the VfM chart.

(Your 8-year: net value added 48.4 bps, cost savings 4.8 bps)



	2022	2021	2020	2019	2018	2017	2016	2015	8-year
Net value added (bps)	55.0	198.0	(69.0)	(40.0)	78.0	276.0	(42.0)	(7.0)	48.4
Your relative cost (bps)	(3.3)	(3.4)	(3.2)	(4.0)	(5.0)	(4.0)	(14.8)	(0.5)	(4.8)

# Key takeaways

## Cost

- Your investment cost of 37.1 bps was below your benchmark cost of 40.5 bps.
- In aggregate, you had a higher cost implementation style.
- In aggregate, you paid less than peers for similar assets.

## Cost trend

- Your costs increased from 34.7 bps in 2014/15.
- Your costs increased because you moved to a higher cost asset mix. Your underlying costs fell materially.

## Returns

- Your 8-year net total return was 8.3%. This was below the U.K. median of 8.8%.
- Your 8-year benchmark return was 7.8%. This was below the U.K. median of 8.7%.

## Funding and Risk

- Your strategic asset allocation suggests that you take more risk relative to your liabilities than U.K. peers.

## Value added

- Your 8-year net value added was 0.5%. The U.K. median was 0.3% and the global median was 0.3%.
- Your cumulative 8-year net value added has added £2,053 million to the funding of your plans.

## Cost effectiveness / value-for-money

- Your 8-year performance placed in the positive value added, low cost quadrant of the VfM chart.

## Appendix 1: Defaults

Defaults are used where the fund is unable to provide data. Defaults are universe median costs by asset class and style.

Asset Class	Implementation style	Default used	Default bps	Based on
Global Property	Fund of funds	Underlying base fees	134	Fee basis <sup>1</sup>
Global Property	Fund of funds	Underlying performance fees	63	NAV
Natural resources	Limited partnership	Performance fees	27	NAV
Hedge funds	Fund of funds	Top layer base fees	56	NAV
Hedge funds	Fund of funds	Top performance fees	41	NAV
Hedge funds	Fund of funds	Underlying base fees	126	NAV
Hedge funds	Fund of funds	Underlying performance fees	140	NAV
Private Equity - Diversified	Fund of funds	Underlying base fees	154	Fee basis <sup>1</sup>
Private Equity - Diversified	Fund of funds	Underlying performance fees	250	NAV

1. For external property, infrastructure, natural resources and private equity/credit investments the fee basis is usually the committed amount during the commitment period and unreturned invested capital (i.e., book cost) afterward. Unreturned invested capital equals contributed capital less contributed capital attributable to realized investments plus the aggregate amount of write-downs, if any, with respect to unrealized investments. If this has not been provided the default will be based on NAV.

## Appendix 2: SAA, Benchmarks and NVA (1 year)

Asset class	Strategic asset allocation (SAA)	Benchmark	Benchmark return	Actual net return	Net value added (NVA)
Equities - U.S.	6.9%	Your Stock: U.S. broad/all benchmark	19.7%	20.5%	0.8%
Equities - UK	17.8%	Your Stock: UK benchmark	13.0%	14.0%	1.0%
Equities - Europe ex-UK	7.6%	Your Stock: Europe ex-UK benchmark	6.5%	7.4%	0.9%
Equities - Japan	3.6%	Your Stock: Japan benchmark	-2.3%	-2.2%	0.1%
Equities - Asia-Pacific ex-Japan	2.9%	Your Stock: Asia-Pacific ex-Japan benchmark	1.4%	4.0%	2.6%
Equities - Global	4.9%	MSCI ACWI with Special Taxes GBP	13.0%	12.8%	-0.2%
Equities - other	4.7%	Your Stock: Other benchmark	15.9%		
Equities - Emerging	4.8%	Your Stock: Emerging benchmark	-4.0%	-7.0%	-3.0%
Bonds - U.S.				-1.5%	
Bonds - UK	1.5%	PLA UK Bonds BM	-0.2%	-2.3%	-2.1%
Bonds - UK gov't	2.0%	Your Bonds: UK gov't benchmark	1.0%	-4.1%	-5.1%
Bonds - UK credit	3.1%	Your Bonds: UK credit benchmark	-5.2%	-1.4%	3.8%
Bonds - Global	2.4%	LIBOR 3 Month +4%	4.2%	9.7%	5.5%
Bonds - Global gov't	1.5%	JPM GLOBAL GOV'T EX UK    JPM World Ex UK Government Bc	-2.4%	1.2%	3.6%
Bonds - Global credit	0.5%	JPM GLOBAL GOV'T EX UK	-2.4%	0.3%	2.7%
Bonds - other	1.0%	Barclays US TIPS			
Bonds - Inflation indexed	3.4%	Your Bonds: Inflation indexed benchmark	5.1%	4.1%	-1.0%
Bonds - Absolute return bonds				-0.3%	
Bonds - Multi-asset credit	1.9%	Barclays Global Aggregate Credit Index	-2.2%	-2.6%	-0.4%
Cash	2.5%	GBP 7 DAY LIBID    LIBID 7 DAY RATE    PLA Cash BM	0.1%	0.0%	-0.1%
Infrastructure	6.2%	7.5% per annum    GBP 7 day LIBID    RPI+4%	9.5%	8.0%	-1.5%
Natural resources			3.9%	24.8%	20.9%
Global property	7.3%	AREF-MSCI UK Quarterly Property Fund Index    IPD UK Monthl	22.7%	16.0%	-6.7%
Domestic property	1.0%	IPD UK Monthly Property Index    Merseyside IPD Quarterly In	6.5%	15.5%	9.0%
Other real assets	1.0%	RPI+4%	13.0%	24.0%	11.0%
Hedge funds	0.8%	7.5% PER ANNUM    GBP 7 day LIBID	5.6%	13.0%	7.4%
Private credit	2.3%	Your Private credit benchmark	4.0%	3.1%	-0.9%
Private equity - Diversified	7.1%	Your Private equity - Diversified benchmark	8.0%	29.8%	21.8%
Private equity - Other	1.5%	RPI+4%	8.2%	13.5%	5.3%
<b>Total</b>	<b>100.0%</b>				
Net Actual Return (reported by you) at a whole-of-fund level				10.8%	
Benchmark Return (reported by you) at a whole-of-fund level				10.2%	

**Net Value Added (Net Return - Benchmark Return)**

**0.6%**

## Appendix 3: Notes

Page	Note
4	<ol style="list-style-type: none"><li>1. Your internal costs reflect both the cost of managing assets internally (either yourself or at a pooled level) and the cost of selection, monitoring</li><li>2. Transaction costs should not be regarded as complete. They are shown only where provided. We specifically exclude transaction costs from the benchmarking analysis because of concerns over the consistency and validity of data. We hope to include transaction costs in future years.</li><li>3. Other expenses include fund administration, governance, compliance, distribution and communication costs captured from CTI templates.</li><li>4. Benchmarked investment costs exclude pension administration costs and non-investment related governance and oversight costs.</li><li>5. Your 2021/22 financial statements report investment costs of £491.16 million . The costs benchmarked here are different. This is likely because of differences in standard definitions, and/or estimations of costs in financial statements.</li></ol>
7	<ol style="list-style-type: none"><li>1. The UK universe currently comprises of 23 funds.</li></ol>
8	<ol style="list-style-type: none"><li>1. Also includes natural resources.</li></ol>
13	<ol style="list-style-type: none"><li>1. A value of 'n/a' is shown if asset class returns are not available for the full 8 years or if they are broad and incomparable.</li><li>2. To enable fairer comparisons, the private equity benchmarks of all participants, except your fund, were adjusted to reflect lagged, investable, public-market indices. If CEM used this same adjustment for your fund, your fund's 8-year private equity net value added would have been 2.4%. The 8-year average, self-reported benchmark from private equity was 7.87%</li></ol>
14	<ol style="list-style-type: none"><li>1. Asset risk is the standard deviation of your benchmark return. It is based on the historical variance of, and covariance between, the asset classes in your strategic asset allocation.</li><li>2. Asset-liability mismatch risk is the standard deviation of funded status caused by market factors. It is a function of the standard deviations of your asset risk, your marked-to-market liabilities and the correlation between the two.</li></ol>
15	<ol style="list-style-type: none"><li>1. The funding level is based on standardised actuarial assumptions developed for the Scheme Advisory Board (SAB). Most of the key assumptions are consistent across funds but some assumptions, and in particular mortality assumptions, are fund specific. The standard basis serves a useful purpose in providing context for comparisons of asset risk and asset-liability mismatch risk.</li></ol>

## Appendix 3: Notes

Page	Note
16	<ol style="list-style-type: none"><li>1. To enable fairer comparisons, the value added for each participant, except your fund, was adjusted to reflect private equity benchmarks based on lagged, investable, public-market indices. If CEM used this same adjustment for your fund, your 8-year total fund value added would have been 0.5% lower.</li></ol>
17	<ol style="list-style-type: none"><li>1. We do not have sufficiently detailed historic data to compare returns for 8 years.</li><li>2. To enable fairer comparisons, the private equity benchmarks of all participants, except your fund, were adjusted to reflect lagged, investable, public-market indices. If CEM used this same adjustment for your fund, your fund's 8-year private equity net value added would have been 2.4%.</li></ol>