Jaguar Land Rover Pension Trustees Limited

Taskforce on Climate-related Financial Disclosures Report 2023

Introduction

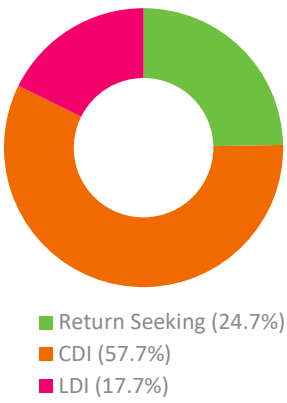
Who we are

Jaguar Land Rover Pension Trustees Limited (the Trustee) is the trustee body for the Jaguar Pension Plan, Land Rover Pension Scheme and Jaguar Executive Pension Plan (the Schemes), which include assets of around £6bn. Its purpose is to pay pension benefits to members of the Schemes as they fall due.

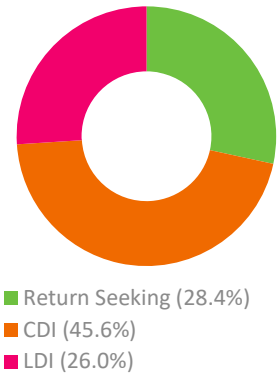
We've agreed to a long-term investment strategy whereby assets will be migrated into a cashflow-driven-investment (CDI) portfolio as members retire and become pensioners. We chose this strategy to provide more funding-level stability and greater certainty of paying members' benefits. A key priority for us is ensuring that the Schemes' investment strategy delivers sustainable long-term cashflows.

The pie charts below show the high-level investment strategy of our three Schemes as at 31 March 2023. The return-seeking (RS) portfolios are invested across a range of growth assets aiming to deliver a high level of return, such as equities, private markets and high-yield credit. The CDI portfolios are invested in income-generating assets, such as corporate bonds, long-lease property and infrastructure. The liability-driven investment (LDI) portfolio holds low-risk assets that aim to ensure that the overall movement in the Schemes' assets is in line with the Schemes' liabilities.

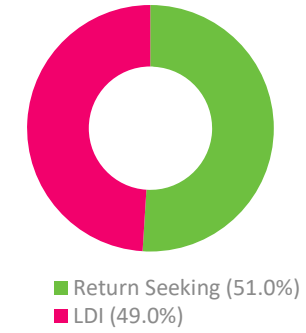
Jaguar Pension Plan (JPP), c£2.8bn



Land Rover Pension Scheme (LRPS), c£2.8bn



Jaguar Executive Pension Plan (JEPP), c£120m



In aggregate across our three schemes, around half of our members are retired, around a quarter are active, and the rest are deferred members. The table below summarises the number of members in our three Schemes, broken into active, deferred and pensioner members.

Scheme	Active	Deferred	Pensioner	Total
Jaguar Pension Plan	2,352	3,032	8,068	13,452
Land Rover Pension Scheme	3,360	2,254	4,479	10,093
Jaguar Executive Pension Plan	13	27	94	134

*Data as at 31 March 2022

TCFD reporting

This statement sets out our approach to assessing, monitoring and mitigating climate-related risks in the context of our broader regulatory and fiduciary responsibilities to members.

We believe that climate change is a systemic risk and an immediate concern. To ensure a sustainable future and to safeguard economic growth, we think concerted global action is required to tackle the climate crisis. The Schemes are long-term investors, and we believe that improved transparency on climate-related matters will lead to improved investment decisions and member outcomes. This has created focus and an imperative to act.

The Trustee board supports initiatives that help improve disclosures and enhances transparency. The Taskforce on Climate-related Financial Disclosures (TCFD) framework provides a structure for companies, asset managers, asset owners, banks and insurance companies to outline the steps they have undertaken to identify, manage and monitor climate-related risks and opportunities. The framework is designed to increase comparability while allowing sufficient flexibility to communicate the specific approach adopted by each entity.

The Task Force divided climate-related risks into two major categories: risks related to the transition to a lower-carbon economy, and risks related to the physical impacts of climate change. Climate-related risks and the expected transition to a lower-carbon economy affect most economic sectors and industries; however, opportunities will also be created for organisations focused on mitigating climate change and adapting solutions.

This report provides detail of our actions against the four pillars set out by the TCFD:

- **Governance**: the organisation's governance around climate-related risks and opportunities
- **Strategy**: the actual and potential impact of climate-related risks and opportunities on the organisation's business, strategy and financial planning
- **Risk management**: the process used by the organisation to identify, assess and manage climate-related risks
- **Metrics and targets**: how we assess and manage relevant climate-related risks and opportunities

As well as developing our own reporting for TCFD, we expect our underlying investment managers and engagement service providers to be aligned with TCFD. We will continue to monitor this through our regular reporting. This is our second disclosure in accordance with the requirements of TCFD. The following pages detail our climate risk disclosures.

Executive summary of this year's report

Since the last report, we've continued to measure and monitor the climate-related risks present within the Schemes' investment strategy. We believe that responsible investment issues can have a material impact on the Schemes' ability to achieve their ultimate objective of meeting benefit payments, so we aim to integrate RI considerations into all decision-making processes.

We carried out a responsible investment review of the Schemes' investment strategy in Q3 2022 to better understand the approach followed by our fund managers. This review was delivered by our fiduciary manager. They summarised their methodology for assessing asset managers' competence at integrating ESG considerations into the investment process and outlined case studies demonstrating how engagement had led to positive outcomes. This review also outlined managers who were weaker from an ESG integration perspective and the steps being taken to address these shortcomings.

In Q4 2022, we also received a presentation from the sponsor on sustainability and what this means for the long-term growth of the company. This session let us consider the alignment of the climate strategy with the company and the pension schemes. The training session also highlighted the overlap in the RI priorities identified by the company and the Schemes.

The volatility in financial markets over the last 12 months, specifically the gilt crisis, has resulted in material changes in the composition of our investment strategy. When rebuilding the investment strategy (particularly the CDI portfolio), we were keen to ensure any new investments also improved the sustainability profile of the overall investment strategy.

The key highlights and findings from the 2022/23 TCFD report are set out below:

Governance

Over the last 12 months, RI discussions have been integrated into the FSC (Financial Strategy Committee) and IIC (Investment Implementation Committee) business plans. The Schemes continue to receive support and training from their strategic investment adviser, fiduciary manager and sponsor. We maintain a governance policy setting out the roles and responsibilities of all relevant parties. We've also designed robust processes to ensure that climate-related risks and opportunities are appropriately managed.

Strategy and risk management

Over the last 12 months, we held dedicated, asset-class-specific RI sessions with the Schemes' fiduciary manager. These captured the engagement being undertaken on behalf of the Schemes to mitigate the different physical and transitional climate-related risks present in the investment strategy. We discussed the expected impact of these risks over different time horizons and what steps can be taken to address these risks.

During the year, we incorporated climate risks into our decision-making alongside the other risks factors we consider when assessing our strategy. In particular, climate risks were considered as part of the investment strategy evolution discussions undertaken at the end of 2022 – especially when looking to rebuild the CDI part of the investment strategy.

We refreshed the scenario analysis conducted last year following the strategic changes to test the resilience of the Scheme's funding position under a range of possible scenarios. A representative of the Trustee discussed the limitations within the current climate scenario modelling approach and agreed to explore a more extreme climate scenario shock. Preliminary discussions have been held between the Schemes' strategic adviser and the Schemes' ESG champion – a focused session on this topic is scheduled for Q4 2023.

Further discussions on managing climate-related risks will be undertaken as part of the 2024 actuarial valuation.

Metrics and targets

We receive regular reporting from the fiduciary manager covering various metrics. There has been an increase in the reported absolute emissions and emissions intensity metrics over the past 12 months, which has been driven by the higher allocation to illiquid assets following the heightened levels of volatility in gilt markets.

The fiduciary manager is scheduled to provide an updated RI metric dashboard in Q4 2023, which is intended to better capture progress relative to targets and achieve the objective of integrating RI consideration into the overall decision-making process.

We have discussed if there is merit in adopting a more aggressive and challenging target than that set by our fiduciary manager. We considered whether an earlier target date would change behaviours, but concluded currently that alignment with the fiduciary manager is appropriate.

Governance

How we retain oversight of climate-related risks and opportunities

We have a clear governance structure with dedicated sub-committees to ensure effective and timely decision-making. Regarding investment and funding matters, we have a Financial Strategy Committee (FSC) that oversees our integrated risk management, covering actuarial, company covenant and investment strategy matters. It reports into the Trustee board.

Role of the fiduciary and strategic adviser

We appointed a fiduciary manager, WTW, to implement our investment strategy. WTW has day-to-day responsibility for the consideration of climate-related risks and opportunities in investment decision-making. We also have an Investment Implementation Committee (IIC) that oversees the implementation of investment strategy, including how climate risks and opportunities are being addressed by WTW. The IIC reports into the FSC and Trustee board.

Alongside the IIC and FSC, we receive advice and support on ESG and climate-related matters from the strategic investment adviser and fiduciary manager. The strategic investment adviser is responsible for embedding climate-related risks and opportunities into investment decisions. The fiduciary manager is responsible for engaging with the underlying managers, with a particular focus on the Scheme's key RI priorities. Through the various committees, we maintain an ongoing dialogue with the sponsor to ensure all parties are aware of the current approach for assessing, managing and monitoring climate-related issues.

The Trustee board has access to the Chief Financial Officer of Jaguar Land Rover and receives periodic updates from the company.

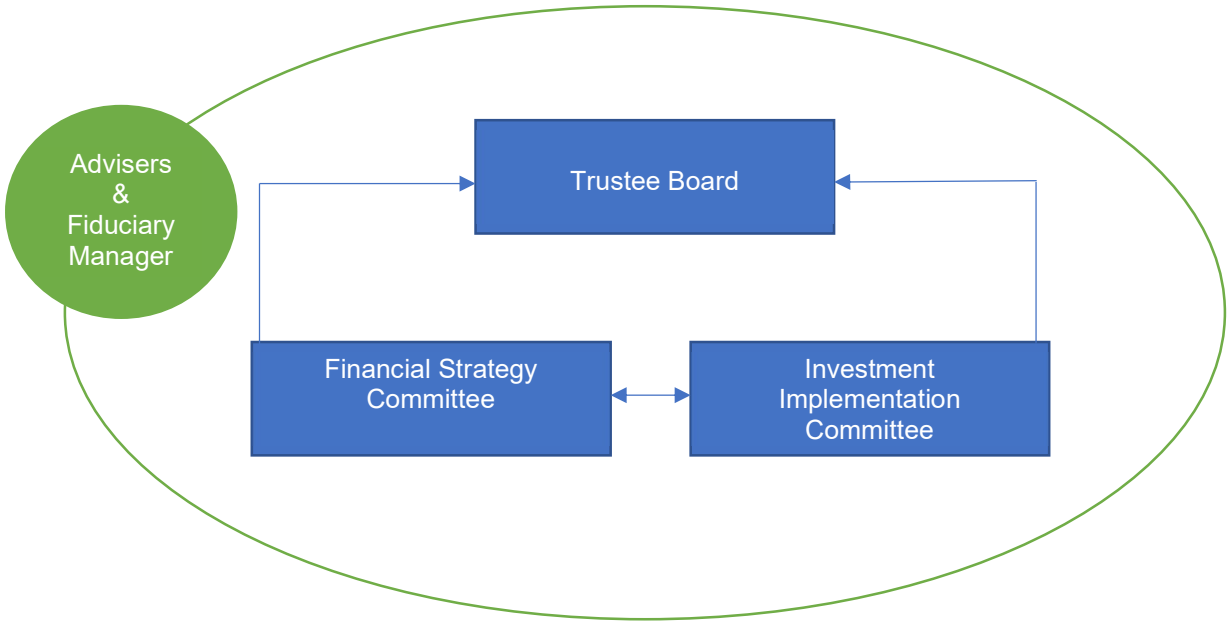
The Responsible Investment Working Group

In 2020, we established a Responsible Investment Working Group (RIWG) with distinct terms of reference and reporting lines. The RIWG comprised four members of the Trustee board, including the Chair of Trustees, and included company representation. We wanted to ensure that sufficient time was devoted to developing a responsible investment and stewardship framework, and to establish the Scheme's core beliefs and priorities from an RI perspective. The creation of this committee enabled the Schemes to challenge and scrutinise WTW on their reporting from an ESG perspective.

As outlined in the previous TCFD report, our desire was to fully integrate RIWG work into the business plans of both the FSC and IIC. This would ensure that RI matters were integrated into all decision-making processes. The last RIWG meeting was held in November 2022. Since this date, dedicated RI agenda items have been added to the FSC and IIC business plans. To ensure that RI matters are central to decision-making, we've nominated an RI champion, who is responsible for flagging key developments in ESG, identifying risks and opportunities that warrant further discussion, and guiding conversations at committee meetings. The RI champion meets regularly with our strategic investment adviser.

The Trustee, IIC and FSC received regular training from our advisers throughout the year on climate-related risks and opportunities. Consequently, we're satisfied that there is sufficient knowledge and understanding to appropriately take climate-related issues into account within our decision-making for the Schemes.

The current governance structure of the Schemes and key relationships is illustrated in the chart below. The FSC and IIC are comprised of members of the Trustee board and have company representation.



Roles and responsibilities in assessing and managing climate-related risks and opportunities

The Trustee board is ultimately accountable for ensuring that climate-related risks and opportunities are appropriately assessed and managed. However, the supporting committees are responsible for building knowledge and understanding and proposing policies and processes for Trustee board approval. We've developed a set of RI beliefs and an RI policy. Climate change is a key theme running through both documents. The documents are owned by us, and we review them to ensure they remain fit for purpose.

WTW is a fiduciary manager for the Return Seeking (RS) and cashflow-driven investment (CDI) portfolios of the Schemes. They have delegated authority to appoint underlying fund managers and purchase assets on behalf of the Schemes. The IIC is responsible for ensuring that WTW integrates climate change into the investment process, including the management of climate-related risks and opportunities. This extends to WTW's oversight of the underlying managers that they appoint. The IIC devotes time to scrutinising and challenging WTW's decision-making and reporting in this respect.

Hymans Robertson, in their role as strategic investment adviser, provide additional support to the sub-committees. We set the investment adviser a set of objectives that are reviewed annually. These objectives include a specific objective on assisting the Trustee in monitoring climate-related risks and opportunities by stating the Trustee's investment adviser "ensures the Trustee has the processes in place to meet TCFD regulations". The success of this objective is also monitored to ensure compliance with the relevant pensions regulation, legislation and supporting guidance, including TCFD regulation and that the Trustee understands the Schemes' climate-related risks and the associated actions available to mitigate these risks. We also review our investment adviser regularly, to ensure they have the appropriate skills and experience to support us on climate-related issues.

The Schemes' actuarial advisers are responsible for identifying any RI considerations that should be incorporated into the funding strategy. We review the actuarial adviser regularly, again to ensure they have the appropriate skills and experience to support us in identifying, assessing and mitigating climate-related risks.

We also analyse climate change from a covenant perspective. Electrification is one of the most significant risks to covenant, and the sponsor's progress on this topic relative to peers is considered quarterly as part of the integrated risk management monitoring dashboard produced by our covenant adviser.

Some of the climate-related issues that the IIC have considered and developed in recent years include:

- Monitoring climate metrics across the Schemes' RS and CDI portfolios quarterly. Looking ahead, we'll be discussing how to evolve this reporting to better capture progress relative to targets and the climate metrics monitored.
- Improving ESG and climate change credentials when rebuilding the investment strategy following the heightened volatility experienced in Q4 2022.
- Discussing net zero journey planning and how the Schemes' expected investment strategy evolution will impact the Schemes' ability to achieve its stated net zero targets. Specifically, we have set a target of ensuring our RS and CDI portfolios are net zero by 2050, with emissions halved by 2030 (relative to 2019 levels). These targets are subject to ongoing review.

The IIC reports to the Trustee board quarterly.

Strategy

The climate-related risks and opportunities we have identified over the short, medium and long term

We define climate risk to be the potential impact on future financial returns that may arise from climate change. Climate risk is typically split into two parts:

- Transition risk: the impacts that may arise from policy change and technological advancement
- Physical risk: the risk from changing weather patterns or the greater frequency/severity of extreme events.

We are a long-term investor. Our current long-term goal is to have a 99% probability of paying all benefits in full by 2045 without further reliance on the sponsor. Climate change is likely to be a material consideration for the delivery of our long-term objective, and so it is crucial that we manage climate risk appropriately.

In the context of our journey planning and investment horizon, we have defined short, medium and long term as follows:

- Short term: in line with our actuarial valuation cycle – three years
- Medium term: half-way point to the long-term target – currently 11 years to 2034
- Long term: consistent with our long-term funding target date – currently 22 years to 2045

As the Schemes continue along their journey plan, the above timescales will be re-assessed and amended as appropriate.

We expect transition risks to feature more prominently over shorter time periods. This view is driven by the likely escalation in climate-change regulation over the short to medium term. This also extends to the sponsoring employer of the Schemes, who needs to adapt their business model to meet regulation in respect of car electrification. In the longer term, we expect physical risks to feature increasingly. Both transition and physical climate risks will impact the Schemes during their lifetime.

We assess climate-related risks at an overall strategy level and at an individual mandate level. The table below sets out a summary of the key risks currently identified and monitored for each area of the Schemes' strategy.

Risk areas	Climate Risks			
	Identified risks	Impact		
		Short term	Medium term	Long term
Investment	Fiduciary manager invests in strategies that are overly exposed to climate risk. Underlying investment managers do not take account of climate risks. The fiduciary manager's approach to climate risk is inadequate.	Low	Low	Medium

Funding	Longevity impact from climate change and potential uncertainties in the funding assumptions introduced by climate risk.	Low	Low	Medium
Covenant	Keeping pace and aligning with consumer demand and changing global policies from a climate change perspective (eg electrification) is one of the key risks facing the sponsor.	Medium	Medium	Medium

Please note that the level of risk is assessed after expected mitigating action.

Several climate-related risks and opportunities have already been identified by our fiduciary manager in considering the implementation of strategy. The key risks and opportunities that they have identified, assessed and discussed are summarised below:

Climate risks

Real assets – agriculture/timber

Within our RS portfolio, we invest in two mandates that provide separate exposure to agriculture and timber – these mandates equate to around 1% of the overall investment strategy. The key climate-related risks for timberland are fire, drought, wind, hurricanes and disease, all of which may be exacerbated by climate change. Furthermore, extreme weather events (eg wildfires and droughts), coupled with rising global temperatures, will significantly affect agriculture production. Therefore, these assets are structurally exposed to physical climate risks. The impact from these physical risks is expected to be more prevalent in the long term.

It's also worth noting that these types of investments could also be considered as a climate-related opportunity (particularly during the transition period). For example, carbon sequestration in trees will play a significant role in achieving net zero transition pathways, so it's important to allow existing trees to grow and plant new forests on suitable and available land. We receive updates from our fiduciary manager on the ESG policy of the manager, with a particular focus on water security and fire risk to ensure that these risks are appropriately managed. The underlying investment manager has confirmed that they focus on regions with optimal climate and infrastructure to grow their high-conviction crops.

Opportunistic private markets – energy

In our RS portfolio, we invest in one mandate that invests across the energy industry. Importantly, it has the flexibility to switch between power generation, midstream and environmental assets and service. However, the manager does hold some gas pipelines that are exposed to transition risks. Reductions in the costs of renewables and increasing political and regulatory pressure to reduce gas usage are the key drivers of transition risks for this sector.

Given the increasing ambitions related to climate change, these transition risks are expected to emerge in the short to medium term. As part of the reporting received by the fiduciary manager, we ask them to notify us of any RI exposures that are not optimal when viewed from a wider portfolio context. Gas pipelines represent a small proportion of this fund, and the mandate itself is only around 0.2% of the Schemes' overall investment strategy. Furthermore, the manager has the flexibility to invest in different segments of the energy sector, so we believe this transition risk will have a negligible impact on the Schemes.

Climate-related opportunities

Secure income assets – renewable energy

Within our CDI portfolio, we have exposure to a fund that gives investors access to a diversified, low-risk and highly cash-flow-generative portfolio of renewable energy. This mandate represents 2.7% of JPP's investment strategy and 1.6% of LRPS's investment strategy.

Over recent years, there have been rapid technology improvements, while renewable solutions have become cheaper. This has made renewable energy an attractive investment opportunity.

In the short to medium term, this mandate provides opportunities to access cashflow-generative assets. Furthermore, these assets are expected to result in lower expected volatility in the CDI funding level. Over the longer term, this mandate provides exposure to long-term energy-producing assets. We've considered the risk of stranded assets as part of the transition to net zero, and we've made the deliberate decision to invest in assets that provide exposure to renewable sources of energy and away from fossil fuels. This is an attempt to mitigate the risk of being exposed to assets that may become stranded. As the CDI portfolio is expected to grow over time, and the fiduciary manager has committed to doubling the allocation to climate solutions by 2030, we expect the allocation to renewables to increase. Furthermore, we expect to see an increase in the number of liquid renewable solutions in the coming years. The intention is for the Scheme to invest in these opportunities, should the Schemes' financial and climate objectives be sufficiently met.

Real assets – energy transition

We are invested in strategies that help finance the global energy transition through infrastructure investments. There is a significant need for capital to reduce carbon emissions and increase the efficiency of industry. Currently, there is the opportunity to be proactive and take advantage in some energy transition technologies. Over the medium term, we expected to see this market grow due to government support. Given the net zero pledge of the fiduciary manager, and the fact we have identified climate change as a key priority, we expect the Schemes to invest more in assets with upside potential linked to the energy transition.

Alternative credit – Green ABS

We are invested in a mandate that invests in bonds backed by loans and leases funding energy efficiency home projects. This investment approach stands to benefit from the wider adoption of solar energy across the US. This offers opportunities across the short, medium and long term. In the short term, there is the ability to lock into credit that offers an attractive yield. In the medium term, this investment approach is expected to offer lower volatility and sensitivity to traditional economic markets through long-term exposure to solar markets, which are expected to have a high social utility. Over the long term, this investment philosophy provides exposure to the US consumer's transition away from fossil fuels.

How climate-related risks and opportunities impact the Schemes' business, strategy and financial planning

Climate-change risk has the potential to reduce returns across all asset classes, as well as having a macroeconomic impact that could affect all Schemes. Equally, the need to transition to a low-carbon economy and the innovation that will require present several investment opportunities.

In recent years, we have dedicated considerable time and resource to ensuring that climate risk is appropriately embedded within our investment processes. This has largely been in the form of engaging with WTW and scrutinising their processes and reporting. For example, we have:

- Considered long-term and interim net zero targets for the Schemes, taking into consideration the our RI beliefs and the approach adopted by the sponsor from a net zero perspective.
- Included specific references to ESG and climate-related risks within the objectives of the our strategic advisers.
- Analysed which climate-related targets would be appropriate, based upon data availability, for the planned evolution of the investment strategy and the Schemes' RI policy.
- Assessed how ESG considerations are integrated into specific asset classes and individual mandates via the quarterly asset class review conducted by WTW.
- Assessed how the sustainability profile of the Schemes' investment strategy was improved as part of the CDI portfolio rebuild.
- Discussed the current limitations of climate scenario modelling and the specific scenarios that are relevant for the Scheme, based upon the key risks impacting funding and investment strategy as well as covenant strength.
- Received frequent training on the management of climate-related risks and opportunities.

Recently, the Schemes have invested in several climate-related mandates. WTW continue to monitor this market closely to identify attractive opportunities. We expect the allocation to climate opportunities to increase over time – given the planned evolution of the investment strategy, we anticipate deploying capital into both liquid and illiquid climate solutions. This is something that we monitor through our quarterly climate reporting provided by WTW.

WTW recently announced a new strategic plan with the overarching goal of being carbon neutral by 2050 across all offices, and within investment portfolios operated for clients under fiduciary management agreements. WTW is also aiming for a 50% reduction in carbon exposure by 2030, compared to 2019 levels. We've agreed to adopt the same targets for the Schemes, though this is subject to periodic review.

As commented on further in the next section, we have placed great focus on climate change within our stewardship policy, and review this annually in full. We expect to receive reporting from our fiduciary manager in Q4 2023, which will aid us in discussing the necessity to evolve and refine the process used to identify, manage and monitor climate-related risks and opportunities.

How resilient is our investment strategy to climate change risks?

As part of our broader integrated risk-management framework, we consider plausible tail risk scenarios. These scenarios are designed to stress test the interconnections in the asset strategy, covenant and funding. The purpose of these scenarios is to bring to life the risks inherent in the Schemes' strategy and how we could respond if they materialise. The five base scenarios considered are:

1. Collateral
2. Climate change
3. Longevity shift
4. Credit crisis
5. Swift covenant deterioration

These scenarios are discussed in the quarterly monitoring report prepared by our strategic investment adviser. This is used as a tool to determine whether any amendments to the composition of the investment strategy is needed to mitigate specific tail risks. The FSC discussed the existing scenario types and whether there was merit in evolving the base scenarios at the March 2023 meeting.

Following discussion at the meeting, it was agreed that we would consider the scenario analysis due to be conducted by the sponsor and determine the merit in exploring equivalent scenarios. In addition, the Schemes' strategic investment adviser was tasked with designing a severe climate shock scenario. The Schemes' ESG champion has received training on the proposed extreme 'food shock' scenario, and further discussions are scheduled at the end of 2023 and beginning of 2024.

In addition to the planned evolution of the scenario analysis, we have continued to test the resilience of the Schemes' investment strategy to climate risk by undertaking climate scenario analysis based on the Schemes' assets and market conditions as at 31 March 2023.

The analysis focused on the impact that specific climate scenarios could have on the Schemes' ability to achieve their long-term objectives. Furthermore, this modelling considered the short-term impact on funding level risk. To test resilience, we looked at these metrics over different time horizons and for different investment strategy compositions.

The scenario analysis was carried out using a model produced by the Schemes' investment adviser. It considered the impact under three scenarios, which differ by how quickly and decisively the world responds (or fails to respond) to climate change. In the table below, we summarise these scenarios:

Green Revolution	Delayed Transition	Head in the Sand
Concerted policy action starting now eg carbon pricing, green subsidies Public and private spending on "green solutions" Improved disclosures encourage market prices to shift quickly Transition risks in the short term, but less physical risk in the long term	No significant action in the short term, meaning the response must be stronger when it does happen Shorter and sharper period of transition Greater (but delayed) transition risks but similar physical risks in the long term	No or little policy action for many years Growing fears over ultimate consequences leads to market uncertainty and price adjustments Ineffective and piecemeal action increases uncertainty Transition risks exceeded by physical risks

Assumes a high likelihood of achieving an emissions trajectory consistent with limiting the average global temperature increase to at or below 2°C The intensity of the disruption is high and immediate	Assumes a high likelihood of achieving an emissions trajectory consistent with limiting the average global temperature increase to at or below 2°C The intensity of the disruption is high and in the medium term	Assumes a very low likelihood of achieving an emissions trajectory consistent with limiting the average global temperature increase to at or below 2°C The intensity of the disruption is very high and in the long term

Climate scenarios – Conclusions

We've performed climate scenario analysis in line with the TCFD regulations, the results of which are summarised in Appendix 1. We have discussed with our adviser the limitations of the climate scenario modelling, and we're working with them to develop a method to better reflect more extreme climate scenario shocks and their impact on the Schemes' ability to achieve its long-term objective. We intent to include this in our report next year.

Our intention is to carry out climate scenario analysis on at least a triennial basis, alongside each investment strategy review. In addition, we will consider annually the merit of refreshing the climate scenario analysis and introducing additional stressed scenarios as appropriate.

Climate Transition Value at Risk (CTVaR)

The fiduciary manager has developed a methodology to consider the potential value lost (or gained) by companies in the transition to a low-carbon economy. CTVaR is used to better understand how the Schemes' investments are exposed to climate transition risk and assesses the financial impact of climate change.

This metric employs bottom-up scenarios to assess the effect of changes to policy, technology and consumer behaviours. It models the financial impact of climate transition on businesses assets and gives us a useful guide to understanding the true impact on the composition of the Schemes' investment strategy.

CTVaR measures how much a company would be revalued or a company's market cap repriced based on a full climate transition; this should drive investment to companies and segments that will lead the transition. This analysis compares the expected Value at Risk (VaR) from a well below 2°C scenario materialising versus a business-as-usual scenario. Therefore, it lets us better manage and mitigate the transition risks that could affect various aspects of the investment strategy.

CTVaR also addresses many of the limitations of existing carbon metrics. This is a forward-looking tool that examines how companies are positioned to manage transition risk, rather than focusing on historical carbon emissions data. It also considers the impact of the transition to a low-carbon economy on asset prices, rather than focusing solely on carbon emissions as a proxy for climate risk. This metric calculates the financial risks and opportunities of the climate transition by assessing the vulnerability of company cashflows to climate-related risks and the potential tailwind for companies providing climate solutions.

Risk management

The processes we use for identifying and assessing climate-related risks

We have identified climate change as one of our top priorities. The importance we place on managing and mitigating climate-related risks has been relayed to WTW and forms the basis of ongoing engagement.

Climate-related risks can be identified by various parties, including the Trustee board, its sub-committees, investment managers, fiduciary manager or the Schemes' advisers. ESG risks can be identified via the following processes:

- **Individual mandates and investments**
    - Investment managers developing processes to identify existing ESG risks and adopting a forward-looking approach to identify emerging risks.
    - WTW is tasked with engaging with the underlying investment managers to ensure their processes are appropriately developed to identify and assess these risks. We expect the Schemes' investment managers and fiduciary manager to identify and disclose these risks in the following ways:
        - During their presentations when meeting with the Trustee board or sub-committees
        - During dedicated ESG-focused training sessions
        - As part of the fiduciary manager's quarterly FundWatch reports
        - By providing climate metric data in line with the TCFD requirements
        - By providing any relevant scenario analysis
    - We note that WTW has developed a proprietary climate transition VaR methodology, which they use to support their decision-making.
- **Investment strategy reviews**
    - Investment advisers are tasked with incorporating ESG considerations into their advice when discussing the long-term evolution of the investment strategy. We've emphasised our expectation that long-term strategic evolution advice papers cover ESG risks and highlight any key risks that could materialise in any potential strategy amendments.
- **Asset classes**
    - When assessing the merits of introducing new asset classes or retaining existing exposure, potential ESG and climate risks will be assessed by the fiduciary manager. The fiduciary manager will notify the Trustee board of any material conclusions from their assessment as they deem appropriate, including exceptional engagement activity or divestment.
- **Selection of investment managers:**
    - When appointing a new manager, the capabilities of the investment managers from an ESG perspective are assessed by the fiduciary manager. The fiduciary manager considers in advance whether climate-related risks and opportunities are appropriately integrated within the manager's investment philosophy.

- **Actuarial valuation**
    - ESG risks are analysed as part of the triennial valuation. The actuarial adviser provides comments on the impact from ESG factors on the valuation of the Schemes' liabilities.
    - Climate scenario analysis is undertaken to assess the potential impacts of climate-related risks on the funding and investment strategy.
- **Covenant**
    - The covenant advisers are tasked with summarising ESG and climate risks to the employer and the implications that this may have over different time periods on the strength of the covenant.
    - Potential impacts will be factored into the development of our funding and investment strategy.

We receive detailed reporting quarterly, which covers climate and other metrics across the different portfolios. Some of these are included in the metrics and targets section below. Each metric is then assessed under a 'red-amber-green' traffic light system to draw out areas of concern. We have worked extensively with WTW and Hymans Robertson in developing reporting tailored to our needs. We appreciate that accurately assessing and calculating climate-related risks is continually evolving, and techniques to measure these risks are still developing. Over the last year, improvements in data quality have meant that we have increased the number of metrics monitored within our standard reporting. For example, WTW has included additional alignment and climate solution metrics in recent reporting. We have a metrics deep-dive session scheduled for Q4 2023.

The process we use for managing climate-related risks

Climate change prioritisation has formed the basis of our dialogue with WTW and Hymans Robertson and shaped our policies and processes (including reporting, as mentioned above). We manage risk in the Schemes through our risk register and via ongoing strategic discussions with WTW and Hymans Robertson. These include the investment risks required to have the highest level of confidence in delivering the long-term objective.

We've gone to great lengths to become comfortable that WTW is embedding climate risk as part of their investment process and when assessing investment managers for inclusion within the RS and CDI portfolios. We note the following about the way in which our assets are selected and then overseen via the exercise of stewardship:

- Long-term asset themes relating to sustainability (eg transition to a low-carbon economy) are developed by WTW's asset research team and ultimately feed through into asset manager selection and portfolio weightings.
- Sustainability represents the joint second highest-weighted factor in WTW's portfolio construction process (12.5%), with only financial risk/return having a higher weighting.
- As noted above, WTW has developed its own proprietary analysis of climate-related risks (Climate VaR) to support its decision making.
- WTW have made a commitment to aligning all client portfolios to be net zero by 2050, with the aim of halving carbon emissions by 2030.
- WTW have appointed Hermes equity ownership services (Hermes EOS) to provide proxy voting advice and corporate engagement for the Schemes' equity holdings, as well as public policy engagement. We have an opportunity, via WTW, to input to the voting and engagement priorities of Hermes EOS. Hermes EOS has climate change as its number one priority, consistent with one of the Trustee's main priority areas.

- WTW are willing to downgrade and remove a manager if insufficient progress (relative to an agreed engagement action plan) is made on RI or stewardship issues.

We also expect our underlying managers to exercise stewardship to help reduce climate-related risks, and for WTW to oversee this and report back to us. Our voting policy makes clear that we expect votes on resolutions related to climate and other environmental actions to be considered carefully based on the specific request being made and the context of the company in question. We expect a high level of support for votes requiring greater disclosure or setting a business transition strategy consistent with the Paris Agreement. WTW is expected to monitor this and explain any cases where such votes are not supported.

We expect engagement with underlying company entities to take place on our behalf, and we receive reporting from WTW to provide comfort that this is the case. Our objective for climate change to be prioritised has been shared with WTW. In the case of EOS, which WTW have appointed to conduct engagement on behalf of the majority of our equity holdings, climate change is also the number-one priority. When reviewing the engagement undertaken by WTW and its stewardship partners, the Trustee board focuses on the topics discussed, agreed action plans and monitoring protocols, rather than the number of engagement activities undertaken.

How our processes for identifying, assessing and managing climate-related risks are integrated into our overall risk management framework

The Financial Strategy Committee (FSC) sets the funding strategy for the Schemes, taking an integrated risk-management approach, with input from covenant, investment and actuarial advisers. Part of the FSC's role involves conducting scenario analysis for the Schemes, which includes the impact of various climate scenarios. The latest scenario analysis is set out in the previous section.

The FSC receives covenant advice quarterly and, during the last year, considered the stressed market events that would impact both the Schemes' investment strategy and the strength of the sponsor covenant. As part of the quarterly covenant updates, our covenant adviser assesses key risks (such as car electrification, semiconductor supply challenges and the importance of China) and the extent to which the investment strategy could mitigate these risks to the covenant. We consider the funding and investment implications of such risks as part of our quarterly FSC meetings.

The FSC sets the risk budget for the Schemes, while the implementation of investment strategy is delegated to the IIC. Both the IIC and FSC cover responsible investment matters following the integration of RIWG work into the business plans of both groups. This includes the integration of climate change within the Schemes' investment strategies. This work is reported back to the wider Trustee board to ensure that their work is fully integrated.

Metrics and targets

The metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process

We receive reporting quarterly, covering various climate-related metrics. We believe it's important to consider metrics on a holistic basis, covering both forward- and backward-looking metrics. We focus on metrics that help us better understand the risks faced and make informed decisions about the resulting actions to be taken. All metrics are used to assess the portfolio and challenge WTW. Metrics are analysed separately for the RS portfolio and CDI portfolio to identify the key priorities for different components of the investment strategy.

This report focuses on the mandatory metrics that all schemes are asked to monitor and report against for TCFD purposes. We appreciate that no single metric is perfect, and therefore we monitor a suite of metrics as part of our broader RI dashboard. This approach enables us to take a comprehensive view of the risks facing the Schemes' investment strategy. In addition, this approach enables us to focus on specific metrics within certain aspects of the portfolio, should a metric not be trending in the desired direction or not progressing as quickly as desired or agreed. Therefore, these metrics aim to identify trends and investigate certain areas where necessary.

The metrics considered within this report are summarised below:

Type	Metric	Measurement
Absolute emissions metric	Total Greenhouse Gas (GHG) emissions	The volume of scope 1 and scope 2 emissions from the Scheme's assets – measured in tons of CO2e.
Emissions intensity based metric	Carbon footprint	The volume of scope 1 and scope 2 emissions per unit of capital invested from the Schemes' assets – measured in tons CO2e per $m invested.
	Weighted Average Carbon Intensity (WACI) – assessment of the efficiency of portfolio carbon emissions.	The volume of scope 1 and scope 2 emissions per unit of sales for each portfolio company, weighted by the size of allocation to each company within the Schemes' assets – measured in tons CO2e per $m sales.
Additional climate change metric (non-emissions based)	Data quality – A measure of the level of actual data available from the Schemes' managers.	Measured per mandate: % of mandate for which actual data (relative to estimated data) has been used to calculate carbon footprint.
Portfolio alignment metric	Science based targets	Measured as the % of underlying assets with science-based targets for transition to a low carbon economy.

Emissions data we have gathered so far (Scope 1 and 2 only)

Data in respect of our RS and CDI portfolios is provided by WTW, in their capacity as fiduciary manager for both portfolios. The below table provides an illustration of the data analysed for each plan/scheme

Metric (31 March 23)	Land Rover		
	RS	CDI	LDI*
Total carbon emissions	95,454 tCO2e	81,115 tCO2e	47,591 tCO2e
Carbon footprint	97 tCO2e / $m invested	52 tCO2e / $m invested	55 tCO2e / $m invested
WACI	262 tCO2e / $m sales	124 tCO2e / $m sales	122 tCO2e / $m sales
Data quality	69.6%	46.5%	96.7%
Science based target	38.1%	46.2%	N/A

**the climate data for the LDI portfolio solely considers government bonds, index-linked government bonds and cash. This data excludes any derivatives held in the portfolio.*

Metric (31 March 23)	JPP		
	RS	CDI	LDI*
Total carbon emissions	83,351 tCO2e	94,030 tCO2e	30,916 tCO2e
Carbon footprint	100 tCO2e / $m invested	48 tCO2e / $m invested	54 tCO2e / $m invested
WACI	272 tCO2e / $m sales	113 tCO2e / $m sales	121 tCO2e / $m sales
Data quality	73.6%	44.7%	96.2%
Science-based target	39.5%	47.7%	N/A

**the climate data for the LDI portfolio solely considers government bonds, index-linked government bonds and cash. This data excludes any derivatives held in the portfolio.*

Metric (31 March 23)	JEPP	
	RS	LDI*
Total carbon emissions	6,658 tCO2e	3,346 tCO2e
Carbon footprint	86 tCO2e / $m invested	56 tCO2e / $m invested
WACI	170 tCO2e / $m sales	125 tCO2e / $m sales
Data quality	66.4%	97.5%
Science-based target	49.8%	N/A

**the climate data for the LDI portfolio solely considers government bonds, index-linked government bonds and cash. This data excludes any derivatives held in the portfolio.*

These metrics are monitored quarterly. As part of the reporting provided by WTW, a heatmap is applied to certain metrics to identify trends and progress relative to the agreed comparators. We accept that there is a large degree of subjectivity with respect to the thresholds selected for each metric. Therefore, we have agreed that the colour heatmapping will be monitored and revised over time, as appropriate.

The latest analysis shows that the RS and CDI portfolios are performing broadly in line with their comparators across most metrics analysed. The carbon emissions across the RS and CDI portfolio have increased from last year's report due to the Schemes' allocation to private markets being a higher proportion of the funds after the sale of more liquid holdings to support collateral requirements following the increase in gilt yields over the last 12 months. Illiquid private markets tend to have a higher structural carbon footprint relative to other asset classes, which explains the increase in carbon emissions within the RS portfolio.

The WACI metric is higher for both the RS and CDI portfolios relative to the comparator used – this is primarily due to assets held within the portfolio. For example, the comparator used for the CDI portfolio is a sterling corporate index, while the CDI portfolio consists of secure income assets, alternative credit and corporate bonds. Adjusting for the types of assets held within the investment strategy, we are comfortable that the WACI figure for the Schemes' investment strategy is good relative to its peers. In addition, the reporting provided as at 31 March 2023 represents a snapshot of the portfolios during a transitionary period to the new target allocation. Consequently, this reporting is not necessarily representative of the portfolio characteristics in the longer term.

There is a session scheduled for Q4 2023 to discuss the RI reporting provided by the fiduciary manager and how this can be evolved so that we can more easily monitor the Schemes' progress against their net zero targets. Furthermore, this session will explore if there are any other additional metrics that should be used in standard reporting, or whether the existing metrics need to be refined to align with best practice. We're aware that best practice is continually evolving, and so agreed that the metrics assessed will be monitored on an ongoing basis.

The LDI emissions data solely considers physical holdings ie government bonds and cash. More specifically, this analysis excludes any derivatives held in the portfolio. Given the nature of the assets held in the LDI portfolios, the funds are performing in line with expectations from an emissions perspective. LGIM has been inputting into the Investment Consultants Sustainability Working Group (ICSWG) to provide their views on the Partnership for Carbon Accounting Financials (PCAF) guidance published in 2022. It provides detail on how carbon emissions should be accounted for within derivative contracts. LGIM strives to ensure full transparency to meet regulatory requirements in this space.

We have not reported on Scope 3 emissions. Following confirmation from our fiduciary manager that meaningful data continue to be very limited in terms of both coverage and quality and therefore are not a reliable assessment of the Schemes' emissions. Our fiduciary manager is working on our behalf to improve the coverage of scope 3 emissions across our holdings.

The targets we have set to manage climate-related risks and opportunities

We have agreed to set a target in relation to the CDI portfolio due to its expected importance in the long-term investment strategy for the Schemes. Specifically, we have set a target of reducing carbon emissions intensity by 2030 (relative to 2019 levels). This target was set after considering various components:

- What is the company's position?
    - While reviewing the sustainability targets for Jaguar Land Rover is useful, we believe that it is appropriate to set targets in the context of our own RI beliefs and strategic objectives.
- What climate pledges have been made by our fiduciary manager?
    - WTW has already announced a goal of reducing carbon emissions by 50% from 2019 levels by 2030. In addition, they have committed to doubling the allocation to climate solutions in the investment strategies that they manage.
    - We have considered whether there is merit in adopting a more aggressive and challenging target than that set by our fiduciary manager. This focused on whether having an earlier target date will change behaviours in a manner that is in our best interest. We concluded that currently alignment with the fiduciary manager is appropriate.
- What limitations are there with respect to setting targets?
    - We considered the expected evolution of the investment strategy as we approach our long-term time horizon and whether this will impede our ability with respect to setting targets.
    - We analysed data availability and the use of proxy information in certain asset classes and whether certain metrics might be overstated or understated by data challenges.

As discussed earlier in this section, there is a dedicated session in Q4 2023 to discuss progress relative to the carbon emission intensity metrics. Furthermore, we intend to use this session to identify asset classes where tangible improvements can be made from a carbon-emissions perspective. This session will then be used as an engagement tool with the Schemes' underlying investment managers and key action plans will be shared as appropriate. This session will also be used to identify climate opportunities that can help the Schemes achieve their interim and long-term targets from an emissions-intensity perspective. We intend to share further information on this review as part of next year's TCFD report.

Appendix 1 – Scenario analysis – results and assumptions

Scenario analysis results based on the Schemes' assets and market conditions as at 31 March 2023.

LRPS

Probability of being 100% funded on CDI basis			
	Short term 3 years	**Medium Term 11 years**	**Long term 22 years**
Current strategy	**Base: 69%** Green Revolution: 70% Delayed Transition: 68% Head in the Sand: 70%	**Base: 72%** Green Revolution: 73% Delayed Transition: 75% Head in the Sand: 73%	**Base: 73%** Green Revolution: 73% Delayed Transition: 74% Head in the Sand: 73%

Average Funding level of 5% worst case modelling outcomes			
	Short term 3 years	**Medium Term 11 years**	**Long term 22 years**
Current strategy	**Base: 87%** Green Revolution: 88% Delayed Transition: 88% Head in the Sand: 86%	**Base: 76%** Green Revolution: 77% Delayed Transition: 79% Head in the Sand: 75%	**Base: 48%** Green Revolution: 54% Delayed Transition: 52% Head in the Sand: 41%

JPP

Probability of being 100% funded on CDI basis			
	Short term 3 years	**Medium Term 11 years**	**Long term 22 years**
Current strategy	**Base: 86%** Green Revolution: 87% Delayed Transition: 87% Head in the Sand: 85%	**Base: 83%** Green Revolution: 84% Delayed Transition: 85% Head in the Sand: 81%	**Base: 82%** Green Revolution: 83% Delayed Transition: 82% Head in the Sand: 81%

Average Funding level of 5% worst case modelling outcomes			
	Short term 3 years	**Medium Term 11 years**	**Long term 22 years**
Current strategy	**Base: 92%** Green Revolution: 93% Delayed Transition: 92% Head in the Sand: 91%	**Base: 81%** Green Revolution: 83% Delayed Transition: 83% Head in the Sand: 81%	**Base: 59%** Green Revolution: 63% Delayed Transition: 62% Head in the Sand: 52%

JEPP

Probability of being 100% funded on TP basis			
	Short term 3 years	**Medium Term 11 years**	**Long term 22 years**
Current strategy	**Base: 70%** Green Revolution: 64% Delayed Transition: 69% Head in the Sand: 70%	**Base: 73%** Green Revolution: 72% Delayed Transition: 72% Head in the Sand: 69%	**Base: 78%** Green Revolution: 78% Delayed Transition: 79% Head in the Sand: 75%

Average Funding level of 5% worst case modelling outcomes			
	Short term 3 years	**Medium Term 11 years**	**Long term 22 years**
Current strategy	**Base: 85%** Green Revolution: 84% Delayed Transition: 85% Head in the Sand: 85%	**Base: 67%** Green Revolution: 64% Delayed Transition: 69% Head in the Sand: 63%	**Base: 7%** Green Revolution: 2% Delayed Transition:15% Head in the Sand: 0%

The analysis has been conducted by Hymans Robertson on our behalf. Their Economic Scenario Service (ESS) model produces stochastic projections for a wide array of asset class returns and other economic factors, which can be used as part of any quantitative risk management exercise. The ESS models are regularly updated to capture the latest market conditions and are maintained and documented by a dedicated specialist team. The models don't make explicit assumptions for climate change or any other economic/political factors like trade wars, pandemics, etc.

However, climate change can be factored in indirectly by weighting the existing ESS outputs to 'tilt towards' possible climate scenarios. For each climate scenario, each of the 5,000 trials run for the ALM exercise is assigned a specific weight – one weight per trial per model calibration date. Weights are determined to achieve higher volatility in the periods specified. In each scenario (green revolution, delayed transition and head in the sand), a disruptive period of high volatility is assumed. This disruption is either linked to the response to climate risk (transition risks) or the effects of it (physical risks). The specific volatility criteria used for each of the scenarios is summarised in the below table:

ESS input	Volatility criteria			
	Year 1-5	Years 6-10	Years 11-15	Years 16-20
Green revolution	Very high	Moderate	Moderate	
Delayed transition		Very high	High	
Head in the sand			High	Very high

The impact of climate change on longevity and sponsor covenant is **not** included in the analysis.

Appendix 2 – metric explanation

Absolute emissions

The formula for this metric attributes a share of each underlying investment's GHG emissions to the Schemes based on the Scheme's share of that investment, as follows:

$$\sum_{i=1}^{i=n} \frac{Scheme's\ value\ of\ asset_i}{Total\ equity\ and\ debt\ of\ asset_i} \times GHG\ emissions\ of\ asset_i$$

This metric is dependent on the issuer's disclosure of its GHG emissions – the GHG emissions used for the RS portfolio and CDI portfolio considers only Scope 1 and Scope 2. While this metric is relatively straightforward to calculate and communicate, there is no normalisation between funds. Subsequently, it's important to consider carbon intensity metrics.

Carbon footprint

The carbon footprint is effectively the total GHG emissions normalised by the size of the portfolio. The formula used for this metric is as follows:

$$\frac{\sum_{i=1}^{i=n} \left(\frac{Scheme's\ value\ of\ asset_i}{Total\ equity\ and\ debt\ of\ asset_i} \times GHG\ emissions\ of\ asset_i \right)}{Current\ portfolio\ value}$$

This metric provides the Scheme with the ability to monitor relative carbon intensity at an overall strategy level, sector level and company level. However, this metric does not take into account differences in the size of companies and hence the importance to monitor this metric in conjunction with Weighted Average Carbon Intensity (WACI).

WACI

The weighted average carbon intensity measures the exposure to carbon intensive assets expressed in tons of CO2e per millions of pounds of revenue. The formula used for this metric is as follows:

$$\sum_{i=1}^{i=n} \left(\frac{Scheme's\ value\ of\ asset_i}{Current\ portfolio\ value} \times \frac{GHG\ emissions\ of\ asset_i}{Issuer's\ revenue_i} \right)$$

This metric relies on historical carbon data and analysis and is, therefore, backwards looking. This means that it doesn't take into account any action plans that companies have agreed to reduce their carbon emissions or achieve environmental objectives. Therefore, this metric needs to be reviewed in conjunction with forward looking metrics.

Portfolio alignment – Science-based targets

The proportion of the portfolio that is covered by science-based targets, as verified by the Science Based Targets Initiative (SBTi).

Data quality

The formula used for this metric is calculated as the percentage of the portfolio for which emissions data has not been estimated. The purpose of this metric is to consider how often actual holdings data has been used relative to estimated data in order to determine the accuracy of the information.

Appendix 3 – Climate Scenario Modelling – Reliances and Limitations

This modelling is a form of asset-liability modelling (ALM).

The Trustee's adviser's ESS (Economic Scenario Service) produces stochastic projections for a wide array of asset class returns and other economic factors, which can be used as part of any quantitative risk management exercise – whether that be carrying out ALM, strategic asset allocations (SAA), or any other exercise designed to quantify financial risk exposure. The ESS models are regularly updated to capture the latest market conditions and are maintained and documented by a dedicated specialist team. The models don't make explicit assumptions for climate change or any other economic/political factors like trade wars, pandemics, etc.

However, climate change can be factored in indirectly by weighting the existing ESS outputs to 'tilt towards' possible climate scenarios. For each climate scenario, a weight is calculated for each of the 5,000 projections run for the ALM exercise so that the projections with higher volatility in the specified time period are emphasised in that scenario.

All scenarios involve a period of 'stress', which happens at different points over the selected modelling horizon. Each period of stress encompasses a combination of transition and physical risks, but whereas the early periods are assumed to be nearly all transition risk, the later periods include more physical risk as the impact of climate change is felt. It has, therefore, been assumed that the later the stress happens, the more intense the climate risk impact will be.

The approach taken is to assess the impact of climate change on the whole range of projected outcomes for the Group's funding position (assets and liabilities combined) and the Trustee has not carried out detailed analysis of the impact on the assets and liabilities independently. The impact of the various scenarios tested is that the range of funding outcomes becomes wider and more uncertain, rather than having a direct impact on Group assets or liabilities independently.

Please note that the impact of climate change on longevity and sponsor covenant is **not** included in the analysis.