HYMANS ROBERTSON

Leicestershire County Council Pension Fund

Annual Review of Investment Strategy and Structure

January 2024

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1 Executive Summary

Addressee and Purpose

This paper is addressed to the Local Pension Committee ("LPC") of Leicestershire County Council Pension Fund ("the Fund"). The purpose of this paper is to present the findings of this year's review of the Fund's strategic asset allocation ("SAA") and investment structure, taking into account the range of funds offered or to be offered by LGPS Central ("LGPSC").

This paper should not be used for any other purpose. It should not be released or otherwise disclosed to any third party except as required by law or with our prior written consent, in which case it should be released in its entirety. We accept no liability to any other party unless we have accepted such liability in writing. We provide comment from an investment but not a legal or tax perspective.

This report complies with Technical Actuarial Standard 100: Principles for Technical Actuarial Work.

Key findings

Since the last SAA review, we have seen a material shift in the markets. Many asset classes have posted losses, nominal yields have risen across all maturities and there has been a material shift in the inflation curve, with expected inflation falling in shorter durations, but staying higher for longer.

Against this backdrop, we conclude that the current investment strategy remains appropriate taking into account the Fund's objectives and funding position (see table below).

Asset Class	Current Target	Current Allocation
Listed equities	37.50%	44.4%
Private equity	7.50%	7.4%
Targeted return	5.00%	7.6%
Infrastructure (incl. timber)	12.50%	10.2%
Property	10.00%	7.3%
Emerging market debt	0.00%	2.0%
Global credit – multi-asset credit	9.00%	3.7%
Global credit - private debt (inc M&G/CRC)	10.50%	8.1%
Inflation-linked bonds	3.50%	4.0%
Investment grade credit	3.75%	3.5%
Currency hedge	0.75%	0.9%
Cash / cash equivalent	-	0.9%
Total	**100%**	**100%**

Projected 20-year return, median p.a.	**8.7%**
1 year dispersion (relative to gilt-based liabilities)	**13.9%**

In particular, we believe the Fund should continue with the planned increase in the allocations to infrastructure and multi-asset credit and the related reductions in the exposure to listed equity and targeted return strategies, and the restructuring of the listed equity portfolio agreed in earlier reviews.

Regarding multi-asset credit, we have refreshed our due diligence of the LGPS Central MAC fund and conclude that it remains a suitable investment for the Fund. However, it remains a relatively new fund and headline performance of the fund since inception relative to benchmark has been disappointing. It has been a challenging market environment for credit since the fund was launched, and its performance is in line with the asset markets in which it invests. Nonetheless we believe there is a case for phasing in the increased allocation.

We have reviewed the size of the protection asset portfolio in the light of the changed market environment, and believe there may be a case for a moderate increase in the allocation. This may reduce downside risk and increase the likelihood of remaining fully funded, albeit modestly so, but, it would reduce the Fund's expected investment return. It is also important to note that the analysis on which this conclusion is based was necessarily limited and did not include full consideration of the impact on the Fund's liabilities.

The Fund's protection assets suffered material mark-to-market losses over the last 12 months, although they did achieve their primary aims of avoiding actual losses and reducing the volatility of the funding position. In the circumstances it is appropriate to consider whether alternative types of asset would have better protected the Fund, particularly if the overall allocation is to be increased. We have considered the case for a number of alternative protection assets, and conclude that either gold or investment grade, real asset-backed senior debt merit further investigation in 2024. We believe that investment grade, asset-backed securities ("ABS") have a role to play in the protection portfolio, but we believe the Fund should gain exposure alongside corporate credit via the LGPS Central Corporate Bond fund.

We have undertaken a preliminary review of the benchmarks the Fund uses to assess the performance of its investment managers. Robust benchmarks are critical to effective performance monitoring; ideally, the same benchmarks should be used by the Fund and its managers and they should be aligned with the strategies employed by the managers as well as the Fund's strategic objectives. We believe the Fund should consider changing the benchmarks it uses in the following asset classes: private equity, property, infrastructure and multi-asset credit.

Summary of Recommendations

As per previous strategy reviews, our recommendations continue the direction of travel towards an investment strategy with greater focus on predictable and sustainable income-based returns and an appropriate level of risk, thereby supporting a stable and affordable level of contributions. All recommendations are also supportive of the Fund's Net Zero strategy.

A summary of our recommendations for each asset class are outlined below.

Fossil Fuels Exposures

We believe the Fund's approach to managing exposure to fossil fuel companies remains appropriate. We do not believe there is a case for applying a blanket exclusion policy covering such companies, as this would benefit neither the Fund nor the wider economy. In particular we do not believe it would be appropriate to invest in fossil fuel free funds.

We do recommend that the Fund considers: 1) strengthening engagement with underlying managers appointed directly by the Fund and 2) encouraging managers to improve stewardship reporting to provide greater insights on actions taken and outcomes achieved. Better reporting would facilitate a deeper dive on the effectiveness of stewardship around fossil fuel companies, and may lead to further changes in the portfolio. It may also provide a basis for setting a firm target around the removal of fossil fuels from the portfolio.

Please see page 12 for more information.

Equities

We recommend the Fund should maintain the allocation to listed equity at 37.5% and private equity at 7.5%, and progress the changes agreed during our recent review of the asset class over 2024.

Targeted Return

We recommend the Fund should maintain the allocation to targeted return at 5.0%, and progress the changes agreed during our recent review of the asset class over 2024.

Infrastructure

We recommend the Fund should maintain the target allocation to Infrastructure at 12.50%, and that consideration is given as to what additional commitments are needed over the next 3 years in order to reach the target allocation, and maintain the desired risk and geography profile.

Property

We recommend the Fund should maintain the target allocation to Property at 10%, and remain comfortable with the structure agreed in the 2022 review.

Higher Yielding Credit

We recommend that the Fund should proceed with the +5% increase in the allocation to MAC agreed at the last strategy review. We also recommend the increase be implemented by additional commitments to the LGPSC MAC fund, funded from listed equities/targeted return and by divestment from LGPSC's standalone Emerging Market Debt fund.

We recommend that the increase to MAC takes place over 2024, split equally across four phases. This will allow time for our tactical outlook for higher yield credit to improve (it remains cautious) and to build increased confidence in the LGPS Central product. The Emerging Market Debt allocation should be divested from pro rata as the MAC allocation is increased.

We recommend the Fund should maintain the target allocation to private debt at 10.5%, with corporate and asset-backed senior lending strategies forming the core of the portfolio.

We recommend that the current allocation to distressed debt is allowed to wind down. We believe distressed debt remains an attractive opportunity at certain points in the credit cycle, but recommend that the Fund gains exposure via a broad-based, opportunistic credit strategy with the manager taking responsibility for timing capital commitments. We recommend that the Fund explores with LGPS Central whether allocations to distressed debt could be built into its Private Debt (High Return) programme, which would reduce the need for the Fund to time its allocation to this class.

We recommend that the Fund makes further commitments to regulatory capital relief strategies in 2024 as its existing commitments to CRC are realised, but we recommend that alternatives to CRC are also considered as we believe that alternative propositions are now available.

Protection Assets

We recommend that the possibility of a moderate increase in the allocation to protection assets be validated by updating the full ALM analysis of the Fund's portfolio in Q1 2024. This will confirm whether or not this change can be justified.

We recommend that the agreed reallocation of capital between Index-linked Bonds ("ILB") and Investment Grade Credit ("IGC") is deferred further, as our short-term outlook for the former remains more positive. We suggest it is reconsidered alongside the exploration into a potential increased allocation to protection assets.

Regarding alternative protection assets, we recommend that the Fund undertakes further investigation of the case for gold and investment grade, real asset backed senior debt in 2024. In addition, we recommend the Fund engages with LGPS Central to ensure that its Corporate Bond fund is fully exploiting the opportunities and potential downside protection afforded by Asset-Backed Securities ("ABS").

Currency Hedging

We continue to support the use of the Aegon currency hedging programme to manage currency risk and volatility reduction, but recommend that the Fund proceeds with the rationalisation of the current programme agreed in the recent review.

Benchmarks

We recommend the Fund undertakes a review of the benchmarks being used for some mandates, as alternatives exist which may facilitate more effective monitoring of manager performance. This is to be progressed by the director of corporate resources with support from Hymans as necessary, with the expectation that this will be phased throughout 2024 (dealing with the highest priority items first).

We look forward to discussing this report with the LPC.

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For and on behalf of Hymans Robertson LLP, January 2024.

Reliances and limitations

The actuarial profession introduced Technical Actuarial Standard (TAS) 100 with effect from 1 July 2017. As part of our internal compliance regime, Hymans Robertson has chosen to apply the principles of TAS100 in the delivery of investment advice. TAS100 applies to work where actuarial principles and/or techniques are central to the work and which involves the exercise of judgement.

The Fund's asset allocation and performance as at 30 June 2023 has been sourced from Portfolio Evaluation reporting provided on 20 September 2023. In some cases, identified by an (*) in the Appendix and the performance summary tables elsewhere in the document, where issues have been identified with the Portfolio Evaluation reporting, manager reported performance has been quoted.

In this report we have provided our estimate of expected asset class returns. The expected returns are based upon 20-year median returns derived from our proprietary economic scenario generator (ESS) asset model. As with all modelling, the results are dependent on the model itself, the calibration of the model and the various approximations and estimations used. These processes involve an element of subjectivity. This model uses probability distributions to project a range of possible outcomes for the future behaviour of asset returns and economic variables. Some of the parameters of the model are dependent on the current state of the financial markets and are updated to reflect metrics that can be measured in markets, such as yields, while other more subjective parameters do not change with different calibrations of the model.

Risk warning

Please note the value of investments, and income from them, may fall as well as rise. This includes equities, government or corporate bonds, and property, whether held directly or in a pooled or collective investment vehicle. Further, investments in developing or emerging markets may be more volatile and less marketable than in mature markets. Exchange rates may also affect the value of an investment. As a result, an investor may not get back the amount originally invested. Past performance is not necessarily a guide to future performance.

2 Development of the Fund's Investment Strategy

Current Strategic Asset Allocation

The current strategic target allocation is shown in the table below and reflect the recommendations approved in the 2023 review:

	Strategic Target Weight (%)	Managers
Growth (50.0%)	**50.0**	
Listed equity*	37.5	UK equity (passive) - LGIM (2.0%) Global equity (passive) – LGIM (8.0%) Low Carbon Transition equity (passive) – LGIM (3.5%) Global multi-factor (passive) – LGPSC (12.0%) Global (active) – LGPSC (12.0%)
Private equity (inc secondaries)	7.5	Adams Street, Aberdeen Standard, Catapult & LGPSC
Targeted return*	5.0	Ruffer, Fulcrum
Income (42.0%)	**42.0**	
Infrastructure (inc timberland)	12.5	IFM, JP Morgan, KKR, LGPSC, Stafford (timberland), M&G/Infracapital, Quinbrook
Property*	10.0	La Salle, DTZ / LGPSC, Colliers
Global credit – liquid sub inv grade markets	9.0	LGPSC (multi-asset credit)
Global credit - private debt (inc M&G/CRC)	10.5	Partners, LGPSC (private lending), M&G (distressed debt), CRC (bank capital relief)
Protection (8.0%)	**8.0**	
Inflation-linked bonds	3.50	Aegon
Investment grade credit	3.75	LGPSC, Aegon[1]
Currency hedge	0.75	Aegon (benchmark hedge ratio 30%)
Total	**100.0**	

*Will be transitioned over 2024

[1] 0.5% of the investment grade credit allocation is held in the Aegon short-dated corporate bond fund which, along with the Aegon Inflation-linked bonds holding, can be readily liquidated to provide additional collateral to support the currency hedging programme.

The actual allocation as at 30 June 2023 is compared with the current target allocation below.

	2023 (Current) Target	30 Sept 2022 Actual	30 June 2023 Actual	Above or Below Target
Listed equities	37.5%	43.4%	44.4%	++
Private equity	7.5%	8.0%	7.4%	-
Targeted return	5.0%	8.9%	7.6%	++
Infrastructure (incl. timber)	12.5%	9.3%	10.2%	-
Property	10.0%	8.8%	7.3%	- -
Emerging market debt	0.0%	1.8%	2.0%	+
Global credit – liquid sub inv grade markets	9.0%	3.6%	3.7%	- -
Global credit - private debt (inc M&G/CRC)	10.5%	7.3%	8.1%	-
Inflation-linked bonds	3.5%	3.3%	4.0%	+
Investment grade credit	3.75%	3.4%	3.5%	-
Currency hedge	0.75%	1.0%	0.9%	+
Cash / cash equivalent	-	1.1%	0.9%	+
Total	**100%**	**100%**	**100%**	

Source: Portfolio Evaluation

Over 2022 and 2023, the Fund has made significant changes to the target allocations which are yet to be implemented. The listed equity and targeted return allocations are significantly overweight and the MAC and property allocations are significantly underweight. This is due to ongoing transitions and implementation of commitments/disinvestments to achieve the target allocations. The Fund also agreed to fully disinvest from emerging market debt which is in progress. Some of these changes are linked to others, where further advice or due diligence was required. Therefore, we would expect the Fund to be overweight/underweight some of the asset classes.

Recap of Recommendations from the 2023 Strategy Review

In the 2023 strategy review we recommended that the Fund:

- Reduce the allocation to listed equity to 37.5% and undertake a comprehensive review of the composition of the portfolio.
- Reduce the allocation to targeted return and undertake a comprehensive review of the managers within the portfolio.
- Increase the allocation to infrastructure and multi-asset credit.
- Review the structure of the protection portfolio, including consideration of alternative protection assets and currency hedging arrangements.

Progress Over 2023

- The ISC agreed to reduce the allocation to listed equities to 37.5% and restructure the portfolio around three core strategies: global, passive; global, factor-based; and global active. In addition, it was agreed to divest the standalone allocation to active emerging market equities and to allocate to a climate-tilted, passive strategy in order to help the Fund achieve its Net Zero targets. The remainder of listed equity transitions are expected to take place over Q1 2024.

- This was supported by a paper presented to the April 2023 ISC. The Fund has separately appointed a transition adviser based on the proposal to implement the transition in four phases. Phases 3 and 4 (disinvesting from emerging market equity and investing an additional c£164m into global equity) are on hold pending mandate changes to the Central product and the potential opportunity to cross holdings with another Fund.
- The ISC agreed to reduce the targeted return allocation to 5% and divest from Aspect and Pictet and appoint Fulcrum as an additional manager to Ruffer.

  The divestments from Aspect and Pictet were to be completed in four redemptions at equal pace. The final divestments are expected to have taken place by the time of the January 2024 committee meeting. Subscriptions to Ruffer and Fulcrum started in Q4 2023 and are planned to complete February 2024.
- Regarding the protection portfolio, the ISC approved the rebalancing of the ILB and IGC portfolios to 3.25% and 3.75% respectively. It was agreed to defer the allocation until the short-term outlook for credit improves.
- In relation to FX hedging, it was agreed that the current programme managed by Aegon remained appropriate but that the hedging arrangements should be applied more consistently across the portfolio.
- The ISC approved a commitment of £80m to private equity. An additional commitment of £80m is also expected in 2024.
- Over the year, the Fund also topped up the infrastructure allocation by c£100m, and the private debt holding by c£280m.

Progress on Pooling

The Fund’s aim is to transition assets to LGPS Central, as and when suitable products become available, so as to capture the benefits of pooling. These include the following:

- Lower investment expenses – by pooling capital from several partner funds, LGPS Central should be able to negotiate lower fees with underlying fund managers than the Fund would be able to achieve acting independently, even after allowing for its own management expenses.
- Wider diversification – by investing via the pool, the Fund will further diversify manager risk without materially increasing its governance burden. This should enable the Fund to reduce the number of fund managers it engages directly, thus freeing up capacity to address other strategic challenges.
- Stronger oversight – by exploiting economies of scale, LGPS Central has been able to engage specialist portfolio managers and risk management professionals that should enable it to exercise stronger oversight of underlying fund managers than the Fund could achieve on its own.

The Fund made further progress in pooling assets with LGPS Central, with 40% (2022: 36%) of assets now managed this way, and a further 16% (2022: 16%) managed under an LGPS master agreement with LGIM (see table below), resulting in a total of 56% in pooled assets. This percentage will increase as commitments made during 2023 to private markets solutions are drawn down and the allocation to the LGPS Central MAC is increased.

GRIP	Asset Class	Manager & Fund	Actual Allocation (June 2023)
Growth	Listed equity	**LGIM Total Passive Equity Fund**	**16.1%**
		LGPSC Global Eq Active Multi Mgr Fund	9.4%
		LGPSC EMM Eq Active Multi Mgr Fund	3.1%
		LGPSC AW Eq Climate Multi Factor Fund	15.9%
	Private equity	LGPSC Private Equity Fund	0.1%

GRIP	Asset Class	Manager & Fund	Actual Allocation (June 2023)
Income	Infrastructure (incl. timber)	LGPSC Infra Core/Core+	0.9%
	Emerging market debt	LGPSC Global Active EMM Bond Multi Mgr Fund	2.0%
	Global credit – liquid sub inv grade markets	LGPSC Global Active MAC Fund	3.7%
	Global credit - private debt (inc M&G/CRC)	LGPSC PD Low Return 2021	1.0%
		LGPSC PD High Return 2021	0.5%
		LGPSC PD Real Asset	0.5%
Protection	Investment grade credit	LGPSC Investment Grade Credit Fund	2.5%
		LGPSC sub-total	**39.6%**
		Total Pooled	**55.7%**

Source: Portfolio Evaluation

Progress on Climate Change

A Net Zero target date of 2050 or sooner, climate change metrics and interim target to reduce emissions intensity (WACI) by 50% and absolute emissions by 40% by 2030 were agreed at the LPC meeting on 3 March 2023.

LGPS Central continue to track selected climate change metrics for the Fund and published its latest annual report in December 2023. The metrics reported were calculated as at 31 March 2023. The reporting has been extended from the 2022 report to include reporting on scope 3, and to include the Fund's fixed income holdings (however the below analysis is based on the equity portfolio only, in line with how the report sets out progress against targets).

The progress made on the metrics that can be measured (compared with a 2019 baseline) is summarised in the table below:

Metric	2023	2019	Difference	2030 Target
Financed Emissions, scope 1 & 2 (tCO2e)	158k	197k	-19.4%	-40%
Weighted Average Carbon Intensity (tCO2e/ $m)	102.0	164.4	-38.0%	-50%
Weight in Fossil Fuel Reserves (% AUM)	5.2%	5.7%	-0.5%pts	
Weight in Clean Tech (% AUM)	39.4%	34.2%	5.2%pts	
Financed emissions, scope 3 (tCO2e/ $m)	1,911.4	N/A	N/A	

Source: LGPS Central Leicestershire Pension Fund 2023 Climate Risk Report dated December 2023

N/A denotes not applicable due to data not being available at the time

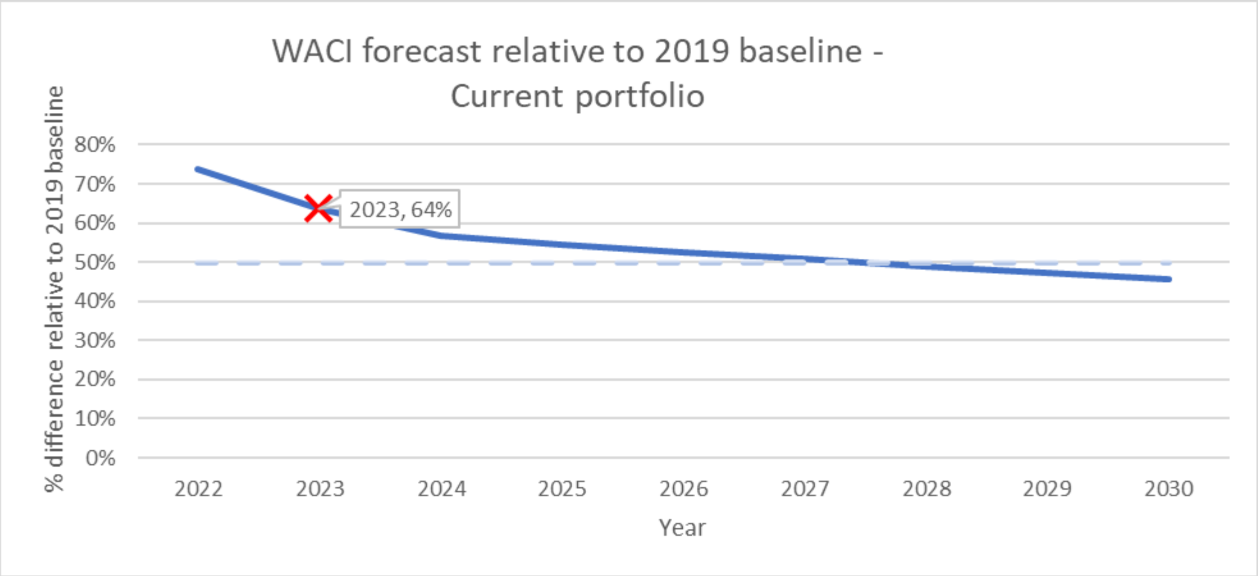
On all the metrics measured, the Fund has made good progress in reducing climate risk and increasing exposure to climate opportunities. Over the period from 31 December 2019 to 31 March 2023, financed emissions have reduced by 19.4% and portfolio carbon intensity by 38.0%. Fossil fuel exposure has reduced from 5.7% to 5.2%, whilst the exposure to clean technology has increased by 0.5% (percentage points) to 39.4% (based on restated prior year).

LGPS Central have also reported on scope 3 emissions which represent the emissions released through the value chain of the company which are not otherwise captured in scope 1 and 2. We have also seen an increase in reporting from 2022 to cover more funds.

However, achieving Net Zero in a way which enables the Fund to continue generating attractive financial returns for scheme members whilst protecting the economies in which it invests will take many years. The values of certain metrics are likely to be volatile year-on-year as the scope of asset classes covered increases, the composition of the portfolio changes and portfolio companies execute their own decarbonisation plans.

The Fund has taken concrete actions towards achieving Net Zero. It has agreed to invest 3.5% in the L&G Low Carbon Transition fund and 12% in the LGPS Equity Central Climate Multi Factor Fund (both climate-tilted passive equity index funds), with further commitments to be considered in the future in order to help meet the listed equity interim target. The Fund has also made commitments to Quinbrook Net Zero Power fund which specialises in energy transition assets, LGPSC Infrastructure fund which has exposure to renewable energy assets and Stafford Capital's Carbon Opportunities timberland fund. These allocations form 3.6% of the current portfolio. Also there are further commitments left to draw on the Stafford and Quinbrook funds; once drawn it is therefore expected that the proportion of assets in climate-related solutions will be over 20%.

The below graph highlights the progress made to date, using the WACI target (50% reduction by 2030) by way of illustration. The forecast (blue line) shows the forecast path which we included in our equity review of 2023, and the 2023 position (red cross) shows the fund is currently on track relative to this. If the Fund contimued to follow the forecast path then the target will be hit earlier than 2030.



In the year ahead, the Fund will pursue a climate-aware investment strategy ("NZCS"), continue to review and develop investment mandates to increase alignment with the NZCS, and consider further climate-related solutions investments with the Investment Advisor.

3 Fossil fuels exposure

Current position

The Fund's fossil fuels exposure has reduced over recent years, both as a result of direct action by the Fund itself and as part of broader global decarbonisation efforts, as illustrated earlier in this paper. However the Fund still retains some exposure to companies with links to fossil fuels, including those which own fossil fuel reserves, those which exploit them and those which provide services to such companies. The Fund's Climate Risk Management Report dated December 2023 estimated that 5.2% of the capital held in listed equities is invested in companies which own reserves, and the proportion with wider links to fossil fuels will be higher. However, the average proportion of revenue derived from fossil fuels by portfolio companies was only 1.9% at March 2023. The Fund's fossil fuels exposure is lower than the wider market, and the residual exposure is reflective of the current high dependence of modern economies on fossil fuels.

To the extent that fossil fuels exposures remain in the portfolio, the Fund will retain some direct exposure to certain risks relating to climate change, notably transition risk. Transition risk would arise when new regulations are introduced which make it too expensive to exploit fossil fuels, leading to a dramatic reduction in the value of companies that remained dependent on them. It is important to remember that this is unlikely to happen in the short-term, given the world's current reliance on fossil fuels, and in the meantime those companies remain potentially attractive investments.

It should also be noted that a sub-fund that eliminates fossil fuel companies will not side-step climate risks altogether. The Fund's other investments would remain directly exposed to the physical risks of climate change, which tend to be systemic in nature, and indirectly exposed to transition risks via the impact of fossil fuel companies on the wider economy. Shares in fossil fuel companies divested by the Fund would likely be acquired by other, potentially less responsible investors, meaning that divestment would have no positive impact. But in the event that all major investors including the Fund did divest from fossil fuels, this would trigger a sudden shut-down of fossil fuel industries due to a lack of capital provision, would lead to a collapse in global economic activity, global food shortages and potentially mass starvation, and the destruction of value in the Fund's portfolio.

Public policy on climate change instead calls for a managed and progressive elimination of fossil fuels from the global economy, and explicitly recognises the role institutional investors and their asset managers have in making this happen. Two specific mechanisms are highlighted: 1) to work with portfolio companies to decarbonise their operations and 2) to provide financing support for companies providing products and services that the wider economy needs to decarbonise successfully. Both require institutional investors to remain invested in, and engage with, companies that may currently be reliant on fossil fuels or otherwise responsible for significant GHG emissions but have credible plans and commitments in place to decarbonise. Divestment, of course, remains an option for those which fail to produce plans or then deliver them. This approach is also supported by the majority of best-practice guidance provided to investors in this area.

In accordance with its Responsible Investment policy, the Fund requires all its investment managers to take ESG factors including climate change into account in investment decision making and to address them through active stewardship of its investments. In the case of actively managed strategies, managers are able to consider all relevant investments including fossil fuel companies on their merits and, where they do invest, they engage with them on their decarbonisation plans. The Fund's passive equity investments are managed by LGIM which, in its traditional strategies, is required to invest in all stocks at index weights although it does have a programme of active engagement with high emissions companies. The Fund recently committed to a climate-tilted strategy run by LGIM whereby stock weights are tilted towards companies with lower current emissions and/or fossil fuel reserves. The manager also applies a limited exclusion policy which precludes investment in companies which generate at least 20% of their revenue from mining thermal coal or using it to generate policy. We believe these are reasonable exclusions given the exploitation of thermal coal is increasingly avoidable and companies focusing in this area will be harder to decarbonise and more exposed to transition risk.

Pros and cons of fossil fuel free listed equity funds

Given the potential impact of climate change, it is appropriate to consider whether it would be worth investing in a sub-fund which went further and excluded more, or even all, fossil fuel stocks from its portfolio. In this section, we outline the pros and cons of strategies which adopt blanket exclusion policies covering all companies in specific sector(s), for example those which own material fossil fuel reserves. We focus on listed equities because that is where such strategies could practically be implemented today.

Such fossil fuel-free strategies take a different approach to that adopted by the Fund's current active managers when they decide not to invest in, or divest from, individual companies because the managers do not believe they have business plans which are sufficiently credible to navigate the transition to a low carbon economy.

The arguments in favour of fossil fuel-free strategies (versus the alternative strategy that tilts towards lower carbon intensities) include those listed below but it should be noted that the majority of these impacts would accrue to society as a whole and are likely to be marginal, unless a large number of investors act in concert which they are not currently being guided to do:

- Eliminates direct transition risks to the Fund associated with the stocks excluded
- May be appropriate for specific types of company that lack opportunities to transition to a low carbon business model;
- Signals to stakeholders that the Fund has limited appetite for climate risk and expects action to be taken by prospective investments to reduce it;
- May lead companies excluded to take action to reduce emissions, eg by decommissioning assets
- May increase the cost of capital for fossil fuel companies leading to fairer pricing of the true cost of climate change and a more appropriate allocation of capital.

Blanket exclusion policies can, however, have a negative impact on both investment outcomes and the wider economy if used inappropriately. In particular, they may lead to:

- Reducing portfolio diversification, thereby increasing prospective market risk and potentially reducing investment returns. Lower investment returns than planned may ultimately result in higher employer funding rates.
- Increasing portfolio complexity and costs, especially if the Fund needed to invest via segregated accounts in order to implement the wider exclusions it required (which may not be practical in private markets today);
- Depriving the Fund's managers of an opportunity to exert influence on excluded companies and/or transferring ownership to less responsible investors, potentially leading to them decarbonising more slowly;
- Missing out on a share of the added value created when companies do decarbonise, thereby reducing prospective returns;
- With-holding capital from companies that have a critical role to play in decarbonisation – for example oil and gas companies using their offshore operations expertise to become major renewable energy providers;
- A strong focus on eliminating fossil fuels exposures may adversely impact on other aspects of the Fund's Net Zero Climate Strategy.

Furthermore, they represent a crude way of filtering the investment universe, thus increasing the chance of the Fund's investment strategy conflicting with its fiduciary obligation to ensure that benefits get paid, whilst taking a prudent and appropriate level of risk to generate the necessary investment returns. We note that fiduciary duty requires LGPS funds to consider key risks like climate change and allows them to take into account non-financial factors in investment decision making, but also requires them to act in ways which are not detrimental to returns and would be supported by the majority of a fund's membership. On this latter point, we understand that the Fund consulted with the membership in 2022 on divestment versus engagement and the results showed a marginal preference for engagement.

In the remainder of this section, we look in more detail at the impact of exclusions on portfolio diversification and risk. In the table below, we show the impact of excluding companies fossil fuel reserves from global and UK equity indices, by considering the proportion of each index with any fossil fuels reserves. We also show the impact of adopting a wider exclusion policy, also excluding companies that derive revenue dependent on fossil fuels, by considering the proportion of each index with any fossil fuels reserves or related revenues.

Current proportion of indices with exposure to fossil fuels (weighted by market capitalisation):

Metric	MSCI ACWI	FTSE All Share
Fossil fuels reserves (any)	7.0%	17.0%
Fossil fuels any tie (including reserve ownership and related revenues)	12.3%	19.8%

Source: MSCI, Hymans Robertson.

There are even stricter definitions that could be considered e.g. looking at 'second order' exposures such as banks / insurance companies that support the fossil fuels industry. However, most major players in these sectors would have some exposure. A strict exclusion would therefore lead to most of the financial sector being excluded, which makes up c15% of global markets. On top of a strict revenue-based exclusion such as that in the table above, this could lead to over 30% of global markets being excluded, which is very meaningful. Also, second order exposures do not form part of standard datasets and so this may be difficult to implement in practice.

Why we believe the Fund's approach is better?

We believe the Fund's current approach to listed equities – climate-tilted passive strategies and active strategies which are sensitive to climate risks (and opportunities) and Net Zero Climate Strategy target to reduce exposure to fossil fuel reserves and increase exposure to climate solutions – is superior to simply excluding all fossil fuel stocks for the following reasons:

- Is complementary and aligned with the recent NZCS as approved by the Local Pension Committee after a rigorous process which included consulation with the Fund's membership and employers.
- Pragmatic, recognising that the world cannot cease burning fossil fuel companies overnight;
- Enables the Fund to remain well diversified across a wide range of sectors, thereby reducing portfolio investment returns risk;
- Supports "good" companies in all sectors including those which may be reliant on fossil fuels (and have high current emissions) but which have credible decarbonisation plans and the commitment to deliver them;
- Allows for engagement with portfolio companies which will drive more action and greater impact on climate change;
- Enables the Fund to generate value from those companies which successfully decarbonise;
- Punishes those companies, again in all sectors, which cannot decarbonise effectively;
- Has delivered meaningful reductions in exposure to fossil fuel reserves and current GHG emissions and progress towards the Fund's interim targets (see section 2 of this report);

- Is aligned with LGPS Central's philosophy on climate change enabling a higher proportion of the Fund's assets to be pooled over time;
- Leaves the Fund's investment managers free to make more robust investment decisions on individual stocks, taking into account the risks and opportunities associated not just with climate change but also the many other factors influencing capital markets;
- Is consistent with current public policy and best practice guidance to institutional investors on climate change (e.g. the Net Zero Investment Framework published by the Institutional Investors Group on Climate Change, see https://www.iigcc.org/resources/net-zero-investment-framework-implementation-guide).

In contrast, we do not believe that investing in 'fossil fuel free' funds would offer a "good" Net Zero strategy for the Fund or the economies in which it invests.

How the current exposure supports the investment strategy and Responsible Investment policy?

The Fund's primary purpose is to pay benefits and it aims to take a prudent and appropriate level of risk in order to generate the necessary investment returns. These objectives call for an investment strategy which is well diversified across different markets and where the material risks including climate change are well understood and properly mitigated.

The current strategy enables the Fund's managers to consider a wide range of investments and build a well diversified portfolio, and has been thoroughly tested across a range of climate change scenarios. The Fund's approach to dealing with fossil fuel exposure is consistent with the current strategy. A highly concentrated investment strategy such as one with material exclusion policies, which is designed to minimise current exposure to a single risk factor such as climate change, would not be consistent with these objectives nor the Fund's investment beliefs, notably:

Belief 5: Diversification across investments with low correlation reduces volatility, but over diversification is both costly and adds little value.

The Fund is committed to Responsible Investment and its policy requires all its investment managers, including LGPS Central ("LGPSC"), to take ESG factors including climate change into account in investment decision making and to address them through active stewardship of its investments. The Fund believes this will deliver superior investment returns over the long-term (*Belief 7*).

The Fund also recognises that long-term asset owners can play a significant role in decarbonising modern economies though the capital allocation decisions they make and the stewardship of the companies they finance. The approach taken by the Fund's managers of remaining invested in "good" companies with a strong investment rationale, even those currently reliant on fossil fuels, and working with them to decarbonise is consistent with this policy. Blanket exclusions of such companies is unlikely to contribute much to addressing climate change in the wider economy, but may well lead to worse financial outcomes for the Fund.

The climate stewardship plans prepared by the Fund's investment managers, including LGPSC, identify portfolio companies which are a focus for engagement. The companies and funds prioritised are identified based on a range of factors, including perceived climate risk and significance to the Fund's portfolio. Most are on the CA100+ list. Regular stewardship reports provided by managers document the engagement activity undertaken on climate change and other ESG factors.

Conclusions and recommendations

In summary, we believe the Fund's approach to managing exposure to fossil fuel companies remains appropriate. We do not believe there is a case for applying a blanket exclusion policy covering such companies, as this would benefit neither the Fund nor the wider economy. In particular we do not believe it would be appropriate to invest in fossil fuel free funds.

We acknowledge that the successful decarbonisation of fossil fuel companies will require concerted action by the Fund, its investment managers and portfolio companies. This in turn depends on good stewardship. We therefore recommend that the Fund considers:

- Strengthening engagement with underlying managers appointed directly by the Fund, to ensure that stewardship is being undertaken to the same standard as those overseen by LGPS Central.
- Encouraging managers to improve stewardship reporting to provide greater insights not just on engagement activity, but also the actions taken and outcomes achieved by portfolio companies.
- Better reporting which would facilitate a deeper dive on the effectiveness of stewardship around fossil fuel companies, and which may lead to further changes in the portfolio and potentially some further tightening of exclusion criteria. This could focus on the companies with the largest exposures (e.g. those with the highest fossil fuels related revenues) initially.
- Continuing to monitor progress against stated decarbonisation targets and look for opportunities to increase allocations to climate-related solutions.

Better reporting may well provide a basis for setting a firm target around the removal of fossil fuels from the portfolio when the Fund's NZCS is next reviewed. Ideally the Fund should differentiate here between actual reductions achieved by changes in company policies vs reductions achieved by divestment. If any of the above areas were to be investigated further, consideration would be given as to whether any changes were supportive of the Fund's Net Zero strategy.

4 Investment Objectives, Investment Strategy and Required Return

Investment Objectives

The strategic objectives of the Fund are as follows:

- To ensure members' benefits are met as they fall due.
- To support a long-term funding approach that is consistent with a stable and affordable contribution approach from the employers.
- To remove any funding shortfall over 14 years on average, with a target to reduce this recovery period.

The investment strategy should be set to achieve these strategic objectives. In practice, to the extent that the discount rate used reflects the expected return on the Fund's assets, this is an integrated process.

Funding Position and Strategy

The funding position at 30 September 2023 was estimated to be 148% using a discount rate of 6.6% p.a in comparison to 31 March 2022 where the funding position was estimated to be 105% using a discount rate of 4.4%. This rate was set such that there was a 75% likelihood of the return on Fund assets being at least equal to the discount rate over the next 20 years. The rate was set using our long-term asset assumptions as at **30 September 2023.** The discount rate sets the required return.

It is important to note that this is just a snapshot of the funding level in time, and small changes in the assumptions used to derive this funding level can have a material impact. In particular the assets and liabilities of the Fund can move very differently; for example liabilities fell much more than assets in 2022 due to rising interest rate expectations, but should interest rate expectations fall from here then that would likely lead to the funding level falling again, all else being equal.

On reaching full funding, it is appropriate to consider whether the Fund should reduce investment risk in order to protect the funding position (or alternatively reduce contribution rates). Lower risk would mean lower projected investment returns, a reduction in the discount rate and an increase in the value of the Fund's liabilities. We explore the case for de-risking in the protection assets section below, but have recommended further work (including full ALM) before material capital is reallocated.

Investment Strategy

The Fund's current funding position and objectives call for an investment strategy that will deliver a sustainable return factoring in considerations such as inflation. The current strategy focuses on those asset classes that are expected to deliver the required return over the long-term. A wide range of asset classes/strategies are employed in order to diversify risk and thereby generate a more sustainable return. The Fund seeks to balance the benefits of diversification with the additional complexity and costs of managing additional asset classes. In recent years, there has been increased focus on asset classes which provide predictable sources of income, rather than capital gains which tend to be more volatile. The current strategy also reflects a focus on long-term investing with allocations to private assets where the return is earned over time and where the Fund takes advantage of an illiquidity premium in return. The Fund is cashflow positive and is expected to remain so for the foreseeable future due in part to the regular contributions being received towards new accrual, which enables it to make a material allocation to private assets.

The projected outcomes of the Fund's current strategy were tested in the 2022 actuarial valuation using asset-liability modelling. The analysis was based on our asset return assumptions as at **31 March 2021**. Two key outputs of this analysis were:

- Likelihood of Success, ie the likelihood of being fully funded in 20 years' time: 83%
- Downside Risk, ie the average funding level in the worse 5% of outcomes over 5 years: 48%

This has since been updated for asset return assumptions as at 30 September 2023 (using the same underlying data and investment portfolio as at the 2022 actuarial valuation), increasing the likelihood of success to 92%.

These are positive outcomes and indicate no pressing need to change the current strategic asset allocation. However, the funding position does leave scope to de-risk and protect the future funding level which is assessed in the protection assets section.

Projected, Required and Realised Returns

The median projected return of the current strategy based on our latest long-term asset assumptions (30 September 2023) is 8.7% p.a. This is the median return, ie there is a 50% likelihood of returns exceeding this level.

This compares with the median projected return for the current strategy of 8.2% p.a. calculated at the 2023 SAA review (using assumptions as at 31 October 2022). The required return set at the 2022 actuarial valuation was 4.4% p.a. (75% likelihood). The median projected return is materially above the required return, leaving a prudent margin for adverse experience such as asset underperformance.

Long-term asset assumptions have changed significantly in the last year, largely due to the increase in interest rates and rate expectations. The table below compares our latest set of assumptions (30 September 2023) with those used in the 2022 actuarial valuation (31 March 2021) and the previous SAA review (31 October 2022). It is worth noting that assumed future asset returns could fall just as quickly as they have risen.

Projected 20-year return, median, % p.a.	As at 31 March 2021	As at 31 October 2022	As at 30 September 2023
Listed equities	5.90	7.80	8.40
Private equity	6.80	11.40	12.00
Targeted return	4.50	5.25	5.90
Infrastructure (incl. timber)	5.90	7.86	8.50
Property	4.20	6.41	7.00
Emerging market debt	3.70	5.39	6.70
Global credit – liquid sub inv grade markets	4.60	6.67	6.70
Global credit - private debt (inc M&G/CRC)	4.90	9.27	8.70
Inflation-linked bonds	-1.40	2.08	4.10
Investment grade credit	2.70	5.07	5.60
Cash	2.00	3.70	4.30

Source: Hymans Robertson's ESS model

Our projected return assumptions are set by reference to risk-free rates of return which we assume equal the yield on UK and US government bonds as applicable. The sharp increase in the yields on these instruments over the last year account for most of the increase in the projected returns tabulated above. But the impact of this sharp increase is moderated because we also assume that returns revert to typical long-term levels over time (e.g. our model considers interest rates over a 30 year period, using the market yield curve to guide the path that interest rates take over the first few years, and then gradually blending towards our view of a more normalised yield by the 30th year).

In the case of private equity and debt, we have also revisited the premium investors are assumed to receive in these asset classes compared with their public market equivalents. Our assumptions are calibrated against historical experience.

The table below illustrates market returns at an asset class level and the return realised by the Fund since March 2022:

Market Index Returns (£) *	9 months to 31/12/2022 (%)	6 months to 30/06/2023 (%)	15 months to 30/06/2023 (%)
UK equities	-0.15	2.61	1.96
Global equities	-5.01	7.85	1.96
Emerging market equities	-5.61	-0.56	-4.94
Property	-14.87	1.23	-11.22
Emerging market debt	0.01	-1.52	-1.20
Inflation-linked gilts	-29.73	-2.59	-27.74
IG corporate bonds	-12.30	-1.08	10.74
Fund (net return)	**-2.9**	**1.0**	**-1.9**

** Index returns: FTSE All Share, FTSE All World, MSCI EM, MSCI UK Monthly Property, JPM EM BI Gib Diversified, FTSE Brit Govt Index-Linked All Maturities, iBoxx Non-Gilts All Mat*

Source: Fund return from portfolio evaluation

The realised return since the 2022 valuation has fallen short of the required return. The increase in government bond yields has had an adverse impact on the value of most asset classes, particularly during 2022. The impact on the Fund’s returns have been mitigated by its well diversified portfolio and by the devaluation of sterling which has boosted the returns on assets denominated in foreign currencies (where not fully hedged).

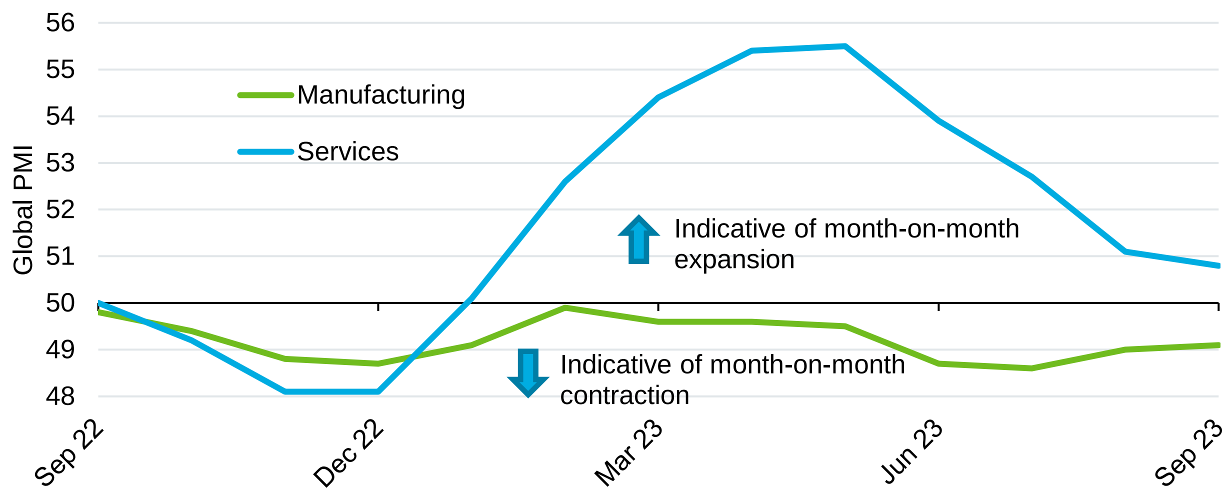
5 Market Commentary

Global themes

Global growth in 2023 has been subdued, even by post-Global Financial Crisis (GFC) standards, but more resilient than expected. Consumer spending exceeded expectations, particularly in the US; fiscal support dulled the impact of higher energy prices on European consumers; and China emerged from its zero-Covid restrictions earlier than hoped.

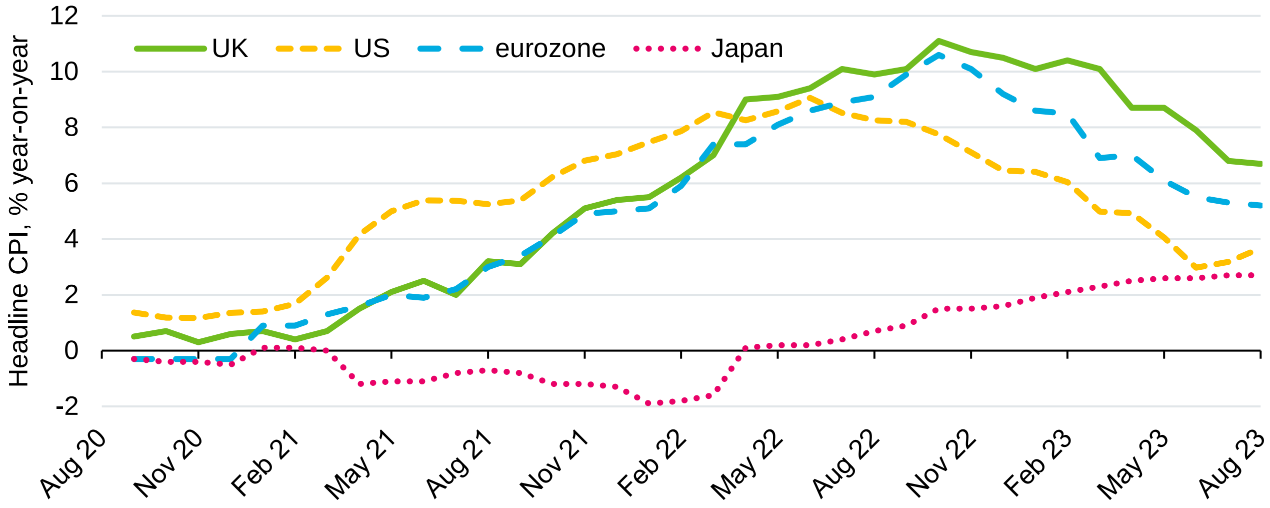
That said, purchasing managers' indices (PMIs) indicated that global growth eased throughout Q3 (Chart 1), as services activity 'caught down' with the contracting manufacturing sector. Consumer spending in developed economies has come under pressure as savings built up during the pandemic have been used, the delayed impact of interest-rate rises on disposable incomes grows, and the positive impulse from fiscal support wanes. As the Chinese post-reopening recovery faltered, the authorities unveiled modest economic stimulus measures, but the troubled property sector is weighing on consumer sentiment. Meanwhile, concerns about leverage limit the scope for debt-fuelled investment to support growth. Against this backdrop, we think growth is likely to slow further, due to the momentum of these factors.

Chart 1: PMI data indicate that global growth slowed in Q3, as the services-led recovery lost steam



Inflation has generally stayed on a downward trend, but the recent sharp rise in oil prices led to an uptick in year-on-year US CPI inflation in August (Chart 2). Declines in energy prices have been a key contributor to the reduction in headline inflation over the last year, and so any reversal could slow the downtrend. Central banks might choose to 'look through' the immediate impact of a temporary, supply-driven increase in energy prices. However, the risk of second-round effects, alongside sticky core inflation and tight labour markets, are reasons why central banks may proceed cautiously with rate cuts.

Chart 2: Inflation has generally continued to trend downwards but remains elevated



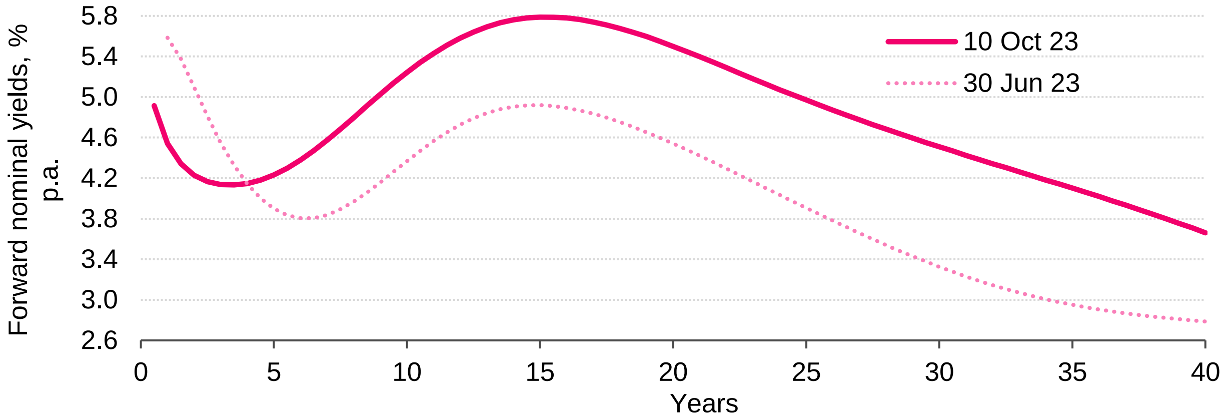
The US Federal Reserve and the Bank of England both raised rates by 0.25% pa, to 5.5% pa and 5.25% pa, respectively, in Q3. The Bank of England surprised markets by leaving rates unchanged in September. The European Central Bank raised its deposit rate twice, to 4.0% pa, but its cumulative tightening is still less than in the US and UK. Both the tone of central bank comments and market pricing suggest that policy rates are at or close to peaking, but subsequent cuts will be gradual. This will limit the potential boost to growth from looser monetary policy in 2024 and 2025.

Against this backdrop, we do not expect growth to collapse, but expect it to fall to a very lacklustre pace in 2024, followed by a modest recovery in 2025. While consensus forecasts for global GDP growth in 2023 have risen to 2.4% from 1.6% at the start of the year, 2024 global GDP forecasts have fallen to 2.1% from 2.5%, and we think a poorer outcome is very possible.

Government bonds

UK gilt yields fell at shorter terms, while long-term yields rose sharply. This is consistent with expectations that rates may peak at a lower level than previously expected, but stay there for longer. It also likely reflects a fragile technical backdrop of heavy global sovereign bond issuance. Indeed, given the weak real growth outlook and expected declines in inflation, we think the fundamental outlook for gilts has improved. In the presence of an independent central bank, and in the absence of catalysts that augur higher long-term real growth, we think longer-term nominal, and, to a slightly lesser extent, real, yields are reasonably attractive relative to fair value.

Chart 3: Inflation will be sticky and rate cuts gradual, but forward nominal rates have risen too far

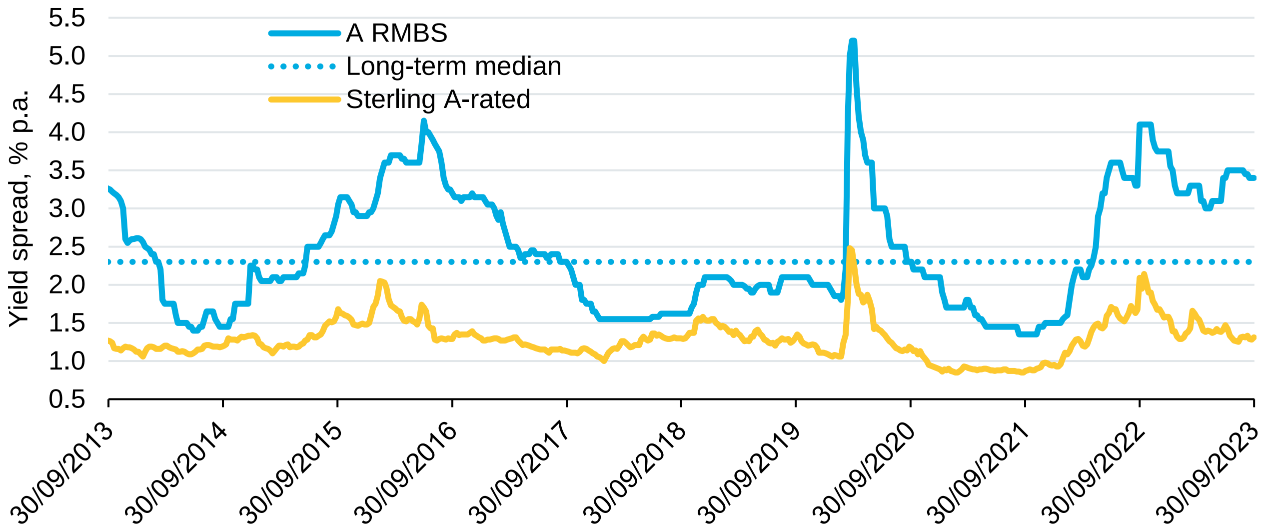


We have little issue with the near-term path of interest rates implied by the market, but we do not think interest rates will remain as high for as long as suggested by forward nominal yields (Chart 3). Given our belief that central banks will ultimately use the tools at their disposal to return inflation towards target, we also expect long-term implied inflation to fall. We think a decline in longer-term implied inflation is more likely to be driven by a fall in nominal yields than a rise in real yields.

Credit

With weaker corporate earnings and higher borrowing costs starting to make their mark on debt affordability measures – debt as a proportion of earnings is generally rising, while earnings as a multiple of interest payments is falling – the fundamental outlook for credit is challenging. However, expectations that growth slows but does not collapse, set against decent absolute levels for the aforementioned debt metrics, means that while defaults have risen long-term average levels, they are only expected to rise a little further, and default forecasts have been revised lower in recent months.

Chart 4: ABS spreads look attractive relative to their own history and equivalent corporate credit



Credit spreads are close to long-term median levels in both investment- and speculative-grade markets and, given the weak outlook and balance of risks, we retain a preference for higher-quality credit. Given our view that near-term interest rates are largely fairly priced, we are agnostic between short-dated fixed and floating-rate exposure. However, better relative value (Chart 4) suggests a preference for asset-backed securities (ABS) over investment-grade corporate credit in short-dated bond mandates. Investment-grade credit markets offer attractive yields, but this is largely a reflection of attractive underlying sovereign bond yields.

Equities

The FTSE All World Total Return Index fell 2.1% in local currency terms in Q3, as sovereign bond yields rose and survey data indicated an easing in economic activity. Amid the subdued, albeit better-than-expected, growth environment, forecasts for full-year equity earnings growth in 2023 have fallen from around 3% at the start of the year to 0% by the end of Q3. Over the same period, equivalent forecasts for 2024 and 2025 have actually seen slight upwards revisions, with full-year earnings growth a little above 11% expected in each of the next two calendar years. Slowing global activity is reducing corporate pricing power at the same time as borrowing costs are rising, creating a tough outlook for corporate earnings. Against this backdrop, these global equity earnings forecasts look vulnerable to potential disappointment.

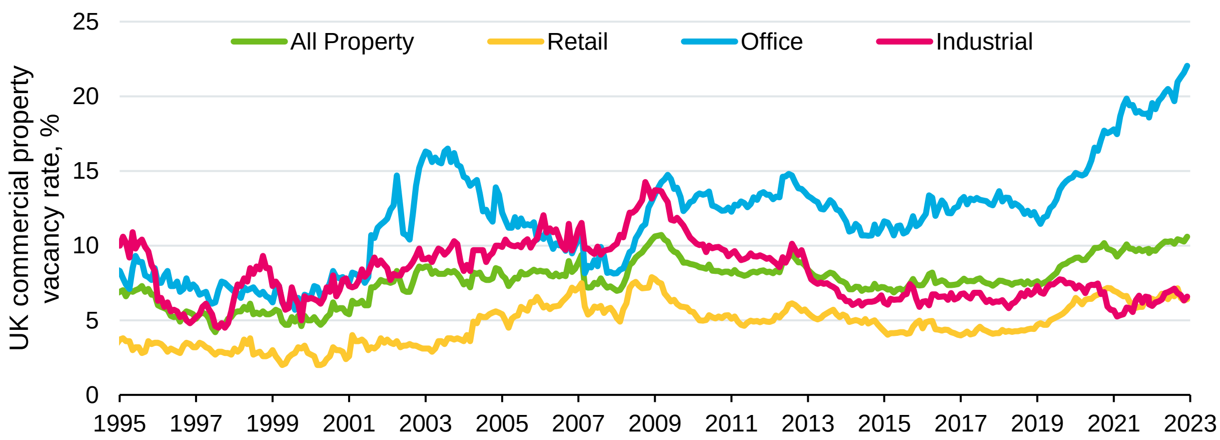
Chart 5: The 'equity risk premium' looks stretched

Cyclically adjusted global equity valuations, which are in line with long-term averages, look reasonable in absolute terms. However, valuations look stretched relative to 'safe' assets, with the equity risk premium, proxied by the MSCI World cyclically adjusted earning yield less 10-year US real treasury yields, as low as it has been since the GFC and well below historic averages (Chart 5). Valuation pressures would be eased by a decline in real yields. While we think that is quite likely, we expect the impact to be limited as we do not anticipate yields to return to the very low levels experienced in the post-GFC era. A background of declining yields is, in any case, likely to be associated with pressure on earnings.

Property

Our caution that a stabilisation in capital values in Q2 reflected a lack of transaction activity rather than a fundamental improvement has proved well founded. Though capital values in the industrial sector have now risen for seven consecutive months, continued declines in the office and retail sectors led to a modest 0.2% fall in the MSCI UK Monthly Property Total Return Index in Q3. On a 12-month basis, capital values are down around 14%, 23%, and 20% in the retail, office, and industrial sectors, respectively.

Chart 6: Record-high vacancy rates in the office sector highlight ongoing fundamental challenges



Property yields have risen significantly from a low in late 2022, but remain below long-term average levels. As with equities, valuations relative to safe assets are stretched – as expensive they have been since the GFC. This feels like scant reward given a challenging fundamental outlook. Real rental growth is rising as inflation declines, but is still negative. The modest improvement in sentiment highlighted in the previous UK Commercial Property Market Survey by the Royal Institute of Chartered Surveyors has also reversed more recently: the latest survey showed renewed falls in occupier demand and rent expectations as availability across industrials and office continued to rise. Highlighting the ongoing impact of the seismic shifts in post-pandemic working patterns, office vacancy rates hit a record-high of 22% in August (Chart 6). This is compounded by ongoing technical weakness as there is a substantial amount of selling pressure in the market, with thin transaction activity and some pooled funds deferring redemptions till 2024.

Conclusion

Global growth in 2023 has outperformed the downbeat forecasts made at the start of the year, but its pace has been subdued and we think it's likely to slow further. Weak growth and rising borrowing costs make for a tough outlook for corporate earnings, so the fundamental outlook for equity and credit markets is challenging. We maintain our defensive positioning, preferring 'safe' assets – sovereign bonds, cash and high-quality credit – over 'risk' assets – equity, speculative-grade credit and property.

Inflation is likely to be sticky, and we expect central banks to proceed cautiously, but long-term forward nominal yields now look very high. At these levels, a return to our assessment of fair value would provide significant capital appreciation, in addition to income. Investment-grade credit looks better value than speculative-grade credit, but with spreads close to long-term medians, the attractions largely reflect decent underlying sovereign bond yields.

A challenging, and arguably still-deteriorating economic outlook puts pressure on equity earnings and UK commercial property rents. In absolute terms, global equity valuations are neutral and UK property valuations are still a little stretched. Both look expensive relative to 'safe' assets, and so any future reduction in real yields might provide only limited relief.

6 Equities

Investment Objective

The Fund invests in equities to achieve a return in excess of inflation over the long-term. Equities are generally more volatile than government bonds, but investors receive a return premium (the “Equity Risk Premium”) to compensate for the additional risks.

The Fund invests in both listed and private equity. Investing in private equity offers exposure to younger and/or higher growth companies, but involves taking significantly more risk. Private equity investments are also inherently illiquid. As a long-term investor, the Fund is able to invest in more volatile, illiquid assets and expects to receive an additional return premium (the “Liquidity Premium”) for doing so.

Many private equity funds have delivered exceptional returns in recent years, and we would not expect such a high level of returns to be sustained in the coming years, as conditions for private equity are not expected to be as favourable. One reason for this is that PE firms often rely on debt to magnify their returns, and borrowing costs are now expected to be higher. Nonetheless, we expect a material Liquidity Premium to persist over the long-term and are comfortable with our recommendation in the 2023 SAA to maintain the increased allocation to this asset class previously agreed.

Current Portfolio

Following the 2023 SAA review, the Fund has a 37.5% target allocation to listed equities and a 7.5% target allocation to private equity, both expressed as a proportion of total fund assets. The Fund is in the process of re-structuring the listed equity portfolio as per the below table. These transitions are underway and are expected to take place over H1 2024.

Manager & Fund	Active/ Passive	2022 Target Allocation	2023 Target allocation
L&G UK Equity Fund	Passive	3.13%	2.00%
L&G North American Equity Fund	Passive	5.83%	0.00%
L&G Japanese Equity Fund	Passive	1.25%	0.00%
L&G European Equity Fund	Passive	2.50%	0.00%
L&G Pacific Ex Japan Equity Fund	Passive	1.25%	0.00%
L&G Emerging Markets Equity Fund	Passive	1.04%	0.00%
L&G All World Equity Fund	Passive	0.00%	8.00%
L&G Low Carbon Transition Fund	Passive	0.00%	3.50%
L&G Total Passive Equity Fund	**Passive**	**15.00%**	**13.50%**
LGPSC Global Eq Active Multi Mgr Fund	Active	8.00%	12.00%
LGPSC EMM Eq Active Multi Mgr Fund	Active	4.00%	0.00%
LGPSC AW Eq Climate Multi Factor Fund	Passive	15.00%	12.00%
LGPSC Total Equity Fund	**Active/ Passive**	**42.00% (40.0-44.0)**	**37.50%**

The investments as at 30 June 2023 are summarised in the table below:

Asset Class	Manager & Fund	Active/ Passive	New Target Allocation	Actual Allocation	Breakdown[1]	Above or Below Target
Listed equity	L&G Total Passive Equity	Passive	13.50%	16.10%	16.10%	++
	LGPSC Global Eq Active Multi Mgr Fund	Active	12.00%	9.40%	9.40%	- -
	LGPSC EMM Eq Active Multi Mgr Fund	Active	0.00%	3.10%	3.10%	++
	LGPSC AW Eq Climate Multi Factor Fund	Passive	12.00%	15.90%	15.90%	+
	Sub-Total	**Active/ Passive**	**37.50%**	**44.40%**	**See above**	**++**
Private equity	UK Private Equity Fund - Catapult (L)	Active	7.50%	7.40%	0.00%	-
	Oseas Private Equity Fund - Adams Street (L)	Active			6.70%	
	LGPSC Private Equity Fund	Active			0.10%	
	Aberdeen Standard Private Equity Fund	Active			0.00%	
	Sub-Total	**Active**	**7.50%**	**7.40%**	**See above**	**-**

The breakdown of the L&G Passive Regional allocation is provided in Appendix 1.

Government target relating to private equity

The Fund currently has a target allocation to private equity of 7.5%. The UK government wishes to see LGPS funds and pools increasing their current allocation into private equity, with a total ambition of 10% investment allocation. This was recently consulted upon, and the intention is for regulatory guidance to be updated to require funds to consider investments to meet the government's ambition.

However the government also acknowledges that each fund will be different and will need to make its own investment decisions based on potential risk and reward appetite. Private equity investments are generally considered to be amongst the riskiest investments in any portfolio, and the Fund has other investments such as distressed debt and value-add infrastructure with a similar risk profile. The Fund's strategic asset allocation has been carefully set based on the specific circumstances of the Fund, including risk appetite, and with the intention to optimise funding outcomes. We remain comfortable with the current target allocation to private equity.

[1] Column show sub-asset class allocations where applicable

Performance

The investment performance is summarised in the table below:

Asset Class	Manager & Fund	Benchmark	Performance 12m (Absolute) %[2]	Performance 12m (Relative) %[3]	Performance SI (Absolute) %	Performance SI (Relative) %
Listed equity	L&G UK Equity Fund	FTSE All Share Index	7.8	0	5.2	0.2
	L&G North American Equity Fund	FTSE World N America Net Index	13.7	0	13.2	0
	L&G Japanese Equity Fund	FTSE Japan Net Index	12.5	-0.1	7.9	-0.1
	L&G European Equity Fund	FTSE Dev Europe ex UK Net Index	18.7	-0.4	7.4	0.2
	L&G Pacific Ex Japan Equity Fund	FTSE Dev. Asia Pacific x Japan Net	2.9	0.4	6.6	0.1
	L&G Emerging Markets Equity Fund	FTSE Emerging Net	-3.4	0.1	5.8	0.2
	Sub-total	**Client Weighted Index**	10.7	-0.7 *	9.9	-0.1
	LGPSC Global Eq Active Multi Mgr Fund	FTSE All World Index (Sterling, Total Return)	14.0	2.3	10.6	0.4
	LGPSC EMM Eq Active Multi Mgr Fund	FTSE Emerging Market Index (Sterling, Total Return)	-4.7	-1.5	-1.3	-2.4
	LGPSC AW Eq Climate Multi Factor Fund	FTSE All World Climate Balanced Comprehensive Factor Index (Total Return)	10.0	0.4	8.2	0.3
	Sub-Total	**Client Weighted Index**	**10.1**	**0.3**	**8.7**	**0.0**
Private equity	UK Private Equity Fund - Catapult (L)	FTSE All World Index	11.4	-0.3	28.4	16.3
	Oseas Private Equity Fund - Adams Street (L)	FTSE All World Index	-2.6	-14.3	17.3	5.2
	LGPSC Private Equity Fund 2018	FTSE All World Index	4.0	-7.7	14.8	9.1
	LGPSC Private Equity Fund 2021	FTSE All World Index	N/A	N/A	N/A	N/A
	Aberdeen Standard Private Equity Fund	Absolute Return +7.5%	8.2	0.7	25.6	18.1
	Sub-Total	**FTSE All World Index**	**-1.7**	**-13.0**	**17.6**	**6.1**

** Note this relative performance figure looks unusual and we are investigating the reasons for this*

The LGPS Central Global Equity Active Multi-Manager fund has outperformed its benchmark over the previous 12 months to 30 June and slightly outperformed its benchmark since inception, though short of its target return, which is to outperform the benchmark by 1.5% p.a. over rolling 5 year periods. Two of the three underlying managers (Union 12.18% p.a. and Schroders 13.10% p.a.) have outperformed the benchmark returns since inception whereas Harris have underperformed the benchmark since inception (10.25%).

Multi-manager funds often employ managers with different styles, with the expectation that the 'average' performance across the managers should outperform the benchmark over longer time periods. Different market environments will suit different styles, meaning that over any given period some of the managers used may outperform a broader benchmark whereas others may underperform.

It is expected a fourth manager with a quality-focused investment style will be added in early 2024, and we are supportive in principle of this change. A diversified portfolio with exposure to a number of well rewarded investment styles is more likely to deliver sustainable performance across different market environments.

[2] Absolute return over last 12 months, and since inception ("SI")
[3] Return relative to benchmark over last 12 months, and SI

The LGPS Central Emerging Market Equity Multi-Manager fund has underperformed its benchmark over 12 months to 30 June 2023 and since inception. All its managers have reported negative returns over the 12 months to 30 June 2023 and since inception. The Fund has agreed to disinvest from the EM fund which will take place over H1 2024.

The passive equity funds, including the LGPS Central Climate Multi-Factor fund have broadly performed in line with their benchmarks, outperforming it slightly and we have no other concerns about these investments.

The Fund is slightly underweight its target allocation to private equity which was increased to 7.5% in the 2023 SAA review. All four underlying managers have outperformed their benchmarks since inception. Aberdeen have announced agreements to sell their European private equity business to Patria Investments and their US private equity business to HighVista Strategies LLC. The transaction is expected to be completed in the first half of 2024 and is subject to regulatory approval. We are comfortable that the Patria acquisition will not adversely affect the SOF range of funds or lead to any departures in the European private equity team.

The returns tabulated above are time-weighted period returns (quoted in sterling) which have limitations when assessing the performance of closed-end funds. Internal rates of return (quoted in the base currency of each strategy) are generally accepted to be more robust measures of performance. We have used time-weighted period returns provided by Portfolio Evaluation for consistency with other asset classes. We also note that the benchmarks used by Portfolio Evaluation do not accurately reflect realistic return expectations for all the above strategies. The continued appropriateness of the benchmarks are reviewed later in the paper.

Recommendation – Listed Equities

We recommend the Fund should maintain the allocation to listed equity at 37.5% and private equity at 7.5%, and progress the changes agreed during our recent review of the asset class over 2024. Work was undertaken as part of the previous listed equity and private equity reviews to ensure the agreed changes were supportive of the Fund's Net Zero strategy.

7 Targeted Return

Investment Objective

The aim of the targeted return portfolio is to provide a return of cash + 4% net of fees, equivalent to a return in excess of CPI+3% long-term, while providing diversification from equities.

Current Portfolio

The Fund has a 5.0% strategic allocation to targeted return and the allocation as at 30 June 2023 was 7.6%. Over 2023, the Fund reviewed its targeted return holdings and agreed to divest from both Pictet and Aspect and invest the proceeds into Ruffer and Fulcrum, 3% and 2% of total asset allocation respectively. These transitions started during summer 2023 and are expected to complete in H1 2024.

The Fund's actual and target allocation as at 30 June 2023 is summarised below:

Manager & Fund	Active/ Passive	Current Target Allocation	Actual Allocation	Breakdown	Above or Below Target
Aspect Capital Partners Fund	Active	0.00%	2.90%	2.90%	+ +
Pictet Fund	Active	0.00%	2.50%	2.50%	+ +
Ruffer Fund	Active	3.00%	2.20%	2.20%	-
Fulcrum Fund	Active	2.00%	0.00%	0.00%	- -
Sub-Total	**Active**	**5.00%**	**7.60%**	**See above**	**++**

Performance

The investment performance is summarised in the table below:

Manager & Fund	Benchmark	Inception date	Performance 12m (Absolute) %	Performance 12m (Relative) %	Performance SI (Absolute) %	Performance SI (Relative) %
Aspect Capital Partners Fund	SONIA 3 Month + 4%	Dec 2013	10.8	3.1	9.2	4.5
Pictet Fund	SONIA 3 Month + 4%	Sep 2015	1.6	-6.1	3.7	-1.1
Ruffer Fund	SONIA 3 Month + 4%	Dec 2013	-3.8	-11.5	5.4	0.7
Sub-Total	**SONIA 3 Month + 4%**		**3.5**	**-4.2**	**6.3**	**1.6**

Over the year to end June 2023, both Pictet and Aspect delivered positive returns, with Aspect being the stand-out performer over the period also outperforming its benchmark.

Ruffer's performance in the first half of 2023 has been one of the worst since inception. However, they remain optimistic about future returns because they believe the macroeconomic outlook is negative and the portfolio is positioned for this outcome. The strategy that Ruffer employs aims to deliver a portfolio that contains both growth and defensive assets. The strategy does not aim to deliver a specific target of return - it just aims to deliver a "meaningful" return above cash – but instead focuses more on preserving capital.

Following a review in 2023, it has been agreed to divest from Aspect and Pictet and instead introduce a fund managed by Fulcrum. The reasons for this were that the combination of Ruffer and Fulcrum are expected to better meet the Fund's objectives in terms of long-term returns and performance in volatile years (following analysis of past performance, volatility and drawdowns), as well as reducing the governance burden by utilising two managers instead of three.

Activity Over 2023

The divestments from Aspect and Pictet were to be completed in four redemptions at equal pace. The final divestments are expected to have taken place by the time of the January 2024 committee meeting. Subscriptions to Ruffer and Fulcrum started in Q4 2023 and are planned to complete February 2024.

Recommendations

We recommend the Fund should maintain the allocation to targeted return at 5.0%, and progress the changes agreed during our recent review of the asset class over 2024. Work was undertaken as part of the previous Targeted Return review to ensure the agreed changes were supportive of the Fund's Net Zero strategy.

8 Infrastructure

Investment Objective

The purpose of the allocation to infrastructure is to provide a positive, real return over the long-term, a high income yield and a degree of inflation protection, and to diversify the risks associated with other return seeking assets such as listed equities. We continue to believe that the rationale for investing over the long-term in infrastructure remains strong.

Current Portfolio

The Fund's investments as at 30 June 2023 are shown in the table below:

Manager & Fund	Active/ Passive	Current Target Allocation	Actual Allocation	Breakdown	Above or Below Target
JPMorgan Infrastructure Fund (L)	Active	12.50%	10.20%	2.50%	- -
IFM Global Infrastructure Fund	Active			2.70%	
KKR Global Infrastructure Fund	Active			0.80%	
Stafford Timberland Fund (L)	Active			2.20%	
Infracapital Infrastructure Fund	Active			0.60%	
LGPSC Infra Core/Core+	Active			0.90%	
Quinbrook Net Zero Power Fund	Active			0.20%	
Quinbrook Net Zero Power Fund - co-inv	Active			0.30%	
Sub-Total	**Active**	**12.50%**	**10.20%**	**See above**	- -

The Fund has a strategic allocation of 12.50% to infrastructure.

Activity

New commitments totalling £100m were made over 2023 to move the Fund towards the target allocation. There were also drawdowns of the existing commitments from LGPSC, Quinbrook and Stafford.

Further commitments may be needed in 2024 to reach the current target allocation. **We recommend a short review during 2024 to establish what additional commitments are needed over the next 3 years in order to maintain the desired risk and geography profile of the infrastructure investments.**

We are also aware that three of the existing Stafford vintages will be returning money over the coming years, and that discussions regarding an 'evergreen' version of the funds are underway. We recommend that the evergreen version is considered over 2024.

Performance

The investment performance is summarised in the table below:

Manager & Fund	Benchmark	Performance 12m (Absolute) %	Performance 12m (Relative) %	Performance SI (Absolute) %	Performance SI (Relative) %
JPMorgan Infrastructure Fund (L)	SONIA 3 Month + 4%	7.7	0.0	7.9	3.1
IFM Global Infrastructure Fund	SONIA 3 Month + 4%	8.2	0.5	13.9	7.9
KKR Global Infrastructure Fund	SONIA 3 Month + 4%	11.2	3.4	18.6	13.8
Stafford Timberland Fund (L)	SONIA 3 Month + 4%	12.9	5.2	6.5	1.6
Infracapital Infrastructure Fund	Absolute Return +7.5%	6.3	-1.2	7.2	-0.3

LGPSC Infra Core/Core+	CPI +3.5%	7.6	-3.3	5.3	-5.0
Quinbrook Net Zero Power Fund	13% IRR	N/A	N/A	-8.6	-12.8
Quinbrook Net Zero Power Fund - co-inv	13% IRR	N/A	N/A	-7.2	-11.4
Sub-Total	**SONIA 3 Month + 4%**	**8.8**	**1.2**	**9.0**	**3.2**

N/A denotes Not Applicable, due to a track record of less than a year.

All the infrastructure managers have delivered positive performance over the 12 months to 30 June 2023.

Infracapital have continued to underperform since inception and over the year. The fund is still in the construction stage of assets and had reported a net multiple of invested capital of 1.3x as of March 2023.

During our research team's most recent meeting, the Infracapital team highlighted a few challenges with the underlying companies relating to debt financing, business planning issues and supply chain management. Of the 9 investments, 1 has been realised at a slightly positive return and 7 have current (as of Q1 2023) current total money multiples between 1x and 2x, and one of the larger investments has not performed to expectations with a multiple slightly below 1x. The team are working on finding solutions to the challenges in the underlying companies and seem confident on the long-term performance of most of the assets. Overall the current fund money multiple is 1.4x which is below expectations at this stage of the fund's life, but not disastrously so.

The fund was set up to own assets from the development and construction phase straight through to the operational stage over a 25 year fund life. The fund terms specify that investors wishing to exit the fund can do so once 90% of the capital has been deployed. Infracapital expect to reach this level by Q4 2023 and c40-50% of the LPs have already expressed an interest to exit the fund. As such, Infracapital expect the fund will not continue through to the operational stage and will sell down the underlying assets once the liquidity window opens – as mentioned above, this is expected to be around Q4 2023 and we expect will be open for around 3 years from that point.

Both the LGPSC and Quinbrook investments are recent commitments made over the period 2021 to 2023 and therefore it is too early to make any judgement over their performance.

We have no other concerns with any of the managers, in terms of changes in personnel, changes to philosophy or any other potential red flags and continue to rate them as positive and preferred.

Recommendations

We recommend the Fund should maintain the target allocation to Infrastructure at 12.50%.

We recommend that consideration is given as to what additional commitments are needed over the next 3 years in order to reach the target allocation, and maintain the desired risk and geography profile.

Work was undertaken as part of the previous Infrastructure review to ensure the agreed changes were supportive of the Fund's Net Zero strategy.

We recommend that the evergreen version of the Stafford funds is considered over 2024. Consideration will also include whether this is supportive of the Fund's Net Zero strategy.

9 Property

Investment Objective

The Fund has a strategic allocation of 10% to property, which is part of a wider allocation to income-focused, return-seeking assets. The purpose of the allocation is to provide a positive, real return over the long-term, a high proportion of which to come from income, and to diversify the risks associated with other return seeking assets such as listed equities. We continue to believe that the rationale for investing over the long-term in property remains strong.

Current Portfolio

The Fund's investments as at 30 June 2023 are shown in the table below:

Manager & Fund	Active/ Passive	Current Target allocation	Actual allocation	Breakdown	Above or below target
Colliers Pooled Property	Active	10.00%	7.30%	0.30%	- -
Colliers Direct Property Fund	Active			1.70%	
La Salle Property Fund	Active			4.30%	
Aegon Active Value Fund	Active			0.30%	
Aegon Active Value Fund II	Active			0.70%	
Sub-Total	**Active**	**10.00%**	**7.30%**	**See above**	**- -**

The Fund has a strategic allocation of 10% to property, which was 7.3% as at 30 June 2023 and is part of a wider allocation to income-focused, return-seeking assets. Further commitments will be required to close the underweight to property.

The Aegon Active Value Funds are due to return capital in the near future, however the timing of this remains uncertain. We would be comfortable with reinvesting some of the expected returns from Aegon with La Salle, as part of the planned further commitments to this manager (i.e. as per the decision made in 2022). These commitments could be made during 2024, under the expectation that sufficient capital will be returned from Aegon to fund this by the time it is drawn down. Alternatively if the Aegon funds have not returned money in time then it is likely there will be sufficient cash available to fund it. This action would help to maintain the current weighting to property. However, given our current outlook for property remains weak we suggest deferring closure of the underweight for the time being.

Performance

The investment performance is summarised in the table below:

Manager & Fund	Benchmark	Performance 12m (Absolute) %	Performance 12m (Relative) %	Performance SI (Absolute) %	Performance SI (Relative) %
Colliers Pooled Property	MSCI UK Monthly Property Index (GBP)	5.0	22.2	1.8	-2.3
Colliers Direct Property Fund	MSCI UK Monthly Property Index (GBP)	-12.3	4.9	5.8	1.8
La Salle Property Fund	MSCI UK Monthly Property Index (GBP)	-16.2	1.0	7.7	4.6
Aegon Active Value Fund I	MSCI UK Monthly Property Index (GBP)	-10.4	6.8	4.3	-0.8
Aegon Active Value Fund II	MSCI UK Monthly Property Index (GBP)	-19.2	-2.0	2.4	-2.0
Sub-Total	**MSCI UK Monthly Property Index (GBP)**	**-14.5**	**2.7**	**6.4**	**2.8**

2023 was a tough year for property managers, with rising interest rates putting pressure on capital values, increasing borrowing costs, leading to a fall in returns. Against this backdrop, all the managers have delivered negative absolute returns (other than Colliers Pooled Property), but have outperformed their respective benchmark, with the exception of the ex-Aegon Active Value Fund II (now managed by DTZ). Absolute performance since inception has been positive for all managers.

We note the Aegon funds have been handed over to DTZ as a result of the exit by Aegon from direct commercial property fund management in UK, which is already in progress. This arrangement is completely independent of DTZ's future involvement in other parts of the property portfolio, which are referred to below. The Aegon funds are closed-ended and are well past their investment periods, and as cash distributions are made these are expected to be 'recycled' into the other parts of the property portfolio.

We have no other concerns with any of the managers, in terms of changes in personnel, changes to philosophy or any other potential red flags.

Activity Over 2023

In 2022, we undertook an in-depth review of the Fund's property allocation. We concluded that a 10% strategic allocation to the asset class was appropriate and sufficient to build a well-diversified portfolio with an appropriate risk/return profile.

We recommended that new commitments to UK direct property be made through the LGPS Central UK Property fund, to be managed by DTZ. We also recommended that responsibility for indirect property investments should transition to La Salle and that its mandate be widened to provide increased diversification globally. Implementation of these recommendations is in progress.

A £120m commitment to the UK Central UK Property Fund was approved by the ISC at the April 2022 meeting and has now been fully committed by the Fund and would expect this to be drawn by DTZ over 2024.

Recommendations

We recommend the Fund should maintain the target allocation to Property at 10%, and remain comfortable with the structure agreed in the 2022 review.

We recommend that some of the money due to be returned from the Aegon funds is reinvested with La Salle, as per previously agreed changes. This commitment can be made in 2024.

Work was undertaken as part of the previous Property review to ensure the agreed changes were supportive of the Fund's Net Zero strategy.

10 Higher Yielding Credit

Investment Objective

The Fund invests in higher yielding credit to provide a high-income yield and to diversify the risks associated with the Fund's allocation to growth assets.

The Fund has a strategic allocation of 19.5% to higher yielding credit markets, comprising 9% liquid multi-asset credit and 10.5% private debt, which is part of a wider allocation to income-focused, return-seeking assets.

Below is a summary of the original rationale for investing in this asset class, and its continued validity:

- Exposure to alternative risk premia, such as complexity risk (CLO/ABS, Special Situations Financing), liquidity risk (private credit) and emerging market sovereign/policy risk. These sources of additional return make the associated asset classes attractive on a relative value basis.

- Attractive income yield – Credit risk is greater in this part of the spectrum and, consequently, so are the associated returns on offer. This year spreads, along with sovereign bonds yields, have continued to rise, providing attractive entry points relative to history. The deterioration in the macro outlook may result in higher default rates and further spread widening, although we note that corporate balance sheets are generally stronger, and the average credit quality of speculative grade credit markets better, than in previous downturns.

- Potential diversification – Certain segments of higher yielding credit markets continue to offer exposure to different economic sectors and/or are subject to different return drivers. This includes a mixture of fixed rate and floating rate instruments, different duration exposures, and a combination of regional and sectoral allocations, all of which provide access to a variety of sub-investment grade borrowers across the market capitalisation spectrum. Multi-asset credit strategies, in particular, are well placed to utilise their flexibility to protect portfolios in various market environments, whilst also positioning to capitalise on market opportunities.

- Stronger downside protection – Private corporate lending can offer stronger downside protection than listed credit. Protection is afforded by better security, stronger control rights and greater transparency amongst other factors. This continues to be the case as lenders in the mid-market at least have generally maintained underwriting discipline so far in this cycle. In addition, as per our recommendations in the private credit review last year, allocations to real-asset debt should provide the aforementioned benefits, particularly around tangible security and access to a different set of borrowers.

Current Portfolio

The Fund's investments as at 30 June 2023 are shown in the table below:

Asset Class	Manager & Fund	Active/ Passive	Current Target Allocation	Actual Allocation	Breakdown	Above or Below Target
Emerging market debt	LGPSC Global Active EMM Bond Multi Mgr Fund	Active	-	2.0%	2.0%	+
Global credit – liquid sub inv grade markets	LGPSC Global Active MAC Fund	Active	9.0%	3.7%	3.7%	- -
Global credit - private debt (inc M&G/CRC)	Christofferson Robb & Company Fund - CRF3 (L)	Active	10.5%	8.1%	0.2%	- -
	Christofferson Robb & Company Fund - CRF5 (L)	Active			1.0%	
	M&G DOF Fund	Active			1.0%	
	Partners Group Private Debt Fund	Active			3.9%	
	LGPSC PD Low Return 2021	Active			1.0%	
	LGPSC PD High Return 2021	Active			0.5%	
	LGPSC Real Assets	Active			0.5%	
	Sub-Total	**Active**	**19.5%**	**13.8%**	**See above**	**- -**

Performance

The investment performance is summarised in the table below:

Asset Class	Manager & Fund	Benchmark	Performance 12m (Absolute) %	Performance 12m (Relative) %	Performance SI (Absolute) %	Performance SI (Relative) %
Emerging market debt	LGPSC Global Active EMM Bond Multi Mgr Fund	JPMorgan EMBI Global Diversified Index, hedged to GBP	7.6	5.0	-5.5	-1.5
Global credit – liquid sub inv grade markets	LGPSC Global Active MAC Fund	SONIA 3 Month + 4%	4.0	-3.7	-3.2	-9.1
Global credit - private debt (inc M&G/CRC)	Christofferson Robb & Company Fund - CRF3 (L)	Absolute Return +7.5%	19.5	12.0	13.3	5.7
	Christofferson Robb & Company Fund - CRF5 (L)	Absolute Return +8.5%	10.4	1.9	10.2	2.0
	M&G DOF Fund	SONIA 3 Month + 4%	-10.6	-18.3	1.4	-3.4
	Partners Group Private Debt Fund	SONIA 3 Month + 4%	6.0	-1.7	4.4	-0.4
	LGPSC PD Low Return 2021	7% IRR	17.8	10.8	10.2	4.2
	LGPSC PD High Return 2021	13% IRR	15.4	2.4	13.6	2.8
	LGPSC Real Assets	Absolute Return +5%	N/A	N/A	-2.3	-4.0
	Sub-Total	**Client Weighted Index**	**3.8**	**-4.4**	**3.8**	**-1.7**

Following a review of the private debt portfolio last year, we remain comfortable with the implementation strategies employed by the Fund and the associated level of commitments and allocations (albeit we comment further on CRC below). This is notwithstanding the concerns highlighted about M&G, whom we had previously downgraded and, consequently, where we recommended against any further allocations.

We also note Partners Group underperformance versus benchmark, as the funds have targeted SONIA + 4-6% net returns p.a., which we believe is a more appropriate benchmark than an absolute return, but a more challenging one. We note, however, that Partners Group are one of the few in the market who have a relative performance target.

With regards to emerging markets debt, we note the LGPSC Global Active EM Bond Multi-Manager fund has outperformed against its target over the last 12 months, but underperformed since inception. We remain comfortable with divesting this fund and gaining exposure to to the asset class via multi-asset credit.

With regards to the multi-asset credit exposure, which is achieved through the LGPS Central Global Active Multi-Asset Credit fund, we note continued underperformance relative to the benchmark and target. Both underlying managers under-performed. However, there is a misalignment between the fund's floating rate benchmark and the largely fixed income markets in which it invests, so it is hard to draw meaningful conclusions about performance over the short-term. We note the fund has performed, based on LGPS Central's analysis, in line with the asset markets in which it invests.

Activity Over 2023

Commitments were approved to the LGPS Central Private Debt (Low Return) sub-fund (£100m) and Private Debt (Real Asset) sub-fund Fund (£180m) during the year and await the next vintages to be formally launched by Central.

Strategic allocation to MAC

By way of reminder, in our 2023 review we recommended increasing the allocation to Multi-Asset Credit to 9%. Our analysis showed that this would improve projected risk-adjusted returns over the long-term, as well as reducing portfolio complexity and governance requirements.

We recommended deferring implementation to allow for a number of factors, including of particular relevance:

- Allowing for greater confidence in the structure, process and prospective performance of the Multi-Asset Credit fund to be gained; and
- Allowing for the short-term outlook for sub-investment grade credit to improve (we had a negative short-term outlook for the asset class at that point due to the recession expected in 2023 across most developed economies).

The Fund currently remains underweight to the strategic MAC allocation by c5%. We have considered whether the strategic allocation to MAC is still appropriate taking into account market developments, the latest market outlook, and the due diligence refresh on the LGPSC MAC product.

General strategic suitability of MAC relative to other options

In considering whether the planned increase to the MAC allocation is suitable, we have considered whether, given current risk and return views, there are any other options which we feel could lead to better outcomes. We did so by refreshing the modelling carried out last year.

The options we have considered for the 5% allocation earmarked for MAC are:

1. Maintain the MAC allocation at 4%, and leave the capital in equities
2. Increase MAC allocation to 9% (as per last year's recommendation)

3. Leave the MAC at current allocation levels, but allocate the 5% in other assets with comparable risk/return profiles, for example private credit, real asset backed debt, Insurance-Linked Securities (“ILS”).

The findings of our investigations were that there was no compelling case for investing the 5% allocation in any of the alternative asset classes (including leaving in equity), as opposed to following the current strategic allocation and moving into MAC.

We found that there was possibly a marginally better risk and return profile if we instead allocated some of this 5% to private credit or ILS, however the case was not strong enough to lead us to recommend changing course, particularly bearing in mind that adding a new asset class would increase portfolio complexity and governance requirements.

Current outlook for MAC

Our current market outlook for multi-asset credit at the end of September 2023 remained cautious. Speculative-grade default rates have risen above long-term average levels but given strong corporate balance sheets and unexpected economic resilience in the US, defaults are only expected to rise a little further. However, high yield bond spreads at long-term median levels provide little additional compensation against a greater-than-expected rise in defaults. Loans are more exposed to rising borrowing costs and forecast defaults are expected to be higher in this market. As a result, loans spreads are higher.

Due diligence refresh on LGPSC MAC product

This work is complete, and detailed in our separate document “LGPS Central Product Assurance Review – Multi Asset Credit sub-fund” dated November 2023. In summary:

We still think the LGPSC MAC product is a suitable investment.

Whilst we are comfortable with the processes followed by LGPS Central to select appropriate asset managers, to provide ongoing monitoring and to appropriately structure fund products, and have not identified any points that would prevent us from recommending the Fund make an allocation to the LGPS Central MAC sub-fund, we do have some concerns as set out below:

- *Ongoing governance at the firm given, high level of turnover within the executive committee, exemplified by the recent departure of CEO, and with an interim CEO currently in place. We understand a permanent CEO is due to be appointed shortly and would recommend the stability of the leadership team be closely monitored for further change.*
- *Low tenure of some members of the executive committee.*
- *Ongoing risk of staff turnover within the investment teams given LGPS Central must compete with the remuneration policies of traditional investment managers (although we note that turnover dropped over 2023).*

We recommend that the Fund should proceed with the +5% increase in the allocation to MAC agreed at the last strategy review. We also recommend the increase be implemented by additional commitments to the LGPSC MAC fund, funded from listed equities/targeted return and by divestment from LGPSC’s standalone Emerging Market Debt fund.

In terms of timing, we recommend that the increase of MAC to strategic allocation takes place over 2024, split equally across four phases and therefore completed by December 2024. However we recommend this is subject to tactical views at the point of implementation of each phase, as well as increased confidence in the LGPS Central product.

Work was undertaken as part of the previous MAC review and recent due diligence refresh to ensure the agreed changes were supportive of the Fund's Net Zero strategy.

Distressed debt

We have considered the case for whether distressed debt should still form part of the portfolio.

There is a current view from some managers that stress is building up in the system, which should lead to more opportunity for things like rescue financing and capital solutions. Some companies with debt issued at high leverage will be finding debt service difficult in a much higher interest rate environment. Distress would therefore be expected to come further down the line as a result.

However, in our view, distressed debt should be considered more of a shorter-term holding, with relatively short windows to find compelling opportunities. This perhaps makes it less suitable for a stand-alone, long-term strategic allocation, as the need to constantly monitor conditions would lead to a higher governance burden.

An opportunistic allocation to distressed debt does have a place in the portfolio more generally. A wider mandate of opportunistic debt which encompasses the potential to allocate to distressed debt would take the pressure off the Fund to time the market correcty. This is in the remit of the LGPSC Private Debt High Return Sleeve in which the Fund already invests, although we are aware that distressed debt was excluded from the original mandate.

We therefore recommend that the current allocation is allowed to wind down. However we recommend that distressed debt is kept on the radar in case future opportunities arise.

We recommend that the Fund explores with LGPS Central whether allocations to distressed debt could be built into its Private Debt (High Return) programme, which would reduce the need for the Fund to time its allocation to this class.

If distressed debt allocations were to be investigated further, consideration would be given as to whether any changes were supportive of the Fund's Net Zero strategy.

We note that the Fund could consider allocating to a third party opportunisitic credit manager with the ability to allocate to distressed debt when opportunities arise. This would reduce the need for the Fund to time its allocation to this class. However in the first instance we recommend exploring with LGPS Central as set out above.

CRC

The Fund has invested in the previous CRF3 and CRF5 vintages of this strategy.

Both are due to return capital in 2024, and so the Fund needs to consider whether to maintain an allocation to the strategy. This would be by way of a commitment to the CRF6 strategy, or an alternative manager.

We performed due diligence on the CRF5 strategy, but we have not formally carried out due diligence on the CRF6 strategy as yet. Should the Fund decide to invest in CRF6, we would be able to refresh our due diligence on the new iteration.

It is likely that refreshed due diligence would find CRC still suitable for investment. However, we are aware that there are now potentially attractive alternatives and we recommend that those are considered prior to making a further commitment.

We therefore recommend that a review be undertaken in 2024 to compare the CRC proposition with the alternatives we have identified. Should a new manager be identified which would be preferable to CRC, we would recommend that all of the allocation required for investment in RegCap in 2024 (amount to be confirmed but expected to be c£40m) be allocated to this new manager. We note that this would create additional governance challenges, and we would factor that in when making a final recommendation. As

part of this review consideration will be given as to whether any proposed changes are supportive of the Fund's Net Zero strategy.

11 Protection Assets

Investment Objective

The Fund invests in protection assets in order to reduce overall investment risk and to mitigate the impact of fluctuations in the value of the Fund's liabilities, thereby protecting the funding position. Protection assets are considered to be low risk because there is a very high likelihood of receiving the principal and interest payments due. Protection assets protect the funding position because their value tends to rise alongside the liabilities when interest rates and government bond yields fall. However, the reverse is also true. In 2022/23, as interest rates rose, the value of protection assets fell sharply, but the value of the liabilities fell further, leading to an improvement in the funding position.

Current Portfolio

The Fund's investments as at 30 June 2023 are shown in the table below:

Asset Class	Manager & Fund	Active/ Passive	Current Target Allocation	Actual Allocation	Above or Below Target
Inflation-linked bonds	Aegon Index-Linked Fund	Active	3.50%	4.00%	+
Investment grade credit	Aegon Global Short Dated Climate Transition Fund	Active	0.50%	1.00%	+
	LGPSC Investment Grade Credit Fund	Active	3.25%	2.50%	-
	Sub-Total	**Active**	**3.75%**	**3.40%**	**-**
FX hedge	Aegon Currency Hedge Fund	Active	0.75%	0.90%	+
Cash	Cash Fund		0.00%	0.90%	+

The Fund's current protection portfolio comprises index-linked bonds (predominantly sovereign issuance), corporate bonds and cash. The corporate bond mandates are invested globally in investment grade companies.

Performance

The investment performance is summarised in the table below:

Asset Class	Manager & Fund	Benchmark	Performance 12m (Absolute) %	Performance 12m (Relative) %	Performance SI (Absolute) %	Performance SI (Relative) %
Inflation-linked bonds	Aegon (Index-Linked Fund)	FTSE All Stocks Index Linked Index	-16.5	0.5	3.6	0.3
Investment grade credit	Aegon Global Short Dated Climate Transition Fund	SONIA 3 Month +1.25% (Rolling 3-year period gross of fees) (GBP)	0.6	-4.3	-1.2	-4.3
	LGPSC Investment Grade Credit Fund	Central Corporate Bond Blended	-3.3	0.0	-3.7	-1.4
	Sub-Total	**Client Weighted Index**	**-2.2**	**-1.2**	**-3.0**	**-2.2**
FX hedge	Aegon Currency Hedge Fund	SONIA 3 Month	-2.8	-6.4		
Cash	Abrdn Sterling Liquidity Fund (plus cash sweep on GBP balances held with the custodian into the JP Morgan	SONIA 3 Month	2.8	-0.8	1.1	0.2

Asset Class	Manager & Fund	Benchmark	Performance 12m (Absolute) %	Performance 12m (Relative) %	Performance SI (Absolute) %	Performance SI (Relative) %
	GBP Liquidity LVNAV Fund)					

The Aegon Index-Linked Bond fund has outperformed its benchmark over the year to 30 June 2023 and since inception.

The LGPS Central Investment Grade Credit fund has performed in line with its benchmark over the year, but has under-performed its benchmark since inception (March 2020). Of the two underlying managers, more detailed reporting provided by LGPS Central confirms that this underperformance since inception can largely be attributed to Fidelity (with Neuberger Berman outperforming the benchmark but modestly underperforming vs target).

The Aegon Global Short-dated Climate Transition fund has significantly under-performed its benchmark over the year and since the Fund invested, which is due to the material rise in short-dated bond yields adversely affecting the value of the fund's holdings relative to its cash-plus benchmark.

The performance of the Aegon Currency Hedge fund reflects the mark-to-market position on the Fund's currency hedging programme. Performance has improved over the last 12 months as sterling rose and the sterling value of assets denominated in foreign currencies fell. However it is important to note that the mark to market performance of the hedge should not be considered in isolation. Any profits (losses) are designed to offset losses (gains) elsewhere in the asset portfolio. Aegon are reporting an overall profit of 0.85% p.a. since inception (commencement of discretionary strategy on 1 January 2014) in their reporting, which is acceptable given that the programme aims to focus on downside protection rather than currency speculation.

We are not aware of any material adverse developments at Aegon or LGPS Central regarding these investments.

Activity over 2023

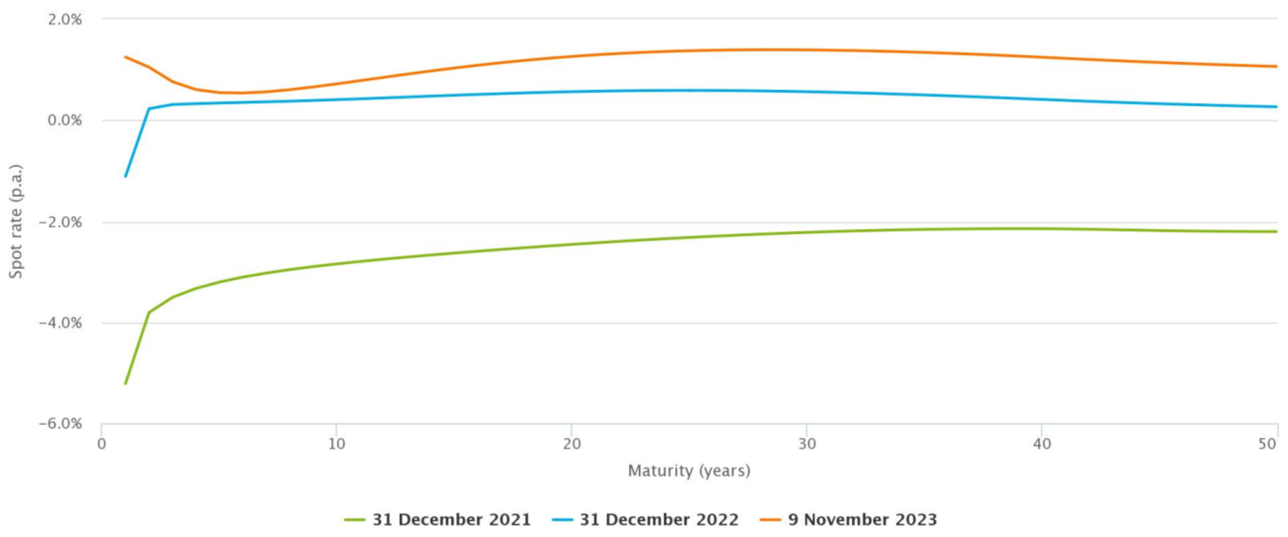
Over 2023, the Fund reviewed the structure of its protection portfolio. It was agreed to:

- Adopt a balanced exposure to ILB and IGC allocating 3.25% and 3.75% respectively.
- Defer the reallocation of capital until the short-term outlook of IGC improves.
- Improve the flexibility in the Aegon Index-linked bond mandate to allow investment in overseas bonds to enhance returns and improve downside protection at times of market stress.
- Rationalise the Fund's FX hedging arrangements.

Market Background

Interest rates and government bond yields have risen sharply since the start of 2022 as Central Banks sought to control rising inflation. In the UK, this trend accelerated in September 2022 after the mini-budget with its large unfunded fiscal package was introduced. Yields initially fell back after the majority of the mini-budget was reversed, but have again trended higher over 2023, particularly at longer terms, as Chart 7 demonstrates.

Chart 7: Sterling real yields, spot, during 2023

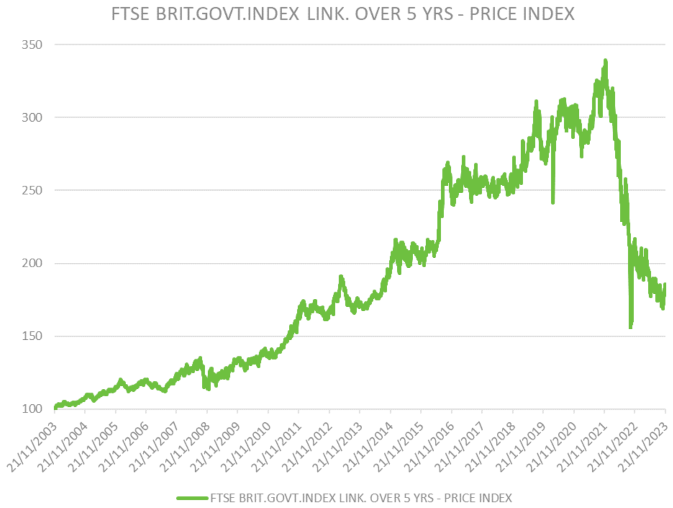


Over 2023, actual inflation readings have trended downwards as seen in Chart 2 (Market Update section), however higher inflation is now expected to persist for longer than previously thought. This leads to an expectation that interest rates will stay 'higher for longer'. Therefore, although UK gilt yields fell at shorter terms, longer-term yields rose.

While there is a current expectation for interest rates to remain elevated in the backdrop of weak real growth outlook and sticky inflation, the outlook for investment in gilts has improved. This applies both from a tactical perspective (as outlined in our market update, in our view it is unlikely that interest rates will remain as high for as long as suggested by markets), but also from a strategic (longer-term) viewpoint i.e. the long-term yields which an investor can 'lock into' through investment in gilts is now looking more appealing.

The chart alongside considers the price movement long-dated index-linked gilts. This highlights just how sharply the price of these investments has fallen; following 18 years of almost continual price rises to the end of 2021 the price of such gilts has almost halved.

As a result, protection assets now represent better value than they have for many years. The Fund is therefore in a position to lock in some of the funding position gains seen recently by increasing the protection assets allocation, so should interest rate expectations fall and liabilities rise again, the protection assets will provide greater protection of the improved funding position.



Should the Fund consider increasing its allocation to protection assets?

In the 2023 SAA paper, we outlined a number of considerations when deciding whether to increase the allocation to protection assets and concluded that the question merited further analysis once long-term real yields rose above +0.5%. These levels have been breached and, therefore, we have undertaken further analysis on this question below.

The current protection assets make up 7.5% (£431.9m) of the overall portfolio. We have modelled strategies with increasing levels of protection assets (with increased allocations split 50:50 between ILB and IGC) starting from the 2023 SAA target allocations. We increased protection assets by 5%, 10%, 15% and 20% of the total allocation, reducing the allocation to all other asset classes pro-rata and assessed the impact of this on the expected return and funding level as at 30 September 2023.

Strategy	Target allocation to IGC	Target Allocation to ILB	Other assets	Target Allocation to protection assets, £m
2023 Strategy	2.75%	4.50%	92.75%	416.9
Protection 1	5.25%	7.00%	87.75%	704.4
Protection 2	7.75%	9.50%	82.75%	991.9
Protection 3	10.25%	12.00%	77.75%	1,279.4
Protection 4	12.75%	14.50%	72.75%	1,566.9

Note on modelling approach: We have not undertaken full Asset Liability Modelling ("ALM") of the Fund in the new market environment as this was not within the scope of the current review. We have considered the impact of the increase in interest rates and government bond yields, on the distribution of returns from the Fund's portfolio and assessed the impact on the current funding position, considering past service liabilities only. The results of this limited analysis should therefore be viewed as indicative. Appendix 2 contains further detail on the modelling approach.

We reviewed the results through three lenses (with a fourth contained in Appendix 3):

1 The probability of achieving the portfolio return of 4.3% p.a. needed to be fully funded based on 20-year expected returns analysis

2 The distribution of return outcomes for the portfolio over the next 20 years, at the 75% and 95% likelihood levels

3 The expected return over a shorter horizon, of 5 years, again at the 75% and 95% likelihood levels

These metrics are different to the ones which we have previously used to assess the risk and return characteristics of different strategies; namely Likelihood of Success (ie the likelihood of being fully funded in 20 years' time) and Downside Risk (i.e. the average funding level in the worse 5% of outcomes over 5 years), as these can only be generated by full ALM. However the modelling output is still meaningful in terms of assessing the risk and return characteristics of different strategies over relevant time periods.

1 The probability of achieving a return of 4.3% p.a. over the next 20 years

As at the 2022 valuation date, our modelling indicated that the annualised return over 20 years required to be 100% funded at that date was 4.1% p.a. Due to actual returns since March 2022 being lower than this, the return required to be fully funded as at September 2023 has increased to 4.3% p.a., assuming the same member profile.

The table below shows the likelihood of achieving the return required to be fully funded over 20 years (4.3%). **Increasing the allocation to protection assets improves the likelihood of achieving the required return, albeit marginally.**

Strategy	Likelihood of achieving the required annualised asset return in 20yr
2023 Strategy	93.6%
Protection 1	93.8%
Protection 2	94.0%
Protection 3	94.2%
Protection 4	94.4%

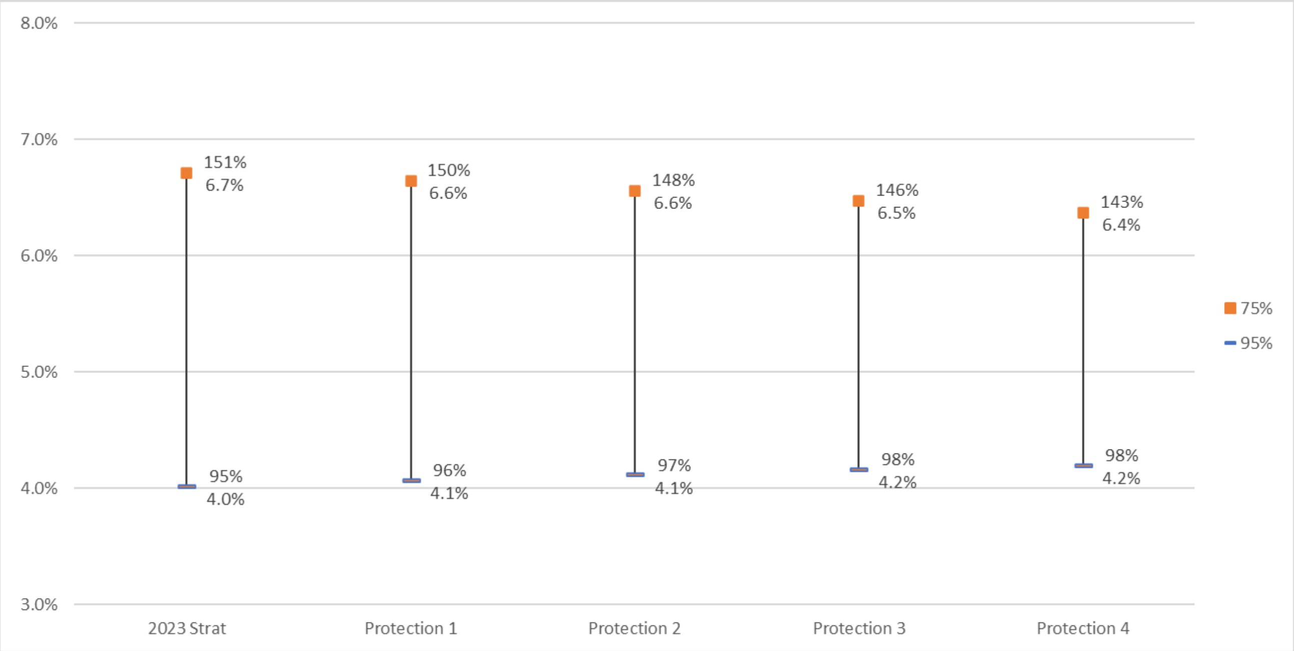
As mentioned earlier, the chance of achieving a return of the order 4.3% p.a. has increased materially since March 2022, largely owing to the significant increase in “risk free rates” over the period. Increasing the protection assets further increases the chance of achieving this return, as it reduces the likelihood of the worst outcomes materialising.

2 The distribution of expected return outcomes for the portfolio over the next 20 years

The graph below shows the expected asset returns with 75% and 95% likelihood for each strategy, over a 20-year period. A 75% likelihood aligns with the Fund’s preferred probability to target for funding purposes. The 95% likelihood asset returns shows how far below a ‘prudent’ estimate the 20-year asset return could be, should a ‘1-in-20’ bad case scenario occur (5% tail risk). We also show the funding levels associated with each of these asset returns.

Each of the graph’s labels show the estimated funding level that could be achieved based on 30 September 2023 data (top number) if the annualised asset return over 20 years is achieved (bottom number).

Chart 8: Annualised expected asset return spreads over 20 years



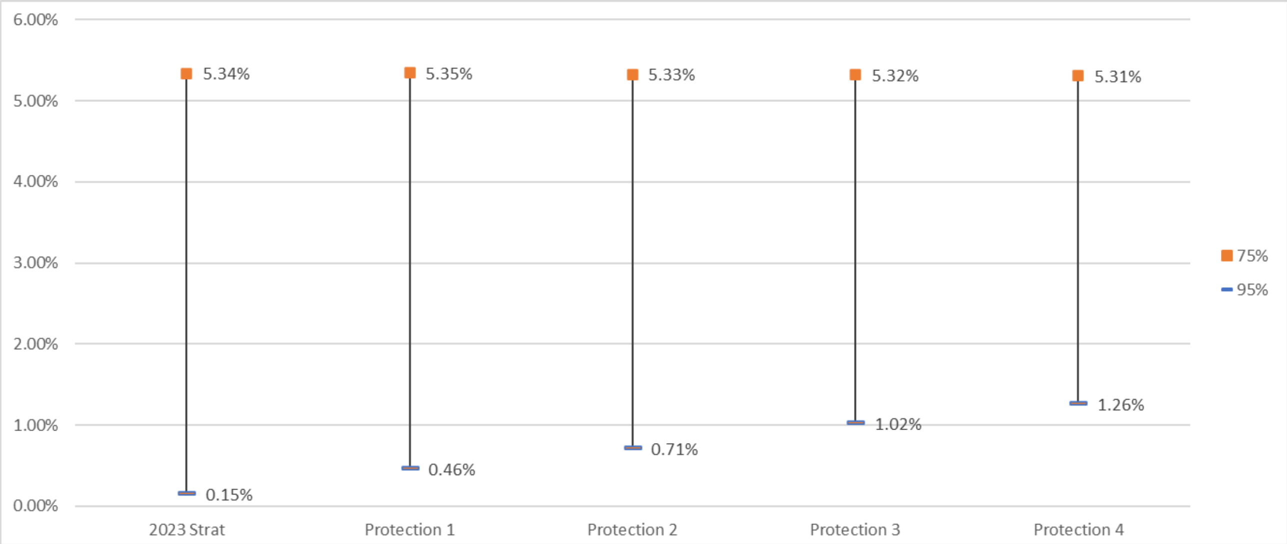
The graph shows that as the allocation to protection assets increases, the downside (95% likelihood) asset return and funding level increase i.e. downside risk is reduced, albeit marginally. At the same time, the expected return (75% likelihood) and hence funding level reduces, although the Fund remains well above the 100% funding level. It could be argued that there is room to reduce expected returns (at least in relation to past service liabilities) with the highest modelled allocation to protection assets still leaving the Fund 143% funded at the 75% likelihood level.

3 The expected return over a shorter horizon, of 5 years, at the 75% and 95% likelihood levels

As seen above, the benefits of increasing protection assets is less pronounced over a 20-year period, which is expected as markets are expected to recover from any adverse shocks over the longer-term. It is over shorter time periods where the benefits of increasing protection assets are most easily seen.

The chart below shows the expected return over 5 years with a 75% likelihood and a 95% likelihood (5% tail risk). It shows that at the 75% likelihood, the annualised returns are similar across all strategies over a 5-year period. At the 5% tail, the expected return increases materially as the allocation to protection assets increases.

Chart 9: Annualised expected asset return spreads over 5 years



Therefore, when projected over a 5-year period, increasing protection assets improves downside (tail risk) outcomes and hence reduces risk, without harming expected returns potential at the 75% likelihood level.

To put this in context, based on current assets of £5.8bn this could result in the asset value being c£330m higher over a 5-year period, should a 1-in-20 downside scenario play out over the next 5 years.

Note we haven't considered liability movements in this section (and hence impact on funding level) under such scenarios as this was out of scope. We have run some more approximate modelling which provides an indication as to the impact on movements relative to gilt-based liabilities and this can be found in Appendix 3.

Conclusions

We have assessed the impact of increasing the exposure to protection assets for the Fund. The main conclusions were as follows:

- Over a 20-year period, increasing the allocation to protection assets modestly increases the likelihood of achieving the required return to be fully funded, but reduces the expected return at the 75% likelihood expected returns and hence the funding level when calculated using current methodology (albeit still remaining materially in surplus);
- Over shorter time periods e.g. 5 years or less, increasing the protection assets allocation leads to a more material reduction in downside risk with little impact on expected returns (at the 75% likelihood). This improvement in tail risk protection may be increasingly useful in volatile markets and to help protect the Fund's improved funding position.
- These results would be supportive of a moderate increase in protection assets, although they are not clear cut, so we would not recommend implementing such a change without fully considering the impact on both assets and liabilities (the modelling here is approximate and only considers asset outcomes).
- The ALM work due to be undertaken next year to support the 2025 valuation would confirm whether or not this change can be justified, however the results of this will not be available until around September 2024. In the meantime market movements could impact on whether the opportunity to increase protection assets remains attractive.

Given these findings, we recommend that the Fund looks to take earlier advantage of the opportunity offered by current high yields and the materially improved funding level.

We recommend that the possibility of an increase in the allocation to protection assets be validated by updating the full ALM analysis of the Fund's portfolio in Q1 2024. This will confirm whether or not this change can be justified. This analysis would also address our concern that as a result of this change the Fund may no longer have suffieicnt growth assets to meet current and future liabilities.

As part of this review consideration will be given as to whether any proposed changes are supportive of the Fund's Net Zero strategy.

Reallocation of capital between ILB and IGC

As noted earlier, it was previously agreed to defer this reallocation of capital until the short-term outlook for IGC had improved relative to ILB. Our Q4 capital markets outlook has not been finalised at the time of drafting this paper, however at this stage we do not expect a material improvement in outlook for IGC. We also note further the above recommendation to explore an increased allocation to protection assets generally, to be carried out in the near future.

We therefore recommend that the reallocation of capital between ILB and IGC is deferred slightly longer, and reconsidered alongside the exploration into a potential increased allocation to protection assets.

This exploration would include consideration of how to implement the increase the protection assets allocation, should an increase be deemed suitable. This includes consideration of any new protection assets components, for example buy and maintain credit or any alternative protection assets as covered in the next section.

Alternative protection assets

Whilst the current Protection Assets (ILB and IGC) do reduce funding level volatility, the mark to market value of these assets can fluctuate materially. This has been brought into light over the last 18 months where rising interest rates have led to material falls in the value of both ILB and IGC assets. Looking at the asset values in isolation, these assets would therefore appear to have performed poorly recently.

Given the increased focus on protection assets, and the potential to increase the allocation to them, it is appropriate to consider whether other types of protection asset could be introduced to improve the resilience of the portfolio particularly with respect to tail risks.

The ideal protection asset would reduce volatility (ie the normal fluctuations in asset values or funding level from year to year) and tail risk (ie the fall in asset values or funding level in extreme downside scenarios), whilst protecting against a range of specific risk factors (eg high inflation or credit default). Unfortunately, no such asset exists; most protection assets offer good protection against some of these risks), with at best limited or indirect protection against the rest. Finding the right protection asset therefore depends on your priorities i.e. what are you looking to protect against the most.

The tables below consider the pros and cons of different types of Protection Assets, grouped into:

- Traditional: i.e. the classes which the Fund already makes use of
- Alternative: other classes of protection asset which the Fund doesn't currently make use of, but which could further diversify risk
- Other options: asset classes which we wouldn't necessarily classify as protection assets, but whose characteristics may lead us to consider them as offering some form of protection against tail risks.

We consider below the protection provided by a range of asset classes, as well as some of the other considerations such as ease of implementation.

Traditional Protection Assets

	Index-linked Gilts
What protection is provided?	Reduces funding level volatility. Protects against **unexpected** UK inflation, ie higher inflation than expected at the time of purchase, which can be very helpful given that LGPS inflation exposure is uncapped. Very low risk of default. May diversify equity risk.
What additional risks does the solution introduce?	Lower asset volatility than other asset classes, but potential for heightened volatility in deflationary environments or when rates are rising fast. Technical headwinds from investor concentration.
When and how does the protection work, and is it robust?	Value moves (up or down) in line with the liabilities, as interest rates/rate expectations change. Diversification fails when equity and bond markets are correlated
What are the expected returns / costs?	Low yields relative to other classes. Low ongoing management fees.
What are the governance implications?	Simple / existing asset class so very little governance impact. Very easy to implement.

	Investment Grade Corporates
What protection is provided?	Partially reduces funding level volatility. Low risk of default. May diversify equity risk.
What additional risks does the solution introduce?	Lower asset volatility than other asset classes, but potential for heightened volatility in deflationary environments or when rates are rising fast. Credit risk (relative to gilts, although default rates have been historically low even in periods of market stress). Value eroded by high inflation. Increased liquidity risk (relative to gilts).
When and how does the protection work, and is it robust?	Value moves (up or down) in line with the liabilities, as interest rates/rate expectations change (note: corporate bonds typically shorter duration that gilts, so their sensitivity to interest rates is weaker). Diversification fails when equity and bond markets are correlated
What are the expected returns / costs?	Usually lower yields than other asset classes, but higher than gilts. Low ongoing management fees.
What are the governance implications?	Simple / existing asset class so very little governance impact. Very easy to implement.

	Cash
What protection is provided?	Lowers portfolio asset volatility. Reduces liquidity risk.
What additional risks does the solution introduce?	Increases funding level risk. Financial counterparty risk (albeit can largely be diversified). Vulnerable to high inflation albeit partly protected when interest rates rise (as typically held in floating rate instruments).
When and how does the protection work, and is it robust?	Asset volatility is practically zero.
What are the expected returns / costs?	Returns close to current base rates. Very low ongoing management fees.
What are the governance implications?	Simple / existing asset class so very little governance impact. Very easy to implement.

Alternative Protection Assets

	Gold
Description	Gold held directly, or more usually via ETFs or futures.
What protection is provided?	Protects asset value against tail risks (eg failure of capital markets). Moderate protection against inflation; price of gold has risen faster than inflation over the long-term (see charts 1 and 2 below). Partly protects against funding level volatility as price typically negatively correlated with real yields (see chart 3 below). May diversify equity risk; correlation with equities has been low over time and gold has tended to perform well in equity down-markets (see charts 4 and 5). Holding physical gold protects against liquidity risk.
What additional risks does the solution introduce?	Significant volatility; spot price volatility over the last 35 years has been 15%, similar to that if the MSCI ACWI. Gold is denominated in USD, so basis risk vs liabilities.
When and how does the protection work, and is it robust?	Generally considered to be a “store of value” due to limited physical supply, underpinned by a range of industrial applications. Traditionally viewed as “safe haven” asset at times of economic/market crisis. Diversification benefit may fail when gold and equity markets are correlated. .
What are the expected returns / costs?	No yield so opportunity cost typically rises when interest rates/government bond yields rise. Cost of carry: when investing via futures the roll yield is typically negative (see chart 5), averaging -0.35% over the long-term. The roll yield for a commodity is the difference between the spot price return and total return. It is influenced by the net demand from producers and consumers seeking to hedge price risk, the cost of financing and storing the physical commodity and the supply/demand balance.
What are the governance implications?	Simple asset class. Could be implemented relatively easily e.g. through futures or physical gold ETFs, or maybe even direct holdings (though this is less common).

Inflation protection?

Chart 10 below looks at the performance of gold during periods of low, moderate and high inflation, in both real and nominal terms. It would be easy to deduce that gold can offer a positive real return in all inflationary environments, and in particular rallies in high inflationary environments. But the chart does not give the full picture:

Chart 10: Gold nominal and real returns as a function of annual inflation 1971-2022[4]

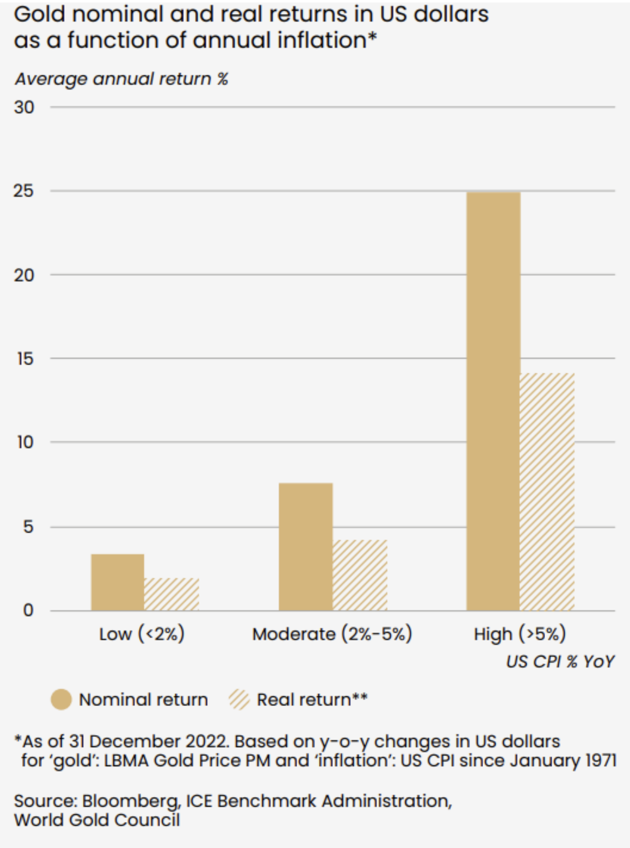


Chart 11 below shows the path of the gold spot price since 1969 in real terms (with rolling 12 month inflation also shaded for reference). Over the whole period, gold has strongly outperformed US inflation returning on average 7.3% vs 4.0% p.a.[5] However over some intervening periods it has clearly struggled and spot prices have generally been very volatile (20.1% p.a.).

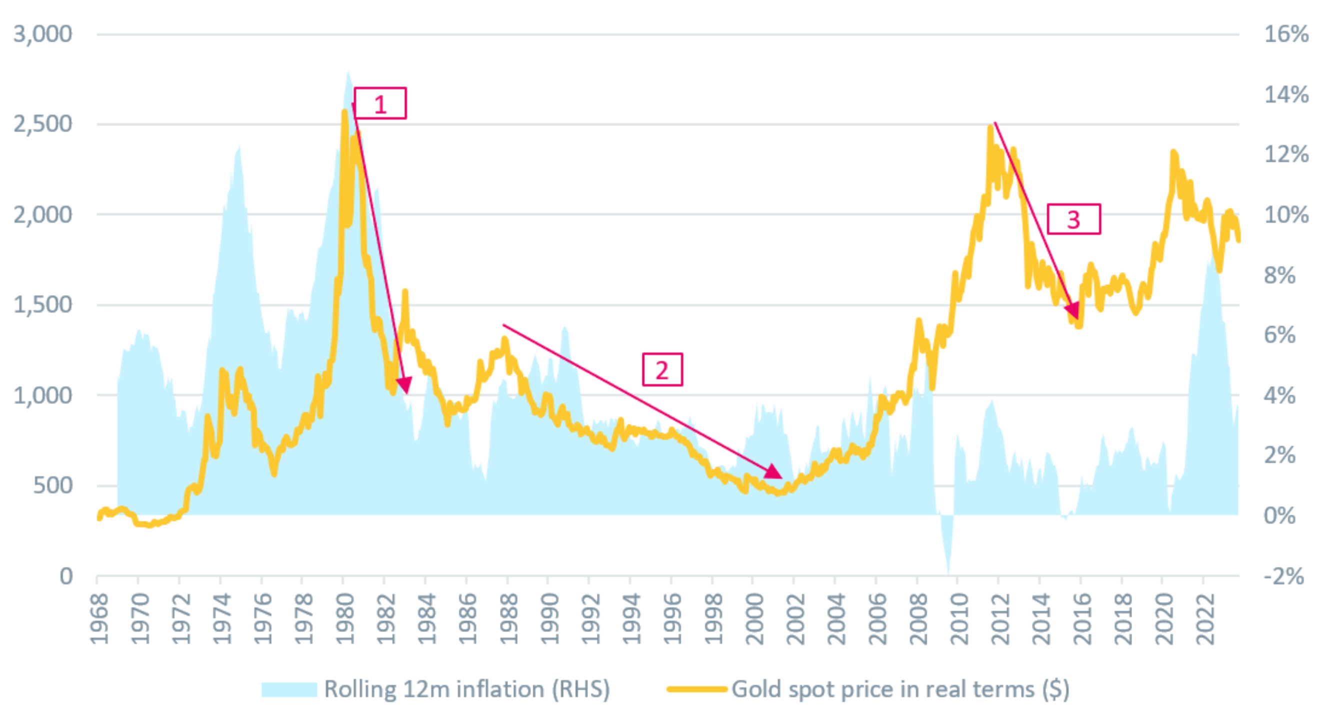
For example, it shows that gold prices rose even faster than inflation in the 1970s, but point 1 highlights a very sharp fall in the real value of gold of c61% between the start of 1980 and mid-1982. This comes over a period where inflation was falling from the highs seen around 1979 to early 1980, but was still high relative to historic averages.

The gold spot price then also declined in real terms during a subsequent period when inflation was more calm, indicated on the chart at point 2 by a c64% fall in value in real terms between the end of 1987 and mid-2001.

Point 3 also highlights a c44% fall in value in real terms between the mid-2011 and the end of 2015, again another period where inflation was running below historic averages. Most of this fall was seen during the period mid-2011 to mid-2013; a 2-year period where the real value of gold fell by c35%.

[4] Source: World Gold Council
[5] Source: Datastream, Hymans

***Chart 11: Gold real spot price vs annual inflation, 1971-2022*[6]**



One reason for this may be that, over the longer-term, spot prices are driven not only by inflation expectations but also by opportunity cost. Chart 12 below considers the relationship between the gold spot price and inverted real yields. Here we see that these were highly correlated over periods when the market was less worried about inflation (for example between 2007 and 2022), but can diverge when the market is more worried about inflation (e.g. since the start of 2022).

***Chart 12: Gold spot price vs US 10-year real yield, 1997-2023*[7]**

We therefore conclude that gold can be a good hedge when inflation is a problem, but opportunity cost can lead to it struggling when inflation isn't a problem.

Diversification and tail risk protection?

Gold has often been considered a 'safe haven' investment. However, we should consider how good a tail risk hedge gold is; for example does it always offer protection against sharp market selloffs.

[6] Source: Datastream, Hymans
[7] Source: Datastream, Hymans

Our own analysis indicates that the long-run correlation between gold futures and global equities (MSCI ACWI) is close to zero. Chart 13 below demonstrates that gold has historically become more negatively correlated with stocks in extreme market selloffs. It also suggests that it does this better than government bonds do, with US Treasuries becoming more correlated with stocks in those scenarios.

Chart 13: Correlation of gold and US treasuries vs US stocks in different market environments[8]

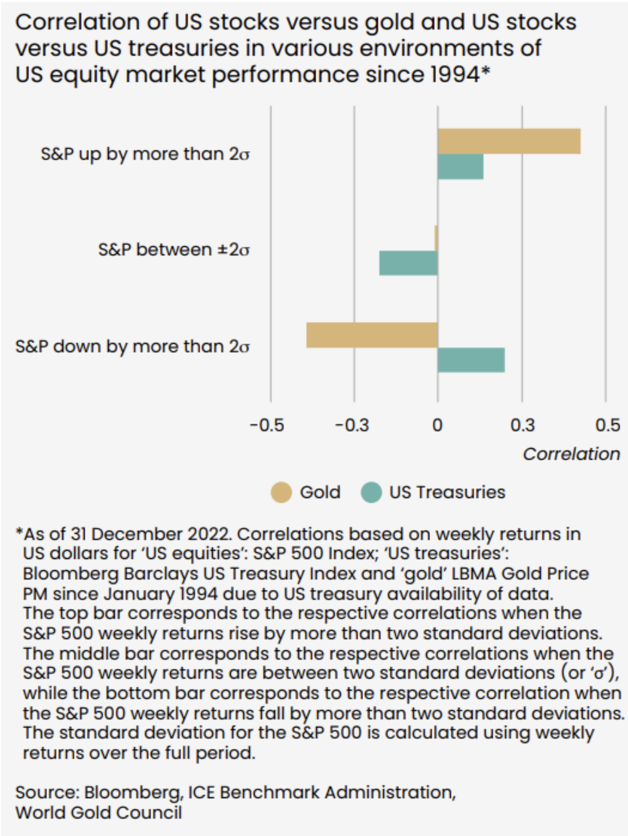


Chart 14 below looks at how gold performs in particularly large equity drawdowns / recoveries. This also demonstrates that gold has performed well under the largest market tail risk events in recent times, with positive or only marginally negative performance during the drawdown and some participation in the subsequent rebounds.

[8] Source: World Gold Council

Chart 14: Correlation of gold and US treasuries vs US stocks in different market environments[9]

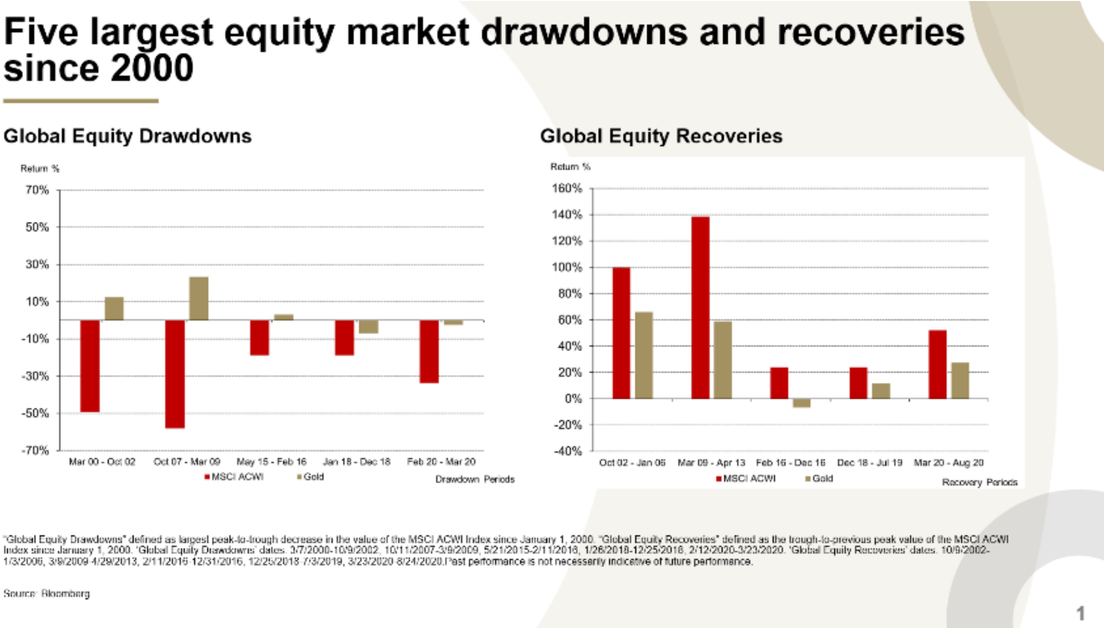


Chart 15 and Table 16 below compare how gold has performed during months where the MSCI has fallen by more than 5%. This covers a number of well known periods of market crisis e.g. GFC, Covid, dot-com bubble, Asian crisis.

Chart 15: performance of MSCI and gold in months where MSCI has fallen by at least 5%[10]

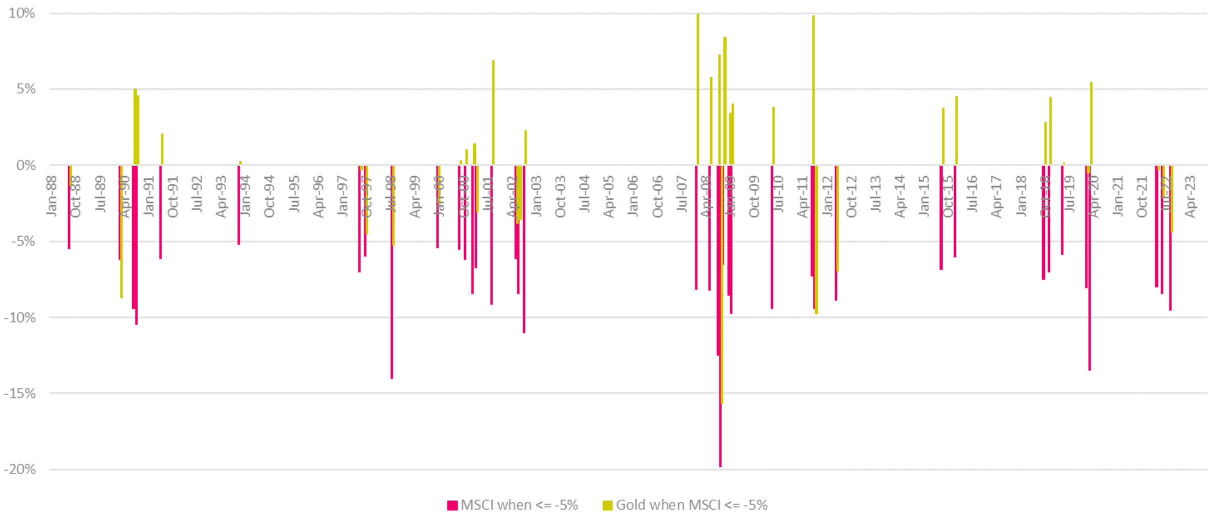


Table 16: closer look at the 39 months since 1988 where MSCI has fallen by at least 5%

During months where MSCI has fallen by at least 5%, the proportion of those months when gold has:	
Outperformed MSCI	95%
Not fallen by more than 50% of MSCI	85%
Performed positively	59%

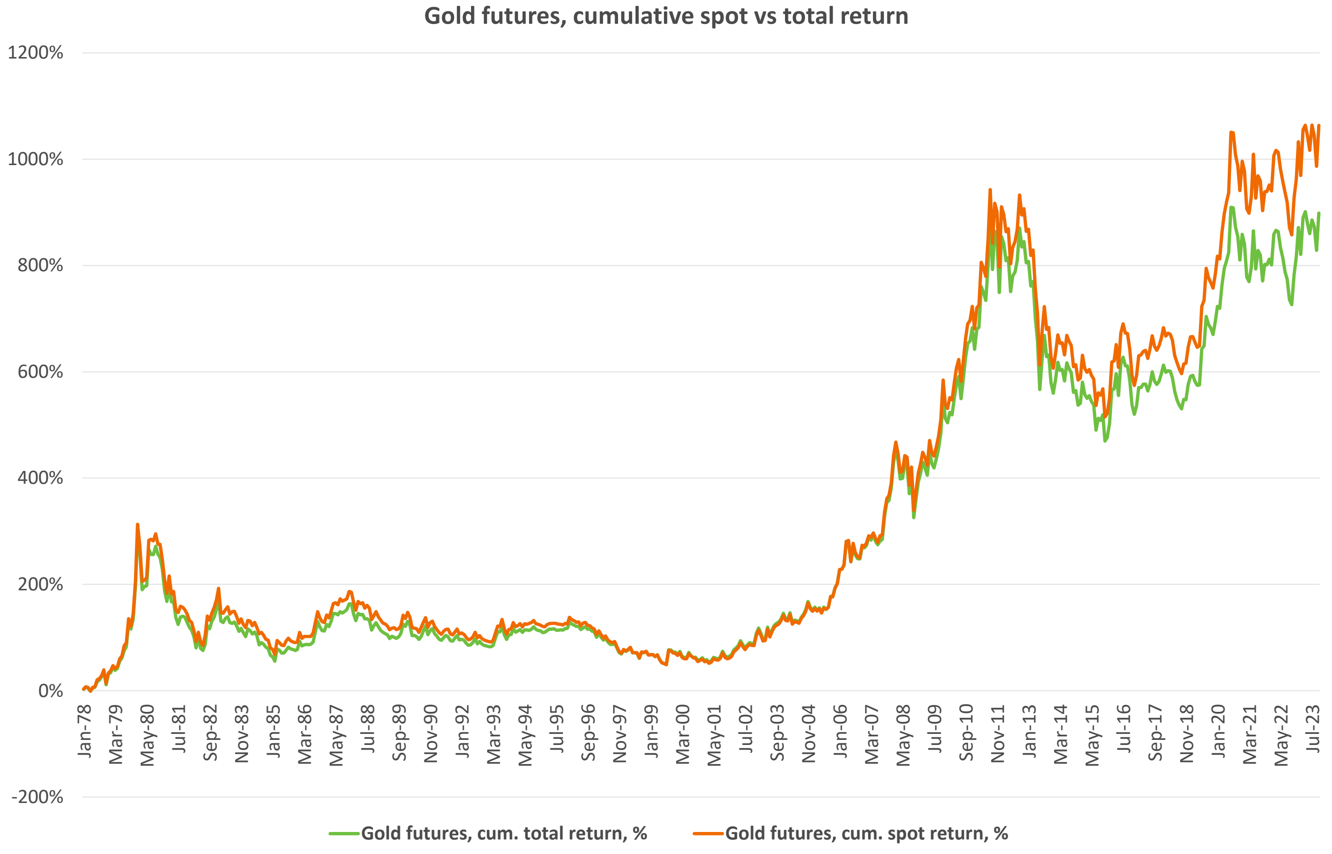
[9] **Source: Bloomberg**
[10] **Source: Datastream, Hymans**

We can see that, over this 35 year period, gold almost always performs better than MSCI during months of sharp downturn. In fact, not only does it outperform, it does so meaningfully e.g. high proportion where gold performs better than 50% of the MSCI fall, and over half where it actually performs positively. This is strong evidence that gold performs well during months where MSCI falls sharply.

We therefore conclude that gold has historically protected relatively well against a number of market crises.

Institutional investors typically gain exposure to commodities such as gold through indices that invest in near-term futures contracts. Maintaining exposure to commodities in this way tends to generate a ‘roll cost’ or ‘roll yield’, meaning the return from commodity futures may not exactly mirror changes in underlying spot prices. The roll yield for a commodity is the difference between the spot price return and total return. It is influenced by the net demand from producers and consumers seeking to hedge price risk, the cost of financing and storing the physical commodity and the supply/demand balance. The roll yield for gold is typically negative (see chart 17), averaging -0.35% p.a. over the long-term. This would indicate that the cost of carry has not historically been that large, albeit this changes over time and it can be seen from the chart that the difference has been greater in more recent years (e.g. since the start of 2008 the average roll yield has been -0.86% p.a.).

Chart 17: Gold futures spot vs total return[11]



We conclude that maintaining exposure to gold comes at a cost but not one sufficient to offset the benefits of the protection it provides against inflation and tail risks.

[11] **Source: Datastream, Hymans**

	Equity protection / options
Description	Derivative-based strategy intended to pay out when equity markets fall by pre-determined amounts over a specified period of time. Can be paid for either by way of a premium (i.e. much like traditional insurance), or by sacrificing upside potential.
What protection is provided?	Protects the value, and reduces mark to market volatility of the equity portfolio. Partially protects against tail risk, assuming financial markets continue to function.
What additional risks does the solution introduce?	Introduces roll risk – protection is for a fixed period of time, so the risk is that you need to roll at a time when protection is more expensive. Counterparty risk, though usually mitigated by clearing the derivatives through an exchange.
When and how does the protection work, and is it robust?	Works when equities fall materially over the term of the contract, providing direct protection. For example, imagine a derivatives strategy was designed to pay out when equities (of the same type already held) fell up to 30% over a specified period (say one year), ignoring how this is paid for here for simplicity: • If equities fell during the period by any amount up to 30%, then the strategy would provide a positive return equal to the negative return seen on the equities, leaving you with a flat return overall • If equities fell by more than 30% (say 40%) over the period, then the strategy would provide a positive return equal to a 30% loss, leaving you with a 10% overall fall relative to the 40% equity market fall • If equities rose over the period, the derivatives strategy would be worthless, and you would just receive the return on the equities held. The protection is robust in this respect, around the point of maturity. Works less well (from a mark to market perspective) when far from maturity. Equity protection can make sense under specific shorter-term situations, for example if a big equity market fall is expected soon, if you wish to protect the asset value in the run-up to a valuation point or a major employer exit, or you wish to protect the value ahead of private markets drawdowns. Over the longer-term, equity protection is less effective than simply reducing the allocation to equities.

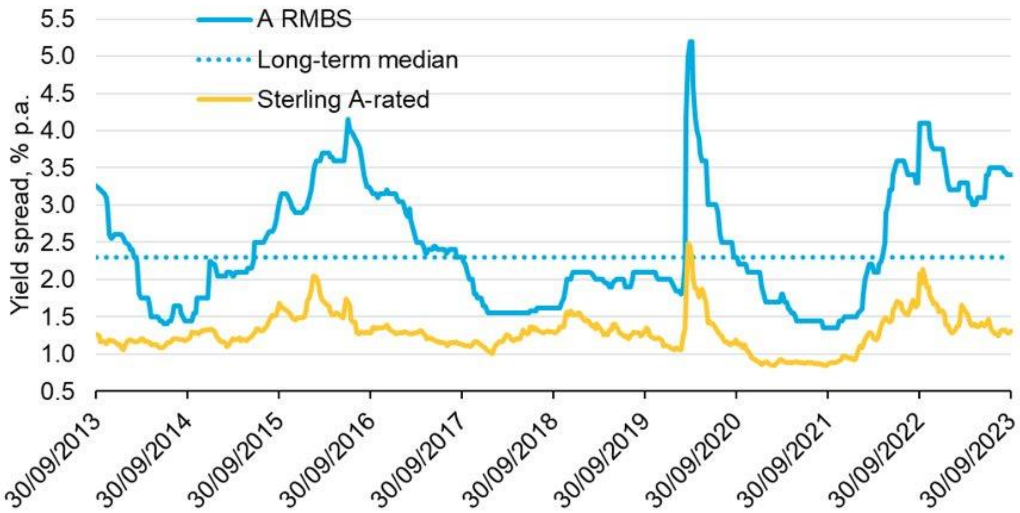
What are the expected returns / costs?	Drag on performance when markets performing strongly. We haven't carried out any detailed analysis in this area, and the precise impact would depend on the strategy chosen, as well as market pricing at the point of implementation. However recent pricing we have seen suggests that protection against falls in the MSCI World index of between -10% and -25% over a 12 month period could be paid for either: • By payment of a cash premium of 2.7%, or • By sacrificing returns above +16%. Costs are lower if implemented using vanilla indices.
What are the governance implications?	New, more complex asset class. Easy to implement, although needs considering on a regular basis, and especially towards maturity. Collateral management requirements.

Other options

	Asset-Backed Securities
Description	Investment grade securities (usually bonds) backed by a pool of underlying, cashflow generating debt. Underlying debt often takes the form of residential mortgages or consumer loans, but a wide variety of other assets can be financed. Securities typically pay a floating rate coupon.
What protection is provided?	Lower mark to market volatility than say equities, so protects portfolio value to a degree. Floating rate exposure indirectly protects against rising inflation (i.e. higher inflation is expected to lead to higher interest rates, and this feeds directly into floating rate exposures). May diversify equity risk. Doesn't directly protect the funding level as no interest rate duration. Not expected to hold / rise in a market downturn; just might not fall as much as e.g. equities.
What additional risks does the solution introduce?	Introduces credit risk (similar level to investment grade corporate bonds), complexity risk (greater dependence on manager skill) and liquidity risk (especially at times of market stress).
When and how does the protection work, and is it robust?	Securities are backed by a diversified pool of collateral, and are typically over-collateralised. Securities are typically tranched, with the senior (investment grade) tranches being protected by the subordinated tranches which absorb losses first. Lower liquidity means that prices can fall rapidly at times of market stress, so the asset class offers little protection against tail risks.
What are the expected returns / costs?	Higher yields expected than investment grade corporate bonds (see chart 7 below). Higher ongoing management fees than corporate bonds.
What are the governance implications?	Could be implemented as new standalone allocation, although this would increase governance requirements particularly as ABS is a relatively complex asset class. Alternatively the remit of the existing LGPS Central corporate bond mandate which currently has no ABS exposure could be extended, which would allow relative value opportunities to be exploited, and minimise the governance impact on the Fund.

Chart 18 below compares yield spreads for a typical ABS (A-rated, £, residential mortgage backed securities) with similarly rated corporate bonds. The chart demonstrates a high degree of correlation between the two asset classes, suggesting limited diversication potential overall, although relative value opportunities do arise. The chart shows that ABS provide a return premium over corporate bonds which compensates investors for the additional complexity and liquidity risk. The chart also shows how ABS prices can fall more rapidly at times of market stress.

Chart 18: RMBS yield spreads vs corporate bonds, A-rated[12]



	Real estate / infrastructure senior debt
Description	Investment grade loans to asset financing vehicles or operating companies that own underlying real estate / infrastructure related assets. Loans may be floating rate, fixed rate or inflation-linked.
What protection is provided?	Lower mark to market volatility than say equities, so protects portfolio value to a degree. May reduce funding level volatility (if fixed rate). Low risk of default. May protect against rising inflation (directly if inflation-linked, indirectly if floating rate).May diversify equity risk.
What additional risks does the solution introduce?	Introduces credit risk (albeit along similar lines to IGC). Liquidity risk.
When and how does the protection work, and is it robust?	Typically senior debt and secured against the underlying assets, leading to higher expected capital recovery in the event of default.
What are the expected returns / costs?	Debt typically pays a premium to investment grade corporate bonds: spread over swaps typically 200bps for the former vs 130bps for the latter. Higher ongoing management fees.
What are the governance implications?	Fund already has exposure to sub-investment grade debt via the LGPS Central Private Debt Real Asset sleeve, so limited additional governance burden. Fund could get exposure to investment grade loans through the Stable Return sleeve of the same programme.

[12] **Source: Datastream, Hymans**

Targeted Return

The Fund invests in two funds which we currently classify as Targeted Return, managed by Ruffer and Fulcrum. These were covered in more detail in an earlier section. Here, we consider the case for whether such investments could feasibly be considered as protection assets. We believe protection assets should:

- Demonstrate strong protection in market downturns;
- Typically invest in less volatile assets or exhibit structurally low ‘beta’ relative to the relevant asset market (i.e. their exposure to market direction is not dependent solely on manager skill); and,
- Use limited leverage.

Alongside this, we have also considered whether the characteristics of a related strategy, **Absolute Return Bond (ARB)** funds, mean they could also conceivably be considered as an alternative protection asset.

We have carried out some analysis looking at the Fulcrum and Ruffer funds, plus our own universe of ARB funds, against the ICE BofA Sterling Corporate Bond Index. This is set out in the table below.

Data for Ruffer goes back to 2006, and for Fulcrum goes back to 2008. Our returns / volatility analysis is therefore from each funds’ respective inceptions.

It should also be noted that the ARB universe changes over time given the track length of each respective fund, for example only 7 funds have a track record going back to 2000, and 7 funds back to 2008. However this is still useful when trying to make an assessment over a longer-time horizon.

Jan 2000 - Sep 2023	MSCI World	Sterling Corp Total Return	Ruffer	Fulcrum	ARB Universe (Hymans)
Return (% p.a.)	10.4%	4.5%	6.8%	4.1%	4.6%
Volatility	13.2%	6.9%	6.7%	5.1%	3.8%
Worst absolute month	-10.6% (Mar 2020)	-9.6% (Sep 2022)	-7.3% (Feb 2009)	-4.1% (Oct 2018)	-5.4% (Mar 2020)
GFC drawdown (Jan 2008-)	-32.2% (Feb 2009)	-16.4% (Mar 2009)	-8.2% (Feb 2009)	-6.2% (Mar 2009)	-10.7% (Nov 2008)
COVID drawdown (Jan 2020-)	-15.7% (Mar 2020)	-5.1% (Mar 2020)	-2.8% (Feb 2020)	-2.0% (Feb 2020)	-4.9% (Mar 2020)

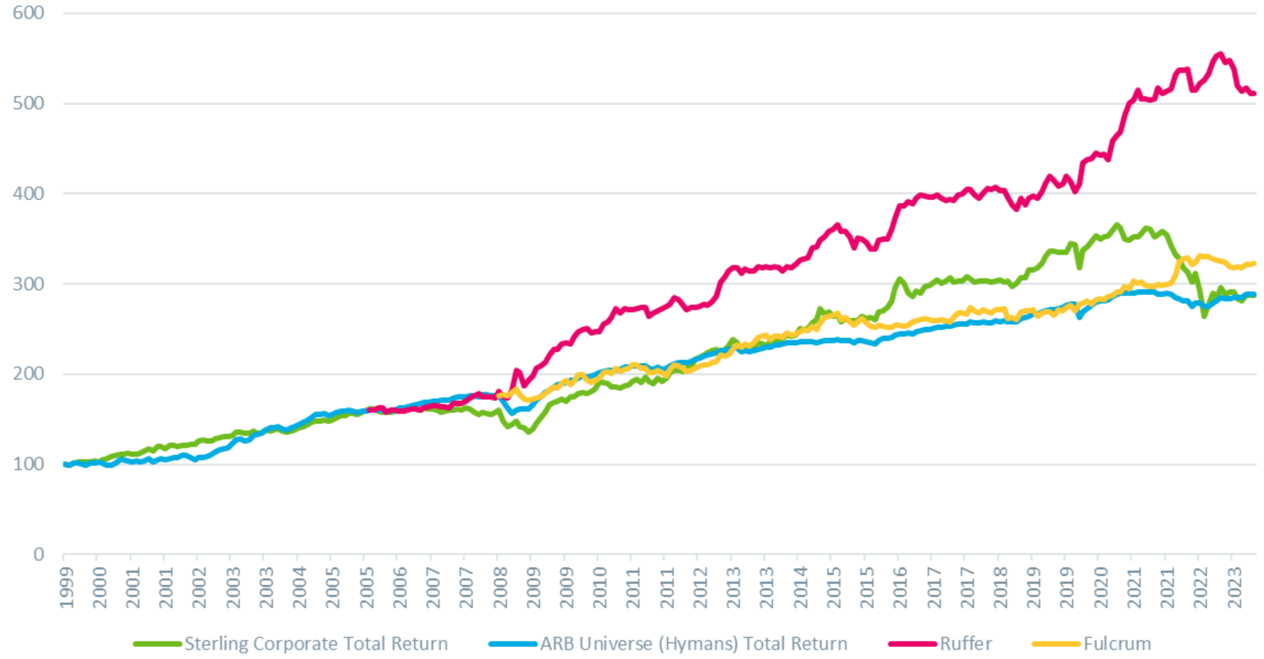
Our observations are as follows:

- Ruffer and Fulcrum, as well as ARBs, have seen materially lower volatility than equities, and their drawdown statistics demonstrate a high degree of tail risk protection. Fulcrum’s performance has been more slow and steady relative to Ruffer; this also comes out in the performance line chart below.
- ARBs have generally been successful at providing a similar return to the corporate bond universe but with lower volatility. However the line chart below highlights how this has been affected by the direction of interest rate expectations i.e. the ARB universe underperformed over a period of falling interest rates, catching up again as interest rate expectations rose sharply since the start of 2022.
- In terms of protection against tail risk events, we see that over GFC the ARB universe fell by less than the corporate bond index but still fell materially, and over the COVID drawdown ARB fell by a similar amount.
- Whilst ongoing volatility for ARBs is lower than for Rufffer and Fulcrum, the drawdown statistics for the latter would suggest that tail risk protection is similar or better.

- We would take GFC drawdown statistics with a degree of caution, as these could reflect a degree of survivor bias, however the fact that this was repeated during the COVID drawdown offers some comfort.

We therefore conclude that Ruffer, Fulcrum and ARBs all offer reduced volatility relative to markets, but the case for offering protection in sharper market downturns is perhaps stronger for Ruffer and Fulcrum than for ARBs. This could be due to these particular managers being able to time their moves in and out of risk markets well, and this may not always hold true in future due to the reliance on manager skill.

Chart 19: Total return since 1999

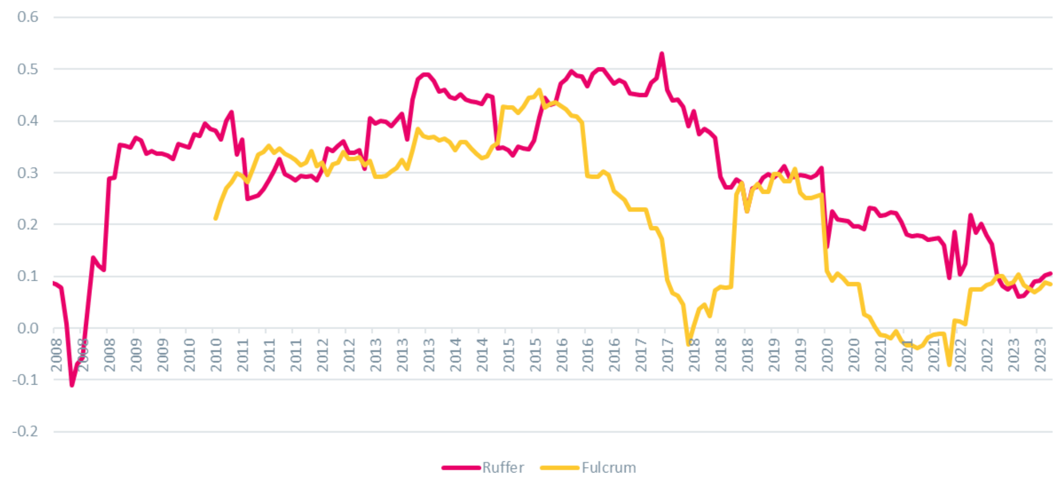


Ruffer and Fulcrum have shorter track records, therefore we have shown their performance lines starting from the ARB universe line for ease of comparison.

Therefore, whilst ARB might have useful characteristics as an asset class generally, we do not recommend that it is explored further in terms of an alternative protection asset.

We take a closer look at Ruffer and Fulcrum's market directionality by comparing their beta with MSCI World equities in the chart below.

Chart 20: 2-year beta with MSCI World equities since 2008



It can be seen that market directionality has varied materially over time for both funds, ranging from close to 0.5 at its highest to zero (or even slightly negative) at its lowest. The success of both strategies is, however, dependent on the managers' skill in managing net market exposure.

Finally, we note on leverage the following points:

- Ruffer does not usually use leverage. They do use derivatives to provide protection at the time of market dislocations, but these will have a negative correlation with some of the portfolio's underlying holdings.
- Fulcrum employ leverage through the use of derivatives.

Returning to our criteria for classifying Ruffer and Fulcrum as protection assets:

- Both funds have demonstrated protection in market downturns, albeit this is highly reliant on manager skill and cannot be guaranteed to be repated again in future. In this respect Fulcrum has historically seen both lower ongoing volatility and better protection against sharp market downturns than Ruffer.
- Both funds have exhibited variable market 'beta'. Whilst this hasn't historically peaked too high for either fund, the fact that exposure to market direction is highly dependent on each manager's discretion means this could be unreliable should sharp market downturns arise in future. Both managers typically invest a high proportion of assets in volatile markets such as equities, therefore given that neither fund maintains a structurally low beta to these markets, it is hard to argue the case for these being protection assets.
- The use of leverage by Fulcrum would give us some concern regarding classifying them as a protection asset.

The uncertain and variable nature of the protection offered therefore leads us to conclude that Targeted Return funds are unsuitable as protection assets.

Summary

There is no class of protection asset which protects against all the key risks identified above. However, we believe some of the asset classes identified above merit further investigation as alternative protection assets. Specifically, we conclude that:

- Gold merits consideration given its linkage to inflation over the long-term and the strong protection it offers in adverse market conditions. It can however suffer prolonged periods of under-performance (relative to inflation) and returns are highly volatile;
- Investment grade, real estate/infrastructure senior debt merits consideration because of the downside protection it offers and the premium it pays compared with corporate bonds;
- Investment grade ABS are potentially interesting if exposure could be provided as part of a wider investment grade credit portfolio, eg via the LGPS Central Corporate Bond fund;
- Equity protection offers robust protection over a fixed term, but we have identified no specific need for such protection, and the strategy is unsuitable as a long-term allocation;
- The Fund's existing Targeted Return strategies should not in our view be considered as protection assets due to the uncertain and variable nature of the protection offered;
- Absolute Return Bond strategies which are commonly used for protection purpose do not appear to exhibit the required characteristics.

We recommend that the Fund undertakes further investigation of the case for gold and investment grade, real asset backed senior debt in 2024. As part of this review consideration will be given as to whether any proposed changes are supportive of the Fund's Net Zero strategy.

In addition, we recommend the Fund engages with LGPS Central to ensure that its Corporate Bond fund is fully exploiting the potential downside protection afforded by asset-backed securities. If ARB allocations were to be investigated further, consideration would be given as to whether any changes were supportive of the Fund's Net Zero strategy.

12 Benchmarks

Benchmarks serve various purposes including the calibration of risk/return expectations when setting strategic asset allocations, and setting a standard against which manager performance can be assessed. In this section, we focus on the latter purpose.

Most benchmarks are based on either market indices or peer group performance. Other types of benchmark are encountered, most commonly in alternative asset classes, where neither indices nor peer group results are readily available. These are typically expressed as premiums over cash, inflation or an absolute return target – intended to describe the long-term returns expected rather than short- or medium-term patterns of performance.

Our general view is that indices are preferable to peer groups, although the overriding consideration is that the benchmark should be suitable for the purpose employed. Where some compromise has to be made in benchmark selection, particular care has to be taken in the interpretation of returns. If, for example, an index based on listed assets is used as a benchmark for unlisted investments, the short-term performance of the benchmark is likely to be more volatile than that of the investments. Where a cash-based benchmark is used, it will not capture the medium-term trends in the asset class. In some cases there may be no single perfect benchmark, so it might also be necessary to set a secondary benchmark to give a fuller picture of performance.

In the table below, we compare the benchmarks used by PEL for monitoring the performance of each sub-portfolio with those used by managers. In each case, the two benchmarks should be the same, they should be aligned with the Fund's strategic objective for the portfolio and with the investment strategy the manager employs. We comment on whether or not we believe the benchmark is suitable or what should be considered by the Fund in selecting a change.

In the table below we have indicated whether the benchmark requires a review. Green indicates a change is not required, orange indicates the Fund may wish to review it and red indicates that a review of the benchmark is preferred.

We recommend the Fund undertakes a review of the benchmarks being used for some mandates, as alternatives exist which may facilitate more effective monitoring of manager performance. This is to be progressed by the director of corporate resources with support from Hymans as necessary, with the expectation that this will be phased throughout 2024 (dealing with the highest priority items first). As part of this review, consideration would be given as to whether any changes were supportive of the Fund's Net Zero strategy.

Manager & Fund	PEL benchmark	Manager benchmark	Manager target	Requires further review	Comment
L&G Regional Passive Funds	FTSE World regional sub-indices, net of tax	FTSE World regional sub-indices, net of tax			The Fund is disinvesting from the regional passive funds and therefore, does not warrant a review
LGPSC Global Eq Active Multi Mgr Fund *	FTSE All World (Sterling)	FTSE All World (Sterling)	Outperform by 1.5% over rolling 5 year		Suitable benchmark, but the Fund could consider stripping out the unhedged currency exposure by showing returns in USD, and combining them with the returns of the Aegon currency hedging programme.
LGPSC EMM Eq Active Multi Mgr Fund *	FTSE Emerging Market (Sterling)	FTSE Emerging Market (Sterling)	Outperform by 2% over rolling 5 year		Suitable benchmark, and fund earmarked for divestment.

Manager & Fund	PEL benchmark	Manager benchmark	Manager target	Requires further review	Comment
LGPSC AW Eq Climate Multi Factor Fund *	FTSE All World Climate Balanced Comprehensive Factor	FTSE All World Climate Balanced Comprehensive Factor			Measure versus the FTSE AW but monitor versus the FTSE AW CBMF index also via LGPS Central.
Total Listed Equity	**Client Weighted Index**				An allocation-weighted composite index is appropriate
UK Private Equity Fund – Catapult (L)	FTSE All World Index				The allocation is too small to warrant a review.
Oseas Private Equity Fund – Adams Street (L)	FTSE All World Index	MSCI ACWI Public Market Equivalent			The benchmark should also include the minimum liquidity premium vs listed equities required by the Fund (eg +4%). We also note that private equity indices are available, for example those offered by S&P, which may provide another reference point.
LGPSC Private Equity Fund 2018	FTSE All World Index	FTSE All-World Index	4% over benchmark after costs for the combined “2018 Vintage” fund.		Same as above
LGPSC Private Equity Fund 2021	FTSE All World Index	FTSE All-World Index	4% over benchmark after costs for the combined “2021 Vintage” fund.		Same as above
Aberdeen Standard Private Equity Fund	Absolute Return +7.5%	N/A	17% Net IRRs		Absolute return benchmarks are appropriate but they should reflect the minimum return required from private equity given the level of risk being taken (eg 12%+). Strong argument also for adopting a consistent approach across all private equity mandates.
Total Private Equity	**FTSE All World Index**				The benchmark should also include the minimum liquidity premium vs listed equities required by the Fund (eg +4%). It may also be worthwhile using private equity indices, for example, S&P.
Aspect Capital Partners Fund	SONIA 3 Month + 4%				Suitable benchmark, and fund earmarked for divestment.
Pictet Fund	SONIA 3 Month + 4%	SONIA + 4%			Suitable benchmark, and fund earmarked for divestment.
Ruffer Fund	SONIA 3 Month + 4%	[requested from the manager]			Suitable benchmark
Fulcrum Fund	N/A	UK RPI inflation +3-5% p.a over a 5-year period			Cash plus benchmark may be more appropriate for strategy, plus consistency with other Targeted Return Funds
Total Targeted Return	**SONIA 3 Month + 4%**				Suitable benchmark

Manager & Fund	PEL benchmark	Manager benchmark	Manager target	Requires further review	Comment
JPMorgan Infrastructure Fund (L)	SONIA 3 Month + 4%	N/A	8-12% Net IRR		Benchmark not aligned with the strategic objective or the manager's strategy. Suggest either CPI+5% or Absolute 8% for all core infrastructure strategies. Listed infrastructure indices could also be considered.
IFM Global Infrastructure Fund	SONIA 3 Month + 4%	N/A	Target of 10% pa, range between 8-12% pa		Same as for JPMorgan Infrastructure Fund
KKR Global Infrastructure Fund	SONIA 3 Month + 4%	N/A	14-16% IRR		Benchmark not aligned with the strategic objective or the manager's strategy. Suggest Absolute 12-15% for all value-add infrastructure strategies.
Stafford Timberland Fund (L)	SONIA 3 Month + 4%	N/A	10% IRR		Benchmark not aligned with the strategic objective or the manager's strategy. Suggest either CPI+5% or Absolute 8%.
Infracapital Infrastructure Fund	Absolute Return +7.5%	N/A	15-18% IRR		Absolute return benchmarks are appropriate for value-add infrastructure but they should reflect the minimum return required given the level of risk being taken (eg 12-15%+).
LGPSC Infra Core/Core+	CPI +3.5%	UK CPI	Outperform (net of fees) by 3.5% over rolling 5 years		Inflation-linked benchmarks are appropriate for core infrastructure but the margin is tight. CPI+5% may be more realistic.
Quinbrook Net Zero Power Fund	13% IRR	N/A	A gross IRR in excess of 15% p.a. (net 13% p.a.)		Suitable benchmark
Quinbrook Net Zero Power Fund – co-inv	13% IRR	N/A	A gross IRR in excess of 15% p.a. (net 13% p.a.)		Suitable benchmark
Total Infrastructure	**SONIA 3 Month + 4%**				Category benchmark should reflect the strategic objective of the asset class, eg CPI+5% or Absolute 8%. Allocations to higher risk strategies have been made on the basis that they deliver incremental returns without material additional risk.
Colliers Pooled Property	MSCI UK Monthly Property Index (GBP)	MSCI UK API	Outperform by 1%		A market index is fine, but the MSCI UK Quarterly Property index may better reflect the composition of the portfolio.
Colliers Direct Property Fund	MSCI UK Monthly Property Index (GBP)	MSCI UK API	Outperform by 1%		Same as above
La Salle Property Fund	MSCI UK Monthly Property Index (GBP)	UK All Balanced Fund Index	Outperform by 1%		The mandate is intended to focus on global, indirect property opportunities, so a global index (eg MSCI Global Quarterly Property index) is potentially more suitable.

Manager & Fund	PEL benchmark	Manager benchmark	Manager target	Requires further review	Comment
Aegon Active Value Fund I	MSCI UK Monthly Property Index (GBP)	AREF UK All Balanced Property Fund Index by MSCI	8-10% IRR		Neither the market index nor a broad-based pooled property fund index likely reflect the specialist strategy employed but the manager, but this fund is in the process of being realised, so not a priority for review.
Aegon Active Value Fund II	MSCI UK Monthly Property Index (GBP)	AREF UK All Balanced Property Fund Index by MSCI	6-8% IRR		Same as above
Total Property	**MSCI UK Monthly Property Index (GBP)**				An allocation-weighted composite index (eg 60% MSCI UK QPI + 40% MSCI Global QPI) would seem more appropriate.
LGPSC Global Active EMM Bond Multi Mgr Fund *	JPMorgan EMBI Global Diversified Index, hedged to GBP	JPMorgan EMBI Global Diversified Index, hedged to GBP	Outperform by 1% over rolling 3 years		Suitable benchmark, and fund earmarked for divestment.
LGPSC Global Active MAC Fund	SONIA 3 Month + 4%	3 Month SONIA	Outperform by 4% over rolling 3 years		A cash related benchmark would only be a reliable indicator over a whole credit cycle. A composite market index, though more complex may be a more suitable benchmark over the shorter-term.
Christofferson Robb & Company Fund – CRF3 (L)	Absolute Return +7.5%	N/A	9.5-10% Net IRR		This is subordinated, floating rate credit so a cash plus benchmark (eg SONIA + 6-8%) may be more appropriate, but there is an argument for consistency with the manager's own target.
Christofferson Robb & Company Fund – CRF5 (L)	Absolute Return +8.5%	N/A	9.5-10% Net IRR		Same as above
M&G DOF Fund	SONIA 3 Month + 4%	N/A	15% Net IRR		The fund has a private equity risk profile, although returns should be relatively insensitive to market direction, so an absolute return benchmark (eg Absolute 15%) may be more suitable.
Partners Group Private Debt Fund	SONIA 3 Month + 4%	N/A	SONIA 3 Month + 4-6% Net		Suitable benchmark
LGPSC PD Low Return 2021	7% IRR	N/A	6-8% IRR net of fees		A cash plus benchmark may be more appropriate, for example, SONIA+4% adjusted for currency
LGPSC PD High Return 2021	13% IRR	N/A	12-14% IRR net of fees		A cash plus benchmark may be more appropriate, for example, SONIA+8-10%, adjusted for currency
LGPSC Real Assets	Absolute Return +5%	N/A	4.5-6.0% IRR net of all fees		A cash plus benchmark may be more appropriate, for example, SONIA+3% adjusted for currency
Total Private Debt	**Client Weighted Index**				Category benchmark should reflect the strategic objective of the asset class, eg SONIA+4%. Allocations to higher risk strategies have been made on the basis that they deliver incremental returns without material additional risk.

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Manager & Fund	PEL benchmark	Manager benchmark	Manager target	Requires further review	Comment
Aegon Index-Linked Fund	FTSE All Stocks Index Linked Index	FTSE All-stock index-linked (total return)			The benchmark is suitable
Aegon Global Short Dated Climate Transition Fund *	SONIA 3 Month +1.25% (Rolling 3 year period net gross of fees) (GBP)	SONIA + 1.25% (rolling 3 years, gross of fees)			The benchmark is suitable
LGPSC Investment Grade Credit Fund *	Central Corporate Bond Blended	Central Corporate Bond Blended - : 50% ICE BofAML Sterling Non-Gilt Index (ex-emerging market issues) and 50% ICE BofAML Global Corporate Index (ex-GBP and emerging market issues) hedged to GBP	Outperform by 0.8% over rolling 3 years		Suitable benchmark given the currency strategy, but will require review if the decision is taken to focus on global credit.
Total Investment Grade Credit	**Client Weighted Index**				An allocation-weighted composite index is appropriate
Aegon Currency Hedge Fund	SONIA 3 Month				The benchmark is suitable
Abrdn Sterling Liquidity Fund	SONIA 3 Month				The benchmark is suitable

Appendix 1 – Notes on our modelling

General

All modelling is as at 30 September 2023.

All modelling considers impact on past service liabilities only i.e. no modelling around impact on future service contribution rates has been undertaken.

Probabilities / expected likelihoods of achieving asset returns over specified periods

The model used makes use of the Economic Scenario Service (ESS) that supports our more comprehensive Asset Liability Modelling (ALM). More information on the underlying assumptions in this modelling can be provided upon request. However, the techniques used are more approximate in nature.

For example, the calculations are based on the Fund’s broader asset classes rather than specific stock selection.

The modelling only considers the spread of future asset return outcomes on liabilities. In the scenarios modelled, all other assumptions that may affect liabilities (such as inflation) are fixed and are in line with the actuary’s best estimate assumptions.

Funding level estimates

The output of the model above is used to determine the asset return with a 75% likelihood of being achieved over a 20-year period, which is consistent with the approach taken for deriving the discount rate at the last full valuation in 2022.

Any funding levels quoted do not represent funding advice.

Risk and return statistics relative to gilt-based liabilities

The modelling above only considers the spread of asset return outcomes. This model enables us to consider how the liabilities may move relative to those asset returns, by considering a spread of asset returns above or below gilts.

The discount rate underlying the liabilities is derived in a different way (as described above), however a number of the asset return assumptions underlying these projections are linked to so-called ‘risk free rates’ of return, which are highly correlated with gilt yield expectations. This therefore provides a reasonable (albeit approximate) indication of the interaction of assets and liabilities.

Appendix 2 – further modelling

The median return profile for the portfolio, relative to gilts, and the associated portfolio dispersion and portfolio efficiency

The modelling above primarily focuses on changes in asset returns based on the portfolio and does not show the relationship relative to liabilities. The table below shows the median returns of each portfolio relative to gilts. Whilst the discount rate used for the libailities is not derived directly from gilt yields, there is some correlation due to the way the underlying expected returns are derived. This therefore provides a reasonable approximation to how liabilities might move.

The below output (taken from a different model to that in the main body of the report) shows the excess returns of the strategies relative to gilts.

The impact of the increased allocation to protection assets, as flagged above, occurs moreso at the tails. In addition, we see the impact of the lower returns, as well the lower dispersion in the portfolio, resulting in a marginal, at best, improvement in the portfolio efficiency over 20 years.

Strategy	Median return, 20yr	Dispersion (volatility), 1yr	Value at Risk, 95th percentile (VaR95) £m
2023 Strategy	3.95%	13.85%	1,325
Protection 1	3.80%	13.28%	1,271
Protection 2	3.65%	12.71%	1,216
Protection 3	3.50%	12.15%	1,163
Protection 4	3.33%	11.63%	1,113

This tells a similar story to the asset modelling that, relative to gilts, the median returns falls as the allocation to protection assets increases, but the 1-year volatility also decreases.

The final column provides some context around the pound amount protection of funding level an increased allocation to protection assets might provide. Comparing the extremes (2023 Strategy vs Protection 4), whilst the median expected outperformance over liabilities might fall by c£35m p.a., the funding level might be further protected by c£210m under a 1-in-20 bad year outcome.

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