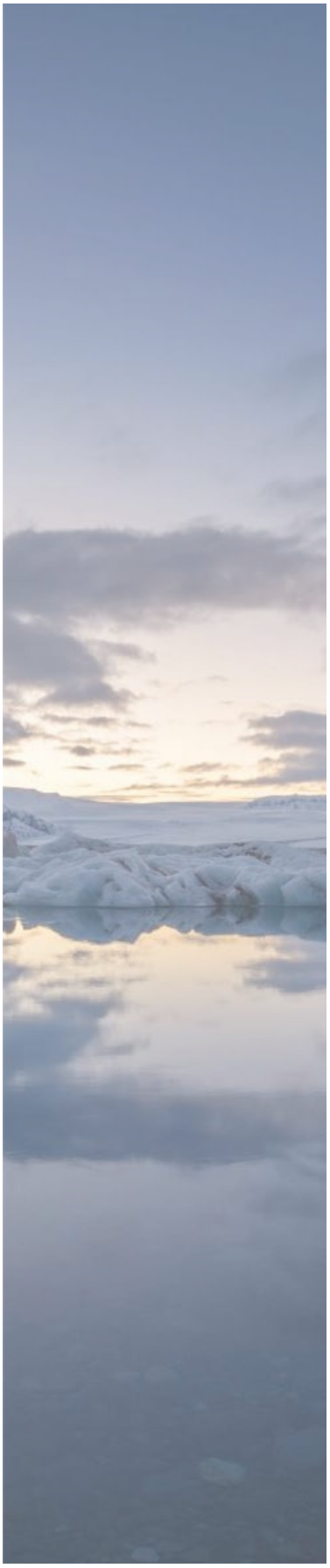
Climate disclosures for year ended 31 March 2024

Produced by: OSPS Trustee Limited

Date: September 2024

Introduction



Climate change is affecting the planet, causing extreme weather events, impacting crop production and threatening Earth's ecosystems. Understanding the impact of climate change and the University of Oxford Staff Pension Scheme's (the "Scheme's") vulnerability to climate-related risks will help us to mitigate the risks and take advantage of any opportunities.

UK regulations require trustees to meet climate governance requirements and publish an annual report on their pension scheme's climate-related risks.

Better climate reporting should lead to better-informed decision-making on climate-related risks. And on top of that, greater transparency around climate-related risks should increase accountability and provide decision-useful information to investors and beneficiaries.

This report is the annual climate disclosures for the Scheme for the year ended 31 March 2024. The four elements covered in the report are:

1) **Governance:** The Scheme's governance around climate-related risks and opportunities.

2) **Strategy:** The potential impacts of climate-related risks and opportunities on the Scheme's strategy and financial planning.

3) **Risk Management:** The processes used to identify, assess and manage climate-related risks.

4) **Metrics and Targets:** The metrics and targets used to assess and manage relevant climate-related risks and opportunities.

This report has been prepared by OSPS Trustee Limited as the Trustee of the University of Oxford Staff Pension Scheme (the "Trustee") in accordance with the regulations set out under The Occupational Pension Schemes (Climate Change Governance and Reporting) Regulations 2021 (the "Regulations").

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Executive summary

This report sets out the actions that the Trustee has taken to understand the potential impact climate change could have on the Scheme.

The Trustee has worked closely with its investment consultant to identify the climate-related risks and opportunities faced by the Scheme, and to understand ways the Trustee can manage and mitigate those risks.

Overview of the Scheme

The Scheme is set up as a hybrid Scheme, which has two Sections, a Defined Benefit ("DB") Section and a Defined Contribution ("DC") Section.

The DB Section invests across a range of assets, and within this report the Trustee considers the impact of climate-related risks on those asset classes, the investment strategy and potential impact on the funding of the Scheme.

The DC Section of the Scheme is relatively small compared to the DB Section, and is invested in a range of equity, fixed income, property, alternative and multi-asset funds, through pooled fund platforms. Despite having less assets under management, relative to the DB Section, the DC Section is also subject to the climate reporting requirements because it is an Authorised DC Master Trust. As a result, the Trustee has included an appropriate level of detail in this report about the relevant assets held in the DC Section.

The Trustee has been supported by its investment consultant, Aon Investments Limited ("Aon") producing the Taskforce on Climate-related Financial Disclosure ("TCFD") report.

Governance

- The Scheme has a DB Section and a DC Section.
- The DB Section has an asset portfolio of c.£868M, as at 31 March 2024 which is invested in a range of asset classes including equities, credit, property and infrastructure, illiquid credit, and liability driven investments ("LDI").
- The DC Section consists of a range of equity, fixed income, property, alternative and multi-asset funds, through pooled fund platforms.
- The Trustee is ultimately responsible for the oversight of all strategic matters relating to the Scheme, this includes climate-related risks and opportunities.
- The Trustee delegates the day-to-day oversight of the Scheme's climate change risk management to the Funding & Investment Committee ("FIC").

Strategy

- The Scheme's qualitative analysis of climate-related risks and opportunities showed that the asset classes in which the Scheme invests are impacted to some degree by climate-related risks. Over time, the risk exposure is expected to increase.
- The Trustee reviewed the climate scenario analysis that was completed in June 2021 and believes that the Scheme still has a reasonable degree of resilience, relative to climate-related risks. The resilience was primarily driven by the high level of diversification in the assets. This analysis will be updated as part of the Trustee's next year of TCFD reporting.

Risk Management

- The Trustee has established a process to identify, assess and manage the climate-related risks and opportunities the Scheme is exposed to. This is integrated into the Scheme's wider risk management framework.
- The Climate Risk Management framework is set out on pages 32-37, which assists with the ongoing management of climate-related risks and opportunities. Alongside this, the Trustee undertakes periodic training on responsible investment ("RI") to understand how environmental, social and governance ("ESG") factors, including climate change, may impact the Scheme's assets and liabilities. Details of training the Trustee has undertaken through the Scheme's year are included in the Governance and Risk Management sections of this report.

Metrics and Targets

The Trustee has disclosed information on four climate-related metrics for each of the DB and DC Sections of the Scheme, listed below:

- Total Greenhouse Gas ("GHG") Emissions.
- Carbon Footprint.
- Data Coverage.
- Portion of the portfolio which is net zero or Paris aligned.

The Trustee has also set the following targets for each Section of the Scheme:

DB target
Achieve above 80% coverage of carbon emission data across all asset classes split across Scopes 1, 2 and 3, by 31 December 2026.
There has been good progress towards this target over the year, with credit in particular seeing a significant increase in data coverage.

DC target
Achieve above 95% coverage across all asset classes for Scopes 1, 2 and 3, in the DC Section, by 31 December 2026.
There was a small decrease in coverage of the DC assets this year, and the Trustee is engaging with the DC asset manager to understand more about this change.

The Trustee reviewed the metrics and the targets, in light of the data received during this set of disclosures, and believes they remain appropriate.

To tackle the Scheme's climate-related risks, the Trustee has decided to take the following actions:

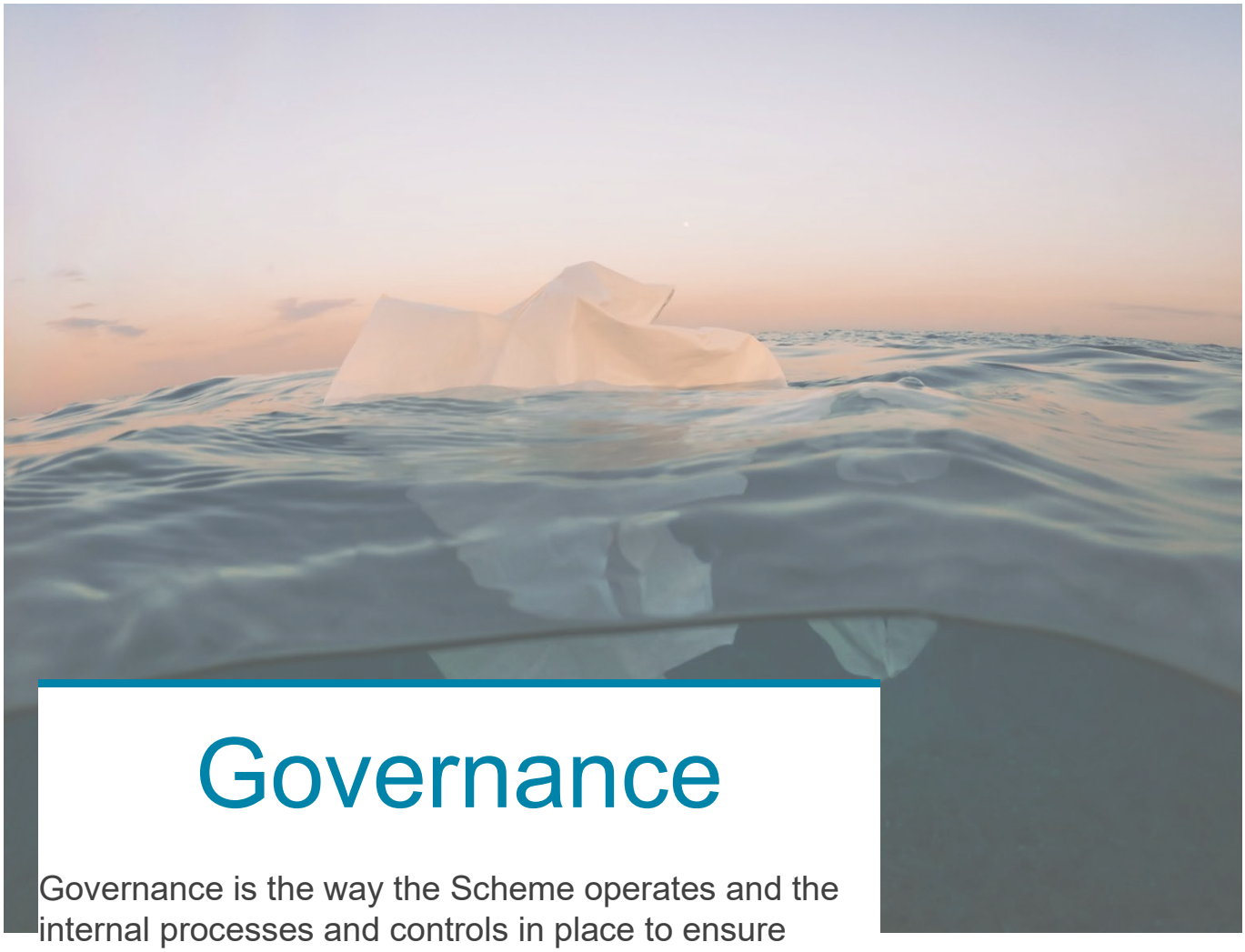
- Engage with investment managers to request higher data availability and coverage for credit and illiquid credit funds.
- Through engagement, the Trustee will identity opportunities to improve coverage, or investigate alternative sources of data.

Following completion of the report, the Trustee was reassured that the various analysis showed that the potential financial impact of climate change on the Scheme is not thought to be significant. The Trustee has spent considerable time and effort to monitor the TCFD framework and will continue to monitor the potential impacts of climate change on the Scheme.

The Trustee hopes you find this report informative to help you understand more about how the Trustee is managing climate-related risks and opportunities within the Scheme.

Chair's signature

on behalf of OSPS Trustee Limited.



Governance

Governance is the way the Scheme operates and the internal processes and controls in place to ensure appropriate oversight. Those undertaking governance activities are responsible for managing climate-related risks and opportunities. This includes the Trustee, and others making Scheme-wide decisions, such as those relating to the investment strategy or how it is implemented, funding, and the ability of the sponsoring employer to support the Scheme and liabilities.

The Scheme's governance

As the Trustee of the Scheme, the Trustee is responsible for overseeing all strategic matters related to the Scheme. This includes the governance and management frameworks relating to ESG considerations and climate-related risks and opportunities.

The Trustee agreed its climate-related beliefs and its approach to managing climate change risk. These are set out in the Scheme's Statement of Investment Principles ("SIP"), which is reviewed annually.

Our climate beliefs

The Trustee believes that climate change is one of the highest concern risks facing the world over the next 10 to 50 years and the Trustee recognises the significant weight of the scientific evidence underpinning this.

The Trustee believes that the risks associated with climate change could have a materially detrimental impact on the Scheme's investment returns within the timeframe that the Trustee is concerned about. Because of this risk, the Trustee seeks to integrate assessments of climate change risk into its investment risk management and strategy.

Furthermore, the Trustee believes that climate-related factors are likely to create investment opportunities. Where possible, and where appropriately aligned with its strategic objectives and fiduciary duty, the Trustee will seek to capture such opportunities through its investment portfolio.

The Trustee acknowledges that there are both long- and short-term risks associated with climate change, and so considers the following time horizons to be appropriate for the DB and DC Sections of the Scheme:

- Short-term: 1 to 3 years.
- Medium-term: 4 to 10 years.
- Long-term: 11 to 30 years.

In seeking to mitigate the impacts of climate change risks on the Scheme, the Trustee expects that managers, advisers, and other service providers have themselves assessed the impact of climate change risk on their organisations and are taking steps to identify, mitigate and manage these risks. The Trustee also expects managers, advisers, and other service providers to seek to capture potential climate-related opportunities where appropriate.

Climate-related risks and opportunities are assessed over the above time horizons, with the medium- and long-term being of most concern to the Trustee, given the long-dated nature of the Scheme's DB liabilities and the extent to which future scientific analysis of the global climate is expected to evolve over that timescale. Where appropriate, the Trustee seeks to consider transition and physical risks separately.

The Trustee receives training on climate-related issues – as part of ongoing continued knowledge and skill development, in discharging its regulatory obligations, when a specific need is identified, or in the event of significant changes to the composition of the Trustee Board – to ensure that the Trustee has the appropriate degree of knowledge and understanding on these issues to support good decision-making.

Finally, the Trustee aims to support progress towards net zero emissions, drawing on Oxford University's leadership on the science, economics, and finance of the transition, and informed by the 2021 United Nations Climate Change Conference (“COP26”) and research from leading global organisations such as the Intergovernmental Panel on Climate Change (“IPCC”).

Role of the Trustee Board

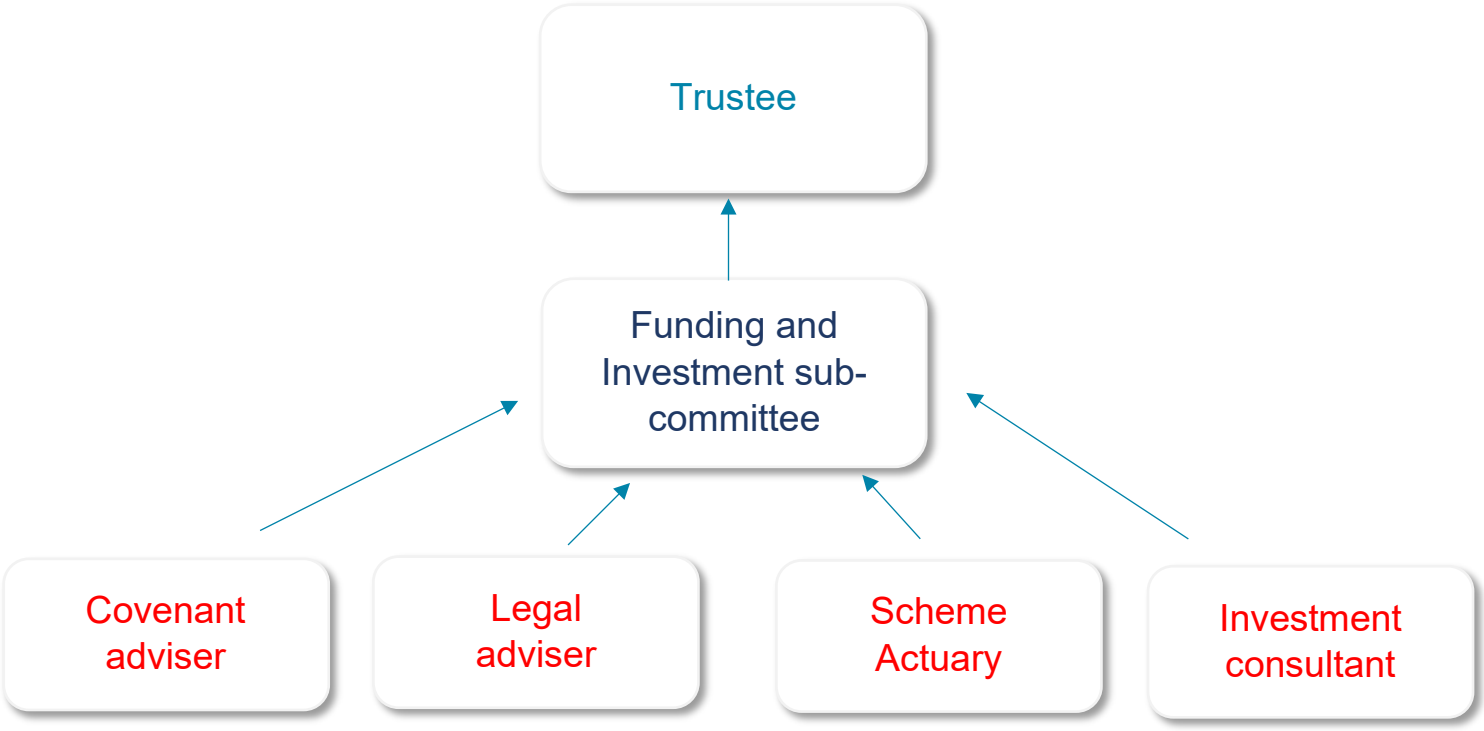
The Trustee Board is ultimately collectively responsible for oversight of all strategic matters related to the Scheme. This includes approval of the governance and management framework relating to ESG considerations and climate-related risks and opportunities. Given its importance, the Trustee Board has not identified one individual specifically to be responsible for its response to climate risks and opportunities. Rather, the Trustee Board has collective responsibility for setting the Scheme's climate change risk framework.

The Trustee Board has discussed and agreed its climate-related beliefs and overarching approach to managing climate change risk. Details are set out in the Statement of Investment Principles ("SIP") for the DB and DC Sections, which are reviewed and (re)approved annually (or sooner in the event of a significant change in investment policy) by the Trustee Board.

The Trustee Board receives regular training on climate-related issues as and when required, to ensure that it has the appropriate degree of knowledge and understanding on these issues to support good decision-making. The Trustee expect its advisers to bring important and relevant climate-related issues and developments to its attention in a timely manner.

The Trustee Board regularly monitors and reviews progress against the Scheme's climate change risk management approach.

The Trustee Board delegates oversight of the Scheme's climate change risk management to the Funding and Investment Committee ("FIC", formerly Investment Committee ("IC")) where it relates to investment matters and the funding matters. This sub-committee keeps the Trustee updated on material climate-related developments on a regular basis (at least annually).



Role of the Funding & Investment Committee

The Trustee Board has delegated the ongoing monitoring of the Scheme's integrated climate risk management framework to the FIC where they relate to investment matters.

The key activities undertaken by the FIC, with the support of the Trustee's advisers, are:

- Seeking to ensure that any investment decisions appropriately consider climate-related risks and opportunities within the context of the Scheme's wider risk and return requirements and are consistent with the climate change policy as set out in the SIP, and RI and ESG policy.
- Regularly monitoring and reviewing progress against the Scheme's climate change risk management approach.
- Keeping the Trustee Board appraised of any material climate-related developments through regular updates, as and when required.

The FIC meets regularly to carry out the above activities. The FIC keeps the Trustee updated on any material climate-related developments through regular (at least annual) updates at Trustee meetings.

How the Trustee work with its advisers

The Trustee expects its advisers and investment managers to bring important climate-related issues and developments to its attention in a timely manner. The Trustee expects its advisers and investment managers to have the appropriate knowledge on climate-related matters.

Trustee's update

During the year, the FIC received climate-related training as part of its regular TCFD sessions. This included brief summaries of TCFD regulatory standards and TPR Industry feedback that summarised lessons learnt from second year of reporting.

The FIC also received a recap on the new requirements that came in place for the second year of reporting.

In line with our Climate Risk Management Framework, we received training on Net Zero commitments and the impact this may have on our Pension Scheme.

The Trustee annually reviews the quality of its advisers' provision of advice and support on climate-related issues. For its investment consultant this is part of the annual review of investment consultant objectives.

Investment consultant - the Trustee's investment consultant, Aon, provides strategic and practical support to the Trustee and the FIC in respect of the management of climate-related risks and opportunities, and ensuring compliance with the recommendations set out by the TCFD.

This includes provision of regular training and updates on climate-related issues and climate change scenario modelling to enable the FIC and Trustee to assess the Scheme's exposure to climate-related risks.

Scheme Actuary - the Scheme Actuary, Aon, will help the Trustee assess the potential impact of climate change risk on the Scheme's funding assumptions.

As part of its assessment of its advisers' climate-related competence, the Trustee will seek to understand how climate-related factors affect the assumptions used for the Scheme, and which sources of expertise the Scheme Actuary has used in determining the appropriate assumptions to use.

Covenant adviser - the Scheme's covenant adviser, Ernst & Young, will help the Trustee understand the potential impact of climate change risk on the sponsor covenant of the participating and principal employers of the Scheme.

As part of covenant advice sought, the Trustee will seek to understand how climate-related factors could affect the sponsoring employer's strategy over time. In doing so, the Trustee will seek information from the covenant adviser regarding their credentials in assessing climate-related factors.

Legal adviser - the Scheme's legal adviser, Burges Salmon, will help the Trustee understand its regulatory requirements in relation to climate-related factors.

As part of legal advice sought, the Trustee will seek information from the legal adviser regarding its credentials in advising on climate-related factors.

Role of Oxford University

As set out in its Responsible Investment and ESG policy, the Trustee acknowledges the evolving nature of University and College policies and practices in relation to climate change. Recognising that investment decisions in connection with the Scheme are primarily matters for the Trustee, the Trustee will have regard to Council's policy including when consulting the University on behalf of the sponsoring employers on investment strategy.

Activity over the year

The Scheme's RI and ESG Policy, agreed by the Trustee, sets out the Trustee's approach on these matters and was in effect during the year. The Policy sets out requirements for investment consultants and investment managers.

The Trustee expects investment consultants and investment managers to take into account the long-term issues set out in the Trustee's RI and ESG Policy, including those which specifically relate to climate risks, and will communicate any actions taken with respect to these issues to the Scheme through their relevant representatives. Where these issues are not being taken into account, the Trustee will reflect this in its assessment of its advisers and managers.

The FIC received training on TCFD lessons learnt from the Pensions Regulator's ("TPR") feedback, based on the completion of the publicly available second year reports from across the industry. The Trustee received training on why and how to consider setting a Net Zero Target.

Strategy

It is crucial to think strategically about the climate-related risks and opportunities that will impact the Scheme if the Trustee is to stand a chance of mitigating the effects of climate change.

Assessing the climate-related risks and opportunities the Scheme is exposed to is key to understanding the impact climate change could have on the Scheme in the future.

What climate-related risks are most likely to impact the Scheme?

Each year the Trustee carries out a qualitative risk assessment of the asset classes in which the Scheme is invested. From this the Trustee identifies which climate-related risks could have a material impact on the Scheme. The Trustee also considers what climate-related opportunities might be relevant for the Scheme.

Given the number of asset classes used in the Scheme, the Trustee completed this exercise to the best of its ability. To help the Trustee with its assessment, it surveyed its eleven investment managers, asking them to rate the climate-related risks and opportunities they believe their funds are exposed to.

At the time of writing the Scheme's Property manager and one of the Credit managers have not been able to provide up to date information for the risk assessment. We will not further engage with the property manager as, post Scheme year end, the Trustee has fully disinvested this investment. The Trustee will, however, engage with the Credit manager that did not provide information to encourage best practice reporting in the future.

Trustee's update

In 2022, we asked our investment managers to assess their exposure to climate-related risks for the funds the Scheme is invested in.

This year, we asked our managers to review their risk assessments and update them if necessary.

The Scheme's investments

The Scheme's DB investment portfolio is diversified across a range of different asset classes including Equities, Credit, Infrastructure, and Property.

As at 31 March 2024, the DB Section's strategic asset allocation is as follows:

DB Section:

Asset Class	LDI	Equities	Credit	Property	Infrastructure	Illiquid Credit
Strategic Allocation	25.6%	10.0%	21.5%	3.8%	9.8%	15.2%

Asset allocations as at 31 Mar 2024. Note: Figures do not sum to 100% due to the exclusion of cash.

The assets held within the DC Section are diversified across a range of equity, fixed income, property, alternative and multi-asset funds, through pooled fund platforms. The Trustee has focused its analysis on the default funds (the Legal & General target date funds), which are entirely multi-asset arrangements. An example glidepath (i.e. demonstration of how the asset mix changes over time) has been included in the climate change scenario analysis for the DC Section. The select funds have been excluded from this analysis as only a small number of members, and a small amount of assets, are invested in the select funds.

How the risk assessment works

Risk categories

In the analysis, the climate-related risks have been categorised into physical and transition risks.

Transition risks are associated with the transition towards a low-carbon economy.

Physical risks are associated with the physical impacts of climate change on companies' operations.

Ratings

The analysis uses a RAG rating system where:

Red denotes a high level of financial exposure to a risk.

Amber denotes a medium level of financial exposure to a risk.

Green denotes a low level of financial exposure to a risk.

Time horizons

The Trustee assessed the climate-related risks and opportunities over multiple time horizons considering the liabilities of the Scheme and its obligations to pay benefits. The Trustee decided the most appropriate time horizons for the Scheme are:

- short term: 1-3 years
- medium term: 4-10 years
- long term: 11-30 years

The Trustee asked its investment managers to provide their own assessments of climate-related risks and opportunities associated with the mandates they manage on behalf of the Scheme over the short-, medium- and long-term, together with their reasoning and rationale for each risk. The table overleaf summarises the responses. The assessment excluded any investments in gilts, or cash, due to the limited materiality of climate risk to those asset classes. It also allowed for investment strategy changes made over the reporting year.

More details about transition and physical risks can be found in the Appendix.

Setting timeframes

When deciding the relevant timeframes for the entire Scheme, the Trustee has taken into account the liabilities of the DB Section and its obligations to pay benefits. The Trustee has based the short-, medium- and long-term timeframes on its long-term journey plan.

The rationale for each timescale can be defined as follows:

- Short-term: 1-3 years. This has been considered relative to when the Trustee expects the Scheme to undertake its next de-risking step on its long-term journey plan.
- Medium-term: 4-10 years. This aligns to the next stage on the Trustee's journey plan and de-risking.
- Long-term: 11-30 years. This aligns to the final stage of the Trustee's journey plan when the Trustee expects the Scheme to be fully de-risked.

The Trustee has determined that these timeframes are also appropriate for the DC Section, given the profile of its members.

Climate-related risk assessment - DB Section

	Asset class	Equity	Property	Infrastructure	Illiquid Credit	Credit	LDI	Liabilities	Covenant
	% Actual asset allocation	10.0%	3.8%	9.8%	15.2%	21.5%	25.6%	N/A	N/A
Physical risks	Short-term	Medium	Low	Low	N/A	Low	Low	Low	Low / Medium
	Medium-term	High	Medium	Low / Medium	N/A	Low	Low	Low/Medium	Medium
	Long-term	High	Medium	Low / Medium	N/A	Low	Low / Medium	Medium	Medium
Transition risks	Short-term	Medium / High	Low / Medium	Low / Medium	Low	Low / Medium	Low	Low	Low/Medium
	Medium-term	Medium / High	Medium	Low / Medium	Low	Low	Low	Low / Medium	Medium
	Long-term	High	Medium / High	Low / Medium	N/A	Low	Low	Medium	Medium
	2023 Impact	Low / Medium	Medium	Medium	Low	Medium	N/A	Low / Medium	Low/Medium
	2024 Impact	Low / Medium	Low	Low / Medium	Low	Low	Low	Low / Medium	Low / Medium

Source: Assets - Investment Managers / Aon; Liabilities. *For the Threadneedle Property Unit Trust and M&G Inflation Opportunities Fund, data that was provided last year has been used as the managers have not shared an updated analysis as at time of writing. 'N/A' denotes where information is 'not available'.*

Key observations

Diversification across asset classes, sectors and regions is important to manage climate-related physical and transition risks for the Scheme.

Global equities, which are a significant part of the assets, are deemed a high-risk (particularly transition risks). The Equity manager, Generation, identified transition risks as high due to the risk of carbon stranding through increased direct and indirect regulation, socio-economic pressures and increased competition for clean technologies. The manager has also noted that it has faced challenges in analysing the physical risks within the Generation Global Equities fund due to the limited data available and there currently being no agreed methodology in place. Its rationale for the high physical risks in medium- to long–term is from there being cause for their exposure to physical risks to escalate as the world trends towards meeting the carbon budget allowable for a 1.5ºC future.

Copenhagen, newly added to the DB Section, identified the climate-related risks over the short- to long-term as low to medium. Similarly, Insight, also newly added to the DB Section, identified the physical and transition risks across all time horizons as low, excluding the long-term acute physical risk for the LDI portfolio, which Insight classed as medium due to higher long-term interest rate projections.

Credit has seen lower climate-related risks reported this year, with the average changing from ‘low / medium’ to ‘low’ for physical and transition risks over the medium- to long-term. The BlackRock Corporate Bonds fund was replaced with the Robeco Sustainable Development Goals (“SDG”) Credit fund, which is less exposed to climate risks given its sustainable characteristics.

Columbia Threadneedle could not provide updated data as at the date of writing; therefore, last year’s response has been used within this analysis.

Macquarie and Ares could not provide their RAG status in the correct format with the appropriate time horizons; therefore, they have not been included in the overall RAG table. The Trustee will continue to engage with these managers, with the support of its investment consultant, to ensure correct RAG statuses are provided, allowing the Trustee to directly compare with other asset classes in which the Scheme is invested in the future.

There have been little other changes in the responses from the managers that have provided data in respect of climate-related risks and opportunities, compared to last year.

Climate-related risk assessment - DC Section

LGIM Multi Asset

Physical Risks

	Acute	Chronic
Short	G	G
Medium	A	G
Long	A	A

Source: Investment Manager. Data as at 31 Mar 2024.

Transition Risks

	Regulatory	Technology	Market	Reputation
Short	G	G	G	G
Medium	A	A	A	G
Long	R	A	R	G

Source: Investment Manager. Data as at 31 Mar 2024

Chronic risks are long-term in nature and not expected to have material financial impact in the short-term. In the medium-term, physical risk exposure is expected to remain low. This is independent of the global climate pathway, as much of the additional warming to 2030 is already "committed" given historical emissions.

In the long-term, heat stress, rising sea levels and changes to weather patterns are likely to affect companies' profitability and countries' economic output through impacts on labour productivity and availability and potential impacts on supply chains and physical infrastructure.

Technology change is accelerating, and companies should already be preparing for the medium- and long-term impacts of this shift. In the short-term it is unlikely that those lagging would lose significant value as a result, regardless of scenario trajectory. The medium-term is a crucial period for the climate transition, as time is running out to stay within global carbon budgets for limiting global warming to well-below 2°C.

Over the longer term, a large drop in demand for fossil fuels is envisaged for both orderly and disorderly transition pathways, especially coal and oil – with potentially large financial repercussions at a global multi-asset portfolio level depending on companies' and countries' mitigation actions. Companies could be left competing for limited resources that will negatively affect valuations.

Please see the Appendix for a detailed assessment for each asset class.

Key conclusions for DB and DC

Based on the analysis completed, the Trustee identified that:

- The managers who did engage provided insightful commentary on, and assessment of, climate risks.
- There were no mandates where significant concerns were raised, needing immediate action.
- There were significant differences in the way managers assessed climate risk, which may represent methodological rather than real differences in risk exposure.
- The Trustee's investment consultant agreed that the investment managers' views were appropriate for the Scheme and its members.
- The changes made to the investment strategy over the year have acted to reduce the impact of the climate-related risks. In

particular, while some individual risks in the equity holding have increased, the impact of the risks is small given the reduced equity holding.

- The Trustee is conscious that its equity holdings are the most exposed to climate-related risks and will continue to monitor the preparedness of its Equity manager to ensure that it has effective processes in place to manage these risks.

Climate-related opportunities

There are a range of climate related opportunities available to the Trustee's investment managers across the assets that the Scheme invests in. This includes investing in companies and industries that are set to profit from the transition to a low carbon economy. Examples of these opportunities are as follows:

Cleaner energy

Green power generation (i.e., solar, wind)
Clean technology innovation i.e., carbon capture and storage and low – or zero – carbon hydrogen
Sustainable biofuels

Environmental resources

Water
Agriculture (Natural assets i.e., foster and farmland)
Waste management

Energy and materials efficiency

Advanced materials
Building efficiency and improved building performance (working with tenants to understand how to maximise energy efficiency)
Power grid efficiency

Environmental services

Environmental protection
Business services

Source: Aon / Managers

The Trustee's investment managers have identified a range of potential investment opportunities across the specific assets that the Scheme invests in. These opportunities are as follows:

Equity

Arguably, climate-related investment opportunities are most readily accessible to equity investors and an equity index-based implementation is a good first step for investors who are seeking to consider the risks associated with climate change whilst supporting the transition to a low carbon economy.

Historically, climate-aware indices have been focused on exclusions (e.g., oil and gas, thermal coal, tar sands) but the market has evolved and there is a proliferation towards more sophisticated index products – a trend that is likely to continue over the coming years.

UK Corporate Bonds

With respect to fixed income more broadly, long-term, large capital investments by business and governments require upfront capital. For example, while the initial development of innovative alternative energy technologies that can compete on price with fossil fuels can be harnessed within a private equity portfolio, when it comes to bringing these technologies to scale, massive investments in capital will be necessary – the kind of investments that such companies have traditionally turned to the fixed income markets for. Such investments can be accessed through, for example, an impact fixed income mandate.

Green bonds, which are debt instruments issued to finance environmentally friendly projects, are also gaining traction with investors. With the UK Government having begun to issue its own green gilts and an increased focus on standards for green bond issues, the green bond market looks set to continue to grow in size over the coming years.

Illiquids

Private debt includes a wide range of assets that offer sustainable outcomes, and many more 'pure play' impact opportunities than public bond markets. This is because finance is often dedicated to discrete projects rather than broad corporate loans.

Private debt also involves lending to smaller companies that are more likely to be focused on a narrower range of business activities than public markets, which also contributes to the great number of pure-play impact investment opportunities in private markets.

One manager believes this means the fund is well placed to take advantage of private climate-related investment opportunities that benefit from the transition to a greener economy.
In particular the fund has exposure to assets in renewable energy.

Given changing investor preferences as well as regulation, these assets are well placed to provide climate opportunities in the future. This is further underpinned by the decreasing costs associated with renewable energy and the transition to a low carbon economy.

Infrastructure

Climate-related investment opportunities in infrastructure are well-known, and can include:

- Green power generation assets (solar, wind, other clean power).
- Clean technologies (e.g., carbon capture and storage).
- Natural assets (e.g., forestry and farmland).

On the debt side, proceeds for green bonds are earmarked for infrastructure projects.

DC Multi Asset

The Scheme's DC investment manager has identified opportunities in relation to the transition to low carbon economy, principally through electric vehicles, alternative fuels and innovative technologies.

The manager also noted that volume growth and investment returns are not intrinsically correlated and so thematic focus on constraints will be required to protect returns.

The manager noted that investors should focus on three areas to evaluate opportunities and produce targeted investment strategies, which in the manager's view are: geological scarcity; technological innovation; and regulatory change.

Further work is planned, in future years, to consider climate-related investment time horizon opportunities that the Trustee is exposed to across the broader strategy.

How resilient is the Scheme to climate change?

Last year the Trustee carried out climate change scenario analysis to better understand the impact climate change could have on the Scheme's assets and liabilities.

The analysis considers a range of climate change scenarios. Each scenario considers what may happen to the Scheme when transitioning to a low carbon economy under different temperature-related environmental conditions. These scenarios were developed by Aon and are based on detailed assumptions. They are only illustrative and are subject to considerable uncertainty.

The climate scenarios intend to illustrate the climate-related risks the Scheme is currently exposed to, highlighting areas where risk mitigation could be achieved through changing the investment portfolio.

Other relevant issues such as governance, costs and implementation (including manager selection and due diligence) must be considered when making changes to the investment strategy.

Investment risk is captured in the deviance from the base case scenario, but this is not the only risk that the Scheme faces.

Other risks, particularly for the DB Section, include covenant risk, longevity risk, timing of member options, basis risks and operational risks.

Trustee's update

Under the Regulations, climate scenario analysis must be carried out at least every three years, or sooner if there have been significant changes which could impact the Scheme.

We reviewed the scenario analysis completed as at 31 June 2021 and we are comfortable that the analysis remains appropriate for this year's report.

Although the Scheme has undergone recent investment strategy changes, additional changes have been made after the end of the Scheme year. We did not view it as beneficial for the FIC to conduct analysis whilst strategy changes were ongoing and believe that it would be more appropriate to undertake revised analysis in line with the required triennial assessment.

Details of the climate scenarios the Trustee chose to analyse are set out in the table below.

Scenario	Reach net zero by	Degree warming vs pre-industrial levels by 2100	Introduction of environmental regulation	Scenario description
Base Case	2050	+2ºC – 2.5ºC	Fragmented Coordination	Emission reductions start now and continue in a measured way in line with the objectives of the Paris Agreement and the UK government's legally binding commitment to reduce emissions in the UK to net zero by 2050.
No Transition	After 2050, if at all	>4ºC	None	No further action is taken to reduce greenhouse gas ("GHG") emissions leading to significant global warming.
Disorderly Transition	After 2050	<3ºC	Late and Aggressive	Limited action is taken, and insufficient consideration is given to sustainable long-term policies to manage global warming effectively.
Abrupt Transition	2050	1.5ºC – 2ºC	Aggressive	Action on climate change is delayed for five years at which point we experience more frequent extreme weather events and governments must address GHG emissions.
Orderly Transition	2050	1.3ºC – 2ºC	Coordinated	Immediate and coordinated action to tackle climate change is taken using carbon taxes and environmental regulation.
Smooth Transition	2045	<1.5ºC	High Coordination	Rapid advancement of green technology and government action on climate change which achieves a smooth transition to a low carbon economy.

Source: Aon.

DB Section – Impact on the funding level

Key conclusions

Overall, the Trustee is comfortable with the level of resilience exhibited by the investment portfolio and is not going to make any changes to the investment strategy as a result of this analysis.

Based on the analysis, the Trustee considers that the investment strategy is relatively resilient to climate change risk, acknowledging that there are scenarios that could lead to a material deterioration in the funding level. The high level of diversification across the Scheme's assets, alongside the current covenant strength, help mitigate the risk.

Of the scenarios, the Trustee believes a Disorderly Transition scenario to be of most concern, given the potential for this scenario to impact on the Scheme's funding level within the timeframe of the existing long-term funding plans. Under that scenario, the Scheme is projected to experience a significant deficit shock within the next decade.

The Trustee, supported by the FIC, should consider further opportunities to mitigate these potential shocks, such as more climate transition focused approaches, to provide further downside protection.

The table below describes the impact of each scenario on the Scheme over the short-, medium- and long-term time horizons.

No Transition Scenario	Summary of the Scenario	Summary of the impact to the Scheme
Temperature rise >4ºC Reach net-zero After 2050, if at all Environmental regulation None	**In the short term:** No action is taken to combat climate change.	**In the short term:** The Scheme's funding position marginally improves in the short-term as no regulation comes into force that would impact the Scheme.
	In the medium term: No action is taken to combat climate change.	**In the medium term:** Funding level starts to deteriorate as a result of the increasing impact of climate change and the impact this has on risky assets and the wider economy. This may place a strain on the sponsoring employer should it be required to make up any funding shortfalls via contributions.
	In the long term: While some climate change policies are implemented, global efforts are insufficient to halt significant global warming. The physical effects of climate change become more severe. The headwinds facing the economy and markets grow.	**In the long term:** The Scheme's funding level starts to stabilise and recover slightly due to increased mortality offsetting the impact of climate change on the Scheme assets but stays in a deficit in the long-term.

Disorderly Scenario

Temperature rise
<3°C

Reach net-zero
After 2050

Environmental regulation
Late and Aggressive

Summary of the Scenario

In the short term:

Insufficient consideration given to long-term policies and there is no action taken to combat climate change.

In the medium term:

Late but coordinated action is taken to tackle climate change. The late timing means it is less effective and more costly to implement. Adverse impacts from climate change leads to a drag on risk assets

In the long term:

Adverse effects from climate change become progressively worse. There are high levels of economic damage and the irreversible loss of natural capital.

Summary of the impact to the Scheme

In the short term:

The Scheme suffers a deterioration in its funding level, following a similar trajectory to the no-transition scenario.

In the medium term:

Funding level starts to deteriorate and falls into a larger deficit as a result of the increasing impact of climate change and the impact this has on risky assets and the wider economy. This may place a strain on the sponsoring employer should it be required to make up any funding shortfalls via contributions.

In the long term:

This is the worst-case scenario for the Scheme. The funding level starts to recover slightly but stays in a large deficit over the long-term. This may place a strain on the Sponsor, should they have to make up a shortfall through deficit contributions, or that the Scheme may have to consider re-risking to achieve its long-term goals.

Orderly Scenario

Temperature rise
1.3ºC-2ºC

Reach net-zero
2050

Environmental regulation
Coordinated

Summary of the Scenario

In the short term:

Immediate coordinated global action is taken to tackle climate change. Risky assets perform poorly.

In the medium term:

The rapid transition to clean technologies and green regulation begins to boost economic growth.

In the long term:

The rapid transition to clean technologies and green regulation begins to boost economic growth. This represents the fastest transition to a green economy, combined with limited physical impacts from climate change despite the large initial transition cost.

Summary of the impact to the Scheme

In the short term:

The Scheme suffers a deterioration in its funding level and falls into deficit. This may place a strain on the sponsoring employer should it be required to make up any funding shortfalls via contributions.

In the medium term:

The funding position begins to recover as risky assets perform well, benefiting from the economic growth. The Scheme is expected to return to a surplus in funding.

In the long term:

The funding position recovers long term and continues to improve over time.

Abrupt Scenario

Temperature rise
1.5ºC-2ºC

Reach net-zero
2050

Environmental regulation
Aggressive

Summary of the Scenario

In the short term:

Despite growing public awareness, material action is not undertaken to combat climate change.

In the medium term:

Increasing effects of extreme weather lead to a rapid introduction of policies to tackle climate change. The delayed action leads to higher costs to tackle climate change and risky assets perform poorly as a result. The higher costs are the result for the economy being forced to transition away from fossil fuels.

In the long term:

Following rapid action in the medium term, the longer-term benefits from tackling climate change lead to higher growth and reduced corporate spreads.

Summary of the impact to the Scheme

In the short term:

The Scheme's funding level deteriorates slightly in the short-term.

In the medium term:

The funding position deteriorates significantly as climate regulations crystalise transition risks to cause a funding strain. The funding position then begins to recover as assets aligned to government policies start to perform better. The initial funding level drop may place a strain on the sponsoring employer should it be required to make up any funding shortfalls via contributions.

In the long term:

The Scheme's funding level regains the initial fall in funding level in the long-term.

	Summary of the Scenario	Summary of the impact to the Scheme
Smooth transition Temperature rise <1.5°C Reach net-zero 2045 Environmental regulation High coordination	**In the short term:** The core issues of climate change are collectively tackled which creates some economic upheaval. However, high government funding helps drive the transition in a balanced way. **In the medium term:** The global economy is placed on a stronger footing and enjoys robust growth driven by the successful restructuring towards a low carbon economy. **In the long term:** The rapid technological advancement combined with government actions drives a smooth transition to a low carbon economy. Risk assets perform well.	**In the short term:** Scheme funding levels remain relatively stable and government funding improves portfolio performance. **In the medium term:** The Scheme's funding level improves significantly driven by strong performance of its assets due to high levels of economic growth. **In the long term:** Economic growth continues to boost asset performance thereby improving Scheme funding level.

Source: Aon. *Effective date of the impact assessment is 30 Jun 2021*

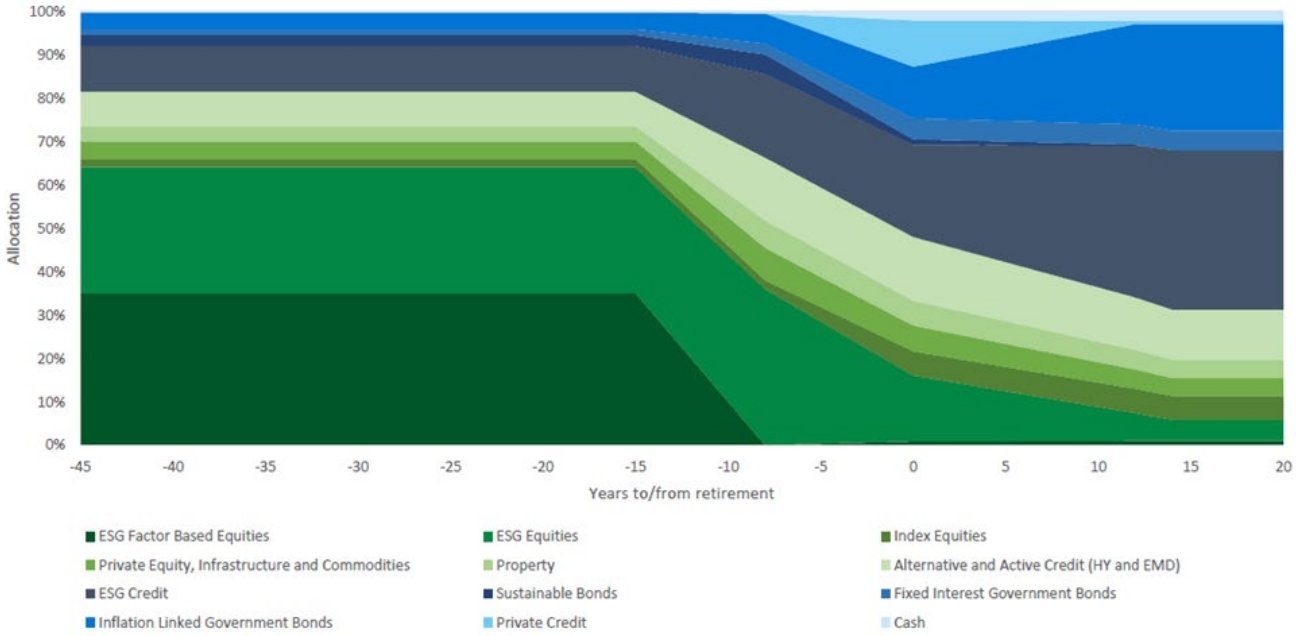
Please refer to the Appendix for further details in relation to the assumptions used for the scenario analysis and its limitations.

DC Section – Impact on members' savings

For the DC Section, the Trustee carried out a qualitative analysis under some of the same scenarios. The DC assets within the Scheme's default fund are managed by Legal & General Investment Management ("LGIM").

Investment strategy

The investment strategy adopted by the default investment arrangement is shown in the chart below.



Source: LGIM. Chart shows illustrative asset allocation for Legal & General Target Date Fund 2065-70 (Default)

The strategy is implemented via 'target date funds', with the asset allocation being managed according to members' terms to retirement. The default strategy, as shown, is the LGIM Target Date Fund to drawdown. This default has been selected as it allows for flexibility in how members may take their benefits.

The rationale for the default strategy is as follows:

- A focus on equity investment when members are a long time from retirement. At this stage of the strategy, c.50% of the Fund is invested in funds with a climate / ESG focus.
- A reduction in risk through diversification into other asset classes, and diversification within asset classes (e.g., bonds) as members approach retirement.
- Further reduction in risk through further reduction in equities in favour of diversified assets, and a greater proportion of investment in fixed income securities, in the post-retirement phase.

The Trustee now selects the three most relevant climate change scenarios for comparison: Orderly transition, Disorderly transition, and No transition as described in more detail above. These scenarios have been selected as they best illustrate the impact of physical versus transition risks.

Younger and mid-career members

The financial impact for these members is likely to be driven by the **long-term time horizon.** Specifically, the climate-related risks associated with investing in equities is expected to be greatest over the long term. Nevertheless, it is important for these members for the assets to be invested in growth assets (primarily equities) to help members achieve good retirement outcomes. Allocating to assets such as government bonds, which offer lower exposure to climate-related risks, is unlikely to be members' best interests over the long term.

Accordingly, the Trustee believes it is important to focus on managing the climate-related risks of the equity portfolio.

Within the equity portfolio, the investment strategy is climate-risk aware, through investment in ESG equity and credit, including a Factor-Based Equity portfolio. These investments aim to manage both the risks and opportunities of climate change to improve the overall risk / return characteristics of the portfolio.

A Disorderly Transition scenario is likely to be of most concern for this group of members, particularly to younger members. This reflects the long-time horizon for younger members and that climate-related risks associated with investing in equities to be greatest over the long term.
Sitting alongside this, it is important to invest the majority of members' assets in growth assets during the early years, in order to help members, achieve good retirement outcomes. In particular, allocating to assets such as government bonds, that offer lower exposure to climate-related risks, to be in members' best interests over the long term.

Accordingly, the Trustee and its investment manager, LGIM, should focus attention on managing climate-related risks within the equity portfolio.

Orderly	Disorderly	No transition
Short-term	**Short-term**	**Short-term**
Asset portfolios are expected to suffer an initial drop as a result of the costs of immediate coordinated action to tackle climate change.	There is not expected to be any initial impact on asset portfolios and performance is expected to follow the base case.	There is not expected to be any initial impact on asset portfolios and performance is expected to follow the base case. There is no action taken to combat climate change.
Medium-term	**Medium-term**	**Medium-term**
Asset portfolios are expected to recover from the initial shock of transition costs. Relative to the other scenarios, lower impact from physical risks (given action to tackle climate change) is beneficial for portfolios.	Asset portfolios deteriorate sharply as a result of delayed action required to tackle climate change.	Impacts from physical risks gradually become more severe over time leading to a drag on economic growth and risk asset returns. Asset portfolios begins to lag the base case.
Long-term	**Long-term**	**Long-term**
Members' asset portfolios are likely to perform strongest relative to the base case. This represents the fastest transition to a green economy, combined with limited physical impacts from climate change despite the large initial transition cost.	Whilst asset portfolios do start to recover from the medium-term shock, this scenario is likely to be of most concern for this group of members, which would leave them materially worse off in comparison to the base case.	Impacts from physical risks gradually become more severe over time leading to a drag on economic growth and risk asset returns. Asset portfolios lag the base case and continue a downward trend.

Source: Aon. *Effective date of the impact assessment is 30 Jun 2021*

Members approaching retirement and at-retirement

The financial impact for these members is expected to be driven by the **short- to medium-term time horizons.** Specifically, the climate-related risks associated with investing in equities is expected to have an impact on these members during this time period.

An increased level of diversification will help mitigate this risk, as members' allocation to equities is reduced as they approach and are at-retirement. Should members continue to invest post-retirement, the impact they experience will be more likely to include the 'long-term' effects below, albeit mitigated relative to younger members by their lower allocation to equities.

Relative to younger members, the climate risk from asset portfolios is reduced because of the lower allocation to equities and the relatively shorter investment time horizon. However, for this group of members, the timing of the impact of climate risk on assets may mean there is limited time (in terms of remaining working life) to make up any shortfall in expected retirement benefits.

Orderly	Disorderly	No transition
Short-term Asset portfolios are expected to suffer an initial drop as a result of the costs of immediate coordinated action to tackle climate change.	**Short-term** There is not expected to be any initial impact on asset portfolios and performance is expected to follow the base case.	**Short-term** There is not expected to be any initial impact on asset portfolios and performance is expected to follow the base case. There is no action taken to combat climate change.
Medium-term Asset portfolios are expected to recover from the initial shock of transition costs. Relative to the other scenarios, relatively lower impact from physical risks (given action to tackle climate change) is beneficial for portfolios.	**Medium-term** Asset portfolios deteriorate sharply as a result of delayed action required to tackle climate change. For this group of members, the timing of a Disorderly transition may mean there is little time (in terms of remaining working life) to make up pensions shortfall.	**Medium-term** Impacts from physical risks gradually become more severe over time leading to a drag on economic growth and risk asset returns. Asset portfolios begins to lag the base case.
Long-term Members' asset portfolios are likely to perform strongest relative to the base case. This represents the fastest transition to a green economy, combined with limited physical impacts from climate change despite the large initial transition cost.	**Long-term** Whilst asset portfolios do start to recover from the medium-term shock, this scenario is likely to be of concern for this group of members, which would leave them materially worse off in comparison to the base case.	**Long-term** Impacts from physical risks gradually become more severe over time leading to a drag on economic growth and risk asset returns. Asset portfolios lag the base case and continue a downward trend.

Source: Aon. *Effective date of the impact assessment is 30 Jun 2021*

Please refer to the Appendix for further details in relation to the assumptions used for the scenario analysis and its limitations.

Risk management

The Trustee must have processes to identify, assess and manage the climate-related risks that are relevant to the Scheme, and these must be integrated into the overall risk management of the Scheme.

Reporting on the Trustee's risk management processes provides context for how it thinks about and addresses the most significant risks to its efforts to achieve appropriate outcomes for members.

The Trustee's process for identifying and assessing climate-related risks

The Trustee has established a process to identify, assess and manage the climate-related risks that are relevant to the Scheme. This is part of the Scheme's wider risk management framework and is how the Trustee monitors the most significant risks to the Scheme in its efforts to achieve appropriate outcomes for members.

Qualitative assessment

A qualitative assessment of climate-related risks and opportunities which is prepared by the Trustee's investment consultant, and reviewed by the Trustee.

Quantitative analysis

Climate scenario analysis, which is provided by the Trustee's investment consultant and reviewed by the Trustee.

Together these give the Trustee a clear picture of the climate-related risks that the Scheme is exposed to. Where appropriate, the Trustee distinguishes between transition and physical risks. And all risks and opportunities are assessed with reference to the time horizons that are relevant to the Scheme.

When prioritising the management of risks, the Trustee assesses the materiality of climate-related risks relative to the impact and likelihood of other risks to the Scheme. This helps the Trustee focus on the risks that pose the most significant impact.

Trustee's update

This process of identifying and assessing climate related risks has been reviewed in the process of producing this TCFD report and is deemed to still be suitable.

We have included a qualitative review of the previously conducted quantitative analysis when preparing its report.

The Trustee's climate risk management framework

The Trustee recognises the long-term risks posed by climate change and has taken steps to integrate climate-related risks into the Scheme's risk management processes.

The Trustee has developed a risk management framework to manage climate-related risk and opportunities. The risk management framework clearly sets out who is involved, what is done and how often. The Trustee has delegated a number of key tasks to the FIC but retains the final responsibility. The processes for managing climate-related risks and opportunities are summarised in the tables below.

Governance

Activity	Delegated responsibility	Adviser / supplier support	Frequency of review
Publish TCFD report	Trustee	FIC	Annual
Receive training on climate-related issues	Trustee	Advisers	Annual
Review adviser objectives to ensure advisers have appropriate climate capability, and bring important, relevant and timely climate-related issues to the Trustee's attention	Trustee	Advisers	Annual
Ensure investment proposals explicitly consider the impact of climate risks and opportunities and seek investment opportunities	FIC	Investment consultant	Ongoing
Ensure that actuarial and covenant advice adequately incorporate climate-related risk factors where they are relevant and material	Trustee	Scheme Actuary, Covenant adviser	Triennial
Engage with the investment managers to understand how climate risks are considered in their investment approach, and stewardship activities are being undertaken appropriately	FIC	Investment managers, Investment consultant	Annual

Trustee's update

The Trustee monitors the above activities as part of its management of climate-related risks and opportunities.

The Trustee has delegated responsibility of several activities in this pillar to the FIC.

The Trustee received a training session on Net Zero (emissions targets), and considered the implications of such a target for the Scheme. The Trustee has requested that this be followed up with a training session on carbon offsetting in the next reporting period.

The Trustee monitored progress of the FIC and its respective implementation of the climate risk management framework periodically, and received regular updates from the FIC.

Strategy

Activity	Delegated responsibility	Adviser / supplier support	Frequency of review
Undertake quantitative scenario analysis to understand the impact of climate related risks	FIC	Investment consultant	Triennial (with annual review)
Identify the climate-related risks and opportunities for investment & funding strategy and assess their likelihood and impact	FIC	Advisers	Annual

Trustee's update

The FIC refreshed its risks and opportunities analysis, asking each material manager for details how these are assessed. The conclusion of this is included in the Strategy pillar.

The Trustee also considered the appropriateness of the climate change scenario analysis, carried out within the Scheme's initial TCFD disclosures, and is comfortable that the analysis remains relevant for the current reporting period, noting that this analysis will be refreshed for the next reporting year.

Risk management

Activity	Delegated responsibility	Adviser / supplier support	Frequency of review
Consider the prioritisation of those climate-related risks, and the management of the most significant in terms of potential loss and likelihood	FIC	Advisers	Annual
Include consideration of climate-related risks in the Scheme's other risk processes and documents, such as the risk register and the SIP, and regularly review these	FIC	Advisers	Ongoing
Seek to understand the climate-related risks to the employer over the short-, medium-, and long-term	Trustee	Covenant adviser	Triennial

Trustee's update

The Trustee reviews its process of identifying and assessing climate-related risks as part of the annual TCFD process to evaluate its continued suitability. This is integrated into the ongoing activities of the Scheme.

The Trustee delegates to its advisers the review of the underlying investment managers and how ESG is integrated within their decision-making processes, including climate change. The Trustee also asks for details on how these have been implemented in practice, including key themes for engagement, such as climate change.

Metrics and Targets

Activity	Delegated responsibility	Adviser / supplier support	Frequency of review
Obtain data for metrics	FIC	Investment consultant, Investment managers	Annual
Review continued appropriateness of metrics	FIC	Investment consultant	Annual

Trustee's update

The Trustee, supported by its investment consultant, collects metrics data on an annual basis, to understand the current state of the portfolio regarding its emissions, data coverage and portfolio alignment. This data is evaluated to produce a climate-related target, whereby in this instance the Trustee has elected to improve the data coverage for the Scheme.

Metrics have been collected in line with industry practice and supported by the FIC and its advisers. In addition, the Trustee has reviewed its target, which was set previously, and considered any refinements required to this.

More details can be found in the metrics and targets section.

Assessing the Trustee's managers

To assess the Trustee's managers' capabilities to manage climate-related risks, the Trustee asked them 10 questions designed by the Pensions Climate Risk Industry Group[1] to help trustees do just that. The questions cover a range of topics including the manager's approach to climate management, whether they produce their own TCFD reporting, their ability to conduct climate scenario analysis, their engagement policies, and their ability to provide GHG emissions data.

Due to the improvement in the Scheme's funding level since the date of the most recent Actuarial Valuation (31 March 2022), the Trustee has undertaken steps to further reduce the risk in the Scheme's portfolio by reducing the allocation to the growth portfolio and increasing the allocation to the matching portfolio.

Changes to the investment portfolio over the year include:

- Full disinvestments from Generation Asia Equities and a reduced allocation to Generation Global Equities.
- A full disinvestment from Ballie Gifford Long Term Global Growth Equities.
- The Trustee also replaced the BlackRock Corporate Bonds fund to Robeco SDG Credit, due in part to the greater integration of ESG considerations into this manager's investment approach. The following was taken into consideration when making these decisions:

[1] Aligning your pension scheme with the Taskforce on Climate-Related Financial Disclosures recommendations - GOV.UK (www.gov.uk)

    - Utilisation of the investment adviser's manager research team to conduct necessary due diligence.
    - The return and overall risk of the investments.
    - ESG credentials of the asset classes and the managers.
- Furthermore, in order to better protect the Scheme's liabilities from movements in interest and inflation rates, including those as a result of climate change, the Scheme's matching assets were switched from State Street Index-Linked Gilts to an LDI portfolio managed by Insight.
- Post Scheme year end, the Threadneedle Property Unit Trust was fully disinvested from.

These changes had an impact on the climate-related risk profile of the Scheme.

Covenant Assessment

The University's investments are managed by Oxford University Endowment Management ("OUEM"). These investments are estimated to have a material impact on the strength of the Scheme covenant, given these investments are a significant income stream and make a material contribution to the flexibility and strength of the University's balance sheet.

ESG considerations appear to be well embedded within OUEM's investment process, with investment screening subject to robust ethical restrictions (in relation to weapons, tobacco and fossil fuel exploration and extraction). OUEM also continues to produce TCFD reporting as part of its wider integration of climate analysis into its operations and investments.

The TCFD report produced by OUEM demonstrates a strong awareness of climate-related risks and opportunities, and the Trustee feels that the covenant strength being rated as 'strong' remains consistent with respect to climate-related risks.

Key Conclusions

All the managers that responded showed awareness of climate-related risks and opportunities, to varying degrees. The investment managers overall, have shown willingness to engage in relation to the questions asked in relation to climate risks and opportunities.

The Trustee believes that most of the managers may be able to provide some carbon data to support the Scheme in completing its TCFD disclosures reporting, although expect varying degrees of data coverage.

The Trustee does expect that some of the illiquid holdings will face challenges collecting the data and may not be able to provide carbon metrics data at this time.

The quality of managers' responses to the questionnaire has been improved since last year. The Trustee will continue to engage with the managers to obtain the outstanding responses and hopes further improvements will follow, and that the managers continue to progress in the future.

Metrics & Targets

Metrics help to inform the Trustee’s understanding and monitoring of the Scheme's climate-related risks. Quantitative measures of the Scheme's climate-related risks, in the form of both greenhouse gas emissions and non-emissions-based metrics, help us to identify, manage and track the Scheme's exposure to the financial risks and opportunities climate change will bring.

The Scheme's climate-related metrics

The Trustee uses some quantitative measures to help it understand and monitor the Scheme's exposure to climate-related risks. Measuring the greenhouse gas emissions related to the Scheme's assets is a key way for the Trustee to assess the Scheme's exposure to climate change.

Greenhouse gases are produced by burning fossil fuels, meat and dairy farming, and some industrial processes. When greenhouse gases are released into the atmosphere, they trap heat in the atmosphere causing global warming, contributing to climate change.

Greenhouse gases are categorised into three types or 'Scopes' by the Greenhouse Gas Protocol, the world's most used greenhouse gas accounting standard.

Scope 1

All direct emissions from the activities of an organisation which are under their control; these typically include emissions from their own buildings, facilities and vehicles

Scope 2

These are the indirect emissions from the generation of electricity purchased and used by an organisation

Scope 3

All other indirect emissions linked to the wider supply chain and activities of the organisation from outside its own operations – from the goods it purchases to the disposal of the products it sells

Scope 3 emissions are often the largest proportion of an organisation's emissions, but they are also the hardest to measure. The complexity and global nature of an organisation's value chain make it hard to collect accurate data.

For more explanation about GHG emissions, please see the Appendix.

The Scheme's climate-related metrics

In the first year of TCFD reporting, the Trustee decided what metrics to report on annually. As part of its second TCFD report, the Trustee also reported on a fourth metric, which is the portion of the investments with net zero, or Paris-aligned targets.

The metrics are described below. This year the Trustee reviewed these metrics and believes that they continue to be suitable for the Trustee to report against.

Total Greenhouse Gas emissions

The total greenhouse gas ("GHG") emissions associated with the portfolio. It is an absolute measure of carbon output from the Scheme's investments and is measured in tonnes of carbon dioxide equivalent ("tCO2e").

Where possible, the Trustee has obtained Scopes 1 & 2 and Scope 3 emissions from the managers separately.

Carbon footprint

Carbon footprint is an intensity measure of emissions that takes the total GHG emissions and weights it to take account of the size of the investment made. It is measured in tonnes of carbon dioxide equivalent per million pounds invested ("tCO2e/£m").

Where possible, the Trustee has obtained Scopes 1 & 2 and Scope 3 emissions from the managers separately.

Data coverage

A measure of the proportion of the portfolio that the Trustee has high quality data for (i.e., data which is based on verified, reported, or reasonably estimated emissions, versus that which is unavailable).

This has been selected on the basis that it provides a consistent and comparable measure of the level of confidence in the data.

The Trustee has not made any estimates where data is unavailable.

Binary target measurement

A metric which shows how much of the Scheme's assets are aligned with a climate change goal of limiting the increase in the global average temperature to 1.5˚C above pre-industrial levels.

It is measured as the percentage of underlying portfolio investments with a declared net-zero or Paris-aligned target, or are already net-zero or Paris-aligned.

DB Section

In the table below are the climate-related metrics for the assets within the DB Section of the Scheme.

The carbon metrics

Asset class	Material asset Proportion excl. Matching assets		Data Coverage (%)		Total GHG emissions (tCO_2e)		Carbon footprint (tCO_2e/£m)		Binary Target Measurement
	%	Year	Scopes 1 & 2	Scope 3	Scopes 1 & 2	Scope 3	Scopes 1 & 2	Scope 3	Portion of portfolio with net zero, or Paris-aligned targets
Equities	17%	2023	95.6%	95.6%	502	41,390	6.0	498.1	53.0%
	32%	*2022*	*96.3%*	*96.3%*	*993*	*20,501*	*6.0*	*123.8*	*31.8%*
Property	6%	2023	81.0%	61.0%	216	223	8.0	11.0	N/R
	8%	*2022*	*100.0%*	*100.0%*	*164*	*1,221*	*2.5*	*18.5*	*100.0*
Illiquid Credit	25%	2023	42.2%	35.9%	1,256	10,936	22.6	231.4	0.7%
	23%	*2022*	*19.9%*	*0.0%*	*2,190*	*N/R*	*90.6*	*N/R*	*N/R*
Other Illiquids	16%	2023	70.5%	36.4%	2,681	6,490	44.7	209.4	N/R
	15%	*2022*	*52.0%*	*22.6%*	*2,856*	*9,035*	*69.1*	*505.3*	*N/R*
Credit	36%	2023	78.0%	53.1%	7,185	6,853	49.3	69.0	59.9%
	19%	*2022*	*32.3%*	*0.0%*	*3,410*	*N/R*	*103.7*	*N/R*	*8.6%*
Total (exc. Matching)	**100%**	**2023**	**70.9%**	**53.6%**	**11,840**	**65,892**	**31.9**	**234.6**	**30.4%**
	100%	***2022***	***61.1%***	***46.2%***	***9,612***	***30,807***	***29.1***	***123.5***	***23.9%***

Source: Investment managers / Aon. Data as at 31/12/2023 unless specified otherwise. Figures may not sum due to rounding. These metrics have been aggregated for assets only where emissions data was received. There may be differing approaches / assumptions followed by the underlying managers. 'N/R' denotes data that is 'not reported' i.e., that no investment managers were able to provide data, and that no emissions have been approximated. 'N/A' denotes where climate-metrics which are 'not applicable'.

Asset Class	%	Year	Data Coverage (%)	Physical emissions (tCO2e)	Synthetic emissions (tCO2e)	Carbon footprint (tCO2e/£m)
Matching	100%	2023	100%	37,028	30,621	170.2
	100%	*2022*	*100%*	*8,200*	*N/A*	170.2

Source: UK Government / Aon. Data as at 31/12/2023 unless specified otherwise. 'N/A' denotes where climate-metrics which are 'not applicable', this if for Scopes 1 & 2 only as there is no industry agreed methodology available for Scope 3 emissions.

Commentary:

- Overall, the data coverage for Scopes 1 & 2 has improved since last year. This is mainly driven by a significant improvement in data coverage provided for Credit, Illiquid Credit and Other Illiquids.

- For both Illiquid Credit and Credit, data coverage has improved in line with developments in industry standards. This is expected over the years as

managers have had time to now develop their methodology and data is readily available. This is also the same rationale for improvements in the portion of the portfolio with net zero, or Paris-aligned targets for Credit managers. An improvement in data coverage can also be driven by managers now including estimated data, this is the case for Ares (Illiquid Credit) who was able to estimate some of the data, compared to M&G (Illiquid Credit and Credit) who is still working to improve its data coverage.

- For Equities, the rationale for the slightly lower data coverage this year compared to 2022 is due to variance in the underlying company data within the portfolio causing a change in coverage year-on-year.
- For Scope 3, at an overall level, data coverage has improved since 2022, driven by Credit and Illiquid Credit providing data coverage for Scope 3 emissions in this year of reporting. This is driven by developments in industry standards for Scope 3 emissions and developments in the methodology of these emissions.
- In 2023, the Scheme experienced a notable increase in absolute GHG emissions across all emission Scopes. This was primarily driven by the increase in coverage for the Credit asset class. This resulted in a much larger proportion of the GHG emissions associated with the credit holdings being reported on in this reporting year and is not necessarily indicative of an actual increase in emissions from these assets.
- The portion of the portfolio with reported net zero, or Paris-aligned targets for the Scheme has improved slightly since 2022. However, six managers this remains as an area where the Trustee expects to see improvements in the future years of reporting.
- Scope 3 is currently not applicable to LDI, as it contains primarily UK sovereign bonds and Scope 3 emissions are not yet widely available for UK sovereign bonds.

DC Section

In the table below are the climate-related metrics for the assets within the DC Section of the Scheme.

The carbon metrics

	Material asset proportion		**Data Coverage (%)**		**Total GHG emissions** (tCO_2e)		**Carbon footprint** (tCO_2e/£m)		**Binary Target Measurement**
Asset class	%	Year	Scopes 1 & 2	Scope 3	Scopes 1 & 2	Scope 3	Scopes 1 & 2	Scope 3	Portion of portfolio with net zero, or Paris-aligned targets
Multi Asset	100%	2023	91.2%	79.8%	3,625	25,892	81.8	667.4	42.6%
	100%	*2022*	*90.7%*	*N/R*	*2,308*	*N/R*	*90.9*	*N/R*	*39.1%*

Source: Investment manager / Aon. Data as at 31/12/2023 unless specified otherwise. These metrics have been aggregated for assets only where emissions data was received. 'N/R' denotes data that is 'not reported'.

Commentary:

- Regulations outline that for DC assets, trustees should focus their attention on each 'popular arrangement offered'. A 'popular arrangement' is defined as one in which £100m or more is invested, or which accounts for 10% or more of the assets used to provide money purchase benefits. Given the limited number of members and assets in the Select funds of the DC Section, an analysis has only been conducted on the carbon metrics of the target-date funds as no other funds are popular arrangements.
- The Scheme's manager, LGIM, provided data on Scope 1, 2 & 3 emissions. Following a successful engagement with LGIM for provision of Scope 3 information over the last year, the Trustee has been able to disclose information of the Scope 3 emissions for the DC Section in 2023.
- In this year's analysis the Trustee identified that the coverage for the Scope 1 & 2 emissions of the DC assets has improved year-on-year. This is expected as emissions reporting continues to become further embedded within company operations, and as methodologies to calculate caron data is improving within the investment industry. The investment consultant did engage with LGIM, via email, to understand if there has been changes in methodology since last year, and what these changes are. There have been no material changes in the methodology used.
- The Trustee will continue to engage with LGIM to ensure the data provided is consistent in future reporting to ensure that there is a direct comparison when assessing changes in data coverage.
- There has been an increase in overall reported GHG emissions, however this is primarily due to a significant increase in the asset value along with an improvement in the data coverage.

Notes on the metrics data

The Trustee's investment consultant, Aon, collected information from all of the Scheme's investment managers about their greenhouse gas emissions. Aon collated this information to calculate the climate-related metrics for the Scheme's portfolio of assets.

Availability of data

DB Section

- The Trustee received Scope 1, 2 & 3 emissions data from all the Scheme's managers, except Macquarie and DIF (who could not provide scope 3 data).
- Macquarie did not provide any data, as the manager stated that the single outstanding asset was in liquidation.
- Only three managers (M&G, Robeco, Generation) were able to share the portion of the portfolio which is net zero or Paris aligned. The Trustee will continue to engage with these managers, with the support of its investment consultant, to improve the availability of this data in future years of reporting.

How we collected the data

Our investment consultant, Aon, collected the carbon emissions data from the Scheme's managers on our behalf using the industry standard Carbon Emissions Template ("CET")[2]. The CET was developed by a joint industry initiative of the Pension and Life Savings Association, the Association of British Insurers and Investment Association Working Group.

The CET provides a standardised set of data to help us meet our obligations under the Climate Change Governance and Reporting Regulations, and associated DWP Statutory Guidance.

- Following a successful engagement by the Scheme's investment consultant, via a virtual meeting, last year, Ares was able to provide emissions data across all scopes as at 31 December 2023.

- For Credit, there has been a reduction in carbon footprint for Scope 1 & 2 emissions, mainly driven by the redemption of BlackRock corporate bonds which had a much higher carbon footprint compared to the Robeco SDG Credit fund. This year one Credit manager was able to provide scope 3 data – previously this data was unavailable throughout.

- Last year, the Scheme's matching assets were held with State Street as Index-Linked Gilts. This year the matching assets are held with Insight as LDI, which includes derivative holdings.

- The methodology, for calculation of Scope 1 & 2 emissions and footprint, have evolved and there is now a more industry-wide accepted methodology for the calculation of carbon footprint of LDI. This includes the use of Purchasing Power Parity Adjusted Gross Domestic Product of the host country (PPP-adj GDP) to calculate the Carbon footprint associated with sovereign bonds. The metrics for sovereign bond holding from 2022 have been restated to allow for an appropriate comparison.

- The rationale for splitting 'physical' and 'synthetic' emissions is to distinguish between the sovereign bonds physically held by the Scheme i.e. 'physical emissions', and certain long only asset exposures obtained through the use of derivatives.

- The data coverage of 100% is not based on figures were directly reported by the manager.

- The calculation of these metrics uses the latest available annual data at the time of calculation. This year, the latest available figures were for the calendar year 2022. The metrics for 2023 use the 2022 carbon footprint as a proxy and will be restated next year once the 2023 information is published and a more accurate carbon footprint can be calculated. This approach will continue in future years of reporting.

- These metrics were calculated in line with the methodology set out in the 'How are emissions calculated for 'matching' assets?' section on page 46 in the TCFD report.

DC Section

- With the support of its investment consultant, the Trustee engaged with LGIM via email for provision of Scope 3 information, as the manager was unable to do so last year. Through this successful engagement, the manager confirmed that it would be able to report on this going forwards and delivered on that promise in this year's reporting.

- The manager provided all Scope 1, 2 & 3 emissions and coverage data alongside providing the portion of the portfolio with net zero, or Paris-aligned targets for all funds.

The Trustee does not make any estimates for missing data.

Notes on the metrics calculations

There isn't an industry-wide standard for calculating some of these metrics yet and different managers may use different methods and assumptions. These issues are common across the industry and highlight the importance of climate reporting to improve transparency. The Trustee expect that in the future better information will be available from managers as the industry aligns to expectations and best practice standards.

The carbon metrics

Aon calculated the carbon metrics for the Scheme based on information provided by the managers. The table below shows for each asset class the broad approach used to calculate each metric.

Asset Class	Approach
All asset classes apart from LDI	The Group Trustee's Investment Adviser collected the carbon emissions data from the Group's managers on the Group Trustee's behalf using the industry standard Carbon Emissions Template ("CET")[2] The collected metrics data from managers are then aggregated by asset class. The methodology used for this aggregation does not make any assumptions or estimations about the carbon emissions for assets for which data was unavailable. The aggregation methodology is as set out below: G = A x C x F G = Total GHG expressed as (tCO2e). A = Assets expressed in £ Millions. C = Data Coverage expressed as a decimal between 0 and 1. F = Carbon Footprint expressed as (tCO2e/£M invested).

Binary target measurement

Aon calculated the binary target measurement for the Scheme based on the information provided by the investment managers. Aon requested the portion of the portfolio with Net-Zero or Paris-aligned targets for each mandate from the Scheme's investment managers and aggregated the results based on the portion of assets invested in each mandate.

Aon did not make any estimates for missing data. The Scheme's portfolio alignment metric only represents the portion of the portfolio for which the Trustee has data.

[2] https://www.theia.org/industry-policy/guidelines/data-delivery-frameworks

How are emissions calculated for ‘matching’ assets?

The emissions for the matching assets are a material portion of the Scheme’s total GHG emissions. This is mainly down to the method used to calculate the emissions, which is different to other asset classes.

The LDI portfolio contains mainly UK government bonds, also known as “gilts” or “index-linked gilts”. Carbon metrics for UK government bonds are based on the total GHG emissions for the whole of the UK, which are high. By contrast, carbon emissions for equities, for example, are based on the emissions associated with the underlying companies invested in, which are relatively lower. Hence, the carbon metrics for matching assets are higher than many other asset classes.

The carbon emissions for the UK government bonds are driven by the total UK greenhouse gas emissions and the total amount of UK public debt. This uses publicly available information, published by the UK Government:

- The Annual UK greenhouse gas emissions data (Scopes 1 & 2) for 2022, published as a provisional figure by the UK government, of 426.6m tCO_2e, divided by UK PPP-adj GDP at 31 December 2022 of £2,506.2Bn.

  $=170.2tCO_2/£M$

Given this difference in methodology to the other emissions figures reported, the matching assets have been split out from the other emissions figures.

Looking to the future the Trustee's climate-related target

Climate-related targets help the Trustee track its efforts to manage the Scheme's climate-change risk exposure.

In the first year of reporting, the Trustee set a target for improving the data coverage metric. Without meaningful data from the investment managers, it is very hard for the Trustee to measure accurately its carbon emissions. So, it is important to set a target to improve the quality of GHG emissions data from the managers.

The Scheme's performance against the target will be measured and reported on every year. Over time, this will show the Scheme's progress against the target.

Trustee's update

Each year we review the suitability of the target we have set. Based on the data collected and the metrics calculated this year, we believe the target continues to be suitable.

2022 Target

Based on the observation of data coverage in the first TCFD report, the Trustee agreed to set the following data coverage target for the Scheme's assets over the next five years (using data as at 31 December 2021 as the baseline):

In 5 years' time, achieve above 80% coverage of carbon emission data across all asset classes split across Scopes 1, 2 and 3 in the DB Section, and above 95% coverage across classes in the DC Section.

2024 Update

In the third year of reporting, there was an improvement in the quality of data provided by the Scheme's managers, primarily driven by improvements in data coverage provided by Illiquid Credit, Credit and Other Illiquids.

DB Section

	Scopes 1 & 2 Coverage			Scopes 3 Coverage			Scopes 1, 2 & 3 Coverage Target
Asset Class	**31 Dec 2021**	**31 Dec 2022**	**31 Dec 2023**	**31 Dec 2021**	**31 Dec 2022**	**31 Dec 2023**	**31 Dec 2026**
Equities	95.9%	96.3%	95.6%	N/A	96.3%	95.6%	>80.0%
Property	100.0%	100.0%	81.0%	N/A	100.0%	61.0%	>80.0%
Illiquid Credit	46.0%	19.9%	42.2%	N/A	0.0%	35.9%	>80.0%
Other Illiquids	71.0%	52.0%	70.5%	N/A	22.6%	36.4%	>80.0%
Credit	63.5%	32.3%	78.0%	N/A	0.0%	53.1%	>80.0%
Matching	N/R	100.0%	100.0%	N/A	N/A	N/A	>80.0%

Source: Investment managers / UK Government / Aon. Note: 'N/R' denotes data that is 'not reported; 'N/A' denotes where climate-metrics which are 'not applicable'.

DC Section

	Scopes 1 & 2 Coverage			Scopes 3 Coverage			Scopes 1, 2 & 3 Coverage Target
Asset Class	**31 Dec 2021**	**31 Dec 2022**	**31 Dec 2023**	**31 Dec 2021**	**31 Dec 2022**	**31 Dec 2023**	**31 Dec 2026**
Multi-asset	88.1%	90.7%	91.2%	N/A	0.0%	81.8%	>95.0%

Observations

Overall, there has been an improvement in data coverage for Scope 1 & 2 since last year (9.8%) for the DB Section, with the biggest improvements seen in Credit and Illiquid Credit.

There is a slightly lower data coverage for Equities this year, however this is due to portfolio movements. For Property, the investment manager provided a lower data coverage this year for the fund. The Property manager will not be engaged with, because post Scheme year end, the Threadneedle Property Unit Trust was fully disinvested from.

For Scope 3, there has been a significant improvement in data coverage since last year. This is also mainly driven by improvements within Credit and Illiquid Credit, which did not provide any Scope 3 data coverage last year.

Scope 3 reporting across all asset classes is expected to be weaker due to the difficulty to obtain and calculate Scope 3 carbon emissions. The Trustee expects reporting to improve in the future years, across all asset classes, in line with industry standards.

In the DC Section, there is improved data coverage for Scopes 1 & 2 compared to last year of reporting. There was positive news in that the DC Section manager was able to provide Scope 3 data in line with that of Scopes 1 & 2 this year.

Suitability of target

The Trustee believes the original target, which focuses on improving the data quality metric for carbon emissions data across Scopes 1, 2 and 3 by 2026, remains suitable.

What is the Trustee doing to reach the target?

The Trustee is taking the following steps to reach the target:

Improving coverage of data	Making the reporting consistent
1	2
Observation **The coverage of data for equity and property funds is greater versus other assets held by the Scheme. For equity holdings in the DB portfolio, data available was in excess of 95%. The coverage of carbon data for credit and illiquid credit assets was lower but had improved compared to last year.** Data coverage for the matching assets (i.e., the LDI portfolio) was assumed to be 100%, although this was not reported directly by the investment manager of the matching portfolio.	**Observation** There were some managers which did not complete the data request in the format of the industry best practice template.
Solution The Trustee will engage with its investment managers, supported by its investment consultant, to request higher data availability and coverage for credit and illiquid credit funds. Through engagement, the Trustee will identify opportunities to improve coverage, or investigate alternative sources of data. In addition to engagement undertaken, the Trustee expects that improvement in data availability and reporting will in part be dependent on improved industry methodologies to calculate carbon metrics, including increased regulatory requirements for reporting carbon metrics.	**Solution** The Trustee will engage with its investment managers, supported by its investment consultant, to encourage managers to adopt the Investment Associate's Carbon Emissions Reporting Template, and provide guidance on how to complete reporting in line with this data delivery framework to a high standard.

Appendices

Glossary

Governance	refers to the system by which an organisation is directed and controlled in the interests of shareholders and other stakeholders.[3] Governance involves a set of relationships between an organisation's management, its board, its shareholders, and other stakeholders. Governance provides the structure and processes through which the objectives of the organisation are set, progress against performance is monitored, and results are evaluated.[4]
Strategy	refers to an organisation's desired future state. An organisation's strategy establishes a foundation against which it can monitor and measure its progress in reaching that desired state. Strategy formulation generally involves establishing the purpose and scope of the organisation's activities and the nature of its businesses, taking into account the risks and opportunities it faces and the environment in which it operates.[5]
Risk management	refers to a set of processes that are carried out by an organisation's board and management to support the achievement of the organisation's objectives by addressing its risks and managing the combined potential impact of those risks.[6]
Climate-related risk	refers to the potential negative impacts of climate change on an organisation. Physical risks emanating from climate change can be event-driven (acute) such as increased severity of extreme weather events (e.g., cyclones, droughts, floods, and fires). They can also relate to longer-term shifts (chronic) in precipitation and temperature and increased variability in weather patterns (e.g., sea level rise). Climate-related risks can also be associated with the transition to a lower-carbon global economy, the most common of which relate to policy and legal actions, technology changes, market responses, and reputational considerations.[7]
Climate-related opportunity	refers to the potential positive impacts related to climate change on an organisation. Efforts to mitigate and adapt to climate change can produce opportunities for organisations, such as through resource efficiency and cost savings, the adoption and utilization of low-emission energy sources, the development of new products and services, and building resilience along the supply chain. Climate-related opportunities will vary depending on the region, market, and industry in which an organisation operates.[8]

[3] A. Cadbury, Report of the Committee on the Financial Aspects of Corporate Governance, London, 1992.
[4] OECD, G20/OECD Principles of Corporate Governance, OECD Publishing, Paris, 2015.
[5] TCFD, Recommendations of the Task Force on Climate-related Financial Disclosures, 2017
[6] TCFD, Recommendations of the Task Force on Climate-related Financial Disclosures, 2017
[7] TCFD, Recommendations of the Task Force on Climate-related Financial Disclosures, 2017
[8] TCFD, Recommendations of the Task Force on Climate-related Financial Disclosures, 2017

Greenhouse gas emissions scope levels[9]	Greenhouse gases are categorised into three types or 'scopes' by the Greenhouse Gas Protocol, the world's most used greenhouse gas accounting standard. Scope 1 refers to all direct GHG emissions. Scope 2 refers to indirect GHG emissions from consumption of purchased electricity, heat, or steam. Scope 3 refers to other indirect emissions not covered in Scope 2 that occur in the value chain of the reporting company, including both upstream and downstream emissions. Scope 3 emissions could include: the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities (e.g., transmission and distribution losses), outsourced activities, and waste disposal.[10]
Value chain	refers to the upstream and downstream life cycle of a product, process, or service, including material sourcing, production, consumption, and disposal/recycling. Upstream activities include operations that relate to the initial stages of producing a good or service (e.g., material sourcing, material processing, supplier activities). Downstream activities include operations that relate to processing the materials into a finished product and delivering it to the end user (e.g., transportation, distribution, and consumption).[11]
Climate scenario analysis	is a process for identifying and assessing a potential range of outcomes of future events under conditions of uncertainty. In the case of climate change, for example, scenarios allow an organisation to explore and develop an understanding of how the physical and transition risks of climate change may impact its businesses, strategies, and financial performance over time.[12]
Net zero	means achieving a balance between the greenhouse gases emitted into the atmosphere, and those removed from it. This balance – or net zero – will happen when the amount of greenhouse gases add to the atmosphere is no more than the amount removed.[13]

[9] World Resources Institute and World Business Council for Sustainable Development, The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition), March 2004.
[10] PCC, Climate Change 2014 Mitigation of Climate Change, Cambridge University Press, 2014.
[11] TCFD, Recommendations of the Task Force on Climate-related Financial Disclosures, 2017
[12] TCFD, Recommendations of the Task Force on Climate-related Financial Disclosures, 2017
[13] Energy Saving Trust, What is net zero and how can we get there? - Energy Saving Trust, October 2021

Appendix – An explanation of climate risk categories

Climate-related risks are categorised into physical and transition risks. Below are examples of transition and physical risks.

Transition risks

Transition risks are those related to the ability of an organisation to adapt to the changes required to reduce greenhouse gas emissions and transition to renewable energy. Within transition risks, there are four key areas: policy and legal, technological innovation, market changes, and reputational risk.

Policy and legal

Examples

Increased pricing of GHG emissions

Enhanced emissions-reporting obligations

Regulation of existing products and services

Potential financial impacts

Increased operating costs (e.g. higher compliance costs, increased insurance premiums)

Write-offs, asset impairment and early retirement of existing assets due to policy changes

Technology

Examples

Cost to transition to lower emissions technology

Unsuccessful investments in new technologies

Potential financial impacts

Write-offs and early retirement of existing assets

Capital investments in technology development

Costs to adopt new practices and processes

Market

Examples

Changing customer behaviour

Uncertainty in market signals

Increased cost of raw materials

Potential financial impacts

Reduced demand for goods and services due to shift in consumer preferences.

Abrupt and unexpected increases in energy costs.

Re-pricing of assets (e.g., fossil fuel reserves, land valuations, securities valuations).

Reputational

Examples

Stigmatisation of sector

Increased stakeholder concern or negative stakeholder feedback

Potential financial impacts

Reduced revenue from decreased demand for goods and services.

Reduced revenue from decreased production capacity (e.g., delayed planning approvals, supply chain interruptions)

Reduced revenue from negative impacts on workforce management and planning

Physical Risks

Physical risks refer to the physical impacts of climate change on a firm's operations. They directly impact a firm's ability to perform its function due to climate disruption. They fall into two subcategories: acute and chronic. Acute risks are extreme climate events such as flooding and wildfires, and chronic risks are trends over time such as an increase in temperature or ocean acidification.

Acute	Chronic
Examples	**Examples**
Extreme heat	Water stress
Extreme rainfall	Sea level rises
Floods	Land degradation
Droughts	Variability in temperature
Storms (e.g., hurricanes)	Variability in precipitation

Appendix – Climate scenario modelling assumptions

The purpose of the climate scenario modelling is to consider the impact of climate-related risks on the Schemes assets and liabilities over the long-term.

The scenario modelling assumes a deterministic projection of assets and liabilities on the technical provisions basis, using standard actuarial techniques to discount and project the Scheme's expected future cashflows.

i. It models the full yield curve as this allows for a more accurate treatment of the liabilities and more realistic modelling of the future distribution of interest rates and inflation.
ii. The modelling parameters vary deterministically for each scenario.

The liability projections are approximate, but they are appropriate for this analysis. However, a full actuarial valuation carried out at the same date may produce a materially different result.

The scenario modelling focusses on the impact of climate change on the Scheme's assets and liabilities. It does not consider the impact climate change could have on the covenant risk or mortality risk.

The scenario modelling reflects market conditions and market views at the time of the analysis. The model may produce different results for the same strategy under different market conditions.

Key Assumptions

	Temperature risk by 2100	**Reach net zero by**	**Carbon price (2030/2050)**	**Introduction of environmental regulation**
No transition	>4C	After 2050	$40/$50	None
Disorderly transition	<3C	After 2050	$65/$340	Late and aggressive
Abrupt transition	1.5C – 2C	2050	$135/$280	Aggressive
Orderly transition	1.3C – 2C	2050	£100/$215	Coordinated
Smooth transition	<1.5C	2045	$80/$165	High coordination

Modelling limitations

- The purpose of the model is to consider the long-term exposure of the Scheme to the climate-related risks and the pattern of the asset returns over the long term. Thus, the model is subject to limitations.
- The model intends to illustrate the climate-related risks to which the Scheme is currently exposed, highlighting areas where risk mitigation could be achieved through changing the portfolio allocation. Other relevant issues such as governance, costs and implementation (including

manager selection and due diligence) must be considered when making changes to the investment strategy.

- The model only considers investment risk, measured in the form of deviance from the Base Case. The Scheme will also face covenant risk, longevity risk, basis risks and operational risks which are not captured in the model.

Appendix – Greenhouse gas emissions in more detail

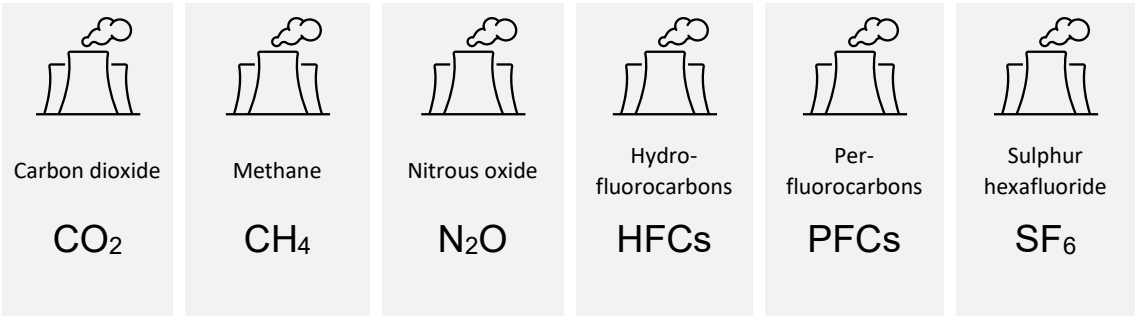
Greenhouse gases in the atmosphere, including water vapour, carbon dioxide, methane, and nitrous oxide, keep the Earth's surface and atmosphere warm because they absorb sunlight and re-emit it as heat in all directions including back down to Earth. Adding more greenhouse gases to the atmosphere makes it even more effective at preventing heat from leaving the Earth's atmosphere.

Greenhouse gases are vital because they act like a blanket around the Earth making it the climate habitable. The problem is that human activity is making the blanket "thicker". For example, when we burn coal, oil, and natural gas we send huge amounts of carbon dioxide into the air. When we destroy forests, the carbon stored in the trees escapes to the atmosphere. Other basic activities, such as raising cattle and planting rice, emit methane, nitrous oxide, and other greenhouse gases.

The amount of greenhouse gases in the atmosphere has significantly increased since the Industrial Revolution. The Kyoto Protocol[14] identifies six greenhouse gases which human activity is largely responsible for emitting. Of these six gases, human-made carbon dioxide is the biggest contributor to global warming.

Each greenhouse gas has a different global warming potential and persists for a different length of time in the atmosphere. Therefore, emissions are expressed as a carbon dioxide equivalent (CO_2e). This enables the different gases to be compared on a like-for-like bases, relative to one unit of carbon dioxide.

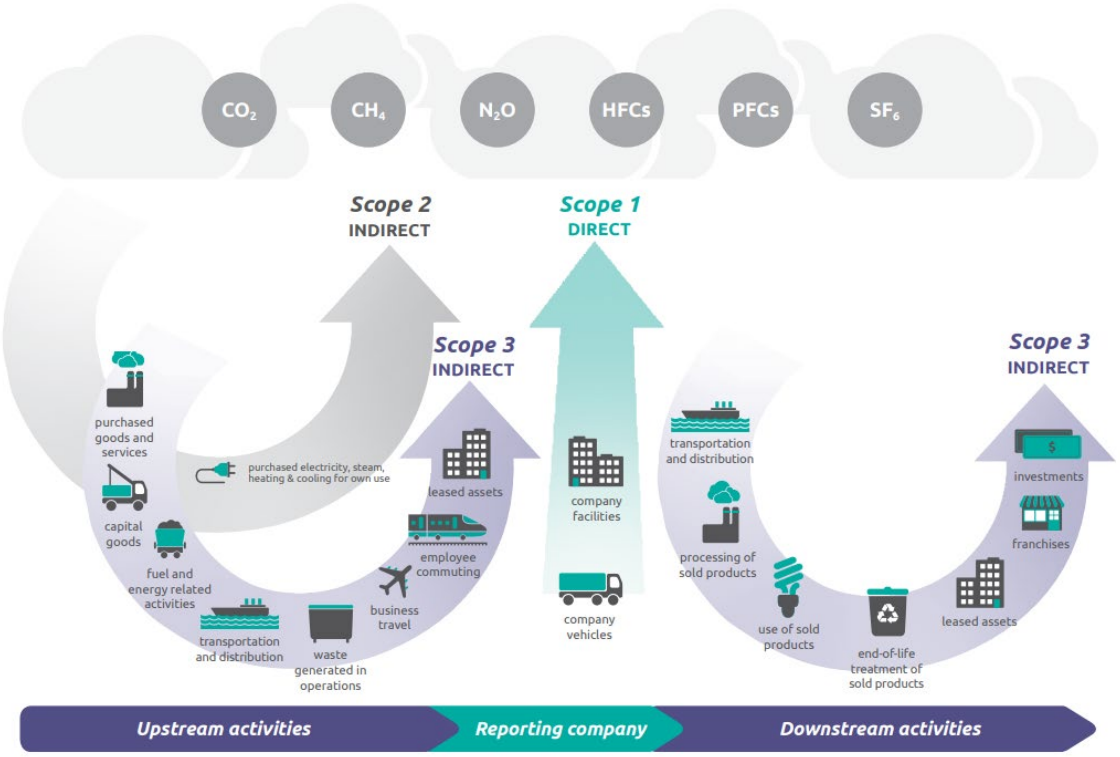
Six main greenhouse gases identified by the Kyoto Protocol



[14] https://unfccc.int/kyoto_protocol

Greenhouse gases are categorised into three types or ‘scopes’ by the Greenhouse Gas Protocol, the world’s most used greenhouse gas accounting standard.

Overview of GHG Protocol scopes and emissions across the value chain



Source: Greenhouse Gas Protocol, Corporate value chain (scope 3) Accounting and Reporting Standard, 2011