

TCFD

TASK FORCE ON
CLIMATE-RELATED
FINANCIAL
DISCLOSURES

Climate disclosures for year ended 31 March 2024

Aon Retirement Plan

Produced by: Aon UK Trustees Limited

Date: August 2024

Introduction

Climate change is affecting the planet, causing extreme weather events, impacting crop production and threatening Earth's ecosystems. Understanding the impact of climate change and the vulnerability of the Aon Retirement Plan (the "Plan") to climate-related risks will help us to mitigate the risks and take advantage of any opportunities.

UK regulations require trustees of pension schemes with more than £1bn in assets to meet certain climate governance requirements and publish an annual report on their scheme's climate-related risks.

Better climate reporting should lead to better-informed decision making on climate-related risks. And on top of that, greater transparency around climate-related risks should increase accountability and provide decision-useful information to investors and beneficiaries.

This report is the annual climate disclosures for the Plan for the year ended 31 March 2024. The four elements covered in the report are:

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

This report has been prepared by Aon UK Trustees Limited (the "Trustee") in accordance with the regulations set out under The Occupational Pension Schemes (Climate Change Governance and Reporting) Regulations 2021 (the "Regulations").



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Executive summary

This report sets out the actions that we have taken to understand the potential impact climate change could have on the Plan.

We have worked closely with our investment adviser to identify the climate-related risks and opportunities faced by the Plan, and to understand ways we can manage and mitigate those risks.

Overview of the Plan

The Plan is set up as a hybrid plan, which has two mandates, a Defined Benefit (DB) mandate and a Defined Contribution (DC) mandate.

The DB mandate invests across a range of assets, and within this report we consider the impact of climate-related risks on those asset classes, the investment strategy and potential impact on the funding of the Plan.

For the DC mandate, we have focused our attention on any 'popular arrangement offered'. A 'popular arrangement' is defined as one in which £100m or more is invested, or which accounts for 10% or more of the assets used to provide money purchase benefits.

The Trustee has been supported by its investment adviser, Aon Investments Limited ("Aon"), when producing the TCFD report.



Governance

- The DB mandate is split into 5 sections which consist of the Aon Alexander & Alexander ("A&A"), the Aon UK ("AUK"), the Aon Bain Hogg UK ("ABH"), the Hewitt Pension Fund ("HPF"), and the Hewitt Associates Pension and Life Assurance Plan ("HAPLAP").
- The analysis in this report focuses on the four largest sections of the Plan (excluding HAPLAP) which have a combined asset portfolio of c.£2,429M as at 31 December 2023, which is invested in a range of asset classes including Liability Driven Investments ("LDI"), property, alternatives, and annuities.
- The majority of the DC assets of the Plan were transferred out into the Aon Master Trust ("AMT") during the Plan year to 31 March 2021. The remaining DC assets within the Plan are managed by Aon DC Solutions.
- The Plan remains ongoing at the current time but over the longer term it is currently our intention to secure members' benefits through annuity policies with insurance companies.
- We are ultimately responsible for the oversight of all strategic matters relating to the Plan, including climate-related risks and opportunities.
- We delegate the day-to-day oversight of the Plan's climate change risk management to the Funding and Investment Sub-Committee ("FISC").



Strategy

- Our qualitative analysis of climate-related risks and opportunities showed that the asset classes in which the Plan invests are impacted to some degree by climate-related risks. Over time, the risk exposure is expected to increase across the asset classes.
- We also identified some investment opportunities for the different asset classes.
- We reviewed climate scenario analysis which confirmed that previous analysis undertaken for our report last year remained appropriate. This is due to no significant changes in any of the following: the Plan's investment strategy, the liability profile/membership of the Plan, the modelling techniques, policy implementation to tackle climate change or asset data availability.



Risk Management

- We have established a process to identify, assess and manage the climate-related risks and opportunities the Plan is exposed to. This is integrated into the Plan's wider risk management framework.
- Our climate risk management framework is set out on pages 34-36, which assists with the ongoing management of climate-related risks and opportunities.
- Alongside the climate risk management framework, we undertake periodic training on responsible investment to understand how Environmental, Social and Governance ("ESG") factors, including climate change, may impact the Plan's assets and liabilities. Details of training we have undertaken through the Plan's year are included in the Governance section and Risk Management section of this report.



Metrics and Targets

We have disclosed information on four climate-related metrics for each of the DB sections of the Plan:

- Total Greenhouse Gas (GHG) Emissions.
- Carbon Footprint.
- Data Quality.
- Binary Target Measurement.

We have also set the following targets for each asset class of the Plan:

Improve data quality to 50% by 2026 for the Illiquid assets and Liquid alternatives, and improve data quality to 80% for the insured assets.

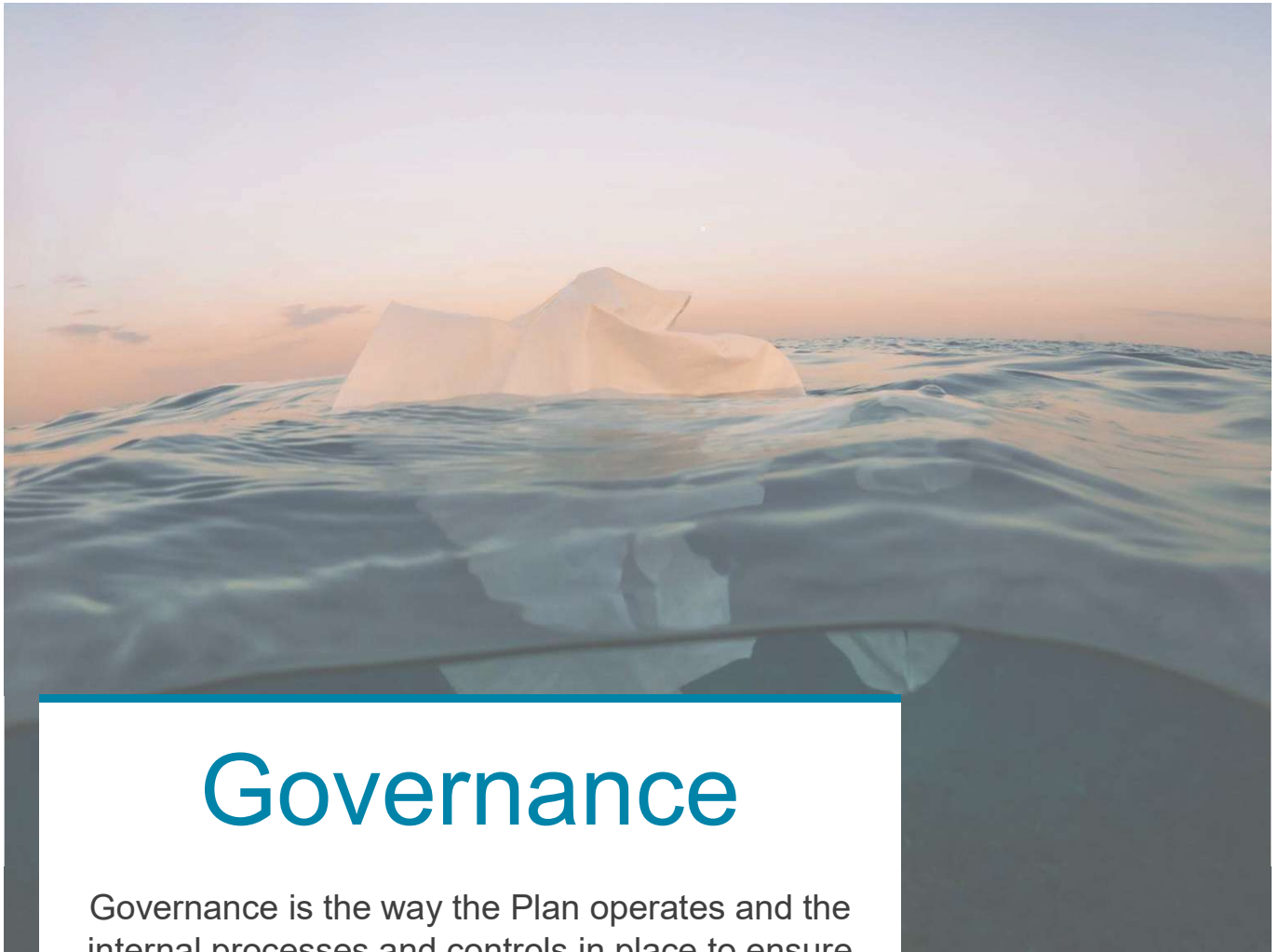
We have reviewed the metrics and the targets and believe these remain appropriate.

Following completion of the report, we were reassured that the various analyses showed that the potential financial impact of climate change on the Plan is not likely to be significant. We have worked hard to identify the climate-related risks and opportunities faced by the Plan, and to understand ways we can continue to manage and mitigate those risks.

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



on behalf of the Trustee of the Aon Retirement Plan.



Governance

Governance is the way the Plan operates and the internal processes and controls in place to ensure appropriate oversight. Those undertaking governance activities are responsible for managing climate-related risks and opportunities. This includes us and others making Plan-wide decisions relating to the investment strategy or how it is implemented such as the sponsoring employers and the Plan's advisers.



Our Plan's governance

As the Trustee of the Plan, we are ultimately collectively responsible for oversight of all strategic matters related to the Plan. This includes approval of the governance and management framework relating to ESG considerations and climate-related risks and opportunities.

We have discussed and agreed our climate-related beliefs and overarching approach to managing climate change risk. These beliefs are reviewed and (re)approved periodically by us.

Our climate beliefs

The Plan remains ongoing at the current time but over the longer term it is currently our intention to secure members' benefits through annuity policies with insurance companies. Given the Plan's healthy funding position, this could happen sometime between 2027 and 2029. Before then we believe that there are short-term risks associated with climate change that may impact the Plan's investment return over the period until the Plan's liabilities are secured.

As such, where it is appropriate to do so, we seek to monitor and manage these risks and integrate assessments of climate change risk into our investment decisions. We also aim to consider potential investment opportunities that may arise from climate-related factors during that time.

In line with our strategic objectives and fiduciary duty, we consider that the most appropriate time horizon for the Plan is the short term i.e. 3 years. Where appropriate, we consider transition and physical risks separately.

Notwithstanding the above we also recognise that the Plan could be subject to much longer-term risks if the Plan's liabilities are not secured with an insurance company within the above timescale. We therefore also assess climate-related risks and opportunities over the medium- and longer term, which we consider to be 4 to 7 years and 8 to 10 years, respectively.

Trustee's update

We receive training on climate-related issues on a minimum of an annual basis, but more frequently if required. This training ensures that we have the appropriate degree of knowledge and understanding on these issues to support good decision making.

This training includes introducing climate-related risk and opportunities as concepts relevant to investment decision making, and the TCFD framework as a method for explaining how these risks and opportunities are identified, assessed, and managed.



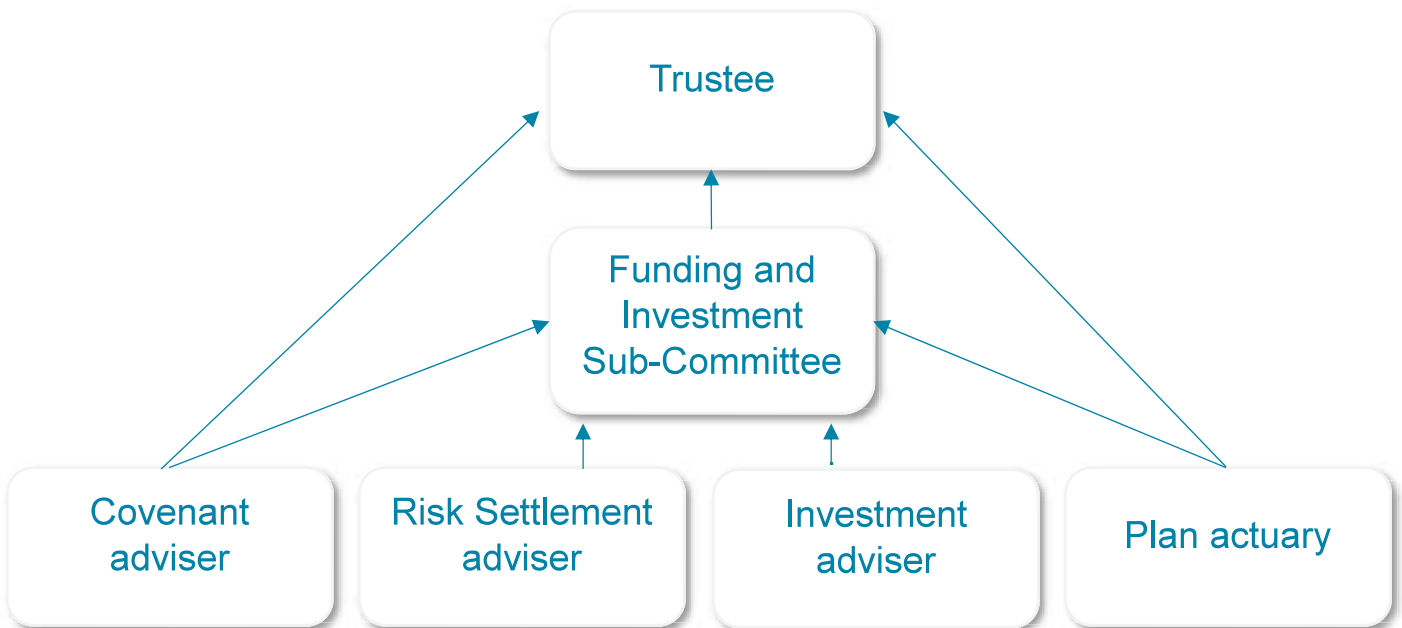
Role of the Trustee

The Trustee Board is ultimately collectively responsible for oversight of all strategic matters related to the Plan. This includes approval of the governance and management framework related to ESG considerations and climate-related risks and opportunities.

Given its importance, we have not identified one individual to specifically be responsible for our response to climate risks and opportunities. Rather, we have collective responsibility for setting the Plan's climate change risk framework.

We have discussed and agreed our climate-related beliefs and overarching approach to managing climate change risk. Details are set out in the respective Statement of Principles ("SIP") for the DB, DC and Additional Voluntary Contributions ("AVC") mandates and are reviewed and (re)approved periodically by us.

We have delegated the ongoing monitoring and implementation of the Plan's climate change risk management framework to the FISC. We regularly monitor and review progress against the Plan's climate change risk management approach.



Role of the FISC

The FISC is a sub-committee and keeps us apprised of material climate-related developments on a regular basis.

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

- Ensuring investment proposals explicitly consider the impact of climate risks and opportunities.
- Engaging with the Plan's investment managers to understand how climate risks are considered in their investment approach.
- Working with the investment managers to disclose relevant climate-related metrics as set out in the TCFD recommendations.

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- Working with the investment advisers of our DB, DC and AVC mandates to ensure that stewardship activities are being undertaken appropriately on the Plan's behalf.
 - Ensuring that actuarial and covenant advice adequately incorporate climate-related risk factors where they are relevant and material.
 - Engaging with the Sponsors on climate risk and the potential impact on covenant.

How we work with our advisers

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

We annually review the quality of our advisers' provision of advice and support on climate-related issues. For our investment adviser this is part of the annual review of investment consultant objectives.

Investment adviser – our investment advisers for the DB, DC and AVC mandates provide strategic and practical support to us and the FISC, in respect of the management of climate-related risks and opportunities and ensuring compliance with the recommendations set out by the TCFD.

This includes provision of regular training and updates on climate-related issues and climate change scenario modelling to enable the FISC and us to assess the Plan's exposure to climate-related risks.

Plan Actuary - our Plan Actuary will help us assess the potential impact of climate change risk on the Plan's funding assumptions where relevant, given the lifetime of the Plan.

As part of our assessment of our advisers' climate-related competence, we seek to understand how climate-related factors affect the assumptions used for the Plan, and which sources of expertise our Plan Actuary has used in determining the appropriate assumptions to use.

Risk settlement adviser - in the lead up to a potential bulk annuity transaction in the next few years, our risk settlement adviser will help us assess the ability of candidate insurance companies to identify, assess and manage climate-related risks and opportunities. This will also include wider ESG considerations.

Covenant adviser - our covenant adviser will help us understand the potential impact of climate change risk on the sponsors' covenant.

As part of covenant advice sought, which is typically around the time of the Plan's triennial funding valuation, we will seek to understand how climate-related factors could affect the sponsoring employers' strategy over time and consider this in the light of the Plan's de-risking journey. In doing so, we will seek information from our covenant adviser regarding their credentials in assessing climate-related factors.



Strategy

It is crucial to think strategically about the climate-related risks and opportunities that will impact the Plan if we are to stand a chance of mitigating the effects of climate change.

Assessing the climate-related risks and opportunities the Plan is exposed to is key to understanding the impact climate change could have on the Plan in the future.



How resilient is the Plan to climate change?

In last year’s report, we carried out climate change scenario analysis to better understand the impact climate change could have on the Plan’s assets and liabilities. We have decided not to refresh the scenarios in this year’s report (with our rationale provided alongside), and this section therefore summarises the approach and conclusions from when we last completed the scenarios analysis.

The analysis carried out in last year’s report, looked at two climate change scenarios. We chose these scenarios because we believe that they provide a reasonable range of possible climate change outcomes. The climate scenarios are compared to a “base case” scenario.

Each climate scenario considers what may happen to the Plan when transitioning to a low carbon economy under different temperature-related environmental conditions. These scenarios were developed by our investment adviser and are based on several assumptions. We recognise that these scenarios are only illustrative and are subject to considerable uncertainty.

Given the commonality in the investment strategies and liability profile across the four largest DB sections of the Plan and on grounds of materiality, we have undertaken quantitative scenarios analysis on the two largest sections, A&A and ABH. We consider that the AUK and HPF sections would exhibit similar climate risk characteristics to both the A&A and ABH sections given the similarities.

In addition, in order to compare the potential impact on the Plan of de-risking the assets in the event of a buy-out, we compared the target de-risked strategy of the A&A section, with the current target strategy of the ABH section. The headline analysis and conclusions are summarised below. Since the smallest section, Hewitt Associates Pension and Life Assurance Plan (“HAPLAP”), does not have the same commonality with the four other larger sections, it has been excluded from this analysis as the investments within this section constitute a significantly smaller proportion of the overall benefits of the Plan.

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

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

Investment risk is captured in the deviance from the base case scenario, but this is not the only risk that the Plan/members faces. Other risks include covenant risk, longevity risk, timing of member options, basis risks and operational risks.

Trustee’s update

Under the Regulations, climate scenario analysis must be carried out at least every 3 years, with an annual review in interim years. There are circumstances which may require the climate scenario analysis to be re-done. This may be as a result of, but not limited to:

- a significant/material change to the investment and/or funding strategy; or
- the availability of new or improved scenarios or modelling capabilities or events that might reasonably be thought to impact key assumptions underlying scenarios.

We reviewed the scenario analysis completed as at 31 March 2022 and we are comfortable that the analysis remains appropriate for this year’s report. Although inflation expectations have significantly increased since the analysis was carried out, we do not expect this to materially change the results of the analysis given the high level of inflation hedging in place. There have been no significant changes to the investment strategy, the liability profile/membership of the Plan, the modelling techniques, significant shift in policy implementation to tackle climate change or asset data availability.

Details of the climate scenarios we chose to analyse are set out in the table below.

Scenario	Reach net zero by	Degree warming vs pre-industrial levels by 2100	Introduction of environmental regulation	Scenario description
Base Case	2050	~2°C to 2.5°C	-	Emission reductions start now and continue in a measured way in line with the objectives of the Paris Agreement and the UK government's legally binding commitment to reduce emissions in the UK to net zero by 2050.
Disorderly Transition	After 2050	<4°C	Late and Aggressive	The world economy remains oriented towards improving near-term economic prospects, with companies and governments taking a "business as usual" approach. Eventually, market participants begin to fully grasp the implications of climate change and there is a growing realisation that current levels of action are inadequate. Market values price in high levels of economic damage and the irreversible loss.
Orderly Transition	2050	<2°C	Coordinated	Increased public awareness of climate change risks galvanises opinion and leads to governments undertaking widespread action globally to aggressively mitigate and adapt to climate change. A high global greenhouse gas tax and carbon cap is introduced.

Source: Aon.

DB Mandate – Impact on the funding level

Key conclusions

Overall, we are comfortable with the level of resilience exhibited by the investment portfolio, and we are not going to make any changes to the investment strategy as a result of this analysis.

The scenarios modelled cover a range of good and bad climate change outcomes. The scenarios look at the impact across the assets and liabilities of the A&A section and the ABH section, which comprise a large proportion of the Plan's total assets and liabilities. The climate outcomes modelled include severe, but feasible scenarios rather than more severe "tail risk" events.

Based on this analysis and the commonality in the investment strategy and liability profile across all four analysed sections, we have concluded that overall, the Plan's funding position is resilient to all the climate change scenarios considered. This is primarily due to the high levels of hedging against changes in interest rates and inflation.

A&A Section

The A&A section's investment portfolio exhibits reasonable resilience under the climate scenarios modelled. This is due to the low-risk strategy and high levels of hedging against changes in interest rates and inflation.

The projection periods considered within each scenario are consistent with the time horizon over which we consider climate-related risks and opportunities for the Plan, as defined by us in the Governance section of this report.

The table below describes the impact of each scenario on the Plan over the short-, medium- and long-term time horizons. It also presents the Base case scenario which the scenarios are compared against for the Plan.

Base case

Temperature rise
+1.5°C- 2.4°C
Reach net-zero
2050
Environmental
regulation
Uncoordinated

Summary of the Scenario

The Base Case is based on Aon's Capital Market Assumptions which considers what is currently priced into the market. This includes some climate change related impact. In the Base Case, action is taken to tackle climate change, but the approach is fragmented. The transition to a low carbon economy is expected to happen in a slow but orderly fashion.

Summary of the impact to the Plan

The funding level gradually increases over time, as the worst impacts of climate change are not currently priced into market conditions. Surplus projections for the A&A section in this scenario exceed that of the disorderly and orderly transitions, given the impact of physical and transition risks in these scenarios relative to the base case.

Disorderly Scenario

Temperature rise
<4°C

Reach net-zero
After 2050

Environmental
regulation
Late and
Aggressive

Summary of the Scenario

In the short term:

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

In the medium term:

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

In the long term:

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

Summary of the impact to the Plan

In the short term:

The funding level improves in line with the base case

In the medium term:

The funding level continues to improve, performing better than the base case.

In the long term:

The surplus deteriorates, albeit the impact is small. This leaves the section slightly worse off in terms of funding surplus relative to the base case, although it is possible (and expected) that the Plan might have secured the liabilities via bulk annuities before the point at which the funding level deteriorates.

Orderly Scenario

Temperature rise
<2°C

Reach net-zero
2050

Environmental
regulation
Coordinated

Summary of the Scenario

In the short term:

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

In the medium term:

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

In the long term:

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

Summary of the impact to the Plan

In the short term:

The section experiences a small reduction in the surplus. This is mainly driven by the initial impact of credit spreads on the section's assets given the section's allocation to Credit Default Swaps.

In the medium term:

The section is expected to recover from the initial shock of transition costs.

In the long term:

The section's assets gain from the economic growth and the funding level is expected to continue to grow. This is expected to be the best outcome for the Plan

Source: Aon. *Effective date of the impact assessment is 31 March 2022*

ABH Section

Similarly, the ABH section's investment portfolio also exhibits good resilience under the climate scenarios modelled. Again, this is due to the low-risk strategy and high levels of hedging against changes in interest rates and inflation.

The table below describes the impact of each scenario on the Plan over the short-, medium- and long term- time horizons. It also presents the Base case scenario which the scenarios are compared against for the Plan.

Base case

Temperature rise
+1.5°C- 2.4°C

Reach net-zero
2050

Environmental
regulation
Uncoordinated

Summary of the Scenario

The Base Case is based on Aon’s Capital Market Assumptions which considers what is currently priced into the market. This includes some climate change related impact. In the Base Case, action is taken to tackle climate change, but the approach is fragmented. The transition to a low carbon economy is expected to happen in a slow but orderly fashion.

Summary of the impact to the Plan

Like the A&A Section the funding level gradually increases over time. Over the long term, the surplus for the ABH section in the base case is lower than the disorderly transition scenario over the modelling period. This is driven by a lower impact of physical risks on the ABH section over this time period, given that transition risks take longer to materialise under the disorderly transition scenario relative to the base case.

Disorderly Scenario

Temperature rise
<4°C

Reach net-zero
After 2050

Environmental
regulation
Late and
Aggressive

Summary of the Scenario

In the short term:

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

In the medium term:

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

In the long term:

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

Summary of the impact to the Plan

In the short term:

The funding level improves in line with the base case

In the medium term:

The funding level continues to improve in line with the base case

In the long term:

Whilst the current ABH section portfolio is running more risk compared to the A&A section, this scenario has a smaller impact on the surplus. This is because the ABH section is anticipated to be fully de-risked when this occurs. However, similar to the A&A section, the ABH section is still expected to be slightly worse off by the end of the modelling period.

Orderly Scenario

Temperature rise
<2°C

Reach net-zero
2050

Environmental
regulation
Coordinated

Summary of the Scenario

In the short term:

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

In the medium term:

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

In the long term:

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

Summary of the impact to the Plan

In the short term:

Compared to the A&A section the funding surplus of the ABH section is more volatile under the orderly transition. The section experiences a small reduction in the surplus, this impact is worse compared to the A&A section. This is because the impact occurs when some of the ABH section investment portfolio is still invested in higher-risk assets.

In the medium term:

The section is expected to recover from the initial shock of transition costs

In the long term:

The section’s assets gain from the economic growth and the funding level is expected to continue to grow.

Source: Aon. *Effective date of the impact assessment is 31 March 2022*

Modelling limitations

Please refer to the [Appendix](#) for further details in relation to the assumptions used for the scenario analysis and its limitations.

DC mandate – Impact on members’ savings

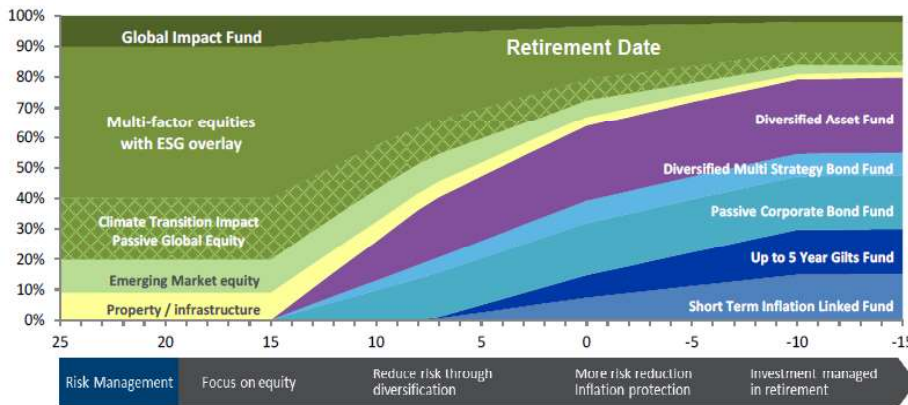
Similarly, we reviewed the scenario analysis completed as at 31 March 2022 for the DC mandate and we are comfortable that the analysis remains appropriate for this year’s report. We are satisfied that there have been no significant changes to the investment strategy, the liability profile/membership of the Plan, the modelling techniques, significant shift in policy implementation to tackle climate change or asset data availability. The below section details the analysis undertaken for the previous reporting year.

For the DC mandate, we carried out climate scenario analysis on the default strategy.

The strategy is implemented via ‘target date funds’, with the asset allocation being managed according to members’ terms to retirement. The default strategy is the Aon Managed Retirement Pathway to Drawdown. This default has been selected as it allows for flexibility in how members may take their benefits. Retirement Pathway variants targeting annuity and cash are also available to members.

Investment strategy

The investment strategy adopted by the default investment arrangement is shown in the chart below. This default arrangement was in place over 2023. Some strategy changes were made in early 2024, as the initial stage of a transition which will continue in the 2024 reporting year. We expect these changes will have a positive impact on the DC mandate’s climate risk exposure. The changes will be considered for our future reporting, but we are comfortable that the analysis below remains appropriate for this reporting year.



For the climate change analysis in relation to the DC assets we have looked at three alternative climate change scenarios relative to our assumed ‘base case’. The base case, orderly transition and disorderly transition are the same climate change scenarios as considered for the DB assets. Additionally, for the DC assets, we have considered the ‘no transition’ scenario given the longer investment time horizon of young and mid-career members in particular.

Scenario	Reach net zero by	Degree warming vs pre-industrial levels by 2100	Introduction of environmental regulation	Scenario description
Base Case	2050	~2°C to 2.5°C	-	Emission reductions start now and continue in a measured way in line with the objectives of the Paris Agreement and the UK government's legally binding commitment to reduce emissions in the UK to net zero by 2050.
Disorderly Transition	After 2050	<4°C	Late and Aggressive	The world economy remains oriented towards improving near-term economic prospects, with companies and governments taking a "business as usual" approach. Eventually, market participants begin to fully grasp the implications of climate change and there is a growing realisation that current levels of action are inadequate. Market values price in high levels of economic damage and the irreversible loss.
Orderly Transition	2050	<2°C	Coordinated	Increased public awareness of climate change risks galvanises opinion and leads to governments undertaking widespread action globally to aggressively mitigate and adapt to climate change. A high global greenhouse gas tax and carbon cap is introduced.
No Transition	After 2050, if at all	+4°C	No Action	No further action is taken to reduce greenhouse gas ("GHG") emissions leading to significant global warming.

Our impact assessment is qualitative in nature and is intended to illustrate the scenarios that we believe are of most concern to members. This is largely driven by members' term to retirement, given the impact on both investment strategy and investment time horizon. Younger members are invested in equities and have longer time horizons, and hence greater exposure to climate scenarios that are damaging to expected equity returns in the long term. Older members are invested in more diversified portfolios and have shorter time horizons, and hence have greater exposure to short- and medium-term climate risks.

Our assumed base case is that emission reductions start now and continue in a measured way in line with the objectives of the Paris Agreement and the UK government's legally binding commitment to reduce emissions in the UK to net zero by 2050. We believe that this scenario is consistent with equity markets delivering positive real returns for members over the long term. Our assessment of the impact of the alternative climate change scenarios is given relative to this base case, over a range of time horizons.

The short-, medium- and long term- time horizons noted here are not the same as those set out for the DB assets on the Plan. The time horizons of the DC assets are all longer than those of the DB assets for each term. We consider the short-, medium- and long-term time horizons of the DC assets to be 1 to 3 years, 4 to 10 years, and 10 to 30+ years, respectively.

Key conclusions

Overall, we are comfortable with the level of resilience exhibited by the investment arrangements, and we are not going to make any changes to the investment strategy as a result of this analysis.

Within the equity portfolio, the investment strategy is climate-risk aware, through investment in the Aon Global Impact Fund, the UBS Global Equity Climate Transition Fund and the ESG overlay within the Multi-Factor Equity portfolio. These investments aim to manage both the risks and opportunities of climate change to improve the overall risk / return characteristics of the portfolio.

An increased level of diversification will help mitigate this risk, as members' allocation to equities is reduced as they approach and are at-retirement. Should members continue to invest post-retirement, the impact they experience will be more likely to include the 'long term' effects below, albeit mitigated relative to younger members by their lower allocation to equities.

Relative to younger members, the climate risk from asset portfolios is reduced because of the lower allocation to equities and the relatively shorter investment time horizon. However, for this group of members, the timing of the impact of climate risk on assets may mean there is limited time (in terms of remaining working life) to make up any shortfall in expected retirement benefits.

The scenarios that have been considered in each instance were chosen to show the impact of each scenario on members at different age groups and career stages. This has been done as the scenarios may have a different impact on different members of the group depending on their investment time horizon and how close they are to retirement.

Younger and mid-career members

For younger members, the impact of climate change will mainly be driven by what happens over the long-term time horizon. In particular, the climate-related risks associated with investing in equities is expected to be greatest over the long term.

<p>Base case</p> <p>Temperature rise +1.5°C- 2.4°C</p> <p>Reach net-zero 2050</p> <p>Environmental regulation Uncoordinated</p>	<p>Summary of the Scenario</p> <p>The base case is based on Aon’s Capital Market Assumptions which considers what is currently priced into the market. This includes some climate change related impact. In the base case, action is taken to tackle climate change, but the approach is fragmented. The transition to a low carbon economy is expected to happen in a slow but orderly fashion.</p>	<p>Summary of the impact to the Plan</p> <p>Members’ asset portfolios increase over time, as the worst impacts of climate change are not currently priced into market conditions. Projections of members’ retirement savings in this scenario exceed that of the disorderly and no transition scenarios. Asset performance under the Orderly Transition scenario initially lags the base case, however overall asset performance is ultimately best under the orderly transition scenario.</p>
<p>Disorderly Scenario</p> <p>Temperature rise <4°C</p> <p>Reach net-zero After 2050</p> <p>Environmental regulation Late and Aggressive</p>	<p>Summary of the Scenario</p> <p>In the short term: Insufficient consideration given to long-term policies and there is no action taken to combat climate change</p> <p>In the medium term: Late but coordinated action is taken to tackle climate change. The late timing means it is less effective and more costly to implement. Adverse impacts from climate change leads to a drag on risk assets</p> <p>In the long term: After the costly implementation to tackle climate change and the resulting drag on risky assets, the transition to clean technologies and green regulation begins to boost economic growth when considering the very long term. However, the late and disorderly climate transition means that physical climate risks remain prominent over the very long term.</p>	<p>Summary of the impact to the Plan</p> <p>In the short term: There is not expected to be any initial impact on asset portfolios and performance is expected to follow the base case.</p> <p>In the medium term: Asset portfolios deteriorate sharply as a result of delayed action required to tackle climate change.</p> <p>In the long term: Whilst asset portfolios do start to recover from the medium-term shock, this scenario is likely to be of most concern for this group of members, which would leave them materially worse off in comparison to the base case.</p>
<p>Orderly Scenario</p> <p>Temperature rise <2°C</p> <p>Reach net-zero 2050</p> <p>Environmental regulation Coordinated</p>	<p>Summary of the Scenario</p> <p>In the short term: Immediate coordinated global action is taken to tackle climate change. Risky assets perform poorly.</p> <p>In the medium term: The rapid transition to clean technologies and green regulation begins to boost economic growth.</p> <p>In the long term: The rapid transition to clean technologies and green regulation begins to boost economic growth. This represents the fastest transition to a green economy, combined with limited physical impacts from climate change despite the large initial transition cost.</p>	<p>Summary of the impact to the Plan</p> <p>In the short term: Asset portfolios are expected to suffer an initial drop as a result of the costs of immediate coordinated action to tackle climate change.</p> <p>In the medium term: Asset portfolios are expected to recover from the initial shock of transition costs. Relative to the other scenarios, lower impact from physical risks (given action to tackle climate change) is beneficial for portfolios.</p> <p>In the long term: Members’ asset portfolios are likely to perform strongest relative to the base case. This represents the fastest transition to a green economy, combined with limited physical impacts from climate change despite the large initial transition cost.</p>

No Transition Scenario

Temperature rise
+4°C

Reach net-zero
After 2050, if at all

Environmental
regulation
No Action

Summary of the Scenario

In the short term:

No action is taken to combat climate change.

In the medium term:

No action is taken to combat climate change.

In the long term:

Climate change headwinds grow and act as a drag on economic growth and risk asset returns. Impacts from physical risks become more severe and irreversible by 2100.

Summary of the impact to the Plan

In the short term:

There is not expected to be any initial impact on asset portfolios and performance is expected to follow the base case.

In the medium term:

Impacts from physical risks gradually become more severe over time leading to a drag on economic growth and risk asset returns. Asset portfolios begin to lag the base case

In the long term:

Impacts from physical risks gradually become more severe over time leading to a drag on economic growth and risk asset returns. Asset portfolios lag the base case and continue a downward trend.

Source: Aon. Effective date of the impact assessment is 31 March 2022

Members approaching retirement and at-retirement

The impact of climate change for these members is expected to be driven by the short to medium -term time horizons. The climate-related risks associated with investing in equities is expected to have an impact in this time period. Over time, members reduce their allocation to equities as they approach retirement which will reduce their exposure to climate-related risks.

Base case	Summary of the Scenario	Summary of the impact to the Plan
Temperature rise +1.5°C- 2.4°C Reach net-zero 2050 Environmental regulation Uncoordinated	The base case is based on Aon’s Capital Market Assumptions which considers what is currently priced into the market. This includes some climate change related impact. In the base case, action is taken to tackle climate change, but the approach is fragmented. The transition to a low carbon economy is expected to happen in a slow but orderly fashion.	Members’ asset portfolios increase over time, as the worst impacts of climate change are not currently priced into market conditions. Projections of members’ retirement savings in this scenario move in line with the disorderly and no transition over the medium term, at which point asset performance under the base case exceeds these scenarios. Asset performance under the orderly transition scenario initially lags the base case, however overall asset performance is ultimately best under the orderly transition scenario.
Disorderly Scenario	Summary of the Scenario	Summary of the impact to the Plan
Temperature rise <4°C Reach net-zero After 2050 Environmental regulation Late and Aggressive	<p>In the short term:</p> <p>Insufficient consideration given to long-term policies and there is no action taken to combat climate change</p> <p>In the medium term:</p> <p>Late but coordinated action is taken to tackle climate change. The late timing means it is less effective and more costly to implement. Adverse impacts from climate change leads to a drag on risk assets</p> <p>In the long term:</p> <p>After the costly implementation to tackle climate change and the resulting drag on risky assets, the transition to clean technologies and green regulation begins to boost economic growth when considering the very long term. However, the late and disorderly climate transition means that physical climate risks remain prominent over the very long term.</p>	<p>In the short term:</p> <p>There is not expected to be any initial impact on asset portfolios and performance is expected to follow the base case.</p> <p>In the medium term:</p> <p>Asset portfolios deteriorate sharply as a result of delayed action required to tackle climate change. For this group of members, the timing of a disorderly transition may mean there is little time (in terms of remaining working life) to make up pensions shortfall.</p> <p>In the long term:</p> <p>Whilst asset portfolios do start to recover from the medium-term shock, this scenario is likely to be of concern for this group of members, which would leave them materially worse off in comparison to the base case.</p>
Orderly Scenario	Summary of the Scenario	Summary of the impact to the Plan
Temperature rise <2°C Reach net-zero 2050 Environmental regulation Coordinated	<p>In the short term:</p> <p>Immediate coordinated global action is taken to tackle climate change. Risky assets perform poorly.</p> <p>In the medium term:</p> <p>The rapid transition to clean technologies and green regulation begins to boost economic growth.</p>	<p>In the short term:</p> <p>Asset portfolios are expected to suffer an initial drop as a result of the costs of immediate coordinated action to tackle climate change.</p> <p>In the medium term:</p> <p>Asset portfolios are expected to recover from the initial shock of transition costs. Relative to the other scenarios, relatively lower impact from physical risks (given action to tackle climate change) is beneficial for portfolios.</p>

No Transition Scenario

Temperature rise
+4°C

Reach net-zero
After 2050, if at
all

Environmental
regulation
No Action

In the long term:

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

Summary of the Scenario

In the short term:

No action is taken to combat climate change.

In the medium term:

No action is taken to combat climate change.

In the long term:

No action is taken to combat climate change.

In the long term:

Members' asset portfolios are likely to perform strongest relative to the base case. This represents the fastest transition to a green economy, combined with limited physical impacts from climate change despite the large initial transition cost.

Summary of the impact to the Plan

In the short term:

There is not expected to be any initial impact on asset portfolios and performance is expected to follow the base case.

In the medium term:

Impacts from physical risks gradually become more severe over time leading to a drag on economic growth and risk asset returns. Asset portfolios begin to lag the base case.

In the long term:

Impacts from physical risks gradually become more severe over time leading to a drag on economic growth and risk asset returns. Asset portfolios lag the base case and continue a downward trend.

Source: Aon. *Effective date of the impact assessment is 31 March 2022*

Modelling limitations

Please refer to the [Appendix](#) for further details in relation to the assumptions used for the scenario analysis and its limitations.

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

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

Given the number of asset classes used in the Plan, we completed this exercise to the best of our ability, to analyse the climate-related risks of each asset class.

The assessment is based on two of the scenario transition pathways described above that clearly contrast the distinction between physical and transition risks (the “no transition” and “orderly transition” scenarios modelled above). The risks in the analysis are shown relative to the base case scenario. In particular, the no transition scenario (under which physical risks dominate) has been contrasted with the orderly transition scenario (under which transition risks dominate). We chose these scenarios because we believe that they most appropriately contrast the range of climate risk categories affecting the Plan.

Our investments

The Plan’s DB investment portfolio is diversified across a range of different asset classes including equities, credit and a range of alternative return-seeking assets.

The Plan’s asset allocation, with cash excluded on the grounds of materiality, as 31 December 2023 is as follows:

A&A section:

Asset Class	LDI	Bulk Annuities	Illiquid Assets	Liquid Alternatives
Strategic Allocation	59%	35%	6%	<1%

Trustee’s update

We reviewed the risk assessment completed as at 31 March 2022 and following this have updated the ratings in line with the latest assessment completed as at 31 December 2023.

AUK section:

Asset Class	LDI	Bulk Annuities	Illiquid Assets	Liquid Alternatives
Strategic Allocation	59%	34%	7%	<1%

ABH section:

Asset Class	LDI	Bulk Annuities	Illiquid Assets	Liquid Alternatives
Strategic Allocation	23%	67%	10%	<1%

HPF section:

Asset Class	LDI	Bulk Annuities	Illiquid assets
Strategic Allocation	84%	16%	1%

Asset allocations as at 31 December 2023. Note: figures may not sum to 100% due to rounding and the exclusion of cash.

Whilst the majority of the commentary in this analysis focuses on the DB mandate, the RAG analysis also includes an analysis of the DC mandate. The Plan’s DC investment strategy and the time horizons relating to the DC mandate are as described on pages 18 and 19 respectively.

How the risk assessment works



Risk categories

In the analysis, the climate-related risks have been categorised into physical and transition risks. In this analysis, we focus on the 'No Transition' and 'Orderly Transition' scenarios to demonstrate the impact of physical and transition risks, described below:

No Transition: no further action is taken to reduce greenhouse gas emissions, leading to significant global warming. Physical risks dominate this scenario.

Orderly Transition: immediate and coordinated global action to tackle climate change is taken using carbon taxes and environmental regulation. Transition risks dominate this scenario.



Ratings

The analysis uses a RAG rating system where:

Red denotes a high level of financial exposure compared to the other scenarios modelled.

Amber denotes a medium level of financial exposure compared to the other scenarios modelled.

Green denotes a low level of financial exposure compared to the other scenarios modelled.



Time horizons

We assessed the climate-related risks and opportunities over multiple time horizons considering the liabilities of the Plan and its obligations to pay benefits. We decided the most appropriate time horizons for the Plan are as follows:

DB Mandate:

- Short-term: 1-3 years
- Medium-term: 4-7 years
- Long-term: 8-10 years

DC Mandate:

- Short-term: 1-3 years
- Medium-term: 4-10 years
- Long-term: 10-30+ years

When deciding the relevant time horizons, we considered the liabilities of the Plan and its obligations to pay benefits.

More details about transition and physical risks can be found in the [Appendix](#).



Climate-related risk assessment

Key conclusions

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

Under the no transition scenario, we expect low risk exposure across all asset classes in the short term as the effects of climate change on global markets are relatively limited.

The risks increase steadily over time as impacts from physical risks gradually become more severe. Climate change headwinds facing the economy and markets steadily grow. This results in a trend from lower risk to higher risk over time, however, these risks are mitigated to an extent by the relatively short time-horizons of the Plan.

Under the orderly transition scenario, there is immediate, coordinated action to tackle climate change such as through the introduction of carbon taxes and environmental regulation.

A high level of financial risk exposure is expected in the short term across most asset classes due to the costs of the transition to a low carbon economy. Green policies and high levels of infrastructure investment in renewable energy technologies lead to the rapid development and take-up of green technology. The rapid transition to clean technologies and green regulation eventually boosts growth in the longer term. This all results in a trend from higher risk to lower risk over time.

The following tables summarise the transition and physical risks for each asset class the Plan is invested in.

DB and DC Analysis

No transition scenario – physical risks dominate

		DC Medium DB		
		Short (1-3y)	Medium-Long (4-10y)	DC Only Long (11-30y)
Equities	Developed Market Equity	G	A	R
	Emerging Market Equity	G	A	R
Fixed Income/ cash	Government Bonds (Including LDI)	G	A	A
	Emerging market debt/ high yield bonds	G	A	R
	Corporate bonds	G	A	R
	Asset bucket securities	A	A	G
Illiquid Assets	UK Property	A	A	R
	Infrastructure	A	A	R

Source: Aon. Data as at 31 December 2023.

Orderly transition scenario – transition risks dominate

		DC Medium DB		
		Short (1-3y)	Medium-Long (4-10y)	DC Only Long (11-30y)
Equities	Developed Market Equity	R	G	G
	Emerging Market Equity	R	G	G
Fixed Income/ cash	Government Bonds (Including LDI)	R	A	G
	Emerging market debt/ high yield bonds	R	G	G
	Corporate bonds	R	G	G
	Asset bucket securities	R	G	G
Illiquid Assets	UK Property	R	G	G
	Infrastructure	R	G	G

Source: Aon. Data as at 31 December 2023.

Climate-related opportunities

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

UK Government Bonds

Green gilts provide LDI mandates with a climate-related opportunity where the bonds they buy are specifically linked to the financing of green initiatives. The UK government's green financing framework sets out six key areas where the proceeds will be invested: clean transportation, climate change and adaptation, renewable energy, energy efficiency, pollution prevention and control, and living and natural resources.

Liquid Credit

Green bonds, as well as companies that are transitioning like those setting Science Based Targets or companies focusing on generating revenues from climate change solutions such as renewable energy, energy efficiency, electric vehicles, circular economy etc. Many financial sector firms issue green bonds, which present a great opportunity for fixed income climate-related investment. Although climate solutions-oriented opportunities will be limited in low climate impact sectors, many companies can be enablers of the transition such as financing, technology, and communications sectors.

Source: Managers

Arguably, potential investment opportunities are more limited for the DB mandate of the Plan given the de-risking of the investment strategy and the potentially close proximity to being able to secure the liabilities with bulk annuities, compared to other pension schemes. That said, we recognise that as the Plan continues to de-risk, the Plan's investments in UK Government Bonds (through the matching portfolio) and Liquid Credit could give rise to potential opportunities in the next few years. Potential opportunities in property, infrastructure and illiquid credit are likely to be less relevant for the Plan in the short term but could become more relevant in the longer term if the timescale before a possible full insurance is extended.

Covenant Assessment

We believe that climate-related risks will not have a significant impact on the financial strength (“covenant”) of our sponsoring employers particularly in the short term as the sponsors’ operations are not as directly exposed to climate-related risks compared with other industries such as manufacturing or aviation. The Pensions Regulator (“TPR”) is however placing increasing importance on our understanding of how these risks impact covenant.

For the sponsors the cost of transitioning to net zero, for which the sponsors have a target of 2030, will likely require a substantial capital investment, and could cause a drag on medium term cash generation. Failure to achieve net-zero and responsible investment targets could result in reputational damage and loss in market share if the sponsors fall behind competitors.

We note there is a reputational risk to the sponsors, which is the area which could potentially have the biggest impact on covenant. If external stakeholders believe the sponsors are ‘greenwashing’ or acting unethically, then that could drive clients away, impacting financial performance and ultimately the covenant. Broader ESG factors could also become increasingly important over the longer term.

We, with the help of our covenant adviser, will monitor the sponsors’ progress against ESG targets, particularly those relating to climate change.

Key conclusions

As the DB Mandate of the Plan approaches the possibility of being able to secure its liabilities by means of fully insuring the liabilities with an insurance company, the principal risks that are likely to be of most concern to us relate to the matching and liquid credit assets. Climate-related risks associated with the Plan’s investments in global equities and illiquid assets are likely to be of less concern to us over this period. However, if the Plan’s circumstances change and the target timeframe to full insurance is extended, then these risks could become of more concern to us in the longer term.

The Plan currently holds a significant proportion of assets in annuity policies, and we have minimal control over the governance related to these assets.



Risk management

We must have processes to identify, assess and manage the climate-related risks that are relevant to the Plan and these must be integrated into the overall risk management of the Plan.


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



Our process for identifying and assessing climate-related risks

As described earlier in this report, we recognise that the Plan is most likely to be exposed to short-term climate-related risks, as the Plan is likely to be able to consider a full insurance in the next few years. Longer-term risks would therefore be less applicable to the Plan; however, we acknowledge that this would change if the timescale to a possible full insurance is extended.


We have established a process to identify, assess and manage the climate-related risks that are relevant to the Plan. This is part of the Plan's wider risk management framework and is how we monitor the most significant risks to the Plan in our efforts to achieve appropriate outcomes for members.



1

Qualitative assessment

A qualitative assessment of climate-related risks and opportunities which is prepared by our investment adviser and reviewed by us.



2

Quantitative analysis

Climate scenario analysis, which is provided by our investment adviser and reviewed by us.

Together these give us a clear picture of the climate-related risks that the Plan is exposed to, subject to the consideration that the impact of climate change is not yet fully understood or widely agreed upon, and that there is currently considerable debate on what the true impact of climate change will be over time. Where appropriate, we distinguish between transition and physical risks. And all risks and opportunities are assessed with reference to the time horizons that are relevant to the Plan.

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

Trustee's update

This process of identifying and assessing climate-related risks has been reviewed in the process of producing this TCFD report and we believe it is still suitable.

We also completed our Implementation Statement over the reporting year and included the theme of climate change within the voting and engagement activity of the Plan's investment managers.

Our Climate Risk Management Framework

We recognise the long-term risks posed by climate change and have taken steps to integrate climate-related risks into the Plan’s risk management processes.

We have a Climate Risk Management Framework to manage climate-related risk and opportunities. The Climate Risk Management Framework set out in the tables below clearly describes who is involved, what is done and how often. We delegate a number of key tasks to different committees but retain overall responsibility.

Governance

Activity	Delegated responsibility	Adviser / supplier support	Frequency of review
Climate change governance framework (<i>this document</i>)	FISC	Investment Adviser	Annual
Publish TCFD report and implementation statement	FISC	Investment Adviser	Annual
Add / review climate risks and activity on key Plan documentation (risk register, work plan)	FISC	Investment Adviser	Ongoing
ESG beliefs (including climate change)	FISC	Investment Adviser	Ongoing
Trustee training	Trustee, FISC	Investment Adviser	Ongoing
Ensure investment proposals explicitly consider the impact of climate risks and opportunities, and seek investment opportunities	Trustee	Investment adviser and Bulk annuity provider	Ongoing
Ensure that actuarial and covenant advice adequately incorporate climate-related risk factors where they are relevant and material	Trustee	Plan Actuary, Covenant adviser	Triennial

Trustee’s update

We monitored the above activities as part of our climate-related risks and opportunities management. During the year we published our first TCFD report and our Implementation Statement.

Strategy

Activity	Delegated responsibility	Adviser / supplier support	Frequency of review
Identify climate-related risks and opportunities (over agreed time periods) for investment & funding strategy	FISC	Investment Adviser	Annual
Climate scenario analysis - annual review for the continuing suitability of the results	FISC	Investment Adviser	Annual

Trustee's update

We have spent dedicated time during the year to analyse climate-related risks and opportunities for the Plan's various asset classes with the support of our investment adviser.

Risk management

Activity	Delegated responsibility	Adviser / supplier support	Frequency of review
Identify, assess and manage key climate-related risks	FISC	Investment Adviser	Ongoing
Include consideration of climate-related risks in the Plan's other risk processes and documents, such as the risk register and the SIP, and regularly review these	Trustee	Investment Adviser	Ongoing

Trustee's update

We have processes in place for identifying and assessing climate-related risks. Climate risks management is integrated into the ongoing risk management activities of the Plan via this climate risk management framework. We carry out qualitative assessment of climate risks and quantitative climate scenario analysis, which combined help us to focus on the risks that pose the most significant impact.

Metrics and Targets

Activity	Delegated responsibility	Adviser / supplier support	Frequency of review
Agree/review approach for metrics	FISC	Investment Adviser	Annual
Agree/review target	FISC	Investment Adviser	Annual
Obtain data for agreed metrics	FISC	Investment Adviser, Investment managers, Bulk annuity providers	Annual

Trustee's update

We have collated carbon metrics data for the reporting year, supported in this by the FISC and the investment adviser. As we prepare our second climate disclosures report, we are required to expand the carbon metrics to include scope 3 emissions. Details of these can be found in the metrics and targets section of this report.

We have also reviewed our targets, which were set in the first year of reporting, and confirmed that these remained appropriate for this reporting year.

Integration into overall risk management

We consider and manage climate-related risks within our wider investment strategy to ensure that the overall investment objective and our principal duty to the members (to pay pensions as they fall due) remains achievable. We ensure that climate-related risks are embedded into the Plan's overall risk management in two main ways.

Governance approach to integrating climate-related risks

As outlined in the Governance section, we have clearly defined areas of responsibility for ESG and climate risk. In particular, the FISC is responsible for developing and overseeing the approach to responsible ownership and climate management and reporting. These arrangements ensure that climate risk is considered alongside our other risk considerations so that they can be identified, assessed and managed in a proportionate way, coherently with the Plan's other risks. Where significant concerns arise, these will be addressed by the FISC on a case-by-case basis and appropriate actions agreed.

Investment approach to integrating climate-related risks

The climate scenario analysis undertaken for us considered the funding position based on the effect of climate risk on the Plan's assets and liabilities. We have determined that no change is currently required to the investment strategy based on the results of our scenario analysis. This is one of the methods by which the evaluation and consideration of climate risk is integrated into our framework for investment strategy decisions.

Climate risk considerations are integrated into asset-level decision making – as appropriate to each asset class – through our stewardship and application of each investment manager’s policy on climate change which is evaluated by us.

As the Plan approaches the possibility of being able to secure its liabilities by means of fully insuring the liabilities with an insurance company, as previously mentioned in the Governance section of this report, we will need to carefully select the right insurer. When selecting our insurer, in addition to other considerations, we will exercise our knowledge to ensure that the insurer demonstrates:

- A good understanding of ESG and Responsible Investment;
- A good understanding and awareness of climate-related risks; and
- A preparedness to change policies and actions in line with the latest developments in relation to climate-related risks and opportunities.

Insurer Analysis

In addition to the climate risk management framework set out above, we conducted an additional analysis on the insurers of the Plan over the reporting period.

The analysis focused on the three insurers that held the largest proportion of the Plan’s assets and accounted for more than 90% of the Plan’s insured assets.

All of the insurers demonstrated that they have fully embedded climate risk management into both their business and processes. As such, we believe they are well positioned to monitor the climate risks that the insured assets are exposed to going forward.

All of the insurers are either signatories of a variety of climate and sustainability related initiatives, or have demonstrated alignment with their principles. For example, the most material insurer is a signatory to the Financial Reporting Council’s (FRC’s) UK stewardship code, as well as being involved in collaborative engagements with UN Principles for Responsible Investment (UNPRI), and Net Zero Asset Owners Alliance which is convened by the United Nations Environment Programme (UNEP) and UNPRI.

A key part of their approach is the identification, assessment and monitoring of financially material climate risks and opportunities, in line with our expectations of the climate-risk management processes for insurers we select for the Plan. A key way in which we assess the insurers we select for the Plan is through an analysis of their ESG credentials, as set out in our DB SIP.



Metrics & Targets

Metrics help to inform our understanding and monitoring of the Plan's climate-related risks. Quantitative measures of the Plan's climate-related risks, in the form of both greenhouse gas emissions and non-emissions-based metrics, help us to identify, manage and track the Plan's exposure to the financial risks and opportunities climate change will bring.



Our climate-related metrics

We use some quantitative measures to help us understand and monitor the Plan’s exposure to climate-related risks. Measuring the greenhouse gas emissions related to our assets is a key way for us to assess our exposure to climate change.

Greenhouse gases are produced by burning fossil fuels, meat and dairy farming, and some industrial processes. When greenhouse gases are released into the atmosphere, they trap heat in the atmosphere causing global warming, contributing to climate change.

Greenhouse gases are categorised into three types or ‘scopes’ by the Greenhouse Gas Protocol, the world’s most used greenhouse gas accounting standard.



Scope 1

All direct emissions from the activities of an organisation which are under their control; these typically include emissions from their own buildings, facilities and vehicles



Scope 2

These are the indirect emissions from the generation of electricity purchased and used by an organisation



Scope 3

All other indirect emissions linked to the wider supply chain and activities of the organisation from outside its own operations – from the goods it purchases to the disposal of the products it sells

Last year, we reported on Scopes 1 and 2 emissions only. This year we are required to report Scope 3 emissions as well. Scope 3 emissions are often the largest proportion of an organisation’s emissions, but they are also the hardest to measure. The complexity and global nature of an organisation’s value chain make it hard to collect accurate data.

For more explanation about GHG emissions, please see the [Appendix](#).



Our climate-related metrics

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

Due to the materiality of the DC assets in the Plan (<1% of total assets), the climate-metrics analysis and subsequent target for these assets have been excluded from this report.



Total Greenhouse Gas emissions

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



Carbon footprint

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



Data quality

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

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

In this report, we refer specifically to the proportion of assets for which data is available.






Binary target measurement

A metric which shows how much of the Plan's assets are aligned with a climate change goal of limiting the increase in the global average temperature to 1.5°C above pre-industrial levels.

It is measured as the percentage of underlying portfolio investments with a declared net-zero or Paris-aligned target, or are already net-zero or Paris-aligned.




On the following pages are the climate-related metrics for the Plan's assets. The metrics are shown separately for the LDI and the Plan's other investments as they cannot be meaningfully aggregated. This is because the calculation methodology used for government bonds within the LDI portfolio is different to that of the other metrics.

Portfolio Carbon Metrics, excl. LDI

Asset class	%		 Data Quality (%)		 Total GHG emissions (tCO ₂ e)		 Carbon footprint (tCO ₂ e/£m)	
			Scopes 1 & 2	Scope 3	Scopes 1 & 2	Scope 3	Scopes 1 & 2	Scope 3
			Scopes 1 & 2	Scope 3	Scopes 1 & 2	Scope 3	Scopes 1 & 2	Scope 3
Illiquid assets	15%	2023	42%	12%	60,442	231	879	12
	15%	2022	28%	n/a	36,847	-	704	-
Liquid Alternatives	<1%	2023	0%	0%	-	-	-	-
	1%	2022	0%	n/a	-	-	-	-
Annuities	85%	2023	74%	19%	76,735	78,759	107	415
	84%	2022	57%	n/a	42,578	-	73	-
Total (excluding LDI)	100%	2023	69%	18%	137,176	78,990	174	377
	100%	2022	52%	n/a	73,695	-	115	-

Source: Investment managers / Annuity providers / Aon.
 Asset and metrics data is as at 31 December 2023, unless stated otherwise.
 Annuities metrics data is as at 31 December 2022, and assets used for underlying asset split by insurer is as at 31 March 2024.
 Scope 3 emissions are not available for 2022 because this is the first year we have reported on these emissions.

LDI Portfolio Carbon Metrics

DB Section	%		 Data Quality (%)		 Physical emissions (tCO ₂ e) / Synthetic emissions (tCO ₂ e)		 Total emissions (tCO ₂ e) / Carbon footprint (tCO ₂ e/£m)	
			Data Quality (%)	Physical emissions (tCO ₂ e)	Synthetic emissions (tCO ₂ e)	Total emissions (tCO ₂ e)	Carbon footprint (tCO ₂ e/£m)	
A&A	56%	2023	100%	106,718	0	106,718	170	
	56%	2022	100%	n/a	n/a	123,281	175	
AUK	23%	2023	100%	45,955	8,851	54,806	170	
	23%	2022	100%	n/a	n/a	57,093	175	
ABH	11%	2023	100%	35,050	1,287	36,337	170	
	10%	2022	99%	n/a	n/a	9,723	80	
HPF	11%	2023	100%	8,864	14,574	23,438	170	
	12%	2022	100%	n/a	n/a	19,631	195	
Total LDI	100%	2023	100%	196,587	24,712	221,299	170	
	100%	2022	100%	n/a	n/a	209,728	172	

Source: Investment managers / Public data / Aon. Data as at 31 December 2023 unless specified otherwise. Note: The LDI metrics are estimated, please refer to the 'Notes on the metrics calculations' section for further details on the methodology used.
 Split between physical and synthetic emissions are not available for 2022 because this is the first year of reporting this split.

Commentary

Overall, total carbon emissions have increased. Given the improvements in data quality and an increase in the number of manager responses received this year, it is likely that this is a reflection of a more accurate depiction of the emissions of the Plan's assets, as opposed to a true increase in emissions.

However, the availability of Scope 3 emissions is lower than expectations. This is a wider issue within the investment industry given the difficulty of collecting such data in comparison to Scope 1 and 2 emissions, but we expect the availability and accuracy of Scope 3 data to increase in future years of reporting.

Illiquid assets

- For Illiquid assets, there has been an increase in the Carbon Footprint, primarily driven by the Carbon Footprint of one of the underlying infrastructure funds.
- This year, we have also reported on Scope 3 emissions. Due to the nature of Scope 3 emissions, they tend to be considerably larger than Scope 1 and 2 emissions. However, Scope 3 data is less mature and not considered to have the same level of accuracy as Scope 1 and 2 data, therefore the total greenhouse gas emissions for equities may be higher.

Annuities

- Similarly, there has been an increase in carbon footprint in the annuity mandates. This increase in data quality is not necessarily indicative of more emissions from the underlying investments, given the increase in data quality.
- We have been able to receive Scope 3 emissions from our annuity providers and would expect the quality of this data to increase in future years of reporting.

LDI

- This year, we have reported on the split between physical assets (long position, non-derivatives) and synthetic assets (long only derivative positions) held within the Plan's LDI portfolio.
- The carbon footprint was calculated using UK GHG Emissions and PPP adjusted GDP and assumes data quality to be 100%. To ensure consistency across the emissions reported within our LDI portfolios, our investment adviser calculates the carbon footprint using best-practice methodology and industry-standard publicly available data.
- The emissions reported for LDI are Scope 1 and 2 emissions only. Scope 3 GHG emissions are currently not applicable to LDI assets because no investment industry-wide agreed methodology is applicable to calculate Scope 3 GHG emissions for government bonds.

Binary target measurement (BTM)

Asset class		Binary target measurement	Proportion of assets for which data was available
Illiquid Assets	2023	-	0%
	2022	-	0%
Liquid Alternatives	2023	-	0%
	2022	-	0%
Bulk Annuity	2023	17%	74%
	2022	3%	57%

Source: Investment managers / Aon.

Data as at 31 December 2023 and 31 December 2022 for 2023 and 2022 respectively.

Except for annuities data, which is as at 31 December 2022 and 31 December 2021 for 2023 and 2022 respectively.

Commentary

BTM is used to show the percentage of underlying portfolio investments with a declared net-zero or Paris-aligned target or are already net-zero or Paris-aligned.

The managers for Illiquid Asset funds were unable to provide BTM metrics. This is an investment industry-wide issue in relation to the nature of the asset class.

Overall, the proportion of the Plan's assets with net-zero aligned targets has improved for Bulk Annuity. This may be a result of improvement in the data availability, with three of the Plan's insurers being able to provide BTM metrics data this year.

Notes on the metrics data

Our investment adviser, Aon, collected information from the Plan’s investment managers about their greenhouse gas emissions. Aon collated this information to calculate the climate-related metrics for the Plan’s portfolio of assets.

Availability of data

- One investment manager provided scopes 1, 2 and 3 GHG emissions.
- Seven managers/insurers provided scopes 1 and 2 only.
- Six managers did not provide any information.
- All LDI managers provided all required information.
- Three managers/insurers provided portfolio alignment data.

Aon does not make any estimates for missing data.

Because not all the Plan’s managers were able to provide all the requested data, the reported emissions metrics do not include all the Plan’s GHG emissions. And so, the metrics show the Plan’s GHG emissions to be lower than they really are.

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

Notes on the metrics calculations

There isn’t an investment industry-wide standard for calculating some of these metrics yet and different managers may use different methods and assumptions. These issues are common across the industry and highlight the importance of climate reporting to improve transparency. We expect that in the future better information will be available from managers as the investment industry aligns to expectations and best practice standards.

The carbon metrics

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

Asset Class	Approach
Illiquid assets	Carbon footprint The investment managers provided the carbon footprint in line with the methodology set out in the CET.

How we collected the data

Our investment adviser, Aon, collected the carbon emissions data from our managers on our behalf using the industry standard Carbon Emissions Template (“CET”)¹. The CET was developed by a joint industry initiative of the Pension and Life Savings Association, the Association of British Insurers and Investment Association Working Group. The CET provides a standardised set of data to help pension schemes meet their obligations under the Climate Change Governance and Reporting Regulations, and associated DWP Statutory Guidance.

Total GHG emissions

Using the carbon footprint, we calculated the Plan's proportion of each investment fund's emissions by calculating:

carbon footprint x £m Plan assets invested in the fund for which carbon data was available

Data quality

The investment managers provided data quality in line with the methodology set out in the CET.

Annuity

The calculations for the annuities are based on the four insurers with the largest annuity holdings of the Plan, accounting for 97% of the total insured assets.

Carbon footprint

The annuity providers shared the carbon footprint figures for the relevant assets which back the annuity books in line with the methodology set out in the CET.

Total GHG emissions

Using the carbon footprint, we calculated the Plan's proportion of each investment fund's emissions by calculating:

carbon footprint x £m Plan assets invested with the annuity provider for which carbon data was available

Data quality

The annuity providers shared the data quality in line with the methodology set out in the CET.

LDI**Carbon footprint**

Estimated as GHG emissions / PPP-adjusted GDP

- Emission figures from the Emissions Database for Global Atmospheric Research (EDGAR). The UK's latest available emissions were the 2022 emissions, taken from EDGAR's 2023 report, of 426.6mtCO₂e
- PPP-adjusted GDP from the Organization for Economic Co-operation and Development (OECD). The latest available PPP-adjusted GDP was the 2022 figure, reported by the OECD in 2024, of £2,506.2 trillion

Total GHG emissions

The Plan's LDI managers shared the amount of physical and synthetic assets held in LDI portfolios. Using the carbon footprint, we calculated the Plan's proportion of each LDI funds' emissions by calculating:

carbon footprint x £m Plan's physical assets invested with the LDI manager
and

*carbon footprint x £m Plan's synthetic assets invested
with the LDI manager*

Data quality

Assumed to be 100%

Binary target measurement

Aon requested the binary target measurement of each fund from our investment managers and aggregated the results based on the portion of assets invested in each fund.

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

Currently, there is no standard approach for calculating binary target measurement for government bonds. Hence there is no binary target measurement for the LDI assets.

Looking to the future

Our climate-related target

A Climate-related target helps us track our efforts to manage the Plan’s climate-change risk exposure.

In our first year of reporting, we set a target to improve data quality. Without meaningful data from the investment managers, it is very hard for us to measure our climate-risk exposure. So, it is important to set a target to improve the data quality of the GHG emissions data from the managers.



Asset Class	Data quality Target for 2026
Liquid Alternatives	50%
Illiquid Assets	50%
LDI	100% ¹
Annuity	80% ²

¹The LDI target represents the inclusion of synthetic exposure to gilts in a consistent manner across investment managers.

²The Trustee acknowledges that it has little ability to influence the carbon metrics reported by insurers.

Trustee’s update

Each year we review the suitability of the target we have set. Based on the data collected and the metrics calculated this year, we believe the target for each asset class continues to be suitable.

Our progress towards the target

The table below shows the data quality metrics for this year and last year.

	2023	2022 ³
Liquid Alternatives	0%	0%
Illiquid Assets	42%	28%
LDI	100%	100%
Annuities	74%	57%

³2022 Data Quality represents the data available as at 31 March 2023

Since last year, good progress has been made with data quality improving by 14% for Illiquid assets. This is mainly due to an additional manager providing carbon metrics data this year. Data quality for the annuities has also improved by 17% from the prior year.

We believe that the original data quality targets for each asset class, which focus on improving the data quality over the next three years, remain suitable but should be reviewed next year once additional Scope 3 data is available.

While we did not see an improvement in data quality for the liquid alternative assets, these assets do not make-up a significant proportion of the Plan’s assets. Overall, there has been a significant improvement in data quality over the year.

The Plan's performance against the data quality target is measured and reported on every year. Over time, this will show the Plan's progress against that target.

Steps we are taking to reach the target

To continue to progress towards our data quality target, we plan to take the following steps:

- Engage with managers to encourage better reporting or investigate alternative sources of data, particularly where there are significant gaps in the data.
- Ensuring managers are providing consistent data; and
- Note that positive outcomes on pooled arrangements and Annuities may be beyond our control.

Appendices

Glossary

Governance	refers to the system by which an organisation is directed and controlled in the interests of shareholders and other stakeholders. ¹ Governance involves a set of relationships between an organisation's management, its board, its shareholders, and other stakeholders. Governance provides the structure and processes through which the objectives of the organisation are set, progress against performance is monitored, and results are evaluated. ²
Strategy	refers to an organisation's desired future state. An organisation's strategy establishes a foundation against which it can monitor and measure its progress in reaching that desired state. Strategy formulation generally involves establishing the purpose and scope of the organisation's activities and the nature of its businesses, taking into account the risks and opportunities it faces and the environment in which it operates. ³
Risk management	refers to a set of processes that are carried out by an organisation's board and management to support the achievement of the organisation's objectives by addressing its risks and managing the combined potential impact of those risks. ⁴
Climate-related risk	refers to the potential negative impacts of climate change on an organisation. Physical risks emanating from climate change can be event-driven (acute) such as increased severity of extreme weather events (e.g., cyclones, droughts, floods, and fires). They can also relate to longer-term shifts (chronic) in precipitation and temperature and increased variability in weather patterns (e.g., sea level rise). Climate-related risks can also be associated with the transition to a lower-carbon global economy, the most common of which relate to policy and legal actions, technology changes, market responses, and reputational considerations. ⁵
Climate-related opportunity	refers to the potential positive impacts related to climate change on an organisation. Efforts to mitigate and adapt to climate change can produce opportunities for organisations, such as through resource efficiency and cost savings, the adoption and utilization of low-emission energy sources, the development of new products and services, and building resilience along the supply chain. Climate-related opportunities will vary depending on the region, market, and industry in which an organisation operates. ⁶

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

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

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

⁴ TCFD, [Recommendations of the Task Force on Climate-related Financial Disclosures](#), 2017

⁵ TCFD, [Recommendations of the Task Force on Climate-related Financial Disclosures](#), 2017

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

Greenhouse gas emissions scope levels⁷ Greenhouse gases are categorised into three types or 'scopes' by the Greenhouse Gas Protocol, the world's most used greenhouse gas accounting standard.

Scope 1 refers to all direct GHG emissions.

Scope 2 refers to indirect GHG emissions from consumption of purchased electricity, heat, or steam.

Scope 3 refers to other indirect emissions not covered in Scope 2 that occur in the value chain of the reporting company, including both upstream and downstream emissions. Scope 3 emissions could include: the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities (e.g., transmission and distribution losses), outsourced activities, and waste disposal.⁸

Value chain refers to the upstream and downstream life cycle of a product, process, or service, including material sourcing, production, consumption, and disposal/recycling. Upstream activities include operations that relate to the initial stages of producing a good or service (e.g., material sourcing, material processing, supplier activities). Downstream activities include operations that relate to processing the materials into a finished product and delivering it to the end user (e.g., transportation, distribution, and consumption).⁹

Climate scenario analysis is a process for identifying and assessing a potential range of outcomes of future events under conditions of uncertainty. In the case of climate change, for example, scenarios allow an organisation to explore and develop an understanding of how the physical and transition risks of climate change may impact its businesses, strategies, and financial performance over time.¹⁰

Net zero means achieving a balance between the greenhouse gases emitted into the atmosphere, and those removed from it. This balance – or net zero – will happen when the amount of greenhouse gases add to the atmosphere is no more than the amount removed.¹¹

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

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

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

¹⁰ TCFD, [Recommendations of the Task Force on Climate-related Financial Disclosures](#), 2017

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

Appendix – An explanation of climate risk categories

Climate-related risks are categorised into physical and transition risks. Below are examples of transition and physical risks.

Transition risks

Transition risks are those related to the ability of an organisation to adapt to the changes required to reduce greenhouse gas emissions and transition to renewable energy. Within transition risks, there are four key areas: policy and legal, technological innovation, market changes, and reputational risk.

Policy and legal

Examples

Increased pricing of GHG emissions
Enhanced emissions-reporting obligations
Regulation of existing products and services

Potential financial impacts

Increased operating costs (e.g. higher compliance costs, increased insurance premiums)
Write-offs, asset impairment and early retirement of existing assets due to policy changes

Technology

Examples

Cost to transition to lower emissions technology
Unsuccessful investments in new technologies

Potential financial impacts

Write-offs and early retirement of existing assets
Capital investments in technology development
Costs to adopt new practices and processes

Market

Examples

Changing customer behaviour
Uncertainty in market signals
Increased cost of raw materials

Potential financial impacts

Reduced demand for goods and services due to shift in consumer preferences.
Abrupt and unexpected increases in energy costs.
Re-pricing of assets (e.g., fossil fuel reserves, land valuations, securities valuations).

Reputational

Examples

Stigmatisation of sector
Increased stakeholder concern or negative stakeholder feedback

Potential financial impacts

Reduced revenue from decreased demand for goods and services.
Reduced revenue from decreased production capacity (e.g., delayed planning approvals, supply chain interruptions)
Reduced revenue from negative impacts on workforce management and planning

Physical Risks

Physical risks refer to the physical impacts of climate change on a firm's operations. They directly impact a firm's ability to perform its function due to climate disruption. They fall into two subcategories: acute and chronic. Acute risks are extreme climate events such as flooding and wildfires, and chronic risks are trends over time such as an increase in temperature or ocean acidification.

Acute

Examples

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

Chronic

Examples

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



Appendix – Climate scenario modelling

Assumptions

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

Aon's model uses a deterministic projection of assets and Technical Provision ("TP") liabilities, using standard actuarial techniques to discount and project expected cashflows.

It models the full yield curve as this allows for an accurate treatment of the liabilities and realistic modelling of the future distribution of interest rates and inflation. It also allows us to truly assess the sensitivities of the assets and liabilities to changes in interest and inflation rates.

The parameters in the model vary deterministically with the different scenarios.

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

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

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

Investment risk is only captured in the deviance from the base case, but this is not the only risk that the Plan faces; other risks include covenant risk, longevity risk, timing of member options, basis risks and operational risks.

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

Impact Assessment: Insured Assets

Climate Change Scenarios analyses were also completed by the insurers of the Plan. These have also been analysed to investigate the impact of the Plan's insured assets.

The Plan's insurers have performed their own Climate Change Scenario modelling to identify the asset classes held in respect of the insured assets of the Plan that are most materially exposed to climate risks and qualitatively understand how they may be impacted. The modelling included an assessment of the risk exposure of orderly transition, disorderly transition, and no transition scenarios. The assessment included the impact on both their businesses and investment portfolios.

Based on the output of the assessments carried out, the insured assets of the Plan are relatively resilient to climate change risk, acknowledging that there are scenarios that could lead to a material deterioration in the security of the assets.

The insurers modelling showed that a disorderly transition scenario is likely to be of the most concern to the security of the insured assets. Under this scenario there are high-risk exposures to the investment portfolio of the insured assets.

Overall, the insured assets are likely to perform strongest under an orderly transition scenario. This represents the fastest transition to a green low carbon economy, combined with limited physical impacts from climate change despite the large initial transition cost.

Appendix – Greenhouse gas emissions in more detail







Greenhouse gases in the atmosphere, including water vapour, carbon dioxide, methane, and nitrous oxide, keep the Earth’s surface and atmosphere warm because they absorb sunlight and re-emit it as heat in all directions including back down to Earth. Adding more greenhouse gases to the atmosphere makes it even more effective at preventing heat from leaving the Earth’s atmosphere.

Greenhouse gases are vital because they act like a blanket around the Earth making it the climate habitable. The problem is that human activity is making the blanket "thicker". For example, when we burn coal, oil, and natural gas we send huge amounts of carbon dioxide into the air. When we destroy forests, the carbon stored in the trees escapes to the atmosphere. Other basic activities, such as raising cattle and planting rice, emit methane, nitrous oxide, and other greenhouse gases.

The amount of greenhouse gases in the atmosphere has significantly increased since the Industrial Revolution. The Kyoto Protocol¹² identifies six greenhouse gases which human activity is largely responsible for emitting. Of these six gases, human-made carbon dioxide is the biggest contributor to global warming.

Each greenhouse gas has a different global warming potential and persists for a different length of time in the atmosphere. Therefore, emissions are expressed as a carbon dioxide equivalent (CO₂e). This enables the different gases to be compared on a like-for-like bases, relative to one unit of carbon dioxide.

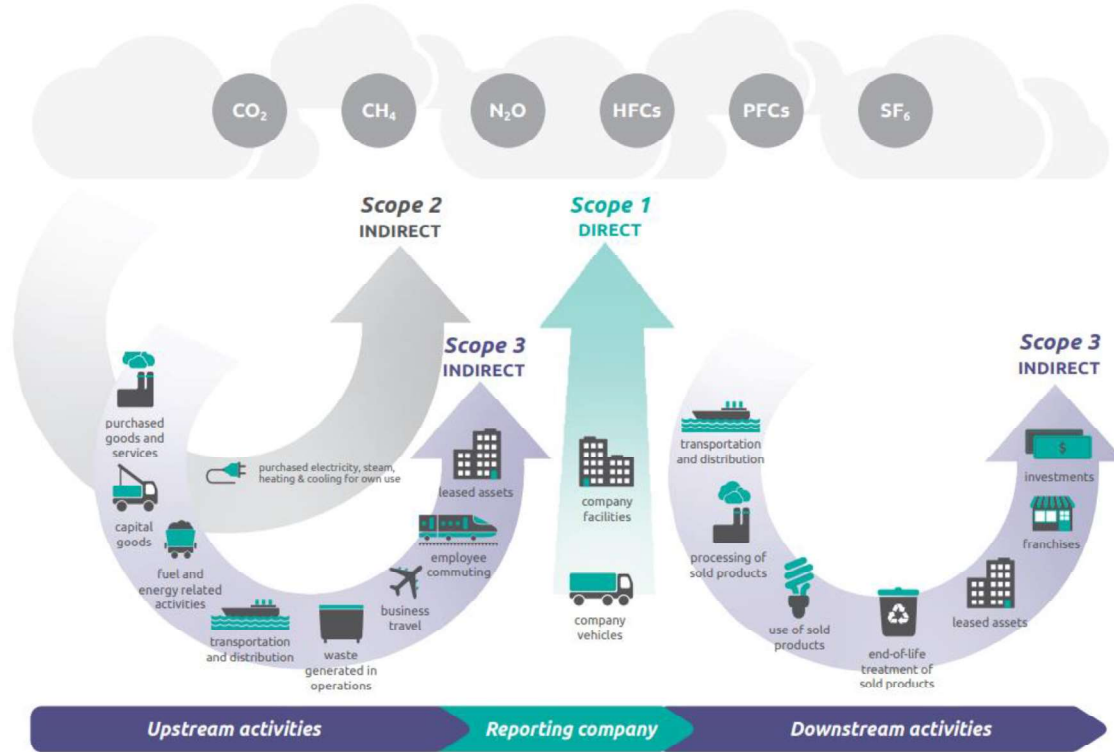
Six main greenhouse gases identified by the Kyoto Protocol

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

¹² https://unfccc.int/kyoto_protocol

Greenhouse gases are categorised into three types or 'scopes' by the Greenhouse Gas Protocol, the world's most used greenhouse gas accounting standard.

Overview of GHG Protocol scopes and emissions across the value chain



Source: Greenhouse Gas Protocol, [Corporate value chain \(scope 3\) Accounting and Reporting Standard](#), 2011