



**TCFD**

TASK FORCE ON  
CLIMATE-RELATED  
FINANCIAL  
DISCLOSURES

# Climate disclosures for year ending 31 March 2023

Produced by: The Board of the John Lewis Partnership Pensions Trust

Date: September 2023

# 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 John Lewis Partnership Trust for Pensions (the "Scheme") vulnerability to climate-related risks will help us to mitigate the risks and take advantage of any opportunities.

UK regulations require pension scheme trustees to meet climate governance requirements and publish an annual report on their scheme's climate-related risks in line with the recommendations of the Taskforce on Climate-related Financial Disclosure ("TCFD").

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 lead to more accountability and provide decision-useful information to investors and beneficiaries.

This report has been prepared in accordance with the regulations set out under The Occupational Pension Schemes (Climate Change Governance and Reporting) Regulations 2021 (the "Regulations"). It provides an update on how the Scheme aligns with each of the four pillars set out in the regulations. These pillars are summarised below:

- **Governance:** The Scheme's governance around climate-related risks and opportunities.
- **Strategy:** The actual and potential impacts of climate-related risks and opportunities on the Scheme's strategy and financial planning.
- **Risk Management:** The processes used to identify, assess and manage climate-related risks.
- **Metrics and Targets:** The metrics and targets used to assess and manage relevant climate-related risks and opportunities.

This is the annual TCFD report for the Scheme for the year ended 31 March 2023. It has been prepared by the Board of the John Lewis Partnership Pensions Trust (the "Trustee").

## What is TCFD?

The Financial Stability Board created the Taskforce on Climate-related Financial Disclosure ("TCFD") to develop recommendations on the types of information that entities should disclose to support investors, to assess and price risks related to climate change.

The TCFD has developed a framework to help companies and other organisations, including pension schemes, more effectively disclose climate-related risks and opportunities through their existing reporting processes.



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# Executive summary

To produce this TCFD-aligned report, we have worked with our responsible investment adviser to carefully consider the potential impact climate change could have on the Scheme and how we identify, manage, and mitigate those risks.

We, the Trustee, support the recommendations set out by the TCFD on the basis that it will allow us to assess, monitor and mitigate climate-related risks more closely, on behalf of our members. This is our second disclosure under the TCFD framework and this report is expected to evolve over time.

## Overview of the Scheme

The Scheme is comprised of a Defined Benefit (“DB”) Section and a Defined Contribution (“DC”) Section.

The DB Section investment portfolio is diversified across a range of different asset classes including private equity, private credit, real assets and hedging assets known as Liability Driven Investments (“LDI”).

The DC Section offers members a range of investment funds, including a default fund for those that do not want to make investment decisions. The funds offered include equities, cash and multi-asset funds.

## Summary of our findings

This report is divided into four sections which align with the pillars of the TCFD recommendations. The key findings of each section are as follows:

### **Governance**

The Trustee takes responsibility for the oversight of climate-related risks and opportunities. A comprehensive governance and management framework relating to Environmental, Social and Governance (“ESG”) considerations (which includes climate-related risks and opportunities) is in place.

The Trustee delegates oversight of the Scheme’s climate change risk management to the DB Sub-Committee and the DC Sub-Committee with support from the Climate Change Working Group (“CCWG”).

### **Strategy**

The Trustee carried out a risk assessment to identify and assess climate-related risks and opportunities. From the analysis, the Trustee found that climate-related risks and opportunities impact all the asset classes in which the Scheme invests. Over time, there is a general expectation that the impacts of physical and transition risks will increase in frequency and severity.

The Trustee also carried out scenario analysis to test the resilience of the Scheme’s investment and funding strategy (where relevant) to climate change. From the analysis the Trustee concluded that the investment strategies of the DB and DC Sections are resilient to climate change under various scenarios.

## Risk Management

The Trustee has integrated climate-related risks into its policies and risk management processes. The Trustee developed a Climate Risk Management Framework, which helps it to manage climate-related risks and opportunities. This is set out in detail in the Risk Management section.

## Metrics

We reported our climate metrics for the year. This is the first year we have reported on Scope 3 emissions, and we note that the availability of data is poor.

Section	Assets at 31 Mar '23 (£k)	Data quality	Total GHG emissions (tCO <sub>2</sub> e)		Carbon footprint (tCO <sub>2</sub> e/£m)	
			Scopes 1 & 2	Scope 3	Scopes 1 & 2	Scope 3
DB LDI	1,900	100%	143,000	Not available	72 <sup>1</sup>	Not available
DB Other assets	2,600	26%	110,000	3,800	100	40
DC Assets	1,100	90%	90,500	Not available	85	Not available

Source: Investment managers / Aon. Data as at 31/03/2023. Figures may not sum due to rounding. The aggregated data quality figure for all DB assets including LDI is 64%.

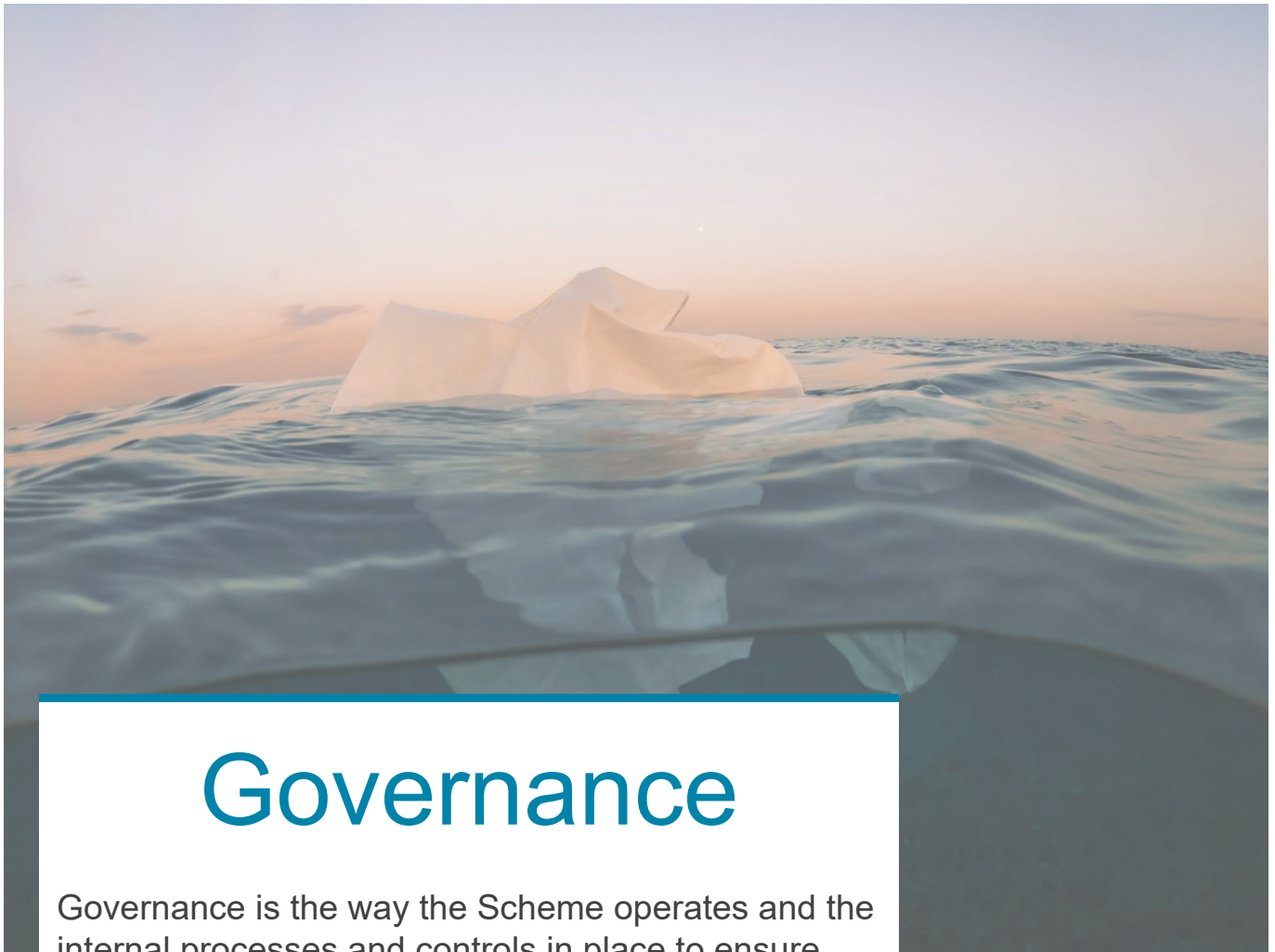
1. tCO<sub>2</sub>e/GDP

## Progress against the data quality target

Last year we set a target for improving the data quality of scopes 1 and 2 emissions data. We reviewed the target in light of the quality of the data we received this year and we decided to increase the ambition of our target for DC assets by shortening the timeframe for achieving 100% data quality by 5 years.

Section	Actual data quality		Target data quality
	31 Mar '22	31 Mar '23	
DB	25%	64%	100% of scopes 1 & 2 by 2032
DC	69%	90%	100% of scopes 1 & 2 by 2027

We hope you enjoy reading this report and understanding more about how we are managing climate-related risks and opportunities within the Scheme.



# 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 us, as the Trustee, and others making Scheme-wide decisions, such as those relating to the investment strategy, funding or the ability of the sponsoring employer to support the Scheme.



# Our Scheme's governance

As the Trustee of the Scheme, we are responsible for overseeing all strategic matters related to the Scheme. This includes the governance and management frameworks relating to environmental, social and governance (“ESG”) considerations and climate-related risks and opportunities.

The Trustee manages climate-related risks and opportunities and uses sub-committees which have appropriate skills in each area. The Trustee is very mindful of the DWP requirements and retains overall control over the management of climate-related issues.

The Trustee has formally approved a detailed plan to achieve compliance with the legal requirements and will maintain oversight. On an annual basis, it will review the governance model, and the asset metrics and targets. The covenant and liabilities will be reviewed at least every three years to align with the actuarial valuation.

We agreed our climate-related beliefs and our approach to managing climate change risk. These are set out in the Scheme's Statement of Investment Principles (“SIP”), which is reviewed as required (at least annually).

Climate-related risks and opportunities are integrated into our risk management framework so we can maintain oversight of those that are relevant to the Scheme.

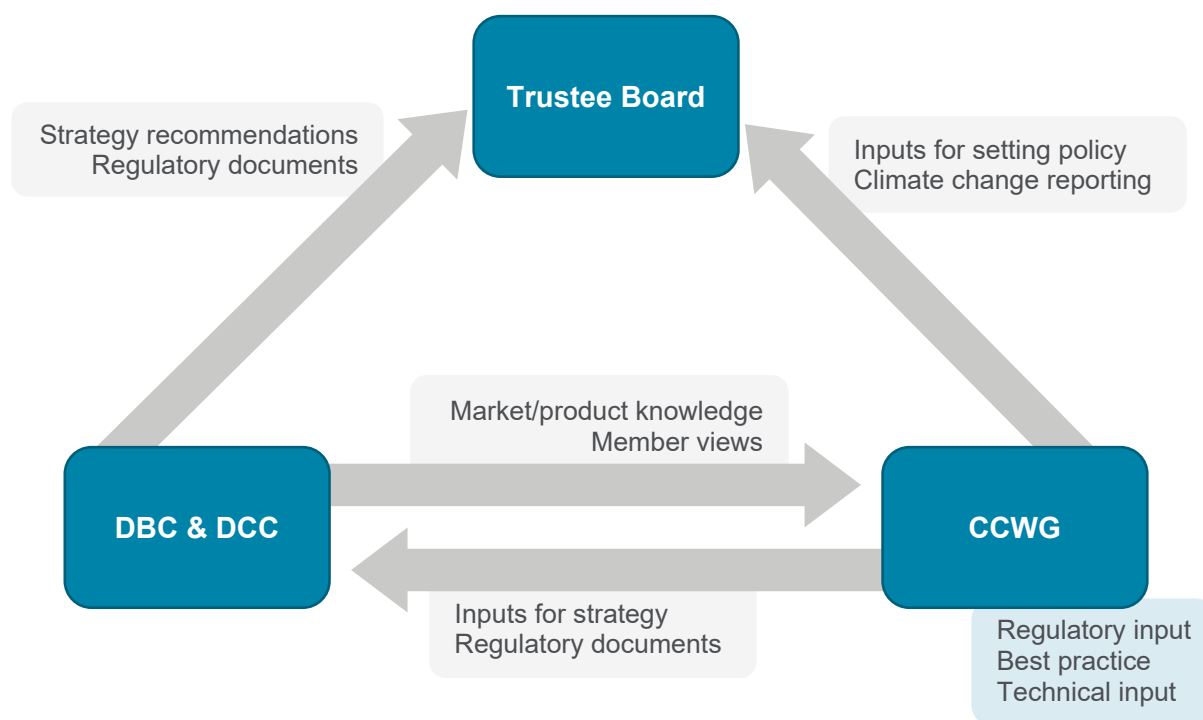
We receive training on an annual basis (or more frequently if required) on climate-related issues to ensure that we have the appropriate knowledge and understanding to support good decision-making.

## Legal disclosure required:

How the trustee maintains oversight of climate related risks and opportunities relevant to the scheme (Para. 27 (a))



Our overall risk management framework is maintained by our Audit and Risk Sub-Committee. We delegate oversight of the Scheme's climate change risk management to the Defined Benefit Sub-Committee ('DBC') and the Defined Contribution Sub-Committee ('DCC') as first line risk owners that are supported by the Climate Change Working Group ('CCWG'). The Trustee is updated through this structure on material climate-related developments on a regular basis (at least annually).



## Defined Benefit Sub-Committee

The main objectives of this Sub-Committee include managing the Defined Benefit assets, funding and oversight of Sponsor covenant. Their role in respect of climate-related issues is as follows:

- To monitor climate-related metrics alongside the integrated risk management. This includes the following:
  - Climate metrics of assets within the investment portfolio alongside the Scheme investment performance risk. This includes looking at the potential impacts upon long-term market factors such as investment returns (in aggregate and by sector), inflation and interest rates.
  - The impact of climate risk on the John Lewis Partnership plc (the "Partnership") covenant including changes in turnover and profits and the market values of the Partnership's assets. This includes transition risks and longer-term changes. It also includes the assets that are pledged to the Scheme should the Partnership become insolvent.
  - The potential impact on the Scheme's liabilities including changes in longevity, working patterns and retirement ages.
- To advise the Trustee and to implement targets in respect of climate-related metrics.
- To monitor progress against those targets and provide analysis of that progress.
- To monitor opportunities that will arise from the transition to a low carbon economy including renewable technology.



- To provide challenge to advisers and providers on their work in this area.

## Defined Contribution Sub-Committee

The main objective of this Sub-Committee is to manage the Defined Contribution assets. Its role in respect of climate-related issues is similar to the DBC but with a different emphasis because of the different nature of the benefits provided.

## Climate Change Working Group

We set up a Climate Change Working Group to help fulfil the TCFD and other reporting requirements and to support the Trustee's approach to climate change overall. It is currently made up of four Trustee Directors plus a representative from the Partnership.

The CCWG has a mandate to provide the initial review of all work conducted by its Responsible Investment adviser on TCFD and recommend to the Trustee an appropriate climate risk framework and reporting disclosures.

## How we work with our advisers and providers

We expect our advisers and providers to bring important climate-related issues and developments to our attention in a timely manner. We expect our advisers and investment managers to have the appropriate knowledge on climate-related matters.

The work of each of these providers is monitored by the CCWG and there is also an Adviser Review policy in place which provides an additional level of scrutiny.

### **Aon – Responsible Investment adviser**

- Provides support and advice on the investment risks and opportunities both in the portfolio and in the capital markets.
- Supports the Trustee and CCWG to deliver the Scheme's TCFD reporting including (but not limited to) advising on the Scheme's approach to the identification, assessment and management of relevant climate-related risks and opportunities; providing scenario analysis; and analysis of climate-related metrics and the Trustee's chosen targets.

### **Mercer – Investment Adviser and Scheme Actuary**

Investment:

- Provides input on the investment strategy including the impact of climate-related issues.
- Provides Environmental, Social and Governance ("ESG") monitoring on all investments.

Actuarial:

- Provides analysis of the potential impact of climate-related issues on the Scheme's liabilities and funding.

### Legal disclosure required:

The role of any person who, otherwise than as a legal adviser of the trustees, advises or assists the trustees with respect to scheme governance activities and the process by which the trustees satisfy themselves that the person is taking adequate steps to identify and assess any climate-related risks and opportunities which are relevant to the matters in respect of which they are advising or assisting (Para. 27 (c))

### **Cardano – Covenant adviser**

Provides analysis of the potential impact of climate-related issues on the strength of the covenant of the Employer.

### **Trustee services – In-house pensions team**

The in-house pensions team may assist with the day-to-day implementation of the climate risk framework as and when required. This will involve liaison with the Trustee, CCWG, and the advisers and providers noted above.

### **Sackers & Partners LLP - Legal adviser**

The Trustee seeks advice from its Legal Adviser to ensure climate reporting, policies and commitments set are in line with the legal requirements.

## **Trustee Knowledge and Understanding**

The Trustee has put the following structures in place to support decision-making, strategy setting and implementation around climate change activity.

*To ensure that the decision making and strategy setting processes give a good outcome.*

- **Formal training:** This covers both legal requirements and practical training on climate change and the various metrics used to measure it. The Trustee receives training on these matters at least annually.
- **Ongoing reviews of published material on legal and best practice requirements:** The Trustee receives updates on emerging best practice in what is a rapidly developing area from sources such as The Pensions Regulator, the Government, and industry experts (including its appointed advisers).
- **Ongoing reviews of climate change issues:** Whilst the Trustee is not itself expert on all scientific analysis of climate change, it does receive updates on developments such as breakthroughs in technology, significant news about climate events and academic research, from parties with recognised expertise in these areas.
- **Specific technical and practical guidance for all decisions:** All papers submitted to the Climate Change Working Group and to the Trustee are accompanied by extracts from the appropriate legislation and DWP guidance plus any other relevant material from published material that is available.

*To ensure that tasks are carried out on a timely basis and that knowledge and decisions from previous tasks are incorporated into future decision making and activities.*

A project plan has been developed which covers the following activities:

- The production of climate change reports.
- The inclusion of climate risk in triennial actuarial valuation discussions.
- The inclusion of these risks into future reviews of DB investment strategy.
- The inclusion of these risks into future reviews of the DC investment strategy.
- The review of due diligence processes on investment managers and other providers.
- The review of reporting of financial and risk information as part of the integrated risk management processes.

- Researching how the Trustee might be able to develop a net-zero target that is consistent with its legal obligations and its investment requirements.

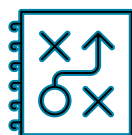
The resourcing and costs of these have been incorporated into the Scheme's budget and planning processes.



# Strategy

It is crucial to think strategically about the climate-related risks and opportunities that will impact the Scheme if we are 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.



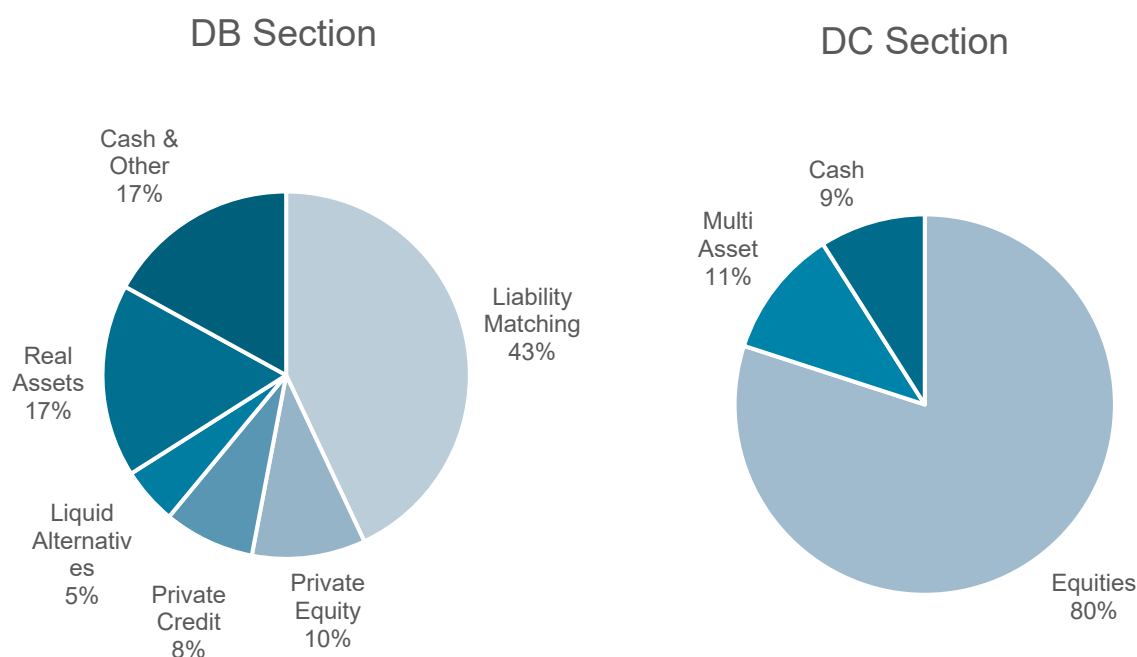
# What climate-related risks are most likely to impact the Scheme?

Each year we carry out a qualitative risk assessment of the asset classes the Scheme is invested in. From this we identify which climate-related risks could have a material impact on the Scheme. We also consider any climate-related opportunities.

Given the number of asset classes used in the Scheme, we completed this exercise to the best of our ability based on the significance of each asset class to the Scheme. To help us with our assessment, we surveyed our investment managers asking them to identify and assign a risk rating to climate-related risks and opportunities they believe their funds are exposed to. At the time of writing eight DB managers, representing 22% of the Scheme's DB assets and one DC manager, representing 24% of the DC assets, did not provide data for the risk assessment. A small amount of DB and DC funds have been excluded from the analysis on the basis that the asset allocation attributed to these funds is not considered substantial enough to have a significant impact on the results of the analysis. This did not alter the asset classes in the DB analysis but resulted in the fixed income asset class being excluded from DC analysis.

## Our investments

The Scheme's DB and DC investment portfolios are diversified across a range of asset classes which are broken down in the charts below.



## How the risk assessment works



### Risk categories

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

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



### 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

We assessed the climate-related risks and opportunities over multiple time horizons considering the asset classes in which the DB and DC Sections are invested.

When deciding the relevant time horizons, we considered the liabilities of the Scheme (where relevant) and its obligations to pay benefits. We have set the time horizons for each section of the Scheme as follows:

#### DB time horizons

- Short term: 1-5 years
- Medium term: 6-10 years
- Long term: 11-28 years

#### DC time horizons

- Short term: 1-3 years.
- Medium term: 4-8 years
- Long term: 9-28 years

### Legal disclosure required:

The time periods which the trustees have determined should comprise the short term, medium term and long term (Para. 27 (e))

## Climate-related risk summary<sup>1</sup>

### Transition Risks

The following table summarises the transition risks rated by the managers for each asset class the Scheme is invested in.

Asset Class	DB Time horizons		
	Short 1-5y	Medium 6-10y	Long 11-28y
Liability Matching	G	A	A
Private Equity	A	R	N/A
Real Assets	G	G	A
Private Credit	G	A	A

Asset Class	DC Time horizons		
	Short 1-3y	Medium 4-8y	Long 9-28y
Equity	A	A	R
Multi Asset	G	G	A

### Physical Risks

The following table summarises the physical risks rated by the managers for each asset class the Scheme is invested in.

Asset Class	DB Time horizons		
	Short 1-5y	Medium 6-10y	Long 11-28y
Liability Matching	G	G	A
Private Equity	A	A	N/A
Real Assets	G	G	A
Private Credit	A	A	A

Asset Class	DC Time horizons		
	Short 1-3y	Medium 4-8y	Long 9-28y
Equity	G	A	A
Multi Asset	G	G	A

<sup>1</sup> The DB section excludes public equity and liquid alternatives as the managers for these asset classes did not provide data for the risk assessment.

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## Key conclusions

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

When analysing risk by asset class, the largest risk identified was transition risk over the medium-term for DB private equity and long-term DC equity. In private equity, there is sectoral exposure to areas of land and water use, manufacturing footprint, and packaging. In equity there are long-term market and regulatory transitional risks, for example where the rapid scale-up of renewable energy deployment could result in supply bottlenecks and leave companies competing for limited resources, negatively affecting valuations. The mitigation of the transition risks will focus on actively managed portfolios, and by managers carrying out strong stewardship and engagement to encourage better climate outcomes, such as voting against resolutions for companies where transition plans remain weak following engagement.

We are taking the following steps to mitigate the risks identified in the asset classes, including:

- close monitoring of stewardship activities carried out by our investment managers to ensure they are appropriately engaging with investee companies on the management of climate risks;
- integrating climate considerations into fund reviews and selections; and
- utilising actively managed strategies where appropriate (allowing managers greater scope to select investments whilst accounting for climate-related risks and opportunities).

Overall, most risks are rated medium (amber) in the medium-term and all risks are either high (red) or medium (amber) over the long term. This can be attributed to the nature of some of the Scheme's asset classes where processes for mitigating these risks are currently not fully developed. The Trustee acknowledges this and through engagement with these managers and industry-wide advancements, the Trustee expects more targeted action in order to mitigate these risks. The Trustee will carefully monitor this over time and at this stage is developing the Scheme's baseline which can be considered thoughtfully over time in conjunction with broader strategic considerations. For a full breakdown and assessment of each asset class please refer to the appendix.

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### Legal disclosure required:

The climate-related risks and opportunities which the trustees have identified (Para. 27 (d))

The impact of the climate-related risks and opportunities on the scheme's investment strategy and, where the scheme has a funding strategy, the impact of those risks and opportunities on the funding strategy. (Para. 27 (f))



## Climate-related opportunities

The following climate-related opportunities were identified by the investment managers.

### DB Section

#### Liability Matching

This asset class is largely focused on government debt and as such countries stand to benefit significantly from this growth in economic terms if they are at the forefront of transitions.

#### Private Equity

Private markets are well positioned to drive positive change and progress towards a low carbon future. Opportunities exist with setting greenhouse gas (“GHG”) emissions goals and signing on to international climate action groups.

#### Private Credit

Private credit funds will likely feel the benefits of access to new markets and the use of public sector incentives from its clients, including the ability for its clients to participate in renewable energy programmes.

#### Real Assets

Opportunities exist to install energy efficient assets. Assets can also be varied so that a low carbon option is presented alongside traditional housing. However, the potential contractual implications of any of these amendments must be considered.

#### Real Assets

Building climate resilience creates opportunities in areas of exploring vulnerabilities, investing in foreign strategies, ensuring optimal operation practices, making buildings self-reliant and seeking solutions that promote equity. Other opportunities include installing resilient backup power systems, participation in renewable energy programmes, using waterproof building materials.

#### Real Assets

Further opportunities exist in the move towards energy efficient buildings, integrating new technologies, taking advantage of public sector initiatives and the substitution of resources through taking advantage of the shift in consumer preferences.

### DC Section

#### Equity

The creation of natural capital funds, investing in a diverse range of activities that preserve, protect and enhance nature over the long-term, and address climate change. Investment themes could include regenerative and sustainable agriculture, sustainable forestry, sustainable fisheries, coastal restoration and biodiversity through wildlife protection and restoration.

#### Multi Asset

Multi asset has opportunities in using forward-looking metrics to tilt into securities that are best positioned for the transition to a carbon neutral economy.

#### Multi Asset

Green bonds are another investment opportunity for financing the transition. Green bonds geared towards adaption, biodiversity and nature-based solutions present an opportunity to minimise physical risks.

# How resilient is the Scheme to climate change?

We have carried out an analysis of various climate change scenarios to better understand the impact climate change could have on the Scheme's assets and liabilities.

In 2022, scenario analysis was conducted for the DB and DC sections of the Scheme. We reviewed the analysis from last year and concluded that it was necessary to refresh the DB analysis due to last year's analysis only covering a small proportion of the Scheme's DB assets, therefore not providing a holistic view on how the DB assets perform against the different climate scenarios. We believe the DC scenario analysis remains appropriate as there have been no significant changes to the availability of data, the investment strategy or modelling techniques that would materially impact the results.

The refreshed DB analysis looks at 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.

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## Key conclusions

We have not repeated the DC scenario analysis because we believe it remains appropriate as there have been no significant changes that would materially impact the results.

Based on the analysis in the sections below, we believe the current levels of climate-related risks are not yet material to the resilience of our funding and investment strategies.

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### Legal disclosure required:

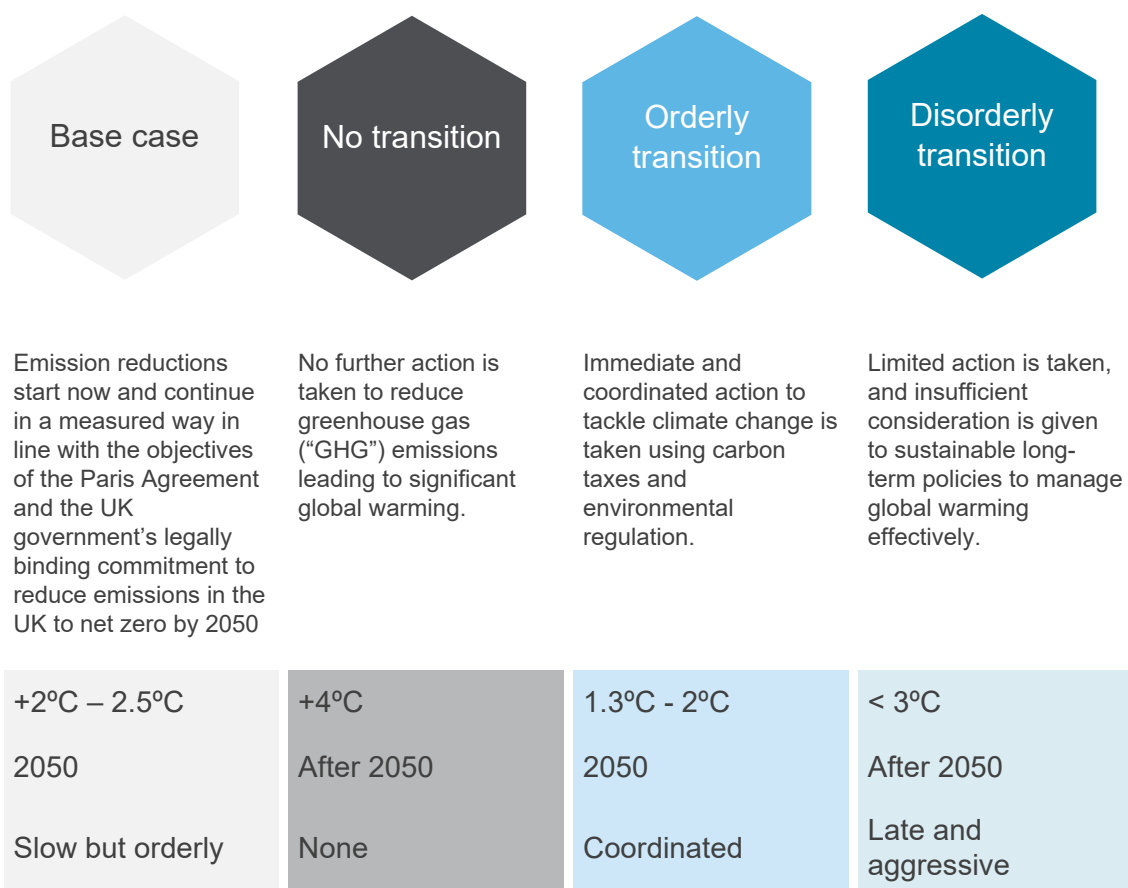
The most recent scenarios which the trustees have analysed (Para 27 (g))

The resilience of the scheme's investment strategy and where the scheme has a funding strategy, the resilience of the funding strategy, in the most recent scenarios the trustees have analysed (Regulation 27 (i))

In cases where the trustees have determined not to undertake new scenario analysis, the trustees' reasons for this determination (para. 27 (j))

## DB Scenario analysis at 31 December 2022

We chose the following three scenarios plus the base case because we believe they provide a reasonable range of plausible climate change outcomes.



Source: Aon

The climate scenarios 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.

For Aon's analysis, investment risk is captured in the divergence from the Base Case, but this is not the only risk that the Scheme faces. Other risks include covenant risk, longevity risk, timing of member options, basis risks and operational risks.

## DB Impact Assessment

### Impact on funding level

The impact assessment shows that the Scheme's DB investment strategy exhibits reasonable resilience under most of the climate scenarios. This is due to the diversification of assets, the low-risk strategy and high levels of hedging against changes in interest rates and inflation.

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

#### DB time horizons:

Short term: 1-5 years

Medium term: 6-10 years

Long term: 11-28 years

#### No transition

Temperature rises by 2100	+4°C
Reach net-zero by	After 2050
Introduction of environmental regulation	None

#### In the short term:

No action is taken to combat climate change.

#### In the medium term:

No action is taken to combat climate change.

#### 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.

#### Scheme impact

There is no impact on the Scheme's funding level, as it is expected to follow the base case.

There continues to be little impact on the Scheme's funding position.

The Scheme's investment performance starts to slow down, and the funding level falls below other scenarios. This is the worst case for the Scheme.

#### Orderly transition

Temperature rises by 2100	1.3°C - 2°C
Reach net-zero by	After 2050
Introduction of environmental regulation	Coordinated

#### In the short term:

Immediate coordinated 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.

#### Scheme impact

The Scheme sees volatility in its funding level. This may place a strain on the sponsoring employer should it be required to make up any funding shortfall via contributions.

The funding position begins to recover.

The funding position recovers. This is the best outcome for the Scheme's funding level, which is expected to result in a surplus relative to the base case.



Disorderly transition

Temperature rises by 2100	< 3°C
Reach net-zero by	After 2050
Introduction of environmental regulation	Late and aggressive

Effective date of the impact assessment is 31 December 2022.

**In the short term:**

No action is 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.

**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.

**Scheme impact**

There is no impact on the Scheme's funding level, as it is expected to follow the base case.

The Scheme experiences volatility in its funding level. This may place a strain on the sponsoring employer should it be required to make up any funding shortfall via contributions.

Whilst the funding level recovers by the end of the 30-year modelling period, this leaves the Scheme worse off in terms of surplus relative to the base case.

## DC Scenario analysis as at 2021

The following three scenarios were chosen as these are the stress scenarios that have been published by the Bank of England. The commentary against each scenario shown below is provided by JP Morgan who carried out the analysis. JP Morgan is the custodian of the Scheme. JP Morgan (“JPM”) analysed the total loss under each scenario, which is made up of losses due to physical climate change impacts plus losses owing to the transition to a low-carbon economy.

### DC time horizons:

Short term: 1-3 years

Medium term: 4-8 years

Long term: 9-28 years

	A	B	C
<b>Temperature rise</b>	Below 2°C	Below 2°C	Above 4°C by 2100
<b>Type of transition</b>	Sudden/disorderly	Long term/orderly	Policy failures

Source JPM

### **Bank of England Scenario Test A – a sudden transition leading to temperature rise being kept below 2°C.**

**JPM Commentary:** A sudden transition (a “Minsky” moment), ensuing from rapid global action and policies, and materialising over the medium-term business planning horizon that results in achieving a temperature increase being kept below 2°C (relative to pre-industrial levels) but only following a disorderly transition. In this scenario, transition risk is maximised.

### **Bank of England Scenario Test B – a long term orderly transition leading to temperature rise being kept below 2 °C.**

**JPM Commentary:** A long-term orderly transition scenario that is broadly in line with the Paris Agreement. This involves a maximum temperature increase being kept well below 2°C (relative to pre-industrial levels) with the economy transitioning in the next three decades to achieve carbon neutrality by 2050 and greenhouse-gas neutrality in the decades thereafter.

### **Bank of England Scenario Test C – failed future improvements leading to temperature increase in excess of 4 °C by 2100.**

**JPM Commentary:** A scenario with failed future improvements in climate policy, reaching a temperature increase in excess of 4°C (relative to pre-industrial levels) by 2100 assuming no transition and a continuation of current policy trends. Physical climate change is high under this scenario, with climate impacts for these emissions reflecting the riskier (high) end of current estimates.

## DC Impact Analysis

The analysis was done at two levels as shown below:

- At Fund Level
- At Popular Arrangement Level

### Fund Level

For all the assets measured c.£949.4m being 69% of the total DC assets.

Scenario	A		B		C	
<b>Temperature Rise</b>	Below 2°C		Below 2°C		Above 4°C by 2100	
<b>Type of Transition</b>	Sudden/disorderly		Long term/orderly		Policy failures	
<b>Analysis time horizon</b>	3 years (i.e. to 2025)		28 years (i.e. to 2050)		78 years (i.e. to 2100)	
	%	£m	%	£m	%	£m
<b>Total loss</b>	4.61%	43.8	6.40%	60.6	7.71%	72.8
<b>Transition loss</b>	4.43%	42.1	3.39%	32.2	0	0
<b>Physical loss</b>	0.18%	1.7	3.01%	28.4	7.71%	72.8

Source JPM

These funds are managed largely on a passive basis and the manager is obliged to invest in line with the indices with some additional discretion for the diversified growth fund. The details of how these funds invest can be found in the DC Statement of Investment Principles<sup>2</sup>. The Trustee has a number of legal obligations to the members and the beneficiaries of the DC section of the Scheme concerning the suitability of the investments and achieving “Value for Members”. We are exploring how we can reduce the carbon footprint of the DC investments in a way which is consistent with our other legal obligations.

<sup>2</sup> <https://www.johnlewispartnership.co.uk/content/dam/cws/pdfs/Juniper/DC-Section%20SIP-2020.pdf>

## Popular Arrangement Level

The majority of DC members are in the default arrangement which has an asset allocation which starts with a 100% in equities (“the Growth Phase”) and reduces that over the 15-year period to retirement in the following way:

- “The Consolidation Phase” from year 15 to 7 before targeted retirement age (“TRA”), assets gradually switch from the JLP Global Equity fund to the JLP Diversified Growth Fund (“DGF”). At 10 years prior to TRA, members will have 40% in the equity fund and 60% in the DGF.
- “The Pre-Retirement Phase” from 7 years to TRA. Assets are gradually switched over to the JLP Cash fund until it reaches 100%.

Scenario	A		B		C	
Temperature rise	Below 2°C		Below 2°C		Above 4°C by 2100	
Type of transition	Sudden/disorderly		Long term/orderly		Policy failures	
	%	£m	%	£m	%	£m
<b>Growth phase</b>						
<b>Total loss</b>	4.86	41	6.66	56	7.85	66
<b>Transition loss</b>	4.68	39	3.54	30	0.00	0
<b>Physical loss</b>	0.19	2	3.11	26	7.85	66
<b>Consolidation phase</b>						
<b>Total loss</b>	3.93	25	5.70	34	7.37	41
<b>Transition loss</b>	3.76	24	2.95	18	0.00	0
<b>Physical loss</b>	0.17	1	2.75	16	7.37	41
<b>Pre-retirement phase</b>						
<b>Total loss</b>	2.01	10	3.01	14	4.06	17
<b>Transition loss</b>	1.92	10	1.53	8	0.00	0
<b>Physical loss</b>	0.09	0	1.48	7	4.06	17

## Prudential with-profits policy

The Trustee has a With-Profits Assurance Policy with the Prudential Assurance Society. The asset allocation of that fund is not within the control of the Trustee but rather is controlled by the life company who invest in M&G Plc. The Trustee does not have the ability to change that allocation, but it does review the material that is provided by the Prudential on climate change.

The Trustee has no direct influence of the asset allocation of the With-Profits fund. It has not been able to obtain any data to perform scenario analysis. Given that it has no ability to influence, there would be less value in having obtained that information.

Based on the work described above, the Trustee believes that the current levels of climate risk that it is aware of are not yet material to the resilience of its funding and investment strategies.



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## Covenant Assessment

The Scheme's covenant adviser, Cardano, advises the Trustee on the ability of the employer covenant to support the Scheme, now and in the future. Climate-related exposures could have a positive or negative impact on the strength of the Scheme's covenant. Therefore, Cardano includes climate-related matters in the covenant advice provided to the Trustee.

During 2022, Cardano carried out a high-level assessment of the potential exposure of the Scheme's covenant to climate-related risks. This year, Cardano reviewed new disclosures made by the Partnership and refreshed the analysis, the conclusions of which are provided below.

The Trustee recognises it is crucial to understand the potential impact on the employer covenant of the effects of climate change throughout different time horizons, with a focus on how this might influence the Trustee's strategy.

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### Key conclusions

Cardano and the Trustee concluded that, over the expected period of covenant reliance, climate change implications on the covenant presented a relatively **low risk** to the strategy of the Scheme across the scenarios considered. The Trustee notes the Partnership continues to progress against its climate targets. To address the risks identified, the Trustee will take the following actions:

- In the near-to-medium-term, continue to incorporate the Partnership's progress against carbon emission reductions targets into its covenant monitoring framework, with sustainability-related updates aligned to the Partnership's disclosure timeline.
- If the Scheme's period of covenant reliance extends beyond current expectations, the Trustee should assess: a) covenant implications of transition scenarios from the perspective of the Partnership's strategy and whether it addresses risks identified; and b) whether climate risks for the Scheme's assets correlate with risks identified in a), and implement specific mitigation if appropriate.

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### Climate scenarios

Cardano conducted a high-level assessment of the potential exposure of the Partnership to the three climate scenarios. The following three climate scenarios, broadly aligned with the scenarios considered by the Trustee's investment and actuarial advisers, were considered for the covenant scenario analysis.

Table 1: Climate scenarios

Selected scenarios	Orderly Net Zero 1.5°C scenario	Disorderly Net Zero 2.0°C scenario	Failed Transition 3-4°C scenario
Scenario outline	Global decarbonisation <b>starts now</b> , so policies intensify gradually but immediately. Large transition changes will happen quickly	Temperature increase is kept below 2°C to achieve carbon neutrality by 2050, but with <b>delayed implementation</b> beginning after 2030	<b>No new transition policies above existing commitments</b> lead to continued increase in GHG emissions and rise in global temperatures
Physical risks	<b>Long-term physical risks are reduced</b> but deviations from the present climate are still expected	<b>Long-term physical risks are reduced</b> but deviations from present climate still expected	<b>More pronounced physical risks –</b> particularly over the longer-term
Transition risks	<b>Highest in the near-term</b> as policies are implemented immediately	<b>Highest in the medium-term</b> as policy implementation is delayed	<b>Limited transition risks</b> over above existing commitments and policies
Macro-economic impact	Overall longer-term <b>impact on GDP growth muted</b> , with assumed long-term benefit from green tech investment	Compressed nature of emission reductions <b>drives material short-term macroeconomic disruption</b> and a sharp fall in GDP	UK and global <b>GDP growth permanently lower</b> with that impact increasing over time. Macroeconomic uncertainty rises
Alignment with advisers	Broadly aligned to JPM's below 2c Orderly scenario (i.e. Scenario B)	Broadly aligned to JPM's below 2c Disorderly scenario (i.e. Scenario A)	Broadly aligned to JPM's above 4c policy failure scenario (i.e. Scenario C)

Source: Cardano

## Scenarios analysis

Table 2 below provides an overview of the assessed climate risk over time on the covenant of the Scheme. The key findings from the risk analysis are as follows:

- Climate risks to the Partnership appear to be moderate in the orderly scenario in the near-term. The most prominent near-term transition risks relate to potential policy changes around GHG emissions (specifically scope 3 emissions relevant to animal protein as part of the supply chain) and building regulations.
- Transition risks increase over the medium-term, with higher expected carbon prices resulting in significant potential Scope 3 emission exposure in both lower-warming scenarios. Other transition risks occur more abruptly in the Disorderly scenario resulting in a greater relative risk exposure. Physical risks steadily increasing in all scenarios.
- Over the longer-term, exposure of operations to adverse climate events such as flooding and sea level rise, is likely to represent a significant risk to the Partnership's physical assets (properties) and distribution channels. These impacts are expected to be greater in the Failed Transition Scenario, with higher physical risks.

Cardano's conclusions as to the potential impact to the covenant over the time periods and the scenarios set by the Trustee are shown below.

Table 2: Assessed climate scenario risk analysis on covenant over time

	Near-term Up to 2027	Mid-term 2027 to 2032	Long-term 2032+
Orderly	Medium risk	Medium risk	Medium risk
Disorderly	Lower risk	Higher risk	Medium risk
Failed	Lower risk	Medium risk	Higher risk

Source: Cardano



# Risk management

We 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 our risk management processes provides context for how we think about and address the most significant risks to our efforts to achieve appropriate outcomes for members.



# Our process for identifying and assessing climate-related risks

We have 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 we monitor the most significant risks to the Scheme in our efforts to achieve appropriate outcomes for members.



## Qualitative assessment

The first element is a qualitative assessment of climate-related risks and opportunities which is prepared by our Responsible Investment adviser and reviewed by us.



## Quantitative analysis

The second element is quantitative in nature and is delivered by means of climate change scenario analysis, which is provided by our Responsible Investment adviser and reviewed by us.

### Legal disclosure required:

The processes which the trustees have established in accordance with paragraph 12 for identifying and assessing climate-related risks which are relevant to the scheme (para. 27 (k))

Together these elements give us a clear picture of the climate-related risks that the Scheme is exposed to. Where appropriate, we distinguish between transition and physical risks. All risks and opportunities are assessed with reference to the time horizons that we have identified as relevant to the Scheme.

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

# Our process for managing climate-related risks

We recognise the long-term risks posed by climate change and have taken steps to integrate climate-related risks into the Scheme's risk management framework.

We have 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. We have delegated a number of key tasks to different sub-committees but retain the overall responsibility. Our processes for managing climate-related risks and opportunities are summarised in the tables below.

Legal disclosure required:

The processes which the trustees have established for managing climate-related risks which are relevant to the scheme (para. 27 (k))

How the processes are integrated into the trustees' overall risk management of the scheme; (para. 27 (m))

## Governance

Activity	Adviser / supplier support	Frequency of review
Maintain a climate change governance framework (i.e. the Governance section of the TCFD report and this table)	Aon	Annual
Publish a TCFD report	Aon	Annual
Publish implementation statements	Mercer	Annual
Add / review climate risks and activity on key Scheme documentation (e.g. risk register)	Aon	Ongoing
Set/review the Trustee's ESG beliefs including climate change	Aon	Triennial
Undertaking trustee training on climate change and climate-related risks	Aon	Ongoing
Ensure investment proposals explicitly consider the impact of climate risks and opportunities, and seek out suitable investment opportunities	Mercer	Ongoing
Ensure that actuarial and covenant advice adequately incorporates climate-related risk factors where relevant and material	Mercer/Cardano	Triennial
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	Annual
Assess the Scheme's suppliers based on climate-related factors	Trustee	Annual

### Trustee update

We monitored the above activities as part of our climate related risks and opportunities management. During the year we published our TCFD report and implementation statement. We updated our risk register for climate-related risks. As part of the triennial valuation, Mercer considered climate-related risk factors where relevant and material. Cardano provided an update on the covenant assessment with respect to climate-related risks.

During the year we received regular updates from the CCWG on the progress of our TCFD reporting. We received climate training from Aon. The CCWG received more detailed training on TCFD developments since last year, scope 3 GHG emissions and net zero.



## Strategy

Activity	Adviser / supplier support	Frequency of review
Identify climate-related risks and opportunities (over relevant time horizons) for investment and funding strategy	Aon / Mercer / Investment Managers	Annual
Scenario analysis - annual review	Aon	Annual
Actuarial valuation	Mercer / Cardano	Triennial

### Trustee update

The CCWG has spent dedicated time during the year to analyse climate-related risks and opportunities for the Scheme's various asset classes.

The CCWG engaged with the Scheme's investment managers who were unable to provide meaningful climate-related data for our strategy analysis. The CCWG engaged through sending letters emphasising our expectations in terms of quality of data.

We have reviewed the continued appropriateness of the climate scenario analysis carried out last year and elected to re-run the analysis for the DB structure (See the *Strategy section* of the report for more details).

As part of the triennial valuation, Mercer considered climate-related risk factors where relevant and material.

The Scheme's Covenant Adviser, Cardano, conducted a refresh of the assessment it conducted last year to assess the potential exposure of the Partnership to the climate scenarios set by us for the Scheme.

## Risk management

Activity	Adviser / supplier support	Frequency of review
Identify, assess and manage key climate-related risks	Aon / Investment Managers	Ongoing
Consider the prioritisation of those climate-related risks, and the management of the most significant in terms of potential loss and likelihood	Aon	Annual

### Trustee update

We have processes in place for identifying and assessing climate-related risks. Climate risk management is integrated into the ongoing risk management activities of the Scheme via the risk register and this climate risk management plan.

We carry out qualitative assessment of climate risks and quantitative climate scenario analysis, which combined help us to focus on the risks that pose the most significant impact. Based on our analysis for this year's TCFD report, we do not need to make any changes to the Scheme's investment strategy.

## Metrics and Targets

Activity	Adviser / supplier support	Frequency of review
Agree/review approach for reported carbon metrics	Aon	Annual
Agree/review target	Aon	Annual
Obtain data for agreed metrics	Aon / Investment Managers	Annual

### Trustee update

For this report we have collected and reported the carbon metrics associated with the Scheme's assets. We have also reviewed the target, which was set last year, and consider it to still be appropriate. More details can be found in the *Metrics and Targets* section.

## Assessing our managers' climate risk management processes

To assess our managers, we asked them 10 questions designed by the Pensions Climate Risk Industry Group<sup>3</sup> to help trustees to assess their investment managers' capabilities to manage climate-related risks. The questions cover a range of issues 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.

### Response Analysis (summarised in the appendix)

#### DB Section

There was good engagement from the managers with most of them completing the questionnaire (14 out of 17).

The majority of the managers carry out their own TCFD reporting, but only half committed to providing us with GHG emissions data for this report.

The majority of managers participate in industry initiatives such as the Net Zero Asset Manager Initiative, Climate Action 100+, Institutional Investors Group on Climate Change, United Nations' Principles of Responsible Investment and Science Based Targets Initiative.

Only five managers carry out climate-related risk analysis, but most of them incorporate ESG considerations into their investment processes. Most managers have either set a Net Zero commitment or are currently working towards setting a commitment or becoming aligned with the Paris Agreement.

#### DC Section

All DC managers completed the questionnaire.

Most of the managers carry out TCFD reporting, with all committed to providing GHG emissions data for our report. All the managers participate in industry initiatives.

Most managers have carried out a climate-related risk analysis and all of them incorporate ESG considerations into their investment processes.

All the managers identified some alignment to the Paris Agreement through their Net Zero commitments.

<sup>3</sup> [Aligning your pension scheme with the Taskforce on Climate-Related Financial Disclosures recommendations - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/consultations/aligning-your-pension-scheme-with-the-taskforce-on-climate-related-financial-disclosures-recommendations)





# Metrics & Targets

Metrics help to inform our 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.



# Our climate-related metrics

We use some quantitative measures to help us understand and monitor the Scheme's exposure to climate-related risks. Measuring the greenhouse gas emissions related to our assets is a key way for us to assess our 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 their own operations – from the goods it purchases to the disposal of the products it sells.

Last year, we reported on Scopes 1 and 2 emissions only. This year we are required to report Scope 3 emissions as well. 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.



## Our climate-related metrics

In our first year of TCFD reporting, we decided what metrics to annually report on; these are described below. This year we reviewed the metrics, and we believe they continue to be suitable for us to report against.



### Total Greenhouse Gas emissions

The total greenhouse gas 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 (tCO<sub>2</sub>e).



### 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 (tCO<sub>2</sub>e/£m).



### Data quality

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).



### 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.

### Legal disclosure required:

The metrics which the trustees have calculated and, if the trustees have not been able to obtain data to calculate the metrics for all of the assets of the scheme, why this is the case; (para. 27 (n))

Paragraph 18. Trustees must in each scheme year, as far as they are able— (a) obtain the scope 1, scope 2 and scope 3 greenhouse gas emissions attributable to the scheme's assets; (b) use the data obtained to calculate their selected absolute emissions metric and selected emissions intensity metric; and (c) use the metrics they have calculated to identify and assess the climate-related risks and opportunities which are relevant to the scheme.

Paragraph 20. Trustees must in each scheme year, as far as they are able— (a) obtain the data required to calculate their selected additional climate change metric; (b) use the data obtained to calculate that metric in relation to the scheme's assets; and (c) use the metric they have calculated to identify and assess the climate-related risks and opportunities which are relevant to the scheme

In the table below are the climate-related metrics for both the Scheme's DB and DC assets. The metrics are shown separately for the Liability Driven Investments ("LDI") because the methodology used for each are different so aggregating the metrics would not make sense.

## The carbon metrics

Section	Assets at 31 Mar '23 (£k)	Data quality	Total GHG emissions (tCO <sub>2</sub> e)		Carbon footprint (tCO <sub>2</sub> e/£m)	
			Scopes 1 & 2	Scope 3	Scopes 1 & 2	Scope 3
DB LDI	1,900	100%	143,000	Not available	72 <sup>1</sup>	Not available
DB Other assets	2,600	26%	110,000	3,800	100	40
DC Assets	1,100	90%	90,500	Not available	85	Not available

Source: Investment managers / Aon. Data as at 31/03/2023. Figures may not sum due to rounding. The aggregated data quality figure for all DB assets including LDI is 64%.

1. tCO<sub>2</sub>e/GDP

### Commentary

Because not all the Scheme's managers were able to provide all the requested data, the reported emissions metrics do not include all the Scheme's GHG emissions. And so, the metrics show the Scheme's GHG emissions to be lower than they really are. In particular, the data quality for the DB assets excluding LDI was limited.

This was the first year we needed to report on scope 3 emissions and, disappointingly, very few of the managers could provide them. Whilst we appreciate that scope 3 emissions are challenging to measure, they could also be significant in size. So, it is crucial that our managers can provide this data for us to be able to fully assess our climate risk exposure.

Over the reporting year, there have been several changes which could have impacted the metrics calculations including:

- The DB investment strategy has changed materially due to the gilts crisis in September and October 2022. The Scheme's public equity and credit investments were sold leaving the Scheme invested primarily in LDI and illiquid investments such as real assets, private credit, and private equity.
- We appointed a new Responsible Investment adviser to support our TCFD reporting. They collated and calculated this year's metrics which may include changes to the methodology compared to last year. Further, the managers themselves may have developed their methodology over the year.

## Binary target measurement

Section	Assets at 31 Mar 23 (£k)	Data coverage	Binary target measurement
DB LDI	1,900	-	Not applicable
DB Other assets	2,600	8% of DB assets	<0.5%
DC Assets	1,100	99% of DC assets	40%

Source: Investment managers / Aon. Data as at 31 March 2023.

Data coverage is the proportion of assets for which we received a binary target measurement.

### Commentary

Many of the Scheme's DB managers were not able to provide a binary target measurement resulting in low figures overall for this metric.

LDI is predominantly made up of sovereign bonds. Binary target measurement is not applicable to sovereign bonds; although governments may have commitments to net-zero emissions, in our view this cannot reasonably be extended to apply to its bonds.

### BTM definition:

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.

## Notes on the metrics data

Our responsible investment adviser, Aon, collected information from the majority of the Scheme's investment managers on their greenhouse gas emissions. Aon collated this information to calculate the climate-related metrics for the Scheme's assets.

### Availability of data

- 10 managers provided scopes 1 and 2 emissions data for 13 funds across the DB and DC sections.
- 2 DB managers provided scope 3 GHG emissions.
- 9 managers did not provide any emissions information requested.
- 4 DB funds and 2 DC funds were excluded from the analysis on materiality grounds.
- 1 DB manager and 3 DC managers provided binary target measurement data for 6 funds.

Aon did not make any estimates for missing data.

We expect that in the future better information will be available from managers and this improvement will be reflected in the coming years' reporting. We have engaged with the managers that were unable to supply emissions data to communicate our expectations for better reporting.

## Notes on the metrics calculations

### Carbon metrics

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

Asset Class	Approach
Equity Private Equity/Credit Real Assets	Where possible, we used the unaltered data provided by the managers.  Where carbon footprint was provided for a fund but not the total GHG emissions, Aon calculated the Scheme's proportion of the fund's emissions by calculating: <i>carbon footprint x £m Scheme assets invested in the fund.</i>
Multi-Strategy Hedge Fund	The Scheme's Multi-Strategy Hedge Fund implements some positions via derivatives; financial contracts whose value is dependent on an underlying asset or group of assets. The manager places both long positions (which profit when the underlying asset appreciates) and short positions (which profit when the underlying asset depreciates). The carbon footprint provided by the manager corresponded to the net

### How we collected the data

Our Responsible Investment adviser, Aon, collected the carbon emissions data from our managers on our behalf using the industry standard Carbon Emissions Template ("CET")<sup>1</sup>. 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 pension schemes meet their obligations under the Climate Change Governance and Reporting Regulations, and associated DWP Statutory Guidance.

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carbon footprint which represents the difference between estimated contribution of long and short portfolio exposures. We adjusted the manager's data to take a more prudent approach by allowing for the long exposures in full, without subtracting the short exposures (i.e. no netting). The carbon footprint figure provided is tCO<sub>2</sub>e/£ Enterprise Value Including Cash ("EVIC") and includes scopes 1, 2 and 3. The manager provided estimated data based on a sector analysis conducted through MSCI indices. The sector analysis includes corporate exposure and structured credit but excludes other forms of fixed income, currency, commodities and digital assets.

Aon calculated the Scheme's proportion of the fund's emissions by calculating:  
*carbon footprint x £m Scheme assets invested in the fund.*

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<b>LDI</b>	Provided by the manager as tCO <sub>2</sub> e/GDP.
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Other notes:

1. Where carbon data was supplied in US Dollars or Euros terms, Aon converted it to GBP using the exchange rates as at 31 March 2023.
2. Cash was excluded from carbon data analysis for the DB section.

**Binary target measurement**

Aon calculated the binary target measurement for the Scheme based on the information provided by the managers. Aon requested the binary target measurement of each fund from our investment managers and aggregated the results based on the portion of assets invested in each fund.

Aon does not make any estimates for missing data. The Scheme's binary target measurement only represents the portion of the portfolio for which we have data.

# Looking to the future

## Our climate-related target

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

Last year we set a target for improving the data quality of scopes 1 and 2 emissions data. Without meaningful data from the investment managers, it is hard for us to measure our climate-risk exposure. So, it is important to set a target to improve the quality of GHG emissions data from the managers.

Based on the quality of the metrics data we received from our managers this year, we believe the DB target remains suitable. The DC data quality has increased significantly since last year and so we have decided to increase the ambition of our DC target by shortening the timeframe for achieving 100% data quality by 5 years.

<b>DB</b>	<b>Data quality target</b>	<b>Actual data quality</b>
	<b>100%</b> Of scopes 1&2 by 2032	<b>64%</b> Of scopes 1&2 at 31 March 2023
<b>DC</b>	<b>Data quality target</b>	<b>Actual data quality</b>
	<b>100%</b> Of scopes 1&2 by 2027	<b>90%</b> Of scopes 1&2 at 31 March 2023

### Legal disclosure required:

The target which the trustees have set in and the performance of the scheme against that target (Regulation 27 (o))

Paragraph 22. Trustees must in the first scheme year, set a target for the scheme in relation to one of the metrics which they have selected to calculate.

Paragraph 24. Where trustees have determined that a target should be replaced, they must set a new target for the scheme in relation to one of the metrics which they have selected to calculate.

### Year-on-year progress against target

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.

Section	31 March 2022 Baseline	31 March 2023
DB	25%	64%
DC	69%	90%

### What are we doing to reach the target?

The Trustee will act accordingly to meet the specified data quality target, being mindful of any unintended consequences. The Trustee will factor in the investment strategy and the Scheme's objectives when carrying out actions to make progress towards reaching the target.



To reach our target, we plan to:

- 1) Consider reducing the allocation to managers who provide low data quality.
- 2) To improve consistency, encourage managers to use industry-standard templates when reporting on carbon metrics.
- 3) Continue engagements with the Scheme's managers.

# Appendices

## Appendix A – Glossary

- Governance** refers to the system by which an organisation is directed and controlled in the interests of shareholders and other stakeholders.<sup>4</sup> 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.<sup>5</sup>
- 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.<sup>6</sup>
- 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.<sup>7</sup>
- 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.<sup>8</sup>
- 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.<sup>9</sup>

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<sup>4</sup> A. Cadbury, [Report of the Committee on the Financial Aspects of Corporate Governance](#), London, 1992.

<sup>5</sup> OECD, [G20/OECD Principles of Corporate Governance](#), OECD Publishing, Paris, 2015.

<sup>6</sup> TCFD, [Recommendations of the Task Force on Climate-related Financial Disclosures](#), 2017

<sup>7</sup> Please refer to footnote 6.

<sup>8</sup> Please refer to footnote 6.

<sup>9</sup> Please refer to footnote 6.

**Greenhouse gas emissions scope levels**<sup>10</sup> 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.<sup>11</sup>

**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).<sup>12</sup>

**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.<sup>13</sup>

**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.<sup>14</sup>

<sup>10</sup> World Resources Institute and World Business Council for Sustainable Development, [The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard \(Revised Edition\)](#), March 2004.

<sup>11</sup> PCC, [Climate Change 2014 Mitigation of Climate Change](#), Cambridge University Press, 2014.

<sup>12</sup> TCFD, [Recommendations of the Task Force on Climate-related Financial Disclosures](#), 2017

<sup>13</sup> Please refer to footnote 12.

<sup>14</sup> Energy Saving Trust, [What is net zero and how can we get there? - Energy Saving Trust](#), October 2021

# Appendix B – An explanation of climate risk categories

Climate-related risks are categorised into physical and transitional 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 referring to extreme climate events such as flooding and wildfires, and chronic referring to trends over time such as an increase in temperature or ocean acidification.

### Acute

#### Examples

- Extreme heat
- Extreme rainfall
- Floods
- Droughts
- Storms (e.g., hurricanes)

### Chronic

#### Examples

- Water stress
- Sea level rises
- Land degradation
- Variability in temperature
- Variability in precipitation



# Appendix C – Climate-related risk assessment – in detail

## DB Section

### Liability Matching – 43% of DB portfolio

#### Physical Risks

	Acute	Chronic
Short	G	G
Medium	G	G
Long	A	A

Acute risks are relatively geographically concentrated and not expected to have material financial impact at the global sovereign bond index level in the short term. This exposure is expected to increase over the long term as extreme weather events become more frequent, severe, and unpredictable. In the long term, chronic physical risks are likely to become significant. Heat stress, rising sea levels and changes to weather patterns are likely to affect countries' economic outputs through impacts on, for example, labour productivity.

#### Transition Risks

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

Transition risks remain low risk over the short term. 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. In the long term, countries adopting low-carbon technologies will face significant costs; however in effectively designed carbon pricing mechanisms these costs should be partially paid-for by tax revenues. Over the longer term, a large drop in demand is expected for fossil fuels with significant financial repercussions at a global sovereign bond index level depending on countries' economic dependence on these sectors and mitigative actions up until that point.

### Private Equity – 10% of DB portfolio

The long-term time horizon is not applicable due to the majority of positions expected to be liquidated before this time period.

#### Physical Risks

	Acute	Chronic
Short	A	A
Medium	A	A
Long	N/A	N/A

In the short term, private equity could be subject to physical risks. During the medium term, this analysis remains unchanged. However, it is expected that risks may decrease over the lifespan of the asset as efforts are made to increase resiliency and as efforts are made to reduce climate change.

#### Transition Risks

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

Transition risks represent the most pervasive effects of climate change. In the short term, the current portfolio is exposed to medium to low risk due to the sectoral exposure to land and water use, manufacturing footprint, and packaging. During the medium term, transition risks may potentially be higher depending on the transition scenario that unfolds.

## Real Assets – 17% of DB portfolio

### Physical Risks

	Acute	Chronic
Short	G	G
Medium	G	G
Long	A	A

Physical acute risks are expected to slowly develop which will increase financial exposure over the three time periods. These effects are likely to build up and compound as the likelihood of extreme weather events increases. Chronic risks will create a medium (amber) financial exposure in the medium term as buildings adjust to variances in mean temperatures, precipitation patterns, and drought conditions. In the long term, chronic stressors are anticipated to create severe risks, which may create significant population shifts away from areas that become inhabitable.

### Transition Risks

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

Regulatory risks are medium (amber) risk in the long term, with gas-based assets exposed to the risks associated with changes in regulations. Technology is a low risk, but a number of companies have recognised that they are exposed to risks associated with changes in technology. Market risks in the long term are expected to be medium (amber) as the cost of raw materials is expected to increase which may impact on the profits.

## Private Credit – 8% of DB portfolio

### Physical Risks

	Acute	Chronic
Short	A	G
Medium	A	G
Long	A	A

During both the short and medium term, there is financial risk from the increased severity of extreme weather events. These risks are generally mitigated using insurance. Real estate credit funds lend to, rather than own, property and thus avoid many chronic risks. However even in the short term, credit fund borrowers could be impacted by changes in weather conditions/sea level rise in certain regions. Many of the properties in the funds are typical UK homes, and thus not at any particular risk of flooding or rising sea levels. However, given the risk of longer-term climate change, there is higher risk over the longer term as there are more unknowns.

### Transition Risks

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

Policy and legal risks in the medium term are seen as medium (amber) risk. If there are significant changes in regulations, there may be challenges such as enhanced emissions reporting obligations. There are some risks associated with technology due to the lack of energy efficiency in some property assets. Market risk is considered low risk in the short term as significant shifts in consumer preference are not expected. In the medium term, significant shifts in consumer preference and/or other climate-related market drivers may impact property valuations which present medium (amber) risk. However, this does not affect all real estate credit funds, for example affordable housing will always be in demand. There is some reputational risk long term as some of the properties are older and thus are not built with sustainability in mind.



## DC Section

### Equity – 80% of DC portfolio

#### Physical Risks

	Acute	Chronic
Short	G	G
Medium	A	G
Long	A	A

Physical risks are expected to have a low impact in the short term for equities as extreme weather events are expected will have a limited effect on companies, whilst they are still few and far between. As we approach the medium term, the risks increase in severity and rise to an amber rating, as supply chains and physical infrastructure become more exposed to adverse weather and environmental effects. In the long term physical risks will likely affect companies through impacts on supply chains and physical infrastructure, affecting companies' profitability.

#### Transition Risks

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

Regulatory risk may increase over time, however this is mitigated through actively managed portfolios and enhanced due diligence of transition plans to ensure alignment with Net Zero objectives. Technological risk is low as managers are actively working on lower-carbon investment solutions and opportunities. Market risk is seen as medium risk in the short and medium term rising to high risk in the long term. Reputation presents a medium(amber) risk. It can be mitigated by voting against revenue exposure to thermal and against chairs of companies where transition plans remain weak following engagement.

### Multi Asset – 11% of DC portfolio

#### Physical Risks

	Acute	Chronic
Short	G	G
Medium	G	G
Long	A	G

The funds have been aligned to the Paris Agreement and therefore the funds direct capital to companies which are better positioned to mitigate physical risk. The funds additionally avoid companies causing harm to the planet which will be the most unprepared for climate change and the most impacted by physical risks. Over the long term, physical risks are expected to increase as extreme weather events become more frequent, severe, and unpredictable.

#### Transition Risks

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

The funds have been aligned to the principles of the Paris Agreement, and thus overall transition risks are low. Regulation is expected to become a risk in the long term as damages are sought from corporations who have caused climate damage. Market may present a risk due to consumer demand shifts.

## Appendix D – Climate scenario modelling assumptions

The climate scenarios were developed by Aon and are based on detailed assumptions. They are only illustrative and are subject to considerable uncertainty. They consider the exposure of the Scheme to climate-related risks and the approximate impact on asset/liability values over the long term.

The purpose of the model is to consider the long-term exposure of the Trust to climate-related risks and the pattern of asset returns over the long term.

- i. In particular, the model considers different climate change scenarios and the approximate impact on asset/liability values over the long term.

Aon's model assumes a deterministic projection of assets and Long-Term Funding Target liabilities, using standard actuarial techniques to discount and project expected cashflows.

- i. It models the full yield curve as this allows for an accurate treatment of the liabilities and realistic modelling of the future distribution of interest rates and inflation. It also allows us to truly assess the sensitivities of the assets and liabilities to changes in interest and inflation rates.
- ii. The parameters in the model vary deterministically with the different scenarios.
- iii. Note – no allowance is made for accrual of future benefits in this modelling.

The liability update and projections are considered appropriate for the analysis. However, they are approximate, and a full actuarial valuation carried out at the same date may produce a materially different result. The liability update and projections are not formal actuarial advice and do not contain all the information needed to make a decision on the contributions payable or investment strategy.

The model intends to illustrate the climate-related risks the Trust is currently exposed to, highlighting areas where risk mitigation could be achieved through changing the portfolio allocation.

- i. 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 only captured in the deviance from the Base Case, but this is not the only risk that the Trust faces; other risks include covenant risk, longevity risk, timing of member options, basis risks and operational risks.

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The model has been set up to capture recent market conditions and views; the model may propose different solutions for the same strategy under different market conditions.

## Data used

The scenario model projects using the following inputs as at 31 December 2022 (as provided by Mercer).

- Market value of assets: £ 4,436m
- Present value of the gilts+0.5% p.a. liabilities: £ 4,985m
- Duration of liabilities: 18.5 years
- Real proportion of the liabilities: 70%
- Benefit outgo in year 1: £167m

The LDI portfolio is assumed to hedge interest rates and inflation up to 78% of the gilts+0.5% basis.

# Appendix E – Climate-related risk questionnaire response summary

The following table summarises the manager responses to the climate-related risk questionnaire.

Asset class	Section	Manager	TCFD report	Climate-related risks analysis	Industry initiatives	Carbon reporting	Temperature alignment	Net Zero Commitment
DGF	DC	BlackRock	✓	✓	✓	✓	▶	✓
Equity	DC	HSBC	✓	✓	✓	✓	▶	✓
	DC	Macquarie	▶	▶	✓	✓	▶	✓
Equity/DGF/Annuity Hedge/Cash + LD1	DB/DC	LGIM	✓	✓	✓	✓	▶	✓
Hedge Fund	DB	Blackstone	▶	▶	✓	✓	▶	▶
	DB	Abrdn	▶	✓	✓	✓	▶	✓
Infrastructure	DB	Ancala Partners	▶	▶	✓	✓	▶	▶
	DB	Innisfree	▶	▶	✓	▶	▶	▶
Private Credit	DB	Strategic Value Partners	▶	✓	✓	▶	▶	▶
Real Estate	DB	Cheyne Capital	▶	▶	✓	▶	▶	▶
Infrastructure	DB	Meridiam	<i>Could not provide response</i>					
Real Estate	DB	PGIM	✓	▶	✓	✓	▶	✓
Private Credit	DB	Alcentra	▶	▶	✓	▶	▶	▶
	DB	Balbec Capital	<i>Could not provide response</i>					
	DB	Calmwater	▶	▶	✓	▶	▶	▶
	DB	GSAM	✓	✓	✓	✓	▶	▶
	DB	Investcorp Credit Management	▶	▶	▶	✓	▶	▶
	DB	Whitehorse	<i>Could not provide response</i>					
Private Equity	DB	Coller Capital	✓	✓	✓	✓	▶	▶
	DB	Hamilton Lane	▶	▶	✓	✓	▶	✓
	DB	Pantheon	<i>Could not provide response</i>					

Source: Managers.

## Appendix F – Detailed breakdown of metrics

### Detailed breakdown of DC assets

The table below shows a more detailed breakdown of the emissions from each fund within the Scheme's DC assets.

Fund	Asset allocation (£m)	Data quality	Total GHG emissions (tCO <sub>2</sub> e)		Carbon footprint (tCO <sub>2</sub> e/£m)		Binary target measurement
			Scopes 1 & 2	Scope 3	Scopes 1 & 2	Scope 3	
JLP Global Equity Fund	897	99%	80,000	-	90	-	48%
JLP Diversified Growth Fund	127	63%	9,700	-	100	-	30%
JLP Cash Fund	95	47%	18	-	0.4	-	7%

Source: Investment managers / Aon. Data as at 31 March 2023. Figures may not sum due to rounding.

### Detailed breakdown of DB assets

The table below shows a more detailed breakdown of the emissions from each fund within the Scheme's DB assets.

Fund	Asset allocation (£m)	Data quality	Total GHG emissions (tCO <sub>2</sub> e)		Carbon footprint (tCO <sub>2</sub> e/£m)		Binary target measurement
			Scopes 1 & 2	Scope 3	Scopes 1 & 2	Scope 3	
LGIM LDI	1,973	100%	143,000	-	70	-	-
Hamilton Lane – private equity	465	5%	790	1,300	2	3	-
ICM – private credit	24	77%	4,020	-	180	-	35%
Aksia – private credit	232	14%	720	2,500	22	77	-
Blackstone – liquid alternatives	206	93%	66,900*	-	350	-	-
Abrdn – Infrastructure	89	100%	7,700	-	90	-	-
Ancala – Infrastructure	115	100%	28,000*	-	240	-	-

Source: Investment managers / Aon. Data as at 31 March 2023. Figures many not sum due to rounding.

\*Blackstone and Ancala were not able to split out scope 3 emissions separately. Hence their Scope 1 & 2 figures include some scope 3 emissions.

## Appendix G – 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<sup>15</sup> 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<sub>2</sub>e). This enables the different gases to be compared on a like-for-like bases, relative to one unit of carbon dioxide.

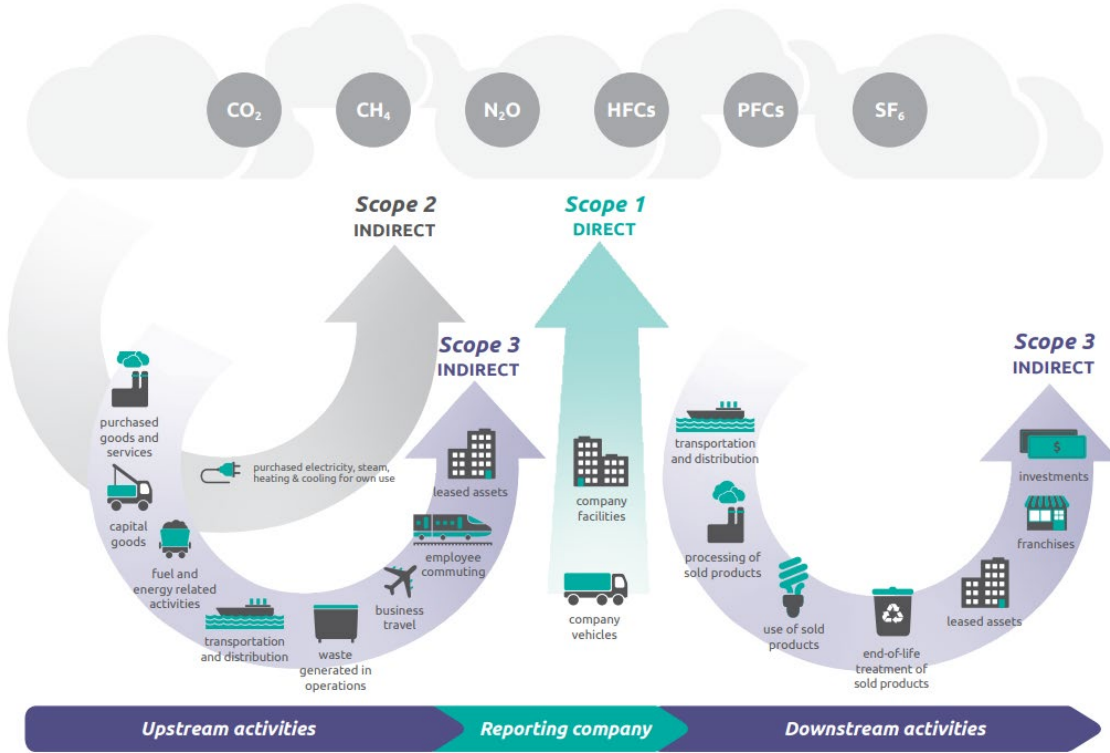
### Six main greenhouse gases identified by the Kyoto Protocol

					
Carbon dioxide	Methane	Nitrous oxide	Hydro-fluorocarbons	Per-fluorocarbons	Sulphur hexafluoride
CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	HFCs	PFCs	SF <sub>6</sub>

<sup>15</sup> [https://unfccc.int/kyoto\\_protocol](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