The Pearson Pension Plan (the "Plan")

Climate change report

A report for members by the
Trustee of the Pearson Pension Plan

Plan Year ending 31 December 2022

Why have we written this report?

The UK has become the first G20 country to make it mandatory for the Britain's largest companies and financial organisations to disclose their climate-related risks and opportunities.

This is part of the government's commitment to making the UK financial system the greenest in the world.

This report provides members the opportunity to find out more about the work carried out by the Trustee in relation to climate change.

It is the first climate change report by the Trustee of the Plan. We hope you find it informative and would welcome any feedback.

J A B Joll

Chairman of the Trustee of the Pearson Pension Plan

Overview

The Trustee of the Pearson Pension Plan views climate change as a risk to society, the economy, and the financial system, but also recognises that reducing carbon emissions throughout the economy presents opportunities.

These risks and opportunities may affect the Plan's financial position, for example by impacting the businesses the Plan invests in. The Trustee monitors this potential impact and takes steps to reduce climate-related risks for members.

This report describes how the Trustee has identified, assessed, and managed climate-related risks and opportunities to the Plan during the Plan year to 31 December 2022.

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Introduction

About The Pearson Pension Plan (the "Plan")

The Plan has a Defined Benefit ("DB") Section with total assets (including its buy-ins) of c.£2.6bn as at 31 December 2022, and a Defined Contribution ("DC") Section with total assets of c.£637m as at 31 December 2022. The DC section has three lifecycle strategies, and members are automatically enrolled into the Drawdown Lifecycle strategy ("default strategy"), unless they actively choose one of the alternative strategies available. The majority of DC members (c.86%) are invested in the default strategy.

The purpose and structure of this report

The purpose of this report is to describe the Plan's governance framework for managing climate-related risks and opportunities and how it has been implemented in the year to 31 December 2022. It is the Plan's first report in line with the recommendations of the **Taskforce on Climate-Related Financial Disclosures ("TCFD")**, as required by the 2021 Climate Change Governance and Reporting Regulations.

This report covers the TCFD's thematic areas of:

- **Governance** – the Plan's governance around climate-related risks and opportunities;
- **Strategy** – the potential affects of climate-related risks and opportunities on the Plan and the resilience of the Plan's investment strategies (for the DB & DC Sections) and the DB funding strategy under different climate-related scenarios;
- **Risk Management** – the processes used by the Plan to identify, assess, and manage climate-related risks; and
- **Metrics and Targets** – the metrics and target used to assess and manage relevant climate-related risks and opportunities to the Plan.

The key findings of this report are set out on page 5.

Key findings

1. **Governance – the Trustee has a robust framework for managing the Plan, including setting clear expectations and responsibilities in relation to climate change.**

A Climate Governance Statement defines the responsibilities of everyone involved

Climate-related risks and opportunities are reviewed regularly in light of the Trustee's beliefs

The Plan's advisers support the Trustee on climate-related matters

2. **Strategy and Risk Management – the Trustee has taken steps to understand how climate change might affect the Plan and to control the risks it has identified. Based on the analysis carried out, the Trustee expects climate change to potentially impact the Plan more significantly over the longer term. The Trustee aims to reduce the risks to the Plan in several ways, including:**

Investing responsibly, in line with the Trustee's beliefs

Regularly reviewing the Plan's investment managers' climate practices and engaging with managers if concerns arise

3. **Metrics and Target – the Trustee has collected and reviewed information about the greenhouse gas emissions, carbon footprint and emissions reductions targets for the assets the Plan invests in, to help it understand the Plan's exposure to climate risks. It has set a target to increase the proportion of companies it invests in with science-based emissions reductions targets.**

Collected and reviewed greenhouse gas emissions data for the Plan's investments

Reported proportion of investments with no data or estimated data

Agreed to use data quality as an additional climate-related metric to help it monitor climate-related risks

Governance

The Trustee has ultimate responsibility for making decisions and ensuring effective governance of climate change risks and opportunities in relation to the Plan. No one other than the Trustee undertakes governance activities.

1. The Trustee and Trustee Chair's role

It is the Trustee Chair's responsibility to ensure that sufficient time is allocated for consideration and discussion of climate matters by the Trustee, the Investment Committee, and its advisers.

In broad terms, the Trustee is responsible for having effective climate governance arrangements in place for both the DB (Final Pay Section) and DC (Money Purchase) Sections including:

- allowing for climate-related considerations when assessing and monitoring the Pearson Group's covenant;
- ensuring that the Plan's actuarial, investment, covenant and legal advisers have clearly defined responsibilities in respect of climate change and that they all work together with the Trustee to incorporate climate change in its governance arrangements, risk register, Integrated Risk Management ("IRM ") framework and communication with stakeholders;
- ensuring that the Plan's actuarial, investment, and covenant advisers: (i) have adequate expertise and resources, including time and staff, to carry out their responsibilities; (ii) are taking adequate steps to identify and assess any climate-related risks and opportunities which are relevant to the matters on which they are advising; and (iii) are adequately prioritising climate-related risks;
- considering and documenting the extent to which the advisers' climate-related responsibilities are included in their service agreements, and the investment advisers' strategic objectives; and
- communicating with Plan members and other stakeholders on climate change where appropriate, including public reporting in accordance with the Occupational Pension Schemes (Climate Change Governance and Reporting) Regulations 2021 and the Occupational and Personal Pension Schemes (Disclosure of Information) Regulations 2013 (together "TCFD reporting") when required.

2. Other parties' and advisers' roles

The Trustee Board seeks to identify, assess and manage climate risks and opportunities, with some matters delegated to the Investment Committee, and with support from the Trustee Secretary and the Trustee's external advisers.

Investment Committee and Alternatives Investment Board

In broad terms, the Investment Committee is responsible for carrying out the following for both the DB (Final Pay Section) and DC (Money Purchase) Sections:

- incorporating climate-related considerations into: (i) the Trustee's investment beliefs and the Plan's investment policies; and (ii) the strategic decisions relating to the Plan's funding and investment framework;
- determining the short-, medium- and long-term periods to be used when identifying climate-related risks and opportunities for the Plan;
- identifying and assessing the main climate-related risks and opportunities for the Plan over the agreed time periods and documenting the management of them;
- incorporating climate-related considerations into the Plan's risk register and IRM framework;
- commissioning the investment advisers to work with the in-house pension team to satisfy TCFD reporting;
- ensuring that the Plan's investment managers have processes in place for managing climate-related risks and opportunities in relation to the Plan's investments; and
- selecting and regularly reviewing metrics to inform the Trustee's identification, including: carrying out scenario analysis as and when required, assessment and management of climate-related risks and opportunities, and setting and monitoring targets to improve these metrics over time.

Governance

2. Other parties' and advisers' roles (cont.)

Actuarial adviser

The Plan's actuarial adviser is responsible for advising on how climate-related risks and opportunities might affect the Plan's funding position over the short-, medium- and long-term and the implications for the Plan's funding strategy, long-term objective, and journey plan.

Investment advisers

The Plan's investment advisers are responsible, as requested by the Trustee or Investment Committee, and working with the Trustee, Investment Committee, in-house pension team and other advisers as appropriate, for:

- providing training and other updates on relevant climate-related matters;
- helping the Investment Committee to formulate the investment beliefs in relation to climate change and reflecting these in the Plan's investment policies and strategy;
- advising how climate-related risks and opportunities might affect the different asset classes in which the Plan might invest over the short-, medium- and long-term, and the implications for the Plan's investment strategy and journey plan;
- advising the Investment Committee on the appropriateness and effectiveness of the Plan's investment managers' processes, expertise and resources for managing climate-related risks and opportunities, given the Trustee's investment objectives and beliefs, and engaging with the managers to improve climate-related integration over time;
- assisting the Trustee and Investment Committee in incorporating climate change in its investment monitoring;
- advising on the inclusion of climate change in the Plan's governance arrangements, risk register and IRM framework;
- assisting the Investment Committee in identifying, monitoring, and using suitable climate-related metrics and targets in relation to the Plan's investments, including liaising with the Plan's investment managers regarding provision of the metrics;
- leading on the preparation of the Trustee's TCFD reporting, and assisting with other communication with stakeholders in relation to climate change; and
- Supporting the Alternatives Investment Board in relevant Responsible Investment and climate requirement matters.

Covenant adviser

The Plan's covenant adviser is responsible for:

- considering in periodic covenant reviews how climate-related risks and opportunities might affect the Pearson Plc over the short-, medium- and long-term and the implications for the Plan's journey plan; and
- noting in the Plan's covenant monitoring any changes in the policies and practices of the Pearson Group relating to climate change, and the Company's progress against any climate-related targets it has set.

2. Other parties' and advisers' roles (cont.)

Investment managers

In broad terms, the Plan's investment managers are responsible for:

- identifying, assessing and managing climate-related risks and opportunities in relation to the Plan's investments, in line with the investment management arrangements agreed with the Trustee and/or Investment Committee;
- exercising rights (including voting rights) attached to the Plan's investments, and undertaking engagement activities in respect of those investments, in relation to climate-related risks and opportunities in a way that seeks to improve long-term financial outcomes for Plan members;
- reporting on stewardship activities and outcomes in relation to the Plan's investments on an annual basis, wherever feasible; and
- providing information to the Plan's investment advisers on climate-related metrics in relation to the Plan's investments, as agreed from time-to-time, and using its influence with investee companies and other parties to improve the quality and availability of these metrics over time.

3. Trustee monitoring

The Trustee and Investment Committee consider a range of different information about the climate change risks and opportunities faced by the Plan to enable them to fulfil their responsibilities set out above. These documents will incorporate climate-related risks and opportunities as appropriate, in accordance with the roles and responsibilities set out above. The Trustee (or Investment Committee as appropriate) will review, revise and approve when required the following, according to their roles and responsibilities:

Quarterly

- Updates on the Plan's investments from the Plan's investment advisers (including updates on environmental, social and governance ("ESG") factors and climate change as part of regular reporting from investment managers and presentations to the Trustee).

Annually

- Governance arrangements, investment beliefs and investment policies in relation to climate change, including reviewing the Plan's risk register
- TCFD reporting
- Report on the climate metrics in the Plan's IRM framework
- Business plan for the following year that outlines the main topics due to be discussed at board meetings.
- Whether it is appropriate to carry out scenario analysis that illustrates how the Plan's assets and liabilities might be affected under various climate change scenarios

Governance

3. Trustee monitoring (cont.)

Annually (cont.)

- Advisers' climate competence and assess how they have performed against their climate responsibilities
- Data on ESG metrics for the Plan's investments, including at least four climate-related metrics, and performance against any targets set in relation to these metrics
- Whether to retain or replace any targets set in relation to these metrics

At least every three years (or following major changes)*

- A responsible investment report from the Plan's investment advisers that reviews the Plan's investment managers in relation to ESG factors and climate change
- Choice of short-, medium- and long-term time periods to be used when identifying climate-related risks and opportunities to the Plan
- Scenario analysis that illustrates how the Plan's assets and liabilities might be affected under various climate change scenarios, along with commentary on the potential impacts for the Pearson Plc and the implications for the resilience of the Plan's funding and investment strategies
- Choice of metrics to inform the Trustee's identification, assessment and management of climate-related risks and opportunities

Oversight activity – appointments

The Trustee seeks input from its investment, actuarial and covenant advisers to ensure that it can identify, assess, and manage climate risks and opportunities. The Trustee will review the climate competence of its advisers and take appropriate action if any concerns are identified.

Over 2022, the Trustee and Investment Committee have undertaken significant activity on climate change, based on information provided to them by their advisers and investment managers. Where appropriate, the Trustee has questioned the information provided to it to ensure it has a clear understanding of the risks facing the Plan and the actions being taken to reduce them.

When appointing new advisers in the future, the Trustee will consider whether the advisers have suitable climate credentials.

With appropriate advisers in place, the Trustee ensures that climate-related risks and opportunities are considered as part of any relevant advice such as investment strategy reviews and assessment of the employer's covenant.

Determining the correct apportionment of resources

The key rationale for allocating resources to this area is that the Trustee believes that ESG factors are likely to be one area of market inefficiency and so managers may be able to improve risk-adjusted returns by taking account of ESG factors which include factors relating to climate change.

*Following an actuarial valuation of the Plan, a review of the investment strategy or change to the assessment of the Pearson Group covenant.

3. Trustee monitoring (cont.)

Oversight activity – objectives set for advisers

In September 2022, the Trustee reviewed the investment advisers' objectives with which they review their investment advisers on an annual basis. As part of the review, the Trustee agreed to add new climate-related objectives to reflect their investment advisers' new responsibilities.

New climate-related investment advisers objectives

- Support the Trustee in relevant Responsible Investment and climate requirements and decisions, including support with preparation of climate reporting (for the DB & DC Sections)
- Support the Alternative Investment Board in relevant Responsible Investment and climate requirements and decisions.

Activities undertaken

Ahead of the Plan Year, in June 2021, the Trustee undertook a training session on the new TCFD-related requirements to deepen its understanding of climate risks and opportunities and ensure it was up-to-date on its new climate-related regulatory requirements for the year ahead. Members of the in-house team that have a role in climate-related activities also participated in this training session.

During 2022, the Trustee and the Investment Committee allocated significant additional meeting time to climate-related topics and commissioned additional advice in order to deepen its understanding of climate change, enhance the Plan's management of climate-related risks and opportunities, and satisfy its regulatory obligations.

Climate-related agenda items during the Plan Year

March 2022: RI review of the Plan's managers

July 2022: Set short-, medium-, and long-term time horizons for the identification of climate-related risks and opportunities

July 2022: Received joint paper from investment and actuarial advisers on climate scenario modelling, including training on scenario analysis, selection of climate scenarios and impact of climate risks on longevity

September 2022:

- High-level review of the climate approaches of the Plan's investment managers
- Reviewed and agreed climate metrics including training on various metrics
- Finalised Climate Governance Statement setting out roles and responsibilities for managing climate risks and opportunities
- Assessed and considered the high-level impact of climate on covenant
- Reviewed the investment consultant strategic objectives and agreed to a new climate-related objective

November 2022: Set the Plan's TCFD metrics target

Identification and assessment of climate-related risks and opportunities relevant to the Plan

Trustees must decide the short-, medium- and long-term time horizons that are relevant to their plan. It is up to trustees how they determine their time horizons for the purpose of identifying and assessing climate-related risks and opportunities.

The Trustee has defined the time horizons for the Plan. In setting these time horizons, the Trustee has taken into account the membership profile and the timing of widely held future climate milestones.

The Trustee will review the designated time periods annually and following any material change to the Plan's membership. These time horizons have informed the Trustee's climate-related considerations and decisions during the year.

The following time horizons were agreed in July 2022 and used for the climate scenario analysis conducted in the same month.

Time period	DB Section	DC Section
Short-term	**2 years (2025)** – To align with valuation timescales and the Trustee's usual strategic decision-making process.	**2 years (2025)** – Major improvements in climate data quality are expected over this period
Medium-term	**7 years (2030)** – Key period over which policy action will determine if Paris Agreement goals will be met	
Long-term	**27 years (2050)** – Many economies are targeting to be net zero by this point	

Strategy

Overview of the climate-related risks and opportunities relevant to the Plan that the Trustee has identified

The Trustee has identified and assessed the risks and opportunities to the Plan within each of these time horizons, as summarised below.

These risks and opportunities are considered further in the following sections where the Trustee's approach to investment risks, opportunities and covenant is discussed further.

DB Section

	Key risks	Key opportunities
Short term	Exposure to climate-related investment risks may be highest while the Plan retains an allocation to growth assets	Climate-tilted funds aim to protect against transition risks and provide exposure to transition opportunities
Medium term	Market volatility could cause investment losses and increase time to reach full funding on buy-out basis	When winding down the infrastructure and property funds, consider climate credentials of where the proceeds should be invested
Long term	Cost of buy-out may increase as insurers allow for climate-related risks in their pricing and reserving bases	Buy-out may provide greater protection from climate risks for members' benefits

DC Section

	Key risks	Key opportunities
Short term	Older members within 7 years of retirement will be most exposed to transition risks in the short term in the event of a Disorderly Net Zero scenario	Low carbon investments can mitigate the impact of market shocks due to a market repricing event
Medium term	Transition risks may still be heightened over the medium-term creating volatility. Market returns may be lower if disorderly transition harms economic performance	Impact investments can take advantage of the shift to a low carbon economy and may provide an enhanced source of return over this period
Long term	Physical risks are most severe in the Failed Transition pathway, impacting those members 17 years or more from retirement	Engagement with investment managers to ensure they are exercising stewardship in support of net zero pathways is key to avoiding a failed transition

The DB Section has a low-risk investment strategy with a strong funding position on its long-term funding basis and the Trustee feels that the DB Section is appropriately positioned taking these risks and time horizons into consideration. The Trustee has a plan in place to wind down its infrastructure and property assets over time which will help to mitigate assets which may be susceptible to climate risks to ensure the strategy and funding level is more resilient to potential climate risks.

The above risks and opportunities are being considered as part of the triennial investment strategy review and are likely to result in some changes to the investment strategy of the default (and other lifecycles) and potentially the self-select range such as integration of low-carbon equities within the lifecycles and review of the appropriateness of current ESG funds available in the self-select range. These changes will aim to improve the strategy's resilience against climate risks.

Climate scenarios considered

The Trustee carried out climate scenario analysis in July 2022, with the support of one of its investment advisers, LCP, based on scenario sets described below and based on market conditions as at 31 March 2022. The analysis looked at three possible scenarios, which are set out (in no particular order of likelihood) in the table below.

The Trustee acknowledges that many alternative plausible scenarios exist, but found these were a helpful set of scenarios to explore how climate change might affect the Plan in future.

To provide further insight, the Trustee also compared the outputs under each scenario to a "climate uninformed base case", which makes no allowance for either changing physical or transition risks in the future.

These scenarios show that equity markets could be significantly impacted by climate change with lesser, but still noticeable, impacts in bond markets.

Further details on climate scenario analysis can be found in Appendix 1.

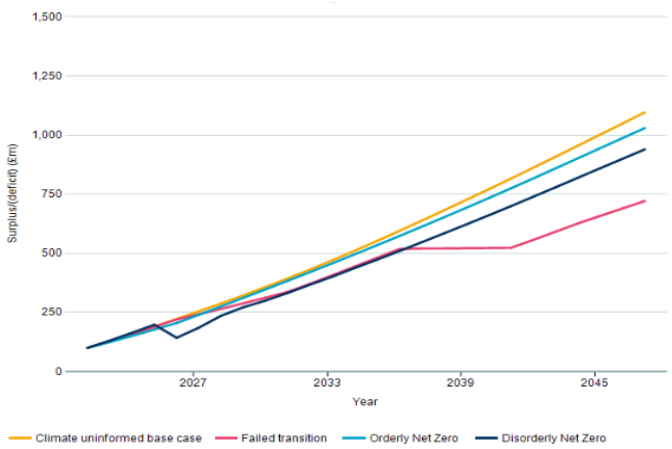
1. **Failed Transition:** Global Net Zero not reached; only existing climate policies are implemented

2. **Orderly Net Zero by 2050:** Global Net Zero CO_2 emissions is achieved by 2050; rapid and effective climate action (including using carbon capture and storage), with smooth market reaction

3. **Disorderly Net Zero by 2050:** Same policy, climate, and emissions outcomes as the Orderly Net Zero by 2050, but financial markets are **slower to react**, and **then react abruptly**

Potential Plan impacts under each scenario – DB Section

The scenario analysis looked at the impact of the Plan's funding position over time on the Plan's long-term funding target using a discount rate of gilts flat. The chart below illustrates the expected change in surplus of the DB section under each of the three scenarios considered, as well as in the "climate uninformed" base case.



Current surplus position is expected to improve with current investment strategy providing returns in excess of gilt returns.

If net zero is to be reached by 2050, there may be some minor adverse impacts to funding levels…

…and if the market reaction to the journey to net zero is volatile, these impacts could be more significant.

A failed transition would be expected to have significant impacts on the current portfolio, but the Plan may be able to de-risk before these impacts occur (particularly as the Plan will be considering another buy-in in due course, for example).

The infrastructure and property investments may be susceptible to climate risks either through the transition to a low carbon economy or through the physical impacts of climate change if not limited.

The Trustee noted the difference in funding position between the climate uninformed baseline and the disorderly net zero projection in 2025/6 (noting this is an illustrative date) arises and reviewed the components of that difference.

As part of this analysis the Trustee also reviewed analysis on its buy-in and reference scheme test ("RST") strain.

Given the Plan's strong funding position on its long-term basis and its likely time horizon, the focus for the DB Section's investment strategy will be more on mitigating climate risks (by assessing and monitoring its current holdings) rather than looking to amend its investment strategy to consider any potential climate-related opportunities.

It is noted that over the long-term, and particularly beyond the time horizon modelled, the largest effects on the funding position would be felt under the Failed Transition scenario. On the face of it, the results below suggest that the DB section is resilient in this scenario. This is partly because in the modelling the DB section has a low-risk long-term investment strategy with limited exposure to growth assets. Moreover, the DB section invests in a way that is designed to make it fairly immune to changes in interest rates and inflation in normal circumstances, which significantly reduces the volatility of its funding position. However, under climate scenarios with major economic disruption – such as the later years of the Failed Transition scenario – the Plan's interest rate and inflation protection may break down, leaving it more exposed to climate risks. The median modelled outcomes do not illustrate this possibility, but the Trustee has considered this risk.

Source: Ortec Finance. Impacts shown are medians, based on financial conditions as at 31 March 2022.

Employer covenant assessment

The Trustee assessed the Employer's covenant during the Plan year. The Trustee noted that the Employer is committed to operate its business in a more sustainable way and has set an ambitious target of becoming Net Zero by 2030 and reducing their scope 1, 2 and 3 carbon emissions by over 50% over the same time period.

The Trustee noted that the Employer's analysis shows that whilst climate change is not one of their principal risks, they have identified climate transition as an emerging risk due to its intensifying importance to all stakeholders.

In assessing the risks, it was determined that there were no significant material risks arising in the near term (up to 2025). One opportunity could be the provision of sustainability-related learning tools, products and services to their customers. Longer-term, the key risks to the business were supply chain risk and outsourcing risk. However, these are not expected to have a material impact on the business in any scenario, in particular due to the Employer's digitalisation strategy.

The Plan's DB Section is fully funded on the Trustee's Long-Term Target and on a solvency basis. The Plan therefore has a limited reliance on the Employer's Covenant, as it is not expected to require any further cash contributions and only needs the Employer to remain an operational business. If climate change were to have a material impact on the Employer business after 2025, the Plan is expected to be able to secure all members benefits in full with an insurance company. The Trustee is therefore comfortable with the Employer covenant in respect of the impact of potential climate risks.

The Trustee, with its advisers, will of course continue to monitor the insurance market to consider any potential for insurer pricing moving adversely, for example, due to insurers needing to increase reserves for climate change or a lack of market capacity.

Potential Plan impacts under each scenario – DC Section

The scenario analysis looked at the retirement outcomes (in terms of the size of retirement pots) for individual members of different ages who are invested in the Default strategy.

The analysis highlighted that members will be subject to climate risks to varying degrees. In addition to the impact over time on members' pots, the Trustee notes that market shocks for members near retirement can be particularly detrimental to their retirement planning and outcomes.

- In the short-term, older members who may retire within the next 10 years could see a sharp decrease in their benefits under a Net Zero Disorderly Transition, as their fund remains invested in return-seeking assets to some degree all the way to retirement, although the proportion decreases over time which helps to mitigate this risk. These members will not have sufficient time to recover from short-term market shocks before retirement.
- In the medium-term, members with 10 or more years until they retire are likely to see an impact on their retirement funds, either initially from a Net Zero Disorderly Transition, or later on under a Failed Transition scenario as the impacts of physical climate change impact their benefits during their period to retirement.
- In the long-term, younger members would see the biggest detrimental impact to their benefits under a Failed Transition scenario and this impact could reduce the level of their benefits by 20% or more.

The Trustee believes that it is imperative to avoid a failed transition to prevent the worst effects of climate change being felt, as the strategy may not be as resilient in that event. The Trustee believes that it cannot do this by lowering the emissions of its investments in isolation; the whole world needs to lower emissions. The Trustee's focus therefore is to encourage fund managers to encourage companies to adopt a science-based net zero target.

Size of retirement pots

	Member aged 25	Member aged 35	Member aged 45	Member aged 55
Starting pot	£1.7k	£10.2k	£23.2k	£12.8k
Change relative to climate-uninformed outcome in brackets				
Climate-uninformed outcome	£210.9k	£250.9k	£206.1k	£72.9k
Orderly Net Zero outcome	£194.0k (-8%)	£237.5k (-5%)	£199.0k (-3%)	£72.1k (-1%)
Disorderly Net Zero outcome	£189.3k (-10%)	£229.6k (-8%)	£191.3k (-7%)	£70.0k (-4%)
Failed Transition outcome	£147.4k (-30%)	£196.1k (-22%)	£180.0k (-13%)	£71.2k (-2%)

Note: The scenario numbers above reflect a projection of example members' pots to age 65 under each scenario to provide an indication of how the different scenarios could impact how much members may have in their pots at the point of retirement. Assumes total contributions and starting salary of 12% and £25.0k, respectively, for a member aged 25; 15% and £36.7k for a member aged 35; 18% and £44.0k for a member aged 45; and 24% and £32.9k for a member aged 55. Further details on the modelling assumptions can be found in Appendix 1.

Risk Management

Introduction

The Trustee has implemented a number of processes and tools for identifying, assessing, and managing climate-related risks and opportunities, including:

- Climate scenario analysis;
- Monitoring of managers' climate approaches;
- Monitoring of metrics; and
- Stewardship activities.

The Trustee also ensures its advisers have processes in place to help it research its investment managers' climate-related practices, thereby helping it make informed judgements about its managers.

These tools have helped the Trustee consider issues such as:

- Which climate change risks are most material to the Plan;
- How to take account of transition and physical risks; and
- How climate change affects the Trustee's risk appetite.

The tools are used to identify the key risks that the Trustee should focus on. The Trustee assesses these risks as part of its investment decision-making processes and monitors them through its risk register to ensure all risks are being considered and managed consistently and proportionately.

How the Trustee has assessed climate exposure

The Trustee has used climate scenario analysis to identify, assess and manage climate-related risks and opportunities. In particular, it has used the analysis to identify the time horizons over which physical risks and transition risks to Plan members could materialize.

Using the scenario analysis, the Trustee has considered what the possible impacts of climate change could be over short-, medium-, and long-term time horizons and whether its investment strategy, funding and covenant is likely to be resilient against these risks (or able to take advantage of any opportunities). Climate scenario analysis was carried out for the Plan in July 2022.

The Trustee will carry out scenario analysis at least every three years and check annually if the review should be carried out sooner.

The results of the analysis are fed into the integrated risk management of the DB Section through specific covenant, investment and DB funding focused considerations and the interaction of these.

The results for the DC Section will feed into the Trustee discussions and decisions on the default investment option and how members could be impacted at different ages over different time periods. This will be considered as part of the triennial investment strategy review which began on 22 March 2023.

During the year, the Plan's actuarial adviser also provided a summary of the impact of climate risks on longevity, covering the potential economic and physical impacts, for example.

Risk Management

Processes for identifying, assessing, and managing climate-related risks and opportunities

The Trustee has implemented a number of processes and tools for identifying, assessing and managing climate-related risks and opportunities for the Plan, including:

- attending climate-related training to understand how climate-related risks might affect pension plans and their investments in general terms;
- undertaking climate scenario analysis which shows how the Plan's assets and liabilities might be affected under a range of climate scenarios;
- reviewing how the sponsoring Employer might be impacted by climate-related factors (see Appendix 1 for more detail);
- reviewing its investment advisers' assessments of the Plan's current and prospective investment managers' climate practices, including how they incorporate climate-related factors into their investment processes and how effectively they manage climate-related risks;
- ensuring good stewardship practices are in place; and
- monitoring a range of climate-related metrics in relation to the Plan's assets.

In addition, the Trustee expects its investment managers to identify, assess and manage climate-related risks to the Plan's assets on a day-to-day basis. The above processes are integrated into the overall risk management of the Plan through the business plan, the risk register and regular support from its advisers.

Risk register

The Trustee maintains a risk register covering the wide range of risks applicable to the Plan. The Trustee updated the register during 2022 to include a number of specific climate risks to ensure that the Trustee manages these as part of their regular risk reviews.

The potential impacts identified in the risk register that arise from climate risks include:

- Higher cost of future buy-ins;
- Investment losses;
- Increased volatility; and
- Physical risks.

The Trustee reviews the risks and opportunities regularly to ensure they are current, to assess any significant priority risks and opportunities to manage/embrace and to ensure regular action is maintained in monitoring and mitigating the risks identified.

The Trustee's current assessment, based on consideration of their impact and likelihood, is that climate-related risks are fairly low-risk for the Plan, relative to other risks, and should continue to be monitored using existing monitoring processes. However, the DC triennial investment strategy will look to further integrate climate-related risk management into the default investment strategy and any self-select options as appropriate.

Processes for identifying, assessing, and managing climate-related risks and opportunities

Investment Monitoring

The Plan's investment advisers provide quarterly investment performance monitoring reports in respect of the DB and DC sections of the Plan. Any concerns in relation to the investment managers are monitored as part of this process.

The Trustee also receives and reviews information about its investment managers' responsible investment credentials, including climate change mitigation, on a biennial basis. This information is provided by one of the Plan's investment advisers, LCP, and is based on proprietary manager research carried out by LCP. The Plan's investment advisers conduct engagement with the managers, encouraging them to improve their practices further and report back to the Trustee periodically.

The 2022 Responsible Investment report and Review of managers' climate approaches report was presented by one of the Trustee's investment advisers. The report uses a "traffic light" system to show the managers' RI capabilities against a range of different factors which included climate specific responses to LCP's 2022 Responsible Investment ("RI") Survey. The report also provides a more detailed review of the climate credentials for the Plan's investment managers. These included factors such as:

- the use of climate tools to assess climate risks and opportunities (e.g., scenario modelling, metrics);
- commitments to climate goals (e.g.TCFD reporting, Net Zero targets);
- the quality and coverage of climate data provided; and
- evidence of stewardship and engagement on climate change.

In addition, the report provides fund and manager specific ratings, based on the specialist asset class and climate knowledge of LCP's manager research teams.

The assessments provided key information on the actions taken by the managers to integrate good climate practices into the running of their firms as well as the funds within which the Plan invests. Based on this review, there were no urgent actions for the Trustee in relation to shortfalls in responsible investment practices. Furthermore, it was assessed that the Plan's fund managers take a reasonable approach to net zero and climate practices and the Trustee used the output of the reviews to drive climate-related conversations with its investment managers over the year.

Some of the actions that the Trustee took away from the assessments for their clime-related conversations with its investment managers included engaging with one of the DC investment managers on increasing its alignment metrics reporting and for another it will engage on whether the manager will increase its usage of scenario analysis. With regards to the DB Section, the Trustee noted it will engage with one of its property managers on the frequency of the manager's engagement on climate change, and for one of the infrastructure managers it will engage on metric data reporting and setting a Net Zero target.

The reports also identified that all of the Plan's DC investment managers have signed up to the UK Stewardship Code, but four DB managers have not yet signed up.

In respect of the four DB managers that had not signed up to the UK Stewardship Code), one of the investment managers is based in France and has a Greenfin label and the other three (who invest across the following asset classes: private equity and infrastructure) are still yet to sign up. With regards to the two infrastructure managers and the private equity manager, the Trustee continues to encourage better practice.

After the Trustee received these reports in 2022, it invested a portion of the DB assets in a new trade finance investment manager which confirmed it had signed up to the UK Stewardship Code.

Processes for identifying, assessing, and managing climate-related risks and opportunities

Changes to investment mandates

If the Trustee identifies any concerns with the way one of the Plan's managers addresses climate-related risks and opportunities, it will initially engage with the manager to raise concerns and seek improvements. If the manager does not sufficiently improve, the Trustee may switch to a different manager. Over the year under review, no manager changes were made due to concerns over their climate approaches.

Over the year under review, the Trustee agreed to appoint one new manager for the DB Section of the Plan. Before investing in the fund, the Trustee obtained formal written advice from LCP, including information on the manager's investment processes and philosophies, which includes how climate-related risks and opportunities are accounted for. The Trustee was comfortable with the approaches taken by the manager.

Stewardship

The Trustee uses stewardship to help manage climate-related risks. Voting and engagement activities are delegated to the individual investment managers. The Trustee has set out two stewardship priorities:

1. Climate change
2. Corporate transparency

Each manager has its own ESG policy, which includes assessment of climate-related risks and policies on voting on climate-related resolutions. In order to monitor how the individual investment managers are exercising their voting rights and undertaking engagement on behalf of the Trustee, the Investment Committee:

- periodically meets with the Plan's investment managers, to engage with them inter alia on how they have considered ESG issues (including climate change) within their stewardship activities and will seek to challenge the investment managers on these matters where they think this is in the best interests of members; and
- further monitors the investment managers by receiving stewardship and governance reports from the investment managers on a regular basis.

During 2022—23, the Trustee wrote to investment managers regarding the Trustee's stewardship priorities, in line with the Department for Work and Pensions ("DWP') stewardship guidance. The Trustee has communicated to managers its expectations of them when they carry out responsible investment on the Plan's behalf.

Metrics and Targets

Metrics

The Trustee has chosen four climate-related metrics to help it monitor climate-related risks and opportunities relevant to the Plan. These are listed below and reported on the following pages (as far as the Trustee was able to obtain the data).

Metric	High-level methodology
Absolute emissions: Total greenhouse gas emissions	The sum of each company's most recent reported or estimated greenhouse gas emissions attributable to the Plan's investment in the company, where data is available. Emissions are attributed evenly across equity and debt investors. Reported in tonnes of CO_2 equivalent. This methodology was chosen because it is in line with the statutory guidance.
Emissions intensity: Carbon footprint	The total greenhouse gas emissions described above, divided by the value of the invested portfolio in £m, adjusted for data availability. Emissions are attributed evenly across equity and debt investors. Reported in tonnes of CO_2 equivalent per £1m invested. This methodology was chosen because it is in line with the statutory guidance.
Portfolio alignment: Science-based targets	The proportion of the portfolio by weight of companies that are aligned with a Net Zero target, demonstrated by a target approved Science Based Targets initiative (SBTi) or equivalent. Reported in percentage terms. The Trustee chose this "binary target" measure because it is considered the simplest and most robust of the various portfolio alignment metrics available.
Data quality	This is the proportion of the portfolio for which each of Scope 1-2 emissions are **verified, reported, estimated or unavailable**.

The data has been calculated using portfolio holdings as at 30 September 2022.

Metrics and Targets

Metrics – DB Section

The Trustee has aimed to report on all the Plan's DB assets including it liability driven investments ("LDI") and bulk annuity holdings, which form the largest holdings of the Plan's assets. Minor residual holdings in an infrastructure and property fund and some historical bulk annuity holdings have not been included for materiality reasons.

Some emissions data was available for mandates comprising 83% of the value of the total Plan's assets (including its bulk annuities) as at 30 September 2022.

The main gaps in the data provided by the DB managers relates to, as expected, the illiquid asset holdings such as infrastructure, property, and private equity mandates. For these illiquid and private market assets classes in general, there are lower disclosure requirements and greater complexity of the underlying holdings within these asset classes which affects the collection of data. The Plan's trade finance manager was not able to provide comparable data on emissions. A higher coverage would of course provide better insights for the Plan.

Most of the Plan's DB investment managers are seeking to improve their climate-related reporting by increasing the number of metrics they report and seeking to fill the data gaps. The Trustee therefore expects data coverage and quality to improve over time. The Trustee is encouraging these investment managers to increase, where possible, their collection and reporting of metrics.

The proportion of holdings with SBTi (science-based target initiative) portfolio alignment targets is fairly low for the Plan's holdings. The Trustee has a long-term target related to this metric and will therefore seek to engage with its managers to encourage improvement of this over time.

Metrics and Targets

Metrics collected – DB Section

Scope 1+2 emissions

Portfolio emissions coverage	<75%	75%-90%	>90%

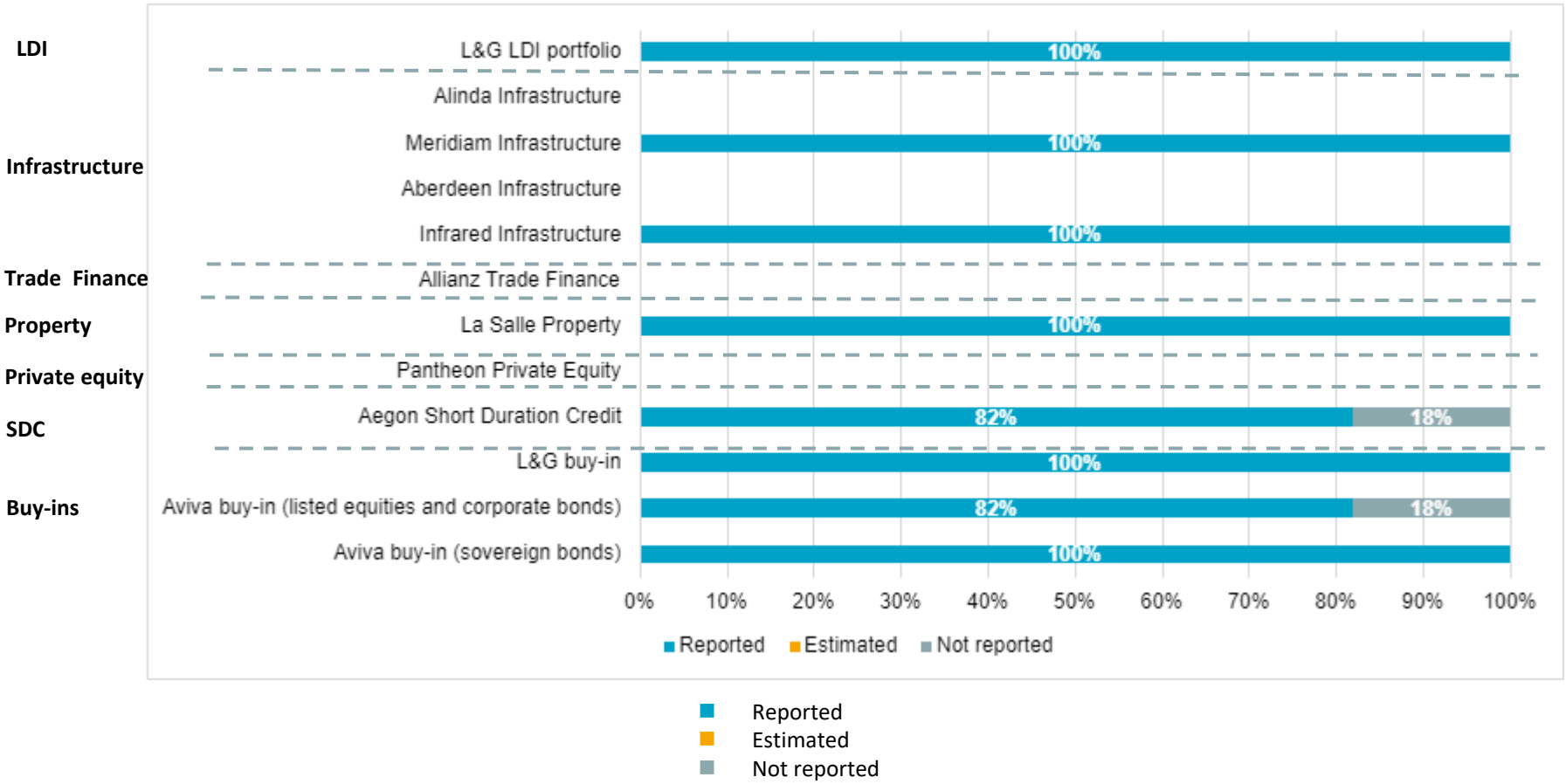
Portfolio	Manager	Assets at 30 September 2022 (% total of DB assets)	GHG emissions (tonnes CO_2e)[1]	Carbon footprint (tonnes CO_2e per £m invested)[1,2]	Coverage of emissions data	SBTi alignment % targets set	Source
LDI	L&G[3]	£708.7m / 26.0%	**119,837**	**174**	**100%**	**100%**	LCP estimate
Infrastructure	Alinda	£11.1m / 0.4%	**N/A**	**N/A**	**N/A**	**N/A**	Manager
	Meridiam	£112.4m / 4.1%	**19,861**	**178**	**100%**	**N/A**	Manager
	Aberdeen	£195.3m / 7.2%	**N/A**	**N/A**	**N/A**	**N/A**	Manager
	Infrared	£44.5m / 1.6%	**0**	**0**	**100%**	**0%**[4]	Manager
Trade Finance	Allianz[5]	£50.5m / 1.9%	**N/A**	**N/A**	**N/A**	**37%**[5]	Manager
Property	La Salle	£215.6m / 7.9%	**0**	**0**	**100%**	**N/A**	Manager
Private Equity	Pantheon	£14.7m / 0.5%	**N/A**	**N/A**	**N/A**	**N/A**	Manager
Short Duration Credit	Aegon	£167.3m / 6.1%	**4,102**	**24.1**	**67%**	**27%**	Manager
Buy-ins	L&G	£771.3m / 28.3%	**57,848**	**75**	**100%**	**19%**	Insurer/LCP
	Aviva (listed equity and corporate bonds	£199.0m / 7.3%	**11,732**	**72**	**82%**	**N/A**	Insurer/LCP
	Aviva (sovereign bonds)	£45.5m / 1.7%	**9,837**	**216**	**100%**	**N/A**	Insurer/LCP

[1] Figures relate only to the assets for which data is available. Total emissions are for the Plan's assets, not the whole pooled fund. Total carbon emissions are calculated using the tonnes CO2e per £1 million multiplied by data coverage and assets as at 30 September 2022.
[2] Carbon footprint was converted from tonnes CO_2e per €m to tonnes CO_2e per £m using the Bank of England exchange rate as at 30 September 2022 (£1= € 1.140).
[3] Legal and General – 31 December 2021 metrics data used and applied to 30 September 2022 Plan asset holdings value.
[4] Infrared confirmed that 25% of portfolio companies have an overall ambition to achieve net zero by 2050. 31% do not have a set Net Zero target, but are expected to set one within 12 months.
[5] Allianz were able to confirm that 70% of their invested companies have set GHG emissions reduction targets. Not confirmed if SBTi.
NB: N/A is not available at the time of writing.

Metrics and Targets

Metrics collected – DB Section

Data quality, measured by Scope 1+2 data coverage



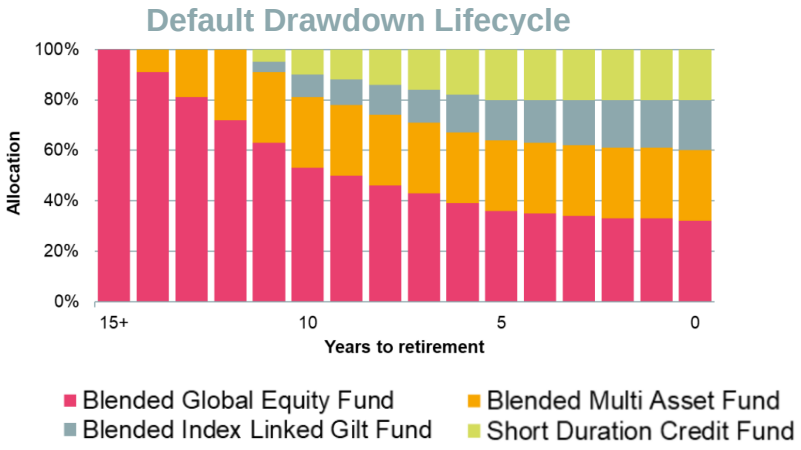
Source: Managers, LCP calculations.

Metrics and Targets

Metrics – DC Section

Metrics are required to be calculated in relation to each "popular arrangement" within the Plan. The Trustee considers the Plan's default Drawdown Lifecycle to be the only popular arrangement.

The majority of assets are invested in the default strategy, with the assets allocated depending on members' expected retirement dates, as shown in the chart on the right. As at January 2023, 80.5% of assets were invested in this strategy. The remaining assets are invested in a range of self-select funds, the largest self-select fund allocation being c4.6% (£29m) to the Blended Global Equity Fund. The Trustee has not collected metrics for the self-select funds as it did not feel it was proportionate to do so. This is in line with the guidance issued by the DWP.



Equities make the most significant contribution to climate risk in the Plan, both as a result of equities being one of the assets most strongly impacted by climate risk and given the high allocation in the default strategy. The Plan's bond and multi-asset funds contribute a smaller proportion of the Plan's total emissions.

The proportion of holdings with SBTi portfolio alignment targets is also highest for the Plan's equity funds (higher is better). The Trustee has a long-term target related to this metric which is shown on page 23.

Coverage for eligible assets will not always be 100%. Reasons for this include a particular company not publishing its carbon emissions data, or the correct mapping not being found between a bond and its parent company to apply the correct carbon data to the correct company. The Trustee has reported coverage of metrics where the investment managers disclose this information and continues to liaise with them to address limitations in coverage of different asset classes.

Reported climate data was only available for listed equity (68% of the Plan's DC assets), short duration credit (5%) and multi-asset investments (12%) within the default. Any climate data reported in respect of government bonds (4% of DC assets) will be entirely estimated as the UK Government does not report this at present. There are gaps in reporting climate data for other asset classes, such as for cash funds (2%). The Trustee, with help from its investment adviser, continues to work with the Plan's investment managers to improve data reporting over time. The Trustee considers both risks and opportunities related to carbon metrics when reviewing its investments.

Metrics and Targets

Metrics collected – DC Section

Scope 1+2 emissions

Portfolio emissions coverage	<75%	75%-90%	>90%

Portfolio	Manager	Manager	Assets at 30 September 2022 (% of total DC assets)	GHG emissions (tonnes)[1]	Carbon footprint (tonnes CO_2e per £m invested)[1,2]	Coverage of emissions data	SBTi alignment % targets set	Source
Listed equities	World Equity Index Fund	BlackRock	£128.6m / 21.0%	6,532	51.1	99%	37.3%	Manager
	Fundamental Equity Index Fund	BlackRock	£128.6m / 21.0%	15,156	119.3	99%	28.2%	Manager
	Minimum Volatility Index Fund	BlackRock	£128.6m / 21.0%	7,612	60.0	99%	39.0%	Manager
	World Emerging Markets Equity Index Fund	BlackRock	£29.0m / 4.7%	4,367	150.9	100%	7.2%	Manager
Bonds	Over 5 Years Index Linked Gilt Index Fund[3]	BlackRock	£13.6m / 2.2%	2,353	181.4	100%	100%[4]	LCP calculations
	Up to 5 Years Index Linked Gilt Index Fund[3]	BlackRock	£13.6m / 2.2%	2,353	181.4	100%	100%[4]	LCP calculations
	Short Duration Credit	BlackRock	£29.3m / 4.8%	1,160	45.8	85%	26.2%	Manager
Multi-asset	Newton Real Return Fund	Newton	£25.2m / 4.1%	400	29.0	55%	13.2%	Manager
	Baillie Gifford Multi Asset Growth Fund	Baillie Gifford	£25.2m / 4.1%	369	39.3	37%	11.2%	Manager
	Schroders Sustainable Future Multi Asset Fund	Schroders	£25.2m / 4.1%	613	36.9	66%	24.4%	Manager
Cash	Sterling Liquidity Fund	BlackRock	£9.4m / 1.5%	N/a[5]	N/a[5]	N/a[5]	N/a[5]	-

[1] Figures relate only to the assets for which data is available. Total emissions are for the Plan's assets, not the whole pooled fund. Total carbon emissions are calculated using the tonnes CO2e per £1 million multiplied by data coverage and assets as at 30 September 2022.

[2] Carbon footprint was converted from tonnes CO_2e per $m to tonnes CO_2e per £m using the exchange rate as at 30 September 2022 (£1= $1.117).

[3] A different emissions intensity metric has been calculated for gilts instead of carbon footprint, so neither this nor total GHG emissions can be compared with the other emissions figures shown.

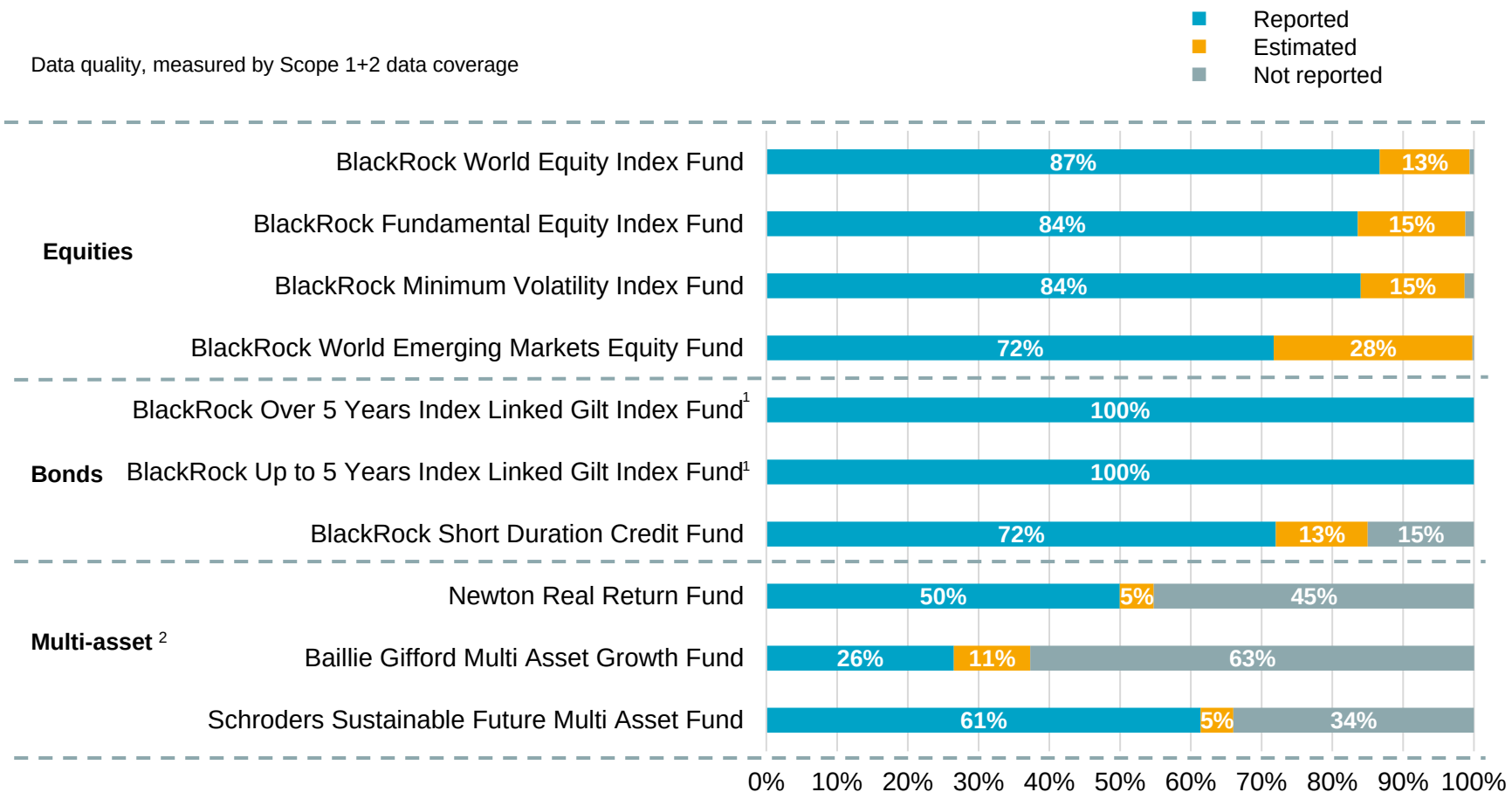
[4] Gilts are considered to have a science-based target. This is because the United Kingdom has net zero emissions by 2050 written into law, with interim carbon budgets set based on advice from the independent Committee on Climate Change.

[5] Data is not available.

Metrics and Targets

Metrics collected – DC Section

Data quality, measured by Scope 1+2 data coverage



Source: Managers, LCP calculations.

[1] The carbon footprint of gilts is calculated based on greenhouse gas emissions produced in the UK and is assumed to cover 100% of emissions.

[2] Lower coverage as the managers were only able to provide carbon footprint data for corporate equity and debt holdings. Emissions data exclude the impact of government bonds, cash, alternative assets.

Metrics and Targets

Target

The Trustee has set the following target. The current % of those relevant DB and DC assets with an SBT has been calculated using a weighted average of the relevant holdings:

Target	Coverage	Reference base year
Aspire to increase the percentage of listed equities and corporate bonds with an SBT from the current level of 32% by 30 September 2030.	Listed equities and corporate bonds within the DC section's default strategy	2022
Aspire to increase the percentage of short duration credit and trade finance with an SBT from the current level of 29% by 30 September 2030.	Short duration credit and trade finance within the DB section (excl buy-ins)	2022

The following steps will be taken to achieve the target:

The Trustee, with help from its investment advisers, will communicate the target to each investment manager.

Investment managers are routinely invited to present at Trustee meetings as part of the existing monitoring process. When meeting with any of the Plan's investment managers, the Trustee will ask the manager how they expect the proportion of portfolio companies with SBTi targets to change over time and encourage the manager to engage with portfolio companies about setting SBTi targets, prioritising those with the highest carbon footprint.

One of the investment advisers (LCP) encourages managers to support the goal of net zero emissions by 2050 or earlier and has published its expectations for investment managers in relation to net zero. This includes the use of effective voting (where applicable) and engagement with portfolio companies to encourage achievement of net zero. The investment advisers continue to engage with managers on this topic and will encourage them to use their influence with portfolio companies to increase the use of SBTi targets.

The Trustee will review progress towards the target each year and consider whether additional steps are needed to increase their chance of meeting the target.

Appendix 1 – Climate Scenario Analysis

The key features of each of the climate scenarios considered (which are listed in no particular order of likelihood) are summarised in the table below.

Scenarios:	***Failed Transition***	***Orderly Net Zero by 2050***	***Disorderly Net Zero by 2050***
Low carbon policies	Continuation of current low carbon policies and technology trends	Ambitious low carbon policies, high investment in low-carbon technologies and substitution away from fossil fuels to cleaner energy sources and biofuel	
Paris Agreement outcome	Paris Agreement goals not met	Global net zero achieved by 2050; Paris Agreement goals met.	
Global warming	Average global warming is about 2° C by 2050 and 4° C by 2100, compared to pre-industrial levels	Average global warming stabilises at around 1.5° C above pre-industrial levels	
Physical impacts	Severe physical impacts	Moderate physical impacts	
Impact on GDP	Global GDP is significantly lower than the climate-uninformed scenario in 2100. For example, UK GDP in 2100 predicted to be 50% lower than in the climate uninformed scenario.	Global GDP is lower than the climate-uninformed scenario in 2100. For example, UK GDP in 2100 predicted to be about 5% lower than in the climate-uninformed scenario.	In the long term, global GDP is slightly worse than in the Orderly Net Zero scenario due to the impacts of financial markets volatility.
Financial market impacts	Physical risks priced in over the period 2026-2030. A second repricing occurs in the period 2036-2040 as investors factor in the severe physical risks	Transition and physical risks priced in smoothly over the period of 2022-2025	Abrupt repricing of assets causes financial market volatility in 2025

Source: Ortec Finance. Figures quoted are medians. * Failed Transition is scenario where Global Net Zero not reached; only existing climate policies are implemented

Appendix 1 – Climate Scenario Analysis

Modelling approach

- The scenario analysis is based on a model developed by Ortec Finance and Cambridge Econometrics. The outputs were then applied to the Plan's assets by LCP.
- The three climate scenarios are projected year by year, over a 40-year period. The results are intended to help the Trustee to consider how resilient the DB strategy and DC default strategy is to climate-related risks.
- The three climate scenarios chosen are intended to be plausible narratives of how the future could unfold. They are only three scenarios out of countless others which could be considered.
- Other scenarios could give better or worse outcomes for the Plan.

Modelling limitations

- As this is a "top-down" approach, investment market impacts were modelled as the average projected impacts for each asset class. This contrasts with a "bottom up" approach that would model the impact on each individual investment held by the default strategy. As such, the modelling does not require extensive plan-specific data and so the Trustee was able to consider the potential impacts of the three climate scenarios for all of the Plan's assets in the default strategy and DB Strategy.
- In practice, the Plan's investments may not experience climate impacts in line with the market average.
- The asset and liability projections shown reflect the current strategic journey plan. No allowance is made for changes that might be made to the funding or investment strategy as the climate pathways unfold, nor for action to be taken in response to the Plan achieving its long-term funding target.
- Like most modelling of this type, the modelling does not allow for all potential climate-related impacts and, therefore, is quite likely to underestimate some climate-related risks. For example, tipping points (which could cause runaway physical climate impacts) are not modelled and no allowance is made for knock-on effects, such as climate-related migration and conflicts.
- In addition, the model presumes that the UK government and bank counterparties will remain solvent, thereby making no allowance for credit risk on government bonds and derivative exposures. However, in a scenario where global warming exceeds 4ºC, this assumption may no longer be valid.
- Medians from Ortec Finance's model outputs are used to project forward assets and liabilities, which means the results reflect the model's "middle outcomes" for investment markets under the three scenarios. Allowing for market volatility would result in better or worse model outputs than shown. Investment markets may be more volatile in future as a result of physical and transition risks from climate change, and this is not illustrated in the modelling shown.

Appendix 1 – Climate scenario analysis

Modelling approach – more details

- The scenario analysis is based on the ClimateMAPS model developed by Ortec Finance and Cambridge Econometrics, and was then applied to the Scheme's assets and liabilities by LCP. The three climate scenarios were projected year by year, over the next 40 years.
- ClimateMAPS uses a top-down approach that consistently models climate impacts on both assets and liabilities, enabling the resilience of the DB Section's funding strategy to be considered. The model output is supported by in-depth narratives that bring the scenarios to life to help the Trustee's understanding of climate-related risks and opportunities.
- ClimateMAPS uses Cambridge Econometrics' macroeconomic model which integrates a range of social and environmental processes, including carbon emissions and the energy transition. It is one of the most comprehensive models of the global economy and is widely used for policy assessment, forecasting and research purposes. The outputs from this macroeconomic modelling – primarily the impacts on country/regional GDP – are then translated into impacts on financial markets by Ortec Finance using assumed relationships between the macroeconomic and financial parameters.
- Ortec Finance runs the projections many times using stochastic modelling to illustrate the wide range of climate impacts that may be possible, under each scenario's climate pathway. LCP takes the median (ie the middle outcome) of this range of impacts, for each relevant financial parameter, and adjusts it to improve its alignment with LCP's standard financial assumptions.
- LCP then uses these adjusted median impacts to project the assets and liabilities of the Plan to illustrate how the different scenarios could affect its funding level. The modelling summarised in this report used scenarios based on the latest scientific and macro-economic data at 31 December 2021, calibrated to market conditions at 31 March 2022.
- The modelling included contributions assumed to be paid in line with the current Schedule of Contributions, and the Trustee discussed how future planned changes to the investment strategies for both Sections would change the analysis. For the DC Section, members' starting pots values were assumed to equal the average value for Scheme members of their age, and member and employer contributions were assumed to be paid in line with the current contribution structure. No allowance was made for changes to the investment strategy or contributions in response to the climate impacts modelled.
- As this is a "top-down" approach, investment market impacts were modelled as the average projected impacts for each asset class, ie assuming that the Plan's investments are affected by climate risk in line with the market-average portfolio for the asset class. This contrasts with a "bottom up" approach that would model the impact on each individual investment held in the Plan's investment portfolio. As such, it does not require extensive scheme-specific data and so the Trustee was able to consider the potential impacts of the three climate scenarios for all of the Plan' assets.

Appendix 1 – Climate scenario analysis

Modelling approach – more details

- In practice, the Plan's investment portfolio may not experience climate impacts in line with the market average. The Trustee considers, on an ongoing basis, how the Plan's climate risk exposure differs from the market average using climate metrics (which are compared with an appropriate market benchmark).
- Uncertainty in climate modelling is inevitable. In this case, key areas of uncertainty relating to the financial impacts include how climate change might affect interest rates and inflation, and the timing of market responses to climate change. ClimateMAPS, like most modelling of this type, does not allow for all climate-related impacts and therefore, in aggregate, is quite likely to underestimate the potential impacts of climate-related risks, especially for the Failed Transition scenario. For example, tipping points (which could cause runaway physical climate impacts) are not modelled and no allowance is made for knock-on effects, such as climate-related migration and conflicts.

Appendix 1: Assumptions for DC Climate Scenario Analysis

- LCP's modelling is designed to illustrate, for each climate scenario and the default lifestyle strategy, the development of a typical member's fund value.
- The key investment assumptions behind its modelling are set out overleaf.
- These assumptions are used within LCP's modelling to determine:
  - the expected fund at retirement and various measures of the risk of achieving this; and
  - the pension the member could buy and various measures of the risk of achieving this.
- A 2.5% pa real increase in the member's salary is assumed. The output is shown in real terms.
- LCP's assumptions for the long-term expected annual return and expected standard deviation of the annual returns for each asset class or investment are set out overleaf.
- The expected return assumptions are geometric average long-term annual figures.
- The assumptions are intended to be best estimates; this means for each assumption there is a 50/50 chance that the observed value will be either higher or lower than assumed. The return assumptions have been reduced to allow for the typical investment management fees required to invest in each asset class.
- The climate-uninformed expected return assumptions for cash, gilts, index-linked gilts, corporate bonds, high yield debt and emerging market debt are based on observed market yields as at 31 March 2022. Other climate-uninformed assumptions have been set by:
  - looking at analyses of historical information;
  - taking into account the views of a number of investment organisations; and
  - making pragmatic judgements.

Appendix 1: Assumptions for DB and DC Climate Scenario Analysis

Asset class returns – 31 March 2022

Expected return (% pa)	Climate uninformed based case			Orderly Net Zero			Disorderly Net Zero			Failed Transition		
	5 years	10 years	40 years	5 years	10 years	40 years	5 years	10 years	40 years	5 years	10 years	40 years
Money market cash	1.4%	1.6%	1.6%	1.5%	1.7%	1.6%	1.5%	1.7%	1.6%	1.4%	1.6%	1.5%
Fixed interest gilts (18 years)	1.4%	1.6%	1.6%	1.3%	1.5%	1.6%	1.4%	1.5%	1.6%	1.4%	1.7%	1.6%
Index-linked gilts (23 years)	1.4%	1.6%	1.6%	1.7%	1.8%	1.7%	1.8%	1.8%	1.7%	1.4%	1.7%	1.7%
Investment grade corporate bonds (8 years)	2.5%	2.7%	2.7%	2.4%	2.8%	2.7%	2.4%	2.7%	2.7%	2.4%	2.7%	2.6%
Investment grade (ex-BBB) corporate bonds (8 years)	2.4%	2.6%	2.6%	2.3%	2.7%	2.6%	2.3%	2.6%	2.6%	2.3%	2.6%	2.5%
UK equities	6.5%	6.7%	6.7%	5.6%	6.3%	6.4%	3.6%	5.4%	6.1%	6.1%	5.8%	5.2%
Low carbon UK equities	6.5%	6.7%	6.7%	5.7%	6.5%	6.5%	4.7%	6.0%	6.4%	6.1%	5.8%	5.2%
Overseas equities	6.5%	6.7%	6.7%	5.2%	5.9%	6.1%	2.6%	4.7%	5.8%	6.0%	5.7%	4.8%
Overseas equities (currency hedged)	6.4%	6.6%	6.6%	5.3%	6.0%	6.3%	2.8%	4.9%	6.0%	5.9%	5.6%	4.8%
Global equities	6.5%	6.7%	6.7%	5.2%	5.9%	6.1%	2.6%	4.7%	5.8%	6.0%	5.7%	4.8%
Low carbon global equities (currency hedged)	6.5%	6.7%	6.7%	5.5%	6.4%	6.6%	4.9%	6.1%	6.5%	6.0%	5.7%	4.9%
Low carbon global equities (unhedged)	6.4%	6.6%	6.6%	5.4%	6.3%	6.5%	4.8%	6.0%	6.4%	5.9%	5.6%	4.8%
Emerging markets equities	7.6%	7.8%	7.8%	6.8%	7.4%	7.2%	3.7%	5.9%	6.8%	7.2%	6.9%	5.5%
Private equity	7.5%	7.7%	7.7%	6.1%	7.1%	7.2%	3.4%	6.0%	6.9%	7.0%	6.4%	5.5%
High yield debt	3.4%	3.6%	3.6%	3.1%	3.8%	3.6%	3.1%	3.8%	3.6%	3.2%	3.5%	3.3%
Emerging market debt	4.3%	4.5%	4.5%	4.2%	4.4%	4.5%	4.4%	4.4%	4.5%	4.2%	4.5%	4.4%
EM multi-asset	6.3%	6.5%	6.5%	5.9%	6.3%	6.2%	4.5%	5.6%	6.0%	6.1%	6.1%	5.3%
UK property	4.9%	5.1%	5.1%	4.7%	5.1%	4.9%	3.0%	4.4%	4.7%	4.5%	4.1%	3.4%
Global property	5.6%	5.8%	5.8%	5.4%	5.8%	5.6%	3.7%	5.1%	5.4%	5.2%	4.8%	4.1%
Absolute return bonds	3.0%	3.2%	3.2%	3.0%	3.3%	3.2%	3.1%	3.3%	3.2%	3.0%	3.2%	3.1%
Diversified growth (traditional)	4.6%	4.8%	4.8%	4.0%	4.5%	4.6%	2.8%	4.0%	4.5%	4.3%	4.3%	3.9%
Diversified growth (relative value)	3.3%	3.5%	3.5%	2.7%	3.2%	3.3%	1.5%	2.7%	3.2%	3.0%	3.0%	2.6%
Listed infrastructure equity	6.4%	6.6%	6.6%	5.9%	6.4%	6.2%	3.9%	5.5%	5.9%	6.1%	5.8%	5.0%
Unlisted Infrastructure equity	6.1%	6.3%	6.3%	5.6%	6.1%	5.9%	3.6%	5.2%	5.6%	5.8%	5.5%	4.7%
Commodities	4.8%	5.0%	5.0%	5.3%	5.6%	5.1%	2.1%	4.6%	4.9%	4.9%	5.1%	5.1%
Fund of hedge funds	4.6%	4.8%	4.8%	4.1%	4.4%	4.6%	3.7%	4.2%	4.5%	4.5%	4.6%	4.4%
Multi-asset credit	4.1%	4.3%	4.3%	4.0%	4.4%	4.3%	4.0%	4.4%	4.3%	4.1%	4.3%	4.2%
Opportunistic credit	7.1%	7.3%	7.3%	6.5%	7.2%	7.2%	5.7%	6.9%	7.1%	6.8%	6.9%	6.5%
Private credit	5.4%	5.6%	5.6%	5.5%	5.9%	5.6%	5.5%	6.0%	5.6%	5.3%	5.6%	5.5%
Long lease property	5.2%	5.4%	5.4%	5.0%	5.4%	5.2%	3.3%	4.7%	5.0%	4.8%	4.4%	3.7%
Alternative risk premia	4.6%	4.8%	4.8%	4.1%	4.4%	4.6%	3.7%	4.2%	4.5%	4.5%	4.6%	4.4%
Insurance-linked securities	5.8%	6.0%	6.0%	5.3%	5.6%	5.8%	4.9%	5.4%	5.7%	5.7%	5.8%	5.6%
Asset-backed securities	3.2%	3.4%	3.4%	3.3%	3.5%	3.4%	3.4%	3.6%	3.4%	3.2%	3.4%	3.3%

- The table above shows the investment annualised returns assumed under each scenario in our modelling over a specified time horizon from 31 March 2022, updated from those provided in Appendix 2 of the pre-read to reflect changes in market conditions since 31 December 2021. These annualised returns are a consequence of the many assumptions underlying the scenario modelling. Alternative assumptions may be justifiable; the choice of assumptions will impact the output of LCP's modelling.
- Returns are illustrated over distinct periods. As such, these do not show the timings of exactly when these returns are expected to take place, in particular the timings of any market shocks described throughout this report.

Appendix 2: Further information on climate-related metrics

GHG emissions for government bonds (gilts) are calculated on a different basis from the other asset classes, so cannot be compared with the other emissions figures shown.

The emissions figures were calculated by the Trustee's investment adviser using publicly available data sources. As suggested in the statutory guidance, Scope 1+2 emissions have been interpreted as the production-based emissions of the country. In line with guidance from the Partnership for Carbon Accounting Financials (PCAF) issued in December 2022, emissions intensity has been calculated as:

$$\frac{UK\ GHG\ emissions}{PPP-adjusted\ GDP\ for\ the\ UK}$$

GHG emissions have then been calculated as:

$$Emissions\ intensity\ x\ value\ of\ the\ \text{Plan}'s\ investment\ in\ gilts.$$

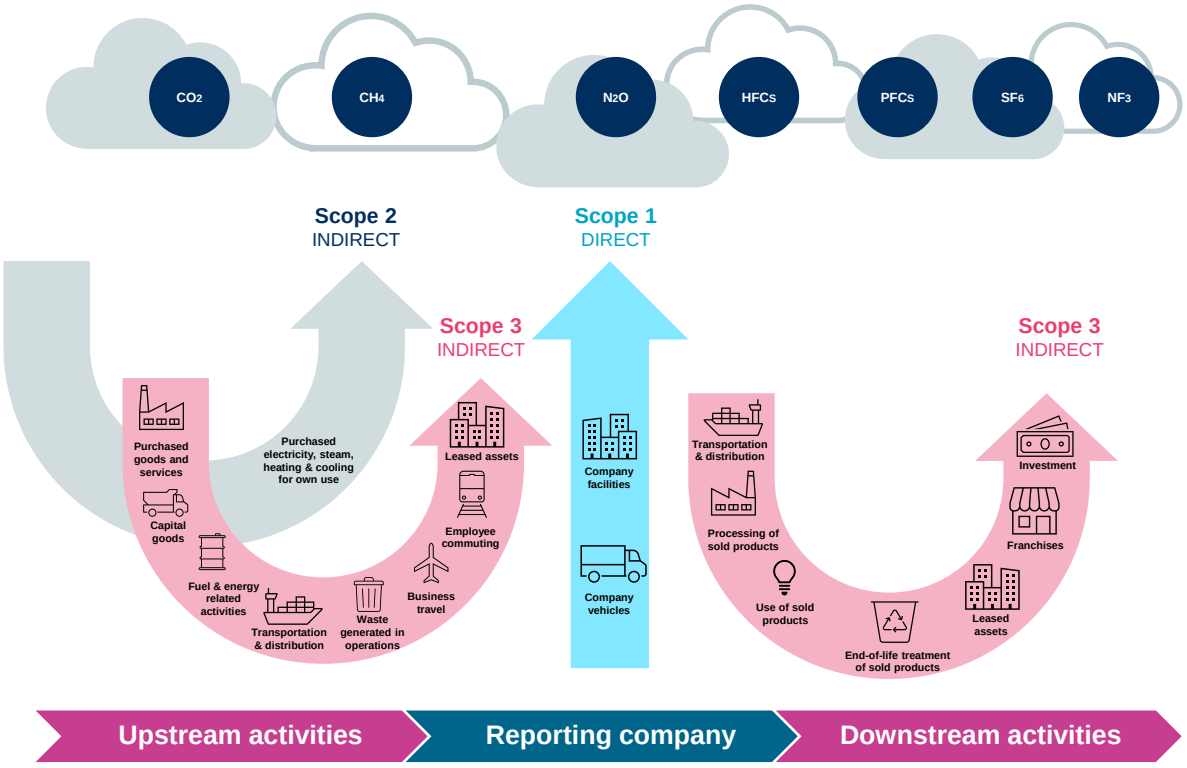
For the LDI mandate, derivatives have been treated as an investment in an equivalent gilt. Greenhouse gas emissions have been calculated for the gilt exposure (including the repo loan amount) but not the swap positions. This is in line with the Trustee's understanding of the typical interpretation of the DWP guidance by investment managers and consultants as not requiring estimation of emissions for swap exposures at this time.

Appendix 3 – Greenhouse gas emissions explained

Within the 'metrics and targets' section of the report, the emissions metrics relate to seven greenhouse gases – carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6) and nitrogen trifluoride (NF_3). The figures are shown as "CO_2 equivalent" (CO_2e) which is the amount of carbon dioxide that would be equivalent to the excess energy being stored by, and heating, the earth due to the presence in the atmosphere of these seven greenhouse gases.

The metrics related to greenhouse gas emissions are split into the following three categories: Scope 1, 2 and 3. These categories describe how directly the emissions are related to an entity's operations, with Scope 1 emissions being most directly related to an entity's everyday activities and Scope 3 referring to indirect emissions in an entity's value chain. Scope 3 emissions often form the largest share of an entity's total emissions, but are also the ones that the entity has least control over.

- **Scope 1** greenhouse gas emissions are all direct emissions from the activities of an entity or activities under its control.
- **Scope 2** greenhouse gas emissions are indirect emissions from electricity purchased and used by an entity which are created during the production of energy which the entity uses.
- **Scope 3** greenhouse gas emissions are all indirect emissions from activities of the entity, other than scope 2 emissions, which occur from sources that the entity does not directly control.



Source: GHG Protocol

Appendix 4 – Glossary

Actuarial valuation – an actuarial valuation is an accounting exercise performed to estimate future liabilities arising out of benefits that are payable to members of a DB pension plan, typically once every three years. In the actuarial valuation exercise, a liability payout at a future date is estimated using various assumptions such as discounting rate and salary growth rate.

Alignment – in a climate change context, alignment is the process of bringing greenhouse gas emissions in line with 1.5°C global temperature rise targets. It can be applied to individual companies, investment portfolios and the global economy.

Asset class – a group of securities which exhibit broadly similar characteristics. Examples include equities and bonds.

Avoided emissions – these are reductions in greenhouse gas emissions that occur outside of the value chain a product's life cycle, but as a result of the use of that product. For example, emissions avoided through use of a wind turbine or buildings insulation.

Bond – a bond is a security issued to investors by companies, governments, and other organisations. In exchange for an upfront payment, an investor normally expects to receive a series of regular interest payments plus, at maturity, a final lump sum payment, typically equal to the amount invested originally, or this amount increased by reference to some index.

Buy-in – DB pension plan trustees may choose to "buy-in" some of their plan's expected future benefit payments by purchasing a bulk (i.e., one covering many individuals) annuity contract with an insurance company. This allows the trustees to reduce their plan's risk by acquiring an asset (the annuity contract) whose cash flows are designed to meet i.e., "match" a specified set of benefit payments under the pension plan. The contract is held by the trustees and responsibility for the benefit payments remains with the trustees. Common uses of buy-in arrangements have been to cover the payments associated with current pensioners or a subset of those members. Contracts to meet payments to members who are yet to become pensioners can also be purchased.

Buy-out – DB pension plan trustees may choose to "buy-out" some or all of their plan's expected future benefit payments by purchasing a bulk (i.e., one covering many individuals) annuity contract from an insurance company. The insurer then becomes responsible for meeting pension benefits due to plan members (effected ultimately by allocating to each plan member an individual annuity contract). Following a full buy-out, (i.e., one covering all plan members) and having discharged all of the trustees' liabilities, the pension plan would normally be wound up.

Carbon emissions - These refer to the release of carbon dioxide, or greenhouse gases more generally, into the atmosphere, for example from the burning of fossil fuels for power or transport purposes.

Carbon footprint – In an investment context, the total carbon dioxide or greenhouse gas emissions generated per amount invested (eg in £m) by an investment fund. Related definitions are used to apply the term to organisations, countries, and individuals

Climate change adaptation – steps taken to adapt to the physical effects of climate change such as improving flood defences and installing air conditioning.

Climate change mitigation – steps taken to limit climate change by reducing greenhouse gas emissions, for example by shifting to renewable sources of energy – such as solar and wind – and by using less energy and using it more efficiently.

Covenant – the ability and willingness of the sponsor to make up any shortfall between a DB plan's assets and the agreed funding target.

CO2e (carbon dioxide equivalent) – the standard measurement of GHG emissions in terms of the most common GHG, carbon dioxide (CO2)

Credit – long-term debt issued by a company, also known as corporate bonds. Corporate bonds carry different levels of credit risk which is indicated by their risk rating and credit spread.

Defined Benefit (DB) – a pension plan in which the primary pension benefit payable to a member is based on a defined formula, frequently linked to salary. The sponsor bears the risk that the value of the investments held under the plan fall short of the amount needed to meet the benefits.

Appendix 4 – Glossary

Defined Contribution (DC) – a pension plan in which the sponsor stipulates how much it will contribute to the arrangement which will depend upon the level of contributions the member is prepared to make. The resultant pension for each member is a function of the investment returns achieved (net of expenses) on the contributions and the terms for purchasing a pension at retirement. In contrast to a defined benefit plan, the individual member bears the risk that the investments held are insufficient to meet the desired benefits.

Debt – money borrowed by a company or government which normally must be repaid at some specified point in the future.

Default strategy – the fund or mix of funds in which contributions in respect of a DC member will be invested in the absence of any explicit fund choice(s) of that member.

Environmental, social and governance (ESG) – an umbrella term that encompasses a wide range of factors that may have been overlooked in traditional investment approaches. Environmental considerations might include physical resource management, pollution prevention and greenhouse gas emissions. Social factors are likely to include workplace diversity, health and safety, and the company's impact on its local community. Governance-related matters include executive compensation, board accountability and shareholder rights.

Equity – through purchase on either the primary market or the secondary market, company equity gives the purchaser part-ownership in that company and hence a share of its profits, typically received through the payment of dividends. Equity also entitles the holder to vote at shareholder meetings. Note that equity holders are entitled to dividends only after other obligations, such as interest payments to debt holders, are first paid. Unlike debt, equity is not normally contractually repayable.

Ethical investment – an approach that selects investments on the basis of an agreed set of environmental, social and governance (ESG) criteria that are motivated by ethical considerations.

Fossil fuels – fuels made from decomposing plants and animals, which are found in the Earth's crust. They contain carbon and hydrogen, which can be burned for energy. Coal, oil, and natural gas are examples of fossil fuels.

Funding position – a comparison of the value of assets with the value of liabilities for a DB pension plan.

Gilts – bonds issued by the UK government. They are called gilts as the bond certificates originally had a gilt edge to indicate their high quality and thus very low probability of default

Greenhouse gas (GHG) emissions (scopes 1, 2 and 3) – gases that have been and continue to be released into the Earth's atmosphere. Greenhouse gases trap radiation from the sun which subsequently heats the planet's surface (giving rise to the "greenhouse effect"). Carbon dioxide and methane are two of the most important greenhouse gases.

Investment mandate – see pooled mandate and segregated mandate

Integrated risk management – Integrated risk management is an approach used by DB pension plan trustees to identify, manage and monitor the wide range of risks (relating to investment, funding and covenant) which might impact the chances of meeting their plan's overall objectives

Liabilities – obligations to make a payment in the future. An example of a liability is the pension benefit 'promise' made to DB pension plan members, such as the series of cash payments made to members in retirement. The more distant the liability payment, the more difficult it often is to predict what it will actually be and hence what assets need to be held to meet it.

LDI (Liability Driven Investment) – an investment approach which focusses more than has traditionally been the case on matching the sensitivities of a DB pension plan's assets to those of its underlying liabilities in response to changes in certain factors, most notably interest rate and inflation expectations.

Appendix 4 – Glossary

Net zero – this describes the situation in which total greenhouse gas emissions released into the atmosphere are equal to those removed. This can be considered at different levels, e.g., company, investor, country or global.

Offsetting – the process of paying someone else to avoid emitting, or to remove from the atmosphere, a specified quantity of greenhouse gases, for example through planting trees or installing wind turbines. It is sometimes used to meet net zero and other emission reduction targets.

Physical risk – these are climate-related risks that arise from changes in the climate itself. They include risks from more extreme storms and flooding, as well as rising temperatures and changing rainfall pattens.

Pooled mandate – a feature of a collective investment vehicle whereby an investor's money is aggregated (i.e., "pooled") with that of other investors to purchase assets. Investors are allotted a share of those assets in proportion to their contribution. Ownership is represented by the number of "units" allocated – e.g., if the asset pool is worth £1m and there are 1m units then each unit is worth £1. Pooled funds offer smaller investors an easy way to gain exposure to a wide range of investments, both within markets (e.g., by buying units in a UK equity fund) as well as across markets (e.g., by buying units in both a UK equity fund and a UK corporate bond fund).

Portfolio alignment metric – this measures how aligned a portfolio is with a transition to a world targeting a particular climate outcome, such as limiting global temperature rises to well below 2°C, preferably to 1.5°C, as per the Paris Agreement. Assessments using these metrics consider companies' and governments' greenhouse gas (GHG) emissions reduction plans and likelihood of meeting them, rather than current, or the latest reported, GHG emissions.

Responsible Investment (RI) – the process by which environmental, social and governance (ESG) issues are incorporated into the investment analysis and decision-making process, and into the oversight of investments by companies through their stewardship activities. It is motivated by financial considerations aiming to improve risk-adjusted returns.

Science-based targets – targets to reduce greenhouse gas emissions that are in line with what the latest climate science deems necessary to meet the goals of the Paris Agreement.

Science-Based Targets initiative (SBTi) – a partnership that sets standards and provides validation for science-based targets set by companies and investors.

Scenario analysis – a tool for examining and evaluating different ways in which the future may unfold.

Scope 1, 2 and 3 – a classification of sources of greenhouse gas emissions.

Segregated mandate – a segregated investment approach ensures that an investor's investments are held separately from those of other investors. This approach offers great flexibility – for example, the investor can stipulate the precise investment objective to be followed and can dictate which securities can or cannot be held.

Self-select – in contrast with a default fund, a self-select fund within a DC plan is one of a range of funds that members can choose to invest in.

Stakeholder – an individual or group that has an interest in any decision or activity of an organisation. The stakeholders of a company include its employees, customers, suppliers and shareholders.

Statutory obligations – statutory obligations are those obligations that do not arise out of a contract, but are imposed by law.

Stewardship – stewardship is the responsible allocation, management and oversight of capital to create long-term value for clients and beneficiaries leading to sustainable benefits for the economy, the environment and society. It is often implemented via engagement with investee companies and the exercising of voting rights.

Stranded assets – assets that have suffered an unanticipated loss of value before the end of their expected useful economic life. The term is most often applied to fossil fuel investments in the context of climate policy, where legislative and market developments may result in assets being worth less than the value recorded on related company balance sheets.

Appendix 4 – Glossary

Sustainable investing - an approach in which the environmental and social sustainability of a company's products and practices is evaluated and is a key consideration in the investment decision. ESG analysis therefore forms a cornerstone of the investment selection process.

Taskforce on Climate-related Financial Disclosures (TCFD) – a group of senior preparers and users of financial disclosures from G20 countries, established by the international Financial Stability Board in 2015. The TCFD has developed a set of recommendations for climate-related financial risk disclosures for use by companies, financial institutions and other organisations to inform investors and other parties about the climate-related risks they face.

Transition risk – these are climate-related risks that arise from the transition to a low-carbon economy and can include changes in regulation, technology and consumer demand.

Appendix 5 – Principles for Effective Disclosure

The Trustee has aimed to follow the Principles for Effective Disclosure (as set out in the statutory guidance) when drafting the report.

1	Disclosures should present relevant information specific to the potential impact of climate-related risks and opportunities on the plan avoiding generic or boilerplate disclosures that do not add value to members' understanding of issues.
2	Disclosures should be specific and sufficiently complete to provide a thorough overview of the Plan's exposure to potential climate-related impacts and the trustees' governance, strategy and processes for managing climate-related risks and opportunities.
3	Disclosures should be clear and understandable showing an appropriate balance between qualitative and quantitative information.
4	Disclosures should be consistent over time to enable plan members to understand the development and/or evolution of the impact of climate-related issues on the plan.
5	Disclosures should ideally be comparable with other pension funds of a similar size and type.
6	Disclosures should be reliable, verifiable, and objective.
7	Disclosures should be provided on a timely basis. The TCFD recommends annual disclosures for organisations.