HSBC Bank (UK) Pension Scheme Taskforce On Climate-Related Financial Disclosures (TCFD) Report 2022

This report has been prepared in line with the Department for Work and Pensions climate change governance and reporting requirements and guidance (June 2021).

This report details how the HSBC Bank Pension Trust (UK) Limited as Trustee of the HSBC Bank (UK) Pension Scheme ("the Scheme") has followed the recommendations and guidance as outlined in the most recent TCFD implementation guidance (October 2021) to the extent it was feasible to do so. It is anticipated that this Report will continue to evolve, in line with evolving TCFD guidance, as it becomes available.

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Executive Summary

Scheme overview

Our Scheme consists of three sections: the HSBC UK Bank plc ("HBUK") Section, the HSBC Bank plc ("HBEU") Section and the HSBC Global Services (UK) Ltd ("HGSU") Section. DB and DC benefits are provided by each section. Within the DC retirement provision, there is a range of investment funds available for members, including different default strategies and a number of self-select funds.

Our approach to climate change

As one of the UK's largest pension schemes we recognise climate change as a systemic, long-term financial risk to members' retirement outcomes. Over the years we have taken steps to ensure that climate-related considerations are embedded into our strategic decision-making.

We believe that disclosure and transparency is an important way to improve accountability to our members. We have been reporting on our approach to climate change in an annual TCFD[1] report since 2018. We have been supporters of the TCFD since it was established by the Financial Stability Board ("FSB") in 2017. TCFD improves and increases the quantity and quality of climate-related information across the global economy. This is vital for the robust management of climate-related risks.

This report for the 2022 Scheme year is broken down into four key areas, as prescribed by the TCFD recommendations, and the regulations:

- **Governance:** We continue to operate a robust governance framework in relation to climate-related risks and opportunities. This enables us to have confidence that climate-related risks and opportunities are appropriately factored into our investment processes. While the Trustee Board is ultimately responsible for the oversight of the Scheme's climate-related risks and opportunities, we are supported by subcommittees and a full-time management team.
- **Strategy:** We have assessed the impacts of potential future climate outcomes on the whole DB funding strategy, and the two main default investment strategies which together encompass more than 85% of DC members and meet the regulatory definition of a "popular arrangement". The analysis found that there is a potential loss of value to our members' investments under different climate change outcomes. Overall, the relative impact of climate-related risks on the DB part of the Scheme is estimated to be more subdued than that on the DC part of the Scheme. We have already taken several investment decisions to mitigate this risk, including investing the majority of the DC default investment strategies' assets in a climate-tilted equity strategy. We are committed to continue to take steps to address and limit these potential impacts.
- **Risk Management:** We established a Climate Risk Management Framework in 2020, which ensures that climate-related risks are identified, assessed and managed appropriately. Our preferred approach to climate risk mitigation is:
    - Specific consideration of climate-related risks in investment manager and mandate selection
    - Integration of climate-related considerations in fund design, for example, our Global Equities Fund - Passive
    - Engagement with our investment managers, regulators, industry bodies and policymakers
    - Reducing our exposure to climate-related risks by investing in climate opportunities
- **Metrics and Targets:** We monitor a combination of climate-related metrics for the Scheme, which provide a balanced view of our current and future exposure to climate-related risks. Furthermore, in an effort to improve our management of the impacts of climate change on the Scheme's investments and the consequent impact on the financial interests of our members, we have also set a number of climate-related targets which we aim to achieve. These include:
    - Achieve net-zero greenhouse gas (GHG) emissions across the DB and DC assets by 2050 or sooner.

[1] The TCFD is a disclosure framework that helps organisations disclose their approach to climate change, including climate-related risks and opportunities. The TCFD is aimed at all financial actors, from companies to investors, as the goal is to provide consistent and transparent information to global markets.

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- Targeting a real economy emissions reduction interim target of 50% by 2030 or sooner for our equity and corporate bond mandates, in line with the findings of the most recent Intergovernmental Panel on Climate Change ("IPCC") report.
- Having the ambition of ensuring that all of our corporate bond and equity investments are fully aligned to the goals of the Paris Agreement by 2030, across both DB and DC assets.
- Enhancing our engagement and stewardship efforts through our investment managers.

These targets are aligned to the goals of the Paris Agreement of limiting global temperature increases to well below 2 degrees Celsius (and ideally 1.5 degrees Celsius) this century.

The Scheme's journey so far includes:

- Investing for a net zero future. To date we have made a number of investment decisions which aim to decrease risk to the Scheme's DC assets and to increase investment in climate solutions and investments that are aligned to a net zero future.
- Engaging for a net zero future. We have communicated our decarbonisation target to all of our Scheme's asset managers and expect them to align their investment decision-making with these goals. At this stage of the decarbonisation journey, the Trustee has a strong preference to engage with companies, rather than exclude companies, to reduce their carbon emissions and speed up the transition to a lower carbon economy.

What's next?

While the Scheme's approach to managing climate risk is well under-way, in a continuation of this journey, we will continue to build out our net-zero investment strategy, including providing further detail of the steps we are taking to achieve our targets and continue to manage climate-related risks in a robust way.

Further information

For further information, you can find the following Scheme documents on the Scheme's website at https://futurefocus.staff.hsbc.co.uk. These include:

- A summary of this 2022 TCFD report;
- An ESG jargon buster which explains many of the commonly used terms and phrases relating to ESG, climate and investment including terms used in this report;
- The Scheme's Climate Action Plan which sets out the Trustee's net zero commitment, interim targets and the actions being taken; and
- An ESG bulletin which explains the Trustee's work managing Environmental, Social and Governance (ESG) risks and opportunities across the Scheme's DB and DC assets.

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Introduction

Approach to climate change

The Trustee recognises climate change is a systemic, long-term material financial risk to the value of the Scheme's investments. Therefore, the Trustee believes it has a fiduciary duty to consider the risks arising from climate change when making investment decisions and seeks to manage these risks on behalf of the Scheme's members. This is especially the case for the Scheme's Defined Contribution ("DC") members, as the value of their pension pots is directly related to the underlying investments.

The Trustee's focus on climate change risk mitigation plays an important role in how investments are managed across all asset classes, in both the DC and Defined Benefit ("DB") parts of the Scheme. At a policy level, the Trustee is supportive of initiatives that contribute towards mitigating climate change risk on members' investments. Within this context, the Trustee is supportive of the Paris Agreement to minimise dangerous climate change by limiting global warming to well below 2°C above pre-industrial levels and pursuing efforts to limit it to 1.5°C.

The Trustee's current focus on managing climate risk is through enhancing its engagement and stewardship efforts with the management of companies in which the Scheme's defined benefit ('DB') and defined contribution ('DC') assets are invested. The Trustee will continue to work closely with the Scheme's fund managers, to ensure they are engaging with company management, voting at company shareholder meetings and encouraging management to run their businesses sustainably and to reduce emissions of greenhouse gases (GHGs).

The Trustee's objective is to encourage real economy GHGs emissions reductions through stewardship and engagement in order to attempt to limit the impact of climate change and not to simply seek to de-carbonise its asset portfolio by excluding high GHGs emitting stocks, however the Trustee expects its investment managers managing pooled funds to make their own decisions with regard to their policies towards achieving net zero GHGs emissions by 2050.

In line with these beliefs, and to ensure climate-related risks and opportunities are embedded in investment decision-making, the Trustee became a supporter of the TCFD in 2017 and published the Scheme's first TCFD report in 2018.

In 2021 the Department for Work and Pensions ("DWP") introduced "The Occupational Pension Schemes (Climate Change Governance and Reporting) Regulations 2021" (the "regulations"), requiring large UK pension schemes to put in place appropriate governance processes for managing climate-related risks and opportunities and to report on actions taken annually.

This is the Scheme's second report prepared in accordance with the regulations, and sixth disclosure under the TCFD framework. It provides a status update on how the Trustee is aligning with each of the four elements of the TCFD framework as set out in the regulations:

Element	Description
Governance	The Scheme's governance around climate-related risks and opportunities.
Strategy	The actual and potential impacts of climate-related risks and opportunities on the Scheme's investments and funding strategy and integration into investment decision-making.
Risk Management	The processes used to identify, assess, and manage climate-related risks and integration into overall risk management.
Metrics and Targets	The metrics and targets used to assess and manage relevant climate-related risks and opportunities.

This report covers the period 1 January 2022 to 31 December 2022.

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Timeline of key climate-related actions

The timeline below shows the evolution of the Scheme's TCFD disclosures and key decisions made in relation to climate change (including "going deeper into climate change" and "net zero ambition").

2015

Climate Change Risk Policy:
In 2015 the Trustee adopted a Climate Change Risk Policy that is recorded in the Statement of Investment Principles. This policy has guided the Trustee's approach to climate change since then and it is updated periodically to reflect any changes and improvements to its approach.

2017

TCFD supporter signatory:
To ensure climate-related risks and opportunities are embedded in investment decision-making, the Trustee became supporters of the TCFD in 2017. Since then, the Trustee has been on a journey to follow evolving TCFD guidance.

2018

First TCFD report:
The Trustee published its first TCFD report, following the recommendations of the TCFD as applicable to asset owners.

2020

Project Clarity:
The Trustee inaugurated Project Clarity in early 2020, an internal project aiming to help enhance the Trustee's oversight, and integration, of Environmental, Social & Governance ("ESG") matters. As part of Project Clarity, the Trustee defined two priority areas for development within responsible investment: "going deeper into climate change" and "enhanced engagement".

Climate Risk Management Framework:
To allow the Trustee to manage climate-related risks effectively, the Climate Risk Management Framework was built which integrated climate-related considerations into the Scheme's approach to risk management. The purpose of this framework is to allow the Trustee to manage the Scheme's climate-related risks robustly and to support its climate-related targets.

2021

Net Zero target and Paris Aligned Investment Initiative ("PAII") signatory: As part of the Trustee's efforts to manage the impact of climate change on the Scheme's investments and the consequent impact on the financial interests of its members, in 2021 the Trustee set out a commitment to achieve net zero by 2050 or earlier if possible to do so. Additionally, an interim target date of 2030 has been set to ensure that sufficient progress is made towards the ultimate target of reaching net zero GHG emissions. The interim targets include:

- a real economy emissions reduction of 50% by 2030 with respect to a baseline of end December 2019 or sooner for the Scheme's equity and corporate bond mandates.
- having the ambition of achieving all of the Scheme's corporate bond and equity investments being fully aligned to the goals of the Paris Agreement by 2030 across the Scheme's DB and DC assets.
- enhancing engagement and stewardship efforts through working collaboratively with the Scheme's investment managers.

2022

Climate Action Plan: As part of the Trustee's membership in PAII, it committed to publishing a Climate Action Plan to document the Trustee's net zero strategy in more detail, including sub-targets for alignment and engagement. The purpose of the Climate Action Plan, which can be found on the Scheme website, is to provide transparency about the Trustee's plan to deliver its net zero commitment.

Stewardship and Voting Policy: The policy sets out how the Trustee aims to practice effective stewardship as part of its fiduciary duty to act in the best financial interests of our members. The policy aims to guide the Trustee in using its influence as an owner of assets to ensure as far as possible they reflect best practice in terms of ESG, including climate change.

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Governance

Climate governance structure, including the role of persons undertaking governance activities and those advising the Trustee

The Trustee's investment strategy is built upon a set of investment beliefs, including several beliefs in relation to climate change, wider ESG factors and stewardship. These beliefs were updated as part of the 2022 review of the Statement of Investment Principles ("SIP") for both the DB and the DC parts of the Scheme, which can be found on the Scheme's website.

- The Trustee recognises that global systems, such as the planet, its climate, its people and societies have a material impact on the whole of the economic system, today and over the longer term. A robust global economy, society and planet are critical elements for stable and resilient retirement outcomes for members. ESG risks and opportunities are important factors to consider in investment decision-making. Some ESG risks and opportunities may be specific to certain companies or assets, others can have a material impact on large parts of the global economy and are considered risks to the whole economic system.
- The Trustee also believes good stewardship and engagement can protect or enhance member retirement outcomes in the long-term.

Further to this, in 2022 the Trustee has chosen to prioritise a number of system-wide ESG risks which it believes are considered specially financially material to the Scheme, now and/or in the future. These include climate change, biodiversity and nature-related losses, including anti-microbial resistance, as well as diversity, equity and inclusion. The selection of these priority areas will support the Trustee in more effectively integrating ESG risk management into its investment decision-making. The Trustee expects to evolve the approach on these system-wide ESG risks over a number of years while continuing to take concrete actions on climate change.

The Scheme's governance structure enables these beliefs to be deployed, ensuring the Scheme is run in the best interests of its members.

While the Trustee Board is ultimately responsible for the oversight of the Scheme's climate-related risks and opportunities, it is supported in this by its sub-committees and a full-time management team:

- The Asset & Liability Committee ("ALCo");
- The Audit & Risk Committee ("ARC"); and
- The Pension Scheme Executive ("PSE")

The roles and responsibilities of the Trustee Board, its sub-committees, those undertaking Scheme governance activities and those advising the Trustee in identifying, assessing, and managing climate-related risks and opportunities, are documented in the Scheme's Climate Risk Management Framework. The Framework has been in place since 2020 and forms part of the Climate Change Risk Policy that is recorded in the Scheme's Statement of Investment Principles (See Appendix A). In 2022 the Trustee adopted a Universal Ownership framework to analyse system risks in its portfolio, which means that it recognises that being a large asset owner it effectively "owns a slice of the market" and that certain systemic risks, including ESG related risks, cannot be diversified away. Engagement with its investment managers is used to discuss how these risks can be mitigated through stewardship and engagement with the companies in which they invest.

In 2021, the Trustee established a Climate Risk Working Group ("CRWG") to identify strategic targets in relation to climate-related risks and opportunities pertinent to the Scheme. After 6 monthly meetings and discussions across 2021, the Board approved the CRWG's recommendations to commit to achieving net zero GHG emissions across the Scheme's DB and DC assets by 2050 or sooner. As the group met its objective it was disbanded in October 2021.

In April 2022, the Trustee appointed a Head of Responsible Investment. This role is to support the Trustee as it continues to implement its plan to reach net zero within the invested asset portfolios over the coming years and to liaise with investment fund providers to manage other environmental, social and governance risks to the Scheme.

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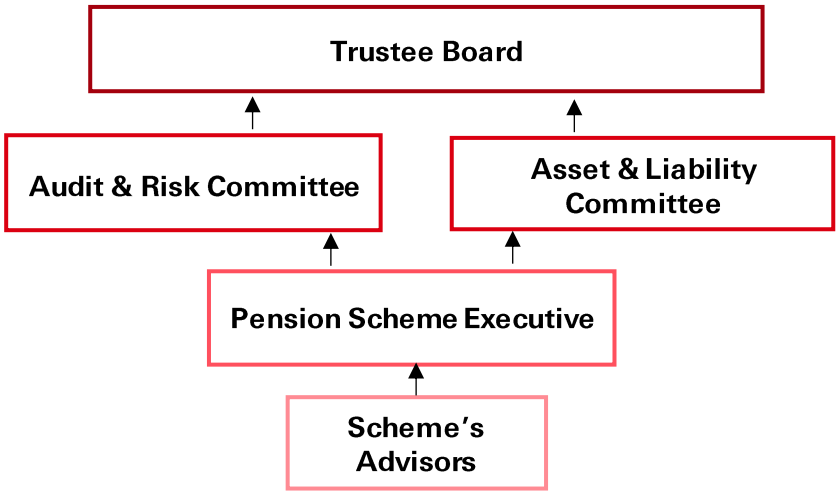
The chart below outlines the current climate governance structure that was in place in 2022.

The Scheme's Climate Governance Structure



	Responsibilities	Key actions over 2022
Trustee Board	The Trustee has ultimate responsibility for overseeing the Scheme's climate-related risks and opportunities and actions taken to manage them. This includes determining both the strategic climate-related objectives and the detailed climate-related targets, as well as overseeing progress made against them.	In 2022 the Trustee was provided an update on the Scheme's climate-related actions undertaken by ALCo on a regular basis (please see detail in ALCo section below). Over 2022 a primary focus area of the Trustee was defining an actionable Stewardship Framework and Policy to allow the Trustee to manage climate risks by practising more effective engagement with investment managers and the wider market. As a result, in Q4 2022 the Trustee Board approved the Scheme's Stewardship and Voting Policy.
Asset & Liability Committee	As a sub-committee of the Trustee Board, ALCo is responsible for ensuring that the Climate Change Risk Policy, including the Climate Risk Management Framework, and the Trustee's climate objectives are implemented into the Trustee's investment policy. To achieve this remit, ALCo has been delegated responsibility from the Trustee Board to review climate scenario analysis on the Scheme's funding and investment strategy and to select climate-related metrics to monitor. The metrics are used as management information to monitor the Scheme's progress versus the Trustee's climate objectives. ALCo is also responsible for defining the Trustee's engagement strategy with the Scheme's investment managers, consistent with the objectives set by the Trustee and the Trustee's Stewardship Policy. This process is informed by monitoring steps taken by the PSE. In cases where the PSE believes there are grounds to carry out investment strategy or	Over 2022 ALCo, along with the Trustee's advisors, continued to build out a climate risk dashboard allowing the sub-committee to effectively monitor the metrics, their evolution over time and the Scheme's progress against the interim and long-term climate targets. In Q2 2022 ALCo reviewed in detail the Scheme's performance against the chosen climate-related metrics, identifying the largest contributors to the Scheme's emissions and assessed whether investment managers are engaging with those companies. Further details of this are provided in the Risk Management section of this report. In Q3 2022 the Trustee's advisors undertook an exercise to re-baseline the Scheme's 2019 emissions (which serves as the baseline for the Scheme's decarbonisation targets), recognising the methodological developments over the past years. At the Q3 meeting ALCo reviewed the re-baselining analysis in detail, including changes in the Scheme's emissions over time and the

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	investment manager changes based on climate change, it is ALCo's responsibility to approve actions to address the PSE's concerns, having taken formal advice from its professional legal and investment advisors. ALCo reports to the Trustee Board on a quarterly basis, with the Chair of ALCo providing a report on the matters discussed and decided that is reviewed by the Board.	Scheme's progress against its target against baseline. Also in Q3 2022 ALCo reviewed the Scheme's Investor Climate Action Plan, which was consequently approved by the Trustee Board and published on the Scheme's website. In Q3 ALCo reviewed and fed into the production of the proposed Stewardship and Voting Policy before Trustee approval. Similarly, following Trustee approval, the Stewardship and Voting Policy was also published on the Scheme's website.
Audit & Risk Committee	ARC is responsible for ensuring that risks related to climate change are incorporated into the Trustee's Pension Risk Framework. Climate change risk is explicitly identified as a Scheme risk on the Trustee's Risk Register, as overseen by ARC, and reported to the Board on a quarterly basis. ARC is also responsible for providing oversight of the internal assurance carried out in relation to the production of the Scheme's TCFD report and ensuring all relevant controls are in place and evidenced as being operational.	In 2022, the Trustee's Risk and Emerging Risk Framework was updated to explicitly reference the Trustee's net zero ambition for the Scheme. In 2022 the Trustee initiated a more formal assurance process for the production of the TCFD Report and the metrics contained in the document by external third parties and the development of formal process manuals for the production of the report and the governance oversight of the process. It is intended that this independent assurance process will be developed further for future reports.
Pension Scheme Executive	To improve the efficiency of the Trustee's decision-making processes, the Trustee has full-time executive support from the PSE. The PSE looks after the day-to-day management of the Scheme, including climate-related matters. The Chief Investment Officer and Investment team have responsibility for ensuring climate-related risks and opportunities are appropriately considered in investment decision-making. Specifically, the PSE is responsible for performing manager-specific and portfolio-level climate risk analysis of the Scheme's alignment versus the Trustee's objectives, as well as the implementation of the engagement strategy set by ALCo. In circumstances where the PSE assesses that an investment manager has failed to operate in line with the Trustee's climate-related objectives, it will engage with the investment manager with the intention of providing feedback on agreed mitigation steps, approved by ALCo. Should persistent engagement fail to correct an investment manager's misalignment with the Trustee's objectives, the PSE will raise its concerns with respect to investment strategy and/or investment manager changes to ALCo for approval, with the ALCo having also taken formal advice from its professional advisors. The Trustee is required by law, as referenced above, to seek expert advice from qualified professionals, such as a legal practitioner, an actuary, or an investment advisor, before it makes certain decisions. The PSE manages the relationship with the relevant advisors, as well as	Over 2022 the PSE worked closely with the Trustee's advisors on developing the climate risk dashboard for the Trustee to use as an effective monitoring tool, understanding the Scheme's performance against climate metrics and targets and developing the Trustee's Investor Climate Action Plan and Stewardship and Voting Policy. The metrics provided in the dashboard include: Total Emissions; Carbon Footprint; Weighted Average Carbon Intensity (WACI); Transition Pathway Initiative (TPI) Management Quality score; TPI Carbon Performance score and a portfolio-level Climate Transition Value at Risk (VaR.) These metrics are supplemented by views provided by the investment advisors on the investment managers' climate capabilities. During 2022 the PSE also engaged with each of the Scheme's investment managers on ESG and specifically climate-related risks and opportunities and included climate-related considerations in the Trustee's manager selections. To strengthen the Trustee's position on this, in 2022 the PSE placed a heightened emphasis on the importance of institutional alignment of investment managers with the Trustee's climate-related priorities in the manager selection exercises undertaken over the year.

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	making sure that the Trustee has access to the right advice for the decisions it is taking.	
The Trustee's advisors	The Scheme's investment advisors advise the Trustee on, and provide objective assessments of, differing approaches to identifying, assessing, and managing climate-related risks and opportunities to help the Trustee meet its climate-related objectives for the Scheme. This includes informing the Trustee of climate-related risks and opportunities as relevant for the Scheme. The advisors are also required to support the PSE in its role of performing manager and portfolio-specific climate risk analysis and engagement. This includes the completion of climate change scenario analysis on the DB funding strategy and DC investment strategy, as well as the provision of climate-related metrics selected by the ALCo. These metrics feed into a Scheme-level dashboard and manager scorecards that the Trustee use to monitor the Scheme's performance against its climate objectives on an annual basis and identify investment manager engagement opportunities.	During the year the Trustee's advisors worked alongside the PSE on building the Scheme's climate risk dashboard, providing climate metrics analysis and engaging with the Scheme's investment managers on climate change. Over 2022 a particular area of strategic focus for the Trustee was building out the Trustee's Stewardship Framework. The Trustee developed this framework alongside discussions with all the Trustee's advisors in respect of key principles and ideas of what makes a good stewardship policy.

Trustee oversight of third parties

The Trustee operates an outsourced model for Scheme investment activities and does not manage any investments in-house. Given this model, the approaches and actions taken by Scheme advisors and investment managers on integrating climate-related risks and opportunities are key. As such, the Trustee's key responsibility is to maintain oversight of third parties in relation to climate change. This is done principally through setting and monitoring objectives for Scheme advisors to integrate climate-related considerations and through holding investment managers to account on climate-related risks and opportunities.

	Trustee oversight	Key actions over 2022
Oversight of advisors	• Climate-related objectives are included in the advisors' annual objectives to ensure they are taking adequate steps to identify and assess climate-related risks and opportunities. • The Trustee annually assesses the delivery of this advice using the Competition Market Authority's Investment Consultant Objective framework ("CMA Objectives"). Following its annual assessment, the PSE produce a report for the Trustee that provides its view on whether the advisors have met the requirements set out in their annual objectives. If the PSE deems the objectives have not been adequately met, it will provide suggested escalation steps for the Trustee to consider.	• In line with the Trustee's strategic focus, the advisors' objectives were updated to reflect the Scheme's enhanced ESG engagement priorities. • In 2022 the Trustee reviewed the advisors' ESG and climate-specific objectives and assessed their performance against them during the annual CMA Objectives monitoring exercise. The Trustee confirmed that the advisors met their objectives for the year.

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	• Further, the processes followed by the PSE and the Trustee's advisors to produce this TCFD report are captured within a TCFD Reporting Process Manual, noting key milestones and requirements. This is a live document that has been independently reviewed by the Trustee's Internal Audit team. Throughout the report drafting process, the advisors are required to keep a log of their progress versus agreed key milestones and practices. This is assessed by the PSE against the process set out in the Process Manual and may be subject to assurance by an independent third party. All revisions to the production process are discussed between the advisors and PSE and formally documented. The aim of this approach is to ensure a rigorous process is followed and continuous process improvements are captured for completing future TCFD reports.	
Oversight of investment managers	• The Trustee expects investment managers to be aware of climate change risks and opportunities within their investment processes and manage climate-related risks on a discretionary basis as applied to the assets of the Scheme. The Trustee has also specifically informed the Trustee's investment managers of its climate-related objectives. The Trustee expects the investment managers to be aware of the climate-related objectives when making decisions in relation to the funds the Scheme is invested in. • Investment managers are required to report annually on how these risks and opportunities have been incorporated into their investment process, including descriptions of engagement activity undertaken with companies in their portfolios and qualitative responses to the issues raised by the PSE's analysis, within applicable guidelines and restrictions.	• Over 2022 the PSE met all of the investment managers at least once to monitor the managers approach to climate-related risks and opportunities. The PSE also reviewed the investment managers' ESG- and climate- reporting and highlighted any areas of concern during the meetings. • The PSE's monitoring of the investment managers over 2022 is described in more detail in the Risk Management section of this report.
Oversight of PSE	• The PSE undertakes the day-to-day operational management of all investment activity on behalf of the Trustee in accordance with a principles-based table of delegations. The PSE's delegated authority is kept under review by the Trustee.	• The PSE reported quarterly to ALCo the decisions and activities undertaken within its delegated authority in order to update the ALCo and permit challenge to how its delegated authority has been exercised, including where it has engaged with investment managers on Trustee ESG priorities.

Trustee knowledge and understanding of climate change

In order to ensure the ongoing suitability of the Trustee's approach to climate-related risks and opportunities, the PSE makes sure that the Trustee Directors receive regular training on climate-related topics. The frequency and

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level of training that Trustee Directors receive depends on their role and their membership of specific sub-committees. For example, given the ALCo's responsibility around monitoring climate-related analysis, members of the ALCo received training on more technical topics such as climate metric calculation methodologies. Training sessions are delivered in face-to-face meetings from advisors and subject matter specialists and in the form of training videos prior to Trustee meetings. Climate change has been a component of several interim meetings, investment away days and strategy days over the year, building on training from previous years. At these sessions the Trustee Directors receive training from its advisors or on occasion by external experts in a given field. In addition, the transition to a more digital way of working has allowed Scheme advisors to deliver shorter and more targeted training sessions in the form of pre-recorded videos. This allowed Trustee Directors to be better informed and to ask more meaningful questions during quarterly meetings when making decisions. Specifically, Trustee Directors received the following training in relation to climate change:

- Paris Aligned Investment Initiatives (e.g. the IIGCC);
- Climate net zero alignment metrics;
- Universal ownership and stewardship, including climate change;
- TCFD carbon emissions metrics calculation methodologies;
- FRC UK Stewardship Code 2020;
- Global system-wide ESG risks (including climate change, biodiversity and nature loss, antimicrobial resistance and diversity, equity and inclusion).

Recognising the pace of development in this space, ongoing training is essential to ensure that the Trustee and its sub-committees make informed decisions. The Trustee continues to assess skills gaps and undertake training accordingly. In 2022 members of the PSE also held one-to-one discussions with each Trustee Director to explore evolution of ESG beliefs, including climate change. These sessions were supported by background papers and training material.

Additionally, the Scheme is a member of several Responsible Investment organisations that help ensure the Trustee remains informed of climate-related issues. The Trustee recognises that it is not possible to support all initiatives and organisations. The Trustee occasionally reviews the Scheme's associations and consider the benefits they offer versus the resources needed to be an active member. The Trustee currently supports the work of the following organisations:

- UN Principles for Responsible Investment ("PRI")
- Institutional Investors Group on Climate Change ("IIGCC") and related Paris Alignment Investment Imitative ("PAII")
- Financial Reporting Council ("FRC") UK Stewardship Code 2020
- Transition Pathway Initiative ("TPI")
- Climate Action 100+
- Occupational Pensions Stewardship Council ("OPSC")
- A4S Asset Owner Network ("A4S")

Strategy

Climate-related factors are fully integrated into the Trustee's strategic funding and investment decision making, sitting alongside traditional investment and risk factors. This is true of both the DB and DC parts of the Scheme. The Trustee recognises that financially material impacts from climate change are unlikely to manifest uniformly across time, and therefore considers the potential impacts on the value of the Scheme's investments over the short, medium, and long terms.

As stated in the Executive Summary, the Scheme consists of three sections: the HSBC UK Bank plc (HBUK) Section, the HSBC Bank plc (HBEU) Section and the HSBC Global Services (UK) Ltd (HGSU) Section. DB and DC benefits are provided by each section. The Scheme holds in assets:

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- DB: £21bn as at 31 December 2022
- DC: £6.2bn as at 31 December 2022

The Trustee completed climate scenario analysis on the DB and DC parts of the Scheme to assess the potential climate-related impacts on the funding and investment strategy as at the end of 2021. The 2021 scenario analysis considered the asset portfolio, liabilities, and sponsor covenant of the DB part of the Scheme, and the investment offerings within the DC part of the Scheme with significant assets under management ("popular arrangements"[2]). Results of this exercise were disclosed in the Scheme's 2021 TCFD report and are also included in Appendix A of this report.

The Trustee is required to repeat this exercise at least every three years, although this can be brought forward should material strategic changes to the DB and/or DC parts of the Scheme or developments to best practice methodologies occur.

In 2022, the Trustee's ALCo took the decision not to update the scenario analysis for the 2022 TCFD Report. As part of this decision, a number of factors were considered including: a lack of material changes to the funding and investment strategy; a lack of material changes in the availability of quality data; a lack of necessity or urgency to harmonise scenarios across the DB and DC Schemes; and other industry or market changes that may impact the assessment. This will be reviewed again in advance of the preparation of the 2023 TCFD Report.

Details of the funding and investment strategies of the DB and DC parts of the Scheme as at 31st December 2022 are provided below.

An overview of the DB funding and investment strategy

There are three DB investment strategies, one for the HBUK Section, one for the HBEU Section, and one for the HGSU Section and these reflect the particular design characteristics and the risk and return requirements of each section. The HBUK Section contains the majority of the DB assets, while the other two sections, referred collectively as the Top Up Sections, are considerably smaller in size of DB assets:

DB Sections	Total Assets[2]
HBUK Section	99.4%
Top Up Section: HGSU	0.5%
Top Up Section: HBEU	0.1%

The Trustee follows a Cashflow Driven Investment ("CDI") approach in the DB HBUK part of the Scheme. Under the HBUK Section's CDI approach, the asset class weights in the portfolio are expected to evolve over time as asset cashflows are released, reducing the value of the Scheme's assets and impacting the relative proportions of remaining assets, although it is intended that some reallocations will take place. The assets now comprise government bonds, cash and hedging instruments, high quality corporate bonds, low-risk illiquid matching assets, and residual allocations in private equity and property. This asset allocation helps achieve the Scheme's overall risk-adjusted return objective for the DB assets to ensure members' benefits can be paid as and when they fall due. The investment strategy for the Top Up sections follows a low-risk strategy comprised of matching assets and a Diversified Growth Fund which is intended to generate an expected investment return that marginally outperforms the return of the actuarial liability discount rate.

[2] A "popular arrangement" is considered to be one in which £100m or more of the scheme's assets are invested, or which accounts for 10% or more of the assets used to provide money purchase benefits.
[2] Climate scenario analysis was completed on the assets and technical provisions liabilities as at 31 March 2021 on each DB section independently, using the latest available data at the time the analysis was performed.

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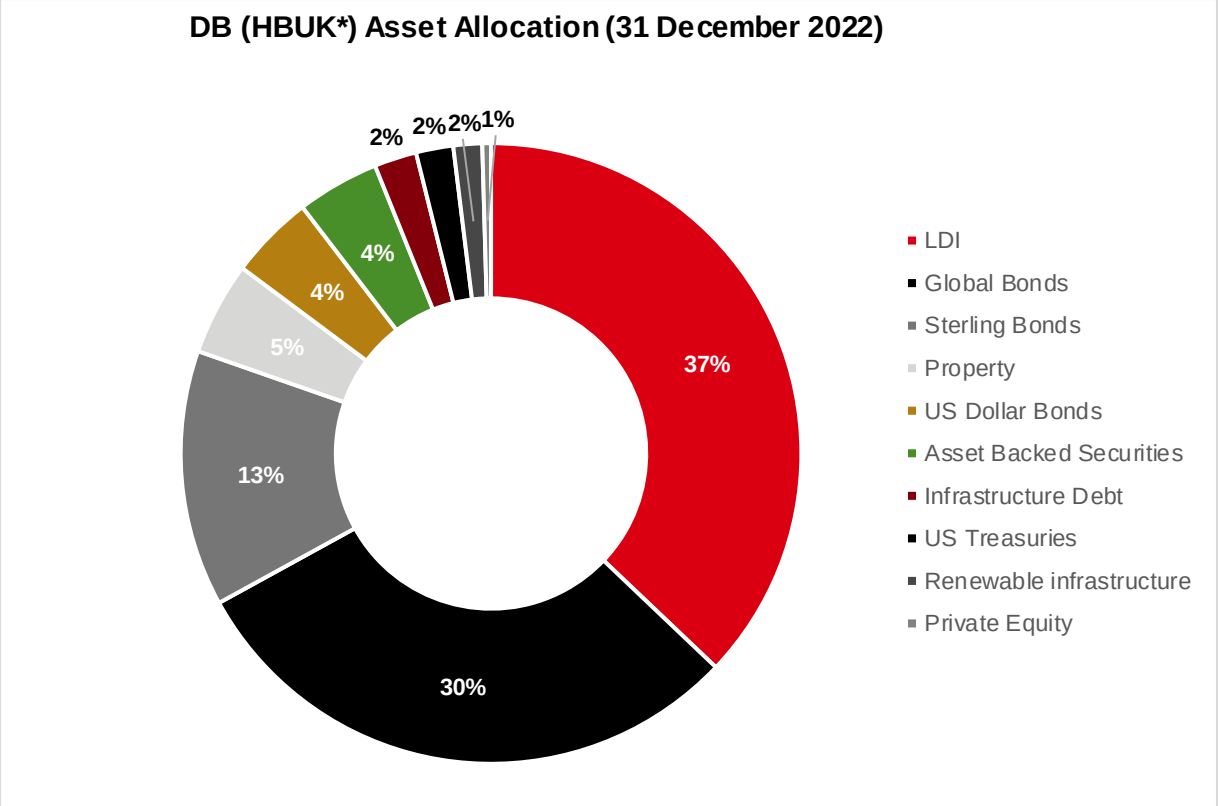

** Given the size of the other two sections, this report does not include a breakdown of their assets.*

Fund	2022 Asset allocation (%)
LDI	37%
Global Bonds	30%
Sterling Bonds	13%
Property	5%
US Dollar Bonds	4%
Asset Backed Securities	4%
Infrastructure Debt	2%
US Treasuries	2%
Renewable infrastructure	2%
Private Equity	1%

An overview of the DC assets

Within the DC assets, there is a range of investment funds available for members. The Scheme has different default strategies for members, depending on the type of benefits they have and where in the targeted strategy a member is in (i.e., the time to retirement age). In line with the definition prescribed by the regulations, in 2021, the Trustee considered climate scenario analysis on two fund offerings within the DC part of the Scheme that meet the regulatory definition of a "popular arrangement" and cover over 85% of Scheme members, and coverage of these arrangements remained broadly consistent into 2022. These are the Flexible Income Strategy, the main default option for members with DC-only benefits, and the Lump Sum Strategy, the main default option for members that have Hybrid benefits (former active DB members on 30 June 2015 who became active DC members from 1 July 2015). Additional detail on these two arrangements is provided below.

Fund Offering	Description
Flexible Income Strategy	For members with only a DC pension pot, the Flexible Income Strategy is the default strategy. It is designed for members, at their retirement or beyond, to take 25% of their DC pension pot as a cash lump sum and the balance to provide a flexible income

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	(e.g. income drawdown), spreading the amount and timing of withdrawals. Members can do this by transferring their DC pension pot out of the Scheme, this strategy works by switching the investment mix of members' DC pension pots from the Global Equities – passive Fund into the Diversified Assets – active Fund and then de-risking into the Global Bonds – active Fund and the Cash – active Fund as the members near retirement. This design is based on the demographic profile of the membership and the generous contribution structure combined with the belief that members are likely to both accrue large pots and choose to take a flexible income. Market trends and Scheme experience since the introduction of Pension Freedoms in 2015 also indicate that members with larger DC pension pots are moving away from purchasing annuities and are choosing flexible income instead.
Lump Sum Strategy	For members with Hybrid benefits, the Lump Sum Strategy is the default strategy. It is designed for members to use all of their DC pension pot for a cash lump sum at their target retirement age or beyond. This strategy works by switching the investment mix of members' DC pension pots from the Global Equities – passive Fund into the Diversified Assets – active Fund and the Global Bonds – active Fund and then de-risks into the Cash – active Fund as the member nears retirement. The rationale for this design is the belief that many members with Hybrid benefits are expected to use all of their DC pension pot as part of their overall Scheme tax-free cash lump sum at retirement.

The main investment fund used in the Scheme's default investment strategy, the Global Equities - passive fund, has Legal and General Investment Management's ("LGIM's") Future World Fund as its underlying investment (75% GBP currency hedged). This is a multi-factor global equity fund which targets stocks with a balanced factor exposure while incorporating climate change considerations in the core investment thesis. These include achieving at minimum a 30% reduction in carbon footprint and a minimum 50% reduction in carbon reserves intensity relative to an index without climate considerations. This is achieved through a combination of tilting. The fund also excludes companies that derive more than 25% of their revenue from coal extraction or coal power generation. As part of this the fund is designed to favour investment in companies which are less carbon-intensive or earn green revenues. This approach was developed by the Trustee, in conjunction with LGIM, the investment manager, FTSE Russell, the equity index provider which the fund tracks and Redington, one of the Trustee's investment advisors, to help the Trustee meet its climate-related ambitions. The Trustee also appointed Schroders Investment Management Ltd to manage a diversified growth fund which seeks to mitigates ESG risks and which is incorporated into the DC default investment strategies. For Freechoice members there are also several other alternative self-select investment funds that members can include within their personal investment portfolio. In the last review of the DC strategy, the Trustee confirmed that the Scheme's lifecycles are adequately and appropriately diversified between different asset classes and the self-select options provide a suitably diversified range of funds for members to choose from. The Trustee reviews the investment arrangements for consistency with their beliefs, including those on ESG risk management, including climate change and stewardship, on a regular basis. The Trustee also monitors the relevant members' behaviour to check whether assumptions made about how members will access their benefits are borne out in practice. The Scheme's full DC asset allocation is shown below:

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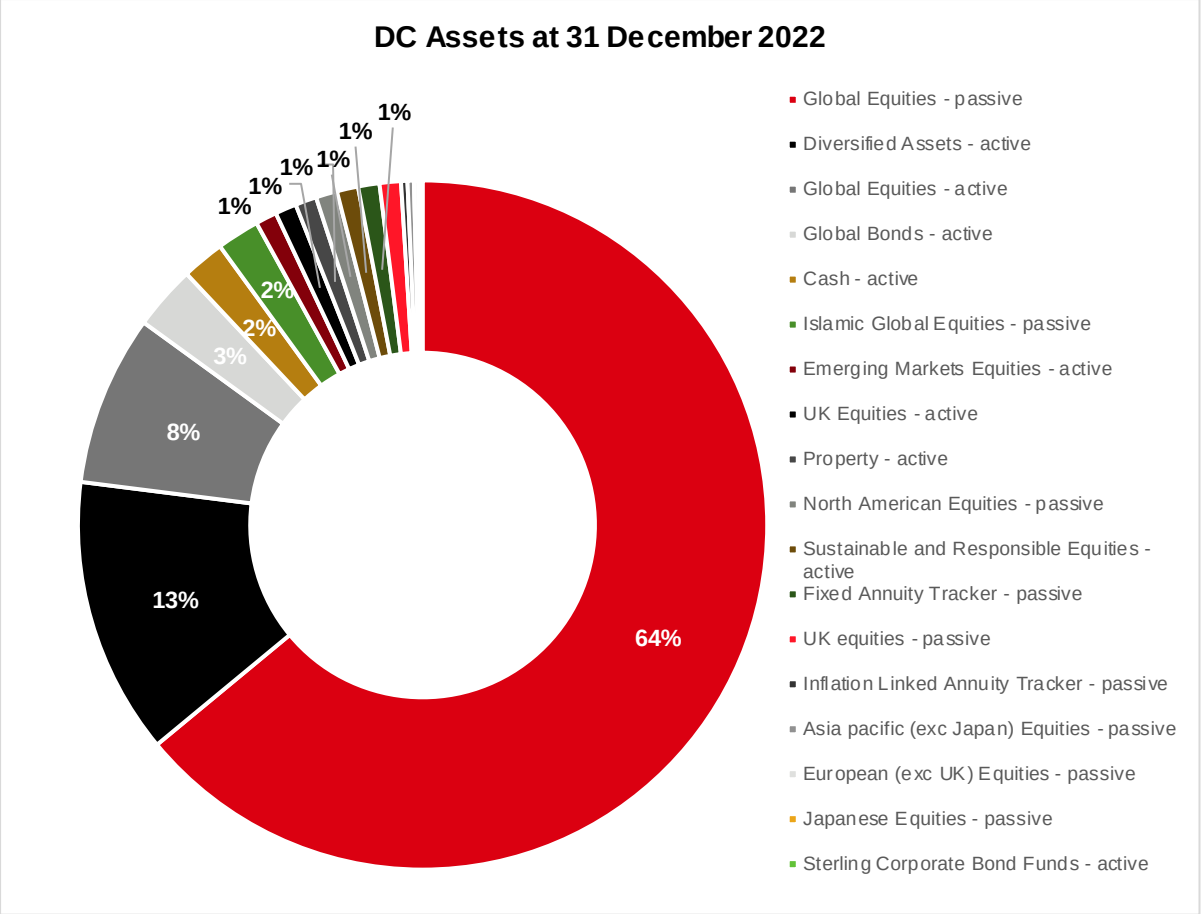

Fund	2022 Asset allocation (%)
Global Equities – passive	64%
Diversified Assets – active	13%
Global Equities – active	8%
Global Bonds – active	3%
Cash – active	2%
Islamic Global Equities – passive	2%
Emerging Markets Equities – active	1%
Property – active	1%
UK Equities – active	1%
North American Equities – passive	1%
Sustainable and Responsible Equities – active	1%
Fixed Annuity Tracker – passive	1%
UK equities – passive	1%
Inflation Linked Annuity Tracker – passive	0.3%
Asia pacific (exc Japan) Equities – passive	0.3%
European (exc UK) Equities – passive	0.2%
Japanese Equities – passive	0.1%
Sterling Corporate Bond – active	0.1%

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Climate-related considerations in setting the Scheme's investment strategy

The Trustee is cognisant that the diversified nature of the DB and DC investment portfolios means that the source of climate-related risks is likely to be asymmetric and varied. For example, climate change risk could affect:

- The creditworthiness of the issuers of the fixed income assets;
- The rental values of the real estate assets;
- The dividend paying capability, and therefore the share prices, of companies in the listed equities portfolios.

The Scheme has material exposure to long-dated credit in the DB portfolio, and developed market equities in the DC portfolio, both of which pose differing climate risks across different time horizons. Given the differing timespans over which climate-related market impacts are likely to occur, the specific types of climate risks are unlikely to be constant. As a result, and to account for these differing sources, the Trustee has evaluated the impact of asset-related climate risks through three lenses:

Physical Risk

Physical risks from climate change are those which arise from both gradual changes in climatic conditions and extreme weather events. They can be event-driven (acute) or longer-term shifts (chronic) in climate patterns and include risks such as a rise in sea levels, with impacts including flooding, and the destruction of biodiversity. These physical risks could have financial implications, such as direct damage to assets and indirect destabilising impacts from supply chain disruption. Other potential impacts of physical changes in the climate are wider economic and social disruption, including mass displacement, environmental-driven migration and social strife.

Transition Risk

Transition risks occur in the process of moving to a low-carbon economy. This includes policy (e.g., abrupt imposition of carbon taxes or emission limits), reputational impacts, risk of stranded assets, as well as shifts in market preferences, norms and technology – the severity of the impact will depend on whether the transition is orderly or disorderly.

In 2022 the Trustee commissioned the calculation of Climate Transition Value-at-Risk ("CTVaR") on the Scheme's DB and DC assets to allow the Trustee to monitor the transition risk of its assets more closely. The output of this analysis is included in the Scheme's climate risk dashboard that the Trustee monitors on an annual basis. The CTVaR metric uses resource and sector models to deliver market-based estimates of the financial impact of a transition on the Scheme's assets on an asset-by-asset basis for mandates where line-by-line holdings are available. The CTVaR analysis covers 95% of the DC assets and 89% of the DB assets of the Scheme.[3]

For the Scheme's publicly listed equity securities, the CTVaR measures the potential value lost during the transition to a low-carbon economy by adjusting downward the future value of a company's business-related cashflows, thereby reducing the value of the company's equity in today's terms. To assess the impact on the Scheme's publicly traded bonds, the CTVaR assesses the maturity and credit rating of the bond as well as the company's ongoing ability to service its debt over time. Most of the developed market sovereign debt is assumed to have no transition risk under the debt CTVaR methodology. This stems from the fact that only the sovereign debt issued by countries whose economics rely heavily on commodity production and/or exports are assumed to face transition risk in the CTVaR model. These assets comprise only a small proportion of the Scheme's sovereign debt investments.

[3] The non-CDI, illiquid matching and alternative credit portfolios have been excluded from the analysis as transition risk data for the underlying assets within these mandates is not currently available.

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For the HBUK portfolio as at 31 December 2021 (the latest available data at the time of analysis), the CTVaR was £29.6m, which represents 0.1% of total DB assets. This is principally because most of the Scheme's corporate debt holdings are in Buy & Maintain portfolios, which generally avoid companies with high levels of transition risk. Additionally, much of the portfolio has a high credit rating and many of the investments with the biggest transition risk are in shorter-dated mandates, which reduces their contribution to CTVaR. This is because maturity is accounted for in the calculations and shorter-dated debt holdings are expected to face less transition risk exposure in general given they will mature before the full effects of the climate transition are realised. Most contributors to the HBUK portfolio's transition risk exposure are companies with significant exposure to fossil fuels and/or commodity prices, both of which may be already negatively impacted by the climate transition.

For the DC portfolio as at 31 December 2021 (the latest available data at the time of analysis), the CTVaR was £87.2m, which represents 1.3% of total DC assets. This is principally the result of the Scheme's equity investments in large, consumer-orientated multinational corporations that face higher transition risk as a result of evolving consumer habits in line with the global transition to a low-carbon economy.

The Trustee is cognisant that the results of this CTVaR model, like other models, are dependent on the assumptions embedded in its calculation methodologies and on the quality of data available. As such, the Trustee recognises the inherent limitations of such modelling exercises and the need for caution when interpreting the results. Nevertheless, it is helpful to periodically review the results that the modelling produces to understand changes in the output and to understand what may be driving those changes.

Reputational Risk

The TCFD considers reputational risk to be a sub-category of transition risk and defines it as a "risk tied to changing customer or community perceptions of an organization's contribution to or detraction from the transition to a lower-carbon economy".

The reputational risk the Scheme is exposed to is mainly in relation to stakeholder and wider civil society perception - stakeholders being entities such as members and regulators, and civil society including activist groups, peers and the media. The risk would materialise if the Scheme were failing to meet public expectations, for example if the Trustee or appointed investment managers, were found to be taking insufficient steps to manage climate risks, and/or changes to the legislative framework under which the Scheme operates occurred. In this context, the Trustee believes the reputational risk to the Scheme is less substantial than the reputational risk for a company that might be affected by a loss of customers as a result of reputational damage.

Nonetheless, it is acknowledged that the importance of retaining the confidence of Scheme members in the Trustee's ability to effectively manage climate-related risks on their behalf, noting that a loss of confidence, and the adverse reputational implications that may ensue, could potentially be financially material.

The Trustee therefore considers the potential implications for the Scheme's reputation as it pertains to climate-related factors within the decision-making frameworks.

Liability Considerations

On the liability profiles for the three DB sections of the Scheme, there are likely to be direct impacts to mortality to consider, as well as indirect impacts from changes to lifestyles resulting from climate change. The mortality outcomes from climate change are impossible to predict accurately and will depend on complex interactions between various factors. In the UK, it is considered unlikely that the direct effects of climate change on weather patterns and global temperatures will have a significant impact on life expectancies[4]. However, the disruption and impact of transition risks on economic activity could have a more significant effect.

Whilst the Trustee has insured broadly half of the liabilities associated with retired members within the HBUK section against mortality impacts, including climate change, transition risk remains relevant for the Scheme and is therefore subject to ongoing assessment.

[4] As presented by WTW to the Asset and Liability Committee in a Climate Change Scenario Analysis paper delivered in November 2021.

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As noted earlier, the ALCo took the decision not to update the scenario analysis for the 2022 TCFD Report because there had been no material changes to the investment strategy. Below is a summary of the conclusions from the 2021 scenario analysis, with the detailed outcomes included in Appendix A.

Time Horizons

Climate-related factors can have a material financial impact on the value of the Scheme's investments over the time horizon applicable to each benefit type, with the impact of time horizons likely to vary depending on the nature of the invested assets. The Trustee therefore believes that by taking such factors into account in the investment process, the Scheme will be better positioned to deliver on its investment objectives.

Time Horizon	Comment
Short-term	The short-term time horizon is a period of 3 years, up to 2025, for both the DB and DC parts of the Scheme. This relatively abrupt period will allow the Trustee to evaluate the short-term risks faced by the Scheme from sudden climate-related behavioural changes. Over the short-term, the climate risk exposure of the Scheme is expected to be almost entirely related to transition risks. This is likely to be most applicable to the equity and corporate credit assets, given the Scheme's investment in these assets is mainly in issuers from developed markets where climate-related policy and societal behavioural changes are expected to occur more quickly and on a wider scale. Higher volatility due to climate change considerations is also a risk the Trustee is aware of.
Medium-term	The medium-term time horizon is a period of 8 years, up to 2030, for both the DB and DC parts of the Scheme. This is aligned with the interim decarbonisation and alignment targets in support of the goals of the Paris Agreement. Over the medium-term, the climate risk exposure of the Scheme is also expected to be predominantly transition risk, although the increasing frequency and severity of extreme weather events means physical risk is likely to be more prevalent than in the short-term. This is likely to have more of an impact on the Scheme's investments in real assets, such as infrastructure assets in the DB portfolio and property assets in the DC portfolio. From a transition risk perspective, a larger scale re-pricing is likely to happen in the medium term, impacting various geographies and sectors.
Long-term	For the DB section of the Scheme, due to the reliance of the CDI portfolio on long-term cash flows to make liability payments, the Trustee has adopted a multi-decade investment long-term time horizon in the region of 20 to 30 years. For the DC section of the Scheme, the majority of the DC assets are invested in the default investment option, which is designed to generate returns sufficiently above inflation whilst members are some distance from retirement, but then to switch automatically and gradually to lower-risk investments as members approach their retirement date and take their DC pension pot. These assets therefore also have a multi-decade investment time horizon, which can extend from 20 years up to 50 years or even longer. Over the long-term, physical risk – as a consequence of locked-in physical impacts from previous decades - is also expected to be a more significant contributor of climate-related risk to the Scheme, however, transition risks still exist and will likely be material. Physical risk could materialise across the Scheme's portfolio via write-downs in real asset valuations due to direct physical damage, or in the form of indirect impacts such as supply chain distributions and weaker productivity owing to temperature effects that may negatively impact business profitability.

Scenario analysis

The Trustee completed scenario analysis on the DB and DC sections of the Scheme to assess the potential climate-related impacts on the funding and investment strategy as at the end of 2021. Results of this exercise were disclosed in the Scheme's 2021 TCFD report and are also included in Appendix A of this report.

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The relative impact of climate-related physical and transition risks on the DB part of the Scheme was estimated to be more subdued than the DC part of the Scheme. This reflected the nature of the assets held across each part, with equity securities, which make up much of the DC portfolio, expected to suffer a larger loss in value than the sovereign bonds and investment grade credit that make up the majority of the DB portfolio.

How these climate-related risks will materialise across the Scheme's assets and liabilities, and over what time horizons, remains uncertain. Nonetheless, irrespective of this uncertainty, the climate scenario analysis detailed in Appendix A highlighted that these risks do exist, and the Trustee therefore believes that appropriate risk management steps should be taken to address and limit the potential impacts of these risks.

Sponsor covenant

There are three Sponsoring employers for the Scheme but in this report "Sponsor" references HSBC Bank UK Plc given that the key Sponsor risk is with the HBUK section as it represents 99.4% of the assets. Given the strong funding position and Technical Provisions surplus, the Scheme has a low reliance on the Sponsor to achieve its long-term objectives. Nonetheless, the Trustee recognises that the Sponsor of the Scheme is likely to be affected by climate change which, in turn, may impact the resilience of the Scheme's investment and funding strategy over the short-, medium-, and long-term. Climate change is a topic that has been covered within the assessment of the investment and funding strategy. Also, the Trustee has noted the Sponsor's 2021 and 2022 TCFD Reports which outline the risks to which they are exposed, along with the Sponsor's Energy Policy, released in December 2022.

The Trustee is confident that the Sponsor recognises the risk that climate change may pose to its operations and wider business strategy. Importantly, the Sponsor has taken steps to incorporate climate-related factors into its wider governance and risk management practices, noting that in November 2020, the Sponsor formalised its overall approach to climate risk management and developed plans to integrate climate risk into the Group-wide risk management framework. Over the past two years, this has continued to develop, and the Sponsor is building resource and capability to further understand and mitigate climate change and wider ESG risks in its business activities. To date, the Sponsor has undertaken exploratory and wide-ranging quantitative stress testing and scenario analysis in relation to climate-related risks, considering the impacts across short-, medium-, and long-term time horizons. Some of the output of these processes is reported in its most recent TCFD disclosure embedded in the Sponsor's Annual Report and Accounts 2022. Climate change remains an area of focus for the Sponsor and further climate stress-testing and scenario analysis is expected to be completed over time.

These actions represent positive and meaningful steps by the Sponsor to address climate-related risks, and the PSE will continue to engage with the Sponsor on this topic with the aim of deepening the understanding of the climate-related risks. This will inform the Trustee's ongoing assessment of the strength of the Sponsor's covenant, and in turn, the Trustee will consider any impact this may have on the Scheme's investment and funding strategy.

Other tools helping the Trustee to identify climate risk in the portfolio

Aside from performing climate scenario analysis on the investment and funding strategy, the Trustee also monitors a suite of climate metrics, which help identify areas of risk in the portfolio. The five key metrics used by the Trustee are disclosed and explained in detail in the Metrics and Targets section of this report: absolute emissions, carbon footprint, weighted average carbon intensity ("WACI"), Transition Pathway Initiative ("TPI") Management Quality ("MQ") score and TPI Carbon Performance ("CP") score.

The Trustee formally monitors two non-emissions-based climate metrics, in conjunction with analysis of the underlying investment funds' total absolute emissions, carbon footprint, and WACI. This allows the Trustee to receive a balanced view of the Scheme's short- and medium-term exposure to climate risks. In 2019 the Trustee adopted the TPI MQ score as a forward-looking indicator of the Scheme's exposure to climate transition risk. The Trustee continues to monitor the TPI MQ scores of its investment funds, where possible, by assessing the relative proportion of each fund's financed emissions attributable to low (i.e., greater transition risk) and high (i.e., lower transition risk) TPI MQ score companies.

In 2022, the Trustee also adopted the TPI CP score as an additional means to assess the emissions pathways of companies in the Scheme's portfolios against the temperature goals of the 2015 Paris Agreement of keeping temperatures well-below 2°C compared to pre-industrial levels.

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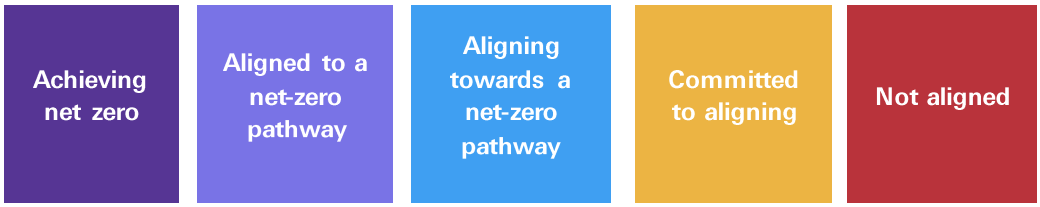
During the year the Trustee also followed the PAII's Net Zero Investment Framework ("NZIF") to assess the alignment of the Scheme's listed equity and publicly traded corporate bond assets. The Trustee aims to classify assets into five distinct categories of alignment from "achieving net zero" to "not aligned".



To do so, the Trustee started collecting alignment data using open-source metrics recommended by the NZIF alongside the metrics produced by TPI:

1) Climate Action 100+ ("CA100+") Net Zero Company Benchmark.
2) Science Based Targets Initiative ("SBTi").

Collecting data on the Scheme's multi-asset and multi-manager portfolios in a way that allows the Trustee to classify Scheme assets into different alignment categories has proven to be a challenge to date. The Scheme's alignment metrics (CA100+, SBTi, TPI MQ, and TPI CP) were only available for a very small proportion of the Scheme's investments – though these did account for a higher percentage of financed emissions (as the CA100+ and TPI metrics in particular cover the most polluting companies with higher emissions). The Trustee is looking to increase coverage of alignment assessment to allow disclosure of progress. The Trustee will continue to collect alignment data from its managers as well as from ESG data providers via its investment advisors, noting that coverage is expected to improve significantly over time. One of the ways in which the Trustee is working on improving the availability of data is by engaging with its investment managers and setting clear expectations of them in regards to climate metrics provision. For example, the Trustee has sent a letter to each of the Scheme's investment managers, which included details of the Trustee's expectations of managers' ESG data provision. The Trustee will also continue monitoring the development of other alignment metrics and the Trustee expects to report on the alignment of Scheme assets in scope in the future.

The Trustee undertakes this activity to develop a picture of the source of the Scheme's climate risks by assessing whether the most carbon intensive portfolios are those mainly consisting of underlying companies with higher or lower transition risks. This will allow the Trustee to focus engagement efforts on those portfolios where it can be most impactful. This is an ongoing exercise on which the Trustee hopes to provide further detail on in future TCFD reports.

Please see the previous year's report here for detail on the results of the scenario analysis undertaken as well as the methodological approach and information regarding the analysis's limitations.

Risk Management

Identifying and assessing climate-related risks in an integrated way

The Trustee considers climate change to be a systemic, long-term financial risk to the Scheme's investment portfolio, though it acknowledges that it is difficult to measure with a single number, metric, or lens. To ensure climate-related risks are assessed in an integrated manner, the Trustee has explicitly identified "Climate Change Risk" as a Scheme risk on the Trustee Risk Report, as overseen by the Audit & Risk Committee, and reported to the Board on a quarterly basis. This ensures climate risk is given due consideration alongside the other investment risks identified for the Scheme.

As discussed in the Governance section of this report the Climate Risk Management Framework, established in 2020 and which aligns with the Scheme's existing Risk Management Framework, clarifies the roles and responsibilities of the Trustee Board, the Trustee's sub-committees, the PSE, and Scheme advisors with regards to identifying, assessing and managing climate-related risks. Having this framework in place allows the Trustee to manage climate risk in a considered and effective manner by considering both top-down (Scheme-level) and

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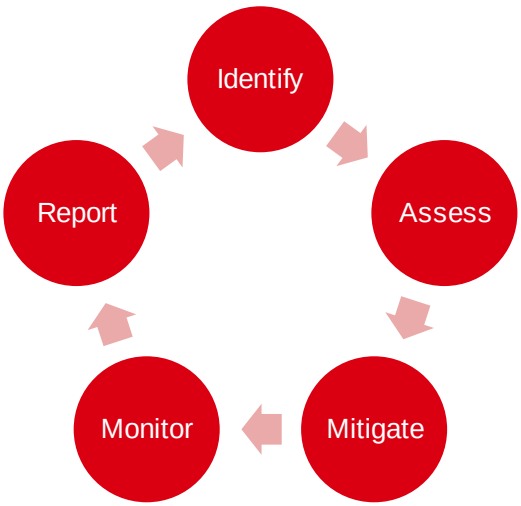
bottom-up (mandate-level) perspectives. The Risk Management Framework, illustrated in the diagram below, follows a circular approach that ensures identified risks are managed on an ongoing basis. At a more granular level:

- The Trustee delegates authority to its ALCo to approve metrics that identify, assess, and monitor the climate-related risks of its appointed investment managers' portfolios.
- The PSE reviews the Scheme's investments versus the ALCo-approved metrics and recommends mitigating actions to the ALCo for approval where necessary. The investment managers are required to provide descriptions of engagement activity undertaken with companies in their portfolios and qualitative responses to issues raised by the PSE's climate risk analysis.
- Where feasible, mitigation of climate-related risks is factored into the mandates the Trustee has with its appointed investment managers.
- For all appointed investment managers, evaluation of ESG risk management, which includes climate-related risks, is a part of all investment manager selection exercises, the investment manager on-boarding process, and continued due diligence or monitoring that the Trustee undertakes.

The Trustee also delegates the authority to the PSE, and advisors, where appropriate, to engage with the Scheme's investment managers as they deem necessary.

The Trustee's Approach to Climate Risk Management



Top-down risk identification and assessment process

At the Scheme level, scenario analysis is used to identify and assess climate-related risks and opportunities under different climate outcomes and circumstances. This includes consideration of the possible impacts that physical and transition risks could have on the Scheme. The results of the scenario analysis are shared with ALCo who assess them in the context of the Trustee Board's overall climate change risk mitigation objectives.

Bottom-up identification and assessment process

To assess risk at the mandate-level, the Trustee makes use of climate-related metrics to identify and assess risks pertinent to the Scheme's portfolio of assets, as discussed in the Strategy section. The Trustee acknowledges that measuring climate-related risks and opportunities from an investment perspective is complex, requiring new data and analysis. The Trustee therefore primarily uses five metrics: Total Absolute Carbon Emissions; Carbon Footprint; WACI, all three of which are backward-looking emissions-based metrics; and TPI MQ score and TPI CP score, forward-looking metrics based on climate governance, commitments, and projected emissions pathways for companies in which it invests. These metrics seek to provide a balanced view of the Scheme's current exposure to transition risk as well as an indication of the underlying holdings' future trajectory. As described in the Strategy section, over 2022 the Trustee also assessed the CTVaR of the DB and DC portfolios to provide additional insight into which issuers are most exposed to climate transition risk and to begin to quantify the financial risk of the climate transition. It also made use of the Climate Action 100+ Net Zero Company Benchmark score and the Science Based Targets Initiative's assessment of company targets in an attempt to classify Scheme holdings into different categories of alignment.

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The Trustee recognises that climate-related metrics remain incomplete and have mixed levels of accuracy and therefore does not rely on any individual metric to drive investment decisions. The Trustee also recognises the pace of change in the development of climate-related metrics and keeps its selection of metrics under active and ongoing review.

The five key metrics are incorporated into manager-level scorecards that assess the investment managers' integration of climate risk factors into their overall investment and risk management processes. The scorecards are used to monitor the year-on-year progress of each individual mandate against the Scheme's climate risk management objectives, as well as any mandate-specific targets. To supplement the annual climate metric analysis and in line with the Trustee's focus on stewardship in 2022, the scorecards also monitor engagement and voting statistics (where relevant) of the investment managers, and include an overarching qualitative assessment formed by the Scheme's investment advisors. The purpose of the scorecards is to enable the PSE to assess and monitor the climate-related risk exposure of the Scheme and to identify mandates where changes could be made if appropriate to keep them in line with the Trustee's objectives. In 2022, the scorecards were predominantly used to support and inform PSE engagements with investment managers.

Recognising their specialist risk identification and management skillset, the Scheme's investment managers are also invited to share their own assessment of climate-related risks identified within the portfolios they manage. This forms part of the regular engagement that the PSE and investment advisors perform with investment managers, the results of which influence the PSE's assessment of investment managers in its reporting of climate risks to ALCo.

Mitigating climate-related risks in an integrated way

Once risks have been identified and assessed appropriately as described above, the next step following the Climate Risk Management Framework is to take appropriate and proportionate actions to mitigate these risks. The Trustee has a preference for engagement as a means to mitigate the Scheme's climate risk exposure, however it will also make use of additional approaches deemed appropriate. This includes:

- Engagement with investment managers and policymakers,
- Consideration of climate-related risks in investment manager and mandate selection,
- Integration of climate-related considerations in fund design, and
- Seeking to limit exposure to climate-related risks by investing in climate opportunities.

Engagement with investment managers to mitigate climate risk in the portfolio

To help protect the Scheme's investments, the Trustee requires the Scheme's appointed investment managers to be cognisant of climate-related risks and opportunities within their investment processes and to manage climate-related risks on a discretionary basis, as applied to the assets of the Scheme, considering both transition and physical risks. The investment managers are required to report annually on how these risks and opportunities have been incorporated into their investment processes, including descriptions of any engagement activity undertaken with companies in their portfolios and qualitative responses to the issues raised by the PSE's climate risk analysis, within applicable guidelines and restrictions.

The Trustee also delegates voting rights to its investment managers and, where permissible, expects them to vote consistently with the Trustee's climate-related objectives, in line with the Trustee's fiduciary responsibility. Where this is not possible, for example within pooled fund structures, the Trustee has made the Scheme's climate-related objectives clear to the Scheme's investment managers and will engage with them should monitoring of their voting activity highlight inconsistencies with Scheme policies.

In 2022 the Trustee adopted a framework for effective stewardship, formulated in the Scheme's Stewardship and Voting Policy. The framework sets out the Trustee's expectations of the Scheme's investment managers' voting and engagement processes, the significance of stewardship in the appointment and monitoring of investment managers, and how the Trustee holds its investment managers to account versus expectations. It also details the Trustee's priority stewardship themes, selected based on the materiality of the financial risks that they pose. One of the priority themes pertains to climate change and the risks associated with significant increases in global temperatures. The Trustee will use the stewardship framework to assess and ultimately improve the alignment of the assets managed by investment managers to the Trustee's net zero ambition, with the intention of mitigating the climate risks facing the Scheme.

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Throughout 2022, the PSE, supported by the investment advisors, engaged with all of the Scheme's investment managers on matters relating to the climate risk exposure of the assets they manage on behalf of the Scheme. This engagement focussed on three overarching themes:

1. The manager's conviction in its own commitments to supporting the transition to net zero.
2. Making the manager aware of the Trustee's priority ESG themes (including climate change) and reinforcing the value the Trustee places on engagement as a risk management lever and its expectations of them to use it to create long-term value for the Scheme's members.
3. Understanding climate risk as part of the Scheme's HBUK Section's illiquid asset allocations, including real estate and renewable infrastructure.

The intention of this engagement was to initiate an ongoing process of improvement with the investment managers rather than act as a catalyst for significant immediate changes to the individual mandates managed on the Scheme's behalf.

To highlight two specific examples:

- In June 2022 the PSE used the manager scorecards to identify a climate laggard issuer held in one of the DB section's largest mandates that was not subject to climate-related engagement by the investment manager during the preceding calendar year. This issuer was highlighted as being a material contributor to the Scheme's absolute emissions. The PSE, supported by their investment advisor, used this information as the basis for targeted engagement with the investment manager. In response, the investment manager explained that the issuer was not featured on the focus list for engagement by their dedicated Responsible Investment team as, although it had not yet made a net zero commitment, it had demonstrated a significant reduction in Scope 1 and 2 emissions intensity from 2006 to 2020 and had met its 2030 absolute emissions reduction target well ahead of schedule. The PSE highlighted to the manager that it had not included scope 3 emissions in its analysis and that scope 3 was material for this company given its sector classification. The PSE retained some comfort with the manager's response, however this remains an area of ongoing monitoring for this mandate.
- Over 2022 the PSE, on behalf of the Trustee, has also engaged with one of the Scheme's sustainable equity fund managers concerning its alignment with the Trustee's climate objectives and the overall quality of the manager's systems supporting its sustainable investing philosophy. Following persistent underperformance of the mandate's investment return, which was against expectations, the PSE performed a review in May, focusing on understanding if the portfolio was still a suitable investment for the Scheme. A follow up review in August took place looking at the practices and investment theses underpinning the portfolio's holdings. This assessment remains ongoing and the mandate remains under enhanced oversight by the PSE.

Engagement with industry, and through policy advocacy to help mitigate systemic climate risk

Noting that active participation in industry initiatives and public policy consultations can provide valuable insight as to current best practice regarding climate risk management processes and to help to achieve our objectives, the Trustee completed five climate-related public engagements during 2022. These are described in the table below.

Engagement	Purpose	Details of engagement
Department of Work and Pensions ("DWP") Climate and Investment Reporting Consultation	The DWP consulted on whether to amend the Climate Change Governance and Reporting Regulations to require Schemes to include a forward-looking portfolio alignment metric in their TCFD reporting that assess the alignment of a security or portfolio with achieving the goals of the Paris Agreement.	The Trustee set out its broad agreement with the proposal on the alignment metric, however noted caution given the immaturity of methodologies and poor quality of data inputs. The Trustee highlighted historical actions to mitigate the risk of unintended consequences and expressed concern that subjective metrics may lead to bad investment decision-making. It was also highlighted that the Paris Agreement was not based on achieving a 1.5°C world, rather its aim is

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	The second part of the consultation sought feedback on steps the DWP was considering to improve the stewardship practices adopted by trustees and ultimately reported in the annual SIP Implementation Statement.	to get to well below 2ºC, and ideally to 1.5ºC. This is a subtle but material point. On the proposals relating to implementation statements, the Trustee's response welcomed the policy proposals as a means to improving stewardship practices in the investment value chain. Particularly the proposals to align with the principles of the 2020 UK Stewardship Code was welcomed.
International Sustainability Standards Board ("ISSB") Consultation on Sustainability Standards	The body responsible for developing a global baseline of sustainability disclosures for capital markets – launched a consultation on its first two proposed standards regarding climate-related risks and sustainability disclosures.	The Trustee was strongly supportive of the IFRS Foundation's introduction of sustainability and climate-related disclosure standards. The Trustee noted that there is considerable value to the Scheme in having verifiable, comparable, and decision-useful climate-related data. It will improve investors' ability to gain the necessary insights to fully understand sustainability and climate risks and opportunities associated with the entities in which they invest. The Trustee is a firm advocate of globally agreed Standards intended to improve climate- and sustainability-related data quality and robustness. The Trustee emphasised that the ISSB Board, in its opinion, should implement standards that recommend that corporate entities assess not only the impact of climate change on their financial health but also their contribution to the risks of climate change. Further, the Trustee believes the introduction, and international adoption of the proposed Standards will help remedy the issue of reluctance to disclose non-uniform data.
Glasgow Financial Alliance for Net Zero ("GFANZ") Consultation on Portfolio Alignment and Net-zero Transition Plans	The Trustee responded to two consultations from GFANZ over 2022: First, GFANZ released a report that provided a practitioner perspective for measuring the alignment of investment, lending and underwriting activities with the goals of the Paris Agreement and critical 2050 global net zero objectives. The report proposed and sought guidance on portfolio alignment use cases as well as enhanced guidance for designing and implementing portfolio alignment metrics. Second, GFANZ released a set of recommendations and guidance on "Net Zero Transition Plans for the Financial Sector".	In the first consultation, the Trustee noted its support for the GFANZ in its vital aim of getting signatories to show how aligned their portfolios are with global climate goals. It was the Trustee's view that investors need comparable and decision-useful data about forward-looking climate-related risks, with market consistent methodologies to ensure that investment managers are building and maintaining portfolios that create real-world decarbonisation. The Trustee submitted a response letter to the second consultation to feedback the needs of asset owners, noting its support for building on the recommendations of the TCFD, the emphasis on effective engagement, and the guidance's cross-sectoral applicability. The PSE also made several recommendations to refine the standards to better reflect the Scheme's practical experience and views to meet the needs of asset owners.
Response to House of Commons'	The House of Commons' EAC released a report on 'The financial	In its response to the EAC's letter, the Trustee set out its net zero plans and explained its approach to

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Environmental Audit Committee ("EAC")	Sector and the UK's Net Zero transition'.	fossil fuel investment, which is centred on engagement.

Mitigating climate-related risks via investment manager and mandate selection

The Trustee has sought to integrate climate change considerations into the Scheme's investment approach for DC members for a number of years. This includes partnering with LGIM, FTSE Russell, and Redington to first develop the Future World Fund in 2016, and later evolve the fund further in 2021, which is a climate-tilted passively managed multi-factor global equity fund. More recently in 2021 the Trustee worked with Schroders, an investment manager within the Scheme's DC pension fund arrangements, to develop a bespoke diversified growth pooled fund with enhanced ESG (including climate change) risk management characteristics.

As noted above, the Future World Fund forms part of the growth phase of the lifecycle default investment options for DC members. The principal aim of the fund is to provide investors with exposure to a well-diversified global equity investment portfolio which uses climate tilts and investment factors (principally quality, value, size & low volatility) to determine the benchmark weights of the underlying companies in which to invest.

The Future World Fund also benefits from LGIM's Climate Impact Pledge[5]. Firstly, LGIM identified the 15 climate-critical sectors that are responsible for more than half of greenhouse gas emissions from listed companies. LGIM focuses on over 1,000 companies, requesting engagement with them on the plans they are developing for a sustainable future. If, after a year of engagement, the companies are not implementing viable plans to transition to a sustainable future, LGIM pledges that it will vote against the re-election of the companies' chairs at the next annual general meeting using all the voting interests from their assets under management. The result of LGIM's activity and efforts of other shareholders can be seen in the overall number of companies within LGIM's invested universe setting net zero targets, which has almost doubled since October 2020. Secondly, the Future World Fund will divest from such companies, even though they remain part of the benchmark index. As of 2022, LGIM excluded 14 companies from the Scheme's global equity exposure as an outcome of the manager's Climate Impact Pledge, as shown in Appendix C.

During 2022, the Trustee sought to improve the positive climate characteristics of the Emerging Markets Equities – active Fund within the Freechoice options available to DC members. This allocation now includes a fund that takes a sustainable approach to investing in emerging markets by allocating the fund's assets to companies that demonstrate improving sustainability characteristics. Sustainable companies are those that the underlying investment manager believes to have effective governance and superior management of environmental issues.

Over the six months from May to October 2022, the PSE met on a number of occasions with one of the investment managers who was also involved in a manager selection exercise within the DC section of the Scheme. The aim of these engagements was to understand whether there was good institutional alignment between the investment manager and the Trustee, and to raise concerns regarding its commitment to supporting the transition to net zero. The PSE initially met with the investment manager to understand their position and share initial concerns from the Scheme's perspective. Discussions continued between the Chairs of the Trustee Board and of ALCo and the investment manager. The investment advisors were also consulted for their views on the manager's commitment to climate change risk mitigation and its position on stewardship. The manager selection process continued, with heightened focus on seeking a manager with good institutional alignment. In this manager selection exercise, this manager was not selected.

Mitigating climate-related risks via fund design

In past years the Trustee has worked closely with a number of investment managers to develop bespoke funds with enhanced climate change risk management characteristics for the Scheme. Examples of this have been disclosed in the Scheme's previous TCFD report and relate to the climate-tilted equity fund designed with LGIM in 2016 as mentioned above and a diversified growth fund designed with Schroders in 2021.

During 2022 the Trustee created a new DB buy and maintain credit fund with Schroders. Part of this fund's objective is to look to integrate environmental, social and governance factors into the investment process and

[5] LGIM expanded their Climate Impact Pledge in October 2022 from covering c. 1,000 companies in 15 sectors to now cover more than 5,000 companies across 20 climate-critical sectors. LGIM have also increased the number of companies subject to deep engagement to over 100.

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seek to engage where appropriate with investee companies to be aligned with the goals of the Paris Agreement to keep temperature increases to below 2°C (with an ambition to limit warming to no more than 1.5°C) relative to pre-industrial times. When considering the appointment of Schroders to manage this fund, the quality of their engagement on climate risk was an important factor.

Mitigating climate-related risks by capturing climate opportunities

As well as adopting climate risk mitigating actions as part of the Trustee's investment strategy, the Trustee also strives to capture opportunities that will contribute to limiting the adverse impacts of climate change while also contributing to enhanced member outcomes. Within the DC portfolio, the funds that the Trustee designed with LGIM and Schroders Investment Management Ltd, have a dual objective of managing climate risks and capturing climate opportunities where feasible. The Trustee also has a sustainable equities allocation where the investment manager focuses on investing in climate solutions and assets aiding the low-carbon transition. In addition, the DB portfolio maintains an investment in a diversified mandate of renewable onshore wind and solar infrastructure assets managed by Schroders Greencoat. These assets generally help to limit the overall carbon footprint and climate risk exposure of the Scheme while also contributing to improvements in the low-carbon transition of the real economy. They also provide a steady stream of cash flows that are used to meet member benefit payments.

In October 2022, the Scheme's investment advisors provided a review of climate-related opportunities, assessing both the Scheme's existing illiquid asset allocations and the wider asset universe. The PSE maintains an active dialogue with the Scheme advisors to understand the latest trends and climate opportunities available in the marketplace and to ascertain if any are worthy of further consideration.

Monitoring climate-related risk exposure

The top-down and bottom-up climate analysis described above was used in 2022 to update the climate dashboard monitored by ALCo at the DB and DC portfolio level. The dashboards build upon the individual investment manager scorecards to present an assessment at the total portfolio level.

The climate metrics set out in this report are key tenets of the dashboard and scorecards, with additional metrics that combine the quantitative and qualitative assessments of each investment manager, supplementing the assessment of mandates and investment managers' practices. The Trustee recognises, however, that data and methodology gaps remain, and therefore continues to explore ways in which new forms of risk analysis will assist with the monitoring of climate-related risks across different asset classes. The investment advisors also perform specialist monitoring of the Scheme's investment managers on an ongoing basis, considering climate-related risk and opportunities at the mandate-level, but also taking an overarching Scheme-level view.

In 2022, the Trustee requested that all managers complete an annual questionnaire that included asking the investment managers to describe their procedures and processes to address climate change risk, including relating to their engagement on climate change issues e.g. voting, their climate risk management practices at the firm and Trustee-mandate levels. The purpose of this annual exercise is to identify whether the Scheme's investment managers have deviated from the Trustee's climate-related objectives. If any deviation is observed, ALCo will be informed, and if necessary, the PSE will recommend corrective steps. There were no recommendations to remove a manager based on climate-related factors alone during 2022, however the PSE did engage with a number of managers to generate improvements.

Reporting on the Trustee's management of climate-related risk

At the end of 2022, the PSE introduced quarterly reporting to ALCo with a summary of their manager monitoring activity and providing, if necessary, recommended mitigating actions they believe ALCo should approve in respect of the Scheme's managers. If the mitigating action is strategic in nature, a recommendation will be submitted to the Board for approval, with appropriate professional advice. The PSE's reporting is supplemented by reporting provided by the Scheme's advisors to ALCo on a quarterly basis that summarises the takeaways from their manager monitoring and assessment. These include clear calls to action should the advisors feel a manager is not meeting the required standard set by the Trustee. The ARC also provide a report on the Trustee's Risk Register on a quarterly basis. This includes an assessment of climate-related factors.

In addition to regular internal monitoring, the Trustee also reports on climate risk management practices and the steps it has taken to address climate-related risks in annual publicly disclosed reports. The Trustee published the Scheme's first annual TCFD report in 2018 and the Scheme's first Implementation Statement in 2021.

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Metrics & Targets

Assessment of climate metrics in relation to the Scheme's investments

The Trustee currently uses five metrics to help assess the exposure to climate-related risks of the DB and DC parts of the Scheme. The metrics offer a balanced assessment of the Scheme's current and forward-looking exposure to climate-related risk.

The Scheme's 2021 TCFD report presented results for four climate metrics. In 2022 the Trustee adopted an additional metric that assesses the degree of alignment to the goals of the 2015 Paris Agreement of the Scheme's assets. This metric was selected to allow the Trustee to monitor its progress against its target of "having the ambition of achieving all of its corporate bond and equity investments being fully aligned to the goals of the Paris Agreement by 2030 across its DB and DC assets" and to continue to align with its statutory obligations.

Details of the metrics and their calculation methodologies are provided in the table below:

Metric Type	Metric	Description and methodology
Absolute Emissions	Total Carbon Emissions (tCO2e)	Measures the absolute emissions associated with a portfolio, expressed in tonnes CO2e. It is a metric based on ownership, where ownership is determined based on the Enterprise Value Including Cash (EVIC) of the underlying corporate issuer, in line with the guidance from the Partnership for Carbon Accounting Financials (PCAF).
Emissions Intensity	Carbon Footprint (tCO2e / £m invested)	Measures the total emissions normalised by total portfolio value. It is a metric based on ownership, where ownership is determined based on the EVIC of the underlying corporate issuer, in line with the guidance from the PCAF.
	Weighted Average Carbon Intensity (tCO2e / £m revenue)	Measures a portfolio's exposure to carbon-intensive assets. It is a metric based on exposure, rather than ownership. The metric covers corporate assets as well as sovereign assets, where the corporates' emissions intensity is defined as the emissions in tonnes of CO2e per company revenue and countries' emissions intensity is defined as a country's emissions in tonnes CO2e on a production basis per Gross Domestic Product (GDP).
Non-Emissions-Based Metric	TPI Management Quality Score	Measures companies' management and governance of GHG emissions and the risks associated with the low-carbon transition. The metric ranges from a score of 0, where a business is unaware of (or not acknowledging) climate change as a business issue, to 4, where a business has integrated climate-related considerations into business strategy.

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Portfolio Alignment Metric	TPI Carbon Performance Score	Provides a quantitative benchmarking of companies' emissions pathways against the 2015 Paris Agreement goals. This metric translates greenhouse gas emissions targets made at the international level (e.g., under the 2015 Paris Agreement) into a benchmark based on sectoral decarbonisation pathways. The benchmark is used to assess the actual performance and forward-looking trajectory of individual companies against each decarbonisation pathway. The TPI metrics provide assessments of companies' trajectory on three time horizons: 2025, 2035 and 2050. The metric ranges from a score of 0% to 100%, showing what proportion of the portfolio is assessed as aligned with the three decarbonisation pathways consistent with the goals of the 2015 Paris Agreement.

Emissions-based metrics

To calculate the absolute emissions, emissions intensity, non-emissions-based metric, and portfolio alignment metric, the Trustee has used individual portfolio holdings data provided by the investment managers. For the emissions-based metrics, the individual portfolio holdings data was used in conjunction with emissions data provided by MSCI to estimate mandate-level scores. The emissions data provided by MSCI made use of a combination of issuer-reported and modelled data. For the non-emissions-based metric and portfolio alignment metric, the individual portfolio holdings data was used in conjunction with data provided by the Transition Pathway Initiative ("TPI").

Individual portfolio holdings data was available for most of the listed and publicly traded assets across the DB and DC portfolios. In certain instances, individual portfolio holdings data was unavailable due to the complex or illiquid nature of the assets within the portfolio. In these cases, where possible, the metrics presented below used figures calculated and provided by the Scheme's investment managers. Details of the data sources and calculation methodologies can be found in Appendix D.

There were however some remaining assets (Asset and Mortgage-Backed Securities and Private Equity assets), equivalent to circa 5% of DB portfolio assets, for which it was not possible to obtain emissions-based and non-emissions-based data. This is reflective of the broader coverage issues associated with these asset classes. The Trustee elected not to make use of proxy figures for these asset classes due to the complexity of the methodology and the heavy reliance on modelling assumptions to derive an estimate. The Trustee intends to provide further updates on the progress of this work in future disclosures.

The Scheme's own operational emissions, which are scope 1 and scope 2 emissions directly relating to its business operations, are likely to be immaterial. The analysis for the emissions-based metrics therefore encompasses the Scheme's most material scope 3 emissions: financed emissions. In line with the statutory guidance, the figures below disclose the Scheme's financed scope 1, scope 2, and for the first time in this year's report, the scope 3 emissions.

Scope 3 financed emissions represent the indirect emissions across the value chain of companies and assets the Scheme is invested in, both upstream and downstream. In simple terms, these are emissions that are the result of activities from assets not owned by the company and are beyond a given company's direct operational control. As such, scope 3 emissions capture a number of different activities. The Greenhouse Gas Protocol has specified fifteen categories of these activities. For this reason, attributing and calculating scope 3 emissions is very complex at a company level, at a fund level and also at a Scheme level. However, this also means that in aggregate, scope 3 emissions tend to be considerably larger than scope 1 and 2 emissions combined. Due to the level of complexity involved in capturing scope 3 emissions, it is rarely reported by underlying companies. To address this coverage and inconsistency challenge, the Trustee has chosen to report scope 3 emissions that have been modelled by MSCI. The Trustee recognised that the use of modelled data is likely to result in a margin

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of estimation error due to the inherent complexity of greenhouse gas emissions data, however, it believes this approach provides more consistency than alternatives. The Trustee completed a review of reputable third-party data providers in 2022 and is comfortable that MSCI is an appropriate data provider for the Scheme while recognising possible margins of error.

The Trustee acknowledges that due to existing methodological limitations, when calculating the Scheme's scope 1 and 2 financed emissions for a given investment, it is likely that the estimated scope 1 and 2 financed emissions will form part of the scope 3 financed emissions for another investment. Aggregating the three emissions scopes would therefore lead to a double counting effect that would result in a higher estimate of the Scheme's true financed emissions. In light of this unavoidable issue, the total scope 1 and 2 absolute emissions and carbon footprint have been reported separately from scope 3 emissions.

Due to the emerging nature of climate data disclosure and reporting across the economy, it is unavoidable that data gaps remain. The Trustee continues its ongoing engagement with the Scheme's investment managers and wider industry to in relation to the availability of metrics and company disclosures. It is hoped that over time this will assist with data quality and coverage.

Non-emissions-based metrics

The Trustee's non-emissions-based metric and alignment metric use the TPI's publicly available dataset to provide a forward-looking assessment of the Scheme's exposure to climate transition risk. The Trustee has been monitoring the TPI MQ scores of underlying funds and issuers, however, it is the first time the Trustee is disclosing a portfolio-alignment metric.

Over 2022 the Trustee went through a careful process to select an alignment metric it considered most appropriate to monitor for the Scheme's DB and DC portfolios. The Trustee was presented detailed information including the advantages and disadvantages of three distinct alignment metrics: Science Based Targets Initiative score, TPI CP score and Implied Temperature Rise. The Trustee selected the TPI CP metric as its choice of alignment metric because it complements the TPI MQ score the Trustee has been monitoring, it is independently calculated with academic rigour and it focuses on material carbon emitters, covering companies with higher climate risk exposure. However, the Trustee recognises that while it covers the higher emitting companies, the metric suffers from low coverage in terms of the number of companies so far subject to scoring (TPI assessed 582 companies at the time of data gathering). It is expected that coverage of this metric will increase meaningfully over time and this is an area the Trustee is engaging with its investment managers and the wider industry on as explained elsewhere in the report.

Climate metrics for the Scheme's DB assets as at 31 December 2022

Absolute Emissions and Emissions Intensity metrics

The table below provides the results for the first three climate metrics at an asset class level, alongside the coverage of total DB assets and the coverage of emissions data. The figures are provided at an asset class level, rather than a total portfolio level as aggregating would have meant adding sovereign emissions to corporate emissions, resulting in a degree of double counting as outlined in the previous section. Additionally, as the current methodology for the attribution of emissions from sovereign bonds differs from that for other asset classes, the Trustee feels it is appropriate to consider these figures separately. Details on the calculation methodologies for the different asset classes are provided in Appendix D.

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Asset Class	Absolute Carbon Emissions (tCO2e)		Carbon Footprint (tCO2e / £m invested)		WACI (tCO2e / £m revenue) Scope 1&2
	Scope 1&2	Scope 3	Scope 1&2	Scope 3	
LDI[1,2]	1,313,338	N/A	194.2	N/A	125.3
Global Bonds	268,813	2,015,765	43.7	327.8	186.6
Infrastructure Debt[1]	126,251	330,344	278.3	728.1	118.5
US Treasuries[1,2]	119,842	N/A	300.3	N/A	219.4
Sterling Bonds[3]	96,631	580,295	60.3	361.8	155.5
US Dollar Bonds	55,240	374,394	61.0	413.1	629.4
Diversified Fund	3,855	19,589	106.6	541.9	332.4
Property[1,4]	7	76,396	0.0	77.2	N/A
Renewable Infrastructure[1]	342	16,606	1.1	53.9	1.4

[1] *Data provided by the Scheme's respective investment managers.*
[2] *Due to the nature of the fund and the calculation methodology used, Scope 3 absolute emissions and carbon footprint data was not available.*
[3] *Two of the Scheme's Sterling Bond funds have been excluded from the calculations due to the lack of EVIC data available for issuers (largely supranational).*
[4] *Due to the nature of the fund and the calculation methodology used for WACI, this data was not available.*

The fund with the highest absolute emissions is the DB portfolio's allocation to Liability Driven Investments (LDI), which is predominantly the result of the amount invested (circa £6.8bn, equal to circa 37% of assets). This mandate primarily consists of UK Government bonds and cash assets and is used for liability interest rate and inflation hedging purposes. However, the emissions attributed to the LDI mandate account solely for the Scheme's investment in UK Government bonds. Looking at carbon footprint, the Infrastructure Debt, US Treasuries, and LDI mandates are the most emissions intensive in respect of scope 1 and 2 emissions. When considering scope 3 emissions, the Infrastructure Debt allocation has the highest carbon footprint.

The figures for the Property assets were provided by the investment managers. The Property Fund has a scope 1 and 2 carbon footprint close to zero but a positive scope 3 carbon footprint. This is due to the treatment of emissions associated with the underlying assets applied by the investment managers of the Scheme's property assets, whereby the majority of the property assets' emissions are tenant emissions that are classified as scope 3.

The Trustee was able to source scope 1 and 2 emissions data for all the funds in the table, however scope 3 emissions data for the sovereign bond funds (LDI and US Treasuries) were not available. Scope 3 emissions for sovereign bonds are emissions related to non-energy imports of goods and services. The Trustee was not able to source this data for this report as the Scheme's investment managers providing sovereign bond data were not able to provide this. The Trustee will engage with the Scheme's investment managers to attempt to overcome this challenge.

Based on the analysis, the US Dollar Bonds have the highest exposure to companies that emit a high proportion of emissions relative to their revenues, with a WACI significantly higher than the other funds. This is due to relatively larger allocation to the energy (a sector with high scope 3 emissions) and utilities sectors, reflective of the investible universe of debit-issuing US companies suitable for a mandate of this type.

The Trustee will perform more in-depth analysis to further explore the drivers of these insights, which will inform the Trustee's engagement activities over 2023.

Coverage statistics	
DB assets covered as a percentage of total (excluding cash)	**89%**
Average data coverage where line-by-line emissions data was available	**47%**

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Overall, the data in the table above covers 89% of the total DB assets (excluding cash). This includes the listed and publicly traded assets calculated using individual portfolio holdings data from the MSCI data feed as well as illiquid assets and gilts where the emissions figures were provided by the Scheme's investment managers. The 11% of non-cash assets that could not be covered by the analysis is made up of Private Equity and Asset and Mortgage-Backed Securities assets, as well as two Sterling Bond funds that were excluded due to the lack of EVIC data due to the nature of the assets held in these funds (privately traded and quasi-sovereign bonds with no EVIC data). Emissions coverage of the listed and publicly traded assets was better for some funds than others.

On average, 47% of the assets within the funds covered with individual portfolio holdings data had available emissions and EVIC figures, inputs necessary to calculate the ownership-based emissions metrics. This result was largely driven by the portfolio's large Global Bonds allocation for which coverage achieved was 46%, the lowest of the covered funds. The Diversified Fund achieved the highest coverage of 71%. To address the issue of low coverage, which can result in a relative understatement of emissions-based metrics, the Absolute Emissions and Emissions Intensity figures for assets within the funds covered with individual portfolio holdings data were scaled up to reflect an equivalent 100% coverage. The Trustee is aware that whilst this aids comparability across assets, it remains an imperfect assessment of the Scheme's financed emissions.

The Trustee recognises the data quality and quantity challenges, although notes that average data coverage has been improving year-on-year since the Trustee's first TCFD report in 2018. To overcome this challenge, the Trustee engages with its investment managers as well as with regulators and industry bodies. For example, in 2022 the Trustee responded to the ISSB's consultation on Climate-related disclosures which, if implemented, is expected to significantly increase data availability via company level climate disclosures.

TPI Management Quality and Carbon Performance Scores

The Trustee uses metrics from the TPI to balance the backward-looking emissions metrics with forward-looking indicators of climate risk. These metrics cover the listed and publicly traded assets of the DB portfolio which account for 39% of DB assets. Whereas the analysis was undertaken on 39% of assets, coverage of companies with underlying scores remains low. Due to the nature of the underlying assets, the TPI MQ scores for the DB portfolio were provided by the Scheme's investment managers. It was therefore not possible to calculate an average coverage figure. The TPI MQ score reflects a weighted average of the companies which do have a TPI rating within the portfolio. The TPI CP score reflects the total assets of the portfolio.

Metric	Result
TPI Management Quality Scores	Aggregate TPI MQ across all mandates where data available: **3.7**
	Highest TPI MQ of all mandates where data available: **4.0**
	Lowest TPI MQ of all mandates where data available: **3.3**
TPI Carbon Performance Score	Aggregate TPI CP score (2025) = **4.3%**
	Aggregate TPI CP score (2035) = **3.0%**
	Aggregate TPI CP score (2050) = **4.9%**

As noted above, the TPI's assessment universe comprised only 582 companies at the time of data gathering. This relatively small universe resulted in low aggregate coverage for both TPI MQ and TPI CP metrics for the DB portfolio. The Trustee uses these metrics for assessing the alignment of individual companies and funds, rather than at the more aggregated level disclosed here. At present, it is challenging to meaningfully use the aggregated TPI CP and TPI MQ metrics to a portfolio-level given the metrics' low coverage. The Trustee expects the coverage for this metric to improve over time, yielding more meaningful and insightful conclusions at an aggregate level.

The Trustee has communicated its choice of climate metrics with its investment managers and continues ongoing engagement with them in relation to the availability of metrics and company disclosures. It is hoped that over time this will assist with data quality and coverage.

Starting with TPI MQ, this metric assesses climate governance of high emitting companies. A score of 0 means a company is unaware of climate-related risks that could impact the business while a score of 4 means a company is strategically integrating climate-related considerations in its business strategy. Considering the aggregate TPI MQ across all mandates, of the companies the Scheme invests in high impact sectors, they have

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an average score of 3.7. This provides comfort to the Trustee that they have assessed how climate-related risks impact their business and have started integrating these considerations into their business strategy.

To assess the DB portfolio's alignment to the goals of the Paris agreement, the Trustee has calculated an aggregate TPI CP score. This metric looks at the proportion of the DB portfolio assets that are projected to be aligned with relevant decarbonisation pathways at three different points in time: 2025, 2035 and 2050. The Trustee recognises that the TPI CP scores are likely to change at different rates across the different time horizons. This is due to the varying pace of economic, regulatory, and technological developments necessary to bring different sectors in line with the TPI's target decarbonisation benchmarks.

The results shown above imply that circa 3-5% of the portfolio's assets are aligned to the different decarbonisation pathways with small variations on the different time horizons. It is expected that this result is largely a function of the low coverage of the TPI metric, rather than a majority of the portfolio's constituents operating in way that is unaligned with internationally agreed decarbonisation goals. As noted in the Risk Management section, the Trustee also made use of the Climate Action 100+ Net Zero Company Benchmark score and the Science Based Targets Initiative's assessment of company targets to classify individual mandates into different categories of alignment.

Climate metrics for the Scheme's DC assets as at 31 December 2022

Absolute Emissions and Emissions Intensity metrics

The table below provides the results for the first three climate metrics at a white label fund level – that is to say, how the funds are described to members - alongside the coverage of total DC assets and the coverage of emissions data. The figures reported are consistent with the range of funds available to DC members, rather than aggregated to a total portfolio or at the popular arrangement level, to aid transparency and clarity in the results.

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White Label Fund	Absolute Carbon Emissions (tCO2e)		Carbon Footprint (tCO2e / £m invested)		WACI (tCO2e / £m revenue) Scope 1&2
	Scope 1&2	Scope 3	Scope 1&2	Scope 3	
Global Equities – passive	299,585	1,790,429	77.0	460.1	153.6
Diversified Assets – active	27,913	177,476	34.3	218.0	104.4
Global Equities – active	19,423	113,386	38.7	225.7	120.9
Global Bonds – active	11,747	63,221	65.4	352.0	185.9
Property – active[1]	7,937	227,310	101.9	2,917.0	39.3
Islamic Global Equities – passive	2,854	26,354	31.8	293.9	86.9
Emerging Markets Equities – active	1,750	11,704	19.9	133.1	76.8
UK Equities – active	3,573	44,279	42.2	523.3	84.7
North American Equities – passive	3,366	21,029	49.2	307.2	180.7
Sustainable and Responsible Equities – active	1,549	9,504	22.7	139.4	106.2
Fixed Annuity Tracker – passive	1,812	15,692	37.7	326.7	115.0
UK Equities – passive	3,429	33,468	102.0	995.9	146.4
Inflation Linked Annuity Tracker – passive	709	5,803	41.3	337.8	118.7
Asia Pacific (excluding Japan) Equities – passive	2,018	13,360	117.9	780.4	241.9
European (excluding UK) Equities – passive	798	3,442	85.3	368.1	133.9
Japanese Equities – passive	438	3,659	79.6	664.9	109.1
Sterling Corporate Bond Funds – active	80	594	19.2	143.4	123.5

[1] *Data for Property – active asset allocation is estimated using both individual portfolio holdings data and data calculated and provided by the Scheme's investment managers.*

The allocation with the largest absolute emissions, both on scope 1 and 2 and scope 3 basis, is the Global Equities – passive fund. As this is the main DC default investment strategy, this result is a function of the size of the investment rather than the intensity of the fund. Looking at the intensity metrics, within the DC portfolio funds with the highest carbon footprint are some of the regional passive equity funds. The Asia Pacific (excluding Japan) Equities – passive, UK Equities – passive and European (excluding UK) Equities – passive funds have the top 3 highest carbon footprints as at the end of 2022. This ranking is reversed when considering scope 3 carbon footprint in isolation, with the UK Equities – passive funds displaying the highest scope 3 carbon footprint. While having the highest carbon footprint, the Asia-Pacific (excluding Japan) Equities – passive fund also has the highest WACI, meaning this fund has the highest exposure to companies that emit a high proportion of emissions relative to their revenues. These insights will inform the Trustee's engagement with its investment managers over 2023 as it continues to explore the drivers of these metrics and how climate impacts can be reduced over time.

Looking at scope 3 emissions, the table above demonstrates the point raised earlier: scope 3 emissions are multiples of scope 1 and 2 emissions for all of the funds. This is expected due to the scale of activities and the range of sources of emissions captured in scope 3 when compared with scope 1 and 2 emissions. As this is the

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first year the Trustee has specifically considered and disclosed the scope 3 emissions of its underlying funds, it will undertake further analysis to understand the underlying factors driving scope 3 emissions during 2023.

Coverage statistics	
DC assets covered as a percentage of total (excluding cash)	**100%**
Average data coverage where line-by-line emissions data was available	**87%**

The emissions data in the table above cover 100% of the total DC assets (excluding cash). It was possible to cover most funds using line-by-line emissions data analysis from the MSCI data feed, with the exception of three funds within the Property– active allocation, where emissions data was provided by the respective investment managers. Overall, emissions coverage of the listed and publicly traded assets was better for the DC funds due to better data availability on equity assets generally. On average, 87% of the assets within the funds with individual portfolio holdings data had available emissions and EVIC figures, inputs necessary to calculate the ownership-based emissions metrics.

Although more than half of the funds with individual portfolio holdings data had coverage > 95%, the average data coverage was reduced by the circa 14% allocation to the Diversified Assets – active fund, where coverage achieved was 33%. This was not an unexpected result given the wide variety of asset classes the Fund invests in, many of which do not have readily available emissions and EVIC figures. Consistent with the approach taken to the assets within the DB portfolio, to address the issue of low coverage the Absolute Emissions and Emissions Intensity figures for assets within the funds covered with individual portfolio holdings data were scaled up to reflect an equivalent 100% coverage.

TPI Management Quality and Carbon Performance Scores

The Trustee uses metrics from the TPI to balance the backward-looking emissions metrics with forward-looking indicators of climate risk. These metrics cover the listed and publicly traded assets of the DC portfolios which account for 98% of DC assets. Whereas the analysis was undertaken on 98% of assets, the average coverage of companies with underlying scores remains low at 15% of assets. The TPI MQ score reflects an average of the companies which do have a TPI rating within the portfolio. The TPI CP score reflects the total assets of the portfolio.

Metric	Result
TPI Management Quality Scores	Aggregate TPI MQ score across all funds where data available: **3.5**
	Highest TPI MQ score of all funds where data available: **4.0**
	Lowest TPI MQ score of all funds where data available: **1.5**
TPI Carbon Performance Score	Aggregate TPI CP score (2025) = **3.8%**
	Aggregate TPI CP score (2035) = **3.8%**
	Aggregate TPI CP score (2050) = **6.8%**

As noted above, the TPI's assessment universe comprised only 582 companies at the time of data gathering. This relatively small universe resulted in low aggregate coverage for both TPI MQ and TPI CP metrics for the DC portfolio.

Looking at the Trustee's chosen non-emissions-based metric of choice, TPI MQ, the high-level conclusions are similar to those for the DB portfolio above. Considering the aggregate TPI MQ across all mandates, of the companies the Scheme invests in in high impact sectors, they have an average score of 3.5. This means they have assessed how climate-related risks impact their business and have started integrating these considerations into their business strategy.

At present, the investment manager of the Global Equities – passive allocation, considerably the largest allocation within the DC portfolio, uses the TPI MQ metric within its portfolio construction and evaluation process. The

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higher aggregate TPI MQ score for the DC portfolio relative to the DB portfolio is therefore not an unexpected outcome.

The Trustee noted that one of the funds within the Emerging Markets Equities – active allocation, has a TPI MQ score of 1.5, meaningfully below the aggregate score and an outlier versus the remaining funds in the portfolio. A symptom of the relatively small assessment universe, the TPI MQ metric was applicable to only two companies within this fund: one with a score of 1 and another with a score of 3. Other than these two issuers, the TPI does not assess any other issuers in the fund. The Trustee will engage with the relevant investment manager on this finding during 2023.

The TPI CP metric reflects the proportion of the DC portfolio that is projected to be aligned with the decarbonisation pathway of the 2015 Paris Agreement at three different points in time: 2025, 2030 and 2050. Given the longer time horizon and the significance of 2050, it is expected that a higher proportion of assets are aligned by 2050 versus 2025. However, 2050 decarbonisation targets should be backed by interim targets and associated decarbonisation pathways. So far, the TPI CP data for the DC portfolio suggests that this is not the case. This is a point the Trustee and the PSE will bring out in its engagement with its investment managers. The relatively low scores are reflective of the small coverage universe for this metric, which, as discussed above, is expected to improve over time.

The Trustee has communicated its choice of climate metrics with its investment managers and continues ongoing engagement with them in relation to the availability of metrics and company disclosures. It is hoped that over time this will assist with data quality and coverage.

Climate Metrics Conclusion

The results set out above are used by the Trustee to provide insights on the Scheme's climate risk exposure as part of the bottom-up identification and assessment process set out in the Risk Management section. In addition, the metrics also form part of the Trustee's "climate dashboard" which is used as a monitoring tool to track the Scheme's progress versus the Trustee's climate-related objectives. The dashboards are maintained separately for DB and DC assets, providing a holistic view of each portfolio. Underlying the dashboards are fund-level climate scorecards, which are used to monitor the Scheme's investment managers' performance and to inform engagement activities. The scorecards combine the metrics' quantitative assessments with qualitative considerations gathered via discussions with the investment managers.

The Trustee reviews the selection of climate metrics in both the dashboard and the scorecards from time to time as appropriate to ensure it continues to make use of best practice techniques that offer effective insight to the Scheme's climate-related risk exposure.

Note: All line-by-line emissions-based analysis is provided by the Scheme's Investment Advisor, Redington Ltd ("Redington"), and the data in the report is sourced from MSCI©. Certain information ©2023 MSCI ESG Research LLC. Reproduced by permission. Where the emissions-based analysis was sourced directly from investment managers, the relevant approaches are outlined in Appendix D.

The Trustee's climate-related targets

In 2022, the Trustee selected a new climate data provider and adopted revised calculation methodologies for the emissions-based metrics to better align with evolving best practice and regulatory guidelines. Following these changes, the Trustee has recalculated the Scheme's 2019 baseline emissions level and annual progress. Details of the Scheme's historical progress and most recent emissions level as at 31 December 2022 are provided below.

In the 2021 TCFD report the Trustee set out details of its target to achieve net zero emissions by 2050, or sooner. The high-level 2050 target is supported by shorter-term interim targets, which include:

- Targeting a real economy emissions reduction interim target of 50% by 2030 or sooner for the Scheme's equity and corporate bond mandates, in line with the findings of the most recent IPCC report (compared to a baseline of financed emissions as at 31 December 2019).
- Having the ambition of achieving all of our corporate bond and equity investments being fully aligned to the goals of the Paris Agreement by 2030 across both DB and DC assets.
- Enhancing the Trustee's engagement and stewardship efforts through the Scheme's investment managers.

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In 2022 the Trustee published its Investor Climate Action Plan, describing the Trustee's approach to net zero and its plans to deliver on the long-term and interim targets. To date the Trustee has been able to quantitatively monitor progress against the interim decarbonisation target, details of which are described below. Progress against the Trustee's alignment and engagement targets are more challenging to quantify robustly at this point in time, however. The section below provides an update on the Trustee's progress in measuring these two targets.

Progress towards the Trustee's 2030 decarbonisation target

In 2022 the Trustee calculated the baseline financed emissions of its listed equity and corporate bond mandates using EVIC, following the recommendations of the PCAF. This allows the Trustee to compare the baseline financed emissions to a given year's financed emissions as the calculation methodologies applied are the same.

The Trustee's 2030 decarbonisation target covers scope 1 and 2 financed emissions, however, it does not cover scope 3 emissions. This is due the challenges around calculating, attributing, and aggregating scope 3 emissions that was explored in the Metrics section of this report. As the Trustee's reported scope 3 emissions are all based on data provider estimates (in an attempt to provide a consistent assessment), the rigour behind sourcing and calculating scope 3 emissions is not yet the same as scope 1 and 2 emissions.

Decarbonisation target	The Trustee aims to achieve 50% emissions reduction in the Scheme's listed equity and corporate bond mandates by 2030 or sooner compared to a year-end 2019 baseline. This target covers scope 1 and 2 financed emissions.
Progress to date	The carbon footprint has declined as compared to 2019: by 34% in DB and 38% in DC portfolios.
Steps the Trustee is taking to achieve its target	The Trustee makes use of two key levers of action to achieve its decarbonisation target: • **Investing for a net zero future:** As described in the Risk Management section the Trustee has already made a number of asset allocation, mandate selection and fund design decisions to increase its investment in climate solutions and assets that are aligned to a net zero future. • **Engaging for a net zero future:** The Trustee currently sees engagement as its main lever of influence to help decarbonise the assets that it holds. This includes engagement with the Scheme's investment managers, policymakers and the wider industry. The Trustee has clearly communicated its decarbonisation target to all of the Scheme's investment managers and it expects its managers to align their investment decision-making with these goals. As explained earlier in the report, the Trustee's Stewardship Framework helps the Trustee hold investment managers to account on climate-related engagements that are material to the Scheme, outlining clear expectations and escalation measures.

The charts below provide the Scheme's progress on its 2030 decarbonisation target, looking at the financed emissions of the DB and DC parts of the portfolio as at 31 December 2022 against the Trustee's 31 December 2019 baseline.

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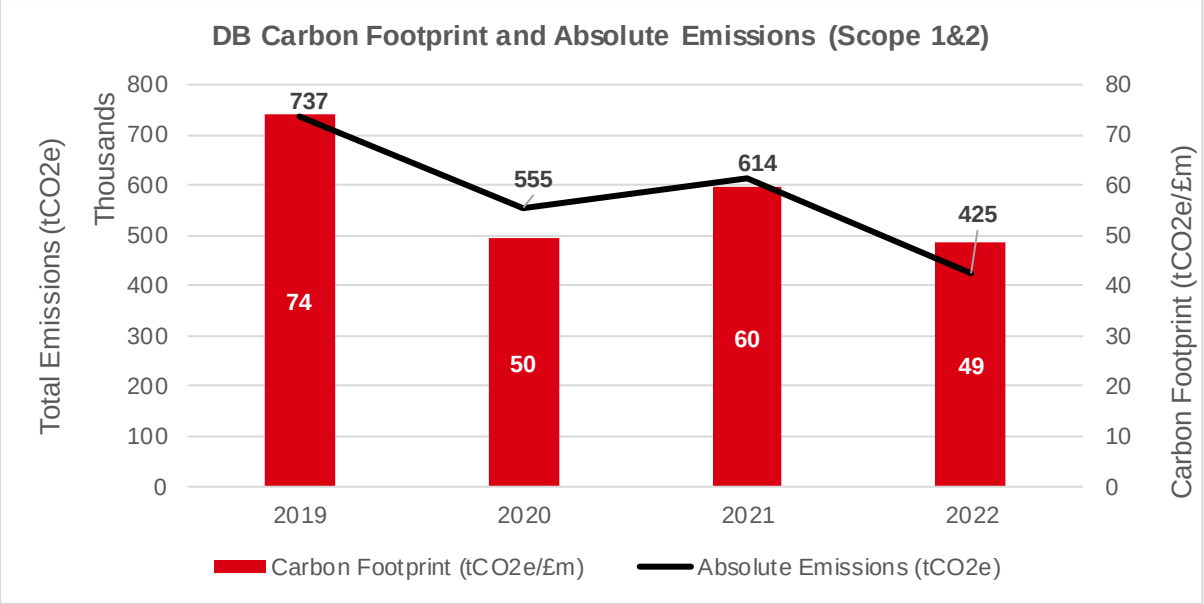

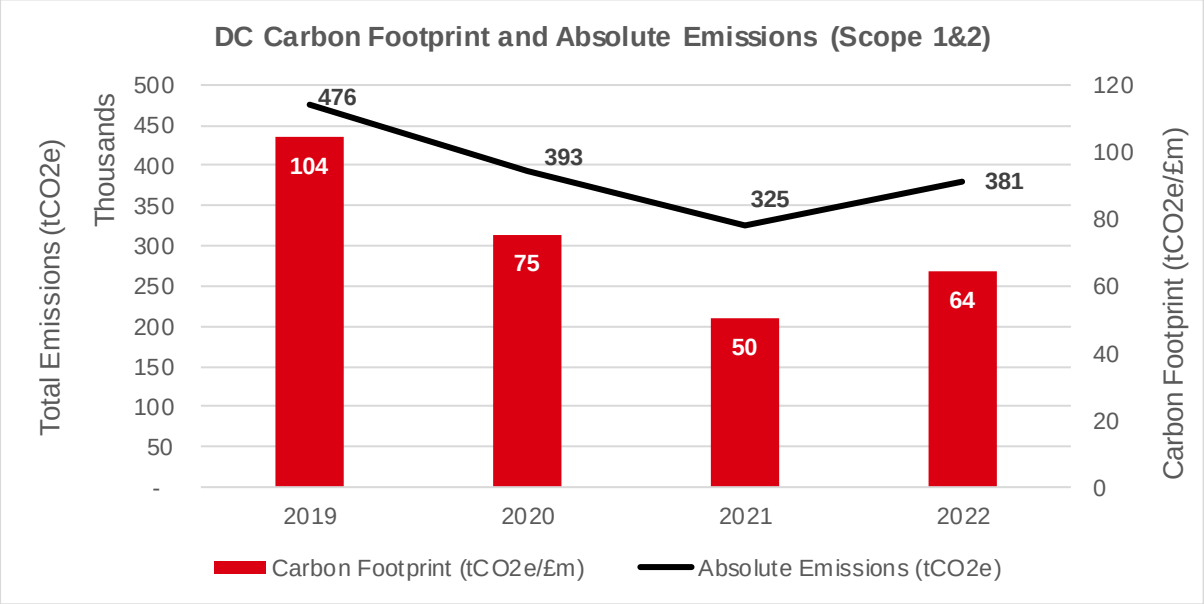

Looking at the Trustee's target of carbon footprint, both the DB and the DC portfolios have reduced their carbon footprint since the 2019 baseline. Having a 2019 baseline provides the Trustee with four data points and allows for a year-on-year comparison over time. However, these four data points are not sufficient yet to draw a clear trend over the years. Instead, there is year-on-year variation, largely driven by volatility in market valuations, changes in portfolio composition and improving coverage of underlying data.

A key driver of this effect from 2021 to 2022 was the observed increase in the equity market capitalisation and profits of typically high-emitting sectors owing to global economic supply and demand factors. With these sectors benefitting from high profits, it was possible for the constituent companies to reduce their level of total outstanding debt. This is expected to have impacted the DB and DC portfolio in broadly opposite ways, as observed in the relative year-on-year change in the aggregate carbon footprint.

As noted above, the carbon footprint metric is an ownership-based metric that uses the EVIC of the underlying corporate issuer to apportion the Scheme's share of an issuer's emissions. As EVIC incorporates the market value of debt and equity, a change in the value of an issuer's equity relative to its debt and the type of asset the Scheme is invested in (i.e. equity or debt) can have a meaningful impact on the emissions apportioned to the Scheme and subsequently its carbon footprint.

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For the DC portfolio, the change in carbon footprint is most impacted by the Global Equities – passive allocation, which features in all stages of the Flexible Income Strategy and represents circa 65% of total DC portfolio assets. This allocation invests in a variety of publicly traded equity securities. The observed change in equity market capitalisations of companies from the oil and gas, utility, industrial, and basic materials sectors held in this allocation tilted the composition of the portfolio towards these high-emitting sectors and away from lower emitting sectors such as technology and consumer products. The higher exposure to more emissions intensive companies is likely to have increased the DC portfolio's carbon footprint. Whereas the carbon footprint for this allocation has increased, it remains on course to achieve its objectives of a 50% reduction in fossil fuel reserves intensity and 30% reduction in WACI relative to the benchmark index by 2030.

The carbon footprint of the DB portfolio, which is predominantly invested in publicly traded credit, is expected to have fallen for two key reasons. First, following the sharp increase in global interest rates across 2022, the value of the Scheme's credit assets as at December 2022 was lower relative to 2021. On average, this is likely to have reduced the Scheme's share of the underlying credit issuer's total EVIC, thereby lowering the emissions apportioned to the Scheme and subsequently its carbon footprint. Second, where the Scheme is invested in the credit assets of high-emitting companies, the sharp increase in the equity market capitalisation of these companies is likely to have meaningfully reduced the Scheme's share of the underlying issuers' total EVIC, given it holds credit assets which did not benefit from equivalent increases as the equity securities. As a result, the relative contribution of high-emitting companies to the DB portfolio's carbon footprint is expected to have fallen.

The Trustee is encouraged to see the carbon footprint decreasing for both portfolios since 2019, however, it will continue to monitor year-on-year changes to ascertain the drivers behind the change.

Progress for measurement of alignment and engagement target

Over 2022 the Trustee has continued to assess its portfolio's alignment to the goals of the Paris agreement using the TPI CP score as described above. To date, the Trustee has used alignment metrics in its fund-level climate dashboards and scorecards to assess the alignment of the Scheme's largest emitters on an issuer basis. However, collecting data on multi-asset and multi-manager portfolios has proven to be a challenge. The low coverage of these metrics has meant that the Trustee has not been able to quantify reliably its total portfolio's alignment to date. The Trustee continues to engage with its investment managers on the availability of alignment data. The Trustee continues to work with its investment advisors to explore the development of other alignment metrics and expects to report on the alignment of its assets in scope in the coming years.

Similar to alignment metrics, assessing the extent and the quality of the Scheme's investment managers' engagement activities is also integrated into fund-level climate dashboard and scorecards. This has allowed the Trustee to focus its engagement activities with investment managers where gaps were identified. However, to date the Trustee has not been able to quantify reliably what proportion of its portfolio's financed emissions has been subject to direct or collective engagement. The Trustee is working on assessing the quality and quantity of engagement activities its investment managers carry out on the Scheme's behalf, leveraging the newly adopted Stewardship Framework.

What's next?

While the Scheme's approach to managing climate risk is well under-way, in a continuation of this journey, we will continue to build out our net-zero investment strategy, including providing further detail, which will include details of the steps we are taking to achieve our targets and continue to manage climate-related risks in a robust way.

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Appendices

Appendix A: Climate Scenario Analysis Results (2021)

Scenario analysis (2021)

The Scheme's strategic advisors completed climate scenario analysis on the DB and DC funding and investment strategies respectively, and the Trustee was comfortable accepting their respective scenarios and methodologies to complete the analysis. The advisors used different scenarios that considered the potential impacts from climate change differently, however both included at least two scenarios, one of which was consistent with the statutory guidance to assess a 1.5°C-2.0°C Paris-aligned temperature scenario. The Trustee's climate-related ambitions pertain to the Paris-aligned scenario specifically.

The analysis completed on the DB and DC parts of the Scheme indicated that there is likely to be a material impact to members under a range of possible climate change outcomes. The magnitude of the impact is likely to differ across the DB and DC parts of the Scheme, reflecting the nature of the invested assets and age profile of the members.

The Trustee noted that the scenario analysis was not free of limitations due to a reliance on assumptions which contained considerable levels of uncertainty, as well as a reliance on data which was recognised as lacking in coverage and robustness. Given these limitations, the results were used as one of a number of inputs to help inform the decision making. Further detail on the scenarios used and estimated impacts are provided below and in Appendix B.

DB – 2021 Modelling and Assumptions

Scenario analysis was completed by Willis Towers Watson, the Scheme's DB Investment and Actuarial advisor. They assessed the assets and technical provisions liabilities associated with the three sections of the DB part of the Scheme under two climate scenarios. Both scenarios considered an immediate shock and a return drag (over 20 years). This reflects the reality that tipping points are likely which will be a combination of asset return drags and significant impacts over short periods when such a tipping point is reached. These scenarios and their underlying assumptions are described below.

	Scenario 1: Least Common Denominator	Scenario 2: Global Coordinated Action
Description	A "business as usual" outcome where current policies continue with no further attempt to incentivise further emissions reduction. Emissions as well as social, socioeconomic and technological trends do not shift markedly from historical patterns.	Policy makers agree on and immediately implement policies to reduce emissions in a globally co-ordinated manner. Companies and consumers take the majority of actions available to capture opportunities to reduce emissions.
Temperature Rise	~3.5°C	~2.0°C
Renewable energy by 2050	30-40%	65-70%
Physical Risk Level	High	Low
Transition Risk Level	Low	High

Source: Willis Towers Watson.

Under both scenarios, the Trustee expects there to be a drag on asset returns. Under the Global Coordinated Action scenario immediate mitigation costs are expected to be significant, however the benefits of moving to a low carbon economy (in terms of lower economic losses compared with a Least Common Denominator scenario) are expected to emerge in the longer term.

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The Trustee noted that the scenarios assumed the entire climate change impact will be capitalised on both the asset and liability side as an instantaneous shock. The Trustee also noted the selected scenarios did not represent the full range of outcomes, nor did they necessarily capture the most adverse possible scenario, but the Trustee believed the analysis provided a useful understanding of potential behaviour of the Scheme's portfolios under scenarios covering potential temperature pathways.

Mortality Assumptions

- WTW considered the potential mortality outcomes which could arise under the two climate scenarios. Clearly these are impossible to predict accurately, being dependent upon complex interactions between various direct and indirect factors.
- However, WTW believed that:
  - those outcomes which increase UK life expectancy are more likely to prevail under the Global Coordinated Action scenario; and
  - those outcomes which reduce UK life expectancy are more likely under the Least Common Denominator scenario.
- To assess the potential impact to liabilities under these scenarios, WTW assumed:
  - Global Coordinated Action: long-term rates of improvements in mortality trend to 2.5% pa
  - Least Common Denominator: long-term rates of improvements in mortality trend to 0% pa
- These long-term trend rates of future improvements in mortality compare to the assumption of 1.5% pa assumed in the 2019 valuations of the Scheme. Average trend rates of mortality improvement experienced in the UK over the 2000 to 2011 period were around 2.5% pa whereas in more recent years mortality rate improvements have been closer to 0% pa (with a recent reversal over 2018 and early 2019).

DB – 2021 Scenario Analysis Results – HBUK Section

The table below shows the estimated impact on the asset value, technical provisions liabilities, and total funding level of the HBUK Section in one year under the two climate scenarios conducted as part of the 2021 TCFD report.[6]

Since the HBUK Section had entered into a longevity hedging arrangement covering 75% of the pensions in payment as at 31 December 2018, the value of the liabilities in respect of these insured members, once the pay and receipt legs of the swap are also taken into account, will be unaffected by the impact of climate change on member mortality. The liability impact shown in each scenario is therefore the estimated change in the total liabilities of the HBUK Section arising solely from the uninsured population.

Scenario	Change in Funding Level (%)	Asset Shock (£m)	Liability Impact (£m)	Net Change in Surplus (£m)
Scenario 1: Least Common Denominator	**+3.4%**	-299	- 1,030	+731
Scenario 2: Global Coordinated Action	**-5.5%**	-602	+770	-1,372

The Trustee estimated that under Scenario 1, the value of the Scheme's assets and technical provisions liabilities are both likely to fall, by £299m and £1,030m respectively. On the asset side, this reflects the realisation of a

[6] Using the latest available data (as at 31st March 2021) at the time the analysis was performed.

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negative price impact owing to climate-related factors, while the liability impact reflects the deteriorating life expectancy under this scenario relative to current longevity assumptions. Given the magnitude of the two changes, the net impact is expected to be a c.3.4% increase in the funding level.

The Trustee estimated that under Scenario 2, the value of the HBUK assets is likely to fall by £602m following the instigation of more rapid economic reform to reduce emissions in a globally co-ordinated manner, with the impact particularly pronounced on the liquid credit assets within the portfolio. The technical provisions liabilities are likely to increase by c.3%, equivalent to £770m, which reflects the improving life expectancy of members under this scenario relative to current longevity assumptions. Given the magnitude of the two changes, the net impact is expected to be a c.5.5% decrease in the funding level. It is important to note, however, that given the funding level surplus, the Scheme is expected to retain a net surplus in spite of the estimated adverse impact on the surplus under this scenario.

The Trustee recognised that mitigating climate risk can offer attractive investment opportunities and believes that investing in such opportunities is consistent with its fiduciary responsibility. The Trustee has already identified and invested in a renewable energy investment opportunity that was both financially compelling and aligned with the Paris Agreement. The Trustee continues to explore further climate-related opportunities that are consistent with its climate objectives as well as its funding objectives and fiduciary responsibility.

DB – 2021 Scenario Analysis Results – Top Up Sections (HGSU and HBEU PLC)

The Trustee currently has a policy in place (jointly agreed by the Trustee Board and relevant Sponsors) to transfer back to the HBUK Section, the liabilities for members of Top-Up sections as they leave service or retire. Whilst this policy remains in place, the impact of climate change on the liabilities of the top-up sections might be expected to be small, with the liabilities being effectively settled before climate change is able to have a significant effect on members.

Those members may still be at risk from the long-term impact of climate change, but while the transfer back policy remains in place, the financial risks of this will be borne by the HBUK Section. This would only have an impact on the Top-Up section if amendments were made to the transfer back assumptions to allow for these climate change risks.

The table below shows the estimated impact on the asset value, technical provisions liabilities, and total funding level of the Top Up sections conducted as part of the 2021 TCFD report. The entire impact is modelled to materialise over the journey plan, with an assumption that no contributions and cashflows will be received, a liability basis of Gilts+70bps and an investment return of Gilts+80bps within the base case.

The scenario analysis indicated that the impact on the HGSU and HBEU sections differs under the two scenarios, with a positive funding level impact realised under Scenario 1 and a negative funding level impact realised under Scenario 2. Similar to the HBUK section, the magnitude of the impact on the HBEU section is not expected to be large enough to remove the current funding level surplus, however based on the funding level of the HGSU section at the analysis date, the deficit is expected to worsen.

HGSU Section

Scenario	Change in Funding Level (%)	Asset Shock (£m)	Liability Impact (£m)	Net Change in Surplus (£m)
Scenario 1: Least Common Denominator	**+5.7%**	-4	-16	+12
Scenario 2: Global Coordinated Action	**-6.1%**	-4	+11	-15

HBEU Section

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Scenario	Change in Funding Level (%)	Asset Shock (£m)	Liability Impact (£m)	Net Change in Surplus (£m)
Scenario 1: Least Common Denominator	**+6.8%**	-1	-3	+2
Scenario 2: Global Coordinated Action	**-7.3%**	-1	+2	-3

Under the Least Common Denominator scenario, where no action is taken to achieve further emissions reductions, the funding level is expected to improve across each Section. Under the Global Coordinated Action scenario, the analysis forecasted a negative impact to the funding level. The Trustee's ambition to decarbonise and simultaneously align the Scheme to a lower carbon world, in accordance with the Global Coordinated Action scenario, thus appeared to pose more risks based on this analysis.

However, it is important to note that in both instances, the estimated liability change was the predominant driver of the net funding level impact. As noted above, the UK-based mortality outcomes from climate change are impossible to predict accurately and will depend on complex interactions between various factors. This therefore introduces a meaningful degree of uncertainty with respect to the liability impacts. Nonetheless, since the estimated upside in the Least Common Denominator scenario arises from heightened mortality among Scheme members, the Trustee was clear that this perceived financial advantage cannot be seen to accrue to their benefit.

Given the scenario analysis forecasted a loss of value under both scenarios, the Trustee believes it is prudent and in the best interests of Scheme members to take steps to manage and reduce the climate risk exposure of the Scheme. It is for that reason the Trustee has adopted a target to align the Scheme to a Paris-aligned trajectory consistent with the Global Coordinated Action scenario.

The Trustee also recognised that mitigating climate risk can offer attractive investment opportunities and believes that investing in such opportunities is consistent with its fiduciary responsibility.

As noted previously, the scenario analysis was not free from limitations due to a reliance on assumptions which contain considerable levels of uncertainty, as well as a reliance on data which was recognised as lacking in coverage and robustness. Given these limitations, the results were used as one of a number of inputs to help inform the decision making.

DC – 2021 Modelling and Assumptions

Scenario analysis was completed by Lane Clark & Peacock, the Scheme's DC Investment advisor, on the Scheme's two default arrangements. These are the Flexible Income Strategy, the main default option for DC-only members, and the Lump Sum Strategy, the main default option for members with Hybrid benefits.

The scenarios cover projections to retirement for four straw person members: a 25-, 35-, 45- and 55-year-old, with characteristics taken from the average member of that age within the Scheme. Members will be impacted in different ways depending on their investments held, contribution rate, fund value and proximity to retirement. The analysis assumed the example members each have an expected retirement age of 65. Assessing members across different age cohorts allowed the introduction of a temporal element into the analysis, and this also allowed the Trustee to assess climate risk across various timespans.

Whilst the Scheme has used the climate-tilted Future World Fund in the default arrangements since 2017, in order to show a meaningful comparison, the projected pots were modelled for identical targeted strategies which do not use low carbon equities and shown the results alongside those of the Scheme's targeted strategies.

Three scenarios were considered, an orderly and disorderly transition to the Paris goals and a scenario of a failed transition. The Trustee compared these climate scenarios with a baseline, "climate uninformed" scenario. This baseline climate scenario assumes no increase of physical risks due to climate change and does not make any explicit assumptions about the transition to a low carbon economy. Details on the three scenarios are provided below. Please see Appendix B for further details on the methodological assumptions and limitations associated with this analysis.

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Policy Response and Physical Effects

Impact	Failed Transition	Paris Orderly Transition	Paris Disorderly Transition
Low carbon policies	Continuation of current low carbon policies and technology trends (e.g., significant falls in renewable energy prices).	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.	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 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 baseline scenario without explicit allowance for climate impacts in 2100. For example, cumulative UK GDP growth to 2100 is c55% lower than estimated in the baseline scenario.	Global GDP is lower than the baseline scenario in 2100. For example, cumulative UK GDP growth to 2100 is c10% lower than in the baseline scenario	In the long term, Global GDP is slightly worse than in the Paris Orderly scenario due to sentiment shock.
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 2021-2025.	Abrupt repricing of assets and a sentiment shock to the financial system in 2025.

Source: Ortec Finance Ltd (a financial modelling specialist that supports LCP to provide investment advice)

DC – 2021 Scenario Analysis Results

The tables below outline the results of the climate scenario analysis completed on the DC popular arrangements conducted as part of the 2021 TCFD report. The figures represent the change in value of each members' pension pot at retirement relative to the baseline outcome, assuming that members are holding low carbon equities.

The figures indicated that the impacts under each scenario are non-uniform across age cohorts, with the magnitude under each scenario less significant as member age increases. This reflects the fact that older members are expected to have less time as active members prior to their retirement, thereby reducing the length of time and therefore cumulative impact that each scenario can have on their pension pots at retirement.

The failed transition scenario is the worst outcome for most members in terms of expected pension pot at retirement, however a disorderly transition is the worst scenario for members over 55 years old, as they are expected to suffer the brunt of the upfront cost and acute shocks of a disorderly transition to a lower carbon economy but retire before their pension pots have sufficient time to recover from any loss in value.

In any case, the analysis showed that there are no climate scenarios in which members are expected to benefit, and it is therefore important that the Trustee takes steps to limit the climate change risk of the Scheme. Details of the activity undertaken during 2022 to address these risks are set out in the Risk Management section.

As reported in previous iterations of the Scheme's annual TCFD report, the Trustee has made several important changes over time to the default and self-select fund range available to members that should reduce both the physical and transition risk exposure of the portfolios. The intention of this activity was, in part, to minimise the potential adverse impacts on members' pension pots at retirement. The Trustee continues to explore further climate-related opportunities, including areas for improvement in current mandates that help to deliver both the Scheme's climate objectives and financial targets.

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	Member aged 25		Member aged 35	
Starting pot and contributions	£5,700, 12% total contribution rate		£35,900, 18% total contribution rate	
	Flexible Income Strategy	Lump Sum Strategy	Flexible Income Strategy	Lump Sum Strategy
Baseline outcome	-	-	-	-
Paris Orderly outcome	-3.2%	-3.1%	-1.1%	-1.1%
Paris Disorderly outcome	-4.3%	-4.3%	-2.7%	-2.7%
Failed Transition outcome	-26.9%	-26.6%	-22.3%	-22%

	Member aged 45		Member aged 55	
Starting pot and contributions	£43,800, 22% total contribution rate		£45,600, 24% total contribution rate	
	Flexible Income Strategy	Lump Sum Strategy	Flexible Income Strategy	Lump Sum Strategy
Baseline outcome	-	-	-	-
Paris Orderly outcome	-0.1%	-0.1%	-0.3%	-0.2%
Paris Disorderly outcome	-1.9%	-1.9%	-2.2%	-1.5%
Failed Transition outcome	-10.6%	-10.3%	-1.4%	-1%

Appendix B: Climate Scenario Analysis Limitations

The climate scenario analysis modelling for the Scheme's DB and DC assets has been undertaken by Willis Towers Watson ("WTW") and Lane Clark & Peacock ("LCP") respectively. The following explains the general limitations of financial and climate modelling and gives greater detail from WTW and LCP about the limitations of elements of their respective processes used.

General limitations of financial modelling

- Models are relatively simplistic approximations of real-world behaviour that are not able to capture every possible real-life permutation. The use of any model of future economic and investment experience is subject to risks arising from the underlying uncertainties inherent in predicting the future.

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- Risk models are only models, even if complex and/or powerful.
- The random variation in future inflation and investment returns over a short or medium time periods may result in experience that is significantly different to the expected long-term average experience over much longer time periods. In short, circumstances that are (reasonably) assumed by a model to be very unlikely to occur may, nevertheless, occur.
- The conclusions of the modelling process will depend on the structure of the underlying model (particularly the relationships between different economic and investment indicators) and on the detailed parameterisation of the model, including the assumed path dependency of the interaction of modelled variables which influence the modelled results.
- The results of the modelling depend crucially on the methodology and assumptions used. Using different models or using different assumptions in the same model can give rise to very different results.
- The results of modelling should be regarded as illustrative. Limited weight should be put on the probabilities of different outcomes emerging calculated by the model.
- The model is best used to compare potential outcomes between scenarios.
- The modelling does not capture all dynamic changes to circumstances

General limitations of climate modelling

- Material uncertainties in climate modelling are inevitable. For example, there is uncertainty about the physical changes in the climate that will emerge as a result of GHGs that have already been emitted (i.e., the locked-in effects of climate inertia) and how the climate will respond to future rises in GHG concentrations. There is also huge uncertainty about the future trajectory of GHG, the actions that will give rise to that trajectory, and the economic effects of those actions.

Willis Towers Watson – DB Analysis Limitations

- WTW has taken reasonable steps to satisfy itself that the data provided by third parties is of adequate quality for the purposes of the modelling, including carrying out basic tests to detect obvious inconsistencies. These checks have given WTW no reason to doubt the correctness of the information supplied. It is not possible, however, for WTW to confirm that the detailed information provided, including that in respect of individual members and the asset details, is correct.
- The climate modelling scenarios span the range of plausible outcomes for physical and transition risks and the trade-off between the two. The costs of each at an index level have been based upon figures sourced from MSCI with judgment being applied by WTW as to current market pricing at the time the analysis was undertaken, the extension of these base figures to all asset classes and their attribution over time.
- The climate scenarios have been derived on the basis of all other things being equal, which is unlikely to be the case in practice. Second order effects and feedback loops are hard to estimate with certainty and represent the reason why the climate scenarios cannot be a substitute for using the base investment model for risk management purposes.
- In the absence of climate transition, temperatures are expected to increase exponentially with the risk of non-linear tipping points being reached (e.g., melting ice sheets) that would amplify the economic impact even further compared to the exponential change.
- Although the scenarios illustrate the potential variability in future mortality rates due to climate change, they are subjective, and arguments could be made for different outcomes. They represent beliefs which are intended to form the basis of a discussion and it is right that they should be challenged.
- Detailed analysis of the drivers of mortality indicates very little impact on the future path of UK longevity, with these impacts much more concentrated on other populations. However, the indirect effects of climate change and the transitional risks on economic, social and health factors would appear to be of sufficient consequence to have similar impact on improvements or deterioration in longevity to that seen in the past, supporting the belief that climate change represents a demographic risk to be managed by pension schemes and their sponsors.

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Lane Clark & Peacock – DC Analysis Limitations

- The scenarios are intended to be plausible, not "worst case". Hence, they do not indicate the potential seriousness of tail risks. Moreover, as described elsewhere, LCP is using median values from Ortec Finance's stochastic modelling outputs.
- In aggregate, it is quite likely that Ortec Finance's modelling, which has been used to support this work, is biased to under-estimate the potential impacts of climate-related risks, especially for the Failed Transition scenario. This is typical of climate-economic modelling.
- Ortec Finance considers three scenarios out of infinitely many that are possible. Alternatives include different long-term temperature outcomes, different combinations of policy/technological/behavioural actions to achieve similar long-term temperature outcomes to those that are being modelled, and different financial market reactions to the same policy/technological/behavioural actions that are being modelled.
- 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.
- Ortec Finance models climate impacts on financial markets using the GDP impacts from Cambridge Econometrics' macro econometric modelling and assumed relationships between GDP and the financial parameters. GDP is the only translation mechanism from the macro econometric model to the stochastic financial scenario model except that, following the June 2020 model updates, Ortec Finance uses Cambridge Econometrics' inflation estimates instead for the two Paris scenarios. Other potential translation mechanisms (such as carbon-price impact on interest rates) are not modelled.
- There is a great deal of uncertainty in the timing of market responses to climate change. Ortec Finance's model assumes the biggest market movements under the Failed Transition scenario occur after 2030, which would mean that many DB schemes would avoid the worst impacts. However, the market movements could occur a lot earlier.
- Financial market volatility might increase as the physical and transition impacts of climate change unfold, particularly if this happens in an unpredictable manner. The modelling does not make any allowance for this, except in the Paris Disorderly Transition scenario during 2025 while pricing-in of climate-related risks takes place.

Appendix C: Climate Impact Pledge exclusions and engagement

LGIM excluded the following companies from the Scheme's Global Equity exposure that it manages as of 2022. As reported in the main document, the Future World Fund which LGIM manages will divest from companies which do not meet LGIM's minimum climate-change standards, even though they remain part of the benchmark index. The reason for the exclusion is reported alongside each company name.

- American International Group Inc - No thermal coal policy in place and no disclosure of Scope 3 emissions associated with investments.
- China Construction Bank Corporation - No thermal coal policy in place and no disclosure of Scope 3 emissions associated with investments.
- China Mengniu Diary - The company has made progress on lower-impact products but no deforestation policy published and no targets or disclosure for scope 3 emissions from agricultural products.
- China Resources Cement - No operational emissions reduction target in place, no improvement since last year where LGIM voted against the chair due to the same concerns.
- Exxon Mobil Corporation - Reporting Scope 3 emissions, but operational emissions reduction target remains unambitious and misaligned with Paris.

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- Hormel Foods Corporation - Progress towards net-zero targets and two product lines sourcing from solely regenerative farms. However no zero-deforestation policy, no targets for scope 3 upstream agricultural emissions.
- Industrial and Commercial Bank of China (ICBC) - No thermal coal policy in place and disclosure of Scope 3 emissions associated with investments.
- Invitation Homes Inc - No disclosure of emissions from property portfolio or emissions target covering property portfolio's operational emissions. No improvement since last year where LGIM voted against the chair due to the same concerns.
- Korea Electric Power Corporation (KEPCO) - Some restrictions on thermal coal have been introduced, but not yet disclosing Scope 3 emissions associated with investments.
- Loblaw Companies Ltd.- Net-zero target covering scope 3 emissions from suppliers, however interim scope 3 targets not yet published and no comprehensive zero deforestation policy in place.
- MetLife, Inc. - Some restrictions on thermal coal have been introduced, but not yet disclosing Scope 3 emissions associated with investments.
- PPL Corporation - No timebound target to phase out coal power generation.
- Rosneft Oil Company - Reporting Scope 3 emissions and has operational targets out to 2035, but these fall short in terms of ambition. Rosneft was previously divested from Climate Impact Pledge-aligned portfolios and, as of June 2022, still features in the list of sanctioned companies as a continued divestment.
- Sysco Corporation - Lack of ambitious emissions reduction targets and progress on net zero commitment not aligned with pace required this decade to align with a 1.5°C trajectory.

This is an ongoing process. These companies could be repurchased if their approach to climate change improves sufficiently. Conversely, other companies could be divested if the reverse is true.

Source: LGIM, Climate Impact Pledge 2022 - Net zero: going beyond ambition (lgim.com)

Appendix D: Climate Metrics Analysis

Data sources:

- The absolute emissions and emissions intensity metrics have been calculated using line-by-line holdings data for the Scheme's Corporate Bonds, Equities, Diversified Funds and REITS Funds. The emissions data for these funds is from MSCI. Please see MSCI data disclosure below:
    - *This disclosure was developed using information from MSCI ESG Research LLC or its affiliates or information providers. Although HSBC Bank (UK) Pension Scheme's information providers, including without limitation, MSCI ESG Research LLC and its affiliates (the "ESG Parties"), obtain information (the "Information") from sources they consider reliable, none of the ESG Parties warrants or guarantees the originality, accuracy and/or completeness, of any data herein and expressly disclaim all express or implied warranties, including those of merchantability and fitness for a particular purpose. The Information may only be used for your internal use, may not be reproduced or redisseminated in any form and may not be used as a basis for, or a component of, any financial instruments or products or indices. Some funds may be based on or linked to MSCI indexes, and MSCI may be compensated based on the fund's assets under management or other measures. MSCI has established an information barrier between index research and certain Information. Further, none of the Information can in and of itself be used to determine which securities to buy or sell or when to buy or sell them. None of the ESG Parties shall have any liability for any errors or omissions in connection with any data herein, or any liability for any direct, indirect, special, punitive, consequential or any other damages (including lost profits) even if notified of the possibility of such damages.*
- The emissions data for the Scheme's LDI, US Treasuries, Property, Renewable Infrastructure and Infrastructure Debt assets were calculated and provided by the Scheme's respective investment managers.

Redington's calculation methodology using MSCI input data:

- Emissions metrics are calculated in line with the GHG Protocol Methodology, the global standard for companies and organisations to measure and manage their GHG emissions. The GHG Protocol provides accounting and reporting standards, sector guidance and calculation tools. It has created a

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comprehensive, global, standardised framework for measuring and managing emissions from private and public sector operations, value chains, products, cities, and policies to enable greenhouse gas reductions across the board.

- The ownership-based metrics have also been calculated using the guidance from the PCAF, which apportions emissions using ownership as determined by EVIC, rather than Market Value.

LDI calculation methodology:

- Insight Investment Management
    - Insight Investment Management provided the estimated figures for one of the Scheme's UK LDI mandates. To calculate the emissions attributable to Gilts, Insight have used the latest annual Scope 1 and Scope 2 CO2e emissions data produced by the Department for Business, Energy & Industrial Strategy ("BEIS") and apportioned these figures to the total market value of Gilts in issuance as at 31 December 2022.
    - Sources, assumptions and approach
        - Latest annual data for emissions produced in the UK (Scope 1 and 2) as at 31 December 2021, published as a provisional figure by the UK government, of 424.5m tonnes of CO2e. Scope 3 emissions are not included.
        - Figures cannot sensibly be aggregated with emissions data for non-gilt assets due to risk of double counting as UK emissions include corporate and household emissions.
        - Total UK government debt at 30 December 2022, taken as the market value of gilts in issuance of £2,174,247m (including green gilts). UK PPP-adjusted GDP estimate for 2021, published by the IMF of $3,402,740m.
        - Scheme's asset position at 31 December 2022.
        - Gilts posted out as collateral by the Scheme are included in the gilt valuations and gilts received as collateral are excluded. Interest rate swaps, inflation swaps, futures, cash and money market fund holdings have all been excluded.
    - **Total absolute emissions:** Total emissions associated with the issuing country's economy on a production basis, attributed based on an investor's ownership of the total government debt.
    - **Carbon footprint:** Total absolute emissions associated with the issuing country's economy, normalised by total government debt.
    - **WACI:** Total emissions associated with the issuing country's economy, normalised by GDP.
- Legal and General Investment Management
    - LGIM provided the estimated figures for two of the Scheme's UK LDI mandates in the DB portfolio as at 31 December 2022. This analysis excludes derivative instruments including repurchase agreements (repo.) LGIM assumes the carbon intensity of government bonds should reflect carbon emissions of the entire country. To that end, carbon intensity is measured as the total carbon equivalent GHG emissions within a country border normalised for GDP (tC02e/$m GDP). For the carbon footprint, the numerator remains the same whilst the denominator is the total capital stock, a measure of total value of investment in the economy at a point in time (tCO2e/$m invested). The metrics LGIM provided for each portfolio were calculated by the relevant investment team and reviewed prior to being released.
    - LGIM define 'Sovereigns' as, Agency, Government, Municipals, Strips and Treasury Bills and is calculated by using: the CO2e/GDP, Carbon Emissions Footprint uses: CO2e/Total Capital Stock
    - Derivatives including repos are not presently included and the methodology is subject to change. Leveraged positions are not currently supported.

US Treasuries ("TIPS") calculation methodology:

- Insight Investment Management provided the estimated figures for the Scheme's US TIPS mandate in the DB portfolio. To calculate the emissions attributable to US TIPS, Insight have used the latest annual Scope 1 and Scope 2 CO2e emissions data produced by the US Environmental Protection Agency ("US

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EPA"), and apportioned these figures to the total market value of US Treasuries in issuance as at 31 December 2022.

- Sources, assumptions and approach:
    - Latest annual data for emissions produced in the US (Scope 1 and 2) as at 31 December 2021, published by the US Environmental Protection Agency, of 5,686m tonnes of CO2e. Scope 3 emissions are not included.
    - Figures cannot sensibly be aggregated with emissions data for non-sovereign assets due to risk of double counting as US emissions figure includes corporate and household emissions.
    - The calculation uses the total market value of US Treasuries in issuance at 30 December 2022, of $22,397,800m (£18,603,613m) (source: St Louis Fed) and the US purchasing power parity-adjusted GDP for 2022 of $25,464,475m (Source: IMF).
    - Scheme's asset position at 31 December 2022.
    - FX conversion rate of 1GBP=0.7420USD at 31 December 2022 (Source: Bank of England) used for converting GDP and total market value of US Treasuries to GBP.
- **Total absolute emissions:** Total emissions associated with the issuing country's economy on a production basis, attributed based on an investor's ownership of the total government debt.
- **Carbon footprint:** Total absolute emissions associated with the issuing country's economy, normalised by total government debt.
- **WACI:** Total emissions associated with the issuing country's economy, normalised by purchasing power parity-adjusted GDP.

Infrastructure Debt

- Vantage Infrastructure ("Vantage") provided the estimated figures for the Infrastructure Debt mandate in the DB portfolio. This uses emissions reporting data taken directly from borrow reporting as at 31 December 2021 and the Scheme's investment amounts as at 31 December 2021. This is the latest available information.
- 35.35% of the emissions of the portfolio (by debt investment amount as at 31 December 2021) were verified by an independent source prior to being provided to Vantage by the borrower. A further 33.40% of the emissions data were provided by the borrower but not subject to independent verification. The final 31.25% of the portfolio by value relates to prorated estimates against comparable companies undertaken by Vantage. Where Scope 3 emissions are not reported by an asset, Vantage has not calculated estimated values due to the complexity and variability between companies. Percentage of the portfolio by investment value reporting Scope 3 emissions = 45.3%.

Property

- Alpha Real Capital
    - Alpha Real Capital provided the estimated figures for one of the Scheme's Property mandates in the DB portfolio. This uses 2021 emissions estimations provided under the MSCI Climate VaR methodology, and therefore is subject to MSCI's methodology limitations and assumptions.
    - The reported metrics are based on proxy and actual data: in the case of HSBC ILIF Holding, actual data corresponds to 64% of the fund (on an asset basis), or 84% (by floor area). In the case of HSBC Direct Holding (Parkdean), metrics are based on proxy data. Such proxies are country and property-type specific, and provided by MSCI Climate Var.
- LaSalle Investment Management
    - LaSalle Investment Management provided the estimated figures for two of the Scheme's Property mandates in the DB portfolio.
    - For built property, scope 1 and 2 emissions relate to the energy use of the building. This does not include construction or development activities. Energy consumption is the most recently available energy use for the building, including the energy consumed by the building's tenants and by shared space and facilities. Weighted average emission factor is the weighted average of the relevant energy suppliers' emission rates. Asset emissions are the emissions for each

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asset determined in an appropriate manner. Value held is the value of the portfolio's holding in the underlying pooled fund.

- External estimations of real asset emissions have been provided by JLL Upstream Sustainability Services, a market leading real estate sustainability consultancy.
- LaSalle did not provide a WACI for the two mandates as this metric is inconsistent with commercial real estate metrics. LaSalle have aligned its carbon reporting metrics with the PLSA and until an appropriate and consistent methodology and calculation is available for Real Assets it does not provide a WACI figure on its mandates.

- Colombia Threadneedle Investment
  - Colombia Threadneedle Investment provided the estimated figures for one of the Scheme's Property mandates in the DC portfolio. Asset-level GHG emissions (i.e., whole building carbon emissions) include:
    - Scope 1 emissions
    - Scope 2 emissions
    - Scope 3 emissions for Category 13: Downstream Leased Assets (i.e., tenant data)
  - The above scope aligns with PCAF Technical Guidance for 'Accounting and reporting of financed GHG emissions from real estate operations' (May 2022), where whole building = base building + tenant space (i.e., whole building approach).
  - Landlord consumption data (and subsequently Scope 1 and 2 emissions) is considered collated for the reporting period, though further bills, credits and rebills received may change the dataset. Tenant consumption data (and subsequently Scope 3 emissions) is considered collated for the 2021 calendar year, with adjustments to this period also possible following 2022 calendar year tenant data collection. Where landlord consumption gaps for the reporting period exist, data has been first estimated as per "Appendix 7 - Estimation Methodology" of the GRESB 2022 Real Estate Reference Guide. The subsequent landlord and tenant consumption datasets has been input into a model using proxy data based on estimated average consumption of different asset sectors to fill gaps via reasonable estimations as recommended within TCFD guidance.
- LGIM
  - LGIM provided the estimated figures for one of the Scheme's Property mandates in the DC portfolio.

Renewable Infrastructure

- Schroders GreenCoat provided the estimated figures for the Renewable Infrastructure mandate. The 2022 emissions are estimated using a GHG Protocol approved methodology developed for wind energy assets in Schroders GreenCoat's portfolio. Schroders GreenCoat achieved 100% data availability for scope 1 and 2 emissions, calculated using primary data sourced internally and from its third-party data providers.
- The scope 3 emissions were estimated with input from ITPEnergised, a leading environmental consultant. The data gathered for scope 3 estimates were considered good quality by Schroders GreenCoat and data availability was sufficient for the chosen methodology.
- Emissions factor may change over time as methodologies evolve, therefore Schroders GreenCoat will continue to review and refine its emissions calculation methodology to provide more accurate and detailed information going forward.

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