

The TCFD logo consists of the letters 'TCFD' in a bold, white, sans-serif font. A vertical white line is positioned to the right of the letters, separating them from the text 'TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES'.

TASK FORCE ON
CLIMATE-RELATED
FINANCIAL
DISCLOSURES

Climate disclosures for the AWE Pension Scheme year ending 31 March 2023

Produced by: AWE Pension Trustees Limited on behalf of
the AWE Pension Scheme
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 AWE Pension Scheme's (the "Scheme") vulnerability to climate-related risks will help us to mitigate the risks and take advantage of any opportunities.

UK regulations require trustees to meet climate governance requirements and publish an annual report on their pension scheme's climate-related risks. The regulations require trustees to report 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 elements set out in the regulations. The four elements covered in the statement are detailed 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 document is the Scheme's first TCFD report for the year ending 31 March 2023. It has been prepared by AWE Pension Trustees Limited (the "Trustee," "we," "us") on behalf of the Scheme.

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 investment adviser to carefully consider the potential impact climate change could have on the Scheme's investments and how we identify, manage, and mitigate those risks.

The report is divided into the four pillars of TCFD: governance, strategy, risk management, and metrics and targets.

These four pillars covered in the statement are detailed 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.

These are the core areas of business practice and disclosure the TCFD recommends should be reported on. In carrying out this exercise, we have ensured that climate-related matters are adequately embedded in our governance, strategy, and risk management processes, and are transparently reported.

The following pages summarise our current position with regards to the TCFD recommendations and those set out in the Regulations. We have been supported by our investment consultant Aon Investments Limited ("Aon") with the production of this TCFD disclosures report and the data contained within it.

Overview of the Scheme

The Scheme is set up as a Defined Benefit (DB) Scheme.

The Scheme invests across a range of assets, including "alternative" asset classes through investment in property, infrastructure, and absolute return funds. Alongside this, the Scheme also invests to more traditional asset classes such as equities and bonds. These assets sit alongside the Scheme's matching assets which are invested in Liability Driven Investments (LDI).

Within this report we consider the impact of climate related risks on these asset classes, the investment strategy and potential impact on the funding of the Scheme.



Summary of findings

Governance

We recognise the importance of climate change for the Scheme and its beneficiaries.

We take responsibility for ensuring that climate related risks and opportunities are integrated into the Scheme's investment strategy, implementation, and reporting. We have delegated oversight of climate change risk management to the Investment Committee ("IC") where it relates to investment and funding matters, to manage our response to climate risks and opportunities.

We require our investment managers and advisers to take account of climate related risks and opportunities in the roles that they perform for us and the Scheme. These are monitored through a regular ESG Dashboard which covers a range of different ESG aspects, including climate change, and annual reporting on stewardship.

Strategy

From the Scheme's qualitative analysis, it became apparent that climate related risks and opportunities impact all the different asset classes in which the Scheme invests, and climate related risks are expected to increase over time. Alongside this, climate change provided numerous investment opportunities for the different asset classes.

The quantitative analysis indicated that the Scheme's investment portfolio is exposed to the risks of climate change under some of the scenarios considered. This is primarily as a result of:

- High allocation to equities and alternative assets
- Low levels of liability hedging assets.
- The increasing maturity of the Scheme within the timeframes considered.

The Trustee is discussing the output of the climate scenarios with its investment adviser alongside ongoing discussions in relation to the Scheme's strategy review.

More detail is provided in the Strategy pillar.

Risk Management

We have integrated climate related risks into various documents and processes. The processes that have been set up to identify, assess and monitor climate related risks and opportunities can be found on pages 26-28.

We have a clear policy on Environmental, Social and Governance ("ESG") considerations within our Statement of Investment Principles and a Responsible Investment policy, which includes the steps we take to monitor and assess ESG related risks and opportunities.

In addition, we have also decided to report on the United Nations Principles of Responsible Investment framework for the first time this year to understand the investment implications of ESG factors.

Metrics and Targets

We have gathered the carbon metrics data from a range of different sources, including our investment managers and investment adviser. As required, we

have, as far as we have been able to, collated the data for four metrics: the total greenhouse gas (“GHG”) emissions, carbon footprint, the portion of the portfolio which have Net Zero or Paris Aligned targets, and data quality.

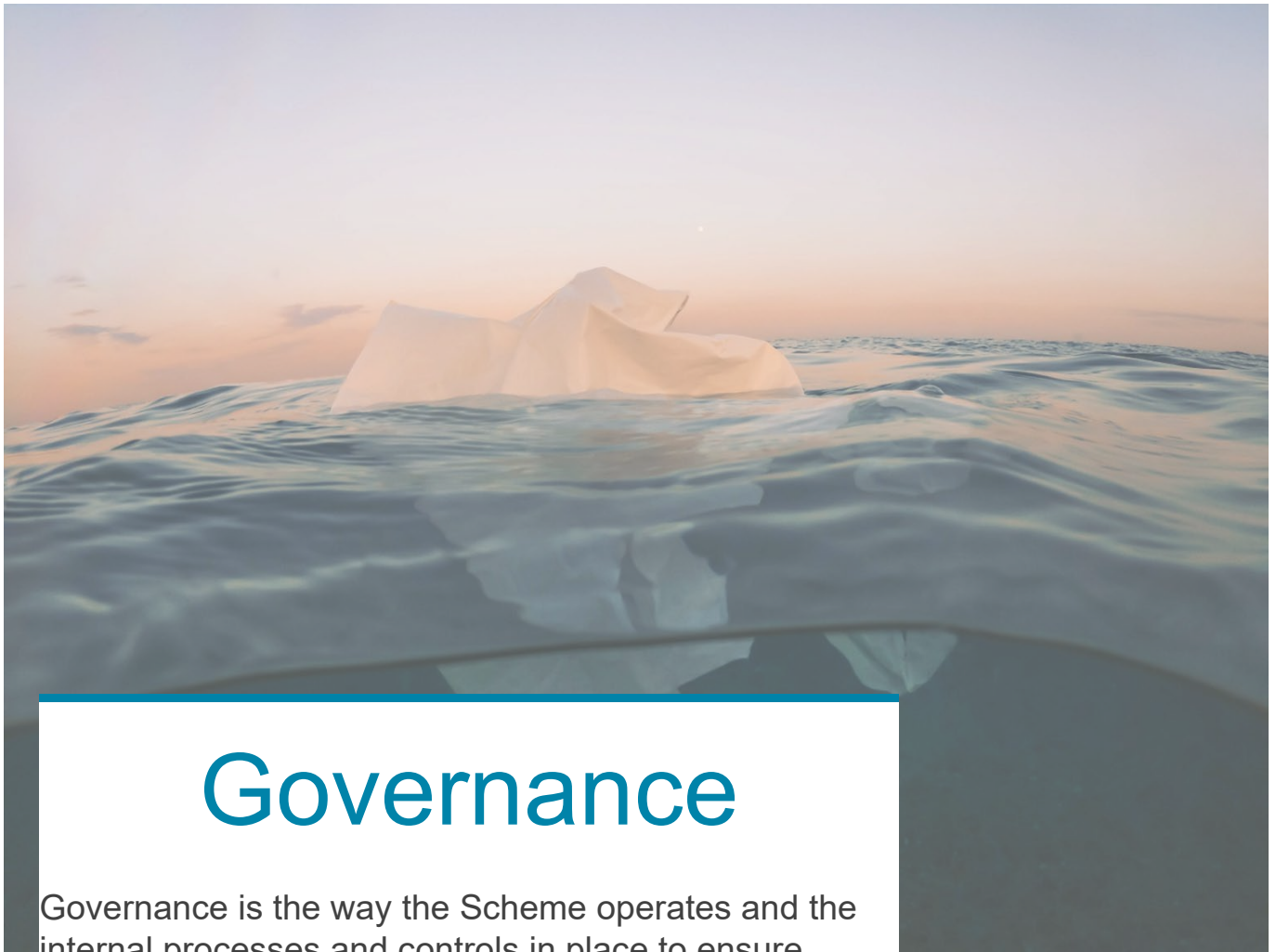
We are keen to understand the carbon emissions in the Scheme’s portfolio, but note that at the current time, data is limited for certain asset classes. We expect that in the future better information will be available from managers as the industry aligns to expectations and best practice standards. We have reported the emissions for the portion of the portfolio where we have been able to obtain carbon data. We are aware that it is likely that our reporting of GHG emissions and carbon footprint may “increase.” We do not view this as a real increase and note that the increase is an expected output as the availability and coverage of data expands as we engage with the Scheme’s managers that were initially unable to supply full emissions data.

We have set a target of increasing data quality of the Scheme’s assets, in particular the coverage of data. This is currently around 19% using 31 March 2022 as the baseline, with our target to increase this to 30% by 31 March 2027. We will continue to monitor the progress of the underlying investment managers against the Scheme’s target.

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

AWE Pension Trustees Limited

on behalf of the Trustee of AWE Pension 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 or how it is implemented, funding, the ability of the sponsoring employer to support the Scheme and liabilities.



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.

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 annually.

Our climate beliefs

We, the Trustee of AWE Pension Scheme, believe that the risks associated with climate change may have a detrimental impact on the Scheme's investment returns within the timeframe that we are concerned about. We are supportive of the key outcomes and goals from COP26, such as the Glasgow Climate Pact. As such, we integrate assessments of climate change risk into our investment decisions. Climate change, whether managed or unabated, carries direct risks through physical damage, changes in health, disruptions to the world economy etc. The global response to climate change carries consequential risks, through restructuring of the economy, regulatory changes, fiscal changes etc.

We will seek to influence and engage with investment managers with regards to climate related factors, rather than simply divesting from assets that are currently not aligned. This approach is one that has the potential to have a real-world impact, which is important given the systemic risk posed by climate change and the potential macroeconomic impacts. We recognise that, ultimately, divestment is an option if engagement is not expected to achieve the desired results

We will also liaise with the employer to understand its approach to climate change and take action where necessary.

Where possible, and appropriately aligned with our strategic objectives and fiduciary duty, we will consider investment opportunities linked to climate-related factors.

Role of the Trustee

We are responsible for oversight of all strategic matters relating to the Scheme. This includes approval of the governance and management framework relating to environmental, social and governance (“ESG”) considerations and climate related risks and opportunities.

We have discussed and agreed our climate related beliefs and overarching approach to managing climate change risk. Details are set out in the Statement of Investment Principles (“SIP”), and the Responsible Investment Policy. These documents are reviewed regularly, at least every three years.

We assess climate related risks and opportunities over multiple time horizons. We decided the most appropriate time horizons for the Scheme are:

- short term: 1-3 years
- medium term: 4-10 years
- long term: 11-20 years

Where appropriate, we consider transition and physical climate related risks separately.

We receive training on climate related issues to ensure that it has the appropriate knowledge and understanding to support good decision-making.

We expect our advisers and investment managers 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.

We have delegated oversight of climate change risk management to the Investment Committee, where it relates to investment and funding matters. The Trustee is updated on material climate related developments on a regular basis (at least annually).

Trustee’s update

The Scheme has recently applied to become a signatory to the Principles for Responsible Investment (“PRI”). The Trustee is also in support of various initiatives to continue to form and develop its approach to climate-related risks and opportunities, including Climate Action 100+, The Transition Pathway Initiative (TPI) and Institutional Investors Group on Climate Change (IIGCC)

Trustee’s update

Over the year, the Trustee completed further training on the importance of climate related risks and additional metric requirements under TCFD as a result of regulatory changes in 2022.

The purpose of the training session was to better equip the Trustee as it prepared its first TCFD report.



Role of the Investment Committee (“IC”)

The key activities undertaken by the IC, with the support of our advisers, are to:

- ensure investment strategy or implementation proposals consider the impact of climate risks and opportunities
- seek investment opportunities which enhance the ESG and climate change focus
- engage with the investment managers to understand how climate risks are considered in their investment approach
- ensure that stewardship activities are being undertaken appropriately by the investment managers
- ensure that funding advice adequately incorporates climate related risk factors where they are relevant and material
- to work with the investment managers to disclose relevant climate related metrics as set out in the TCFD recommendations; and
- to align the Scheme to the new requirements to report on climate related risk.

The IC will monitor and review progress against our climate change risk management framework on a biannual basis. It will also monitor and review progress as part of the triennial valuation cycle, annual funding updates and monitoring of the covenant strength.

How we work with our advisers

We expect our advisers and investment managers 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.

Investment consultant - our investment adviser provides investment related strategic and practical support to the IC in respect of the management of climate related risks and opportunities. This includes provision of regular training and updates on climate related issues, climate change scenario modelling and ESG ratings.

Scheme Actuary - the Scheme Actuary, Keith Gourlay at Government Actuary’s Department, will help the IC assess the potential impact of climate related risks on funding.

Trustee’s update

The IC has undertaken numerous activities throughout the year to ensure there is understanding how investment managers are incorporating climate risks and stewardship into their mandates.

This has been monitored through a regular dashboard, focusing on ESG including climate change, and annual reporting on stewardship activities (including voting and engagement).



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

Given the number of asset classes the Scheme invests in, we completed this exercise to the best of our ability. To help us with our assessment, we surveyed our investment managers asking them to rate the climate-related risks and opportunities they believe their fund(s) are exposed to. At the time of writing some of the Scheme's investment managers have not been able to provide information for the risk assessment. Please also note the Scheme's Addition Voluntary Contributions (AVCs) have been excluded on materiality.

Our investments

The Scheme's investment portfolio is diversified across a range across a range of different asset classes including equities, bonds, alternatives (property, infrastructure, and absolute return funds) and LDI.

The Scheme's asset allocation as at 31 March 2022 is as follows:

Asset Class	LDI	Equities	Alternative assets	Property	Multi-Asset Credit	Emerging Market Debt
Allocation	20%	26%	32%	7%	10%	4%

Trustee's update

The Trustee has carried out a qualitative risk assessment on each asset class the Scheme is invested in. From this, the Trustee has identified which climate-related risks and opportunities could have a material impact on the Scheme.

This assessment will be reviewed annually and where relevant, refreshed.

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.



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 liabilities of the Scheme and its obligations to pay benefits. We decided the most appropriate time horizons for the Scheme are:

- short term: 1-3 years.
- medium term: 4-10 years
- long term: 11-20 years

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

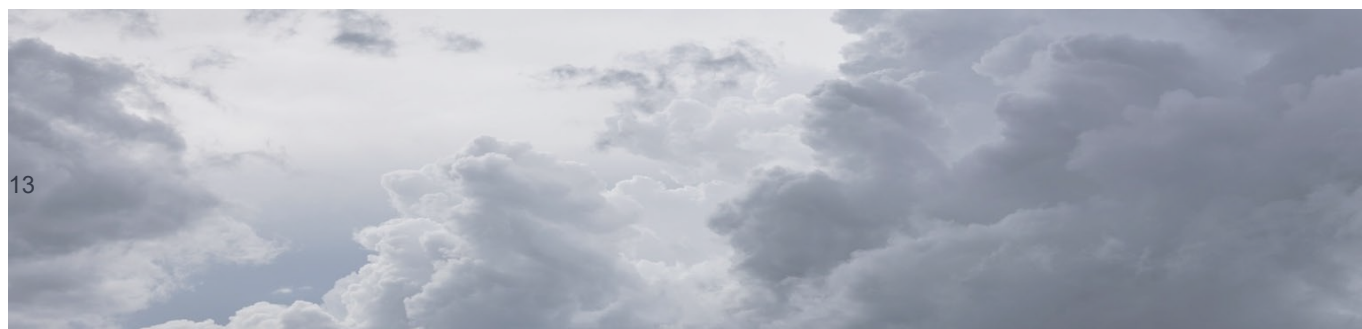
Key conclusions

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

Alternative opportunities form a significant part of the Schemes assets. Overall, they are deemed as relatively a medium-risk area, with high-risk being identified specifically in the long-term around policy and legal. This is because this poses a substantial threat to companies' financial strength due to public pressure on certain industries as well as government policies catching up and enforcing low carbon practices into law.

We have taken proactive steps over the year to mitigate climate-related risks, including:

- close monitoring of stewardship/climate-related activities carried out by our investment managers (to ensure they are appropriately engaging with investee companies on the management of climate risks).
- utilising actively managed strategies where appropriate (allowing greater scope to select investments whilst accounting for climate-related risks and opportunities); and
- engaging with our investment managers when we have identified inadequate management of climate-related risks.



Climate-related risk assessment – in detail

LDI – 20% of portfolio

Physical Risks

	Acute	Chronic
Short	G	G
Medium	G	G
Long	G	G

The manager considers the physical risks to be green as any adverse movements in gilt prices affects the assets and the liabilities equally and so there will be minimal financial impact on the Scheme. For UK Government bonds the cost of increased frequency of natural disasters and its impact to GDP is a risk.

Transitional Risks

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

The manager sees transition risks for the government as loss of revenue from taxes on fossil fuels and subsidies on green energy. If either of these risks resulted in costs to the UK government there may be an increase in the issuance of debt and a potential increase in yields, reducing the value of the gilts. However, the manager sees this as a low risk as liabilities would be impacted in a similar way.

Equities – 26% of portfolio

Only the Scheme's Infrastructure Equity manager provided information regarding climate-related risks. This manager was unable to provide an overall RAG rating for the physical and transition risks over the different time horizons. However, it did provide information regarding physical and transition risks.

Physical Risks

The manager identifies the acute risks to infrastructure equity as changes in the occurrence of severe weather events, increasing sea levels and increased occurrences in extreme temperatures. Over the long term as climate change progresses these risks will become potentially more frequent advancing to more chronic risks.

Transitional Risks

The manager believes that the changes in the technology of renewable energy creation will affect electric utility expenditure and consumer bills. The substitution of existing services with lower emissions options could result in risks such as early retirement of assets and lower costs. It sees legal risks as changes in pricing and mandates for greenhouse gas emissions. It could affect the pace of construction of renewable energy generation and could result in higher reporting costs and consumer bills.

Alternatives– 32% of portfolio

Physical Risks

	Acute	Chronic
Short	G	G
Medium	A	G
Long	A	A

All managers agreed that physical risks will increase over time, and that investment into technology may be required to facilitate more thorough risk assessments due to the increase in climate risks such as heat and flooding.

Some managers mentioned that there will be acute physical risk over all time periods from the increase in the occurrence of extreme weather events which may result in reduced production capacity an increase operating costs due to the higher costs of materials.

One manager believes both physical risks to be low over all time periods. It believes that the increase in the severity of extreme weather events could impact the performance of companies in the real estate sector but does not believe that there is the technology available currently to correctly assess the magnitude of these risks.

Transitional Risks

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

Most managers foresee increased risks in the regulatory environment over all time periods. It is believed that policy will pose a substantial threat to companies' financial strength in the long term due to public pressure on certain industries.

All the managers agreed that reputation risk will increase with time due to efforts facing both social and legal pressure.

One manager anticipates market risks to be high in both the medium and long term. It believes there are more businesses committing to becoming Net Zero and so, occupiers will demand Net Zero buildings. However, none of the buildings in the fund are aligned to Net Zero yet.

Another manager anticipates reputational risk to be medium over all time periods and the most significant transition risk, given the increase in client related engagements.

Multi-Asset Credit – 10% of portfolio

Physical Risks

	Acute	Chronic
Short	G	G
Medium	G	G
Long	R	R

The manager does not see material physical risks in the short and medium term.

However, over the long-term, it believes that the tools to assess and analyse the physical risks will improve and incorporating the pricing of these risks within investment decisions will become important.

Transitional Risks

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

The manager believes that energy related companies will have to invest in new technologies to reduce their carbon footprint in the short term and companies from other sectors will have more time to adjust their business model. In the medium and long term, the risk arising from not adopting new technologies will be severe.

The manager considers the regulatory risk to be higher in the short term rather than the long term. Companies who will not integrate new policy and legal constraints related to a low carbon economy will most likely not remain competitive in the next few years.

Emerging Market Debt – 4% of portfolio

The emerging markets debt manager did not provide an overall RAG rating for the physical and transition risks over the different time periods. However, it did provide information regarding physical and transition risks.

Physical Risks

The manager identifies the physical risks to include water, atmospheric and agriculture. China has high exposure to the economic losses associated with drought, as well as coastal areas which are amongst the most exposed to sea-level changes and other maritime risks globally. Southern Asia, in this particular Index, is very exposed to agriculture risk. In India, this is particularly via the large, informal rural economy.

Transitional Risks

The manager identifies transition risks in the form of energy production and exports. It believes that these will likely come under pressure as measures to stop global warming intensify. It highlighted that the most significant transition risks were seen in countries where hydrocarbon production is the highest. In general, few emerging markets are making adequate investment to support new activities that are less vulnerable to climate and nature risks.

Data Availability

At the time of writing some of the investment managers have been unable to provide the information requested to support our assessment.

We are engaging with the managers, with support from our investment consultant Aon, to encourage them to better support our understanding of climate risks. We will consider engaging with the managers further if expectations are still not met in due course.

Climate-related opportunities

We have identified some climate-related opportunities which may be suitable for the Scheme:



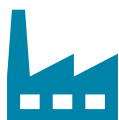
Cleaner energy

Green power generation, clean technology innovation, sustainable biofuels, shift towards decentralised energy generation.



Environmental resources

Agriculture, waste management, reduced water usage.



Resource efficiency

Advanced materials, transport efficient, power grid efficiency, more efficient buildings, reduced operating costs and production capacity.



Environmental services

Environmental protection, business services, climate adaption and insurance risk solutions, increased revenue through superior competitive positioning.

The Scheme's diversified credit manager identified an increasing amount of issuance of green bonds which will enable exposure to a wide range of sustainability goals. The Scheme's manager expects this segment of the market to grow in the future, providing additional climate-related opportunities.

Many managers identified that there is an opportunity for firms to become early adapters to a low carbon economy. Firms that have the foresight and resources to adapt will overcome the challenges surrounding climate change and succeed by increasing revenue through strong competitive positioning.



How resilient is the Scheme to climate change?

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

Under TCFD, scenario analysis must be carried out at least every 3 years, or sooner if there have been significant changes which could impact the Scheme.

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

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

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

Investment risk is captured in the deviance from the Base Case, 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.

Trustee's update

The Trustee has carried out the climate scenario assessment based on the Scheme's strategic asset allocation.

This assessment will be reviewed annually and redone on at least a triennial basis.

We chose the following scenarios because we believe they provide a reasonable range of possible climate change outcomes.

5 scenarios + base



Base case

Emission reductions start now and continue in a measured way in line with the objectives of the Paris Agreement and the UK government's legally binding commitment to reduce emissions in the UK to net zero by 2050



No transition

No further action is taken to reduce greenhouse gas ("GHG") emissions leading to significant global warming



Disorderly transition

Limited action is taken, and insufficient consideration is given to sustainable long-term policies to manage global warming effectively

Temperature rise by 2100
Reach net-zero by
Introduction of environmental regulation

+1.5°C – 2.4°C

2050

Fragmented Policy Coordination

+4°C

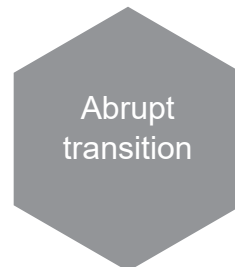
After 2050

None

< 3°C

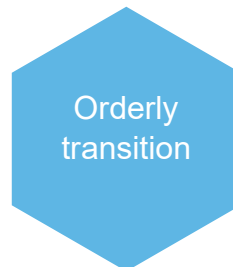
After 2050

Late and aggressive



Abrupt transition

Action on climate change is delayed for five years at which point we experience more frequent extreme weather events and governments must address GHG emissions



Orderly transition

Immediate and coordinated action to tackle climate change is taken using carbon taxes and environmental regulation



Smooth transition

Rapid advancement of green technology and government action on climate change which achieves a smooth transition to a low carbon economy

Temperature rise by 2100
Reach net-zero by
Introduction of environmental regulation

1.5°C - 2°C

2050

Aggressive

1.3°C - 2°C

2050

Coordinated

<1.5°C

2045

High coordination

Impact Assessment

The Trustee observed that for some of the scenarios considered, the investment portfolio exhibited some resilience. However, there were some scenarios in which it is recognised that the Scheme is potentially exposed to the risks of climate change, in particular under the Disorderly and Abrupt transitions.

This is due to:

- High allocation to equities and alternative assets
- low levels of liability hedging assets.
- The increasing maturity of the Scheme within the timeframes considered.

The Trustee is discussing ways which these risks may be mitigated against with its investment consultant, Aon, as part of the Scheme's ongoing strategy review.

The table below describes the impact of each scenario on the Scheme over the short-, medium- and long-term time horizons. The effective date of the impact assessment is 31 December 2022.

No transition		Summary of the Scenario	Summary of the impact to the Scheme
Temperature rise by 2100	+4°C	In the short term: There is no action taken to combat climate change.	In the short term: The Scheme suffers a deterioration in its funding level, as the performance of the assets lags the liabilities.
Reach net-zero by	After 2050	In the medium term: There is no action taken to combat climate change. Impacts from physical risks gradually become more severe over time leading to a drag on economic growth and risk asset returns.	In the medium term: The Scheme's funding level deteriorates as a result of the drag on risky assets and the deficit continues to increase. The Scheme's sponsor may be required to make up any funding shortfall.
Introduction of environmental regulation	None	In the long term: Climate change headwinds grow and act as a drag on economic growth and risk asset returns. Impacts from physical risks become more severe and irreversible by 2100.	In the long term: Within the time period considered, the funding level begins to stabilise despite the drag on economic growth and risk asset returns.

Disorderly Scenario

Temperature rise by 2100	<4°C
Reach net-zero by	After 2050
Introduction of environmental regulation	Late and Aggressive

Summary of the Scenario

In the short term:

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

In the medium term:

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

In the long term:

After the costly implementation to tackle climate change and the resulting drag on risky assets, the transition to clean technologies and green regulation begins to boost economic growth when considering the very long term. However, the late and disorderly climate transition means that physical climate risks remain prominent over the very long term.

Summary of the impact to the Scheme

In the short term:

There is no initial risk to the Scheme, as the performance of the assets, and the liabilities and therefore the Scheme's funding level, is expected to follow a similar path to the base case.

In the medium term:

The Scheme's funding level deteriorates as a result of late and aggressive action to tackle climate change and falls into deficit and an increasing maturity of the Scheme's liabilities. This may lead to the Scheme's sponsor make up any funding shortfall.

In the long term:

After 10 years the Scheme's funding level sharply deteriorates and does not recover within the 20-year time horizon, relative to the base case, leaving the Scheme materially worse off. This is driven by increasing value of the liabilities, low levels of hedging, and increasing maturity of the Scheme.

This is the worst-case scenario for the Scheme and under the period of analysis, the Scheme's deficit has materially increased may lead to the Scheme's sponsor make up any funding shortfall.

Orderly Scenario

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

Summary of the Scenario

In the short term:

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

In the medium term:

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

In the long term:

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

Summary of the impact to the Scheme

In the short term:

The Scheme experiences an initial fall in the funding level as a result of the performance of risky assets. This may lead to the Scheme's sponsor to make up any funding shortfall via contributions.

In the medium term:

The funding position begins to recover as risky assets perform well, benefiting from the economic growth. However, the Scheme is expected to remain in deficit.

In the long term:

The funding position recovers long term and continues to follow a similar path the base case, albeit lower as a result of the initial action taken to tackle climate change. The Scheme may reach full funding towards the end of the period.

Abrupt Scenario

Temperature rise by 2100	1.5°C - 2°C
Reach net-zero by	2050
Introduction of environmental regulation	Aggressive

Summary of the Scenario

In the short term:

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

In the medium term:

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

In the long term:

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

Summary of the impact to the Scheme

In the short term:

The Scheme experiences a more sustained fall in funding level compared to the Base Case.

In the medium term:

The Scheme experiences a material drop in its funding level as a result of the higher cost to implement steps to tackle climate change which leads to risky assets performing poorly. However, the driver is the impact on the liabilities which is as a result of increasing value of the liabilities, low levels of hedging, and increasing maturity of the Scheme.

However, funding does begin to recover within the medium term as the economy begins to recover, which boosts growth, but the Scheme remains in a deficit.

In the long term:

The funding position begins to recover, before a further deterioration which begins to put the funding level on a downward path leading the Scheme's sponsor make up any funding shortfall. This is driven by the increasing value of the liabilities, low levels of hedging, and increasing maturity of the Scheme.

Smooth transition

Temperature rise by 2100	<1.5°C
Reach net-zero by	2045
Introduction of environmental regulation	High Coordination

Summary of the Scenario

In the short term:

Collective and coordinated action in the short term, despite initial costs of funding the structural costs to transition the economy, leads to innovation and green technology development which boosts growth.

In the medium term:

The rapid technological advancement combined with government actions drives a smooth transition to a low carbon economy and enjoys growth.

In the long term:

The rapid technological advancement combined with government actions drives a smooth transition to a low carbon economy. Risk assets perform well.

Summary of the impact to the Scheme

In the short term:

The Scheme is expected to benefit, relative to the base case and the deficit reduces.

In the medium term:

The Scheme's funding level improves driven by strong performance of its assets due to high levels of economic growth.

In the long term:

Economic growth continues to boost asset performance thereby improving the Scheme's funding. This is the best outcome for the Scheme.

Modelling limitations

The purpose of the model is to consider the long-term exposure of the Scheme to the climate related risks and the pattern of the asset returns over the long term. Thus, the model is subject to limitations.

The model intends to illustrate the climate-related risks that the Scheme is currently exposed to, highlighting areas where risk mitigation could be achieved through changing the portfolio allocation. Other relevant issues such as governance, costs, and implementation (including manager selection and due diligence) must be considered when making changes to the investment strategy.

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

The projections are considered appropriate for the analysis however, they are approximate, and a full actuarial valuation carried out on the same day 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.



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 investment consultant 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 investment consultant and reviewed by us.

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. And 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 on who is involved, what is done and how often. We have delegated a number of key tasks to different committees but retain the final responsibility. The processes for managing climate-related risks and opportunities are summarised in the tables below.

Governance

Activity	Delegated responsibility	Adviser / supplier support	Frequency of review
Climate change governance framework	IC	Investment Adviser	Ad-hoc
Publish a TCFD report and implementation statement	IC	Investment Adviser	Annual
Add / review climate risks and activity on key Scheme documentation (e.g., risk register)	IC	Investment Adviser	Ongoing
Review climate change beliefs	Trustee	IC, Investment Adviser	Triennial
Receive training on climate-related issues	Trustee / IC	Advisers	Annual
Review adviser objectives to ensure advisers have appropriate climate capability, and bring important, relevant, and timely climate-related issues to our attention	Trustee	Advisers	Annual
Ensure investment proposals explicitly consider the impact of climate risks and opportunities and seek investment opportunities.	IC	Investment adviser	Ad-hoc
Ensure that actuarial and covenant advice adequately incorporate climate-related risk factors where they are relevant and material.	Trustee	Scheme Actuary, Covenant Adviser	Triennial
Engage with the investment managers to understand how climate risks are considered in their investment approach, and stewardship activities are being undertaken appropriately	IC	Fund managers, Investment adviser	Annual

Trustee update

The Trustee monitors the above activities as part of its management of climate-related risks and opportunities. The Trustee has delegated responsibility of several activities to the IC. The Trustee, and the IC, have received several training sessions through the year on climate-related issues, including reporting metrics, net zero, training from the Company and also the PRI.

The Trustee has monitored progress of the IC and its respective implementation of the climate change governance framework through the year, receiving regular updates from the IC and querying information as and when required. The Trustee is aided with its ongoing monitoring through the ESG Dashboard.

Strategy

Activity	Delegated responsibility	Adviser / supplier support	Frequency of review
Undertake quantitative scenario analysis to understand the impact of climate related risks	IC	Investment Adviser	First year, Triennial thereafter with annual review
Identify the climate-related risks and opportunities for investment & funding strategy and assess their likelihood and impact	IC	Fund managers /Investment Adviser	Annual
Actuarial valuation	Trustee	Scheme Actuary	Triennial

Trustee update

The IC, supported by the Investment Adviser, has taken time to review and understand how each material manager is incorporating climate related risks and opportunities into their respective portfolios. The conclusion of this is included in the Strategy pillar.

The Trustee undertook the climate change scenario analysis to understand the potential impact on the Scheme's funding level. The Trustee is liaising with its investment adviser to understand what steps can be taken to mitigate some of the risks identified.

Risk management

Activity	Delegated responsibility	Adviser / supplier support	Frequency of review
Consider the prioritisation of those climate-related risks, and the management of the most significant in terms of potential loss and likelihood	IC	Advisers	To consider with strategy review/actuarial valuation
Seek to understand the climate-related risks to the employer over the short, medium, and long term.	Trustee	Covenant Adviser	Annual

Trustee update

The Trustee has developed a process to identifying and assessing climate-related risks. This will be integrated into the ongoing activities of the Scheme and reviewed at least annually.

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

Metrics and Targets

Activity	Delegated responsibility	Adviser / supplier support	Frequency of review
Obtain data for metrics	IC	Fund managers/Investment Adviser	Annual
Review continued appropriateness of metrics	IC	Investment adviser	Annual

Trustee update

The Trustee, supported by its investment adviser has collected the required carbon metrics data. This helps the Trustee to understand the emissions associated with the portfolio. The Trustee noted that there were significant gaps in data. This is further addressed in the Metrics and Targets Section.

Metrics have been collected in line with industry practice and supported by the IC and its advisers. The Trustee also agreed an additional metric for reporting, as per changes to the Regulations in October 2022.

Assessing our managers

To assess our managers, we asked them 10 questions designed by the Pensions Climate Risk Industry Group¹ 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.

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

Key Conclusions

We have, through our investment adviser, engaged with each of our managers. We asked 13 investment managers for these details. In summary:

- Seven managers have produced a TCFD report, setting out their approach to managing climate-related risks.
- Five managers conduct climate-related risks scenario analysis and disclose climate-related data pertaining to the relevant mandates.
- Three managers have committed to a long-term temperature alignment target for the portfolios they manage.

Overall, the managers have adequate frameworks and processes in place to ensure they consider climate related risks and opportunities within their mandates. In addition, the majority of the managers are participating in industry initiatives.

In summary we are comfortable with the managers' ability to act in their best interests of the Scheme and to account for climate-related risks and opportunities in the portfolios that they manage.



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 its own operations – from the goods it purchases to the disposal of the products it sells

Scope 3 emissions are often the largest proportion of an organisation's emissions, but they are also the hardest to measure. The complexity and global nature of an organisation's value chain make it hard to collect accurate data. Reporting on Scope 3 emissions will be a regulatory requirement to report on in the second year and will be covered in our report to 31 March 2024.

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



Our climate-related metrics

We have decided what metrics to annually report on. These are described below.



Total Greenhouse Gas emissions

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

This year the Trustee collected scope 1&2 emissions. Next year it will collate scope 3 emissions from the managers separately.



Carbon footprint

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

This year the Trustee collected scope 1&2 emissions. Next year it will collate scope 3 emissions from the managers separately.



Data quality

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

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

This year, the Trustee has focused on the coverage of data (which includes reported and estimated data from the managers). The Trustee did not need to make any estimations as the data was directly provided by the managers. Please note some managers used estimates of their data, details of which are not shared as part of this document.






Portion of the portfolio with Net Zero, or Paris Aligned targets

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.

In the table below are the climate-related metrics for the Scheme's assets. The metrics are shown separately for the LDI assets because the methodology used for these are different, so aggregating the metrics would not be appropriate.

The carbon metrics

					
	Allocation	Data Quality	Total GHG	Carbon Footprint	% of the portfolio
Asset Class(%)		(%)	emissions (tCO₂e)	(tCO₂e/£m)	with Net Zero / Paris aligned targets
Equities	26%	34%	29,239	58	25%
Alternatives	32%	3%	5,083	8	-
Property	7%	29%	6,453	45	14%
Multi Asset Credit	10%	30%	11,630	61	10%
Emerging Market Debt	4%	0%	-	-	6%
Total (excluding LDI)	80%	19%	52,405	34	9%
LDI	20%	100%	89,558	165.0	-

Source: Investment managers, Aon. All data provided as at 31 March 2022.

- LDI emissions data has been estimated by the investment manager as total UK GHG emissions/ UK Public Debt (t/£m).
- For the LDI assets, carbon metrics are shown solely in relation to the Scheme's physical and repo gilt holdings.
- Carbon data metric calculation methodology for LDI has not yet been agreed industry wide meaning the LDI total emissions figures are subject to change in the future and are based on estimations at the current time.
- Carbon metrics relating to derivative investments have been excluded. The DWP notes that methodologies for calculating metrics in relation to certain asset classes, particularly derivatives (such as repo and interest rate and inflation swaps), are not yet established. At this time, trustees are not expected to be able to readily calculate emissions associated with derivatives.
- Using the carbon footprint, we calculated the Scheme's proportion of each investment fund's emissions by calculating *carbon footprint x £m Scheme assets invested in the fund*

How are LDI emissions calculated?

LDI emissions are a material portion of the Scheme's total GHG emissions. This is primarily due to the method used to calculate the emissions associated with LDI, which is different to other asset classes.

The LDI portfolio contains mainly UK government bonds. Carbon metrics for UK government bonds are based on the total GHG emissions for the whole of the UK, which are extremely high. By contrast, carbon emissions for equities, for example, are based on the emissions associated with the underlying companies invested in, which are smaller. Hence, the carbon metrics for LDI are higher than other assets.

Notes on the metrics data

Availability of data

- Out of the 13 managers information was requested from, 7 were able to disclose at least one carbon metric.
- 6 managers provided scopes 1 & 2 GHG emissions.
- The Emerging Markets Debt manager did not provide any information in relation to the metrics data. They did however provide some information relating to portfolio alignment.
- Many of the managers for the alternative assets stated that they are not yet able to calculate the requested portfolio alignment data.

Neither the Trustee nor the investment adviser made any estimates for missing data. The data shown represents the portion of the portfolio for which we have received data for.

The Scheme's Addition Voluntary Contributions (AVCs) have been excluded on materiality.

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.

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 plan to engage with our managers that were unable to supply emissions data to communicate our expectations for future reporting.

We note that there is not an industry-wide standard on calculating some of these metrics and that different managers may use different methods and assumptions when providing data.

How we collected the data

Our investment adviser, Aon, collected the carbon emissions data from our managers on our behalf using the industry standard Carbon Emissions Template ("CET")¹. 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.

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.

We have set a target for improving the data quality metric. Without meaningful data from the investment managers, it is very 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.

The Trustee recognises that positive outcomes for some of the assets invested in may be outside of its control. As a result, the target has been set where we expects to be able to have the greatest influence.



**2022 Data quality metric
(excluding LDI)**

19%



**Target: 2027 Data quality
(excluding LDI)**

30%

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.

What are we doing to reach the target?

The Trustee is taking the following steps to reach the target. We will track interim progress of our engagement through the ESG dashboard, produced by our investment adviser.

<p style="text-align: center;">Increasing data availability</p> <div style="text-align: center;"></div>	<p style="text-align: center;">Making the reporting consistent</p> <div style="text-align: center;"></div>
<p style="text-align: center;">Observation</p> <p>Coverage of data is an area for improvement across all our mandates.</p> <p>One of the key areas for improvement will be in relation to the equity assets, where data for all the metrics was below expectations.</p> <p>We note that for some fixed income assets, such as Muti Asset Credit, data coverage and therefore quality may be lower.</p>	<p style="text-align: center;">Observation</p> <p>There were inconsistencies with the data provided by its managers. The Trustee will continue to follow guidance for collecting carbon data in line with the industry standard CET.</p>
<p style="text-align: center;">Solution</p> <p>The Trustee will engage with the relevant investment managers directly, or through its investment advisor. The Trustee's focus will begin with the equity holdings.</p> <p>Through engagement, it is expected that this will identify opportunities to improve data availability or investigate alternative sources of data, particularly where there are significant gaps in the data.</p> <p>Engagement may also identify areas to improve the portion of assets with Net Zero or Paris-Aligned targets.</p>	<p style="text-align: center;">Solution</p> <p>The Trustee will engage with the managers directly, or through its investment consultant to understand challenges with providing consistent data and find an appropriate solution.</p> <p>Where methodologies for certain assets are not yet developed, the Trustee will encourage its managers to participate in industry initiatives and consultations to develop these.</p>

Appendices

Glossary

- Governance** refers to the system by which an organisation is directed and controlled in the interests of shareholders and other stakeholders.¹ 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.²
- 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.³
- 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.⁴
- 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.⁵
- 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.⁶

¹ A. Cadbury, [Report of the Committee on the Financial Aspects of Corporate Governance](#), London, 1992.

² OECD, [G20/OECD Principles of Corporate Governance](#), OECD Publishing, Paris, 2015.

³ TCFD, [Recommendations of the Task Force on Climate-related Financial Disclosures](#), 2017

⁴ Please refer to the link in reference number 10.

⁵ Please refer to the link in reference number 10.

⁶ Please refer to the link in reference number 10.

Greenhouse gas emissions scope levels⁷ 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.⁸

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).⁹

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.¹⁰

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.¹¹

⁷ World Resources Institute and World Business Council for Sustainable Development, [The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard \(Revised Edition\)](#), March 2004.

⁸ PCC, [Climate Change 2014 Mitigation of Climate Change](#), Cambridge University Press, 2014.

⁹ TCFD, [Recommendations of the Task Force on Climate-related Financial Disclosures](#), 2017

¹⁰ Please refer to the link in reference number 16.

¹¹ Energy Saving Trust, [What is net zero and how can we get there? - Energy Saving Trust](#), October 2021

Appendix – 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 Scheme 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.

Our model assumes a deterministic projection of assets and Technical Provisions 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.

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 you need to make a decision on the contributions payable or investment strategy.

The model intends to illustrate the climate-related risks the Scheme 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 Scheme faces; other risks include covenant risk, longevity risk, timing of member options, basis risks and operational risks.

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.

Appendix – 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 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 – 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 Protocol¹² 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 (CO₂e). This enables the different gases to be compared on a like-for-like bases, relative to one unit of carbon dioxide.

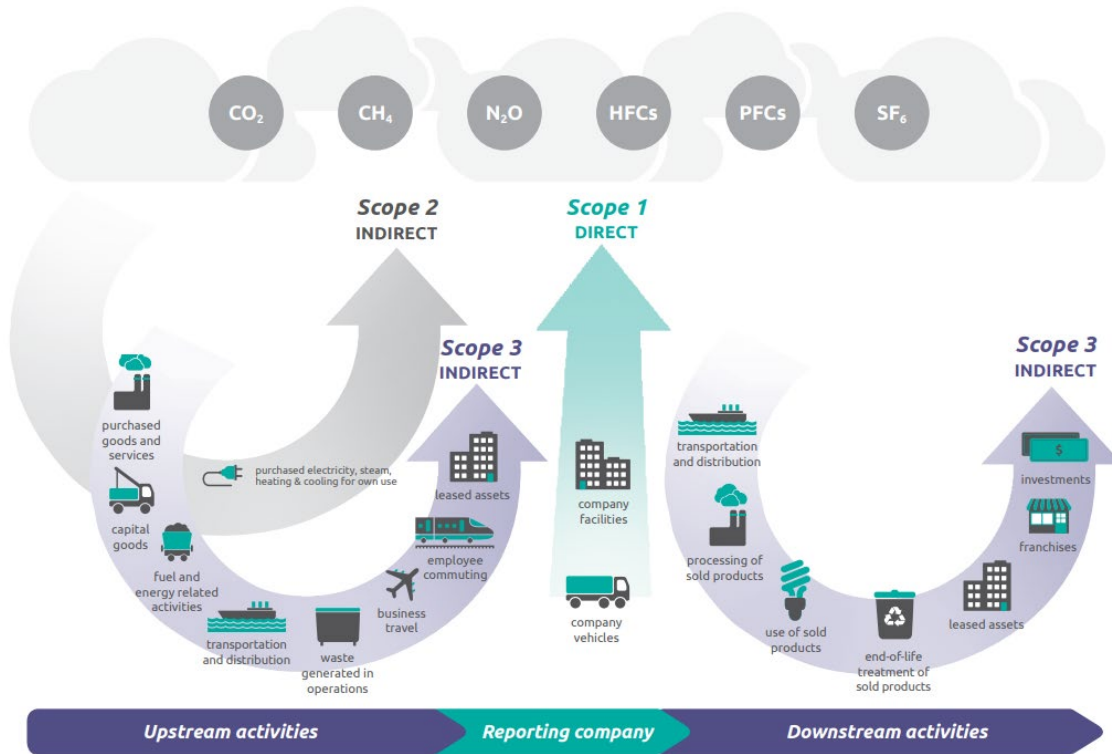
Six main greenhouse gases identified by the Kyoto Protocol

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

¹² 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