2023 valuation toolkit

We're delighted to introduce our 2023 valuation toolkit, a series of short notes to guide you through the LGPS actuarial valuation process and make it a success.
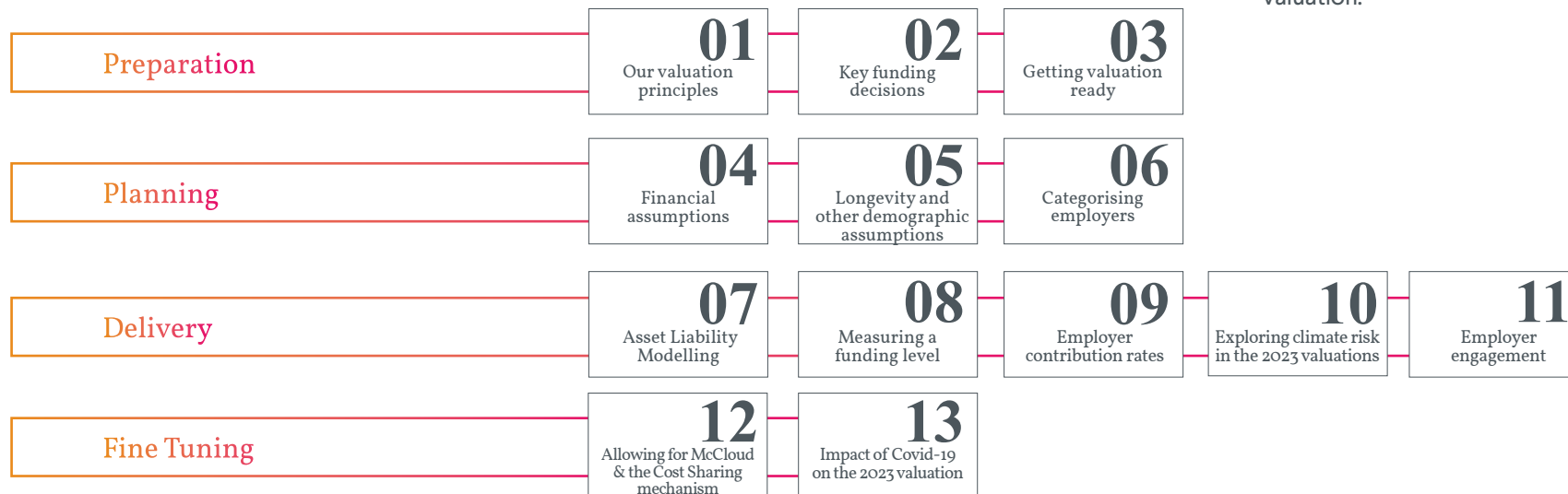
We believe the foundations of a successful valuation are a smooth and efficient process, informed decision making and effective stakeholder engagement. This toolkit serves as a useful reference tool throughout the 2023 valuation; containing advice on operational issues such as preparing for the valuation and technical issues such as funding methodology and assumptions.

Introduction

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We have structured the toolkit into 4 distinct phases so you can easily identify the relevant section as you make progress with your 2023 valuation.

1. **Preparation:** The initial pre-valuation thinking that should take place before any successful project. This includes setting the key valuation principles (toolkit 1) and identifying the key funding decisions (2). In effect, the goal is to make sure you are 'valuation ready' (3) before the real work begins.

2. **Planning:** This is where the valuation begins in earnest and decisions are required in respect of the financial (4) and demographic assumptions (5) that will apply at the valuation. A consideration of how to categorise employers(6), and ensuring it reflects covenant strength, is also necessary.

3. **Delivery:** For your largest employers we recommend carrying out an in-depth review of the funding strategy even before the main part of the valuation begins, making use of Asset-Liability Modelling (7). Once the assumptions are set and the data is clean, the valuation calculations are carried out so we can report the whole fund funding level (8) and individual employer contribution rates (9). Understanding the impact of climate risk (10) is a new and important element of the valuation in 2023. Engagement with employers (11) is the crucial part of this phase.

4. **External events:** We have been talking about the cost cap mechanism and the impact of McCloud for the last few years, and this will be ongoing. Similarly it may be many years before we fully understand the impact of the Covid-19 pandemic. It remains important for us to consider how these factors will impact on the 2023 valuation.
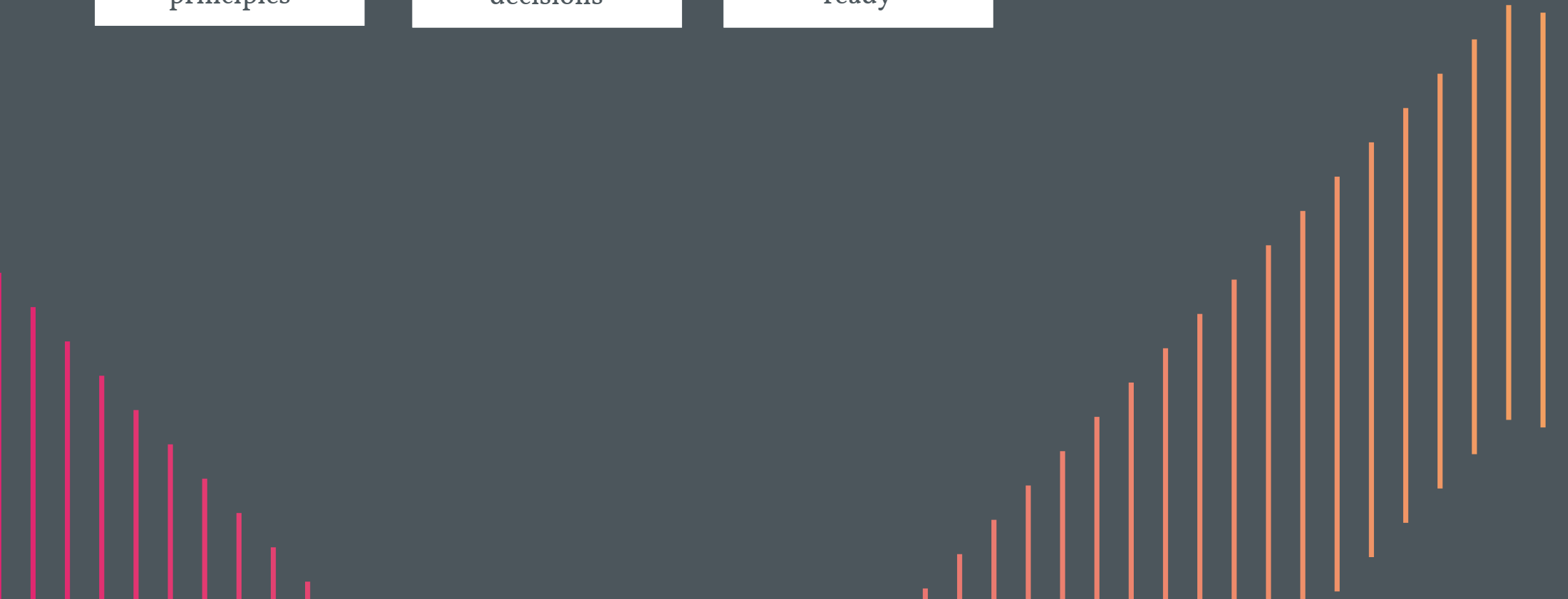
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Preparation

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01
Our valuation principles

It's fair to say the LGPS has come a long way since its humble beginnings in 1922. Whilst no one can know what's in store for the LGPS in future, we can be certain that we will be with you every step of the way – helping you drive the LGPS forward and deliver the best outcomes for your fund and your employers.

We provide valuation advice to more funds in the LGPS than any other advisor. We have a team of 21 qualified actuaries and 28 part-qualified associates and analysts working with 53 different LGPS funds (including 9 Scottish LGPS funds). Whilst all these funds have similar challenges, each individual fund has different priorities and objectives.

Our actuaries work closely with you to identify the best ideas and solutions to help you. Our valuation approach is deliberately flexible so it can reflect your own beliefs. Our commitment to you is to deliver a valuation focused on three areas which comprise our valuation principles.

"we believe your valuation should reflect your own beliefs"

1

SMOOTH AND EFFICIENT PROCESS

2

INFORMED DECISION MAKING

3

EFFECTIVE STAKEHOLDER ENGAGEMENT

Smooth and efficient process

Automated tools driven by market

leading technology

....

End-to-end process that is time and

cost effective

....

Cost savings are passed on to you

Informed decision making

Clear and objective presentation of information

....

Contribution rate, investment strategy and employer

covenant work together

....

Health check against long-term objectives, avoiding

decisions based on a snapshot view

Effective stakeholder engagement

Secure pensions for your members and

manageable pension costs for your employers

....

Increased employer engagement,

understanding and satisfaction

....

Simple and transparent funding plans that

stand up to external scrutiny

02
Key funding decisions

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Background

The formal valuation is your fund's budgeting exercise. The purpose of the valuation is to review your funding strategy and ensure that you have a contribution plan and investment strategy in place that enables your fund to pay members' benefits. Budgeting exercises for open defined benefit pension funds are complex. Firstly, the projected budgeting period is very long; benefits earned in the LGPS today will be paid out over a period of the next 80 years. Secondly, the LGPS remains a defined benefit scheme so there are large uncertainties in the final cost of the benefits to be paid. Finally, in order to keep contributions low, LGPS funds typically invest in higher return investment strategies which will naturally include high levels of volatility and risk.

Our valuation approach recognises the uncertainties and risks posed to funding by these factors and provides a framework for funds to set clear funding targets and manage their funding risks.

We believe that the key funding decisions can be addressed by answering the following three questions.

(1) What is your funding target?

(2) How long do you want to give yourself to get to this target?

(3) How sure do you want to be that you will reach the target?

What is your funding target?

The LGPS is open to future benefit accrual and new members. Budgeting for future benefit payments requires LGPS funds to consider a funding strategy that will meet the cost of both benefits accrued to date and benefits being earned in future. An LGPS fund with a long-term funding plan must consider: what level of assets does the fund want to hold in the future to meet the cost of benefits earned today and in the future? The answer to this question is the funding target.

In a defined benefit scheme, the actual cost and amount of assets required to fund benefits is only known after the last payment to members has been made. Given that funds are funding benefits in advance of their payment, the funding target needs to be an estimate, based on informed assumptions about the size and timing of future pension payments. At the valuation, we work with each fund to determine its own long-term funding assumptions based on transparent and objective analysis. Further detail on the key economic and demographic assumptions that determine the funding target are included in part 4 – "Financial assumptions" and part 5 – "Longevity and other demographic assumptions".

02
Key funding decisions

What is your funding time horizon?

You need to decide over what time horizon you will require each of your employers to achieve its funding target. Most LGPS employers are open to new members and future accrual so there is no natural end date by which a funding plan must meet its target. When deciding a funding time horizon, LGPS funds will have regard to long-term cost efficiency; you want to set a funding plan that is fair to both today's and the next generation.

Additionally, external scrutineers are increasingly interested in inter-generational fairness and ensuring costs are not unreasonably deferred.

How sure do you want to be that you will reach your funding target?

Funds will need to rely on both contributions and investment returns to pay members' benefits in the future. The more a fund relies on investment return, the less employers need to pay in contributions - in the short-term at least. However, to generate high investment returns funds need to take extra risk – which can lead to volatility and unexpected contribution increases in future.

In order to test and understand the risk inherent in funding plans, we use an Asset Liability Model ("ALM") with both inputs and outputs specifically tailored for LGPS funds.

Instead of relying on a single set of actuarial assumptions about the future, the ALM projects forward every employer's assets and liabilities under 5,000 different economic scenarios. This approach allows you to understand the risk in every funding plan and measure how likely an employer's funding strategy will achieve the funding target – the "likelihood of success".

The likelihood of success will vary between the employers in a LGPS fund. The variation will be directly linked to employer covenant – the weaker the covenant, the higher the likelihood of success. Further detail on categorising employers is set out in part 6 "Categorising employers".

03
Getting valuation ready

Background

Effective planning will lead to a smooth 2023 valuation process and early completion of the main calculations, leaving you more time to focus on what really matters – liaising with your stakeholders and reaching the best possible funding solutions for your fund and employers.

There are some steps you can take in the lead up to the 2023 valuation to save time and effort during the process itself.

A smooth and efficient process

Data cleansing

By using the Hymans Robertson dataPORTAL, you are able to cleanse and validate your fund's data (both membership data and employer cash flow data), completely free of charge. Doing this before the valuation process will allow you to benefit from:

- Ensuring membership data is up to date and reflected correctly in the Universal Data Extract
- Ensuring there is consistency between membership data and cashflow data
- An early warning if some new employer opening positions have not been calculated

Good quality membership and cashflow data is imperative for a successful funding valuation. We would advise all LGPS funds to upload their data to the dataPORTAL today to understand if any updates are required for membership and cashflow data to be 100% valuation ready. Your Hymans Robertson team will be on hand to help you with advice and practical assistance for any issues that arise.

Updating employer assets

The use of Hymans Robertson's Employer Asset Tracking (HEAT) system in determining employer asset shares is now embedded in the valuation process, which means that the assets allocated to each employer no longer relies on the membership data submitted for the valuations.

As per the 2020 valuation, employer asset shares will be readily available when it comes to the valuation time.

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03
Getting valuation ready

Informed decision making

comPASS Asset Liability modelling

Our approach to setting contribution rates for long-term, secure employers, such as councils, doesn't rely on market conditions on the valuation date. We view the valuation as a health check against your long-term objectives, rather than making decisions based on a snapshot view. To do this we use our LGPS specific asset liability model. The model tests contribution and investment strategies for employers by considering how market conditions and assets may evolve in future, rather than considering market conditions and asset values on the valuation date only.

This approach means the precise timing of the health check is less important, and we don't need to wait until after 31 March 2023 to test and review contribution and investment strategies for long-term, secure employers. This gives advance warning of contribution rates payable from 1 April 2024, allowing more time for you to engage with employers and for them to build any changes into budget planning processes.

For more information on our comPASS modelling, see part 7 – "Asset Liability Modelling" (coming soon).

Employer risk review

We want to help you look at the bigger picture, taking contribution rates, investment strategy and employer covenant all into account. Setting funding plans requires a balance between affordability for the employer and security for the fund.

For a financially healthy employer, the balance can be tipped more towards affordability as there is a higher likelihood that the employer will be able to fund an increase in contribution rates if experience is worse than expected. Conversely, for a financially weaker employer, the balance needs to favour security for the fund as the employer is less likely to be able to afford any future unexpected costs.

During the 2023 valuation we will help you put in place funding plans which are tailored to each employer's individual circumstances.

Understanding the risk associated with each of your employers is an important factor when setting these plans. Carrying out a review and investigation into each employer's funding profile and financial covenant now will give you time to engage with high risk employers so you can work together to agree a plan which provides both affordability for the employer and security for the fund.

See part 6 – "Categorising employers" and part 9 – "Risk-based funding (coming soon).

03
Getting valuation ready

Effective stakeholder engagement

Early engagement

The statutory deadline of 31 March 2024 to complete the valuation may seem like a long way away, but those of us who have been through a valuation before will know how quickly the year can pass! Time in a valuation year is precious and needs to be used as efficiently as possible. During the valuation exercise, a large amount of fund officers' time is often spent liaising with a small number of employers. You may already have a good idea which employers these are - meeting them now on a one-to-one basis to discuss and understand their individual circumstances will help you during the valuation itself.

We also encourage you to engage with all of your employers as early as possible to build up knowledge and understanding of any particular new situations that may affect participation in the fund before the valuation calculations commence.

For more information see part 11 – "Employer engagement".

Stakeholder liaison plan

The actuarial valuation is a large exercise with many different stakeholders who need to be informed, engaged and consulted with. Work with your actuary now to agree a valuation timetable and plan the agendas for your 2023 Pensions Committee, Local Pension Board and Employer meetings. This will give you increased clarity on deliverables and allow you to identify and plan for times of peak activity. Everyone feels better when there is a plan in place!

"engage with all of your employers as early as possible to build up knowledge and understanding"

Planning

04	05	06
Financial assumptions	Longevity and other demographic assumptions	Categorising employers

04
Financial assumptions

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The purpose of the valuation is to set employer contribution rates that have a sufficient likelihood of being able to meet the cost of future benefit payments.

The actual cost of paying all the benefits is uncertain until the final benefit payment is made. So we use a risk-based approach to set employer contribution rates which allows funds and employers to understand and quantify the level of risk inherent in funding plans. This approach is described in more detail in part 9 – "Individual employer contribution rates".

Under the risk-based valuation approach, each employer's future benefit payments, contributions and investment returns are projected into the future under 5,000 possible economic scenarios. Future inflation (and therefore benefit payments) and investment returns for each asset class (and therefore employer asset values) are variables in the projections. Salary growth is assumed to be linked to inflation by a fixed margin (the magnitude of which is agreed as part of the valuation assumption setting process).

By projecting the evolution of an employer's assets and benefit payments 5,000 times, we can select a contribution rate that results in a sufficient number of these future projections being successful. This approach reflects that the future is uncertain and cannot be predicted using a single set of assumptions linked to market conditions at the valuation date alone.

04 Financial assumptions

5,000 projections of the future – our Economic Scenario Service (ESS)

We use the ESS to project a range of possible outcomes for the future behaviour of asset returns and economic variables. With this type of modelling, there is no single figure for an assumption about future inflation or investment returns. Instead, there is a range of what future inflation (affecting benefit increases and salary growth) or returns will be, which leads to likelihoods of the assumption being higher or lower than a certain value.

The ESS is a complex model which reflects the interactions and correlations between different asset classes and wider economic variables. The table below shows the calibration of the model as at 31 March 2022. All returns are shown net of fees and are the annualised total returns over 5, 10 and 20 years, except for the yields which refer to the simulated yields at that time horizon.

For example, the highlighted figures in the table below show that over the first 5 years of the model:

- in 800 of 5,000 scenarios (84th percentile), UK equity returns were greater than 13.9% per annum;

- in 2,500 of 5,000 scenarios (50th percentile), UK equity returns were less than 5.5% per annum; and

- in 4,200 of 5,000 scenarios (16th percentile), UK equity returns were greater than -2.7% per annum (implying that in 800 scenarios, UK equity returns were less than 4.1% per annum).

		Annualised total returns									
		Cash	Index Linked Gilts (medium)	Fixed Interest Gilts (medium)	UK Equity	Overseas equity	Property	Corp Medium A	Inflation (CPI)	17 year real yield (CPI)	17 year yield
5 years	16th %'ile	0.7%	-2.2%	-1.4%	-2.7%	-3.2%	-2.5%	-1.5%	2.3%	-2.2%	1.1%
	50th %'ile	1.5%	0.8%	1.1%	5.5%	5.3%	4.0%	1.5%	3.9%	-1.3%	2.1%
	84th %'ile	2.3%	4.0%	3.6%	13.9%	14.0%	11.0%	4.2%	5.5%	-0.4%	3.3%
10 years	16th %'ile	0.8%	-1.9%	-0.3%	-0.4%	-0.7%	-0.6%	-0.1%	1.6%	-1.7%	1.1%
	50th %'ile	1.8%	0.2%	1.1%	5.7%	5.6%	4.4%	1.6%	3.3%	-0.5%	2.5%
	84th %'ile	2.9%	2.4%	2.4%	11.6%	11.7%	9.5%	3.2%	4.9%	0.7%	4.3%
20 years	16th %'ile	1.0%	-1.5%	0.7%	1.7%	1.5%	1.4%	1.1%	1.2%	-0.7%	1.3%
	50th %'ile	2.4%	0.1%	1.5%	6.2%	6.1%	5.0%	2.1%	2.7%	1.1%	3.2%
	84th %'ile	4.0%	1.9%	2.2%	10.6%	10.8%	8.9%	3.2%	4.3%	2.7%	5.7%
	"Volatility (Disp) (1 yr)"	0%	7%	7%	20%	20%	15%	8%	1%		

04
Financial assumptions

We can't keep projecting forward assets and benefits forever – at some point a line in the sand needs to be drawn. Typically this is around 20 years but may vary for shorter term employers. At this point, an assessment will be made – for each of the 5,000 projections – of how the assets held compared to the value of the future benefit payments.

Valuing the cost of future benefits requires the actuary to make assumptions about the following financial factors:

- Benefit increases and CARE revaluation

- Salary growth

- Investment returns (the "discount rate")

When setting these assumptions, we need to be aware that each of the 5,000 projections represents a different prevailing economic environment at the end of the projection period and so a single, fixed value for each assumption is unlikely to be appropriate for every projection. For example, a high discount rate would not be prudent in projections with a weak outlook for economic growth. Instead of using a fixed value for each assumption, we need to reference economic indicators to ensure the assumptions remain appropriate for the prevailing economic environment in each projection.

For convenience, the economic indicators we use are:

- future inflation expectations (which determines the benefit increase and salary growth rates)

- the prevailing risk free rate of return (which determines the discount rate).

Working with funds, we set an investment return as a margin above the risk free rate so that it remains appropriate in each of the 5,000 projections and reflects the fund's long-term strategic asset allocation and desired level of prudence (all other assumptions are best estimate).

05
Longevity and other demographic assumptions

The first step of the actuarial valuation calculations is to project the benefits that will be paid to members in the future.

As there are uncertainties in both the timing and amount of payments to be made from the fund over a long time horizon, we have to make assumptions. Demographic assumptions impact the timing of payments. Employer contribution rates are sensitive to these assumptions, so the choice of assumption has to be reasoned and robust.

For the demographic assumptions, we undertake a comprehensive review of membership trends and experience in the LGPS. This is based on the data we hold across all of our LGPS clients, input from Club Vita and other sources, including national statistics. Some assumptions are best informed by reference to national statistics or trends across the LGPS as a whole, whereas other assumptions are best determined with a stronger weighting on local knowledge.

This part of the valuation toolkit sets out the key demographic assumptions and the results of our national analysis (financial assumptions are considered in note 4). For your local fund valuation, some of these assumptions may be adjusted to reflect any local circumstances or experience.

The most significant demographic assumption is the longevity of LGPS members.

05
Longevity and other demographic assumptions

The longevity assumption is split into two separate parts:

- Baseline longevity - how long we expect members to live based on current death rates; and

- Future improvements in longevity - how death rates are expected to change in the future.

Baseline longevity

The baseline longevity assumption for all Hymans Robertson advised LGPS funds will be set using information from Club Vita. For funds subscribing to the full Club Vita service, the baseline assumptions will be a bespoke set of VitaCurves that are tailored to each member depending on their characteristics (age, sex, affluence, retirement health, occupation). For all other funds, a fund level specific tailored assumption will be created based on the characteristics of each fund's membership and experience. Either method is more accurate than trying to fit standard mortality tables to reflect a given fund's membership.

Evidence has shown over the years that Club Vita assumptions closely reflect the actual experience of LGPS funds, meaning that there are rarely any significant surprises in terms of the financial effect of baseline mortality.

The effect of recent experience will be taken into account in the 2023 valuation baseline longevity assumption. However, recent death rates have been distorted by the effect of Covid-19 and care will be exercised when setting this assumption to avoid extrapolating the recent (extreme) death rates into the future via the baseline longevity assumption.

Future improvements in longevity

Our assumption for the rate of future longevity improvements is based on the Continuous Mortality Improvements (CMI) longevity improvements model published by the Actuarial Profession. This model is updated each year based on observed longevity rates of the English and Welsh population. The principle behind the model is that the future rate of longevity improvements can be extrapolated from current rates on a defined path until a long-term rate of improvement is reached.

05
Longevity and other demographic assumptions

For the 2023 valuations, we will use the latest available version of the CMI model.

The model contains flexibility to allow actuaries to vary the parameters to reflect their own view of the path of future rates.

1. *To what extent does the longevity characteristics of the pension scheme reflect the characteristics of the population of Scotland?* The current rate of improvement in our scheme is higher than for the population, we can adjust the starting point of the projections to reflect this (by applying an initial addition to improvements via the 'A parameter'). Evidence from Club Vita suggests that an A parameter of 0.25% is appropriate for LGPS funds.

2. *What is our view on the likely long-term rate of longevity improvements?* Since the 1950s, the average rate of longevity improvements has been around 1.5% per annum (for males and females), which would suggest a suitable long-term rate of 1.5% per annum (although improvement rates have been lower than this in recent years). This is consistent with the long-term rate adopted at the 2020 valuation.

3. *Do we wish to take advance credit for the potential impact of Covid-19 on future longevity improvements?* It is clear that Covid-19 has had a significant impact on death rates in 2020 and 2021 (albeit, we expect this to lead a negligible impact on liabilities at the 2023 valuation). The potential impact of the pandemic on future death rates is very uncertain and a wide range of views exist from **"the social and economic effects of the pandemic will be felt for years to come and will create a drag on future longevity improvements"** to **"we will recover quickly from the pandemic and the learnings we take from this can be used to drive future longevity improvements"**. The true path will likely lie between these extremes, but it is too early to say. The CMI model allows actuaries to take advance credit for a possible drag on future longevity by placing weight on the 2020 and 2021 death data (by adjusting the 'W parameter'). We believe that more evidence is required before we can understand the impact of the pandemic on future longevity and therefore, that it is too early to make allowance for this when setting valuation assumptions.

05
Longevity and other demographic assumptions

Summary

Overall, the longevity assumptions reflect a realistic long term view whilst considering recent (non-covid related) experience.

If you wish to understand more about your fund's longevity experience and assumptions, please speak to your usual Hymans Robertson contact.

Other demographic assumptions

At each valuation we carry out a review of all other demographic assumptions using experience data for all the Scottish LGPS funds we advise (9 out of 11 funds).

Whilst we believe our nationwide assumptions are suitable across the LGPS as a whole, we understand that there may well be local factors which influence certain trends, or some funds with markedly different experience. At the 2023 valuation, like we did at the 2020 valuation, LGPS funds have the opportunity to undertake detailed analysis of their own fund's demographic experience, meaning a more tailored assumption can be made.

06
Categorising
employers

Download our Briefing Note on managing and integrating employer risk in funding decisions to find out more.

Delivery

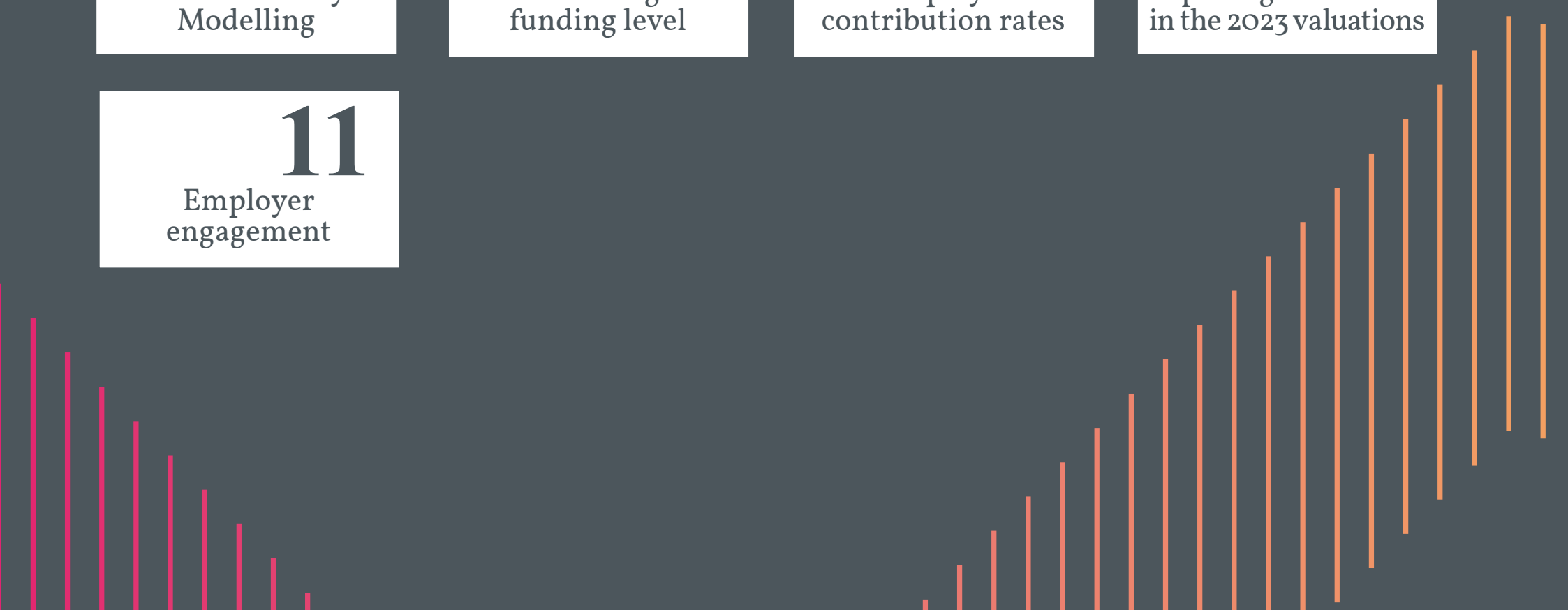| **07** Asset Liability Modelling	**08** Measuring a funding level	**09** Employer contribution rates	**10** Exploring climate risk in the 2023 valuations

11 Employer engagement

07
Asset Liability Modelling

Asset Liability Models (ALMs) have become widely used in the actuarial world to project the future evolution of assets that are invested to meet liabilities, like in pension funds.

The key feature of an ALM is that they show how the funding outcomes for a pension fund are dependent on the interrelated behaviour of both the assets and liabilities in different economic scenarios. This enables the pension fund to optimise both the investment and contribution strategy to meet the liabilities and identify key funding risks. At Hymans Robertson, we use an LGPS specific ALM called 'comPASS'.

How does comPASS work?

Cashflows

Our ALM, comPASS, is specifically tailored to work for LGPS funds. We project the liability cashflows for the fund (the benefits that have to be paid to members in the future) and the contributions that will be received from members and employers. As the LGPS is an open fund, both to future accrual and to new members, a projection of benefits to be paid in the future to new members not yet in the fund is also included.

Testing Contribution and Investment Strategies

The model inputs are proposed combinations of investment and employer contribution strategies, with the aim of testing which combinations produce the best outcomes for the fund under different possible future economic conditions.

For employer contributions, we can model the effectiveness of different types of contribution patterns, including:

- Specified short term contribution rates;

- Stabilisation mechanisms, where changes in employer contributions are constrained to a maximum increase or decrease each year;

- Payment of lump sums into the fund;

- Fixed contribution rates; and

- Contribution rate caps and floors.

07
Asset Liability Modelling

We can also test the impact of changes in employer membership over time if significant workforce changes are anticipated.

We use comPASS to test the impact of different investment strategy decisions such as:

- Different asset allocations;

- Impact of hedging;

- Impact of diversification; and

- Setting triggers for changes in level of investment risk.

Scenarios

The different economic conditions are modelled using our propriety economic scenario generator model (ESS). The model is risk-based, meaning it uses statistical distributions to project a range of 5,000 different possible outcomes for the future behaviour of asset returns and economic variables, such as inflation.

Some of the parameters of the model are dependent on the current state of financial markets and are updated each month (for example, the current level of equity market volatility) while other longer-term parameters are more subjective and based on economic theory and long-term market and Government views.

Some of the key subjective assumptions include the equity risk premium and the volatility of yields, credit spreads, inflation and expected (breakeven) inflation.

07
Asset Liability Modelling

Output from comPASS

comPASS allows us to understand what happens to the funding level and other key metrics under each of the 5,000 scenarios. We can then analyse these metrics at any future point and summarise them for decision makers. An example is the chart shown below.
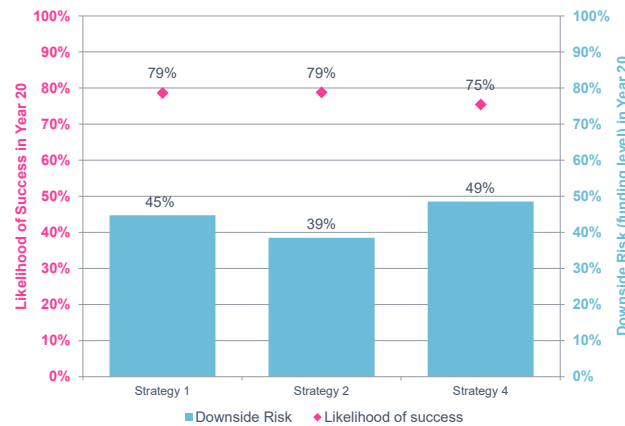
The pink diamonds and blue bars summarise the key funding plan risk metrics for each of the three combinations of investment and contribution strategy tested. The pink diamonds show the percentage of the 5,000 outcomes where the funding target was achieved ie the likelihood that the strategy is successful. The blue bars show a measure of downside risk – the average funding level in the worst 5% of outcomes - to understand the relative risk of each strategy. As well as funding level, we can analyse future employer contributions requirements and project the potential range of future funding deficits.

Advantages of using an ALM

The key advantage of using an ALM, like comPASS, as part of the funding valuation is that it allows you to consider the contribution strategy and investment strategy together in the same process, rather than the traditional methodology of setting the contributions first and then considering the investment strategy. This leads to the contribution and investment strategy working together and optimised funding plans. The ability to consider 5,000 scenarios, rather than relying on a single set of valuation assumptions about the future, also results in a better understanding of risk and a more robust funding plan.

Governance

The model provides useful information to aid decision makers when setting funding plans. Additionally, the simple summary output makes the documentation of the decision-making process straight-forward and transparent.

08
Whole fund funding level

The ultimate objective of an LGPS fund is to be able to pay members' benefits as they fall due. For an open, ongoing scheme like the LGPS, the main purpose of the valuation is to set employer contribution rates that, together with future investment returns on the employer's assets, have a high likelihood of meeting this ultimate objective.

Our valuation approach focuses on optimising both the investment and contribution strategy to meet the fund's future benefit payments and identify key funding risks. We do this by determining a long term funding target (see note 2 – Key funding decisions) and then assessing the effectiveness of different investment strategies and contribution patterns to meet that target using our Asset Liability Model, comPASS. This approach is discussed in more detail in note 7 – Asset Liability Modelling.

A secondary output from the valuation is the calculation of a funding position at the valuation date: in other words, to what extent do the assets held by the fund at 31 March 2023 cover the accrued benefits (liabilities)? LGPS funds typically report two measures of the funding position: a funding level (the ratio of assets to liabilities) and a funding surplus/deficit (the difference between the asset and liabilities values).

In this note, we consider the purpose of the funding level measure and how we calculate this at the 2023 valuation.

08
Whole fund funding level

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The purpose of a funding level

For many LGPS stakeholders, a funding level is one of, if not the, key valuation output. This is because, traditionally, a funding level provided an indication of the funding gap that must be made good via future employer deficit recovery contributions.

However, considering the current funding position in this way has the following limitations:

- A funding level is calculated on a single set of assumptions about the future, and is very sensitive to the choice of assumptions. Within a funding level there is no insight into the likelihood of the assumptions being borne out in practice within the current economic environment or the fund's investment strategy.

- A funding level is based on the market value of the assets at the valuation date. As the LGPS is generally invested in volatile assets (eg equities) there can be significant shifts in a funding level on a daily basis.

- A funding level only considers the benefits accrued to date. Funding these benefits are only one part of the cost that employers must meet in a LGPS fund. For the majority of employers, the contributions required to meet the cost of future benefit accrual (primary contributions) are a much greater proportion of the total contribution rate than those required in respect of accrued benefits (secondary contributions).

Given these limitations, a funding level will not indicate directly how contributions have moved or provide an in-depth assessment of the risk inherent in the funding plans.

However, a funding level is helpful to:

- provide a high-level snapshot of the position of the fund at 31 March 2023 relative to other dates; and

- to help employers gain an understanding of the factors that cause their pension costs to change, and in particular, the impact of their decisions around risks they control (for example, salary awards and early retirement enhancements).

Tracking a funding level over time can also still be useful for LGPS funds. Understanding how the assets and liabilities are changing can help the fund identify opportunities that arise following genuine improvements in the underlying funding position. For example, an improvement in funding position caused by a period of strong asset returns may identify an opportunity to review the investment strategy.

08
Whole fund funding level

Calculating a funding level

To calculate a current funding level, we compare the market value of assets against a value of the benefits accrued to date. The value of assets is easily obtained via market valuations. Placing a single value on the benefits requires assumptions about when and how much benefits will be paid ie demographic and financial assumptions. These are discussed in further detail in note 4 – Financial assumptions and in note 5 – Longevity and demographic assumptions.

We believe valuation outputs are more meaningful when stakeholders can understand the likelihood attached to them. Instead of using a single future investment return (discount rate) assumption, we use an assumption that reflects the range of possible future investment returns and the likelihood of a fund's assets achieving the return. We do this by using the current investment strategy and our proprietary economic model, the Economic Scenario Service (ESS), to generate a distribution of possible annual investment returns over the next 20 years.

Likelihood of achieving the assumed future investment return over 20 years (from the 2022 valuation date)
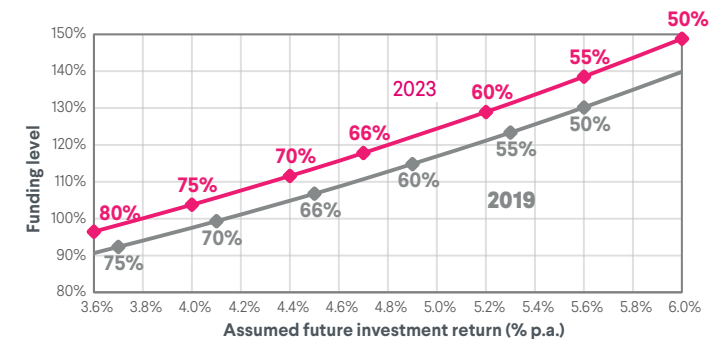
We can then show how the funding level varies with the level of prudence in the future investment return assumption – see chart. For comparison, the funding level associated with the same choice of investment return assumption at the 2020 valuation is also shown.

This approach to measuring a current funding level allows stakeholders to have a better appreciation and understanding of the risk inherent in their strategy when looking at the funding level metric.

When communicating valuation results, LGPS funds need to present a single funding level. The above analysis allows funds to do this by selecting their level of prudence in the calculation of the funding position and reading off the associated funding level.

All this information will be presented during the initial results stage of the valuation.

09
Employer contribution rates

How employer contribution rates are set

Traditionally, formal valuations of the fund were a calculation exercise with contribution rates being set for all employers based on a single set of assumptions about the future (a "deterministic approach"). The disadvantage of a deterministic approach is that it does not allow the fund, employer or fund actuary to assess the risk associated with the proposed contribution rate. Risk in this context means the likelihood that the funding plan will not achieve the funding target over an agreed time horizon.

With continuing scrutiny on the LGPS, and the requirement to consider covenant strength of the employer when setting contributions, there is an increased focus on using the valuation as an opportunity to assess and understand risk.

This part of our guide sets out how we set contribution rates for employers participating in your fund by adopting a "risk-based" approach. The risk-based approach allows for thousands of possible future economic scenarios, rather than a single outcome (which is dependent on the choice of assumptions under the deterministic approach). This allows the fund to quantify the risk of an employer not meeting their funding target given a proposed contribution plan and investment strategy, eg if the employer met their funding target in 4,000 out of 5,000 possible future economic scenarios, there would be an 80% likelihood of the funding plan being successful.

The benefits of using a risk-based approach

There are many more employers participating in the LGPS and they are more diverse than ever before. They have different funding profiles (funding level, cash flow position, maturity) and may have different funding objectives. For example, one employer may be well funded, consist purely of active members and will continue to participate in the fund whereas another may have few active members, be poorly funded and be planning to exit the fund in the near future. For each of these employers, the contribution and investment strategy that will help them best meet their obligations to the fund will be different.

A 'one size fits all' contribution and investment strategy is unlikely to lead to optimum funding outcomes for all employers. Tailoring contribution and investment strategies for employers in the fund reduces the risk of adverse outcomes for employers and the risk of complaints against the administering authority (and the associated reputational damage).

09
Employer contribution rates

The process itself

The risk-based approach can easily and transparently reflect these different contribution and investment strategies in employer fund plans. The approach also ensures stability and affordability of contributions for employers while providing a robust approach that assures the fund that employer contributions are sufficient to meet the employer's funding target.

Setting contribution rates using a risk-based approach requires the fund to consider for each employer:

(1) The employer's funding target

(2) How long the employer has to reach the funding target (the 'funding time horizon')

(3) An appropriate likelihood of meeting the target ('likelihood of success') eg 2/3rds, 75%

The outcome of these decisions are documented in the fund's Funding Strategy Statement. Further details of this approach are provided in Guide 2 'Key Funding Decisions.'

The first two decisions are typically a function of:

- Employer body type
- Approach to new entrants

Setting an appropriate likelihood of success for each employer requires further analysis.

To set funding strategies under this risk-based approach, the fund should understand the wider business outlook and financial strength for each employer. The fund should also consider if the failure of an individual employer has a material impact on other employers in the fund (who will need to make good any funding deficit that cannot be met by the employer).

To help build up this understanding for each employer, the following information/metrics may be analysed:

- Magnitude of funding deficit/surplus;
- Security provided to the fund in the form of a guarantee or an additional asset;
- Inspection of company accounts/financial statements;
- Evidence provided that there are no competing calls for cash;
- Formal covenant analysis;
- Understanding the business outlook; and
- Outlook for the sector the employer participates in.

Combining the above factors will allow the fund to build up a comprehensive picture of each employer in the fund while maintaining a pragmatic and cost-effective approach.

Following this approach, each employer in the fund will have a funding plan with an aligned contribution and investment strategy, which reflects their risk profile both within and outside the fund.

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Exploring climate risk in the 2023 valuations

An actuarial valuation is ultimately a risk management exercise: there is no such thing as the 'correct' funding level or contribution rate because no one knows the true cost of pension benefits until after they have been paid. Instead, funds and actuaries must choose a reasonable level of contributions for each employer so that the risk in their funding plan is deemed to be acceptable.

Climate change is now widely regarded as one of the main sources of risk for pension schemes, with potential implications for future inflation, investment returns and longevity. LGPS funds, with their open-ended timescales and investments in return seeking assets, are arguably more exposed to climate risk than most pension schemes.

It is therefore essential for LGPS actuaries to consider the implications of climate change in their advice, and indeed the actuarial profession has issued risk alerts to its members reminding them of this fact. Private sector pension schemes are now subject to regulatory requirements to report climate risks under the Task Force on Climate-related Financial Disclosure (TCFD) framework, and the LGPS is currently consulting on how it will implement TCFD.

The Government Actuary has identified climate risk as an area of focus and they will expect all LGPS funds to explain what approach they have taken to measure and consider this risk in their valuation reports and funding strategy statement.

Against this backdrop we have developed a technique for the 2023 LGPS valuations designed to test the resilience of funding strategies to climate risk.

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Exploring climate risk in the 2023 valuations

How we set funding strategy

Toolkit 9 explains our risk-based approach to setting contributions. We consider 5,000 simulated future outcomes for each employer and choose a contribution plan in which a desired proportion of those simulations are successful (fully funded) by the end of a given time horizon. This proportion is typically between 66-80%.
The risk management exercise mentioned above essentially corresponds to choosing what likelihood of success is acceptable for each employer.

The 5,000 simulations are generated by our proprietary economic scenario generator called the Economic Scenario Service (ESS) which allows for different inflation, interest rates, investment returns etc in each year. The distribution of possible values for each variable in the model is based on a mixture of historical trends, current market data and economic theory.

Climate change risk is already implicitly built into the outcomes based ESS model (some of the 5,000 different future outcomes will align certain possible future climate scenarios) but there are no explicit assumptions. Therefore, to understand the resilience of a funding strategy to climate change risk, we want to test whether the results would change significantly if we do explicitly introduce some kind of climate change assumption.

Scenario testing

Climate change is very complex and uncertain and no-one can define the full range of possible climate outcomes, let alone assign a probability to each one. Instead, we have chosen three scenarios representing three broad possibilities for how the world might respond to climate change, which will affect future investment returns and inflation.

The three scenarios are described qualitatively and quantitively on the next page.

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Exploring climate risk in the 2023 valuations

Qualitative scenario descriptions

The scenarios are defined in terms of the pace and extent of the world's response to climate risks, as set out in the table below. The description is divided into different time periods of five years, corresponding roughly to the five-year framework of the Paris Agreement 'ratchet mechanism' under which signatory counties are supposed to review (and reduce) national greenhouse gas emissions.

The three main scenarios all involve periods of higher volatility, corresponding to periods when the response to transition and/or physical risks leads to uncertainty, frequent repricing, changes in government borrowing and inflation, etc.

Table 1 - Qualitative scenario descriptions

"Paris-aligned" scenarios which expect the ‹2°C target to be met		High temperature scenario
Green revolution	**Delayed transition**	**Head in the sand**
Concerted policy action starting now eg carbon pricing, green subsidies.	No significant action in the short-term, meaning the response must be stronger when it does happen.	No or little policy action for many years.
Public and private spending on "green solutions".	Shorter and sharper period of transition.	Growing fears over ultimate consequences leads to market uncertainty and price adjustments.
Improved disclosures encourage market prices to shift quickly.	Greater (but delayed) transition risks but similar physical risks in the long term.	Ineffective and piecemeal action increases uncertainty.
Transition risks in the short term, but less physical risk in the long term.	High expectation of achieving ‹2°C warming.	Transition risks exceeded by physical risks.
High expectation of achieving ‹2°C warming.		Low/no expectation of achieving ‹2°C warming.

Immediate   **Timing of disruption**   10+ years

High   **Intensity of disruption**   Very high

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Exploring climate risk in the 2023 valuations

Quantitative scenario definitions

Turning the qualitative scenario definitions above into precise quantitative definitions is necessarily subjective. We have defined the scenarios in terms of the additional level of volatility associated with each and placing more weight on higher volatility outcomes in the set of 5,000 simulations. This "tilts" the whole set of results towards the conditions which are more likely in each climate scenario.

Scenario definitions extend for 20 years as this is the typical funding time horizon for an LGPS fund. The impact of climate change will be felt for a long time beyond this, but we assume that financial markets will respond within 20 years in all scenarios, on the grounds that the level of climate action by that point will indicate what level of impact can be expected.

Table 2 - Quantitative scenario definitions

Scenario	Volatility weighting criteria *(percentile of core model volatility that the scenario average volatility is increased to)*			
	Years 1-5	Years 6-10	Years 11-15	Years 16-20
Green revolution	Very high (85%ile)	Moderate (60%ile)	Moderate (60%ile)	
Delayed transition		Very high (85%ile)	High (75%ile)	
Head in the sand			High (75%ile)	Very high (85%ile)

The volatility criteria are applied to four key variables in the ESS model: global equity returns, CPI inflation, credit spreads and real yields. The correlations underpinning the model then ensure that this volatility feeds through to all other variables to an appropriate extent. All other ESS model assumptions including correlations, long-term yield levels etc are unchanged – in other words we assume that fundamental economic principles and observed historic correlations will still apply.

We have not considered a scenario where the disruption from climate change is so extensive that markets cease to function (for example) given that this would have such a profound impact on life and society as a whole the funding of pension benefits would be of low concern.

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Exploring climate risk in the 2023 valuations

Impact of applying the scenarios

The following charts show how the distribution of two of the four target variables mentioned above compares between the core ESS model (solid black lines) and the three different scenarios (dashed lines).

Note that these charts are based on a pre-2023 calibration of the ESS model.

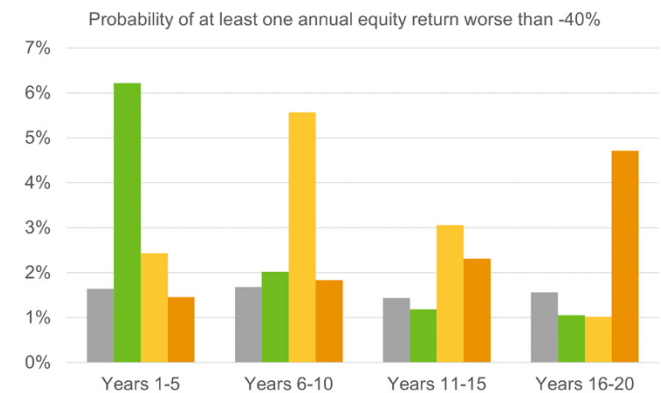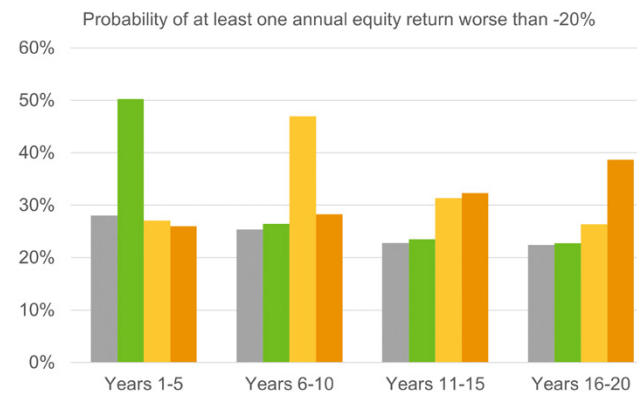### Annual CPI inflation
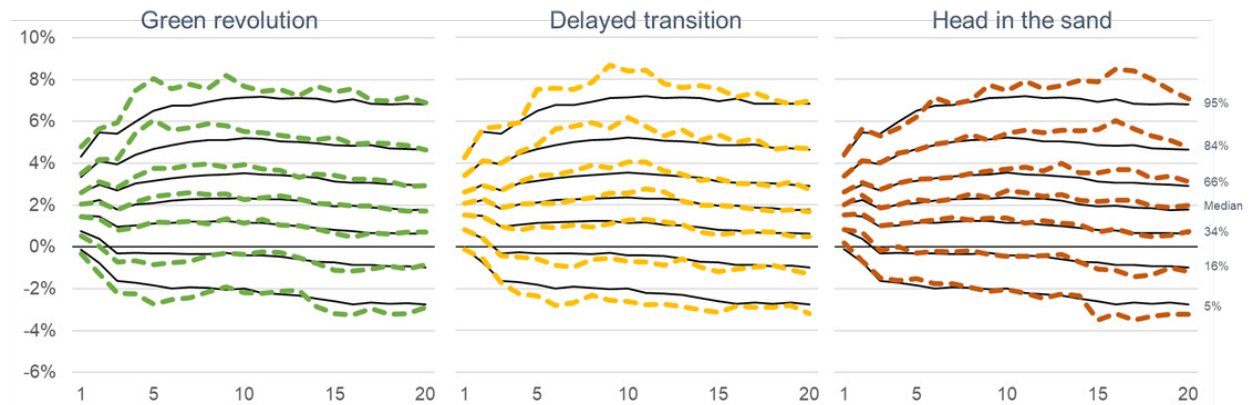
Annual Global equity returns

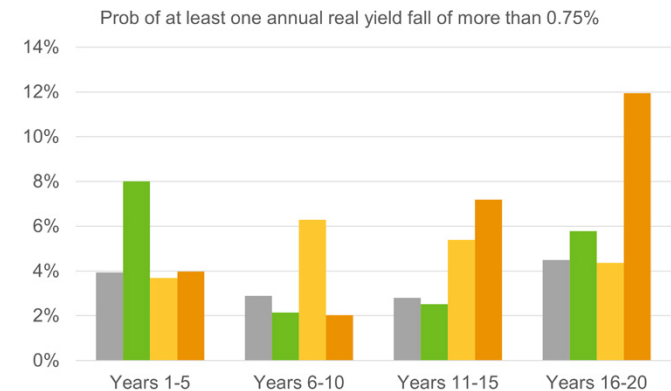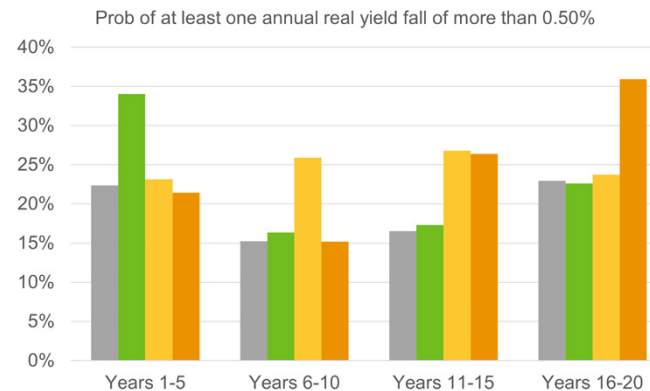## 10
Exploring climate risk in the 2023 valuations

Propability of a significant equity shock

These charts show how the chance of significant annual fall in global equity values is significantly greater in the periods of disruption in each scenario, compared to the base case in grey. From left to right the bars in each cluster refer to the base case, *Green revolution*, *Delayed transition* and *Head in the sand* scenarios.

Probability of at least one annual equity return worse than -20%

Probability of at least one annual equity return worse than -40%

Propability of a significant fall in real yields

Similar to the above, these charts show how the chance of a major fall in real yields is significantly greater in the periods of disruption in each scenario, compared to the base case in grey.

Prob of at least one annual real yield fall of more than 0.50%

Prob of at least one annual real yield fall of more than 0.75%

10
# Exploring climate risk in the 2023 valuations

How the scenarios affect model results and conclusions

The scenarios can be applied to any output which relies on projections from the ESS model. With an asset-liability model, for example, we will have 5,000 projections of how the funding level changes in future based on 5,000 ESS simulations. Each individual simulation is exactly the same under the climate scenarios as it is in the core model, but because some simulations are weighted more heavily the conclusions we can draw are different.

For example, one of the key output statistics is the likelihood of success, where success is defined as being fully-funded at the end of a given time horizon. In the core model this is simply the number of projections in surplus, divided by 5,000. In the climate scenarios, we use the total weight rather than the number of scenarios. If, say, 3,500 scenarios are fully funded then the core model likelihood of success is 3,500 / 5,000 = 70%. But if in one of the climate scenarios the highly-weighted outcomes tend to have worse outcomes and aren't fully-funded, the likelihood of success will be lower – perhaps materially so. The same principle applies to all other statistics such as median funding level and downside risk (average funding level in the worst 5% of outcomes).

The core model might say that a given strategy has a 70% likelihood of success, and the climate scenario analysis might say that this falls to 65% in the worst of the three climate scenarios. It's then a question of judgement as to whether this increase in risk is acceptable, and therefore whether the strategy continues to be considered appropriate.

This approach to modelling and exploring climate risk does not focus on trying to predict how much higher/lower the funding level will be in the future in a particular climate scenario. Instead, it complements funds' understanding of funding risk by "stress testing" the model to check that it isn't drastically underestimating how this level of risk might be affected by climate change.
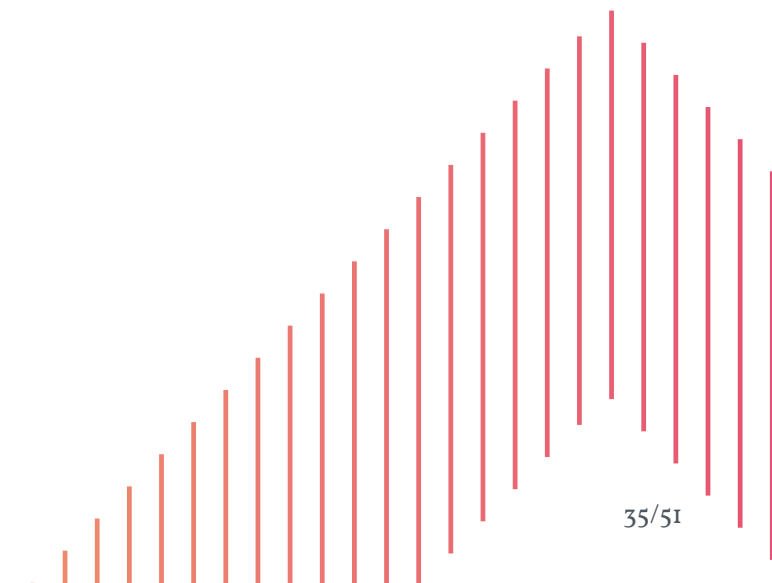
II
Employer engagement

For months the focus of the valuation is getting a set of individual employer results ready. It is a significant milestone in the year, but it does not mean funds can relax. The next step is communicating the results to employers.

Given that employers are one of, if not the most affected stakeholder by the valuation results, getting this engagement right is crucial.

The first place to start when thinking about how best to engage is to remember that a lot of employers may only think about pensions funding once every three years. Combined with potential staff turnover, this means all communications need to provide the necessary information but also include clear, concise and easy-to-understand explanations.

Creating an employer engagement plan for the valuation will help with this. When setting out the valuation year timetable, think about when and what you will be communicating to employers and, in today's post-Covid world, how you will do that communication.

Ahead of the valuation

Signposting the valuation to employers in newsletters in the run-up and discussing at employer forums can help explain some of the valuation basics, eg it's the exercise where your contribution rate is re-calculated. This point of engagement can also be used to emphasise the importance of employers providing clean data and keeping the fund up-to-date with their financial situation and any plans to leave, close to new entrants or restructure (all of which will likely affect their contribution rate).

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Employer engagement

Communicating the valuation results

Most funds communicate the valuation results to employers using a results schedule provided by their actuary. For an employer who understands pensions funding or has lots of experience from previous valuations, this schedule on its own is likely to be sufficient. However, many will not fall into this category.

For these employers, some context around the results will be needed. Ideally, when the results schedule is issued to the employer, the fund should also be:

- Reminding them what a valuation is and how it affects them.

- Explaining, at a high level, the nature of the information contained in the results schedule.

- Sign-posting if there have been any changes to the funding strategy that affects them and, if so, why the changes have been made and how it will affect their funding plan.

- Linking the results to the updated Funding Strategy Statement and noting the consultation that will be undertaken on it.

It's now typically best practice for funds to hold an employer forum around the point of issuing results. This allows the fund and actuary to give more context to the valuation and the results and answer any questions. Forums used to always be held face-to-face but now some are making use of video calls to host them virtually. There are pros and cons to each option, with some wanting to use the forum as an opportunity to meet employers face-to-face to build up a relationship with them whilst others will want to reduce as many barriers as possible to people attending the forum.

Finally, you may also want to think about how the messaging and communication varies between different groups of employers in the fund. For example, open and closed employers probably have different levels of focus on the funding balance sheet and considerations around exit. This variation could be reflected in the communications sent to employers, or even separate employer forums where the messaging can be tuned to the specific audience.

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Employer engagement

Managing queries

It's expected that some employers will have queries about their results. Some of the queries will be general in nature, whilst others will be specific and may focus on affordability issues or planned changes in the status of their participation.

Typically, responding to queries is a reactive situation for the fund. However, there are some pro-active measures you can take for this stage:

- When reviewing and discussing the initial employer results with your actuary, have an eye on any results where you may expect an employer to ask a question. You can then have a discussion at this point to agree a response or if any additional should be communicated to the employer when issuing their results.

- Have some stock answers to 'typical' valuation queries written down that members of the fund team can use to quickly respond.

- Set-up dedicated dates and times for employers to attend calls to ask queries so you are able to do in a concentrated spell. This may help avoid a constant, ongoing stream of queries which can either get lost or take up more time on top of the day job.

Audit trail

Finally, as you get close to the end of the valuation you want to make sure that there will be no issues when the new contribution rates come into force on 1 April, eg an employer claims they were never notified of their new rate. To avoid this, funds could ask employers to acknowledge receipt of their results and track the responses, with targeted follow up for any outstanding replies. This approach should also be used if a fund has adjusted the contribution rate during follow-on discussions so everyone is clear on what rate is going to be paid and the reasons why.
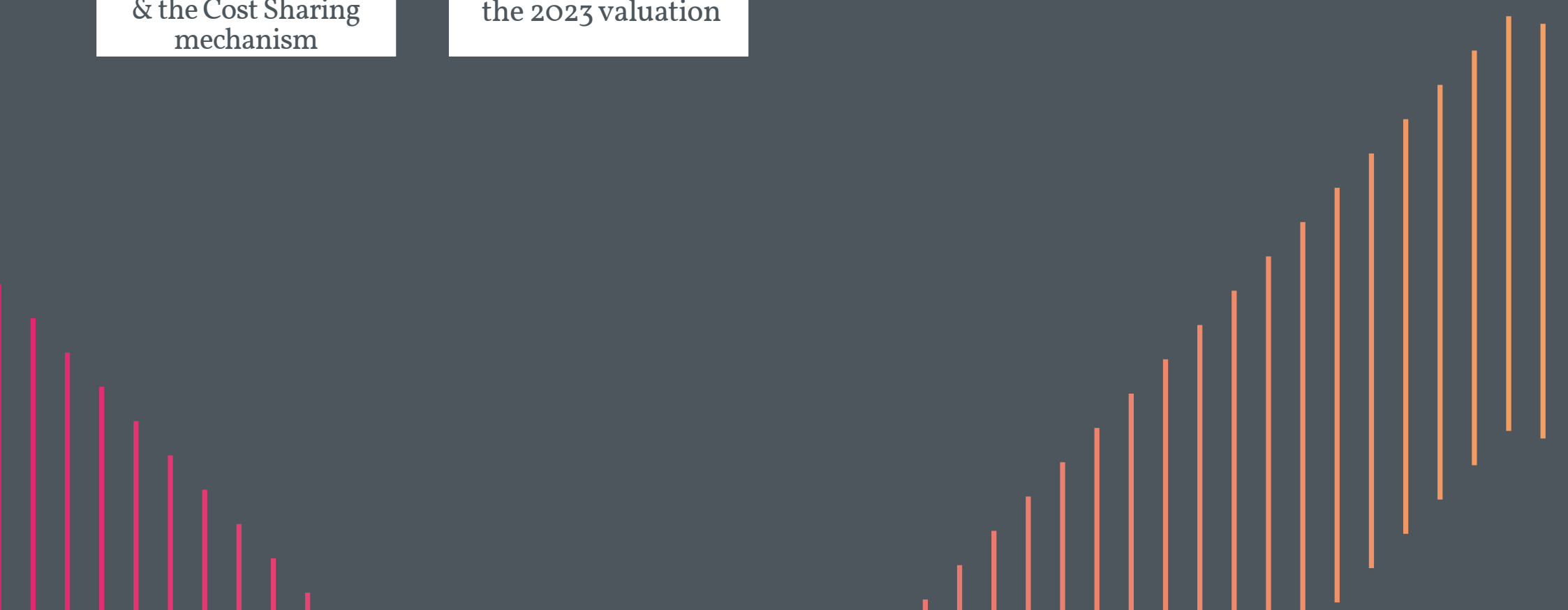
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Fine Tuning

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Allowing for McCloud & the Cost Sharing mechanism

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Impact of Covid-19 on the 2023 valuation

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Allowing for McCloud and the Cost Sharing mechanism

Two Court of Appeal judgements in December 2018 (collectively referred to as the 'McCloud' judgement) ruled that transitional protections in the new 2015 Firefighters' and Judges' pension schemes amounted to unlawful discrimination against younger members (and indirectly against women and ethnic minorities).

Since then, the government has accepted that a remedy to address this discrimination must be put in place in all public service schemes, including the LGPS.

The regulations to address the discrimination were consulted on in 2020 but the changes have yet to be made to the scheme regulations. The Scottish Public Pensions Agency (SPPA) wrote to all Scottish funds in April 2023 to confirm how they wanted the remedy to be allowed for in the 2023 valuations. Specifically, LGPS benefits should be valued as per the regulations in force at 31 March 2023 with the following exceptions:

- The current underpin (which only applies to those members within 10 years of their NPA at 31 March 2012) will be revised and apply to all members who were active in the scheme on or before 31 March 2012 and who join the post April 2015 scheme without a qualifying service gap.
- The period of protection will apply from 1 April 2015 to 31 March 2022, but will cease when a member leaves active service or reaches their final salary normal retirement age (whichever is sooner).

- Where a member remains in active service beyond 31 March 2022, the comparison of their benefits will be based on their final salary when they leave the Scottish LGPS or when they reach their final salary scheme normal retirement age (again, whichever is sooner).
- Underpin protection will apply to all qualifying members who leave active membership of the Scottish LGPS with an immediate or deferred entitlement to a pension.

The underpin calculation will consider when members take their benefit so that they can be assured they're getting the higher benefit. SPPA expects that all administering authorities will reflect the above amendments when valuing liabilities.

The rest of this guide explains how we make allowance at the 2023 valuation for the above.

Please note that the contents of this guide have been written to act as a reference source for further advice during the valuation process and are of a technical nature. It has been necessary to include a high level of detail in this guide to ensure the advice we deliver during the 2023 valuation complies with Actuarial Professional Standards.

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Allowing for McCloud and the Cost Sharing mechanism

How will the McCloud remedy affect the benefits paid out in future?

The above assumptions mean that, when an eligible member retires, the benefit accrued between 1 April 2012 and 31 March 2022 would be calculated in two ways:

- 2015 scheme: CARE with a 49ths accrual rate, and a normal retirement age equal to state pension age
- 2009 scheme: Final salary with a 60ths accrual rate, and a normal retirement age of 65

Allowance would also need to be made for any retirement age protections and any early or late retirement factors. The member would then receive the better of the two benefits. There are four key elements which determine which method ends up giving the more generous benefit:

Element	Explanation	Which is more generous?	Level of uncertainty
Accrual rate	How quickly pension benefits build up each year.	2015, by over 22% (except for the very small number of members in the 50:50 scheme).	None.
Retirement age and early/late retirement factors	Benefits are adjusted for members retiring before/after their normal retirement age for each scheme.	Generally 2009 as the retirement age is generally lower, although many members will see no difference due to protections.	Retirement age is uncertain as members have freedom to choose. Factors are reviewed periodically by the Government Actuary's Department (GAD) but are otherwise fixed.
Real salary increases (versus CPI inflation) from 2014 to retirement/ deferment	2009 scheme depends on pensionable pay at date of retirement (or deferment for deferred members).	Depends on pay increases versus CPI inflation – would expect pay increases to be higher than CPI inflation in the long term.	**Very high** – future salary increases will vary significantly by year and by member depending on career progression.
Rate of withdrawal from active service	The longer members remain active contributors in the LGPS, the longer the 2009 benefit will be linked to salary increases.	The lower the rate of withdrawals, the more likely the 2009 benefit will overtake the 2015 benefit.	**Moderate** – will vary by member depending on their career choices but is historically more predictable than salary increases at whole fund level.

Because of the uncertainty over future pay progression and retirement age, it's impossible to determine in advance which scheme will give a higher benefit. The answer will only be known for each member when they retire and benefits can be calculated accurately under both methods.

12
Allowing for McCloud and the Cost Sharing mechanism

How will we estimate the cost impact?

Active members

For each member we will estimate their 2015–2022 benefit at retirement (based on service up to the valuation date) under both the 2009 and 2015 schemes, and then take whichever is greater. If the 2009 scheme benefit is expected to be greater, this leads to a benefit uplift and therefore a cost impact.

The process is summarised as:

1. Identify which members are eligible for the extended protections, ie those active at 31 March 2012.

2. Multiply the member's existing CARE pot by 49/60 as an estimate of the equivalent benefit under the 2009 scheme (we don't have full salary history prior to 2015 to work out something more accurate).

3. Generate a salary increase in each year, based on the assumption described below, allowing for the likelihood that the member is still active in that year.

4. Calculate the cumulative salary increase up to retirement.

5. At the member's 2009 scheme retirement age compare the two benefits, allowing for any early retirement reductions to the 2015 scheme benefit, and take whichever is greater.

By repeating this process for every active member in a fund, we can estimate how much greater members' benefits may be as a result of the McCloud remedy, split by age and member group (ie male/female, full-time/part-time etc). The results of this analysis are then fed into the rest of our valuation calculations to adjust liabilities and contribution rates accordingly. For example, if our analysis shows that female employees working full-time and born between 1975 and 1980 are likely to see a 15% benefit increase thanks to McCloud, we will increase their liabilities for 2015–2022 service by 15%.

Deferred and pensioner members

The McCloud ruling applies to all service earned from 1 April 2015 to 31 March 2022, so pensioners and deferred pensioners who were active at some point since 2015 could also be affected.

We've not allowed for any impact on pensioners on the assumption that virtually all who have retired since 2015 will have been eligible for the underpin anyway.

For deferred members we'll make a flat increase of 1% to the liability related to 2015–2022 service for all members who became deferred since 2012. These members are unlikely to benefit from McCloud as they lose the 'final salary link' when moving to deferred status. However, some members could still benefit if they return to active service or if they had a substantial pay rise before they left. The 1% loading is an approximate way to allow for these factors.

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Allowing for McCloud and the Cost Sharing mechanism

What assumptions will we make?

Salary increases

The salary increase assumption has a very significant impact on which scheme is most generous, but each member's future salary growth is very uncertain.

Traditionally, when we carry out an actuarial valuation, the salary growth assumption is comprised of a fixed 'inflationary' element (eg CPI inflation + 1.0% pa. and an age-dependent 'promotional' scale based on analysis of historical trends and future expectations. These assumptions are described further in guides 4 and 5. Using a fixed assumption in this way is appropriate for most valuation purposes but is unsuitable for modelling the impact of McCloud as it means everyone in the same category (defined by age, sex, retirement age etc) would have exactly the same salary progression up to retirement. The underpin would therefore either 'bite' for everyone

in a certain category or bite for no one at all, which is not realistic in practice and leads to 'cliff-edges' in the results.

Instead, to capture both the uncertainty and variability of salary increases, we will model them stochastically. This means that every member has a different salary increase for each year in the future, generated from a specified probability distribution. The probability distribution has been designed so that the median value at each age mirrors very closely the simple assumption made elsewhere in the valuation (including the promotional element). This ensures that the allowance for McCloud is consistent with the rest of the valuation calculations.

For example, for a fund whose inflationary pay growth assumption is CPI + 1% pa, the parameters of the distribution are as follows:

Age band	Lognormal probability distribution *All pay increases are expressed in real terms, ie net of CPI inflation*			
	Promotional element (pa)	Inflationary element (pa)	Combined median (pa)	Standard deviation
16 – 25	2.5%		3.5%	
26 – 35	2.0%		3.0%	
36 – 45	1.0%	1.0%	2.0%	2.0%
46 – 55	0.0%		1.0%	
56 – 65	0.0%		1.0%	
66+	0.0%		1.0%	

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Allowing for McCloud and the Cost Sharing mechanism

Based on these parameters, the resulting distribution of pay increases at ages 30 and 50 is shown below:

Model distribution of annual real pay increases at age 30 vs age 50
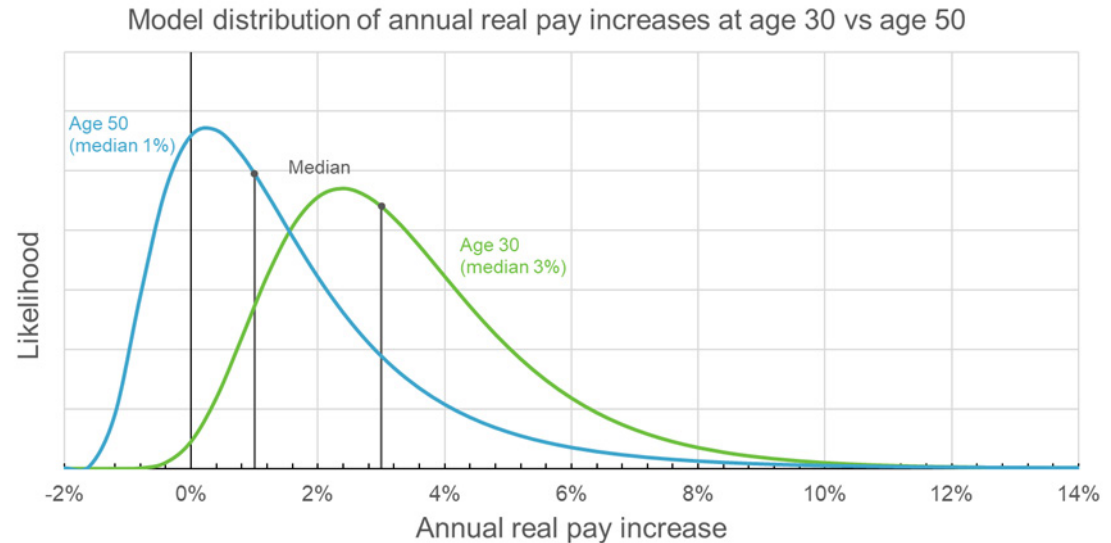
The distribution allows for the possibility of negative real pay increases (ie pay rises below inflation) as well as large positive increases. Real terms pay cuts are likely to happen when pay is frozen but inflation continues, whereas pay rises could be very high depending on promotions and career progression. This is why the shape of the distribution is not symmetrical.

As with the pay increase assumption used at the valuation this is a long-term assumption. Some of the members affected by the McCloud remedy might not retire for decades.

Although inflation is expected to be high in the short term, which increases the likelihood of negative real increases, we feel the above distribution is appropriate over the long term. If we do underestimate the likelihood of real pay falls, it means that the cost impact of the McCloud remedy ends up being overestimated. Given that the impact is very small anyway, any overestimation of the cost impact will not lead to materially different valuation results or funding strategies.

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Allowing for McCloud and the Cost Sharing mechanism

Withdrawal from active service

For the McCloud analysis we will adopt the same withdrawal assumption used for your 2023 actuarial valuation. The withdrawal decrements at sample ages will be shown in your fund's Initial Results Report and the final Valuation Report.

Other assumptions

To calculate the reduction or uplift to pensions taken before/after normal retirement age, we will use the LGPS early and late retirement guidance and factors in force at the time of writing, ie:

- **Early Retirement:** Guidance dated 5 May 2021 and factors implemented 8 January 2019
- **Late Retirement:** Guidance dated 5 May 2021

To estimate each member's 2009 scheme benefit for the period 1 April 2015 to 31 March 2022, we will multiply their CARE pot by 49/60. This implicitly assumes that:

- All members have been in the main section of the 2015 scheme (rather than the 50:50 section)
- Pay increases since 2015 have been in line with CPI inflation
- The pay definitions for the 2009 scheme and 2015 scheme is identical

We believe the above assumptions are appropriate and proportionate given the data available and the expected financial impact of McCloud on liabilities.

The impact of McCloud is sensitive to the assumptions outlined above. If any of the factors feeding into these assumptions were to change then it may have a significant impact on the funding impact of McCloud.

Our model allows for all the significant factors influencing the cost impact of the McCloud ruling. Given the uncertainty around the design of the remedy, the data available and the complexity of the LGPS benefit structure, there are some elements that we will not allow for:

- Active members leaving the scheme before retirement age due to ill-health retirement (the incidence rates of ill-health retirements are typically very low).
- Active members in the 50:50 scheme (who elect to pay lower employee contributions in return for lower benefits). Given the low take-up rate of this option, we do not believe this will have a material impact on the results.

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Allowing for McCloud and the Cost Sharing mechanism

Cost Sharing

Background

Alongside McCloud, there's another ongoing national process which is resulting in uncertainty around the benefit structure of the LGPS – the Cost Sharing mechanism or "Cost Cap".

As part of the public sector pension scheme reforms in the first half of the 2010s, a mechanism was put in place which sought to protect employers from significant increases in future pension costs. Historically, any variations in pension costs fell to the employer to fund. The mechanism sought to re-distribute the risk and share large cost variations with members.

The mechanism was originally intended to act as a capping mechanism on costs, ie action would only be taken if costs were higher than expected. However, during the reform implementation, the mechanism was amended to a symmetrical design, ie there would be a cap and a floor on cost. Therefore, if costs were less than expected, then action would be taken to improve the benefit structure. The Cost Cap became Cost Sharing.

Under the Cost Cap the Government Actuary Department (GAD) calculates a notional "target cost" for each public service scheme, using a special set of actuarial assumptions. This target cost bears no relation to actual employer contributions, particularly in the LGPS where they're set at individual employer level. At each Cost Cap valuation GAD determines how much this notional cost has moved away from the target cost. If the movement is greater than 2% of pay (in either direction) (the corridor has recently been increased to 3% of pay following a review), benefits must be changed to bring it back in line.

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Allowing for McCloud and the Cost Sharing mechanism

Impact on the LGPS

The first Cost Cap valuation of the LGPS in Scotland was as at 31 March 2017, with initial results suggesting that a small improvement in benefits (ie an increase in employer cost) would be required. However, the mechanism was paused in January 2019 to allow the impact of the McCloud judgement to be factored in. The results allowing for McCloud were published in June 2022, and recommended no change in benefits (and hence no impact on employer costs).

Cost Cap valuations take place every four years in line with the unfunded scheme valuations, and the 2020 Cost Cap valuation is still ongoing. It is not clear when the results from this will be available, however the reforms made to the mechanism mean that there is a lower likelihood that benefit changes will be required.

Impact on the 2023 valuations

No allowance can be made for the 2020 Cost Cap valuation as no results have been published. However, it's less likely that the mechanism will bite and that any benefit changes will be required as a result.

The progress of the 2020 cost cap valuations will be monitored carefully during the 2023 valuations and updates will be provided where results become known.

If you wish to discuss any of the points covered in this guide or require further information on either McCloud or the Cost Cap for your stakeholders, please get in touch with your usual Hymans Robertson contact.

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Impact of Covid-19 on the 2023 valuation

Undoubtably the largest external event since the 2020 valuations has been the Covid-19 pandemic. While it's difficult to summarise the personal impact that the pandemic had on so many, we do need to consider the effects on the 2023 valuation and in particular, what impact the pandemic has had on asset values, liabilities and the cost of benefits in the future.

Asset volatility

The emergence of Covid-19 through the early months of 2020 caused significant market volatility and uncertainty with a fall in asset values at the end of March (see chart below) which were captured as part of the 2020 valuation.

Asset value progression (31 March 2019 = 100)

However, markets more than recovered throughout the latter part of 2020 and strong investment performance continued into 2021. Investment returns were more volatile throughout 2022 with some declines in asset value. The asset value for each fund will be reflected in the final 2023 valuation results, most (if not all) will see the benefit of strong investment performance over the valuation period, despite the period of significant volatility.

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Impact of Covid-19 on the 2023 valuation

Liability movements

Unfortunately, many funds may have experienced a higher number than usual of reported deaths throughout the period since the last formal valuation. However, analysis of this data suggests the impact on liabilities is generally small (less than a 1% change), due to the size of pension and / or the age of the individuals who sadly passed away.

Each fund will receive analysis from their actuary showing the impact of member deaths on the liabilities calculated as part of the valuation process.

Impact on future benefit costs

As discussed in Toolkit 5 - Longevity and other demographic assumptions, the Actuarial Profession's CMI model (used to set the life expectancy assumption) allows actuaries to incorporate any longer-term impact of the pandemic on future longevity. The CMI model introduced a 'W parameter' which increases the weight placed on 2020 and 2021 death data when setting the future longevity assumption.

There are varying schools of thought on the longer-term impact of Covid-19 which may lead to different outcomes for the cost of pension provision. For some, life expectancy may be improved through an improved work-life balance, increased sanitation measures and increasing awareness of the importance of healthy living. There's also the alternative possibility that longer NHS waiting lists leading to delayed treatment and the impact of long covid could shorten life expectancy. Life expectancy changes ultimately impact on the cost of defined benefit pension provision like the LGPS.

As the number of deaths has continued to exceed the five-year average throughout 2022, there's emerging evidence that Covid-19 (or other factors) are influencing life expectancy. We will therefore make some allowance for the inclusion of 2020 and 2021 data within the calibration of the latest available CMI model (and in practical terms will set the W parameter within that model to be non-zero) to reflect that recent death experience is part of an emerging trend.

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Impact of Covid-19 on the 2023 valuation

Employer covenant

We have already seen the impact the pandemic has had on some businesses. We expect that in some individual cases, an employer's covenant will have significantly deteriorated as a result of what's happened since 2020. In these cases, any change in contribution rate as a result of the 2023 valuation, or even continuing to participate at all in the LGPS, may be problematic. In such cases, it is better to be aware of the issues as early as possible instead of waiting to find them out later on in the valuation year.

With that in mind, we would advise that funds review their employer database to identify any employers that are especially exposed to the issues in the economic and social environment brought on by the pandemic. The fund should then open a dialogue with these employers as soon as possible to gain some understanding and reassurance (or otherwise) about their:

- ability to fund their LGPS pension obligations
- ability to fund any cessation deficit if/when they leave the fund
- future pension provision arrangements and whether the pandemic has accelerated their thinking.

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