

# Chair's introduction

Climate change is one of the most defining challenges of our time. The response to climate change will influence the health and prosperity of the world now and in future; its impacts are already being felt and observed around the globe.

The Trustee of the Rolls Royce Retirement Savings Trust ("the Trust") recognises climate change is one of the most important issues of our time and recognises it as a risk that could impact the financial security of members' benefits if it is not properly measured and managed. It also presents an opportunity, through investment in companies or assets that are expected to perform well in an economy that is positioned to address climate change.

The Trustee supports the recommendations of the Task Force on Climate-related Financial Disclosures ("TCFD"), and has prepared this report accordingly and in compliance with relevant legislation i.e. The Occupational Pension Schemes (Climate Change Governance and Reporting) Regulations 2022. The TCFD framework helps the Trustee to manage and report on the actions the Trustee, and others involved in the management of the Trust, take to identify, assess and manage climate change related risks and opportunities.

This is the first year that the Trustee has produced a TCFD report. This report covers the 12 month period to 5 April 2023. The Trust does not currently fall under the requirements of The Climate Change Governance and Reporting Regulations 2022, based on asset value as at 31 March 2023. The Trustee considers it good governance to prepare a report in advance of that required by the regulations. The Trust expects to be subject to the regulatory requirements from 2024 onwards with the first disclosure deadline of 7 months after the Trust year end, i.e. by 5 November 2024.

In drafting this report we have considered the Occupational Pension Schemes (Climate Change Governance and Reporting) Regulations 2021 using the Department for Work Pension's (DWP) statutory guidance. The report explains how the Trustee has established and maintained oversight and processes to satisfy themselves that the Trust's relevant climate-related risks and opportunities are considered appropriately by all stakeholders involved in the day-to-day management of the Trust.

This statement outlines where governance of climate risk and opportunities has been applied, focusing on (but not limited to) the Default Investment Option, the Drawdown Lifestyle. We will seek to expand the remit of this reporting to cover the entirety of the Trust's investment strategy as and when the ability to monitor these risks becomes more achievable via improved availability of data.

**For the avoidance of doubt, this report does not constitute a regulatory disclosure.**

This report is available in the Help and resources tab at [www.rolls-roycepensions.com](http://www.rolls-roycepensions.com). Members are encouraged to contact the Trustee if there are comments they wish to raise and they can contact the Trustee at Secretary to the Trustee – Rolls-Royce Retirement Savings Trust, Rolls-Royce Pensions (A-90), PO Box 31, Derby, DE24 8BJ.

**Mark Porter, Chair - Rolls-Royce Retirement Savings Trust**

# Executive Summary

This report covers the Trust year ending 5 April 2023 and it focuses on the following four areas which comprise the current TCFD framework:

- **Governance:** How the Trustee maintains oversight and incorporates climate change into its decision making;
- **Strategy:** How potential future climate warming scenarios could impact the Trust;
- **Risk Management:** How the Trustee incorporates climate-related risk in its risk management processes; and
- **Metrics and Targets:** How the Trustee measures, and monitors progress against different climate related indicators known as metrics and targets.

The key messages from this report are:

- Climate change risk is expected to have an impact on the long-term outcomes for DC members.
- The Trustee has processes in place to identify, assess and mitigate climate change risk.
- Four metrics have been chosen to monitor the progress against climate change risk: measured absolute emissions, carbon intensity (as measured by Weighted Average Carbon Intensity – “WACI” and Carbon Footprint) and portfolio alignment (as measured Science Based Targets Initiative – SBTi – approved transition plans). In addition to this a non-emissions based metric (data quality) will be discussed in 2023/24 ahead of the regulatory deadline.
- A target to reduce the level of carbon emissions of the listed equity and corporate bond mandates within the Trust’s default investment arrangement has been set and actions determined.

## Steps taken over the year

The Trustee has considered climate change and other environmental issues in its investment strategy for many years.

During the year to 5 April 2023, the key steps taken by the Trustee have been:

- Carrying out a detailed ‘top down’ scenario analysis and a ‘bottom up’ carbon metrics analysis which provide an indication of the Trust’s greenhouse gas emissions exposure and its risk, over multiple time periods, from different climate change scenarios.
- Setting targets to reduce greenhouse gas emissions.

## Next steps

The Trustee recognises that further progress needs to be made to consider climate-related risks and opportunities in a balanced and proportionate approach. The ultimate responsibility of the Trustee is to maximise DC member outcomes at retirement and the Trustee is aiming to do this in a sustainable way.

The Trustee supports the goals of the Paris Agreement that seeks to limit warming to well below 2°C relative to pre-industrial temperatures. The Trustee believes that climate risk is likely to have an impact on long-term financial returns and considering climate risk is in the best long-term interest of members.

**The Trustee has set a target to reduce greenhouse gas emissions by 50% or more by 2030, as measured by WACI with a 31 December 2019 baseline – and fully (i.e. to net zero) by 2050.** This is for all listed equity and corporate bond mandates within the Trust's default investment arrangement and includes Scope 1 and 2 emissions only.

# The TCFD Framework

The Financial Stability Board, an international body established by the G20 that monitors and makes recommendations about the global financial system, created the TCFD framework in 2015. TCFD was created to improve and increase reporting of climate-related financial information that can promote more climate-informed investments.

This climate change-related disclosure report is prompted by that drive for transparency and fulfils the Trustee's regulatory obligation in relation to climate change and governance reporting. The Trustee's aim is that members and stakeholders can better understand the climate-related risks and opportunities within the Trust through its ownership of companies and other investments.

## Figure 1: TCFD Framework

The recommendations are in four key areas: Governance, Strategy, Risk Management, Metrics and Targets.



Asset owners like the Trust sit at the top of the investment chain and, therefore, have an important role to play in influencing the organisations through which they invest (such as asset managers) and companies in which they ultimately invest to provide better climate-related financial disclosures. Disclosure of climate-related risks and opportunities by asset owners allows beneficiaries and other audiences to assess the asset owner's investment considerations and approach to climate change.

In monitoring, reviewing and selecting the Trust's investment strategy, the Trustee has incorporated the available and relevant climate-related financial information into its investment decision-making. The Trustee believes that their climate-related financial disclosures encourage better disclosures across the investment chain, from asset owners to asset managers to underlying companies.

# Governance

## The Trustee's approach to climate-related risks and opportunities

The Trustee has ultimate responsibility for ensuring effective governance of climate-related risks and opportunities. The Trustee's approach to the oversight and management of climate-related risks and opportunities is consistent with its approach to considering other financially material risks and opportunities facing the Trust. The Trustee's Statement of Investment Principles (the "SIP") details the key objectives, risks and approach to considering environmental, social and corporate governance ("ESG") factors, including climate change, as part of its investment decision making. The SIP is reviewed on an annual basis or more frequently as required.

The Trustee's overall investment beliefs on ESG are:

- The Trustee believes that ESG factors can have a material impact on investment risk and return outcomes, and that good stewardship can create and preserve value for companies and markets as a whole.
- The Trustee also recognises that long-term sustainability issues, particularly climate change, present risks and opportunities that increasingly require explicit consideration within the investment decision making process.

Ongoing actions are embedded into the Trustee's business plan, and ESG risks are included in the Trustee's risk register. All TCFD items and training are tabled at relevant Trustee Board meetings. During the last two years, the Trustee Board had several meetings where ESG factors were discussed. These are set out below:

- September 2021 & December 2021: Training on the climate change-related reporting requirements.
- June 2022: Training on climate metrics.
- December 2022: Training on scenario analysis.

Investment performance and risk management are reviewed at least quarterly, of which ESG factors, stewardship and climate change form part of the wider assessment. The Trustee recognises a balance needs to be maintained between meeting the investment objectives of the Trust and considering these risks and opportunities.

The Trustee expects all advisers to act with integrity and diligence in fulfilling the set objectives and uses meetings with the advisers to assess and challenge them. Where relevant, this includes discussion of the steps taken by advisers to identify and assess any climate-related risks and opportunities.

The investment adviser's approach to climate change and how it is integrated into its advice and services is assessed as part of the adviser selection and monitoring process. The Trustee sets its investment adviser objectives, including ones related to ESG and climate change competency (which have to be

reviewed at least every 3 years). The investment adviser is formally assessed against these objectives annually.

## **Key Trustee responsibilities and oversight of climate change risks**

The Trustee takes independent advice from its professional advisers and input from its investment managers to help assess and manage climate risks and opportunities. The Trustee considers, discusses, questions and challenges the advice provided to ensure that any decisions continue to be integrated into a coherent investment strategy that supports the Trust's ability to provide pensions.

## **Regular monitoring**

The Trustee monitors the investment managers on a regular and ongoing basis, including with respect to ESG factors, stewardship and climate change. This includes the Investment Adviser's ESG ratings which are the assessment of how well each underlying investment manager embeds ESG considerations and active ownership into their investment processes. The investment managers have been appointed based on their credentials, which includes the integration of ESG factors.

The Trustee has worked with its Investment Adviser to ensure that the appropriate governance framework is in place to consider climate risks and expect to review the processes in place going forwards.

The Trustee or the Investment Adviser, acting on behalf of the Trustee, will engage with underlying investment managers where they are perceived to be lagging their peers in terms of ESG integration and climate risk management, and to ensure the investment managers are voting and engaging with the investee companies in accordance with the principles underlying the UK Corporate Governance Code and the UK Stewardship Code, in respect of all resolutions at annual and extraordinary meetings.

The Trustee will also review the climate scenario analysis (see 'Strategy' for further detail) at least once every three years.

## **Day-to-day implementation**

The Trustee has delegated responsibility for the selection, retention, and realisation of investments to its underlying investment managers.

The Trustee expects the overall approach to climate-related financial risks and opportunities for each of the Trust's investment managers to be consistent with the Financial Stability Board's TCFD framework. Disclosures consistent with the TCFD recommendations are also expected of appointed investment managers. The Trustee works with their Investment Adviser to ensure that the investment managers adopt a consistent approach.

The Investment Adviser provides advice to the Trustee on the investment strategy and investment manager appointments. This includes advice on managing and monitoring investment-related risks, such as ESG factors, stewardship and climate from a strategic asset allocation perspective and with the appointed investment managers.

The Investment Adviser provides climate-related scenario analysis, advice and training on the selection of climate-related metrics for the Trust to monitor. The Investment Adviser will assist the Trustee in producing the Trust's climate change-related disclosures report on an annual basis.

The Rolls Royce in-house pensions team engage with managers e.g. on ESG integration. The in-house pensions team work with the Trustees to understand their climate-related risks.

The Trustee works with other relevant advisers (in addition to its Investment Adviser, Mercer) to ensure that climate-related risks and opportunities are considered as part of their risk management framework and expects their advisers to ensure the Trustee is compliant with the regulatory requirements when considering climate change.

# Strategy

The Trustee's approach to managing strategic climate change risks and opportunities

## Summary of Trust's Assets

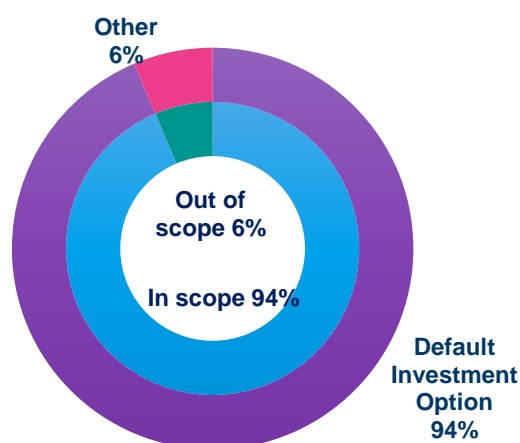
The Trust's investment arrangements are managed and provided by Aviva under a bundled arrangement.

As a minimum, the scope of reporting for DC arrangements is expected to cover popular arrangement(s), which is considered to meet one of the following criteria:

- £100m or more of invested DC assets; or
- accounts for 10% or more of the assets used to provide money purchase benefits.

For the purposes of this report the Trustee has considered the component funds of the Default Investment Option, the Drawdown Lifestyle, as this strategy meets both of the criteria listed above.

**Figure 2: Summary of assets within the Default Investment Option as at 31 March 2023**



The vast majority of assets in the Trust are invested in the Default Investment Option, c.94%, more details on this can be found in the Appendix. The remaining c.6% of assets are invested in the alternative lifestyle strategies and self-select funds, these have not been included within the analysis contained in this Climate Change-Related Disclosures report.

Note that the component funds of the Default Investment Option, the Drawdown Lifestyle, are as follows:

- BlackRock 10:80:10 Global Equity (hedged) (44% of Trust assets)



- Aviva Diversified Growth (50% Abrdn Global Absolute Return Strategies / 50% Insight Broad Opportunities Fund) (17% of Trust assets)
- LGIM Diversified Fund (16% of Trust assets)
- LGIM Retirement Income Multi-Asset Fund (7% of Trust assets)
- BlackRock Institutional Sterling Liquidity Fund (3% of Trust assets)

We note that the following funds are excluded from the metrics analysis but are included within the scenario analysis:

- Aviva Diversified Growth (50% Abrdn Global Absolute Return Strategies / 50% Insight Broad Opportunities Fund): Data for the Abrdn fund only covers physical equity and credit securities which made up 24.6% of the portfolio as at 31 December 2022. Therefore the fund has been excluded due to low coverage. For the Insight fund, many of the positions taken in the fund are in the form of derivatives and therefore presents considerable reporting challenges around its ESG and carbon profile. Therefore the fund has been excluded from the analysis as the data may be misleading.
- Blackrock Institutional Sterling Liquidity Fund: Cash funds typically hold short dated fixed income instruments, the turnover in these portfolios is extremely high and the duration of these instruments can be as short as a few weeks, therefore in our view, conducting climate analysis on a cash fund at a single point in time could be misleading regarding its actual decarbonisation progress.

## Climate change timescales, risks and opportunities

The time horizons identified by the Trustee for the purposes of the scenario analysis are detailed below.

**Figure 3: Timeframes of short, medium and long-term horizons to identify relevant climate-related risks and opportunities.**

Term	Duration
Short term	5 years
Medium term	20 years
Long term	40 years

These time horizons have been chosen as they reference the expected lifetime of a typical member, as a new joiner.

As a long-term investor, the Trustee recognises the risks and opportunities arising from climate change are diverse and continuously evolving. Climate change presents risks over the short, medium and long-term, which the Trustee aims to better understand and mitigate where possible. The Trustee will consider the following short, medium and long term drivers of risk going forwards.

**Over the short term (5 years)**, transition risks (i.e. risks and opportunities relating to transitioning the economy to emit lower levels of greenhouse gasses) are expected to dominate and may present themselves through rapid market re-pricing risks as:

- Scenario pathways become clearer. For example a change, in the likelihood of a below 2°C scenario occurring becoming higher and driving the transition risk to occur.
- Market awareness grows. For example, the implications of the physical impacts of climate change become clearer to markets and impact asset valuations.
- If policy changes unexpectedly surprise markets. For example, if a carbon price or significant regulatory requirements are introduced across key markets to which the Trust's assets are exposed.
- Perceived or real increased pricing of greenhouse gas emissions.
- Substitution of existing products and services with lower emission alternatives may impact funds available to DC schemes.
- Litigation risk relating to dangerous warming becoming more prevalent.
- Increases in the energy/heat efficiency of buildings and infrastructure.
- Investments in transition aligned strategies may provide the Default Investment Option a partial hedge against climate transition risks.

The ability of the Trustee and investment managers to consider these short-term changes can position the Trust favourably, for example taking advantage of the climate transition by avoiding and reducing investment in high-emitting carbon sensitive businesses that do not support the transition to a low carbon economy (where available and appropriate).

**Over the medium term (20 years)**, transition risks associated with the transition to a low carbon economy are still likely to dominate, with the introduction of some physical risks. These include the development of technology and low carbon solutions. Policy, legislation and regulation are likely to also play a key role at the international, national and subnational level. Technology and policy changes are likely to produce winners and losers both between and within sectors. Advancement of transition is likely to have started to crystallise stranded asset risks over the medium term. The ability of the Trustee and investment managers to understand these changes can position the Trust favourably, for example by increasing investments in new emerging technologies. The Trustee seeks to select managers and choose indices (where available and appropriate) that can identify potential emergence of low carbon opportunities and the decline of some traditional sectors.

**Over the long term (40 years)**, physical risks are expected to come to the fore. This includes the impact of natural catastrophes leading to physical damages through extreme weather events. Availability of resources is expected to become more important if changes in weather patterns (e.g. temperature or precipitation) affect the availability of natural resources such as water. A changing climate may directly impact the viability of some assets or business models (for example, flood risk for real estate, or drought / fire risk for timberland assets). The ability of the Trustee and investment managers to understand these

changes can position the Trust favourably, for example by increasing investments in infrastructure projects that display a high level of climate resilience (where available and appropriate).

One of the greatest impacts to the Trust from climate change is investment risk. The performance of the Trust's investments is directly aligned to the value of the underlying assets, which are increasingly impacted by climate-related risks and opportunities.

The Trustee ensures that the Trust's investment strategy is well-diversified, and that the investment managers have an appropriate understanding of both the companies and assets in which they invest in and the risks to which they are exposed. The Trustee aims to, where possible and appropriate, seek to maximise exposure to positive ESG factors within the Trust's Default Investment Option.

The Trustee monitors on an annual basis the carbon emissions of the Trust's Default Investment Option and how this changes over time, where the information is available. The carbon emissions for each of the component funds used in the Default Investment Option has been reported (where available) within the "Metrics and Targets" section of this report.

There are significant opportunities for investing in companies and assets that may benefit as we transition to a lower carbon environment.

Following the previous triennial investment strategy review, the Trustee made available the LGIM Future World Fund via the self-select fund range for members who wish to invest in a more sustainable way.

As part of the Trust's triennial investment strategy review carried out during 2022/2023, the Trustee has considered opportunities to further integrate ESG and climate change into the Trust's investment strategy and has sought to integrate this into the review process at every stage.

The Trustee expects the Trust's Investment Adviser, to provide support and consider potential investment and implementation opportunities to reduce the Trust's exposure to climate-related risks over time.

However, the Trustee recognises a balance is needed to be maintained between meeting the investment objectives of the Trust and considering these risks. Climate-related risks, but also opportunities, will be monitored as part of future triennial investment strategy reviews for the Trust.

## Climate change scenarios

The Trustee supports the goals of the Paris Agreement that aim deliver a well below 2°C temperature increase above pre-industrial levels and pursuing efforts to limit the increase to 1.5°C, and believes that climate-risk may impact long-term financial returns and considering climate-risk is in the best long-term interests of DC members.

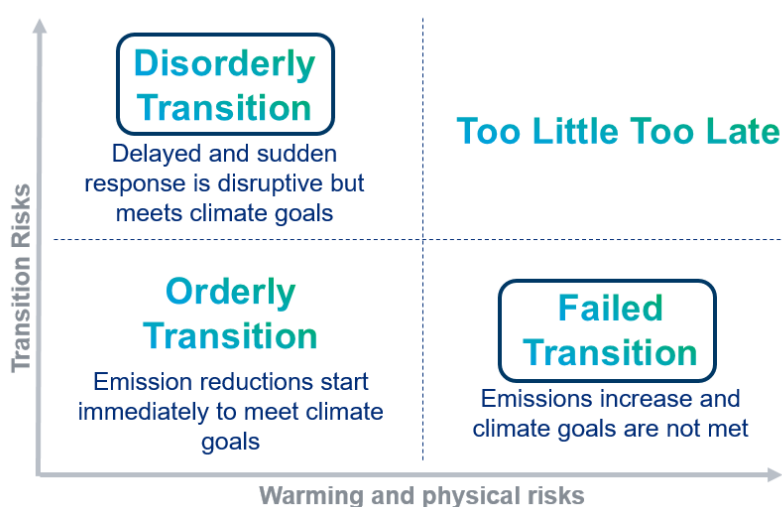
Climate change scenario analysis has been undertaken on the strategic asset allocation of the Trust's Default Investment Option, the Drawdown Lifestyle, to assess the potential implications of climate change under two scenarios ("Rapid" and "Failed" Transitions) and over three time periods (5, 20 and 40 years).

- **A Rapid / Disorderly Transition** – Average temperature increase of 1.5°C by 2100 (relative to pre-industrial average). This scenario assumes sudden downward re-pricing across assets in 2025. This could be driven by a change in policy, consideration of stranded assets or expected costs. The shock is partially sentiment driven and so is followed by a partial recovery. Physical damages are most limited under this scenario.
- **A Failed Transition** – Average temperature increase above 4°C by 2100. The world fails to coordinate a transition to a low carbon economy and global warming exceeds 4°C above pre-industrial levels by 2100. Physical climate impacts cause large reductions in economic productivity and increasing impacts from extreme weather events. These are reflected in repricing events in the late 2020s and late 2030s.
- Note that an Orderly Transition is not shown in this analysis but is one in which the average temperature increase is less than 2.0°C by 2100. Political and social organizations to act quickly and predictably to implement the recommendations of the Paris Agreement to limit global warming to below 2°C. Transition impacts do occur but are relatively muted across the broad market.

At a market level, transition risks are reasonably priced in, however, longer term physical risks are more likely to be mispriced. Transition risks remain at sector level and at the market level due to the potential for more extreme transition scenarios to occur. We express this view by modelling scenarios relative to a baseline scenario. Mercer's baseline assumes a composite scenario with the following weightings priced in: 40% Orderly Transition, 10% Rapid Transition, 10% Failed Transition, the remaining 40% represents low impact scenarios and the potential for the transition to have an overall positive impact.

One way to illustrate scenarios is by plotting the transition risk against the physical risk. This is shown in the chart below, which builds upon the Climate Scenarios Framework developed by the Network for Greening the Financial System.

**Figure 4: Summary of climate change scenario analysis**



Climate scenario analysis is an ever evolving space and, as such, the scenarios modelled and reported may be subject to review in future periods. The Appendix of this report summarises the key assumptions and limitations of the climate scenario modelling. It is important to note that the modelling may understate the true level of risk due to the uncertainty around the future economic impacts of climate change.

The chosen scenarios help the Trustee understand the resilience of the Trust's Default Investment Option to different potential warming pathways covering eventual temperature increases over different timeframes. While a lower warming pathway (sub-2°C scenario) is one which governments, businesses and society should aim for, there is a possibility that a failure to reduce greenhouse gas emissions quickly enough could set off irreversible feedback loops that significantly warms the planet (4°C scenario).

The Trustee notes that the modelling may understate the true level of risk and uncertainty is likely to be greater for higher warming scenarios, in particular due to the difficulty in being able to accurately predict the future. Please note, climate-related scenario analysis is an ever evolving space and as such the scenarios modelled may be subject to review in future periods.

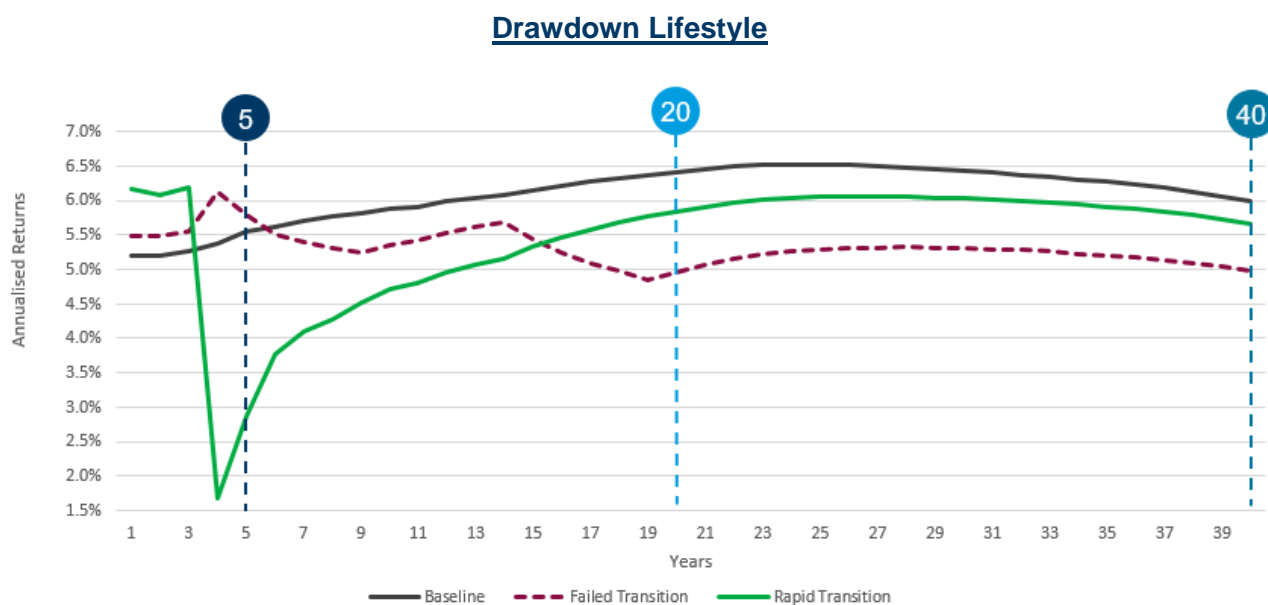
The table below shows the strategic asset allocation modelled for the Drawdown Lifestyle for a new DC member joining the Trust. We are assuming a starting asset value of £100 with no contributions. This will allow an assessment of the climate impact upon investment returns.

The chosen scenarios help the Trustee to understand the resilience of the Trust's Default Investment Option to different potential warming pathways covering eventual temperature increases over different timeframes.

The scenario analysis is based on the lifestyle glidepath and allocation vary as members approach retirement. The scenario analysis has been conducted using the Strategic Asset Allocation as at 30 June 2022. Further details are set out in the Appendix.

The charts below represent the output of the Trustee's quantitative analysis of the Default Investment Option. The charts represent projections of annualised returns and asset values from an analysis date of 30 June 2022 over a period of 40 years. Projections ignore the impact of future contributions. Further detail on the underlying asset allocations and limitations associated with climate scenario analysis are set out in the Technical Appendix.

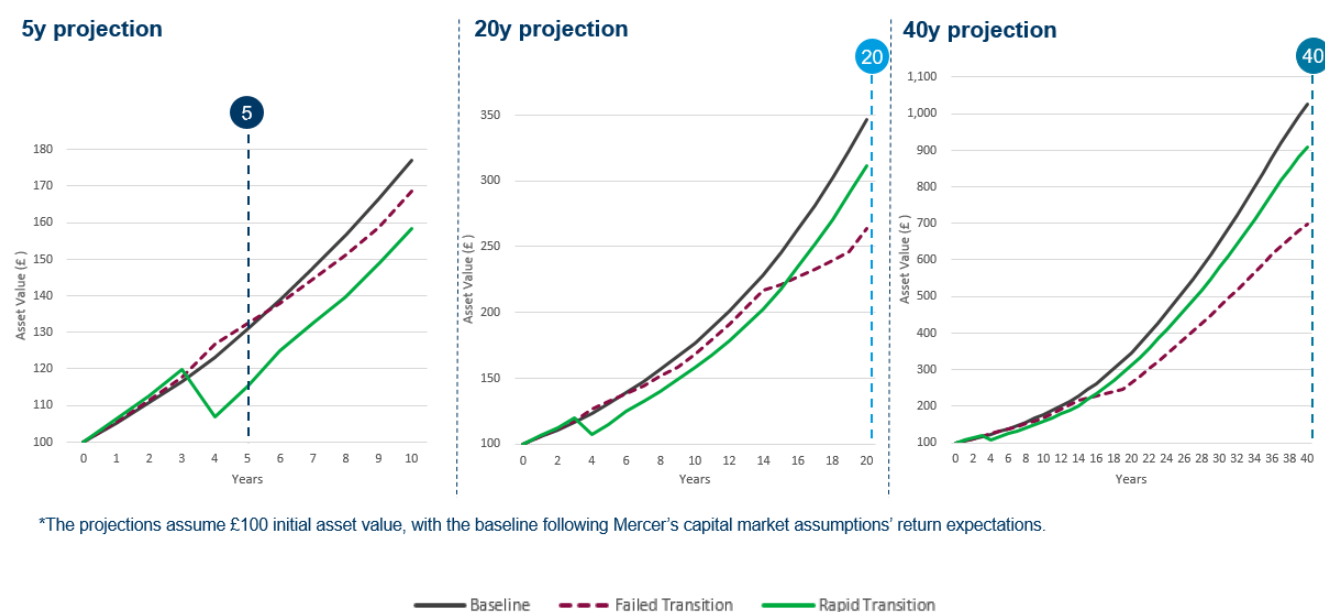
**Figure 5: Annualised Returns**



*Note: Annualised returns at Year X are the annualised returns for each year up to and including Year X.*

Our analysis has considered “stress tests”. In this analysis repricing shocks are included within scenarios. Our rapid transition includes a shock around 2025 pricing in (and over reacting to a degree) to transition costs.

**Figure 6: Asset Projection**



5

**5 Years** – over the short term, transition risk dominates and the market shock in the rapid transition causes a deterioration of c.£16 (12%) in value at year 5 (compared to the baseline) and returns are reduced by 2.7% p.a. over the 5 year period. This is driven by the transition shock impacting the economy and investment markets, causing losses in equity and growth assets in particular. The timing of any shock or recovery is uncertain.

Also, for the 5 year time period shown there is very little difference between the baseline scenario and the failed transition scenario as physical risks are not yet having a material impact on returns.

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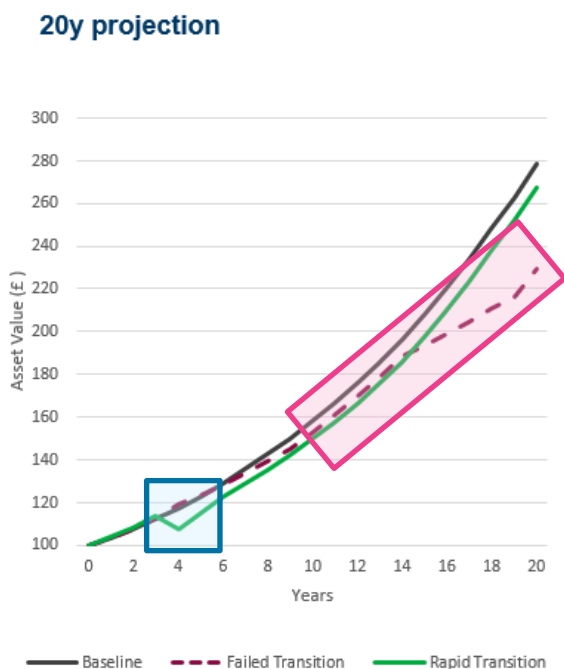
**20 years** – physical impacts and, to a lesser extent, transition risks are evident over the medium term. The failed and rapid transitions show a deterioration of around £83 and £35 over 20 years respectively, with the failed transition reducing annual returns by 1.4% p.a. over the 20 year period.

40

**40 years** – over the long term the failed transition is the worst scenario, reducing the value by almost one third and the returns by 1.0% p.a. over the 40 year period. It is clear that this scenario would have a material impact on DC member outcomes at retirement, if no action was taken.

Our analysis illustrates that a failed transition is by far the worst in terms of long term returns. This supports the view that long term investors collectively trying to bring about an effective and orderly transition is aligned to their fiduciary duty to seek the best return within risk, liquidity and complexity restraints.

**Figure 7: Climate stress testing**



In reality, sudden changes in return impacts are more likely than neat, annual averages. This means that longer-term impacts, including transition impacts and particularly physical damages, could impact portfolios earlier than they occur. Our analysis has considered this through what we call “stress tests”. In this analysis repricing shocks are included within scenarios.

Our rapid transition includes a shock around 2025 pricing in (and over reacting to a degree) to transition costs, see blue box. Our failed transition includes shocks towards the end of the 2020s and 2030s pricing in future damage, see pink box.

While the exact timing of such shocks is unknown, considering such shocks is important to risk analysis.



**Figure 8: Summary of the scenario analysis (as at 30 June 2022) – Drawdown Lifestyle Strategy**

Impact	Asset Value (Starting value = £100)	Annualised Return
<b>Rapid Transition (1.5°C)</b>		
Impact at 5 years	-£16	2.9% p.a.
Impact at 20 years	-£35	5.8% p.a.
Impact at 40 years	-£117	5.7% p.a.
<b>Failed Transition (above 4°C)</b>		
Impact at 5 years	£2	5.8% p.a.
Impact at 20 years	-£83	5.0% p.a.
Impact at 40 years	-£327	5.0% p.a.

- Over 5 years, transition risk dominates and could decrease the asset value by £16 under the rapid transition scenario.
- Over 20 years, physical impacts and, to a lesser extent, transition risks are evident. The asset value could decrease by £83 under a failed transition, indicating that physical risks are more dominant.
- Over 40 years, physical risk dominates and could decrease the asset value by £327 under the failed transition.

Our analysis illustrates that a failed transition is by far the worst in terms of long term returns and that the Drawdown Lifestyle Strategy would be materially impacted under such a scenario.

## Risk Management

The Trustee recognises that climate-related risks can be financially material and that due consideration of climate risk falls within the scope of the Trustee's fiduciary duty. Given the long-term nature of the Trust's investments and the timeframe in which climate risks could materialise, a total portfolio approach to risk management covering all sectors and all relevant asset classes has been taken, with specific focus given to the Default Investment Option, the Drawdown Lifestyle, since over 93.6% of the total Trust assets are invested in this investment strategy.

A summary of the investment managers' voting statistics and a selection of significant votes cast over the year are disclosed in the Trust's Implementation Statement which is reviewed on an annual basis by the Trustee. The Trustee has included climate change as a significant vote.

The Trustee annually reviews Trust documentation including the SIP and risk register. The risk register is used to identify, prioritise, manage and monitor risks associated with the Trust and the escalations of risk are managed by internal controls in place. The Trustee manages risk by prioritising those risks that it believes may be most financially material. These risks are identified in the SIP.



## Governance

- The Trustee's **Statement of Investment Principles** is reviewed at least annually and sets out how ESG risks including climate change are managed and monitored.
- The Trustee maintains a **risk register** to monitor and mitigate financially material risks to the Trust. On at least an annual basis, the Trustee reviews the Trust's risk register which includes reference to ESG risks (including climate change) to ensure the assessment of the likelihood and impact continue to remain appropriate for the Trust.
- The Trustee receives regular **training** on climate-related issues, including market updates. The training allows the Trustee to better understand how climate-related risks and opportunities can have an impact on the Trust.
- The Trustee reviews climate change developments to identify risks and opportunities for the Trust regularly. In particular the Trustee reviews quarterly the investment managers' ESG ratings.
- The Trustee reviews the advice and services provided by its advisers as part of the selection and monitoring process.

## Strategy

- The Investment Adviser will take ESG risks and opportunities (including climate change) into account as part of any wider strategic investment advice provided to the Trustee. This includes highlighting the expected change in climate-risk exposure through proposed asset allocation changes.
- Climate scenario analysis for the Trust, focusing on the Default Investment Option will be reviewed at least every three years. A summary of the Trustee's latest climate scenario analysis has been included in this report and is the primary tool to help the Trustee understand the materiality of climate-related risks that could impact the Trust over time.
- The Trustee has set strategic objectives for its Investment Adviser which includes an expectation that ESG risks and opportunities (including climate change) are given due consideration. An assessment against these objectives is carried out by the Trustee annually.

## Reporting

- Annual reports of climate-related metrics and progress against climate-related targets will be reviewed by the Trustee. The Trustee may use the information to engage with the investment managers and will take the information into account in triennial investment strategy reviews.
- The Trustee produces an annual Implementation Statement which includes commentary on how the investment managers choose to vote and engage on climate-related issues (among other ESG issues), where applicable. Climate change is a key priority of the Trustee and hence voting information if provided in line with this.

- The Trustee recognises the challenges with various metrics, tools and modelling techniques used to assess climate change risks. The Trustee aims to work with its investment adviser and investment managers to improve its approach to assessing and managing risks over time.

## **Manager selection, monitoring and retention**

- The Trustee, with advice from the Investment Adviser, will consider an investment manager's firm-wide and strategy-specific approach to managing climate-related risks and opportunities alongside other ESG factors when either appointing a new manager, in the ongoing review of a manager's appointment, or as a factor when considering the termination of a manager's appointment.
- The Investment Adviser's Manager Research Team reviews investment managers on the extent of integration of ESG factors (including climate change) into their processes. A manager's stewardship process forms part of the rating assessment. This is considered at the firm level and at the investment strategy/fund level. The ratings are presented in quarterly investment performance reports and are reviewed by the Trustee. A downgraded ESG rating may (taking into account other factors) lead to an investment manager being put 'on watch' or removed from the Trust.
- The Trustee will engage with managers where they are perceived to be lagging their peers in terms of ESG integration or active ownership, including where this relates to climate change risks.

# Metrics

## Key metrics for climate change related risks

This report presents climate metric analysis for the Trust's Default Investment Option, the Drawdown Lifestyle as at 31 December 2022.

Due to practical data availability, the Trust-level figures quoted in the report assume that companies not covered by the analysis are represented within the range of companies that have been covered in the analysis, the 'pro-rata approach' (i.e. it is not assumed that companies not covered have emissions of 0) in line with statutory guidance.

The Trustee recognises that the availability of accurate data for some asset classes is an industry-wide issue and will look to engage with the investment managers to improve their climate reporting. In particular, the Trustee notes that positions taken in derivatives present considerable reporting challenges around its ESG and carbon profile.

Carbon risk metrics aid the assessment of potential climate-related risks to which the Trust is exposed, and help to identify areas for further risk management, including engagement, monitoring, retention and selection.

The Trustee has agreed to report on the following four metrics:

Metric type	Description
<b>1. Absolute emissions:</b> Total greenhouse gas emissions	Total greenhouse gas (GHG) emissions: metric tons of CO <sub>2</sub> and equivalents (tCO <sub>2</sub> e) (or for sovereigns, carbon emissions from ISS divided by Total Stock from IMF in tCO <sub>2</sub> e per million Total Stock). Calculates an investor's share of the total emissions for each company/holding. It seeks to answer what emissions the investor is responsible for.
<b>2a. Emissions intensity:</b> Carbon Footprint	tCO <sub>2</sub> e / \$million invested (or for sovereigns, carbon emissions from ISS divided by Total Stock from IMF in tCO <sub>2</sub> e per million Total Stock). Total GHG Emissions figure normalised to take account of the size of the investment made. It seeks to answer how carbon intensive the portfolio is.
<b>2b. Alternative emissions intensity:</b> Weighted Average Carbon Intensity ("WACI")	tCO <sub>2</sub> e / \$million revenue (or for sovereigns, carbon emissions from ISS divided by GDP from ISS in tCO <sub>2</sub> e per million GDP). Average exposure (weighted by portfolio allocation) to GHG emissions normalised by revenue. It seeks to answer how carbon intensive the companies in the portfolio are.
<b>3. Portfolio alignment:</b> % of portfolio with Science Based Targets Initiative (SBTi)	A measure of how many companies in a portfolio have submitted climate transition plans that have been approved by the Science Based Targets Initiative.

Absolute emissions includes various scopes of emissions:

- Scope 1 “direct” emissions: those from sources owned or controlled by the company (e.g. direct combustion of fuel from vehicles); and
- Scope 2 “indirect” emissions: those caused by the generation of energy (e.g. electricity) purchased by the company.

Scope 3 emissions are currently not included in the climate metrics for two reasons: the rate of scope 3 disclosure remains insufficient to use reliably in analysis and the inclusion of scope 3 emissions leads to double-counting at the portfolio level. The possible inclusion of Scope 3 emissions will be reviewed in future analysis by the Trustee.

The Trustee has selected to use % of portfolio with SBTi targets as a means to measure portfolio alignment. SBTi provides a useful third party indication as to whether companies decarbonisation targets are credible or not.

In addition, a non-emissions based metric (data quality) will be discussed in 2023 ahead of the regulatory deadline for climate-related disclosures.

The Trustee recognises the challenges with various metrics, tools and modelling techniques used to assess climate change risks. The Trustee aims to work with its investment adviser and investment managers to continuously improve the approach to assessing and managing risks over time as more data becomes available.

## Results

**Figure 9: Climate-Related Metrics (31 December 2019 & 31 December 2022)**

**a) 31 December 2019**

Fund	Value	% of Trust Assets	Absolute Emissions (tons CO <sub>2</sub> e)		Carbon Footprint (tons CO <sub>2</sub> e / \$m invested)		WACI (tons CO <sub>2</sub> e / \$m revenue)		SBTi Alignment
	(£m)	Total	Coverage	Scope 1 & 2 (Exc Sov)	Coverage	Scope 1 & 2 (Exc Sov)	Coverage	Scope 1 & 2 (Exc Sov)	(%)
BlackRock 10:80:10 Global Equity (hedged)	223.6	43.6	91.9	26,815	90.5	90.5	95.9	171.8	n/a
LGIM Diversified Fund	71.9	14.0	n/a	n/a	61.3	121.3	64.2	359.2	n/a
LGIM Retirement Income Multi-Asset Fund	29.6	5.8	n/a	n/a	55.5	117.1	58.3	487.0	n/a
<b>Total</b>	<b>325.1</b>	<b>63.4</b>	<b>-</b>	<b>n/a</b>	<b>-</b>	<b>97.6</b>	<b>-</b>	<b>225.6</b>	<b>n/a</b>

Source: Aviva (asset valuation) and Mercer (climate metrics) as at 31 December 2019. We note that data on sovereigns, absolute emissions and SBTi Alignment was not available at this time.

BlackRock 10:80:10 Global Equity (hedged) consists of 100% listed assets (equities and corporate bonds)

LGIM Diversified Fund consist consists of 71.4% listed assets (equities and corporate bonds) and 11.8% sovereigns.

LGIM RIMA Fund consists of 66.5% listed assets (equities and corporate bonds) and 17.1% sovereigns.

Note: Scope 1+2 only. % of fund directly analysed reflects coverage for listed assets and sovereigns used in this analysis.

The actual allocation weight is adjusted to reflect the sub asset classes within multi-asset class mandates. These percentages may not sum up to the mandate total allocation due to asset classes not included in the analysis (e.g. cash, derivatives, forwards, etc.).

Sovereign analysis has been conducted in line with LGIM's ongoing methodology: absolute emissions = CO<sub>2</sub>e/GBP, Carbon Emissions Footprint = CO<sub>2</sub>e/Total Capital Stock, WACI = CO<sub>2</sub>e/GDP.

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## b) 31 December 2022

Fund	Value	% of Trust Assets	Absolute Emissions (tons CO2e)			Carbon Footprint (tons CO2e / \$m invested)			WACI (tons CO2e / \$m revenue)			SBTi Alignment
	(£m)	Total	Coverage	Exc Sov	Inc Sov	Coverage	Exc Sov	Inc Sov	Coverage	Exc Sov	Inc Sov	(%)
BlackRock 10:80:10 Global Equity (hedged)	391.0	43.9	95.5	29,878	29,878	95.5	63.5	63.5	95.6	129.7	129.7	37.6
LGIM Diversified Fund	141.4	15.9	82.1	13,399	17,986	82.1	105.9	114.2	84.5	292.1	295.4	27.8
LGIM Retirement Income Multi-Asset Fund	61.2	6.9	75.1	3,562	6,668	75.1	73.6	98.9	78.2	191.5	228.9	22.8
<b>Total</b>	<b>593.6</b>	<b>66.7</b>	<b>-</b>	<b>46,839</b>	<b>54,531</b>	<b>-</b>	<b>72.6</b>	<b>76.1</b>	<b>-</b>	<b>166.3</b>	<b>169.7</b>	<b>34.6</b>

Source: Aviva (asset valuation) and Mercer (climate metrics) as at 31 December 2022. The Trustee is working with the fund managers to provide data on sovereigns individually.

BlackRock 10:80:10 Global Equity (hedged) consists of 100% excluding sovereigns (equities and corporate bonds) and 0% sovereigns.

LGIM Diversified Fund consist consists of 74.4% excluding sovereigns (equities and corporate bonds) and 18.2% sovereigns

LGIM RIMA Fund consists of consists of 65.8% excluding sovereigns (equities and corporate bonds) and 25.8% sovereigns.

Note: Scope 1+2 only. % of fund directly analysed reflects coverage for listed assets and sovereigns used in this analysis.

The actual allocation weight is adjusted to reflect the sub asset classes within multi-asset class mandates. These percentages may not sum up to the mandate total allocation due to asset classes not included in the analysis (e.g. cash, derivatives, forwards, etc.).

Sovereign analysis has been conducted in line with LGIM's ongoing methodology: absolute emissions = CO<sub>2</sub>e/GBP, Carbon Emissions Footprint = CO<sub>2</sub>e/Total Capital Stock, WACI = CO<sub>2</sub>e/GDP.

Please note that LGIM report Carbon Footprint and WACI in GBP – we have converted to USD using the following exchange rate, USD/GBP = 0.83132 as at 31 December 2022 (sourced from Refinitiv).

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## Analysis

The tables above show the funds that are used within the Default Investment Option (with the exception of the Abrdn GARS Fund, Insight Broad Opportunities Fund and the BlackRock Institutional Sterling Liquidity Fund) and are within the scope of this climate change-related disclosures report.

We note that the data from 2019 is more limited than 2022 due to data availability at the time.

The BlackRock 10:80:10 Global Equity (hedged) holds the largest allocation of DC Section assets and it is the largest contributor to total absolute emissions. The BlackRock 10:80:10 Currency Hedged Global Equity fund, which has a material allocation at both dates saw a c.24% decrease in WACI and a c.30% decrease in Carbon Footprint over the period, largely contributing to the overall listed portfolio decarbonisation.

The LGIM Diversified Fund and LGIM Retirement Income Multi-Asset Fund have the largest WACI of the underlying funds. On a carbon intensity basis, the LGIM Diversified Fund portfolio has decreased by c.19% in WACI and by c.13% in Carbon Footprint. On a carbon intensity basis, the LGIM Retirement Income Multi-Asset Fund's listed portfolio has decreased by c.61% in WACI and decreased by c.37% in Carbon Footprint.

# Targets

The Trustee will keep the following target under review to ensure they remain appropriate and relevant, taking into account any changes to the investment strategy of the Trust, the availability of data and wider market developments.

**The Trustee has set a target to reduce greenhouse gas emissions by 50% or more by 2030, as measured by WACI with a 31 December 2019 baseline – and fully (i.e. to net zero) by 2050.** This is for all listed equity and corporate bond mandates within the Trust's default investment arrangement and includes Scope 1 and 2 emissions only.

The Trustee will review its targets at least annually and include Scope 3 emissions, when the available data has improved and there are suitable methodologies. The Trustee will exclude sovereigns from the target at this stage due to the absence of a consistent methodology amongst managers on reporting currently.

A summary of the progress to date against the target is shown in the table below for the three year-period; 31 December 2019 to 31 December 2022.

**Figure 10: Progress to date of target**

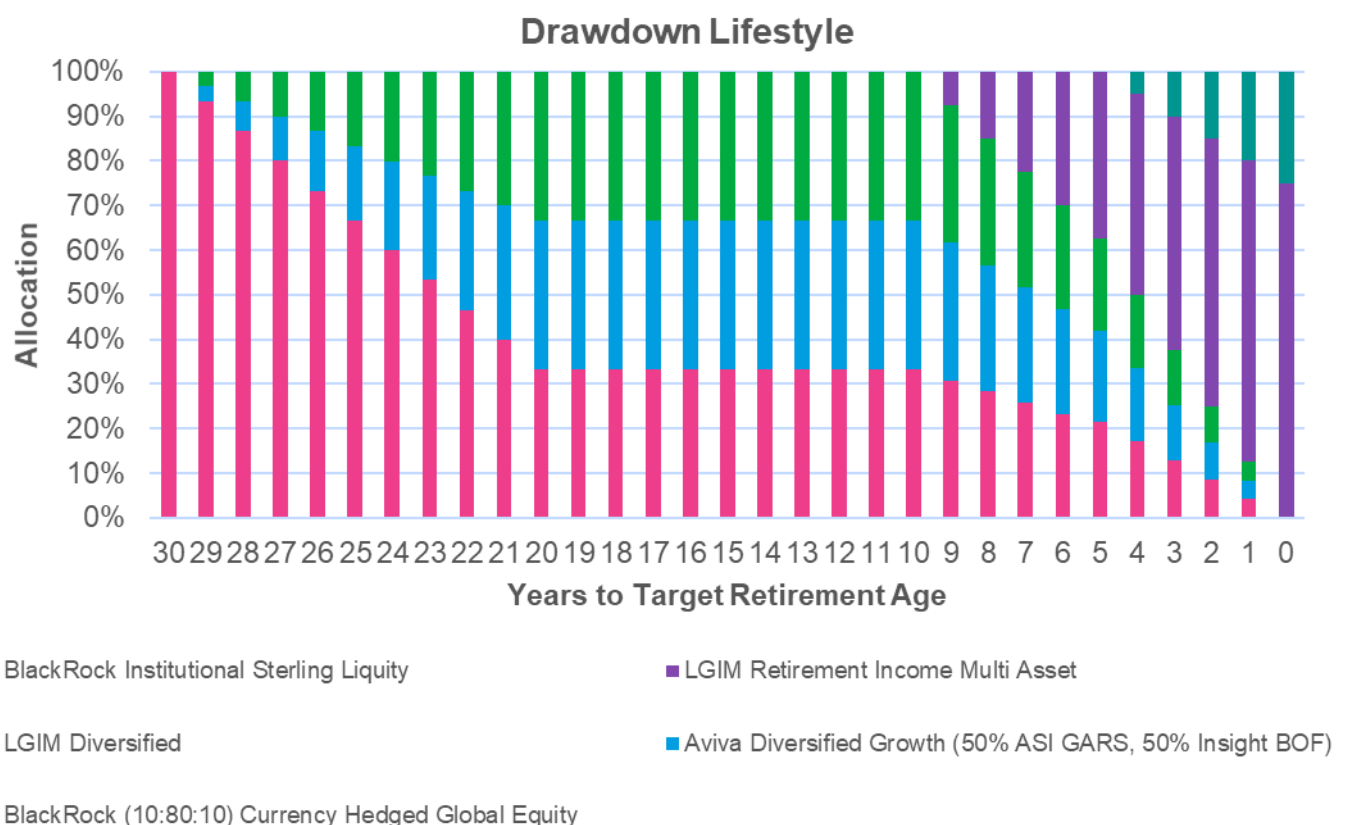
WACI (tCO <sub>2</sub> e/\$m revenue)	Baseline 31 December 2019	Current 31 December 2022	Change
BlackRock 10:80:10 Global Equity (hedged)	171.8	129.7	-24%
LGIM Diversified Fund	359.2	292.1	-19%
LGIM Retirement Income Multi-Asset Fund	487.0	191.5	-61%

It should be noted that the target applies for the assets where WACI data is reportable and that any improvement in the consistency, comparability and quality of climate related data is likely to have an impact on the Trust's climate metrics.



# Appendix 1: Default Investment Option, Fund Allocations & Strategic Asset Allocation

## Drawdown Lifestyle



## Fund Allocations – 31 March 2023

## Default component funds

	Asset Value (£M)	% of Trust assets
BlackRock (10:80:10) Currency Hedged Global Equity	424.3	44.4%
BlackRock Institutional Sterling Liquidity	29.5	3.1%
Aviva Diversified Growth (50:50 GARS/BOF)	163.7	17.1%
LGIM Diversified	151.4	15.8%
LGIM Retirement Income Multi-Asset	66.2	6.9%
Aviva Three Year Transition Fund	51.6	5.4%
BlackRock UK Equity Index	21.4	2.2%
BlackRock US Equity Index	7.1	0.7%
BlackRock European Equity Index	1.4	0.1%
BlackRock Japanese Equity Index	0.8	0.1%
BlackRock Pacific Rim Equity Index	1	0.1%
BlackRock Emerging Markets Equity	1.8	0.2%
HSBC Islamic Global Equity Index	14.9	1.6%
LGIM Ethical Global Equity Index	6	0.6%
BlackRock Over 5 Year Index-Linked Gilt Index	5.8	0.6%
BlackRock Over 15 Year Gilt Index	0	0.0%
BlackRock Corporate Bond All Stocks Index	0.4	0.0%
LGIM Future World Global Equity	0.5	0.1%

## Strategic Asset Allocation – 30 June 2022

Asset Class	Year																				
	0-10	11	12	13	14	15	16	17	18	19	20-30	31	32	33	34	35	36	37	38	39	40
MSCI ACWI Equity	-	-	-	-	-	-	-	-	-	-	-	2.0%	4.1%	6.1%	8.1%	10.1%	12.2%	14.2%	16.2%	18.2%	20.3%
US Equity	27.1%	25.3%	23.5%	21.7%	19.9%	18.0%	16.2%	14.4%	12.6%	10.8%	8.9%	8.1%	7.2%	6.3%	5.4%	4.5%	3.6%	2.7%	1.8%	0.9%	-
UK Equity	10.0%	9.3%	8.7%	8.0%	7.3%	6.7%	6.0%	5.3%	4.6%	4.0%	3.3%	3.0%	2.6%	2.3%	2.0%	1.7%	1.3%	1.0%	0.7%	0.3%	-
Europe Equity	26.6%	24.8%	23.0%	21.2%	19.5%	17.7%	15.9%	14.1%	12.3%	10.6%	8.8%	7.9%	7.0%	6.1%	5.3%	4.4%	3.5%	2.6%	1.8%	0.9%	-
Japan Equity	13.1%	12.2%	11.4%	10.5%	9.6%	8.7%	7.8%	7.0%	6.1%	5.2%	4.3%	3.9%	3.5%	3.0%	2.6%	2.2%	1.7%	1.3%	0.9%	0.4%	-
Developed Asia ex Japan Equity	13.2%	12.3%	11.4%	10.5%	9.6%	8.8%	7.9%	7.0%	6.1%	5.2%	4.3%	3.9%	3.5%	3.0%	2.6%	2.2%	1.7%	1.3%	0.9%	0.4%	-
Emerging Markets Equity	10.0%	9.3%	8.7%	8.0%	7.3%	6.7%	6.0%	5.3%	4.6%	4.0%	3.3%	3.0%	2.6%	2.3%	2.0%	1.7%	1.3%	1.0%	0.7%	0.3%	-
Multi Asset Credit	-	-	-	-	-	-	-	-	-	-	-	1.1%	2.2%	3.3%	4.4%	5.5%	6.6%	7.7%	8.8%	9.9%	11.0%
Global Investment Grade Credit	-	-	-	-	-	-	-	-	-	-	-	1.3%	2.5%	3.8%	5.1%	6.3%	7.6%	8.9%	10.1%	11.4%	12.7%
Sovereign Bond UK	-	-	-	-	-	-	-	-	-	-	-	1.0%	2.0%	3.0%	4.0%	5.0%	6.0%	7.0%	8.0%	9.0%	10.1%
EMD Hard Currency	-	-	-	-	-	-	-	-	-	-	-	0.7%	1.4%	2.0%	2.7%	3.4%	4.1%	4.7%	5.4%	6.1%	6.8%
EMD Local Currency	-	-	-	-	-	-	-	-	-	-	-	0.7%	1.4%	2.0%	2.7%	3.4%	4.1%	4.7%	5.4%	6.1%	6.8%
Cash	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.5%	13.0%	19.5%	26.0%	32.4%
DGF / Multi-Asset	-	6.7%	13.4%	20.0%	26.7%	33.4%	40.1%	46.7%	53.4%	60.1%	66.7%	63.6%	60.1%	56.7%	53.2%	49.8%	39.8%	29.9%	19.9%	10.0%	-

Source: SAA as at 30 June 2022.

# Appendix 2: Modelling assumptions

## Mercer's UK Capital Market Assumptions:

Analysis is shown as at 30 June 2022.

The assumptions are based on Mercer's Stochastic scenarios. Our scenarios do not assume any differences between geographies regarding Developed Equity returns.

**Climate scenario modelling** is a complex process and the Trustee is aware of the modelling limitations. In particular:

- The further into the future you go, the less reliable any quantitative modelling will be.
- Looking at average asset class returns over multi-decade timeframes leads to invariably small impacts. The results are potentially significantly underestimated.
- There is a reasonable likelihood that physical impacts are grossly underestimated. Feedback loops or 'tipping points', like permafrost melting, are challenging to model particularly around the timing of such an event and the speed at which it could accelerate.
- Financial stability and insurance 'breakdown' is not modelled. A systemic failure may be caused by either an 'uninsurable' 4°C physical environment, or due to the scale of mitigation and adaption required to avoid material warming of the planet.
- Most adaptation costs and social factors are not priced into the models. These include population health and climate-related migration.

Asset Class	31/12/2021					
	Excess return over cash		Absolute			
	Arithmetic Mean	Median	Arithmetic Mean Return	Median Return	10 Year Standard deviation	One Year Standard deviation
	(% p.a.)	(% p.a.)	(% p.a.)	(% p.a.)	(% p.a.)	(% p.a.)
Cash	0.0	0.0	1.3	1.0	5.3	0.0
Fixed interest gilts (>15 years)	0.0	-0.2	0.9	0.9	6.9	9.9
Index-linked gilts (> 5 years)	-0.4	-0.9	0.6	0.3	7.8	9.8
Sterling non-gilts (all stocks)	0.7	0.6	1.8	1.8	3.9	6.7
Sterling non-gilts (>10 years)	0.7	0.5	1.7	1.6	5.5	8.9
Developed Global Equity (Hedged)	4.6	3.5	5.9	4.7	17.4	15.9
Emerging Market Equity	6.5	3.4	7.9	4.6	29.1	25.3
Small Cap Equity (Unhedged)	7.0	5.2	8.3	6.4	21.3	20.3
Defensive Equity (Hedged)	4.0	3.3	5.3	4.4	14.2	12.7
Conventional Property	3.1	2.1	4.4	3.3	15.5	14.7
High Lease Value Property	1.8	1.5	3.0	2.7	8.3	8.4
Hedge Funds (Standard)	2.2	2.1	3.6	3.2	8.4	6.7
High Yield Debt (Hedged)	2.0	1.7	3.3	2.8	10.3	11.1
Emerging Market Debt (LC)	3.2	2.1	4.4	3.3	14.1	15.1
Emerging Market Debt (HC)	2.3	2.0	3.5	3.1	8.9	9.9
Infrastructure Unlisted Equity	4.2	3.3	5.5	4.4	15.6	15.4
Private Debt (Junior)	3.8	3.2	5.3	4.4	13.4	13.8
Private Debt (Senior)	2.6	2.3	4.1	3.5	10.7	10.4
Private Equity	6.8	4.2	8.1	5.4	25.2	24.9
Multi Asset Credit	3.3	3.1	4.7	4.2	8.7	9.3
Absolute Return Fixed Income	1.6	1.6	3.0	2.7	5.6	3.0

## Modelling Assumptions – Cumulative Impacts (relative to baseline) for:

	Failed Transition		Rapid Transition	
Asset Class	31/12/2021			
	10 Years	30 Years	10 Years	30 Years
MSCI World	-5.1%	-34.1%	-11.1%	-11.5%
Emerging Markets Equity	-5.8%	-41.3%	-10.3%	-10.5%
MSCI ACWI ESG	-5.7%	-36.3%	-9.1%	-8.6%
Paris Aligned Equity	-6.0%	-35.8%	-7.3%	-6.4%
Multi-Asset Credit	-1.1%	-4.2%	-2.5%	-2.4%
Global Investment Grade Credit	-0.8%	-3.2%	-1.0%	0.1%
Emerging Market Debt	0.2%	-4.2%	-2.3%	-1.5%
Cash	-1.3%	-4.1%	1.1%	1.6%
Sterling Investment Grade Credit	-1.1%	-2.4%	-0.1%	0.8%

## Modelling Assumption - Narratives

	Rapid transition	Orderly transition	Failed transition
<b>Summary</b>	Sudden divestments in 2025 to align portfolios to the Paris Agreement goals have disruptive effects on financial markets with sudden repricing followed by stranded assets and a sentiment shock.	Political and social organizations act quickly and predictably to implement the recommendations of the Paris Agreement to limit global warming to below 2°C.	The world fails to meet the Paris Agreement goals and global warming reaches 4.3°C above pre-industrial levels by 2100. Physical climate impacts cause large reductions in economic productivity and increasing impacts from extreme weather events.
<b>Cumulative emissions</b>	416 GtCO <sub>2</sub> (2020-2100)	810 GtCO <sub>2</sub> (2019-2020)	5,127 GtCO <sub>2</sub> (2020-2100)
<b>Temperature change</b>	Average temperature increase of 1.5°C by 2100.	Average temperature increase of <2°C by 2100.	Average temperature increase of >4°C by 2100.
<b>Key policy &amp; tech assumptions</b>	An ambitious policy regime is pursued to encourage greater decarbonization of the electricity sector and to reduce emissions across all sectors of the economy. Higher carbon prices, larger investment in energy efficiency and faster phase out of coal-fired power generation under a 'rapid' transition		Existing policy regimes are continued with the same level of ambition.
<b>Financial climate modelling</b>	Pricing in of transition and physical risks of the coming 40 years occurs within one year in 2025. As a result of this aggressive market correction, a confidence shock to the financial system takes place in the same year.	Pricing in of transition and physical risks until 2050 takes place over the first 4 years.	Physical risks are priced in two different periods: 2026-2030 (risks of first 40 years) and 2036-2040 (risks of 40-80 years).
<b>Physical risk impact on GDP</b>	Physical risks are regionally differentiated, consider variation in expected temperature increase per region and increase dramatically with rising average global temperature. Physical risks are built up from: <ul style="list-style-type: none"> <li>Gradual physical impacts associated with rising temperature (agricultural, labour, and industrial productivity losses)</li> <li>Economic impacts from climate-related extreme weather events</li> </ul> Current modelling does not capture environmental tipping points or knock-on effects (e.g., migration and conflict).		
<b>Physical risk impact on inflation</b>	Gradual physical impact (supply shocks) on inflation included through damages to agriculture and change in food prices. Total impact on a Global CPI Index is +2% in 2100.	No explicit modelling of physical risk impact on inflation (supply-side shocks). Impact on inflation follows historical relationship between GDP and CPI.	Severe gradual physical impact (supply shocks) on inflation included through damages to agriculture and change in food prices. Total impact on a Global CPI Index is +15% in 2100.

# Appendix 3: Climate Change Glossary

**Carbon footprint:** The amount of carbon dioxide (or other greenhouse gasses) released into the atmosphere as a result of the activities of a particular individual, organization or community. Carbon footprint is calculated for each company as (Scope 1 and 2 carbon emissions / \$m investments). See also Scope 1, 2, 3 emissions and Weighted Average Carbon Intensity (WACI).

**Carbon intensity:** The amount of emissions of carbon dioxide (or other greenhouse gasses) released per unit of another variable such as revenue, gross domestic product (GDP), per \$1million invested etc. See also Weighted Average Carbon Intensity (WACI).

**Carbon price:** The price for avoided or released carbon dioxide (CO<sub>2</sub>) or CO<sub>2</sub>-equivalent emissions. This may refer to the rate of a carbon tax, or the price of emission permits. In many models that are used to assess the economic costs of mitigation, carbon prices are used as a proxy to represent the level of effort in mitigation policies.

**Carbon neutrality:** Achieved by offsetting emissions by paying for credits (usually certified via new forestry equivalents that provide carbon removal). Carbon neutrality is similar to net zero targeting – the latter requires actual emissions reductions to meet targets though (rather than purchasing offsets). See also Net Zero CO<sub>2</sub> emissions.

**Decarbonisation:** The process by which countries, individuals or other entities aim to achieve zero fossil carbon existence. Typically refers to a reduction of the carbon emissions associated with electricity, industry and transport.

**Global warming:** The estimated increase in global mean surface temperature expressed relative to pre-industrial levels unless otherwise specified. See also Pre-industrial.

**Greenhouse gases:** Gases in the planet's atmosphere which trap heat. They let sunlight pass through the atmosphere but prevent heat from leaving the atmosphere. Greenhouse gases include: Carbon Dioxide (CO<sub>2</sub>), Methane (CH<sub>4</sub>), Nitrous Oxide (N<sub>2</sub>O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), Sulphur Hexafluoride (SF<sub>6</sub>), Nitrogen Trifluoride (NF<sub>3</sub>).

**Inevitable policy response:** A scenario that expects an acceleration of climate-related policy announcements in 2023–2025, which has been supported by the Principles for Responsible Investment (PRI).

**Mitigation (of climate change):** A human intervention to reduce emissions or enhance the sinks of greenhouse gases.

**Mitigation strategies:** In climate policy, mitigation strategies are technologies, processes or practices that contribute to mitigation, for example, renewable energy (RE) technologies, waste minimization processes and public transport commuting practices.

**Net zero CO<sub>2</sub> emissions:** Net zero carbon dioxide (CO<sub>2</sub>) emissions are achieved when CO<sub>2</sub> emissions are balanced globally by CO<sub>2</sub> removals over a specified period. The term “net zero” is also typically associated with the 2050 date or earlier, as this is aligned with the scientific recommendations to achieve a 1.5°C scenario. See also Carbon neutrality (which differs slightly).

**Paris Agreement:** The Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC) was adopted on December 2015 in Paris, at the 21st session of the Conference of the Parties (COP) to the UNFCCC. The agreement, adopted by 196 Parties to the UNFCCC, entered into force on 4 November 2016 and as of May 2018 had 195 Signatories and was ratified by 177 Parties. One of the goals of the Paris Agreement is “Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels”, recognising that this would significantly reduce the risks and impacts of climate change. Additionally, the Agreement aims to strengthen the ability of countries to deal with the impacts of climate change.

**Physical risks:** Dangers or perils related to the physical or natural environment that pose a threat to physical assets e.g. buildings, equipment and people. Mercer’s scenario analysis grouped these into the impact of natural catastrophes (for instance sea level rise, flooding, wildfires, and hurricanes) and resource availability (particularly water). See also Transition risks.

**Pre-industrial:** The multi-century period prior to the onset of large-scale industrial activity around 1750. The reference period 1850–1900 is used to approximate pre-industrial global mean surface temperature.

**Principles for Responsible Investment (PRI):** Non-profit organisation which encourages investors to use responsible investment to enhance returns and better manage risks. It engages with global policymakers and is supported by, not but part of, the United Nations. It has six Principles for Responsible Investment that offer a menu of possible actions for incorporating ESG issues into investment practice.

**Resilience:** The capacity of social, economic and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganising in ways that maintain their essential function, identity and structure while also maintaining the capacity for adaptation, learning and transformation.

**Scope 1, 2, 3 emissions:** Scope 1 emissions are direct emissions from owned or controlled sources. Scope 2 emissions are indirect emissions from the generation of purchased energy. Scope 3 emissions are all indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions.

**Stranded assets:** Assets exposed to devaluations or conversion to “liabilities” because of unanticipated changes in their initially expected revenues due to innovations and/or evolutions of the business context, including changes in public regulations at the domestic and international levels.

**Transition risks:** Risks from policy changes, reputational impacts and shifts in market preferences, norms and technology as the economy moves to a low carbon approach. See also Physical risks.

**Weighted average carbon intensity (WACI):** The carbon intensity of a portfolio, weighted by the proportion of each constituent in the portfolio. Carbon intensity is calculated for each company as (Scope 1 and 2 carbon emissions / \$m revenue). See also Carbon footprint.