

Oxfordshire Pension Committee

Assumption Setting for the 2022 Actuarial Valuation

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A glossary of technical terms used in this report can be found in Appendix 4

The valuation process

The valuation process: Pensions Committee



Valuation basics

How the Fund works



**Collect money
(contributions)**



**Invest money
(assets)**



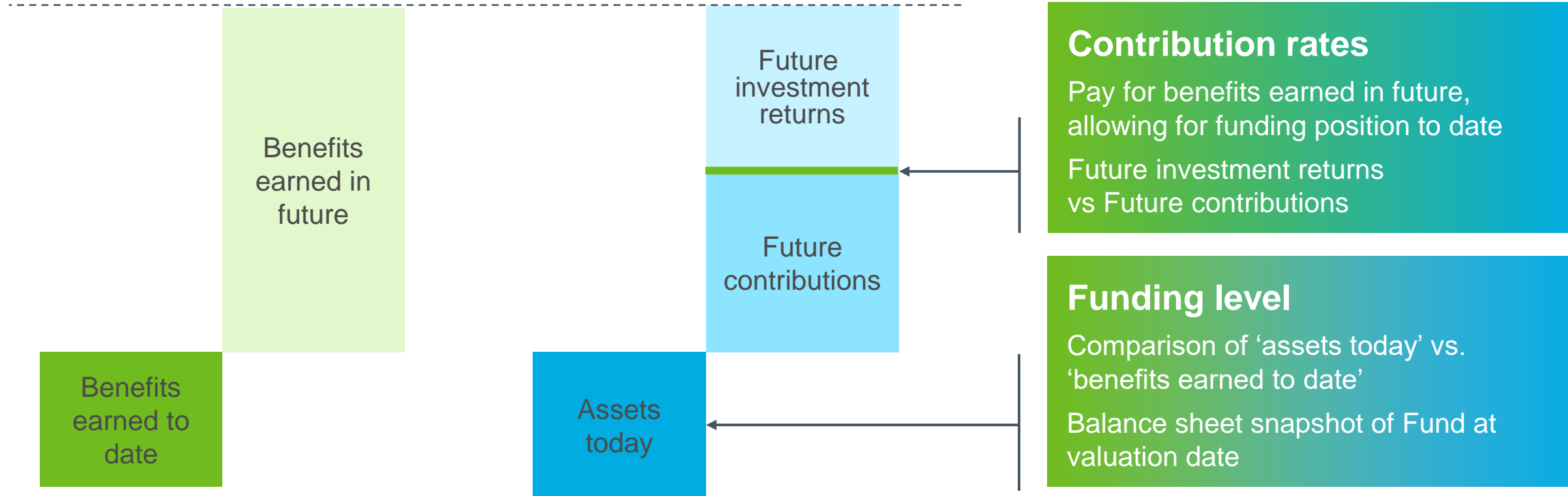
**Pay money out
(benefits)**

Use the menu bar above to navigate to each section.

Outputs of the valuation

Liabilities

Assets



Contribution rates
 Pay for benefits earned in future, allowing for funding position to date
 Future investment returns vs Future contributions

Funding level
 Comparison of 'assets today' vs. 'benefits earned to date'
 Balance sheet snapshot of Fund at valuation date

Benefits "Liabilities" valued using assumptions

Why and how we set assumptions

What assumptions are needed

Assumption	Description	Required for
Financial assumptions		
Future investment return	Projected annual returns and volatility on asset classes invested by the Fund e.g. UK equities, property etc.	Asset projection – to project employers’ asset shares to the end of the funding time horizon
Discount rate	Annual rate of future investment return that will be earned on the Fund’s assets after the end of the funding time horizon	Funding objective – to place a present value at the end of the funding time horizon of the future benefit payments
CPI inflation (benefit increases / CARE revaluation)	Future Consumer Price Index inflation	Benefit projection – to determine the size of future benefit payments (LGPS benefits are index-linked to CPI inflation)
Salary increases	Future inflationary salary awards	Benefit projection – to determine the size of future benefit payments (the pre-2014 final salary and post-2014 Career Average Revalued Earnings benefits are linked to salary) Asset projections – to determine future payroll values (and hence contribution income)
Demographic assumptions		
Baseline longevity	How long we expect members to live based on current observed death rates	Benefit projection – to determine how long each member’s benefits are paid for
Future improvements in longevity	How death rates are expected to change in the future (historically life expectancy has improved over time)	Benefit projection – to determine how long each member’s benefits are paid for
Other demographic events	Events such as retirement age, rate of ill health retirement, level of commutation and 50:50 take up	Benefit projection – to determine the size and timing of future benefit payments

How we review and set assumptions

Our approach

1. **Look at the assumptions from the last valuation**
2. **Review evidence and consider the landscape:**
 - Changes in financial/economic conditions
 - Regulation and guidance
 - Population and general pension scheme statistics
 - Fund specific data and experience, especially members' demographic characteristics
 - Future trends
 - Assessment of employers' financial strength
 - Investment strategy
 - Fund views – and employer views in some cases (e.g. salary increases)
3. **Propose, discuss and agree changes to set new assumptions**

Acknowledging uncertainty

There is no certainty about how the future may evolve and it is important to acknowledge this uncertainty during the valuation. Understanding the impact of the future deviating from the assumptions on funding levels and contribution rates is an important aspect of how the Fund manages risk.

Ways of understanding the impact:

- **Stress testing** – measures immediate changes in assumptions by testing alternatives at valuation date. We will stress test the longevity assumptions as part of the valuation.
- **Risk-based modelling** – risk-based approach involves projecting a wide range of possible future outcomes. There is no single figure for an assumption – instead, we work with a future range. We use a “risk-based” approach to calculate the benefit and asset projections and set the underlying financial assumptions.
- **Scenario projection** – considers future projections across different scenarios, bringing together relevant factors for a better understanding of overall impact. We will use different climate change scenarios at the valuation to help you understand this risk.

Most assumptions are a best estimate, set objectively without margins for adverse experience. A prudent discount rate assumption meets the requirement (from LGPS guidance) for a ‘prudent’ valuation.

Assumptions matter – projecting future benefit payments and assets

To determine the level of employer contributions we carry out two projections.

The **benefit projection** estimates the future payments that will be made to members, allowing for future pension increases, death and other events.

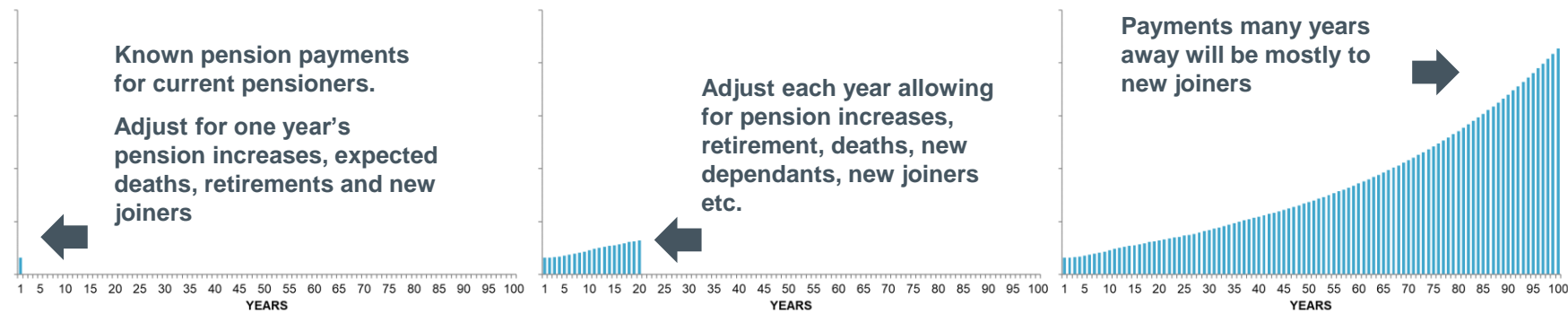
The **asset projection** takes into account future investment returns, contributions and benefits paid to members.

The contribution rates are set so at the funding time horizon, there are enough assets to meet future benefit payments in a sufficiently high number of future economic scenarios – the funding objective.

Because we can't see into the future, the projections mean working with uncertainty and require assumptions.

We review assumptions regularly to make sure they're relevant to the financial, demographic and regulatory environment.

Illustration: how we project benefit payments



Two types of assumptions:

1

Financial assumptions (like inflation) affect the amount of payments and asset values.

2

Demographic assumptions (like how long members live) affect the timing of payments.

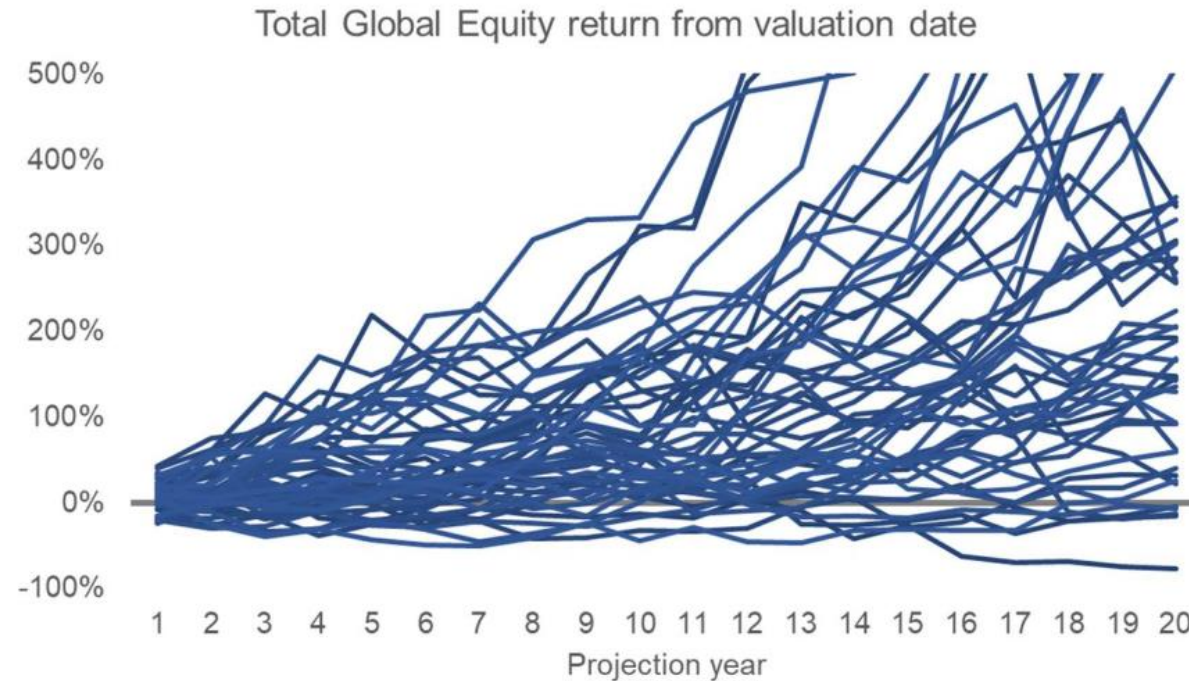
Assumptions and our valuation approach

We use a “**risk-based**” approach to calculating the benefit and asset projections.

Under this approach, we use an economic scenario generator (Hymans Robertson’s proprietary generator is called the Economic Scenario Service – ESS) to produce 5,000 different simulations of future economic conditions and associated assumptions.

The assumptions in each scenario vary by year i.e. they are not ‘flat’, so they are a better representation of reality than a single, linear assumption.

The chart shows a sample of the 5,000 simulations for future cumulative total returns on global equities over the next 20 years.



This approach allows the generation of a distribution of future benefit and asset projections so all stakeholders in the Fund can better understand risk.

Other factors affecting assumptions at the 2022 valuation

Climate change

Climate change will affect many aspects of the Fund's assets and liabilities, for example the return on its assets, the inflation used to revalue benefits and the longevity of its members. The uncertainty around future climate pathways and their impact means that it is impossible to factor climate change considerations meaningfully into every assumption described in this paper.

We will however consider climate change scenarios when setting the long-term longevity improvements assumption, and the Fund will consider climate risk in its funding strategy by testing the resilience of the strategy in three climate scenarios.

Possible benefit changes

McCloud

Benefits accrued by certain members between 2014 and 2022 may be increased in future following the outcome of the McCloud case, which ruled that transitional protections introduced in 2014 to older members were discriminatory. We will make an allowance for the cost of these potential improvements in the 2022 valuation, based on the assumptions agreed here (in particular the salary increase and withdrawal assumptions). The impact is expected to be minimal for the majority of employers.

Cost sharing mechanism

Benefits could also change as a result of the 2016 and 2020 "cost cap" valuations, neither of whose outcome has been completely confirmed. If new assumptions are necessary to value any potential changes we will agree these separately.

Guaranteed Minimum Pension equalisation and revaluation

As per our approach for the 2019 valuation, we will assume that the Fund will fund all increases on GMP for members with a State Pension retirement date after 5 April 2016.

Other legal cases

Benefits could change as a result of other legal challenges (e.g. the "Goodwin" case affecting partner pensions), but at present we do not believe any additional assumptions are needed to value these.

Financial assumptions

Level of prudence

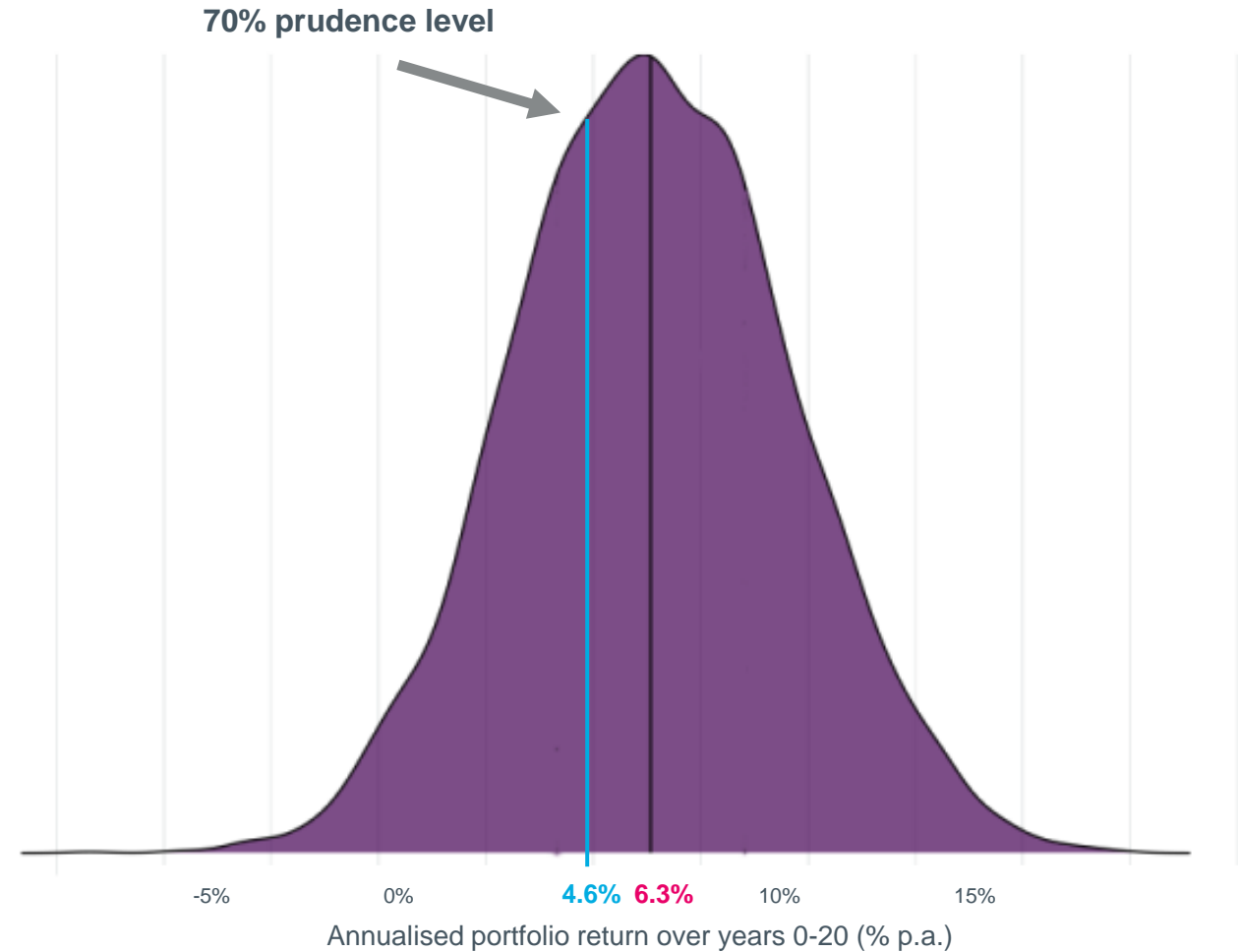
The prudence level in the future investment return (discount rate) assumption is the likelihood of the Fund’s investment strategy achieving a given annualised return over the period.

Using the Fund’s current investment strategy and running 5,000 simulations of our proprietary economic model (ESS), we have generated a distribution of possible future annual investment returns over the 20 years from the valuation date. From the chart we can derive that:

- There is a 50% (best estimate) likelihood of the Fund’s investments achieving at least an annual return of **6.3%** p.a. over the next 20 years;
- There is a 70% likelihood of the Fund’s investments achieving at least an annual return of **4.6%** p.a. over the next 20 years (ie 70% of outcomes in the chart opposite lie to the right of this prudence line)

For the purpose of reporting a funding level and funding surplus/deficit for the 2022 valuation, **we have proposed the investment return assumption which has an associated 70% likelihood, namely 4.6% p.a.** (note this has been increased slightly from 67% adopted at 2019, to allow for the risk of increased volatility in markets, e.g. post-pandemic, Ukraine invasion, climate transition risks).

The same level of prudence (70%) is used for the following 20 years (years 20-40) and the discount rate is based on the underlying economic conditions in 20 years time.



The Fund’s level of prudence helps to balance to the long term solvency of the Fund while seeking to maintain affordable contributions for employers.

Investment return / discount rate

The approach to calculating the assumed future investment return differs over the projection period. However, the key decision for the Fund is to agree the level of prudence being adopted in setting the underlying assumptions within these approaches.

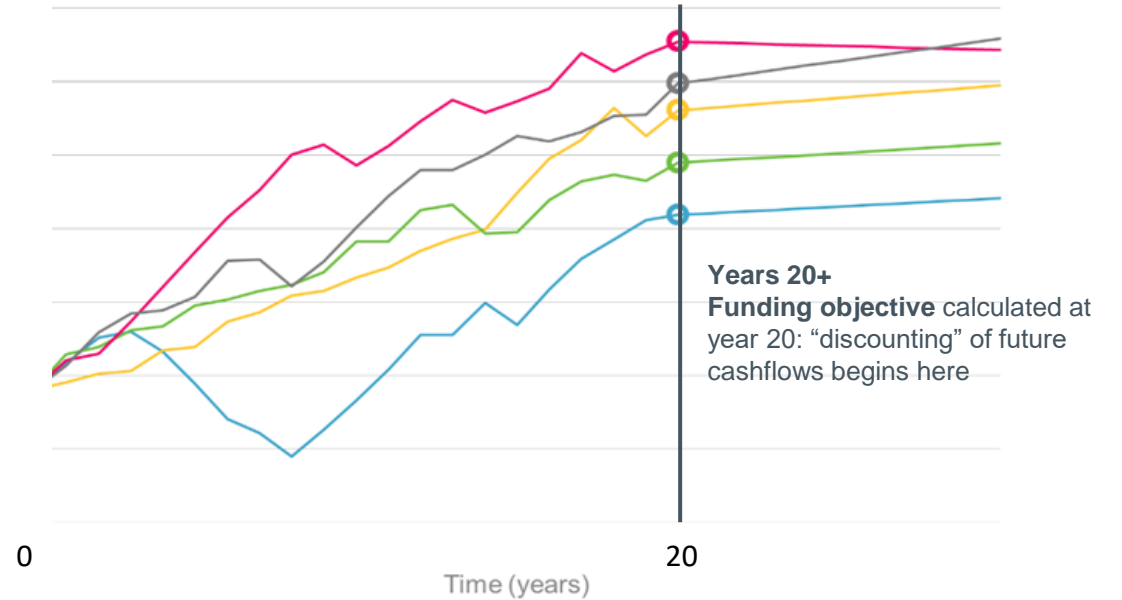
Years 0-20: Risk-based approach to generate future investment returns based on the Fund’s investment strategy (using ESS).

Years 20+: projections further into the future lead to greater uncertainty. For this reason we adopt a ‘straight line’ approach to discounting the benefit cashflows. The Fund’s discount rate is derived based on the underlying economic conditions in year 20, allowing for the Fund’s level of prudence.

Same level of prudence (70% at the 2022 valuation) applies over both periods which drives the assumptions in line with the Fund’s risk appetite.

Years 0-20:

Risk-based calculations over years 0-20 allowing for timing of cashflows and volatility of investment returns and inflation



Employer contribution strategies may be set using a different a time horizon (eg 17 years) however the above principle remains the same

Assumptions of future investment returns are generated in line with the Fund’s proposed prudence level (70%)

Investment return and discount rate assumptions

<p>2019 approach</p>	<ul style="list-style-type: none"> • Year 0-20: Investment return assumptions: Risk-based approach to generate future investment returns, based on Fund’s investment strategy. • Year 20+: Discount rate assumption: Assumed future investment returns are generated for each asset class and combined to estimate an overall portfolio return.
<p>What’s changed since the previous valuation?</p>	<ul style="list-style-type: none"> • The outlook for returns on many asset classes is better compared to 2019 in years 0-20, however the expected returns from year 20 onwards are slightly lower compared to 2019 • Investment markets have experienced periods of disruption and increased volatility during the pandemic and the Ukraine invasion. • The Fund’s strategic asset allocation has been reviewed following the 2019 valuation.
<p>Proposed approach for the 2022 valuation</p>	<ul style="list-style-type: none"> • Year 0-20: Investment return assumptions: Same approach but updated for current market outlook and proposed level of prudence. Based on a 70% level of prudence, an assumed investment return of 4.6% p.a. at 31 March 2022 will be used for the purpose of reporting a funding level (note this was 4.3% p.a. at 2019, using a 67% level of prudence). • Year 20+: Discount rate assumption: use the same level of prudence (70%) in estimating the overall portfolio return based on the underlying economic conditions at year 20

RECOMMENDATION:

Year 0-20: Continue to use modelling to generate future investment returns

Year 20+: Set discount rate assumption relative to Fund’s proposed level of prudence (at 70%)

IMPACTS:

The money you are aiming to hold to meet benefit payments and the target for investment return

SIGNIFICANCE:

Increasing the assumed discount rate by 0.3% p.a. reduces the assets the Fund is aiming to hold by c6% (i.e. the funding target) placing more reliance on future investment returns to pay benefits

Benefit revaluation and pension increases

<p>2019 approach</p>	<ul style="list-style-type: none"> Benefit projections were assumed to be in line with CPI projections from the ESS model
<p>What's changed since the previous valuation?</p>	<ul style="list-style-type: none"> Increased inflation expectations, perhaps due to government actions during Covid-19 pandemic and/or Brexit-related supply pressures
<p>Proposed approach for the 2022 valuation</p>	<ul style="list-style-type: none"> No change in approach but update for current market outlook

RECOMMENDATION:
CPI inflation will be derived from the updated calibration of the ESS model

IMPACTS:

The increase applied to benefits each year

SIGNIFICANCE:

Increase in assumed future inflation will increase inflation linked liabilities

Salary increases

<p>2019 approach</p>	<ul style="list-style-type: none"> At the 2019 valuation, the assumption for 'inflationary' increases was based on long-term increases in line with CPI inflation, reflecting sustained local government budgeting constraints over the longer term. Salary scale allows for promotional salary increases.
<p>What's changed since the previous valuation?</p>	<p>Run off of final salary liabilities: it is expected that this will be more gradual than at previous valuations and therefore the impact of any short-term pay restraint is negated</p> <p>McCloud remedy: many members' benefits earned between 2014 and 2022 will retain a link to final salary, meaning a more gradual run off of these liabilities. This further dampens the impact of any short-term pay restraint on the longer term salary increase assumption.</p> <p>Impact of Covid-19 on budgets: the impact of the pandemic on public and private sector finances may mean lower future salary increases</p> <p>National living wage increases: recent years have seen an above inflation rise in the National Living Wage (NLW) and an increasing number of employers adopting this as their minimum wage. Although the NLW is aimed at the lowest paid, these recent increases will put pressure on salary rates across the whole workforce as employers may feel the need to keep the increments between staff consistent to adequately reward those with more responsibility or experience.</p>
<p>Proposed approach for the 2022 valuation</p>	<ul style="list-style-type: none"> Maintain increases in line with CPI inflation with inflation updated for current market outlook Salary scale allows for promotional salary increases.

RECOMMENDATION:
 No change from 2019 assumption
 CPI pa (plus a promotional salary scale)

IMPACTS:

The benefits paid to members with service earned prior to 31 March 2014

Payroll projections used for contribution modelling

The estimated cost of the McCloud remedy

SIGNIFICANCE:

Less significant than in previous valuations

Reporting the funding level

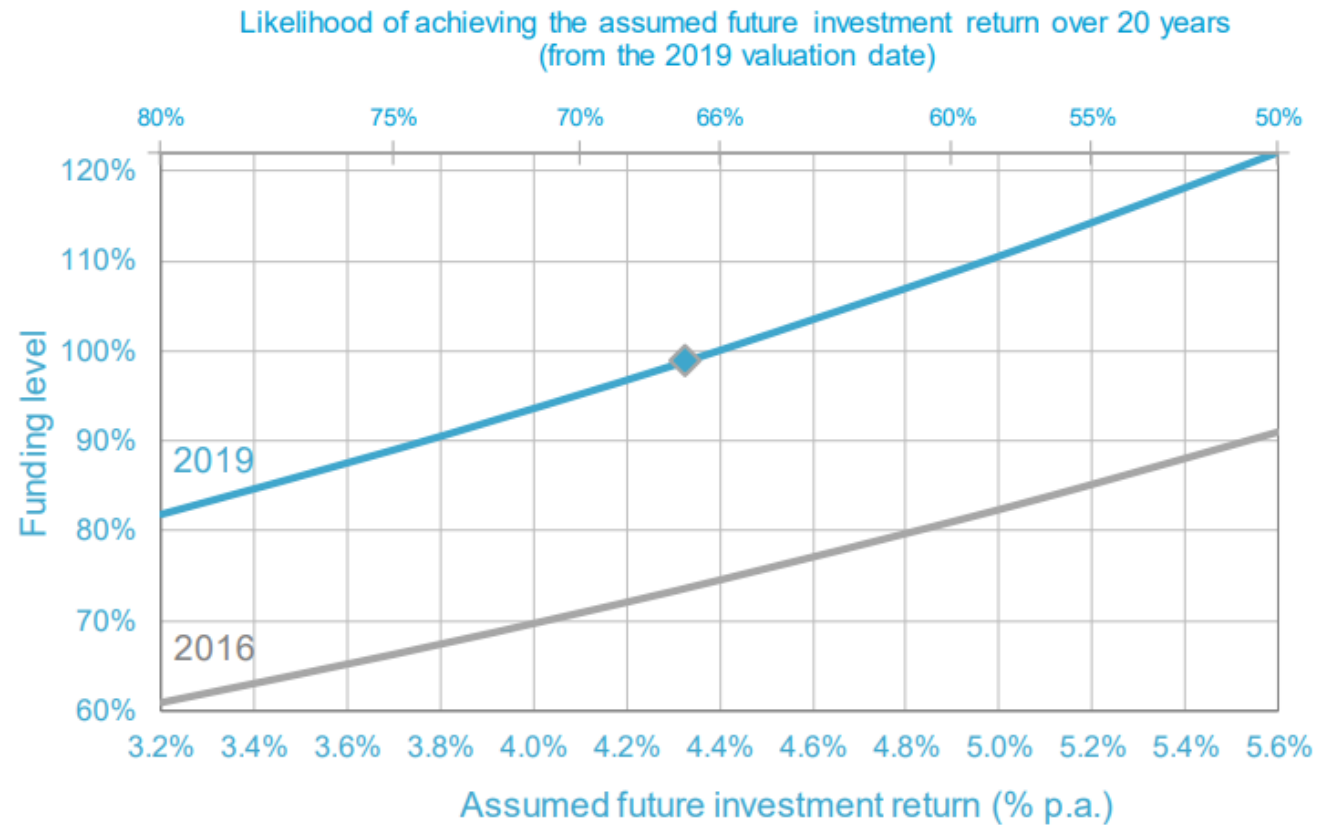
As well as setting contributions, a key output of the valuation is a measurement of past service liabilities at the valuation date itself to determine the funding level.

To report a funding level, we need to use a single value for each assumption (compared to the risk-based approach used for contribution rate setting).

To ensure consistency between the reported funding level and employer contribution rates, we still use the ESS to derive the assumptions used to report the funding level. These assumptions are summary statistics of the 5,000 individual simulations used to project forward assets and benefit payments when setting contributions.

At the 2019 valuation, we showed how the funding level at the valuation date varied with the choice of future investment return and the likelihood of the Fund’s assets yielding at least a given investment return (based on the ESS simulations).

This was all detailed in this chart. A similar chart will be shown in your 2022 valuation preliminary results report.



Assumptions for reporting the funding level

2019 approach

Funding level was reported using an assumed investment return assumption of 4.3% p.a., which had an associated prudence level of 67%

Pension and salary increases were based on market-implied CPI inflation.

Proposed approach for the 2022 valuation

Same approach but updated for market conditions as at 31 March 2022 and proposed level of prudence at 2022 (at 70%).

- **Assumed investment return** - use the same approach as in 2019 with a slightly increased prudence level used for setting the discount rate at 70%. This gives an assumed investment return of 4.6% p.a.
- **Pension increases** - use the median estimated CPI inflation over the next 20 years (equivalent to 2.7% p.a. as at 31 March 2022)
- **Salary increases** - assume salary increases in line with CPI inflation

RECOMMENDATION:

Use prudence level of 70% for the assumed investment return, and assume pension and salary increases in line with the median estimated CPI inflation

IMPACTS:


Reported funding level.
Does not affect contributions.

SIGNIFICANCE:

For reporting and tracking the funding level only

Longevity assumptions

Breaking it down



Your longevity assumptions

How long you expect to pay a pension to each member and their dependants.



Baseline

- A snapshot of how long people currently live
- Measured **objectively** based on recent mortality data
- Use Club Vita analytics for a **best estimate** based on members' characteristics
- Reflects that people with certain characteristics tend to live longer (women, non-ill-health retirees, higher affluence, non-manual workers)



Future improvements

- How life expectancy increases over time
- Shorter-term expectations reflecting recent trends
- Longer-term expectations reflecting historical trends **plus** evidence that improvements may be higher or lower than historical trend
- **Subjective** – wide range of possible outcomes

Evidence based baseline + informed future judgement

Baseline

<p>2019 approach</p>	<p>Club Vita tables tailored to fit each individual member of the Fund</p>
<p>What's changed since the previous valuation?</p>	<p>Current assumptions capture the unique mix of people in your scheme using experience across the Club Vita database of similar individuals to identify a baseline longevity assumption for each member. But new evidence on longevity emerges yearly. Since your last valuation more data has been gathered and VitaCurves have been updated.</p>
<p>Proposed approach for the 2022 valuation</p>	<p>Adopt the latest member-specific Club Vita base tables – a consistent approach that captures a more up-to-date experience. We will make an appropriate adjustment to recent data to avoid the assumption being skewed by excess deaths due to Covid-19 in 2020 and 2021</p>
<p>Other comments...</p>	<p>The Covid-19 pandemic has unfortunately resulted in increased morbidity and death since 2020. It is likely that we will see higher than expected death experience since the 2019 valuation. This will result in a decrease in liabilities as the Fund will be paying out less pension than expected. However, our initial estimates for a typical LGPS fund suggest that the reduction in liabilities due to the higher number of deaths will only be a decrease of 0.1-0.2%</p>

RECOMMENDATION:
 Latest member-specific Club Vita mortality base tables, adjusted to avoid being skewed by Covid-19.

IMPACTS:

How long you expect to pay a pension to each member and their dependants.

SIGNIFICANCE:

Small change in base table to reflect up-to-date experience

Future improvements

2019 approach

The starting point is the Actuarial Profession’s CMI model, which is updated annually with the latest observed mortality data. At the 2019 valuation we used CMI_2018 with default smoothing parameters, an initial addition of 0.25% for females/0.5% for males and long-term rate of improvement of 1.25% pa.

Proposed approach for the 2022 valuation

Use the latest available CMI model (CMI_2021) with adjustments as follows:

Weight placed on 2020 (and 2021) experience

Given that both 2020 and 2021 have been significantly affected by the Covid-19 pandemic, we would recommend that no weight is placed on data from these years. This will avoid overstating the impact of the pandemic on long-term rates of improvements, as we have little evidence of the long-term effects at this stage.

Adjustment to observed data to reflect scheme membership

Slightly positive reflection in the model for the difference between the population-wide data used in the model and the Fund’s own membership.

Long-term improvement rate

Club Vita analysis suggests increasing the long-term rate of improvements to 1.5% p.a., offsetting the impact of lower starting improvements due to recent experience (even before Covid-19).

RECOMMENDATION:

Updated to adjusted CMI 2021 model with no weight on 2020/21 data, reflection of slightly improved expectations vs national population, and long term improvement of 1.5%.

IMPACTS:

How long you expect to pay a pension to each of member and their dependants.

SIGNIFICANCE:

Increase liabilities by 1-2% vs 2019 assumption

Other demographic assumptions

Other demographic assumptions

Withdrawals (excluding ill-health)	Based on our LGPS experience analysis and Fund specific analysis for the period 2016-2019, we have increased the likelihood of withdrawals at each age.
Retirement age	<p>Due to benefit changes in the LGPS, there are a complex set of rules determining the age a member can retire with unreduced benefits. These rules differ by member and the period in which the benefit was earned. However, by 2022, many of the members with complex retirement ages will have retired and therefore the assumptions can be simplified.</p> <p>At 2019 we assumed members retired in the years up to their state pension age, with a chance of retiring at each age from age 55 based on historical data.</p> <p>For 2022, the assumption will reflect the earliest age at which a member can retire with their benefits unreduced. We estimate the impact of this change to reduce liabilities by around 1%.</p>

Following analysis, all other demographic assumptions remain unchanged from 2019 valuation.

RECOMMENDATION:
 Adopt proposed demographic assumptions based on LGPS wide analysis, adjusted for local experience where appropriate

IMPACTS:

Timing and magnitude of future cashflows.

SIGNIFICANCE:

Minor impact on liabilities

Summary of recommendations

Summary of recommendations

Assumption	Recommended approach	Comments
Future investment return assumption	Based on Hymans Robertson ESS model updated to latest market calibration (same as 2019)	Asset class return expectations are generally higher than in 2019
Discount rate	Set the discount rate in line with the proposed Fund's level of prudence for 2022 (at 70%)	Propose to adopt a slightly higher level of prudence (than at 2019) to allow for increased market volatility risk and to bring the assumption more in line with similar LGPS funds
CPI inflation (benefit increases / CARE revaluation)	Based on economic outlook (same as 2019)	Inflation expectations are slightly higher (c.0.4-0.5% p.a.) than 2019 due to current economic outlook
Salary increases	Equal to CPI inflation (same as 2019)	2022 proposed assumption in line with 2019 long-term salary increase expectations.
Baseline longevity	Based on Club Vita analysis updated to reflect non-Covid related experience	Longevity assumptions are tailored to the Fund's experience and membership
Future improvements in longevity	Updated to CMI 2021 model with no weight on 2020/21 data and long term improvement of 1.5%	Latest version of CMI model is best practice but avoid projections being affected by short-term Covid-19 experience
Demographic assumptions (excluding longevity)	Adopt Hymans proposed demographic assumptions	All demographic assumptions have been reviewed against LGPS wide experience with some adjustment to reflect Fund's own experience

Thank you

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Appendices

APPENDIX 1

Economic Scenario Service (ESS)

The ESS uses statistical models to generate a future distribution of year-on-year returns for each asset class e.g. UK equities. This approach is also used to generate future levels of inflation (both realised and expected). The ESS is also designed to reflect the correlations between different asset classes and wider economic variables (e.g. inflation).

In the short-term (first few years), the models in the ESS are fitted with current financial market expectations. Over the longer-term, the models are built around our long-term views of fundamental economic parameters e.g. equity risk premium, credit-spreads, long-term inflation etc.

The ESS is calibrated every month with updated current market expectations (a minor calibration). Every so often (annually at most), the ESS is updated to reflect any changes in the fundamental economic parameters as a result of change in macro-level long-term expectations (a major calibration). The following table shows the calibration at 31 December 2021.

	Annualised total returns											Inflation (RPI)	17 year real yield (RPI)	Inflation (CPI)	17 year real yield (CPI)	17 year yield
	Index Linked Gilts (medium)	UK Equity	Private Equity	Property	UK Infrastructure Debt	Emerging Markets Equity	Multi Asset Credit (sub inv grade)	Global High Yield Debt	All World ex UK Equity in GBP Unhedged	Corporate Bonds (medium, A rated)						
10 years	16th %'ile	-1.9%	-0.4%	-1.2%	-0.6%	-0.3%	-2.5%	1.7%	0.6%	-0.4%	-0.1%	2.4%	-1.7%	1.6%	-1.7%	1.1%
	50th %'ile	0.2%	5.7%	9.4%	4.4%	2.2%	5.8%	3.5%	3.4%	5.8%	1.6%	4.1%	-0.5%	3.3%	-0.5%	2.5%
	84th %'ile	2.4%	11.6%	20.1%	9.5%	4.3%	14.4%	5.2%	5.8%	11.9%	3.2%	5.7%	0.7%	4.9%	0.7%	4.3%
20 years	16th %'ile	-1.5%	1.7%	2.4%	1.4%	1.2%	0.1%	2.8%	2.1%	1.8%	1.1%	1.6%	-0.7%	1.2%	-0.7%	1.3%
	50th %'ile	0.1%	6.2%	10.0%	5.0%	2.7%	6.3%	4.4%	4.2%	6.3%	2.1%	3.1%	1.0%	2.7%	1.1%	3.2%
	84th %'ile	1.9%	10.6%	17.6%	8.9%	4.2%	12.8%	6.0%	6.4%	11.1%	3.2%	4.7%	2.7%	4.3%	2.7%	5.7%
40 years	16th %'ile	-0.3%	3.2%	4.7%	2.6%	2.3%	2.1%	3.6%	3.1%	3.4%	2.0%	1.1%	-0.6%	0.9%	-0.6%	1.1%
	50th %'ile	1.2%	6.7%	10.3%	5.5%	3.7%	6.8%	5.3%	5.1%	6.8%	3.1%	2.4%	1.3%	2.2%	1.3%	3.3%
	84th %'ile	3.1%	10.2%	16.1%	8.8%	5.1%	11.7%	7.1%	7.2%	10.4%	4.4%	3.9%	3.2%	3.7%	3.2%	6.1%
	Volatility (Disp) (1 yr)	7%	18%	30%	15%	8%	26%	6%	8%	18%	7%	3%		3%		

APPENDIX 2

The Fund's asset allocation

The table sets out the long-term strategic asset allocation we have used for the analysis of the future expected investment returns for the Fund and the subsequent discount rate recommendations.

This asset allocation is as provided by the Fund for the purposes of carrying out analysis of the discount rate to be adopted as part of the 2022 formal valuation.

Asset class	Allocation
UK Equities	15.0%
Global Equities	32.0%
Emerging Market Equities	4.0%
Corporate Bonds	4.0%
Index-linked Bonds	7.0%
Property	8.0%
Private Equity	10.0%
Private Debt	5.0%
Multi-Asset	5.0%
Infrastructure Debt	5.0%
Secured Income	5.0%
Total	100.0%

APPENDIX 3

Reliances and limitations

This paper is addressed to Oxfordshire County Council as Administering Authority to the Oxfordshire County Council Pension Fund. It has been prepared in our capacity as actuaries to the Fund and is solely for the purpose of discussing the assumptions for the 2022 formal valuation and setting out our recommendations. It has not been prepared for any other purpose and should not be used for any other purpose.

The Administering Authority is the only user of this advice. Neither we nor Hymans Robertson LLP accept any liability to any party other than the Administering Authority unless we have expressly accepted such liability in writing. The advice or any part of it must not be disclosed or released in any medium to any other third party without our prior written consent. In circumstances where disclosure is permitted, the advice may only be released or otherwise disclosed in its entirety fully disclosing the basis upon which it has been produced (including any and all limitations, caveats or qualifications).

The results of the Fund specific demographic assumptions analysis are wholly dependent on the valuation data provided to us for the 2019 valuation and the assumptions that we use in our calculations.

The assumptions in this document are for the Fund's ongoing employers. Different assumptions may be used for some employers (e.g. more prudent assumed investment return or more prudent longevity improvements assumptions) in particular circumstances. If required, these will be discussed and agreed as part of the 2022 valuation process and will be set out in the Funding Strategy Statement.

The following Technical Actuarial Standards are applicable in relation to this advice, and have been complied with where material and to a proportionate degree: TAS100; and TAS300.

APPENDIX 4

Glossary

Term	Explanation
50:50 option	An option for LGPS members to pay half contributions and earn half the retirement benefit (pre-retirement protection benefits are unreduced).
Baseline longevity	The rates of death (by age and sex) in a given group of people based on current observed data.
Club Vita	A firm of longevity experts who Hymans Robertson partner with for longevity analysis. They combine data from thousands of pension schemes and use it to create detailed baseline longevity assumptions at member-level, as well as insight on general longevity trends and future improvements.
Commutation	The option for members to exchange part of their annual pension for a one-off lump sum at retirement. In the LGPS, every £1 of pension exchanged gives the member £12 of lump sum. The amounts that members commute is heavily influenced by tax rules which set an upper limit on how much lump sum can be taken tax-free.
CPI inflation	The annual rate of change of the Consumer Prices Index (CPI). The CPI is the UK government's preferred measure of inflation and is the measure used to increase LGPS (and all other public sector pension scheme) benefits each year.
Demographic assumptions	Assumptions concerned with member and employer choices rather than macroeconomic or financial factors. E.g. retirement age, promotional salary scales etc. Demographic assumptions typically determine the timing of benefit payments.
Discount rate	A number used to place a single value on a stream of future payments, allowing for expected future investment returns. At the valuation the discount rate is used to calculate the value of remaining benefit payments at the end of a given time horizon (e.g. 20 years). It is expressed as a prudent margin above the risk-free rate.
ESS	Economic Scenario Service - Hymans Robertson's proprietary economic scenario generator used to create thousands of simulations of future inflation, asset class returns, interest rates etc

APPENDIX 4

Glossary

Term	Explanation
Inflation	The term for that prices in general tend to increase over time. It can be measured in different ways, with different measures using a different “basket” of goods and using different mathematical formulae.
Liability/ies	An employer’s liability value is the single value at a given point in time of all the benefit payments expected to be made in future to all members connected to that employer. The benefit payments are projected using demographic and financial assumptions and the liability is calculated using a discount rate.
Longevity improvements	An assumption about how rates of death will change in future. Typically we assume that death rates will fall and life expectancies will improve over time, continuing the long-running trend.
Prudence	To be prudent means to err on the side of caution in the overall set of assumptions. We build prudence into the choice of discount rate by choosing an assumption with a Prudence Level of more than 50%. All other assumptions aim to be best estimate.
Prudence Level	A percentage indicating the likelihood that a given discount rate assumption will be achieved in practice, based on the ESS model. The higher the Prudence Level, the more prudent the discount rate is.
RPI inflation	The annual rate of change of the Retail Prices Index. RPI is no longer linked to any LGPS benefits. It still has many legacy uses, notably to determine the payments to holders of index-linked government bonds.
Time horizon (or Horizon)	The period over which we require each employer in the Fund to reach full funding. The Time Horizon is typically long (up to 20 years) for employers who we expect to be in the Fund for the long-term (e.g. local authorities and academy schools) and shorter for employers who are expected to leave (e.g. contractors or employers who don’t admit new staff to the LGPS).
Withdrawal	Refers to members leaving the scheme before retirement. These members retain an entitlement to an LGPS pension when they retire, but are no longer earning new benefits.