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TRAFALGAR HOUSE PENSION TRUST

TCFD REPORT
DECEMBER 2024

INTRODUCTION

CHAIR'S COMMENTARY

We recognise the need for urgent, collective action on climate change

Welcome to our third Task Force on Climate-Related Financial Disclosures (TCFD) report.

Climate change remains a significant global challenge, with increasing scientific evidence that global temperatures are likely to climb above the targeted maximum increase of 1.5 °C above pre-industrial levels without increasingly urgent action. The responses to this global challenge will heavily influence the health and prosperity of the world now and for future generations.

We recognise that climate change presents a risk that could impact member outcomes. The impact of climate change is already being felt across the globe, and, left unchecked, could lead to substantial financial, environmental and social consequences. We therefore consider climate related risks and impacts as part of our fiduciary duty to protect member benefits. This objective can be aligned, rather than at odds with, the desire to protect and preserve the natural environment.

In addition to this, the rapidly evolving geopolitical tensions are likely to affect the pace and the cost of the climate transition, which could also impact member outcomes.

Integrating sustainability matters makes sense for our members

We think there are good investment reasons to consider sustainability, and climate change in particular. By not considering major sustainability matters, including environmental, social and governance issues, we would be giving an incomplete perspective of the risks to the investments.

Our TCFD report in the context of our investment strategy and industry developments

The Trust's investment strategy was revised following a strategic review in early 2024, and this led to an increase in global equity and credit exposures. This is therefore an important factor to consider when comparing the Trust's year on year climate-related analysis. There remain challenges in assessing quality of corporate greenhouse emissions-related data, particularly in respect of unlisted investments. There has also been much discussion regarding the credibility of integrated assessment models used to underpin scenarios adopted by the market. We

remain committed to adopting a best-practice approach to assessing climate-related risks and opportunities and will continue to evolve our approach to scenario analysis as new data and models become available.

Our commitment

We have committed to support the objectives of the Paris Agreement to limit the increase in the global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels.

To achieve the 1.5°C goal, the global economy needs to progress towards net-zero greenhouse gas emissions by 2050 with a 50% reduction by 2030. Net zero is an ideal state where the amount of greenhouse gases released into the Earth's atmosphere is equal to the amount removed. Emission removal and reduction through decarbonization efforts are needed to reach net zero1.

We have committed to support the progression towards net-zero greenhouse gas emissions in the global economy by 2050 at the latest. We acknowledge there is a high degree of uncertainty in achieving this, as this requires progress across a range of areas, including global collaboration and the development of new, cost-effective technologies.

To achieve this, we seek to support real world change and align our portfolios by encouraging (via the asset managers we employ) underlying investments issuers to target the profitable transition to net-zero greenhouse gas emissions by 2050 by setting science-based targets (including interim targets for reductions by 2030) for emissions reductions appropriate to their sector and geography and developing and executing on realistic transition plans to achieve this.

While we aspire to see our portfolios achieve an aggregate 50% reduction in emissions by 2030 versus 2019 baseline levels the nature of the portfolio with a large historically committed private equity portfolio and a substantial LDI (Liability Driven Investment) portfolio means we may have limited flexibility to adjust the portfolio to meet this objective. The Trustee also recognises that the extent to which this is achievable will depend on the broad progress within the global economic system. We will none-the-less continue to measure progress against this objective.

Sustainability beyond climate change

Climate change is one of a number of sustainability issues considered in our investment strategy. We have selected several sustainability themes as part of new requirements relating to most significant votes. Our themes are:

- **Climate Crisis** (with a focus on climate change and net zero greenhouse gas emissions)
- **Environmental Impact** (with a focus on biodiversity, deforestation and water)
- **Human Rights** (with a focus on living wages, gender equality, and health & nutrition)

[1] Source: McKinsey & Company, October 2024

WHAT IS CLIMATE CHANGE?

Climate change refers to global warming caused by the greenhouse gas emissions of human activity. This leads to the increased frequency and severity of weather events, such as droughts, sea-level rise, floods, heat-waves, hurricanes and wild-fires.

Globally, we emit around 51 billion tons of greenhouse gases a year. Most of our emissions come from industry (in particular cement, steel and plastic), energy (including electricity, heating and cooling), agriculture and transport. To stop human-made climate change, we need to stop emitting net neutral greenhouse gases.

The greenhouse gases that trap heat in the atmosphere includes carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O) and fluorinated gases.

The Paris Climate Agreement seeks to limit warming to 1.5°C. This looks to be challenging target.

WHAT ARE OUR COMMITMENTS AND BELIEFS?

Climate change is now a widely established and socialised concept within financial markets – both as a financial risk, due to transition and climate-related risks, and an investment imperative, because the way in which we direct capital will support (or hinder) climate targets. Beyond mitigation, adaptation risks and opportunities are also increasingly recognised, as businesses and investors must navigate the challenges of physical climate impacts while identifying potential growth areas in resilience-focused solutions.

We believe that, where possible, our investment portfolio should be constructed in a way which considers the achievement of net zero greenhouse gas emissions by 2050.

Our starting point is to stay invested and have influence rather than disinvest.

That said, in the same manner that some investments are judged to be too risky irrespective of returns, some investments will be judged to have too negative a real-world impact, in particular, with regard to systemic issues, such as climate change.

As investors, we have a critical role to play, and we can use our influence to support change. We believe in collective action. More is to be gained from collaborating with other like-minded investors and supporting joint initiatives to tackle climate change. By doing so, we not only contribute to climate targets but also enhance financial resilience, ensuring that businesses and markets are better equipped to navigate both the risks and opportunities presented by a changing climate.

We exert influence on companies via our Fiduciary Manager and investment managers.

WHAT IS TCFD?

The Taskforce for Climate-related Financial Disclosures (TCFD) was established in 2015 by the Financial Stability Board (FSB).

The TCFD is an industry-led reporting framework that sets out recommendations for issuers and financial market participants to organise and standardise climate disclosures.

It was set up because the FSB considered that:

- The financial risks and opportunities posed by climate change are not fully understood and not fully priced by financial markets
- Corporate and financial institutions are not prepared for the transition to a low carbon economy
- This will lead to the misallocation of assets, the risk of asset stranding, and market volatility and dislocation

The TCFD has since been adopted by regulators, including by the UK government.

WHAT ARE THE REGULATIONS?

The UK government has amended the Pensions Bill2 to require large pensions schemes and Master Trusts, to publish a TCFD report.

The regulations include the following requirements, across four themes, which we will cover in this report:

- Governance, including how we:
    - Oversee financially-material climate change risks and opportunities
    - Apply processes to stay informed on climate change
    - Disclose our role with respect to climate change risks and opportunities
    - Disclose third parties' role with respect to climate change risks and opportunities
- Strategy:
    - Consider climate-related risks and opportunities of our investment and funding strategy using at least two scenarios of which one is Paris-aligned (e.g. 1.5oC)
        - A scenario assesses the financial risk of a certain degree of warming, and is used due to the unpredictability of climate change
        - We have selected three scenarios, 1.5°C, 2°C and 3oC
    - We assess the resilience of investment and funding strategies under each of these scenarios, which includes consideration of impact on asset value
- Risk management:
    - Identify and assess climate-related risks and opportunities and manage their impact on our investment and funding strategies
    - Integrate these processes into our overall risk management
    - Use different risk management tools alongside our advisors, and the outputs and outcomes of using those tools
- Metrics and target setting:

[2]https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1006024/statutory-guidance-final-revised.pdf

- Absolute emissions-based metric, which we'll explain later in the report
- Intensity emissions-based metric, which we'll also explain later in the report
- Alignment emissions-based metric, which we'll explain later in the report
- One other emissions-based metric. We've decided to disclose data availability / coverage due to the importance of climate data in TCFD reporting
- A non-binding emissions reduction target. Our target is net zero greenhouse gas emissions by 2050

GOVERNANCE

INTRODUCTION

As the Trustee of the Trust, we consider climate change to be a potential significant risk, which is reflected in how we interpret our duties and responsibilities. The Trustee believes that Climate Change related Risk and Opportunities (CCRO) are, and will continue to be, a financially material factor and as such is incorporated in our investment decision making. The Trustee further believes that, to the extent our decisions, including investment related decisions, have an impact on climate change, it is appropriate to consider these impacts while ensuring we uphold our financial responsibilities.

To fulfil our duties to the Trust regarding climate change, we have prepared this Climate Change Policy and also put in place a governance framework that provides structure for making climate-related decisions and to ensure that we integrate climate risks and opportunities in our decisions on behalf of our members, which include investment related decisions. It shows where responsibility lies for decision making and sets out how this work is integrated into our longer-term plans, monitoring framework and meeting cycle.

This framework has been prepared in line with the latest regulation and guidance. This includes the Pension Schemes Act 2021 and the Occupational Pension Schemes (Climate Change Governance and Reporting) Regulations 2021 (the Regulations), statutory guidance for climate governance and reporting of CCRO issued by the Department for Work & Pensions (DWP), the guidance prepared by The Pensions Regulator (tPR), the non-statutory guidance prepared by the Pensions Climate Risk Industry Group (PCRIG), as well as recommendations set out in the Taskforce for Climate-Related Financial Disclosures (TCFD).

The framework comprises three main elements:

1. Trustee Oversight
2. Trustee Knowledge and Understanding
3. Third-Party Providers

TRUSTEE OVERSIGHT

The Trustee is ultimately responsible for the oversight of its Climate Change related Risk and Opportunities as they relate to the Trust. Climate change is a financially material risk that we consider in our decision making.

The Trustee sets its processes within the governance framework concerning climate change, including:

- Agreeing the types of climate-related risks and opportunities which they consider will have an effect over the short, medium and long terms on the Trust's investment and funding strategies
- Agreeing the time periods which comprise the short, medium and long term applicable to the Trust, taking into account the Trust's liabilities and its obligations to pay benefits as appropriate
- Ensuring that the Trust's risk management processes adequately incorporate the identification, assessment and effective management of relevant climate-related risks
- Agreeing appropriate climate-related targets for the Trust
- Agreeing the climate-related metrics that are used to measure progress towards the climate-related targets, which will include at least one absolute emissions metric, one emissions intensity metric, one alignment metric, and one additional climate change metric
- Agreeing the Trust's approach to scenario analysis, including the scenarios to model (which will include at least two scenarios where there is an increase in the global temperature and in at least one of those two scenarios the global average temperature increase selected will be within the range of 1.5 and 2 degrees Celsius above pre-industrial levels)

The Trustee will review the policy (including the metrics, targets, scenario analysis etc.) annually.

The Trustee delegates responsibility for implementing the investment strategy to a Fiduciary Manager. The Fiduciary Manager aligns its investment decisions with the Trustee's climate change policy. The Trustee has appointed an Investment Committee to help streamline discussions between the Trustee and its Fiduciary Manager.

The Trustee will maintain oversight through its quarterly reporting and meeting cycle where climate change matters are considered. Climate change information and reporting includes updated information on targets, progress against those targets and climate change scenarios, and assessments of the impact of the climate-related risks and opportunities on the Trust's investment and funding strategy.

- The Investment Committee meets with the Fiduciary Manager monthly and receives advice and monitoring reports
- The Investment Committee challenges the Fiduciary Manager to continue to improve the data quality, monitoring, tools and processes used to assess climate related risks and opportunities.
- The Investment Committee will report back to the Trustee

TRUSTEE KNOWLEDGE AND UNDERSTANDING

While we are not directly involved in the day-to-day investment decision process, we as the Trustee, are ultimately responsible for ensuring that climate related risks are identified,

assessed and managed on behalf of the Trust and its members. We are therefore required to have sufficient knowledge and understanding of the types of climate-related risks and opportunities which may have an effect on the Trust and in order to set metrics and targets for our service providers and interpret the results of any analysis and reporting provided to us. We need to ensure that we are sufficiently informed so that we are able to challenge assumptions, external advice and information received and to fully understand any proposals developed by our advisers.

The Trustee maintains its Knowledge and Understanding with respect to climate change by:

- Identifying regulatory developments that are relevant to the Trust, including guidance provided by the Pensions Regulator and the Department for Work and Pensions
- Attending specific sessions on climate change and TCFD requirements run by our Fiduciary Manager

OVERSIGHT OF FIDUCIARY MANAGER AND THIRD-PARTY PROVIDERS

We do not carry out underlying investment activities ourselves but rely on our Fiduciary Manager and third-party asset managers (including any third-party managers for the Defined Contribution Scheme) to identify and assess climate change risks and opportunities. In respect of the DB section, we will also consider input from other third-party providers, specifically the Trust's Actuary.

When selecting third-party providers, we require each provider to demonstrate sufficient credentials in relation to the assessment of climate-related matters. This is done by assessing the providers in terms of their:

- Level of understanding on climate change and climate risks and opportunities
- Whether they have commitments to decarbonisation targets, including the Paris Climate Agreement of global warming to +1.5°C (we do not require all service providers to set such a target, though our Fiduciary Manager has set such a target)
- Corporate policies focusing on reaching stated decarbonisation targets
- Resources in place to deliver to climate related objectives
- Ability to report to us
- Associations with and involvement in relevant industry bodies

The Trustee reviews its third-party providers on a regular basis to ensure all stated processes for those managing / advising the Trust on climate governance remain appropriate.

In relation to our Fiduciary Manager, the Trustee sets objectives informed by the competency framework proposed by the Investment Consultants Sustainability Working Group. These competencies may be assessed as part of our annual assessment of our Fiduciary Manager.

Our Fiduciary Manager assesses our third-party fund managers' climate change competency. This forms part of the Fiduciary Manager's overall assessment when recommending a manager and part of the ongoing monitoring of the managers through an annual ESG questionnaire and regular monitoring calls.

STRATEGY

THE SHORT-, MEDIUM- AND LONG-TERM TIME PERIODS IDENTIFIED FOR THE TRUST

Consistent with guidance from the Pensions Regulator, we, the Trustee, consider:

- Short-term to be 3 years
- Medium-term to be 8 years
- Long-term to be 13 years

The rationale for each of the time periods is as below:

- The short-term refers to the period over which we focus on those risks that have been delegated to the external investment pools and managers; these mandates are typically judged over time horizons of up to three years
- The medium-term refers to the period over which we focus on those risks that currently fall outside the scope of the external investment management mandates, but which are not considered to be long-term in nature, for example risks relating to broad market conditions or to identifiable anomalies or trends in the investing environment that fall across multiple asset classes. This is also the estimated timeframe for the Trust to achieve fully funded status on a Low Dependency basis
- The long-term refers to the period over which the majority of the benefit payments are expected to be made by the Trust with respect to the current membership. Whilst the Trust could exist for longer than the 13 years, it is understood that by that stage the Trust will be mostly invested in government and corporate bonds or potentially insurance contracts where the Trustee will have less influence.

THE CLIMATE CHANGE-RELATED RISKS AND OPPORTUNITIES THAT WILL AFFECT THE TRUST'S INVESTMENT STRATEGY OVER THE SHORT-, MEDIUM- AND LONG-TERM

We consider:

- Adaption-related risks and opportunities
- Transition-related risks & opportunities, i.e., policy, legal, reputational and technology including environmental opportunities
- Physical risks & opportunities
- Systemic risks & opportunities i.e., economic implications

The transition-related risks relate to the need to transition a business to be consistent with the decarbonisation pathways set out in the Paris Climate Agreement.

The physical risks relate to the increase in weather events that result from a warming, and unpredictable climate, such as rising sea levels, droughts, floods, and wild-fires.

The systemic risks relate to the economic impact of extreme weather events, political activity and policy progress. There will be social and economic impact across our portfolio, which needs to be managed across the short-, medium- and long-term.

Physical risks over the medium-term (up to 8 years) are relatively similar regardless of the scenario we look at because, in all scenarios, the climate will continue to warm to at least 1.5 degrees over this period. Nonetheless we expect increasing impacts of climate change such as extreme weather over this period under all scenarios. In the longer term, the physical risks will start to diverge substantially in warmer versus cooler scenarios. We expect that the discounting of these physical risks will start to be priced into markets more quickly in the medium term i.e. we will not need to wait for the very long term for physical risks to start to be reflected in asset prices.

For our scenario analysis we choose to focus on the medium-term time horizon. Despite little difference in physical risk, this is a time horizon over which we could see dramatic shifts in policy and consumer responses to climate change so we believe it is the most useful time horizon for Trustee decision making, also given the likely timeframe of the Trust moving towards a fully funded status on a Low Dependency basis.

The table below summarises the climate change-related risks likely to materialise reported by The Bank of England's Prudential Regulation Authority3:

Climate-related risk		Short/Medium/Long Term	Main causes of financial impact on members
Physical	**Acute**	Medium/Long	Increased frequency and/or severity of extreme weather events
	Chronic	Medium/Long	Steady increase in global sea levels and changes in precipitation patterns
		Medium/Long	Rising temperatures
Transitional	**Policy and legal changes**	Short/Medium	Regulations of existing products and services
		Medium/Long	Sectors facing penalty incentives could harm current business models
	Market demand	Short/Medium	Changing consumer behaviour
	Technology	Medium	Existing products replaced with lower emission technology
	Reputational	Short/Medium	Increased scrutiny following changes in stakeholder's perceptions of climate-related action or inaction
Liability	**Direct**	Medium	Those seeking compensation for financial losses as a result of physical and transitional risks
	Third-party	Medium/Long	Those seeking compensation for damages of physical risk

[3] https://www.bankofengland.co.uk/climate-change

THE IMPACT OF THE RISKS AND OPPORTUNITIES ON THE TRUST'S INVESTMENT STRATEGY

We consider climate change-related risks and opportunities in relation to the Trust's investment strategy, including the asset allocations and asset management structure. Climate change-related risks and opportunities could, for example, affect:

- The dividend paying capability and the share prices of companies which we own (either directly or indirectly)
- The prospects and prices of portfolios that we invest in via derivatives
- The creditworthiness of the issuers of the fixed income assets in which we invest
- The prospects for banks and other financial institutions that we place cash with
- Systemically, impacting multiple parts of the portfolio at the same time, and in the same direction
- We consider climate change-related risks and opportunities in a number of ways, taking into account regulatory developments, geopolitical factors, and the potential impact of policy choices on financial and economic returns:
- Our investment policy, and how climate change may affect the different asset classes we are invested in over appropriate time horizons
- Asset class selection and their susceptibility to climate risk
- Allocation within an asset class
- Selection of instruments

SCENARIOS

Details of the most recent scenarios we have selected

Our three scenarios are 1.5°C Paris-aligned transition, 2°C "late transition" and 3°C "slow transition" or "hot house":

- Paris-aligned transition – this is our goal: AIM/CGE4 1.5°C assumes measures are taken that will keep the rise in temperature limited to 1.5°C
- Late transition – following a review in conjunction with our Fiduciary Manager, this is a forecast of what we think is most likely to happen: Late AIM/CGE 2 degrees assumes measures are introduced to tackle climate change, but are introduced too late to meet the Paris Agreement
- Slow transition – this is our hot-house scenario: AIM/CGE 3°C assumes current policies being continued. According to the UN, we are currently on track for 3°C warming.

[4] The AIM/CGE model is a multi-regional, multi-sectoral, computable general equilibrium (CGE) model.

The reasons for choosing the scenarios we have used

Each scenario consists of a degree of warming and an assessment of its impact on the portfolio. In other words, what do we expect the financial risk to be, and across which asset classes / investments, based on a certain degree of warming?

We have chosen to disclose three scenarios, because we believe this provides us with sufficient scope to inform our investment decisions. They are scenarios that highlight the impact of physical risks and transition risks as well as systemic risks in different scenarios and so enable us to draw conclusions about the different components of climate change-related risks and opportunities.

The resilience of our investment strategy in these scenarios (in other words, the results)

For the following analysis, we have considered the period to 2030 consistent with our medium-term time horizon for the Trust. We are realistic about the challenges with scenario analysis; it is too complex an impact to model far into the future with high confidence and too long a time horizon to be decision useful for the Trustee. Nonetheless, it is important that we try to reflect the types of risks and opportunities that our strategy may face over the medium-term that may not materialise over shorter-term time horizons. We believe 2030 is an appropriate timeframe as it is enough time for different policy and economic outcomes to develop and affect markets and to be decision useful to trustees.

We have chosen not to provide a quantitative assessment of scenario risks, as we believe that the commercially available scenario metrics are inadequate in the way they quantify climate change risks. Instead, we have chosen to provide a qualitative assessment of various risks and ultimately portfolio outcomes based on narrative scenarios across the three scenarios for climate outcomes. These scenario narratives and portfolio impacts are set out in detail in the Appendix 6. Our analysis incorporates physical and transitional risks but also separates out systemic risk (impacts on the whole economy) which is often missing from current climate scenario modelling.

As a summary, the impact is set out in the table below:

	1.5°C	2.0°C	3.0°C
Physical Risk	*Moderate*	*Moderate*	*High*
Transitional Risk	*High*	*Low*	*Initially moderate but increasingly uncertain*
Systemic Risk	*Positive*	*Moderate*	*High*
Portfolio Impact	**Positive**	**Moderate**	**Negative**

Definition of risk types:

- Physical Risks: The impacts of climate change on physical assets owned by a company or in its supply chain, from climate change. For example, the damage to a factory due to coastal flooding and storm damage

- Transition Risks: The impacts of climate change on the individual assets due to changing climate policies, legal risks, market and reputational risks faced by companies, particularly as reflected in the increase of either direct or indirect costs of greenhouse gas emissions of the company or its supply chain.
- Systemic Risks: The macro effects of the consumer and government policy responses to climate change which affect overall economic growth, inflation and broad market outcomes.
- Portfolio Impacts: The combined effect of the scenario on both assets and liabilities.

Further detail of the scenarios can be found in the Appendix.

Describe the key assumptions for the scenarios you have used and any limitations of the modelling

We used a qualitative scenario assessment compared to quantitative analysis due to the complexities and inaccuracies involved in forecasting the degree of warming that will result from climate change, including:

- Uncertainties surrounding regional projections and effects of climate change
- Uncertainties around the government policies which will drive transition risks including legislation and regulation, monetary policy and fiscal policy
- Uncertainty around consumer reactions to climate change and how preferences may change over time
- Uncertainties around the economic impacts on future growth and inflation of both the climate change factors and the government policies
- Uncertainties around the market reactions to changes in policy, consumer behaviour, growth and inflation prospects.

Key assumptions are explained in the narratives explaining the scenarios in appendix 6 and focus on overall growth asset performance and the effects of interest rate and inflation on liability values.

ENGAGEMENT

Engagement with companies and governments

We believe it is more important to engage with companies and governments and to supply enabling capital to achieve long-term profitable transformation and decarbonisation than it is to hit short-term carbon footprint target metrics.

For example, emerging markets, which have higher carbon footprints, in part because they produce carbon intensive goods consumed by developed markets, require capital in order to transform their economies.

We will resist pressure to modify portfolios to meet headline portfolio level decarbonisation targets at the expense of incentivising the necessary real-world transition. Our goal is to be aligned with the aspiration to achieve net zero greenhouse gas emissions globally – and we seek to maximise our influence to support this. In the long-term, this is the only effective strategy to mitigate the systemic effects on markets of climate change.

For these reasons, portfolio decarbonisation targets will continue to be reviewed at least every three years to ensure they remain appropriate and aligned with fiduciary objectives.

Asset manager engagement

The Trustee expects:

- UK-regulated asset managers to be signatories of the Stewardship Code
- Non-UK regulated managers to exercise their voting rights in a manner consistent with a focus on medium and longer-term investment performance.

The Fiduciary Manager is responsible for monitoring asset managers and engaging with them to improve their stewardship and engagement processes.

As part of their responsibilities, where applicable, the Trustee expect the Trust's asset managers to:

- Engage with investee companies with the aim to protect and enhance the value of assets
- Exercise the Trustee's voting rights in relation to the Trust's assets
- Incorporate the Trustee's views on climate change risk and opportunities.

RISK MANAGEMENT

HOW WE IDENTIFY AND ASSESS CLIMATE CHANGE-RELATED RISKS AND OPPORTUNITIES

We recognise that climate-related risks can be financially material and that incorporation of identified risks and opportunities into Trust risk management is therefore essential.

We have identified these risks in conjunction with the Fiduciary Manager who, in addition to their own research from their sustainability team have worked to identify risks together with expert organisations such as the IIGCC, PCAF and MSCI (see section 4.3 below).

The Trustee has identified the following risks as posing the greatest potential loss and being the most likely to occur:

- Risk 1 – we do not correctly identify portfolio risks from climate change - new risks are likely to emerge (physical, transitional and systemic)
- Risk 2 – insufficient policy action globally to avoid a "hot-house" scenario (the 3 degree scenario) – which results in longer term systemic risks for overall markets and negative effects for the portfolio
- Risk 3 – policy action globally accelerates more quickly than anticipated leading to unexpected asset stranding and the portfolio is not able to capture the positive benefits in this scenario
- Risk 4 – correlated portfolio risks - while asset managers may consider the individual climate change related risks and opportunities per company or investment, the Trustee needs to consider them across the portfolio as a whole

HOW WE INTEGRATE THESE PROCESSES INTO OVERALL RISK MANAGEMENT FOR THE TRUST

The Trustee governs the portfolio and oversees the Fiduciary Manager, Investment Committee and the Trust's investment asset managers (Asset Managers) who help scan, measure and monitor the climate change risks and opportunities and determine their relevance to the Trust. The Trustee, along with their Fiduciary Manager, adopt a variety of methods to help with the analysis including:

- Reviewing relevant background material and identifying regulatory developments that are relevant to the Trust, including guidance from the Pensions Regulator and Department for Work and Pensions
- Engaging with peer groups, industry bodies and advisers
- Identifying relationships between events and news, and business and financial impacts to manage reputational risks
- Identifying and assessing physical, adaptation and transitional risks over different time horizons
- Considering the impact of physical, adaptation and transitional (including operational) risk factors

THE RISK MANAGEMENT TOOLS WE – AND OUR FIDUCIARY MANAGER – HAVE USED AND THE OUTCOMES OF USING THOSE TOOLS

Climate Scenario Analysis

Scenario analysis allows us to consider potential outcomes in different scenarios and think through the impact on different individual positions and the overall portfolio.

Outcome: considering the appropriateness of the overall strategic asset allocation including the LDI strategy, the need for a portfolio risk management overlay and decisions on the appropriateness of each new investment from a climate perspective over appropriate time horizons.

LDI hedging

The Trustee considers the appropriate level of LDI hedging.

Outcome: The Trustee has adopted an approach of maintaining the hedging in line with the asset value to stabilise the funding ratio i.e. The Trust's assets move in line with the liabilities for shifts in interest rates and inflation expectations. The impact of climate change on real and nominal interest rates is highly uncertain in the different scenarios, so this hedging strategy eliminates that uncertainty on the funding ratio of the Trust. However, this strategy does require sufficient collateral to maintain the LDI hedges in scenarios where interest rates or inflation expectations increase. Maintaining sufficient liquidity is part of the risk management strategy of the LDI portfolio.

The trustee notes that this does not include hedging the deficit which could increase (or reduce) in pound terms if interest rates fall (or rise).

Portfolio risk management tools

The Fiduciary Manager may deploy a risk management overlay to protect the value of assets. This may include exposure to inflation assets, government bonds or options on equities and interest rates. These tools can be effective in protecting the portfolio from more acute risks at moments in time. However, these tools may not be effective against longer term slower developments of chronic risks such as climate change induced risks. Therefore, they need to be deployed dynamically by the Fiduciary Manager overseen by the Trustee and Investment Committee.

Portfolio Analysis tools

In 2020, our Fiduciary Manager appointed MSCI as its external sustainability data provider. The appointment followed an RFP process which reviewed the service offerings of different providers. Our Fiduciary Manager selected MSCI for a number of reasons, including the extent of its coverage, MSCI's research process (and as such, data reliability), and portfolio scenario analysis based on degrees of warming, following the acquisition of carbon delta in 20195.

The appointment (and reappointment) is also overseen by our Fiduciary Manager's Group Sustainability Steering Committee.

This data provides insights into where climate risk may be most acute on a geographic, sectoral and individual security level both from a physical and a transition risk perspective. It is used by the Fiduciary Manager and Trustee to understand and discuss risk exposures. It is not particularly useful when considering systemic risks which tend to be underestimated in the models used, where the Fiduciary Manager makes use of their approach to macro scenario analysis.

Participation in industry groups working on methodology development, in particular, IIGCC and PCAF

The Department of Work and Pension's TCFD regulations set out multiple methodologies to determine corporate and sovereign greenhouse gas emissions metrics. There remain methodological challenges for 'hard to reach' asset classes, such as hedge funds, commodities and derivatives.

Our Fiduciary Manager participates in, and contributes to, multiple industry initiatives to develop and evolve metrics and reporting on climate change, in particular, IIGCC and PCAF. IIGCC is the Institutional Investors Group on Climate Change, and it hosts the Paris-Aligned Investment Initiative and the Net Zero Investment Framework. The initiative sets out the advantages and disadvantages of the multiple methodologies used to determine a company's, and portfolio's, absolute emissions, emissions intensity, and more recently, environmental alignment.

We use "EVIC" (enterprise value including cash) to determine financed emissions. This aligns with MSCI and the recommendations of PCAF – the Portfolio Carbon Accounting Financials initiative.

[5] https://ir.msci.com/news-releases/news-release-details/msci-strengthen-climate-risk-capability-acquisition-carbon-delta

While Scope 3 data is available (and transparency is encouraged), the disclosed metrics will be based on Scope 1 and 2 data, which is more reliable.

Internal controls

Our Fiduciary Manager has implemented internal controls in the preparation of TCFD metrics and scenarios. We have assessed these internal controls to ensure they are appropriate.

Finally, we note that there will be inaccuracies in the data. In some markets, corporate greenhouse gas emissions disclosures are not regulated, and not subject to audit. The quality of the data is constantly improving. We believe that the processes we have implemented mitigate for known limitations in data quality and coverage. Our Fiduciary Manager will continue to engage with standard-setters, policymakers, data providers and companies to improve data quality.

INVESTMENT DECISIONS THAT HELP ADDRESS CLIMATE CHANGE-RELATED RISKS AND OPPORTUNITIES

LDI Risks and Opportunities

The decision to maintain an LDI hedging portfolio close to the value of the assets addresses a substantial portion of the climate related risks as discussed in the sections above. As discussed above the decision to deploy the risk management overlay is also a tool that can be used at moments to protect the portfolio against acute risks.

The financial characteristics of sustainable bonds such as green gilts are the same as conventional bonds. They have a fixed term, fixed notional and a fixed coupon. The main difference is that the proceeds of the bonds are used for green, social or sustainable purposes.

Systemic risks such as climate change, by definition, cannot be completely diversified away, they affect whole market outcomes. The LDI Manager has the flexibility to invest in green gilts that could contribute towards the objectives of the Paris Agreement to limit global warming to 1.5 degrees.

Private Market Risks and Opportunities

Within the private markets portfolio there are a range of different strategies employed.

Some of those strategies have been identified as more specifically exposed to climate change risks, in particular transition or physical risks because of their specific industry exposures in the commodity sector. In these cases, the Fiduciary Manager, on behalf of the Trustee, has engaged with the investment managers to understand their approach to identifying climate related risks and to managing those risks. In these cases, the Trustee and Fiduciary Manager are satisfied that the risks are being adequately managed through:

1. A focus on low cost of production, high quality assets;
2. Strong risk management around commodity price risks. Despite volatility in recent years these assets have remained robust.

One of the Trust's private market assets is also particularly exposed to some of the climate opportunities driven by investment industries associated with the energy industry and energy transition. This has been one of the Trust's best performing private market opportunities benefiting from strong trends for solar electricity generation in the US, the need to upgrade

the electrical grid system and the investment in energy infrastructure support and decarbonization efforts.

UNDERSTANDING FUNDING RISKS

Climate change may also impact the value of the Trust's pension liabilities, i.e. the present value of future benefit payments. This impact could be via any or all of:

1. Changes in interest rates,
2. Changes in inflation expectations,
3. Changes in life expectancy.

Whilst we acknowledge the possibility of 1) and 2), we have implemented a liability hedging strategy which manages the risk up to the value of the assets. This strategy helps to mitigate risk to our funding level from adverse movements in interest or inflation rates over time.

As discussed above, the approach to LDI limits some but not all of these climate related risks. The Trustee keep this approach and these risks under continual review.

METRICS AND TARGETS

WHO IS OUR DATA PROVIDER?

Approach to data collection

Our third-party managers are requested to provide climate-related analysis for their portfolios. This is to encourage our managers to carry out their own assessments and gain oversight of the climate-related risks and opportunities from the companies in which they invest.

For managers who fail to provide data for the purpose of TCFD reporting (for example most of the private market managers in our portfolio), our Fiduciary Manager produces the analysis based proxy indices applied to the managers' portfolios. Our Fiduciary Manager employs the services of MSCI to provide them with data and metrics. Measuring the success of sustainability initiatives requires new types of data analysis. A third-party data provider allows us to improve our portfolio analysis and provide valuable insight into ESG factors that can have a significant impact on investment outcomes.

Our primary data source is MSCI ESG and Climate Scenario analytics, which we use to assess the sustainability of our own investments and those of our managers using analysis provided by our Fiduciary Manager 6.

WHAT ARE THE LIMITATIONS?

We recognise the importance of managing climate change-related risks and opportunities – but also the challenges involved in doing it well. We continue to develop and evolve our policies to reflect climate change-related challenges. This reflects the evolution of our thinking on sustainability and the changes underway in the financial services sector, and society more broadly.

We are acutely aware that managers' methodologies can vary and whilst we encourage our managers to follow best practices and complete industry standard templates, there is a limit to the extent we can practically vet the data provided.

[6] https://www.msci.com/our-solutions/esg-investing/climate-solutions/climate-risk-reporting

When measuring at the portfolio level, where we aggregate the emissions of investee companies, our approach is to disclose Scope 1 and 2 emissions (to avoid double counting).

We recognise that there remain gaps and inconsistencies in data availability, in particular, regarding Scope 3 emissions, emissions data from private market and alternative investment managers, and emissions data from managers located outside of the UK and EU region.

Scope 3 emissions help us better understand a company's sensitivity to climate change-related risks and opportunities, and its ability to transition. It can therefore help to understand relative performance of different companies within industries.

While we believe companies should disclose their Scope 3 emissions, we note that there are a number of data challenges which will take time to resolve.

As at the reporting date, the Trust's investments consisted of Equity, Credit, Hedge Funds and Private Markets. Private Markets and Hedge Funds are not currently regulated to disclose portfolio holdings and/or portfolio carbon analysis for the purpose of TCFD reporting. In addition, private companies are often in industries where GHG emissions data sets are not readily available, and Private Equity/Debt investors are often less inclined to disclose their positions or carbon emissions.

Due to the lack of transparency and confidence in GHG emissions data around Private Markets, the TCFD analysis for Private Equity has been proxied by public markets based on the Private Equity investment's sector and geographical exposure. The analysis excludes Property, Private Credit and Hedge Funds due to a lack of an appropriate public market proxy. Reported numbers are therefore estimates based on these proxies.

As shown in the table below, approximately 34% of the portfolio's assets in equity, credit and private markets are included within the proxied emissions data. In addition, 35% is held in physical gilts which are reported on separately.

We recognise this does not cover most of the portfolio's assets as disclosed in 5.3.1 and that this coverage level is a limitation when disclosing our emissions data. We note that the majority of public market equity issuing companies are already being covered and that the credit issuing company analysis is still developing.

METRICS

The metrics we have calculated

We calculate and disclose the following metrics:

- **Absolute financed emissions**: Our absolute emissions for GHG Scope 1 and 2 are 30,469 tCO2e. This is the total greenhouse gas (GHG) emissions, in CO2 equivalent, of the portfolio. This is based on public market proxies where the manager does not provide data.
- **Carbon Footprint**: Our emissions intensity for GHG Scope 1 and 2 is 82 tCO2e per £1m invested. This is based on public market proxies where the manager does not provide data.
- **Data availability (as shown as % coverage)** – Our coverage is 99% of the proxies used to map the credit, private market and equity exposure financed. This is the data availability across our portfolios but through the use of proxies. We will work with our

Fiduciary Manager and our asset managers to provide more direct data and engage companies, policy makers and data providers to improve data quality and coverage.

- **SBTi alignment metric** – Our estimated alignment is 16.6% of the portfolio*. This is the percentage of the portfolio exposure having set Science Based Targets to align with either a 1.5 degree or 2 degree climate scenario. We use the Science-Based Targets Initiative (SBTi) framework which assesses the ambition of a company's Scope 1 and 2 targets. This is based on public market proxies where the manager does not provide data.

Emissions associated with our direct financed exposure

Asset class	% exposure	% coverage	Absolute Emissions (tCO2e)		Carbon Intensity (tCO2e/£m invested)	
			Scope 1+2	Scope 3	Scope 1+2	Scope 3
Equity	8%	100%	2,953	22,232	36	271
Private Equity	25%	100%	24,874	199,471	91	728
Credit	1%	74%	26,42	13,137	175	869
Total	**34%**	**99%**	**30,469**	**234,840**	**82**	**633**

Data represents exposure and fund holding data as at 31/12/24

*Coverage for Private Equity: Due to a lack of directly reported data, private equity is entirely covered by public market proxies. I.e. We have no data on the direct carbon footprint or SBTi alignment of the underlying private market portfolios.

Interpreting the results:

- Absolute emissions tell us the emissions associated with our investments. While an important metric for us – and the regulator – it is difficult to use this metric for comparison purposes, because it is dependent on the size of the Trust at the point we conduct the analysis
- Therefore, we disclose an emissions intensity metric, which is the total GHG emissions per £1m invested. This is useful, because, while subject to market fluctuations, it allows us to compare our emissions year-on-year and help us check we are moving in the direction of achieving our targets. For example, both the absolute emissions and emissions intensity should tend to zero if we're to meet our net zero target
- The emissions data **does not** include the Trust's exposure to:
    - Cash
    - Funds that have minimal credit and equity exposures or invest in these securities over a short time horizon, mostly using derivatives. The Trust's Defined Contribution Scheme (DCS) Underpin investment is captured within this

group, given its investment strategy. This also includes hedge fund strategies and other liquid alternative strategies. We note that these strategies have to date been hard to reach, but progress is being made via industry groups such as the IIGCC

- As stated, due to the lack of confidence and insight into portfolio holdings and GHG emissions from Private Market investments, the metrics reported are based on Public Market proxies of the underlying Private Market investment's exposures

We report sovereign bonds carbon footprint separately from this measure for several reasons:

1. There is no comparable measure for sovereign bonds to financed EVIC (enterprise value including cash, i.e., sum of the market capitalisation of ordinary & preferred shares, book value of debt and non-controlling interests and cash
2. Total Sovereign country CO2e involves substantial double counting of emissions with corporate CO2e, and
3. We believe adding sovereign numbers to corporate numbers can substantially obscure the dynamics of monitoring the changes to the portfolio's corporate emissions intensity over time.

Our preferred approach to Sovereign emissions is to use a metric that is as close to and consistent with an emissions intensity metric. We use the weighted average consumption based GHG emissions adjusted to GDP and we record and report separately below.

For the Trust's Sovereign bond exposure, we calculate and disclose the following metrics:

- **Production emissions**: Sovereign emissions data represents Scope 1 domestic territorial emissions, including emissions from exported goods and services. Emissions data includes land use, land use change and forestry
- **Consumption emissions**: Sovereign emissions data represents Scope 1, 2 and 3 domestic territorial emissions, excluding emissions from exported goods and services. Emissions data includes land use, land use change and forestry.
- **£ PPP-adjusted GDP**: PPP (Purchasing Power Parity)-adjusted GDP provides a more accurate comparison of economic output across countries by accounting for differences in local price levels and living costs. Data sourced from MSCI

Country	% Physical exposure	% Derivative exposure	Total Carbon Emissions* (tCO2e)		Carbon Footprint (intensity)(tCO2e/£m PPP adjusted GDP)	
			Production emissions	Consumption emissions	Production emissions	Consumption emissions
UK	35%	42%	132,424	183,780	120.6	167.3

Data represents exposure and fund holding data as at 31/12/24. Table summarises emissions from the total exposure to UK Gilts (£845.5m) with 100% coverage. Analysis excludes Scheme's LDI investments in interest rate and inflation swaps. Source for Carbon metrics: MSCI.

TARGETS

The target we have set based on the metrics calculated

The Trustee has set the following principal target with respect to the Trust:

- To align our investments to support the goal of net zero greenhouse gas emissions by 2050, in line with global efforts to limit warming to 1.5°C

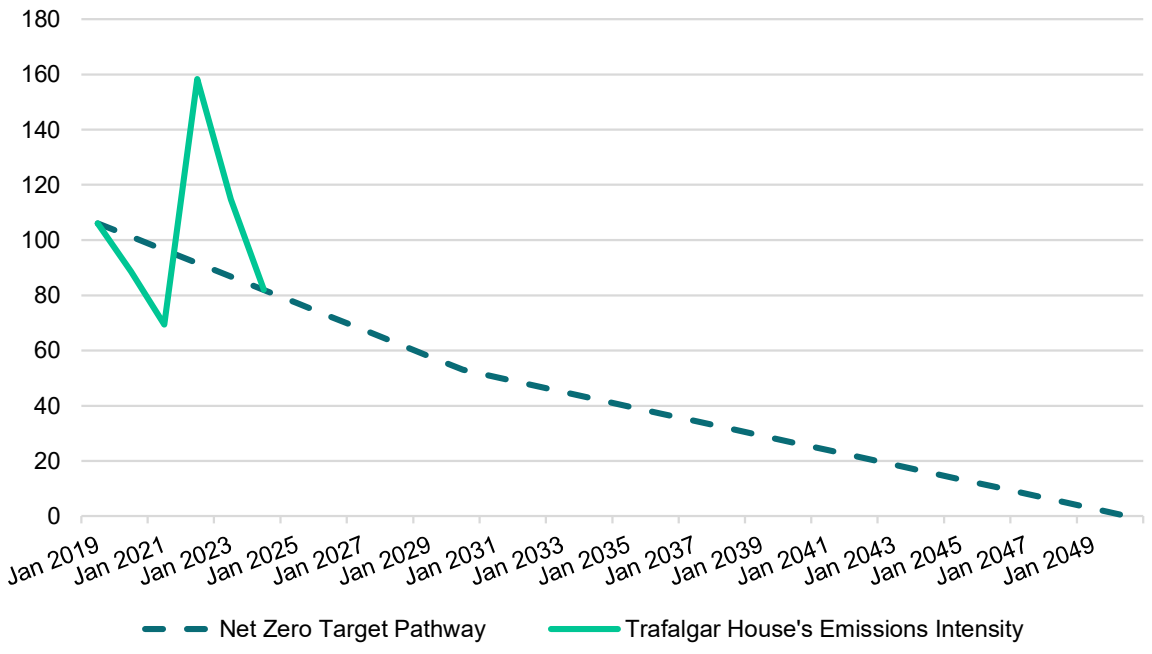
Specifically, we commit to:

- Work in partnership with other asset owners on decarbonisation goals, consistent with an ambition to reach net zero emissions by 2050 or sooner
- Review the progress against our target every year, and to review the target itself at least every three years, to ensure it remains consistent with the latest scientific thinking and is appropriately incentivising the necessary economic transition

The portfolio emissions intensity will be measured against these targets.

Our objective is to achieve, where possible, decarbonisation through the transformation of underlying businesses and government activities rather than divestment (because it is in our members' interests to decarbonise the economy-as-a-whole, and by remaining invested we retain our influence on the companies that must transition).

Net Zero Emissions Intensity Tracker



The Trust's 2019-2021 emissions intensity have been calculated by proxying the developed markets, emerging markets and high yield allocation of the portfolio with appropriate indices. 2023 and 2024 results are also based on proxies but based on more detailed mapping of portfolio exposures.

We note that the progress from year to year is driven by many factors. This includes:

- Changes in the absolute emissions of the underlying businesses. This was particularly evident in 2020 due to the COVID 19 pandemic which led to international shutdowns of many businesses and lower emissions compared to subsequent years when activity recovered, and emissions output increased to more normal levels. This will also reflect the progress (or lack thereof) in the de-carbonization of the underlying businesses in the portfolio
- Changes in the valuations of businesses in the markets, which can affect the denominators of the calculations of enterprise value (including changes in the value of equity relative to debt) without any actual change in the carbon emissions. In recent years, substantial increases in the value of technology businesses (which usually have lower carbon footprints compared to industrial and energy businesses) which now form a bigger component of global and US indices have meant decreases in the emissions intensity of these indices driven purely by these changing market capitalizations
- Changes in the portfolio itself: as new investments enter and old investments exit the emissions intensity will change.

Between 2023 and 2024, although global GHG emissions increased, US emissions decreased due to lower manufacturing output and reduction in methane emissions from the oil and gas sector. Given that the portfolios basis to the US, this contributed to the overall reduction in emissions

As anticipated the portfolio has shown volatility in its emissions estimates from year to year.

On the basis of data to date we are continuing with our current plans (as set out in 5.4.2.) and will monitor continued progress.

The steps we are taking to achieve our target

Our Fiduciary Manager has committed to:

- Provide us with information, metrics and analytics on net zero greenhouse emissions by 2050 investing and climate change-related risks and opportunities
- Engage with those key to the investment system including data and service providers to ensure that products and services available to the Trustee are consistent with the aim of achieving global Net Zero emissions by 2050 or sooner
- Ensure any relevant direct and indirect policy engagement is undertaken in support of achieving global net zero greenhouse gas emissions by 2050 or sooner

We will:

- Take account of, and report on, progress against Scope 1 and 2 emissions and, to the extent possible, material portfolio Scope 3 emissions
- Prioritise the achievement of real economy emissions reductions within the sectors and companies in which we invest
- Use the reporting provided by our Fiduciary Manager to help us assess progress towards our targets

Whilst we expect our portfolio to trend towards our emissions reduction target, we'll take the decisions necessary to align the portfolio consistent with our net zero emissions by 2050 goal and the funding requirements of the Trust.

The method we used to measure performance against our target

In order to help us track progress against our target of net zero greenhouse gas emissions by 2050, our Fiduciary Manager will, at least annually, report to us:

- Our portfolio's absolute GHG emissions
- Our portfolio's emissions intensity

PRIORITISING REAL-WORLD OUTCOMES OVER PORTFOLIO-LEVEL TARGETS

While we measure our carbon footprint to track the progress of the portfolios and the real world decarbonisation over time, and we have set headline decarbonisation targets, this is not what we believe should drive portfolio change. Instead, we would consider shifting our focus to alignment metrics, such as the proportion of the portfolio that have set Science Based Targets. We will resist pressure to modify portfolios to meet headline portfolio level decarbonisation targets at the expense of incentivising the necessary real-world transition. Our goal is to be aligned with the successful shift to net zero greenhouse gas emissions globally – and we seek to maximise our influence to support this. In the long-term, this is the only effective strategy to mitigate the systemic effects on markets of climate change. For these reasons, portfolio decarbonisation targets will continue to be reviewed every few years to ensure they remain appropriate and aligned to the achievement of the Trust's fiduciary objectives

APPENDIX – CLIMATE SCENARIO ANALYSIS

APPROACH TO DEVELOPING THE SCENARIOS

Global warming is currently at 1.1 degrees above pre-industrial levels. Given that human related GHG emissions will continue to accumulate in the atmosphere at a substantial pace over the next 7 years regardless of action to decrease emissions, the trajectory of climate change over this medium-term period is very similar in all three scenarios - i.e. whether we are ultimately on a +1.5, +2 or +3 degree pathway, we expect that we will continue to experience more and more extreme weather over the coming years. However random variation can lead to substantial variations in actual impacts of weather from year to year around the scenario path. For this reason, we assume similar actual weather outcomes in the +1.5 and +2 degree scenarios and more severe fluctuations and impacts under the +3 degree scenario. This leads to greater physical and economic impacts in the +3 degree scenario.

Under both a +1.5 and +2 degree scenario, we invite you to imagine that the following weather scenario might unfold7: Over the next 6 years, the world witnesses a series of increasingly severe weather events. 2024 was the warmest year on record breaching the 1.5 degree limit for the first time in part due to the "El Niño" effect. Despite the transition to La

[7] This weather scenario is loosely adopted from the USS/Exeter University paper "No Time to Lose" which gives a much more comprehensive description of such a scenario and adopts a similar approach to that outlined here.

Niña in 2025 we are seeing record weather effects, with the LA fires causing unprecedented property damage and flash floods in Valencia claiming over 220 lives. Globally this pattern continues in the coming years with new challenges: droughts, wildfires and heatwaves in certain regions, flooding, and agricultural disruptions in other regions, especially some emerging markets. By 2028, intensifying tropical storms, including hurricanes and cyclones, wreak substantial damage in the US and Asia, while India suffers from an unprecedented heatwave. Meanwhile, Europe experiences milder winters and longer growing seasons. In 2030, the world grapples with unprecedented wildfires, severe flooding in coastal regions, and prolonged droughts in Western Africa. In addition, the Arctic experiences record-low sea ice, highlighting the urgent need for comprehensive climate action amidst escalating environmental fragility.

We assume that in the +3 degree scenario, a very similar overall climate set of outcomes but that weather is more concentrated: that some of these weather impacts, by chance happen back-to-back and happen in particularly impactful regions for the global economy and global food production, compared to a more fortunate spread of outcomes in the other two scenarios.

The government policy responses, economic outcomes and consumer response to climate change over time vary across the three scenarios leading to different outcomes for markets and portfolios over this medium term time horizon.

1.5 DEGREES

Scenario outline

Unfortunately, this scenario seems increasingly unlikely because of disparate policy adopted across major economies and in particular the US stepping back from its role in the climate transition. A grass roots consumer led revolution and reaction triggered by extreme weather events and an increasing lack of insurability causes growing global pressure for action. Society responds through their spending behaviour, political activism and voting in favour of climate friendly politicians at mid-term elections. China emerges as the unlikely leader on climate issues pushing for consensus to tackle climate change more quickly despite a lack of US involvement. Governments including the EU and UK respond as they recognise the changing public attitude and large economic appetite for the green transition. Despite a lack of US leadership, geo-political alignment emerges from the COP process, with countries agreeing coordinated initiatives to meet global targets. Supportive policies come into effect to target aggressive Net Zero implementation and climate adaptation. Tax revenues from carbon and resource intensive consumption and public investment is used to support and fund greener alternatives, resilient infrastructure programs and accelerate efforts to catch-up with China's leading renewables programme.

Physical Risk – Moderate

Each year across the globe, different regions are affected by extreme weather events that result in destruction of property, flood damage, and disruption to transport and industry. Sea level rises impact coastal areas with more severe storm damage. In other areas extreme heat waves, drought and water shortages cause modest disruption to regular economic activity. The effects are felt by both business and consumers. Both developed and developing countries experience droughts and changing rainfall patterns which disrupt crop yield and livestock production in some years impacting crop yields leading to temporary food shortages and price spikes in essential commodities and inflation. Insurance losses mount. Portfolio effects are felt

through the impacts on the physical locations and supply chains of businesses and consumer demand.

Strong investment in flood defenses infrastructure and other infrastructure leads to mitigation of some of these effects in this scenario. In addition, alternative solutions are implemented to support essential food, energy and climate adaptation and most areas remain covered by insurance with the exception of some coastal areas and fire risk areas that are over exposed. After several years, the aggressive Net Zero initiatives start to slow the pace of increases to atmospheric green-house gases, meaning the more extreme environmental tipping points are likely to be avoided.

Transitional Risk – High

Governments introduce intense green taxation policies on carbon-intensive industries and Carbon Border Adjustment mechanisms tax imports. Reputational risks weigh on companies failing to transition to a greener economy and they are publicly held to account as consumers switch to cleaner alternatives. Carbon pricing significantly increases, putting a large revenue strain on those heavily reliant on fossil fuels and companies are forced to quickly invest in green technology to improve their carbon footprint. Stranded asset risk is high, particularly in fossil fuel industries. Conversely companies with technology and intellectual property that provide solutions benefit from the substantial positive investment in scaling up solutions, offsetting some of the transitional risks.

Systemic Risk – Moderate

Public policy leads to positive robust growth as public and private innovation and investment increases. Revenues from green taxation are directed into green investment and infrastructure, boosting economic growth. Interest rates increase modestly as investments produce strong returns and inflation rises modestly with booming demand for new capital stock but strong productivity growth. Carbon pricing systems provide financial transition support to labour from now-stranded carbon-intensive industries, limiting downside risk. Developing markets receive large funding support following COP agreements and their economies are boosted, accompanied by high inflation, as they emerge as major exporters of solar-based fuels and climate friendly agriculture.

Portfolio Impact – Positive

Overall, the portfolio and funding ratio would most likely benefit, as strong economic growth from accelerated public and private investment offsets some of the negative transitional and physical risks leading to positive overall returns from growth assets.

The high transitional and physical risks create greater dispersion between "winners" and "losers": the former being companies and countries which are well prepared for and able to contribute to a greener world or with strong adaptation polices, and infrastructure related businesses benefit; and the latter being companies that are negatively affected by increased taxation/carbon pricing policies, and with stranded fossil fuel assets. Businesses with supply chains in higher risk physical locations are still affected, especially those which are highly indebted. In this scenario, countries with strong reliance on fossil fuel export revenues (and high costs of production) are likely to be most negatively impacted, including Canada, the US and some middle eastern countries. The UK is negatively affected as expensive North Sea oil and gas production becomes stranded. The US is least affected due to its diversified economy.

Countries more reliant on fossil fuel imports and transitioning quickly to renewables benefit including China and the broader emerging markets.

While growth assets do well in this scenario, liabilities are well hedged. On the back of strong growth, real rates increase modestly reducing liability values in this scenario despite higher inflation but these are matched by modest losses on LDI hedges. The unhedged deficit shrinks.

2.0 DEGREES

Scenario outline

Our new expectations for global warming following the events of 2024. Geo-political fragmentation and climate denialism delay action to fight global warming. Global co-operation on Net Zero efforts is stymied as politicians and media channels focus on living standards and energy security. Through the decade, extreme weather damage leads to consumer and investor pressure to act on climate change but progress is patchy and erratic.

Some countries in Europe persevere with their Net Zero goals, investing in greener technology, but growth is limited with supply-chain issues. Climate policies are initially local and patchy but mounting pressure through the decade leads to the return of and support for politicians who target climate action. Finance flows towards affected emerging markets for loss and damage and eventually the developed world succeeds in persuading China to join forces.

Physical Risk - Moderate increasing to high

Similar to the 1.5 degree scenario: Each year across the globe, different regions are affected by extreme weather events that result in destruction of property, flood damage, and disruption to transport and industry. Sea level rises impact coastal areas with more severe storm damage. In other areas, extreme heat waves, drought and water shortages cause modest disruption to regular economic activity. The effects are felt by both business and consumers. Both developed and developing countries experience prolonged droughts and changing rainfall patterns which disrupt crop yield and livestock production in some years impacting crop yields leading to food shortages and temporary price spikes in essential commodities and inflation. Insurance losses mount and insurance is increasingly withdrawn from multiple areas leading to falls in property values and wealth. Portfolio effects are felt through the impacts on the physical locations and supply chains of businesses and consumer demand.

The growing frequency and intensity through the decade of extreme weather gradually pushes climate focus up government agendas. However, the mitigating effects of climate adaptation measures are more limited. Limited investment in infrastructure driven by budget constraints and the slow rollout of such measures mean greater losses are absorbed by portfolio exposures. State governments increasingly take on the role of insurer of last resort as areas become uninsurable pushing up credit risks.

In emerging markets, where weather shocks and crop failures are worst felt, economic and political instability increases and supply chains are impacted.

Transitional Risk – Low increasing to Moderate

With the new US administration and global political fragmentation, short-term transition risks have temporarily decreased. Over the next few years, governments and businesses operate under loose initiatives to tackle climate change with limited taxation. Some companies

recognise the appetite for greener technology and continue on their paths to Net Zero where there is a clear financial reward, posting positive growth. Pressure from consumers, society and investors start to slowly build through the decade as the effects of global warming are strongly felt. Society becomes increasingly more supportive of businesses on following a Net Zero path and consumers shift away from companies with poor reputations. Later through the decade, the shift to greener companies starts to emerge and strong climate policies come into force, first in Europe, to mitigate the damage from delayed action.

Systemic Risk – Moderate

The return to normality in inflation leads to a decline in interest rates and a surge in economic growth over the next few years which sparks an upturn in lending and investment in proven tech opportunities, creating a tech-led boost in equity markets. Businesses manage to navigate the complex political landscape but eventually, material shortages emerge and the next few years are followed by bouts of renewed inflation, exacerbated by weather-related spikes in food prices.

Subsequently, the burst in growth and rising inflation prompt central banks to raise interest rates again. After a slowdown, policy makers are forced to step in with renewed monetary stimulus and fiscal responses though these are limited by budget deficits and debt levels resulting in anaemic growth over the remainder of the decade.

Portfolio Impact – Moderate

Over the short-term, the portfolio is expected to benefit from an initial growth environment led by the technology industry. The majority of growth assets (e.g., equity, credit and private markets) benefit from the boom and the portfolio holds up well.

But, over the longer-term, companies and sovereigns post flat or negative growth with more limited investment and fiscal spending means returns are likely to be volatile. As climate taxation comes into force, the portfolio may need to transition to assets which are making good progress in green tech and benefiting from increased investment and away from highly indebted positions.

On the liability side, the impact on interest rates and inflation is uncertain. However, the liability hedging approach should protect the portfolio which-ever the outcome.

3.0 DEGREES

Scenario outline

Geopolitical conflict and division detract from global efforts in climate policy. Tensions across the world, particularly between China and the US, and US domestic political deadlock slow global decarbonisation efforts and technological progress. Diminishing trust between nations undermines any hopes of Net Zero collaboration through COP. Initially we see low levels of government and consumer intervention and climate policies shift to local efforts, not global, with many countries failing to meet their Net Zero commitments.

Private investment continues to accelerate but well below the levels required to create massive scale in the implementation of affordable green technology. The unfortunate back-to-back experience of extreme weather over several years impacts multiple food basins, reducing crop productivity and food availability and generating sustained high inflation. Climate protests gain

little traction as extreme weather events compound political and economic problems and result in social instability where food and energy security take precedence. Inequality grows as masses are severely impacted by extreme weather conditions and rising prices of scarce resources drives the wedge further.

Physical Risk – High

An unlucky combination of back-to-back weather occurrences over two years lead to simultaneous droughts and severe storms across the world. Droughts affect several major crop producing regions, disrupting crop yield and livestock production, while water shortages and the extreme heat waves affect tourism in some regions. The demand for resources and successive years of major crop failures drives up prices globally. Electricity supply in some regions is disrupted and economic productivity is impacted negatively. In other regions, the more severe storm seasons create particularly large losses for insurers through flood and storm damage. This results in more severe destruction of property, flood damage, and disruption to transport and industry. Sea level rises impact coastal areas with more severe storm damage. All of these effects contribute to increased healthcare costs for individuals affected.

Portfolio effects are felt to a greater degree than in other scenarios through the impacts on the physical locations and supply chains of businesses and consumer demand.

Property, businesses and critical infrastructures are severely damaged in several countries requiring increased funding support from governments who are already experiencing budgetary pressures, diverting funds from investment and productive growth. As we progress through the decade, commercial property insurance is retracted from many areas subject to high acute physical risk and insurance losses lead to substantially higher premiums and falls in property values. Investors also become acutely aware of the location of production facilities and supply chains for specific businesses, increasing risks across affected sectors.

As the decade closes, scientists become increasingly concerned that the world is on track to exceeding several climate tipping points. This leads to greater discounting of physical risks in asset prices.

Transitional Risk – Initially moderate, but increasingly uncertain

The lack of climate policies and green taxation puts less initial strain on companies to transition to a greener world. Investment in renewable development is modest with businesses focusing more on continuing their operations as normal. Political attention is focused on keeping prices as low as possible, rather than diverting activity away from damaging fossil fuel practices. However, the extreme weather events lead to increased political pressure and different countries adopt uncoordinated approaches. These sudden swings in policy create heightened uncertainty for investors, driving up risk premia in companies with high emissions.

Systemic Risk – High

Productivity is negatively impacted while inflation remains stubbornly high. Poor market environments stem from political, economic and financial turmoil, which further disrupt trade flow and supply chains. This reduces productivity growth and raises inflation and interest rates. Geopolitical tensions rise and divergent policy responses create uncertainty and increasing risk premia. Financial markets are increasingly volatile in the face of food shortages, recessions and political instability and unemployment runs high. Banks and governments are hit by huge

losses on corporate and sovereign failures which fall back on state support. Emerging markets suffer from weak economic activity, limited trade and the failure of developed markets to provide financial support. China benefits from its dominance in renewables and access to materials but its exports are damped by weak global growth.

Portfolio Impact – Negative

Overall, the portfolio is negatively affected with lower transition risks more than offset by higher physical and systemic risks. Growth assets would struggle from the rising physical risk and low productivity, and company revenues would be directed to recovering against harsh weather conditions as insurance policies are pulled. High interest rates and persistent inflation make it difficult to finance new investment. Many regions would be severely hit, particularly emerging markets, and the portfolio would struggle to deliver positive returns.

It's likely the strategy would need to be revisited to focus on assets and countries which are more resilient to climate change and which benefit from the increased demand of natural resources and need for renewable technology. Fossil fuel assets, while initially benefiting from a slower transition, in the longer term would be subject to increasing risk premia from erratic government responses and lurches in policy. The portfolio would need to focus more on assets that provide inflation protection including against volatile food and agricultural prices, and on stocks that can contribute strongly to climate adaptation such as infrastructure investment.

On the liability side, high short-term interest rates lead to inverted yield curves and the combination of lower levels of real interest rates with higher inflation risk premia may mean higher liability values. The LDI portfolio mitigates the risks of this through the use of hedging the funded assets, though the unfunded deficit grows.