Railways Pension Schemes Combined TCFD Report 2022

Contents

Chair's message to members

Dear Member,

This is the second round of detailed reporting on how the railways pension schemes are managing the financial risks relating to climate change. This year, we have combined our reporting into a single document, saving over 21,000 words of duplicative content, and providing for more accessible material for members.

Aside from meeting the expectations of government regulation, and the recommendations of the Taskforce on Climate-related Financial Disclosures (TCFD), the report below explains how the Trustee has done what it said it would do last year, including: analysing the most carbon-intensive companies in the investment portfolio; doing more to understand "physical climate risk"; continuing to engage and understand the climate transition journeys of sponsoring employers, and; searching for new investment opportunities that support a lower carbon future.

Some of the language in this report is difficult to understand. The complexity of the railways pension schemes and the level of detail required of TCFD reports mean that this is by necessity a very long report. We have tried to ease the reader's burden by providing a summary for members (Section 2), and a helpful Glossary (towards the back of the document).

Railways Pension Trustee Company Limited (RPTCL), the corporate Trustee of the railways pension schemes, is focused on our mission to pay pensions securely, affordably, and sustainably. The physical effects of climate change, and the policy and technological measures introduced to mitigate climate-related damages, are likely to have financial consequences for investors. In fact, the analytics in this report suggest we have a vested interest in supporting a lower temperature outcome, as this would benefit – economically as well as societally – the 350,000 members on whose behalf we invest. Climate change remains one of the most pressing issues of our time.

We are supported in managing climate risks by our wholly-owned subsidiary Railways Pensions Investments Limited (Railpen). Railpen's purpose ('to secure our members' future'), governance, and operating arrangements ensure a good degree of alignment with the Trustee's mission, giving us both a clear line of sight of our shared objectives.

At the time of writing, the UK is going through a cost of living crisis. A crisis like this makes the importance of providing a decent income in retirement even more stark. Failing to act – and act equitably – on climate change could exacerbate inequalities, as poorer people are more vulnerable to the impacts of a changing climate and a changing economy. As you will read below, it is the Trustee's intention to ensure good governance, make the schemes resilient to climate risks, remain alive to investment opportunities, and remain supportive of a just transition in line with the goals of the Paris Agreement on Climate Change.

I hope you enjoy reading the report.

Signed,

Christine Kernoghan
Chair, RPTCL

1. About this report

The purpose of this report is to explain the governance and actions taken by the Trustee in identifying, assessing and managing climate-related risks and opportunities. The report fulfils the requirements of the Occupational Pension Schemes (Climate Change Governance and Reporting) Regulations 2021, Occupational Pension Schemes (Climate Change Governance and Reporting) (Miscellaneous Provisions and Amendments) Regulations 2021, and the new requirements detailed in the Occupational Pension Schemes (Climate Change Governance and Reporting) (Amendment, Modification and Transitional Provision) Regulations 2022 (taken together: "the Regulations"), which are themselves designed to align with the recommendations of the Taskforce on Climate-related Financial Disclosures[1]. In preparing this year's report we have considered and acted upon TPR's direct and general industry feedback.

The schemes in scope for this report are: the Railways Pension Scheme ("RPS") and the British Transport Police Force Superannuation Fund ("BTPFSF") and the report content refers to both schemes unless otherwise stated. The RPS is comprised of six parts (including defined benefit (DB) and defined contribution (DC) arrangements) with over 100 individual underlying sections[2]. The BTPFSF is a registered pension scheme providing DB and DC benefits (in respect of its Additional Voluntary Contribution (AVC) arrangements). Both schemes are administered by the same Trustee, invest in the same collection of pooled funds, and are managed to the same climate governance arrangements. Therefore this year's TCFD Report combines the content for both schemes into a single document, making it clear throughout if metrics or narrative reporting refer to one particular scheme in isolation.

The railways pension schemes are among the most complex in the UK, with over 100 individual sections servicing many different benefit arrangements. To simplify the governance and reporting of climate-related risks, the Trustee has availed itself of flexibility within the statutory guidance[3] to group similar sections, though our groupings have evolved slightly since last year, with the current groupings shown in Table 1.1 on the right. The level at which the activities under "Strategy" and "Metrics" are carried out is further explained in sections 4.2 and 5.4.1.

Table 1.1: Level at which sections and arrangements are grouped for reporting purposes

Reporting Content	Level (s) at which information is reported
Climate metrics	Section level Pooled Fund level Scheme level/ Arrangement level Total schemes level
Scenario analysis (asset side)	Pooled Fund level
Scenario analysis (liability side)	Scheme level Grouped-section level
Covenant	Sector level Employer level (in some cases)

The TCFD Recommendations – and therefore the Regulations and associated statutory guidance – are structured around four pillars:

(i) Governance

(ii) Strategy

(iii) Risk management, and

(iv) Metrics and targets

In structuring our report, we have found it expedient – in terms of the ease with which members could engage with the report – not to structure the report in a way that progresses sequentially from (i) to (iv). Instead, we have prepared our disclosure in such a way as to maintain readability, though we provide an index at the back of the document for those wishing to look up particular statutory or TCFD reporting requirements.

All data in this report are as of 30 December 2022 unless otherwise noted.

Day-to-day operation of the railways pension schemes is delegated to Railway Pension Investments Limited (Railpen), a subsidiary wholly owned by the Trustee. Railpen undertakes a significant amount of climate-related activities on the Trustee's behalf. This is reflected in the content of this report, which includes references to activities carried out both by the Trustee and by Railpen.

Further information in relation to Railpen's approach to climate change can be found at railpen.com and in Railpen's Net Zero Plan.

[1] *https://www.fsb-tcfd.org*

[2] *Please see the Annual Report and Accounts for more detailed information.*

[3] *Governance and reporting of climate change risk: guidance for trustees of occupational schemes", Department for Work and Pensions, June 2021, amended and re-published October 2022.*

1.1 Internal Audit

Whilst not a mandatory requirement to seek assurance over the TCFD report, Railpen's Internal Audit team was engaged on the Trustee's behalf to undertake work on the report prior to publication. This team is independent, objective and has an extensive track record in providing challenge and insights across the wider Railpen business, in conformance with the International Standards for the Professional Practice of Internal Auditing ('the Standards') and the Chartered Institute of Internal Audit's guidance, 'Effective Internal Audit in Financial Services'. An internal review of this report was chosen owing to the Internal Audit team's extensive experience and the value that this would add to the process.

The objective of this review was to provide assurance over the Trustee's TCFD report and an independent and objective view on the process, content and statements made within the report. This was approached through review of a sample of assertions made within the report, to evaluate the statements made and the evidence the organisation holds to support making these specific disclosures. Internal Audit provided challenge and found that, for the sample of assertions tested, these were supported by clear evidence.
A number of recommendations were raised around specific figures or language used in the report, and the resulting suggested amendments were applied within the final version of the report.

Internal Audit also reviewed the TCFD report in consideration of the requirements of the updated Statutory Guidance, relating to "Portfolio Alignment Metric", to assess if these had been met. This review demonstrated alignment where relevant, to this section of the guidance.

2. Summary for members

Climate-related risks are financial risks. Over the long term, companies, consumers, and the financial industry are likely to have to adapt to new and bold climate policies like carbon taxes, or adapt to the potentially catastrophic consequences of uncontrolled climate change like sea level rises and increasingly frequent extreme weather, or a mixture of both.

Whilst climate risk is likely to play out over many decades to come, its effects are already evident both in the dramatic and tragic weather events you might see on the news and, from time to time, in financial markets. There is some evidence that investors have decided they have enough certainty about the future evolution of, for example, energy policy that they have begun to factor climate change issues into the way they buy and sell financial assets. Attending to climate risk is part and parcel of an investor's 'fiduciary duty' – the promise to act in the best interests of the person whose money is being invested.

Climate risks have the potential to affect almost every sector, region, and asset class, depending on how the risks play out. This makes climate risk a systemic risk, because its effects are likely to be felt by a large part of the financial system, rather than being localised to one or two areas. This means long-term investors like pension funds are unlikely to be able to completely avoid climate risks by simply refusing to invest in certain sectors or countries.

The Trustee of the railways pension schemes treats climate risk with the seriousness it deserves. As we explain in this, our second "TCFD[4] Report", the effects of climate change could impact three key areas of pension schemes like ours:

- **Threats to the employer covenant**: the pension fund depends on ongoing contributions from your employer. If your employer turns out to be vulnerable to climate risks, this could threaten the employer's ability to contribute in the future.
- **Threats to scheme liabilities**: the liabilities of the schemes – the amount of cash we need to pay out in pension benefits over a long period of time – might be affected by climate change if, for example, changes in weather patterns affect life expectancy in the UK. This is very hard to predict, but is something pension funds need to monitor.
- **Threats to investment returns**: a large part of our members' pension is provided by investment returns which are generated when Railpen, the scheme's investment manager, invests money on your behalf. Railpen is well-regarded for taking a leading approach to climate change issues, but the possibility remains that climate-related risks could affect the amount of investment return generated by investing the schemes' assets. Trustees and their investment managers need to take account of this.

The railways pension schemes are among the largest and most complex schemes in the UK. Good governance is essential when managing complexity. Since last year's report, we have updated our Statement of Investment Principles (our policy document which outlines our approach to climate change, among other things), updated the questions that will inform future Board skills assessments to include climate change, and Railpen added to the climate expertise on its principal investment committee. You can read much more about climate governance in section 4 of this report.

[4] *TCFD stands for Taskforce on Climate-related Financial Disclosures, a body that has recommended a reporting structure for organisations wanting to make a disclosure about climate change. Starting in 2022, large UK pension funds are required to produce a report that complies with the recommendations of the TCFD.*

We have a framework for managing climate risks that spans the climate-related threats to covenant, liabilities, and investment returns. As we explain later in this report, this has, in 2022, included a range of activities. A summary is included in the table to the right.

Covenant	On our behalf, Railpen has assessed and keeps under review the way in which climate risks affect and are affected by (i) UK policy, (ii) sectoral issues in the rail industry, and (iii) particular issues at individual employers. This provides the Trustee with a valuable assessment of climate risks to the scheme's employers. In this year's report we have significantly expanded the detail on the extent to which climate change poses a risk – or, more likely in case of rail, an opportunity – to employer covenant, drawing on the sector-specific risk information Railpen's Employer Covenant team has gathered over the past year. You can read more about this in section 5.2.
Liabilities	To improve our understanding of the sensitivity of the schemes' liabilities to climate risks, we undertook 'climate scenario analysis' in 2022. This means we made assumptions about the ways in which climate change might play out over the long term, then considered the potential impacts to the schemes' liabilities. In particular, we reviewed the impacts that climate change might have on life expectancy. While the results of the analysis suggested the impact of climate change on liabilities is likely to be relatively low, the relationship between climate change and life expectancy is inherently unpredictable, so we will be monitoring this again in the future. We compared the impacts climate change might have on liabilities to the impacts it might have on investment returns. The results suggest that climate change might have a bigger impact on investment returns than on liabilities. You can read more about this in section 5.3.
Investments	Working on the Trustee's behalf, Railpen incorporates climate risks and opportunities into the investment management process. Briefly put, Railpen aims to reduce climate-related risks, and identify climate-related opportunities, because it is likely that doing so would support the Trustee's mission to pay pensions securely, affordably, and sustainably. This includes: ■ excluding companies we think might face elevated risks of asset stranding, such as thermal coal and tar sands companies ■ incorporating assessments of climate risk and net zero alignment into investment decisions using a framework and tool developed in-house: since last year we have increased the scope of our analysis of 'physical' climate risks ■ engaging companies and voting at company AGMs in a way to hold companies to account for the management of climate risks and the transition to 'net zero' ■ overseeing external fund managers to make sure they meet our own high standards on climate change issues You can read more about this in section 5.4.

In December 2022, the investment portfolio of the railways pension schemes had a carbon footprint of c59 tonnes of greenhouse gases (GHGs) per £million invested. For the Railways Pension Scheme (RPS) in particular, the carbon footprint was 59, and for the British Transport Police Force Superannuation Fund (BTPFSF) in particular it was 57 tonnes of GHGs per £million invested. The slight difference between the RPS and BTPFSF carbon footprints is driven by the different investment strategies in the two schemes. This is significantly below the market average, because Railpen's portfolio managers tend to invest in lower carbon companies than the average. The carbon footprint has decreased by approximately 16% since December 2020.

The Trustee has adopted climate targets that, if achieved, should put the schemes on track to be "net zero" by 2050 or sooner. "Net zero" is a state in which the emissions created by the schemes' investments are very close to zero, and any leftover emissions are removed from the atmosphere either by natural or technological means. The schemes aim to halve their carbon footprint by 2030, and to have reduced them by 25-30% by 2025.

A significant amount of the schemes' assets are invested in renewable energy and other sectors that could benefit from the UK's transition to a greener economy. For example, we own two large wind farms in Scotland that produce enough energy to power around 50,000 homes. In January 2023, we completed our acquisition of a solar farm in Cambridgeshire which will produce clean energy sufficient to power a further 8,000 homes. Green investments can be attractive to long term investors like pension funds, providing the price of the investment makes financial sense. The transition to net zero could provide significant investment opportunities, and the scheme's investment manager continues to locate sustainable investments that match the needs of our members.

In producing this TCFD report, we have provided as much climate-related information as we have been able to source, but unfortunately investors are still some way away from having perfect information on climate risk. For example, reporting annual GHG data is not compulsory in most markets, meaning that plenty of companies do not tell investors the amount of GHGs emitted each year. It is not always possible to estimate a company's GHG emissions to plug gaps in the data. Issues like these mean that the carbon footprint data we provided above covers about three quarters of the investment portfolio of the railways pension schemes, rather than the whole lot. The Trustee and Railpen are members of several industry initiatives that support improvements in climate-related information (see section 6.4.2). More information should improve our ability to take action on climate risk, and keep our stakeholders better informed via the annual TCFD report.

We recognise that many readers may be encountering this topic for the first time, and we have tried to make this report as readable as possible to members. Writing a report on climate change, and its complex connections with pension investing, cannot be done without having to resort to concepts that are somewhat technical in nature and unfamiliar to many. We have tried to avoid jargon where we can, and we have provided a glossary of key terms to aid the report's readability.

Members who wish to contact the schemes or learn more about the schemes' approach to climate change are encouraged to email contactus@railpen.com

3. Climate change and its relevance to pension schemes

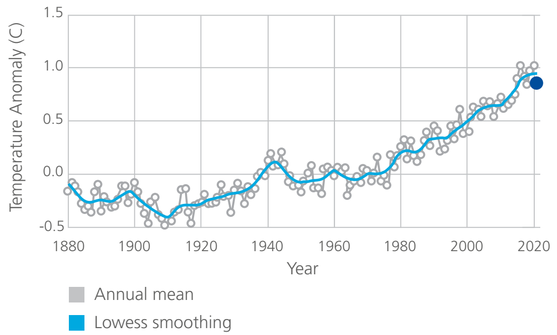
3.1 Climate change summary

The overwhelming scientific consensus is that the Earth's average surface temperature has risen by approximately 1°C since pre-industrial times and that this temperature rise has been caused by human activity, particularly the consumption of fossil fuels and changing how we use the land.

Figure 3.1.1: Historical average surface temperature rise for the Earth; Source: NASA

Global land-ocean temperature index

Data source: NASA's Goddard Institute for Space Studies (GISS)
Credit: NASA/GISS



Anthropogenic climate change is linked to more frequent and severe extreme weather events, the impacts of which are both societal and economic. Climate change is one of the greatest challenges of the present generation and, in the past few decades, has caused irreversible damage to our planet and way of life.

The impacts of human-induced climate change are not a phenomenon for tomorrow – they are visible today. Examples include wildfires in Australia and California, US hurricanes Katrina, Ida and Sandy, floods in Europe, UK and Asia, and increasing devastation in the global south. These events have resulted not only in devastation for current and future generations and their families, but also in cumulative historical costs of more than $1 trillion to the global financial system[5]. The future economic impact of climate change continues to be highly researched, with a 2021 study from University College London indicating that, by 2100, global GDP could be 37% lower when taking the effects of climate change on economic growth into account[6].

There is clear evidence that the pace of warming in recent decades has increased. The Earth's average land and ocean surface temperature in 2021 was 0.84°C above the 20th century average, the 45th consecutive annual rise since 1977. The years 2013-2021 rank as the warmest years on record.

Figure 3.1.2: Historical CO2 levels from 2005 to present; Source: NASA[7].

Direct measurements: 2005-present

Data source: Monthly measurements (average seasonal cycle removed)
Credit: NOAA

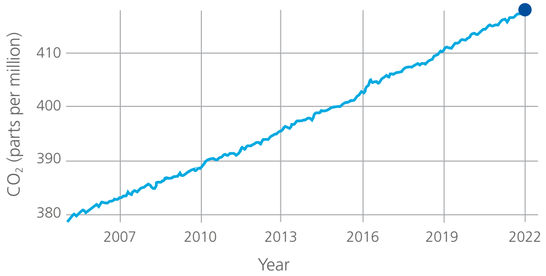
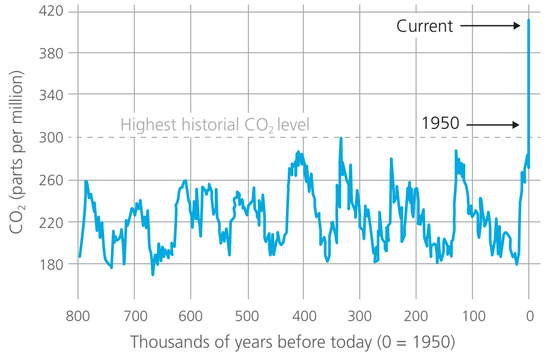


Figure 3.1.3: Historical CO2 levels from 800,000 years ago to present; Source: NASA[8].

Proxy (indirect) measurements

Data source: Reconstruction from ice cores
Credit: NOAA



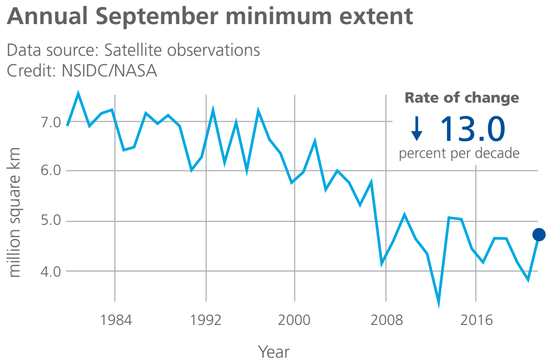
[5] *Source: Reuters, on climate change https://www.reuters.com/article/us-climate-change-companies-disclosure-idUSKCN1T50CF.*

[6] *Source: University College, London https://www.ucl.ac.uk/news/2021/sep/economic-cost-climate-change-could-be-six-times-higher-previously-thought*

[7] *Source: NASA; https://climate.nasa.gov/vital-signs/carbon-dioxide/, accessed May 2022*

[8] *Source: NASA; https://climate.nasa.gov/vital-signs/carbon-dioxide/, accessed May 2022*

Figure 3.1.4: Decline in annual minimum Arctic sea ice; Source: NASA[9]



The Intergovernmental Panel on Climate Change (IPCC) identified in its latest climate science synthesis report that it is now certain global temperatures will continue to increase until at least 2050[10].

Arctic sea ice reaches its minimum each September. The ice is now declining at a rate of 13% per decade, relative to the 1981 to 2010 average. Figure 3.1.4 shows the annual Arctic sea ice minimum each September since 1979, derived from satellite observations.

The evidence from climate science suggests that, over the coming decades, the impacts of global climate change will become worse as a result of historic human-induced GHG emissions. The extent of future climate change impacts will depend on our success in controlling global emissions over the coming decades. The average surface temperature in the UK has risen by 1.1°C since pre-industrial times, and further warming is predicted under all decarbonisation pathways set out by the IPCC. Whilst the Paris Agreement on Climate Change sets out an aim to limit warming to 1.5°C, current trends imply that warming up to 4°C is not implausible.

3.2 Physical, transition, and litigation risks

It has become common to follow the TCFD in sub-dividing climate-related risks into two major categories:

- physical risks – those related to the physical impacts of climate change, and
- transition risks – those related to the transition to a lower-carbon economy.

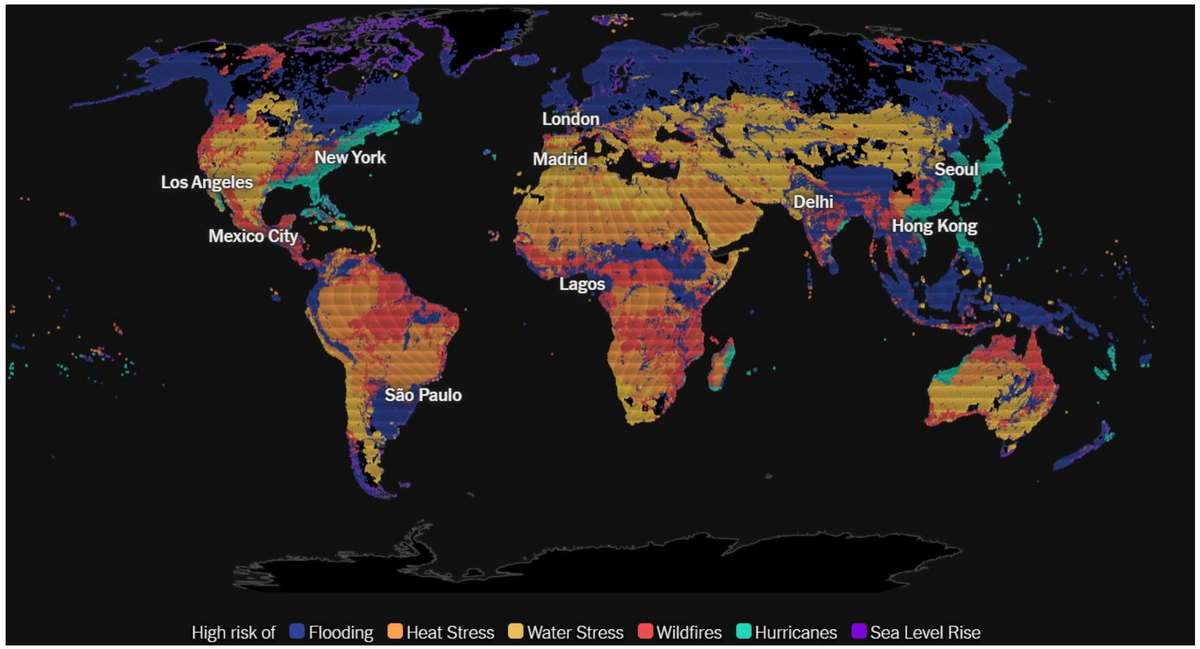
[9] *Source: NASA; https://climate.nasa.gov/vital-signs/arctic-sea-ice/, accessed May 2022*

[10] *Source: IPCC; https://www.ipcc.ch/sr15/chapter/spm/*

Figure 3.2.1: Definition of physical and transition risks

Physical risks	Transition risks
Physical risks are those that pertain to the physical impacts that occur as the global average temperature rises. For example, the rise in sea levels could have impacts such as flooding and mass migration. Physical risks can be event-driven (acute) or relate to longer-term shifts (chronic) in climate patterns. Physical risks have direct and indirect financial implications for companies, including damage to assets, impacts from supply chain disruption, water availability, sourcing, and quality, food security, extreme warming affecting premises, operations, supply chain, transport needs, and employee safety.	Transition risks arise as we seek to realign our economic system towards low-carbon, climate-resilient solutions. Transitioning to a lower-carbon economy may entail extensive policy, legal, technology, and market changes to address mitigation and adaptation requirements related to climate change. For example, this includes policies to phase-in (EV), phase-out (coal), subsidies, carbon tax. It also includes development of specific low carbon energy technologies. Depending on the nature, speed, and focus of these changes, transition risks pose varying levels of financial and reputational risk to organisations.

Figure 3.2.2: Global distribution of areas at high risk of floods, sea level rises, heat stress, water stress, wildfires and hurricanes. Source: New York Times[11].



Investors should also be aware of litigation risks. Litigation risks may result where businesses and investors fail to account for the physical or transition risks of climate change, and are prone to legal action from potential claimants.

[11] *Source: New York Times. Requires subscription to view. https://www.nytimes.com/interactive/2021/01/28/opinion/climate-change-risks-by-country.html*

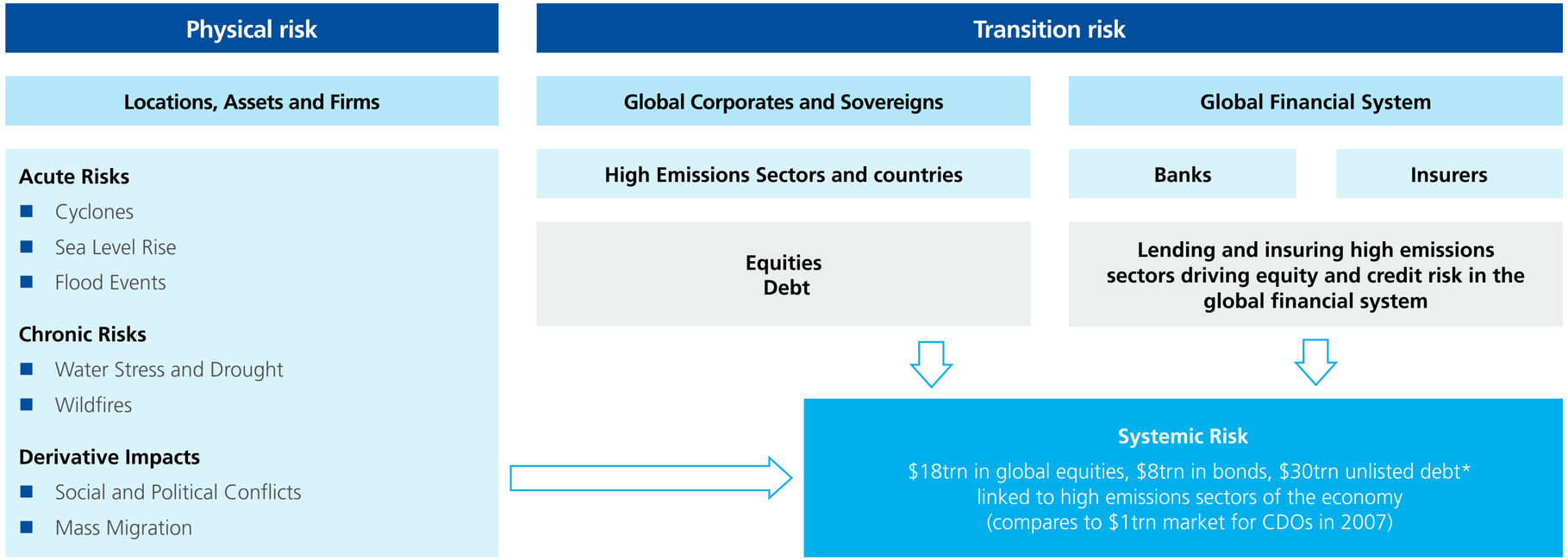
3.3 Why climate change matters to pension schemes

From an investment perspective, physical and transition risks can affect the assets, operations and financial performance (i.e. profits) of the companies in an investor's portfolio. When climate-related risks crystallise at the company-level, it is likely they would also affect the value of the investor's asset, for example the financial value of some particular company's shares in the market place. As a result, investors have a fiduciary duty to consider climate-related risks.

It is important to recognise that climate risk is "systemic" in nature. This means that its impacts are so wide-ranging that they are likely to affect, in some way, the majority of the entire financial system, as opposed to being localised to one or two sectors or regions of the economy. Since climate risk is systemic, a long-term investor cannot eliminate this risk simply by avoiding certain sectors or regions.

Figure 3.3.1 depicts physical and transition climate risks, and their transmission into systemic risks. As an indicator of the systemic nature of climate risk, Carbon Tracker estimated in 2020 an outstanding amount of c$56 trillion in shares, bonds, and other financial instruments linked to high emissions sectors of the global economy.

Figure 3.3.1: Climate Risk and the Global Financial System



** Carbon Tracker Estimates*

In addition to investment returns, sustainable pension schemes must attend to climate risks to the covenant strength of participating employers and to scheme liabilities.

- **Covenant:** Employers that contribute to (or sponsor) a pension fund may themselves be vulnerable to climate-related risks. As a result, their ability to contribute to the scheme over the long term could, if risk management activity proves insufficient, be compromised by physical and climate risks.
- **Liabilities:** The liabilities of a defined benefit pension scheme could be affected by changes to mortality assumptions, other macroeconomic variables such as inflation (i.e. if climate change or climate policies affect the general level of prices for goods and services), or influences on the discount rate.

Our governance and activities in relation to climate risk, therefore, span the areas of Covenant, Liabilities, and Investments, and this report is structured so as to provide disclosure on each area.

4. Climate governance at our schemes

'Climate governance' means the arrangements in place within the schemes to manage climate-related risks and opportunities. This section describes the schemes' climate governance, in line with the Regulations.

4.1 The railways pension schemes

Railways Pension Trustee Company Limited (RPTCL) is the corporate Trustee[12] of the railways pension schemes and for each separate section within the Railways Pension Scheme. The Trustee is responsible for managing four railways pension schemes:

- BR (1974) Fund
- British Transport Police Force Superannuation Fund
- British Railways Superannuation Fund
- Railways Pension Scheme

The schemes are occupational pension schemes providing defined benefit ("DB") and defined contribution ("DC") benefits.

The Trustee Board is comprised of 16 persons, eight nominated by employers and eight by members of the railways pension schemes (six are nominated on behalf of employees and two on behalf of pensioners). Directors are appointed for a six-year term of office with a third of them retiring by rotation every two years.

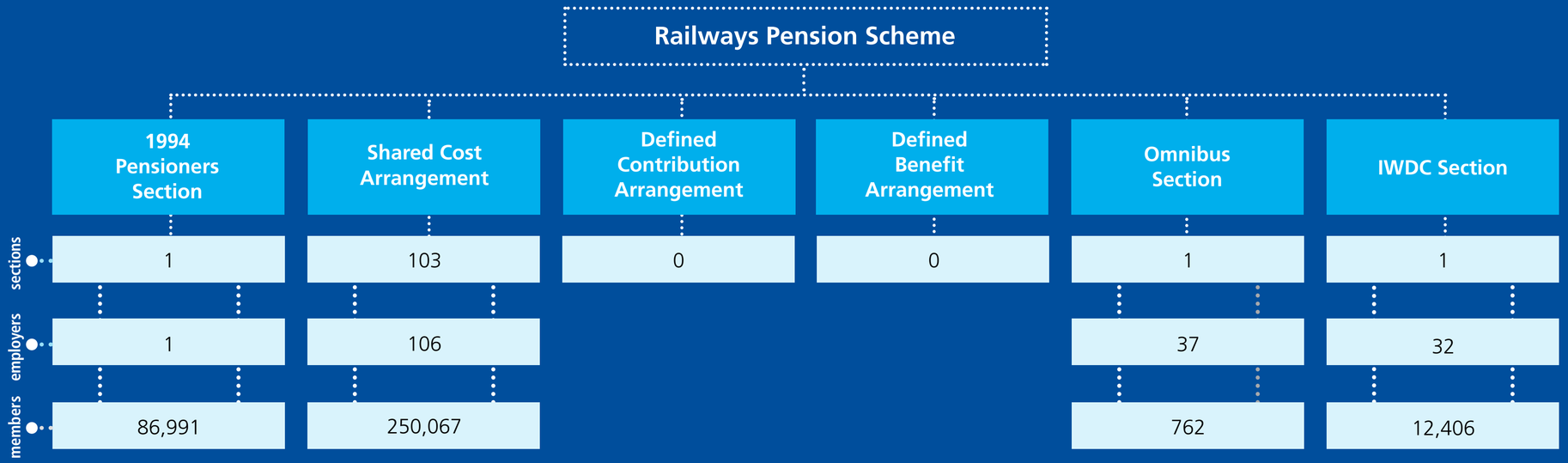
Railpen (the trading name of Railway Pension Investments Limited), is a wholly-owned subsidiary of the Trustee. Railpen is authorised and regulated by the Financial Conduct Authority (FCA). Railpen acts as the investment manager and fiduciary adviser for the railways pension schemes and is responsible for the day to day operation of the schemes and the management of around c.£34 billion of assets. The Trustee is Railpen's only client, ensuring that its activities are aligned with the interests of the schemes' members.

Further information on the schemes and the composition of the Trustee Board is available in the 2021 Annual Report and Audited Financial Statements[13].

4.1.1 The RPS

The Railways Pension Scheme (RPS) is the largest of the four schemes and was created in 1994 after the privatisation of the railway industry and reorganisation of the British Rail Pension Scheme. It is one of the largest schemes in the UK. It provides pensions for over 150 companies operating within the privatised railway industry.

Figure 4.1.1: Overview of the railways pension scheme

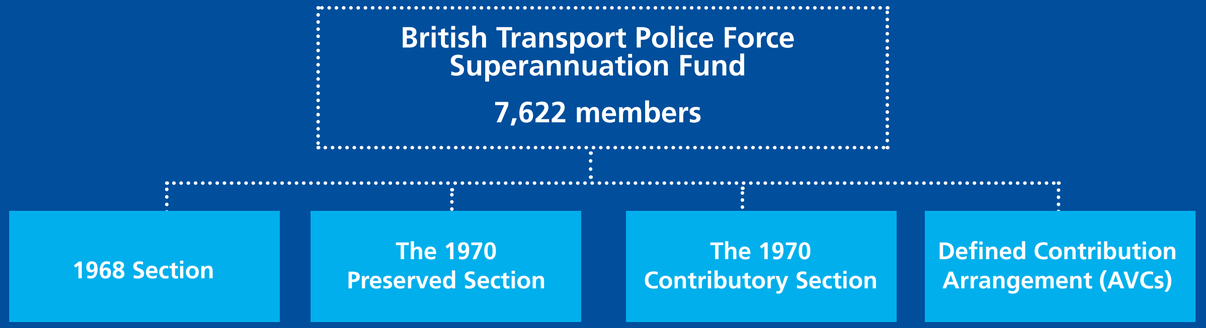


[12] *We use "RPTCL" and "Trustee" interchangeably in this report.* [13] *Available at www.railpen.com*

4.1.2 The British Transport Police Force Superannuation Fund (BTPFSF)

The BTPFSF is made up of the 1968 Section (which is a small historical Section); the 1970 Preserved Section (comprising pensioners only); and the 1970 Contributory Section which is open to new entrants and has three benefit structures depending on when a member joined the Fund. The scheme participates in the pooled fund structure of the railways pension schemes and is currently open to new members.

The principal employer of the Fund is the British Transport Police Authority (BTPA). BTPA is an independent body responsible for overseeing the work of the British Transport Police (BTP) – the national dedicated police force for the railways. The membership of the BTPFSF was at 7,866 during 2022.



4.2 Climate governance overview[14]

The Trustee places great emphasis on maintaining high standards of fiduciary governance. Governance means having the people, structure and processes in place to provide the foundation for the efficient operation and effective decision-making of the Trustee Board. The experience and skills of Trustee Directors are the cornerstones of the Board's effective ways of working.

When it comes to climate-related risks, the Trustee has a duty to ensure good governance of climate risks and to monitor the potential impacts on investment returns, liabilities, and employer covenant.

Governance is multi-faceted: climate governance – including the Trustee, others undertaking scheme governance activities, and advisers – may be considered in six parts, as shown in Figure 4.2.1. Taken in aggregate, the following six subsections (4.3 - 4.8) explain how the Trustee maintains oversight of climate-related risks and opportunities which are relevant to the schemes.

Figure 4.2.1: Six parts of climate governance

The Trustee Board has chosen to take an approach to the oversight and management of climate-related risks and opportunities that integrates as far as possible into the processes for how it considers other risks and opportunities. However, given the unique challenges posed by climate risk, some monitoring and reporting is carried out separately to other risk management processes.

The Investment Risk Governance Framework (see section 4.4) is reviewed annually and approved by the Trustee Board. At the present time, the Trustee is satisfied that this framework is sufficient for the management of investment risk including climate-related risk.

The schemes are among the most complex in the UK. The day-to-day operations of the schemes are delegated to Railpen, with oversight maintained by the Trustee through reporting quarterly, annually, and as required. Within Railpen, oversight of climate risk management is ensured by the application of the Investment Risk Governance Framework and, in an investment context, through the oversight of the Railpen's Investment Management team by its Fiduciary team. Physical and transition climate risks are identified, assessed and managed using several tools and approaches as described later in this report, particularly section 5.

RPTCL's Statement of Investment Offering (see section 4.4) prescribes a list of pooled funds that individual sections subscribe to according to their investment and funding requirements. Given the one-to-many mapping of pooled funds to the sections that invest in them, it is efficient from a governance and reporting standpoint to consider the impacts of climate risk at a pooled fund level. This means that, in this TCFD report, we produce analytics and pass comment at a pooled fund level (for example when reviewing climate scenario analysis or climate metrics).

Railpen is responsible for ensuring that external fund managers invest scheme assets in line with RPTCL's investment policy. Railpen also requires that the fund managers' climate, ESG, stewardship and sustainable investment policies align with RPTCL's own policies. This includes assessing how the relevant manager makes investment decisions based on the medium to long-term financial performance and climate and ESG risks of investee companies and engages with investee companies to improve their performance. The climate and ESG practices of external managers are typically reviewed prior to appointment and on a regular basis thereafter.

In the interests of providing for the reader a simplified exposition of climate governance at the railways pension schemes, we refer in the prose and diagrams that follow only to those bodies, committees, and documents, that have a relation to the governance of climate risk, i.e. the arrangements detailed do not represent an exhaustive mapping of governance at the railways pension schemes and Railpen.

[14] *In this report we adopt the definition of 'Governance' used in the relevant Statutory Guidance: "the way a scheme operates and the internal processes and controls in place to ensure appropriate oversight of the Scheme…This includes – but is not limited to – decisions relating to investment strategy or how it should be implemented, funding, the ability of the sponsoring employer to support the Scheme and liabilities."*

4.3 Investment Beliefs

The Trustee's Investment Beliefs serve as a foundational and reliable guide to investment decision-making. The investment activities that Railpen carries out on behalf of the Trustee must align to the Trustee's beliefs. As noted in the Statement of Investment Principles, the Asset Management Committee (AMC) is responsible for monitoring Railpen's alignment with the Trustee's Investment Beliefs.

The Trustee reviewed and updated its Investment Beliefs in 2021. The Trustee's previous Investment Beliefs referred to a link between ESG[15] factors and investment performance, and a duty to incorporate ESG into investment decision-making. The updated Investment Beliefs refer explicitly to climate change, reflecting its significance for the successful delivery of the Trustee's mission (see Figure 4.3.1). Climate change could be said to relate to all six of the Trustee's Investment Beliefs, though we highlight one particular belief for its explicit reference to climate change.

Figure 4.3.1: Trustee's Investment Beliefs, updated in 2021

Beliefs	Belief narrative
1. Managing asset-liability risk is integral to a scheme's long-term success.	"Environmental, social, and governance ('ESG') factors affect corporate financial performance, asset values, and asset-liability risk. Well-informed and financially material ESG analysis, as part of a holistic investment process, supports the identification and ultimately the pricing of ESG risk and opportunity. Constructive engagement combined with thoughtful voting can protect and enhance investment value. "A long investment horizon exposes a pension scheme to societal and systemic risks, such as **climate change**. These risks are growing and need to be managed. Capital allocation by investors and corporates makes a difference in how these risks play out. Railpen has a responsibility to make a scheme assets resilient to systemic threats and position portfolios for long-term opportunities. We believe it is possible and necessary to deliver the returns the schemes need, whilst positively contributing to the world our members retire into."
2. Long-term focused investment decision making has many advantages that should be carefully exploited.	
3. Diversification of the overall investment portfolio, across different structural drivers of return, improves the resilience of a scheme assets in an uncertain world.	
4. Incorporating and acting upon climate risk and other environmental, social and governance factors is a significant driver of investment outcome and part of our fiduciary duty.	
5. Effective portfolio management requires flexibility around a thoughtfully considered investment strategy.	
6. Investments should be selected, structured and sized in a manner aligned to a scheme's long-term objective.	

[15] *Environmental, social, and corporate governance investment factors*

4.4 Documentation and processes

The Investment Risk Governance Framework (the 'Framework') defines the structure and relevant processes for the governance surrounding the management of investment risks across the schemes, sections and Pooled Funds. A risk governance framework principally provides clear ownership and accountability for all investment decisions. It creates a well-defined set of expectations regarding risk-taking and assessing adherence with those expectations, thus facilitating intentional business outcomes.

This is achieved by having a structure with distinct levels of authority. Risk governance is divided into three 'levels' as shown in Figure 4.4.1. The levels allow the risk governance framework to provide a strong link between delegation, oversight and decision-making. This in turn ensures the right decisions are made by those with the most specialism and experience, whilst sufficient oversight is guaranteed.

Figure 4.4.1: Three levels of risk authority

More information on the roles of Level 1, 2, and 3 risk authorities is provided in section 4.5.

A thorough, consistent and aligned set of governing documents forms the cornerstone to successful governance. The Investment Risk Governance Framework establishes a document hierarchy that is driven by the three levels, and which defines oversight and accountability for the entirety of items within the Trustee's purview, including climate risk. This confers responsibilities on the Trustee, others undertaking scheme governance activities, and advisers.

The Investment Risk Governance Framework ensures a clear understanding of which governing documents are required and who owns them. The documents owned by the boards and sub-committees provide the well-defined parameters from which all subsequent investment risk decisions are derived. These documents include Mission and Beliefs, Statement of Principles (SIP), Railpen Investment Manager Agreement (IMA), terms of references and policies. The Investment Risk Governance Framework also establishes a decision authority matrix with governing authorities and investment approval delegated authorities. Ultimately, the Investment Risk Governance Framework enables boards and committees to satisfy themselves that persons advising or assisting take adequate steps to identify and assess any climate-related risks and opportunities which are relevant to the matters on which they are advising or assisting.

Figure 4.4.1.2: Document hierarchy in the Investment Risk Governance Framework

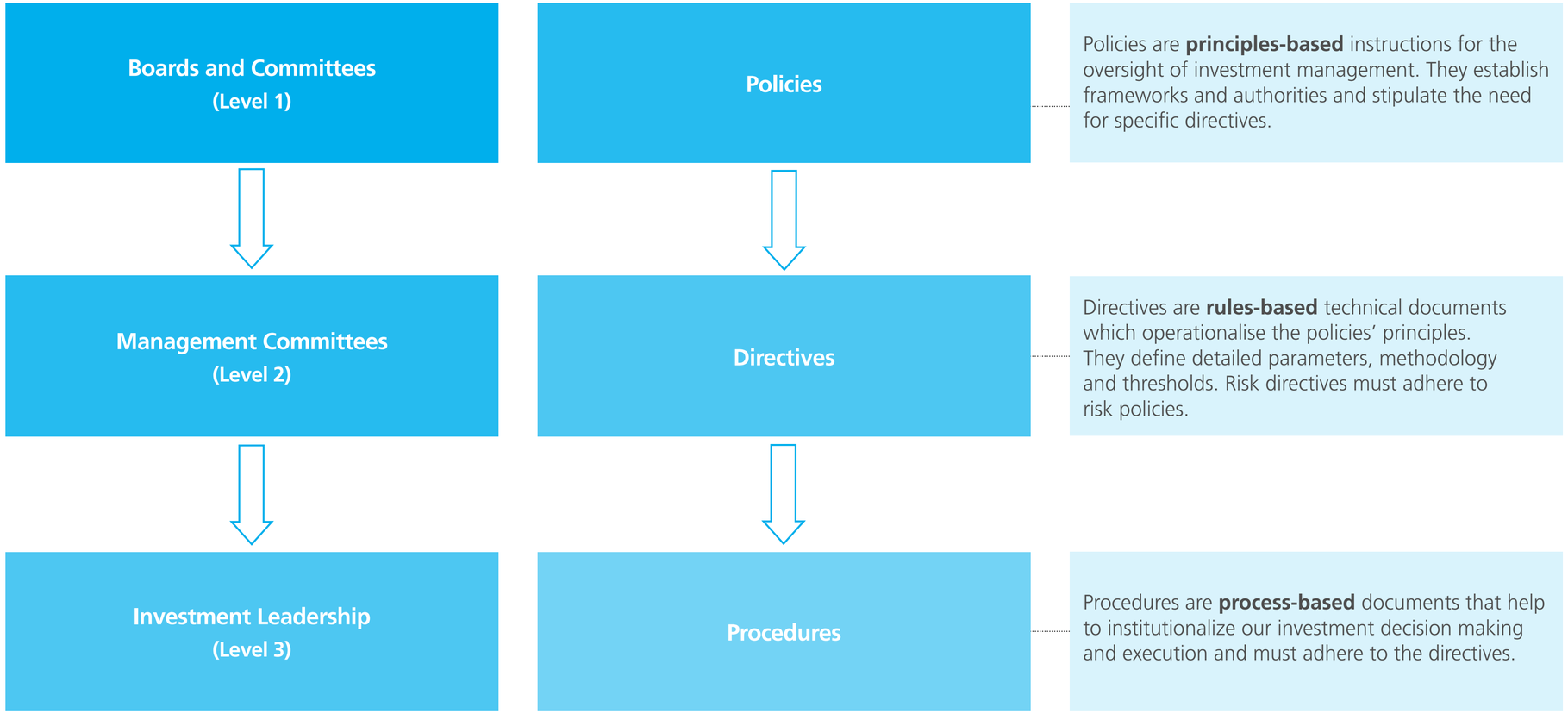


Figure 4.4.1.3 lists the key level 1, 2, and 3 documentation that relates to the management of climate risk. The tables that follow explain the specific relation between the document and climate risk for levels 1 and 2 documents.

Key frameworks and policies were reviewed and re-approved in 2022. Where the review amended an arrangement relating to climate risks, this is noted in the tables that follow to the right.

Figure 4.4.1.3: Documentation relating to climate risk, levels 1, 2 and 3

	Risk authority	Document type	Documentation relevant to climate risk
Level 1	Boards and Sub-committees	Policies	Investment Risk Governance Framework RPTCL - Railpen Investment Management Agreement (IMA) Statement of Investment Principles Investment Beliefs Statement of Investment Offering Pooled Fund Policy and Pooled Fund Mandates Investment Risk Policy Board and Sub-committee Terms of Reference and Meeting Minutes Investment and Risk Report
Level 2	Management Committees	Risk Directives	ESG Risk Directive Investment Transaction Approval Directive Investment Management Agreements
Level 3	Investment Leadership	Procedures	Team Procedures Investment Recommendations

Level 1 documents relating to climate change[16]

Investment Risk Governance Framework	
Purpose	This document defines the structure and relevant processes for the governance surrounding the management of investment risks across the schemes, sections and pooled funds.
Relevance for Climate Governance	The Investment Risk Governance Framework documents: ■ inventory of major investment decisions ■ authority for delegation and oversight of decisions ■ authority for making of decisions, and ■ approval processes and governance documentation.

RPTCL-Railpen IMA	
Purpose	Establishes the terms of the discretionary investment management agreement given to Railpen by the RPTCL.
Relevance for Climate Governance	Requires Railpen to invest in line with the Trustee's SIP, which refers to climate change. Delegates investment powers and voting rights to Railpen. Requires Railpen to provide the Trustee with information that enables the Trustee to review and monitor engagement activities, the exercise of voting rights and the "financially material considerations" and "non-financial matters" (as set out in the Investment Regulations) taken into account in the selection, retention and realisation of investments.

[16] *Please note that Investment Beliefs are described on page 16 and the Investment & Risk Report is described on page 28*

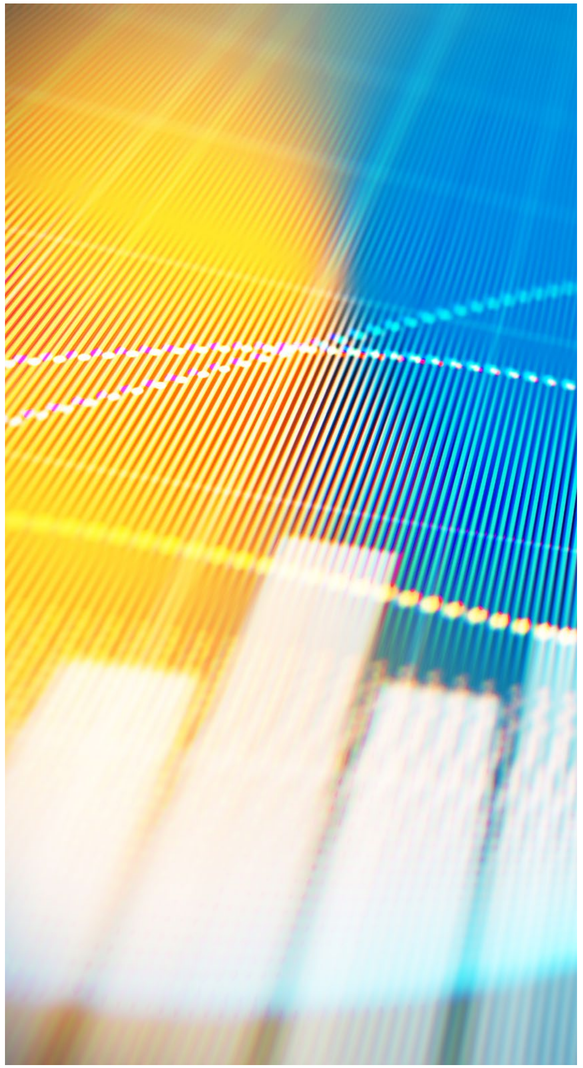
Statement of Investment Principles (SIP)	
Purpose	The RPTCL SIP sets out the Trustee's arrangements in respect of investing scheme assets.
Relevance for Climate Governance	The SIP recognises that climate change can have a financially material impact on investment returns, and that the Trustee has a legal duty to consider financially material climate factors. In the SIP, the Trustee commits to undertake annual training on ESG and climate change. The SIP was reviewed in December 2022 with the Trustee's expectations in relation to ESG factors restructured for additional clarity. In addition, the term "climate change" has been included throughout to make clear that the Trustee's expectations in relation to ESG factors encapsulate climate factors where material.

Statement of Investment Offering	
Purpose	This document defines the range of investment products to be used in client investment strategy and, importantly, sets out the Trustee's expectation that its Investment Beliefs should be integrated into the investment process.
Relevance for Climate Governance	Investment Beliefs include explicit reference to climate change.

Pooled Fund Policy and Pooled Fund Mandates	
Purpose	This document sets out the investment objectives and investment risk guiding principles and limits for investment management activities within the pooled funds.
Relevance for Climate Governance	The document states that ESG risk, which includes climate risk, should be integrated into the investment process, minimised and diversified. It should be risk-managed as part of the ongoing active management of assets.

Investment Risk Policy	
Purpose	This document sets out the investment objectives and investment risk guiding principles and limits for investment management activities within the pooled funds.
Relevance for Climate Governance	The Investment Risk Policy defines ESG risk (which includes climate change) and sets a requirement for a Level 2 document, namely an ESG Risk Directive (see below).

Board and Sub-committee Terms of Reference and Meeting Minutes	
Purpose	Terms of Reference (ToR) for the Trustee Board, the Integrated Funding Committee, and the Defined Contribution Committee, are approved by the Trustee Board; the ToR for the Asset Management Committee are approved by the Railpen Board; the ToR for the Investment and Risk Committee are approved by the Asset Management Committee.
Relevance for Climate Governance	Duties laid out in ToRs cover roles and responsibilities for activities that have a bearing on funding and investment issues. Climate-related risks where material are considered to be within the scope of the duties laid forth in Board and sub-committee terms of reference.



Level 2 documents relating to climate change

ESG Risk Directive	
Purpose	This document specifies how ESG Risk, as defined in the Investment Risk Policy, should be monitored, measured, and managed.
Relevance for Climate Governance	ESG Risk is defined to include climate risk. The directive sets certain pooled fund-specific requirements in respect of ESG risk management, and directs a policy of excluding carbon intensive businesses (thermal coal and tar sands) in order to reduce the risk of asset stranding.

Investment Transaction Approval Directive	
Purpose	This document defines the framework for determining the classification of investment transactions (by size and nature) and the relevant approval authorities.
Relevance for Climate Governance	Investment approvals may be escalated for reasons relating to ESG risk including climate risk. The directive requires investment managers to provide all relevant investment and due diligence information to Railpen's Investment Risk and Sustainable Ownership teams. More information is provided in section 4.5.

Investment Management Agreements (external managers)	
Purpose	These documents establish the terms of appointment of external managers.
Relevance for Climate Governance	IMAs and similar documentation place requirements on external investment managers in relation to ESG and climate change. Requirements are in place for the management of climate risks, and the reporting of risk management activities on an agreed basis. Specific requirements are set out for those managers in-scope of Railpen's Net Zero Plan. In 2022, our legal representatives developed a new contract template for incorporating climate risk management and reporting in external managers operating in private markets (private equity, venture capital, private debt, and so on).

In addition to the above, a number of third party suppliers support the governance of climate-related risks. Supplier contracts document the requirement for climate-related data, proxy advice, climate scenarios, consultancy and so on. Certain significant suppliers are required by contract to produce Key Performance Indicators or other indicators of activity such that the Trustee, or Railpen acting on its behalf, can measure delivery of services to RPTCL.

Key documents are stored, managed, reviewed, and processed for approval via a Sharepoint site.

4.5 Roles and responsibilities

This sub-section describes the roles of those undertaking scheme governance activities, and those advising and assisting the Trustee with scheme governance activities, in identifying, assessing and managing climate-related risks and opportunities relevant to those activities.

As described in section 4.4, the Investment Risk Governance Framework establishes three levels of risk authority for the Trustee and Railpen:

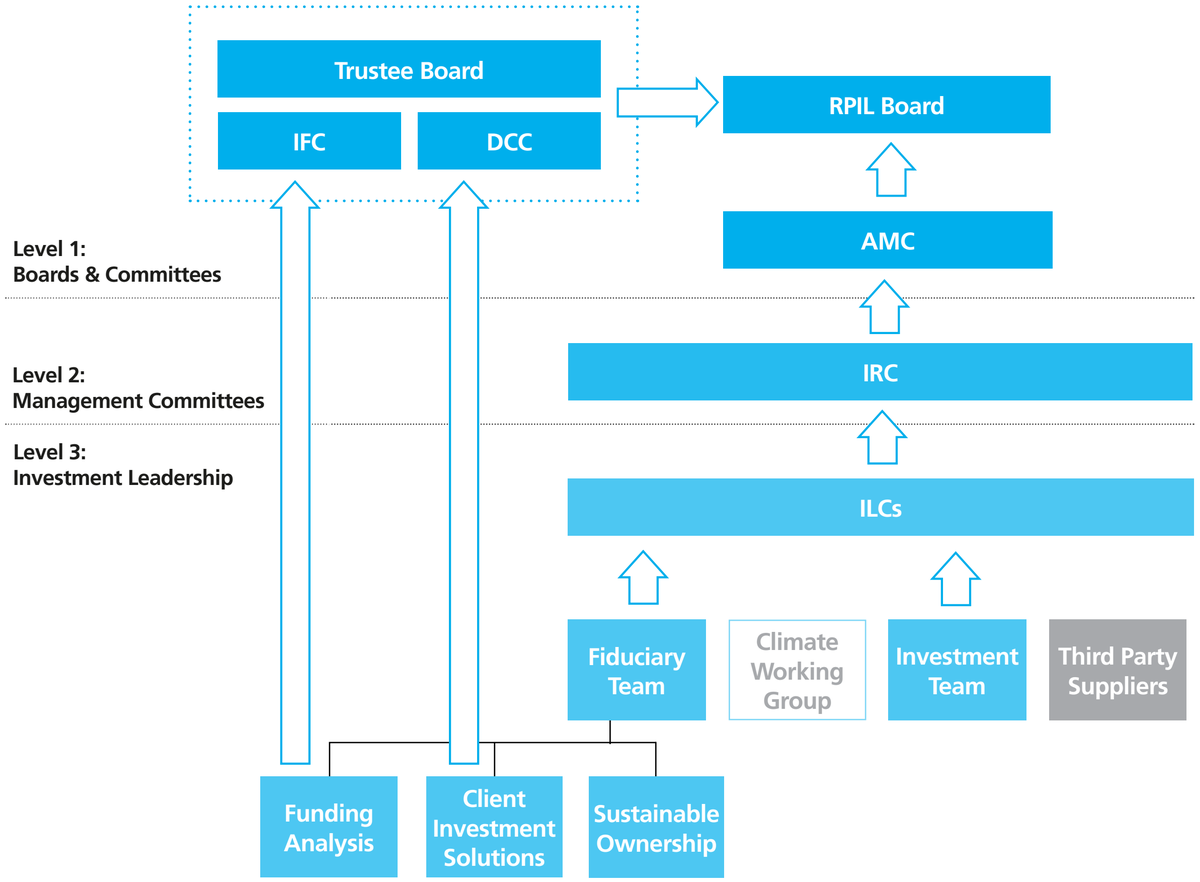
Level 1 - Boards and their sub-committees oversee the governing parameters, which set the necessary expectations and context for all investment decisions. Level 1 also provides the valuable role of oversight, ensuring delegated authorities are thoughtful and well maintained.

Level 2 - The second level of authority is various Management Committees. These operate within the Level 1 defined frameworks and policies. These Management Committees are granted authority to make various investment decisions, which are overseen by Level 1. In addition, these Management Committees are eligible to further delegate more detailed but less material investment decisions to individual investment teams/members. For example, the Investment and Risk Committee would approve risk thresholds (which fall below the AMC approval limit), and for example, would recommend to AMC any changes to Pooled Fund Mandates.

Level 3 - The last level represents Investment Leadership, including the Investment Management Team, which are ultimately responsible for execution of bottom-up investment decisions. These are investment experts who are employed to deliver investment returns in line with Railpen's mission. These may be teams or individuals who make security and portfolio level investment decisions or, for example, recommend (for approval) investments to a Management Committee. These include Investment Leadership Committees (ILCs), which comprise the Public Markets Investment Committee (PMAC), Private Markets Investment Committee (PMIC), and the Real Assets Investment Committee (RAIC).

In the context of climate risk governance, key level 1, 2, and 3, risk authorities are displayed in Figure 4.5.1. The remit of each authority as relating to climate risk is explained on the following pages.

Figure 4.5.1: Summary of climate governance at the railways pension scheme and Railpen[17]



[17] *Level 1 relates to what the TCFD Recommendations refer to as "the Board" and Levels 2 and 3 relate to what the TCFD Recommendations refer to as "Management".*

Section 4.4 (page 17) describes the Investment Transaction Approval Directive, which determines which risk authority may approve which transaction depending on its nature classification, where transaction nature classification depends on a range of factors including the perceived degree of climate risk. Figure 4.5.2 summarises which risk authorities approve which transactions, and further information is available below.

Figure 4.5.2: Risk authorities for investment approvals

	Risk authority	Nature Classification
Level 1	Boards and Sub-committees	Special nature transactions
Level 2	Management Committees	Material transactions
Level 3	Investment Leadership	Significant transactions

Railpen undertakes a range of activities to assist or advise the Trustee with its oversight responsibilities relating to climate-related risks and opportunities. This includes delivering training (see section 4.6), investment management services including climate risk integration (see section 5.4), advice relating to climate impacts on employer covenant and liabilities (sections 5.2 and 5.3), external manager monitoring, delivery of programmes to support the Trustee's climate targets, provision of climate scenario analysis, and support in the production of the schemes TCFD Report.

As relayed in the Statement of Investment Principles, the Trustee is satisfied that Railpen has the appropriate knowledge and experience for managing the investments of the schemes and it carries out its role in accordance with the criteria for investment set out in Investment Regulations, the principles contained in the SIP, the Trustee's investment policy and any applicable investment guidelines and restrictions agreed with the Trustee. Railpen assesses the credentials and competence of relevant employees prior to appointment and on an ongoing basis through rigorous recruitment processes, performance assessments, and monitoring of continuous professional development.

The schemes' actuaries are a valuable source of expertise – including on financially material climate-related risks and opportunities – for scheme governance activities. WTW is the RPS Scheme Actuary and a significant portion of advice provided in 2022 was centred on the assumptions to be used for the triennial valuations. This included discussion of the potential impact of climate change on mortality assumptions; the impact of climate risk on financial assumptions is built in through the WTW Investment Model. XPS Pensions Group is the Scheme Actuary for the BTPFSF and climate risks are included at a high level in future scenario modelling as part of forecasting mortality rates within demographic analysis as part of the scheme valuation. Such analysis helps provide comfort that assumptions in the valuations are prudent.

The following tables describe the composition and remit of the committees and other groups depicted in Figure 4.5.1.

Level 1 risk authorities relating to climate change

Trustee Board	
Composition	Eight Board members nominated by employers and eight by members of the railways pension schemes (of which six are nominated on behalf of employees and two on behalf of pensioners).
Relevance for Climate Governance	The Trustee has ultimate responsibility for ensuring effective governance of climate-related risks and opportunities. These responsibilities are discharged, delegated, and overseen as described throughout this TCFD report.

Integrated Funding Committee (IFC)	
Composition	Five employer-nominated and four member-nominated directors of the Trustee Board.
Relevance for Climate Governance	The IFC is responsible for: principles for integrated risk management; discount rates and other funding assumptions; the investment advice framework; covenant ratings; client portfolio management principles. Material climate risks relating to these duties are considered within the purview of the IFC. The IFC oversees the appointment and monitoring of the Scheme Actuary.

Defined Contribution Committee (DCC)	
Composition	Three employer-nominated and three member-nominated directors of the Trustee Board.
Relevance for Climate Governance	Ensures appropriate management and governance of BRASS, AVC Extra, and the Industry-Wide Defined Contribution (IWDC) Section of the Railways Pension Scheme, including compliance with the requirements of master trust authorisation for the IWDC Section. It helps to shape and articulate the Trustee's policy on DC matters. DCC's mission is to provide DC arrangements, which are designed for the long term and offer good value for members, including default investment strategies, which are suitable for the majority of members throughout their scheme membership, and an appropriate range of fund choices for those who wish to self-select. IWDC is the authorised master trust.

Railways Pension Investments Limited Board (RPIL Board)	
Composition	Three independent non-executive directors; four directors of the Trustee Board (two employer-nominated and two member-nominated); Railpen Chief Executive Officer; Railpen Chief Financial Officer.
Relevance for Climate Governance	Responsible for the governance and management of Railpen. Reports to and is accountable to the RPTCL on the management of the business. Oversees the AMC.

Asset Management Comittee (AMC)	
Composition	Two independent non-executive directors; two Trustee Board directors (one employer-nominated and one member-nominated); Railpen Chief Executive Officer; and the Chair, who must be an independent non-executive director of the RPIL Board.
Relevance for Climate Governance	Provides advice on the pooled funds, investment planning, macro and investment risks, and oversees investment and fiduciary activities on behalf of the RPIL Board. The AMC engages with the Trustee and the IFC on fund management, Pooled Fund, investment and ESG risk issues, including climate change. AMC receives a quarterly Investment and Risk Report which includes reporting on ESG issues including climate change. AMC receives a KPI report in relation to the Railpen pooled funds, which includes a KPI on ESG (including climate change). AMC approved Railpen's Net Zero Plan. Reports to the Trustee Board at least annually, including a report containing KPIs relating to Railpen's performance. Reviews and approves "special nature" investment transactions, which might include those escalated for reasons of climate risk.

Level 2 risk authorities relating to climate change

Investment and Risk Committee (IRC)	
Composition	Chief Fiduciary Officer, Chief Investment Officer, Head of Client Investment Solutions, Head of Investment Strategy and Research, Head of Real Assets, Head of Public Markets, Head of Private Markets and Head of Investment Risk and Sustainable Ownership.
Relevance for Climate Governance	Oversight of investment risks relating to investment activities, including climate risks, across Total Fund, Pooled Funds, Strategies, and Manager Portfolios. Approves the ESG Risk Directive (which includes climate change). Is authorised by and directly accountable to AMC. Reviews and approves "Material" investment transactions, which might include those escalated for reasons of climate risk. In 2022, Railpen's Head of Sustainable Ownership was appointed to IRC, adding further climate expertise to the committee.

Other relevant teams and working groups

Fiduciary Team and Investment team	
Relevance for Climate Governance	Within Railpen, oversight of climate risk management is ensured by the application of the Investment Risk Governance Framework and, in an investment context, through the oversight of the Railpen's Investment Management team by its Fiduciary team. Climate risks are considered in their appropriate context, whether Covenant, Liabilities, or Investments and in respect of the latter whether the investment relates to Public Markets, Private Markets, or Real Assets.

Client Investment Solutions team	
Relevance for Climate Governance	Support the DCC in discharging its duties. Where climate risks are material, this would involve supporting the DCC in reviewing and monitoring relevant risks.

Funding and Analysis team (includes Employer Covenant team)	
Relevance for Climate Governance	Support the IFC in discharging its duties. This includes support with employer covenant ratings and establishing integrated funding plans. The support provided to the IFC incorporates climate risk where material.

Sustainable Ownership team	
Relevance for Climate Governance	Railpen's in-house ESG expert team. Includes a dedicated resource overseeing a specific workstream related to climate risk, alongside complementary resources that support the analysis and monitoring of climate risks and delivery of Railpen's Net Zero Plan.

Climate Working Group (CWG)	
Relevance for Climate Governance	In 2020, Railpen set up an internal Climate Working Group (CWG) with members from across the Investment and Fiduciary businesses encompassing public and private markets, real estate, infrastructure, employer covenant, risk, investment strategy and client investment solutions. The CWG is co-chaired by the Chief Investment Officer (who is also a member of Railpen's Executive team) and the Head of Sustainable Ownership, a member of the Fiduciary Leadership Team. The purpose of the CWG is to support a coordinated and cross-team approach to managing climate risk across Railpen, ultimately supporting the Trustee in discharging its duties. The objectives for the CWG are to: ■ increase knowledge of climate risk impacts on investment and fiduciary outcomes ■ coordinate and support delivery of projects that improve Railpen's approach to managing climate risk, and ■ disseminate learnings to CWG members' local teams This is achieved through the pillars of Climate Integration, Intelligence and Innovation, and Disclosure and Reporting.

Integration	Intelligence and Innovation	Disclosure and Reporting
Integrate climate risk and Net Zero considerations into the investment and funding processes	Absorb, disseminate and incorporate relevant climate intelligence and solutions across RPTCL and Railpen	Facilitate meaningful and relevant climate disclosure for RPTCL, stakeholders and regulators

Third party suppliers	
Relevance for Climate Governance	The Trustee's oversight of climate-related risks depends on the support of third party suppliers, for example those rendering services relating to climate scenario analysis, GHG data, and proxy voting advice. Climate-relevant service providers are appointed after a careful selection process driven by procurement specialists. Contracts are established to ensure high quality service delivery and enable supplier monitoring. Following the findings of last year's TCFD Report (in particular the scenario analysis, which suggested physical risks could become material in higher warming scenarios), a specialist provider of physical climate risk data was appointed and risk information included in Railpen's CRIANZA framework and tool (see section 5.4.4.2).

4.6 Training, Trustee Knowledge and Understanding

This section describes the training opportunities provided for Trustee Directors and relevant employees in relation to climate change risks and opportunities.

Directors have a comprehensive training programme on appointment and throughout their tenure. They complete Training Skills Analyses and a programme of training and workshops is provided, which is designed to support individuals and the Board as a whole, and facilitate effective succession planning based on the Board's Skills Matrix. All Trustee Directors must achieve a minimum standard of Trustee Knowledge and Understanding which meets The Pensions Regulator's requirements, and are required to complete the Trustee Toolkit prior to appointment. A wide range of training is offered by external providers and Railpen, including training on the unique characteristics and complexity of the railways pension schemes. To further support Trustee Directors, information relevant to their role is easily accessible to them electronically in one convenient place, alongside all Board and Committee papers.

Whilst the existing Board Skills Matrix incorporates climate change via broad overarching TKU categories, specific climate change questions have been proposed for the next iteration of the skills matrix, in line with TPR's 2023 recommendations[18] on good practice.

In respect of the identification, assessment and management of climate risks in particular, the Trustee Board undertakes training at least annually. This has included understanding how scenario analysis works, why climate change poses a material financial risk, and its relevance to overall risk management. Recognising that the Trustee Directors themselves delegate the act of identifying and assessing climate risks, the objective of the training is not to achieve technical mastery, but rather to confer the Trustee Directors with the ability to challenge the risk information they receive from others. The Trustee Directors receive training and engagement on other aspects of risk management outside climate change (for example on the general Investment Risk Governance Framework) further supporting the governance of climate risk.

In 2021, Railpen convened two half-day training sessions for the Trustee Board on (i) ESG including climate change, regulations, fiduciary duty and (ii) climate change specifically. Given the lockdowns in place at the time, the training sessions were delivered in virtual format, using multi-media, polling, interactive activities, and climate scientists and other external speakers. Topics covered included regulation, climate science, stewardship, net zero, climate as an investment opportunity, metrics and targets, and climate impacts on covenant strength. The 2022 Trustee training session on climate change focused on climate scenario analysis, climate impacts on covenant, and Railpen's progress against its Net Zero Plan.

The 2023 Trustee training session on climate change included a review of the updated TCFD regulations, updates to the TCFD report, and Railpen's work in climate stewardship. The extent of Trustee training and level of engagement with Railpen's Sustainable Ownership team are reviewed and agreed each year.

As the primary adviser to the Trustee, Railpen also undertakes training on climate change. Railpen employees (in particular, those responsible for managing investment, liability, and covenant risk) have attended three detailed workshops on climate scenarios provided by Ortec Finance and WTW[19] in relation to the 2021 climate scenario analysis. Railpen's Climate Working Group maintains an active Microsoft Teams channel for sharing of climate intelligence and investment views, and a regular climate newsletter is distributed to Railpen's Investment and Fiduciary Teams covering relevant climate-related investment news and a dashboard of climate-related market information. The appointment of high-quality service providers, and external fund managers, provides a valuable source of information and discussion. The Trustee and Railpen have the opportunity to attend conferences to further build climate change expertise, and engage in industry collaboration and knowledge sharing through a range of industry initiatives (see section 6.4.3).

[18] *Review of climate-related disclosures by occupational pension schemes | The Pensions Regulator, accessed March 2023*

[19] *WTW is also the Scheme Actuary*

4.7 Risk monitoring

The Trustee has approved an annual programme of engagement with Railpen's Sustainable Ownership team, with clear objectives relating to the fulfilment of regulatory, fiduciary, and disclosure requirements (now and forthcoming) in respect of environmental, social, and corporate governance (ESG) issues including climate change. The Trustee is satisfied that, at the present time, the governance and risk monitoring arrangements in place are sufficient. This is, however, reviewed at least annually.

The Trustee Board receives a quarterly Sustainable Ownership report, which includes reporting on climate-related matters. The quarterly reports contain information related to integration (which when relevant may include the consideration of climate risk in investment decision-making), active ownership (engagement and voting data including on climate risks), and the climate transition. Separately to this, the Trustee Board has received four additional climate-related updates at Board meetings in the past 12 months, covering: "net zero"; TCFD reporting (twice) and; metrics and targets. In the round, climate risks have been a substantive agenda item in the past 12 months. The training sessions described in section 4.6 provide time to discuss climate scenario analysis and other risk metrics and give the Trustee Directors further opportunity to challenge the information provided to them.

Railpen's Enterprise Risk and Trustee Governance teams support the Trustee in an annual review of its risk register. This includes reviews of the risks associated with those undertaking scheme governance activities and other significant suppliers. Supplier service levels are also monitored through the receipt of KPI reports and other relevant means. The specific frameworks and tools used to monitor climate risks are detailed in section 5.

All Trustee Board reports are required to include a "Risks" section – which should include climate-related risks where relevant – for the purposes of Trustee discussion and challenge. Examples of recent challenge provided by the Trustee include questioning the metrics and targets proposed, including the stringency and potential unintended consequences of climate targets, and other challenges related to TCFD reporting. Risks are mapped to the Trustee's enterprise risk management system provided by a third party supplier of enterprise risk management software. The risks in this software tool are actively monitored for changes to risk scores, emerging risks, and developments in the control environment. Other risk authorities within the Investment Risk Governance Framework offer challenge on the Trustee's behalf, including when appraising new investment transactions (in this setting challenge is typically offered by IRC or an ILC).

The extent of Trustee Board time devoted to monitoring climate-related risks is reviewed annually. The production of annual TCFD reports will provide a natural focal point for climate risk monitoring at Trustee-level and detailed discussion. In December 2022, it was determined by the Trustee Board to retain the same level of time monitoring climate-related risks in 2023. This decision was based partly on the results of climate scenario analysis and other risk analytics undertaken in 2022 and reported in last year's TCFD report.

The Asset Management Committee (AMC) receives an Investment & Risk Report, which includes Sustainable Ownership (including climate change) reporting on a quarterly basis. In addition, the AMC is able to request ad-hoc information on climate-related matters and provide challenge, as it did in relation to the impact of Russia's war in Ukraine on global energy markets and consequences for the climate transition (and Railpen's Net Zero Plan). In addition, the AMC receives a quarterly KPIs report, which includes an ESG KPI (where ESG includes climate change). In turn, the Trustee Board receives an annual update of KPIs from the AMC chair. The AMC has oversight of the IRC, which oversees Railpen's climate-related exclusion policies (currently applying to thermal coal and tar sands companies).

Railpen's climate risk monitoring includes: weekly SO team meetings on ESG risks (including climate risks) at key portfolio holdings, quarterly portfolio reviews, external manager monitoring, company engagement, and reviews of carbon metrics data. In 2021, Railpen launched an internal climate newsletter named "Heated", which covers news items related to climate finance, a dashboard of climate metrics and relevant market measures, and is distributed to all investment professionals at Railpen.

4.8 Reporting

The preceding sections detail the non-public facing reporting on climate-related issues within the Trustee and Railpen. In addition, climate-related information is reported through the following channels:

Report	Content
Scheme Report and Accounts	Includes a detailed "Implementation Statement", explaining how the Trustee has fulfilled its Statement of Investment Principles, including detail on Sustainable Ownership including climate change. Also includes a link to the TCFD Report.
Annual TCFD Report	A report delivering against the Regulations.
Stewardship Report	An annual report against the 12 principles of the Financial Reporting Council's Stewardship Code. The report includes climate-related information in several areas.
Voting disclosure	A portal available via Railpen.com detailing the outcomes of Railpen's voting decisions. Includes climate-related voting.
Principles for Responsible Investment Report	An in-depth report detailing RPTCL's commitment to the six PRI principles; contains climate-related disclosures.
Sustainable Ownership Review	A brief, member-focused document explaining Sustainable Ownership activities (including but not limited to climate change) carried out on behalf of the schemes membership.

5. Climate risks in the schemes, impacts on strategy and the actions we are taking

5.1 Overview and climate scenario specifications

Transition and physical risks are identified and assessed using quantitative and qualitative approaches. These approaches are applied as appropriate for assessments of covenant, liabilities, and investments. This includes the use of proprietary tools and frameworks developed in-house by Railpen, in addition to the analytical capabilities of respected third parties.

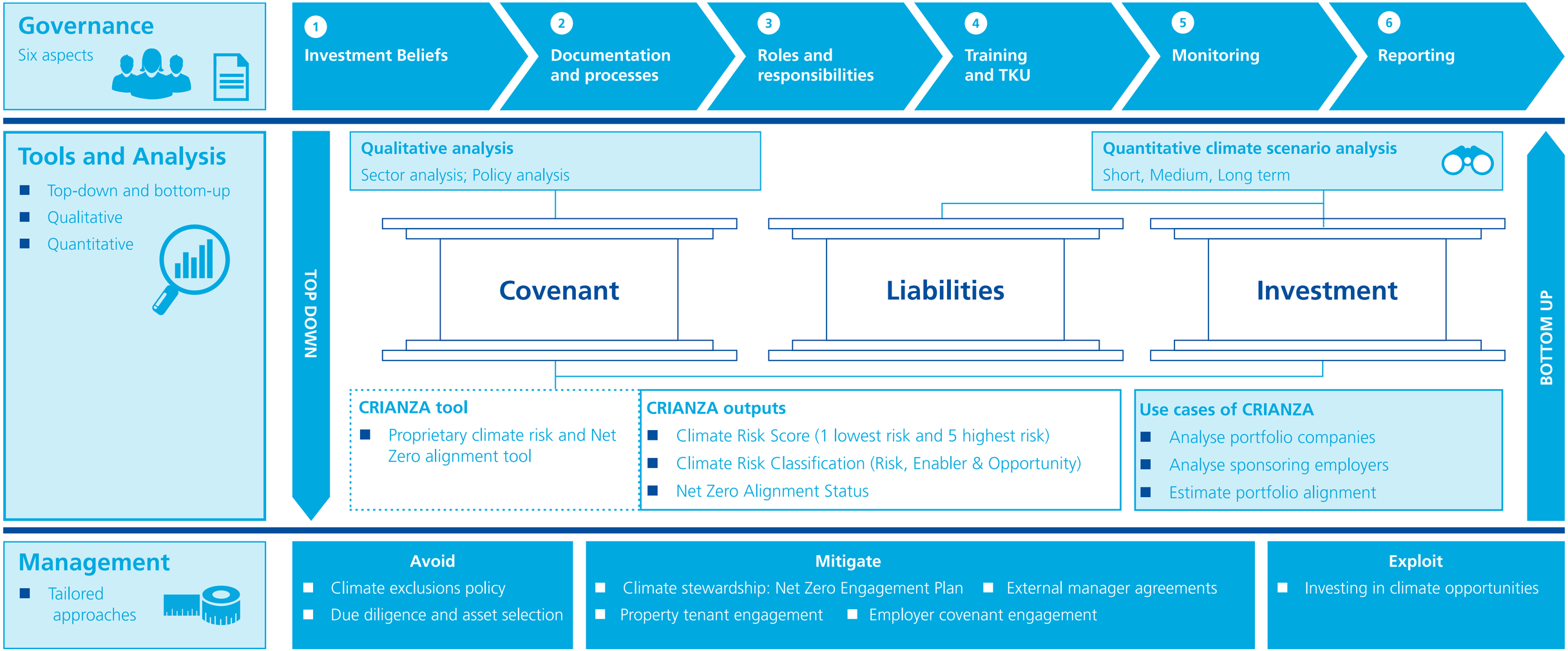
Once risks have been identified and assessed, risk management is achieved through approaches tailored to context (i.e. covenant, liabilities, or investment, and the detail of the risk type within each of these areas). Depending on the type of risk, actions are taken to avoid, reduce, or exploit the risk. Risk management activities are described in more detail in the sections that follow.

Although the focus of this report is on the management of scheme-wide climate risks, the Trustee believes a combination of top-down and bottom-up perspectives is important for the purposes of analysing and managing physical and transition risks. Bottom-up perspectives are particularly significant in assessing (i) employer covenant, and (ii) particular investments made on the Trustee's behalf.

Ultimately, the schemes utilise a framework of Governance, Tools and Analysis, and Management (GTAM) for identifying, assessing, and managing climate-related risks across the three areas of covenant, liabilities, and investment. This is depicted in Figure 5.1.1 and further explained in the report sections that follow.

Note to reader: according to the Regulations and Statutory Guidance, trustees are required to undertake and report climate scenario analysis on a frequency of no less than once in every three years. Following review and given ongoing dynamics in the macro and scheme-specific environments, the Trustee has opted not to repeat the analysis undertaken last year. These dynamics include uncertainty with regards to inflation and interest rates, fluctuations in scheme and section funding levels, a live programme of section de-risking, updates to investment strategy, and the scheme valuation. Undertaking point-in-time scenario analysis in this operating backdrop would lead to an analysis that would be out of date (and potentially misleading) soon after completion. As a result, the climate scenario analysis presented in the report sections that follow derives from last year's report, and certain parametric settings (such as choice of scenarios and definition of short, medium, and long-term) will be unchanged this year. The Trustee will review the advantages and disadvantages of undertaking new climate scenario analysis prior to publishing next year's TCFD Report).

Figure 5.1.1: Governance, Tools & Analysis, Management (GTAM)



5.1.1 Selection of climate scenarios

Climate scenario analysis is a means by which investors can understand the potential financial consequences of climate risks in certain plausible scenarios. It is important to note that climate scenarios are hypothetical constructs that assess sensitivities to potential climate change outcomes, not forecasts or predictions. The Trustee uses quantitative climate scenario analysis to understand the potential impacts on scheme liabilities and investment returns.

Services from Railpen, Ortec Finance, and WTW were procured in order for the Trustee to assess, using scenario analysis methods, climate-related risks to scheme liabilities and investment returns. The following scenarios were used: "Paris Orderly", "Paris Disorderly", and "Failed Transition". These scenarios are summarised in Figure 5.1.1.1. The Trustee, on the advice of Railpen, selected these scenarios having regard to the following criteria:

- Plausibility – given national and international climate agreements on limiting GHG emissions, and given recent trends in emissions growth
- Statutory Guidance – aside from the requirement to consider a scenario within a temperature warming range of 1.5-2C above pre-industrial temperatures, the Trustee agrees with the Guidance to consider different scenarios with the same temperature outcome, in addition to a higher temperature outcome
- Simplicity – there is no limit to the number of scenarios one could compute for systems so complex and long-term; in order to facilitate effective risk management it is necessary to streamline and simplify the scenarios in use

Figure 5.1.1.1 - Description of the climate scenarios selected by the Trustee. The scenarios are developed by Ortec Finance as part of its Climate MAPS tool. The mortality impacts in different scenarios are inferred from modelling by WTW.

	Paris Orderly transition	Paris Disorderly transition	Failed transition
Use case	Tests exposure to the risks/ opportunities from the systemic drivers of an orderly transition and locked in physical risk	Shows resilience of the portfolio to sudden transition triggering a market dislocation centred on high emitting stocks	The main focus of this scenario is physical risk, results show the exposure to plausible, severe climate change impacts
Risk transmission and key assumptions	■ Large transition impact due to policy measures and technology drivers ■ Transition is assumed to occur as smoothly as possible ■ Market pricing-in dynamics occur smoothed out over the 2020-2025 period ■ Physical impacts occur up to 1.5/2°C which are greater than today but still much less than under a Failed Transition	■ Large transition impact due to policy measures and technology drivers ■ Transition has disruptive effects on financial markets with repricing followed by a sudden sentiment shock and stranded assets in 2024/2025 ■ Physical impacts occur up to 1.5/2°C which are greater than today but still much less than under a Failed Transition	■ Limited transition impact economies follow the business as usual track without additional new policy measures ■ Severe physical impacts occur and continues to increase over time both gradual physical changes, as well as more frequent and severe extreme weather events ■ Markets price in physical risks up to 2050 by end of this decade, and price in post 2050 physical risks from the mid-2030s onwards
Mortality impacts	By 2050, life expectancy[20] increases by around 3 years	By 2050, life expectancy increases by around 2.25 years	By 2050, life expectancy is essentially unchanged
Temperature outcomes	■ Average temp increase of **1.6°C** by **2100**. ■ In line with: Emissions ≈ IPCC RCP 2.6 ■ 97% probability of limiting warming to 2°C and c.29% probability of limiting to 1.5°C.		■ Expected global warming of **3.8°C** by **2100** ■ In line with: Emissions ≈ IPCC RCP 6.0

Further information on Ortec Finance's Climate MAPS model is available at https://www.ortecfinance.com/en/insights/product/climate-maps

[20] *In this table, "life expectancy" means the number of years after the age of 60 lived by an average male pension scheme member. Life expectancy increases in this table ignore potential improvements or deteriorations to life expectancy that could result for reasons other than climate change.*

Climate scenario analysis on the assets of the railways pension schemes was first undertaken in 2019, ahead of it becoming a regulatory requirement. In the years since, the uptake of climate scenario analysis by investors has increased and the sophistication and reliability of climate scenario models has improved. Nevertheless, the need for care, consideration and contextualisation, in making sense of the outputs of climate scenario analysis, is highlighted by the following limitations and assumptions:

- Time lags in the scientific and econometric data that are used as model inputs.
- Climate scenario analysis depends on climate scientific modelling. If the scientific modelling is precautionary, this might lead to an under-estimate of physical risks and their financial impacts.
- The need to use proxies for modelling climate risks in investment portfolios. These proxies might be imperfect representations of the actual investments in the schemes' investment portfolios.
- Typically climate scenario analyses assume investment strategy remains constant for many decades, whereas this is unlikely to be the case.
- Actual climate-induced mortality impacts might be influenced by exogenous factors such as lifestyle changes and public health interventions.
- Challenges in identifying a probability for a given climate scenario (climate scenario analysis tends to focus on impact rather than likelihood).
- The requirement to make assumptions about when climate risks will be priced into asset values.

Further limitations are described in section 5.3. Overall, climate scenario analysis is useful for identifying outliers and direction of travel, rather than pin-point accuracy.

5.1.2 Selection of time horizons

The financial impacts within climate scenarios are time-sensitive: the impacts in a given scenario might be different in the short term compared to the long term. For example, transition risks might be a dominant influence in the short term, but physical risks might dominate in the longer term. In the context of climate scenario analysis, the Trustee defines short term, medium term and long term in the following way:

Figure 5.1.2.1 - Trustee's definition of short, medium, and long term in the context of climate scenario analysis.

	Short Term	Medium Term	Long Term
Time	10 years	20 years	40 years

Given that a significant majority of assets in the RPS and the BTPFSF are in respect of open defined benefit sections, the investment strategy is long-term, and the Trustee Investment Beliefs make explicit reference to the long term, we believe the time horizons in Figure 5.1.2.1 are appropriate for the schemes.

When analysing climate impacts to scheme liabilities, the Trustee focuses on the Long Term time horizon (40 years). When used in climate scenario analysis, shorter term time horizons tend not to show funding impacts significantly different to the climate agnostic baseline.

The time horizons considered for the DC arrangements link to the timeframe for which current members' monies will be invested to and through retirement. It is therefore appropriate, when applying climate scenario analysis to DC arrangements, to adopt the same time horizons as those in Figure 5.1.2.1.

For the climate scenario analysis presented on the following pages, RPS asset allocation data and membership liability data are as of 31 December 2021 and 31 December 2019[21] respectively. At the time of first specifying these climate scenarios, no actuarial valuation of the BTPFSF had been completed since 31 December 2015[22]. Therefore, when considering the liabilities, WTW has assumed that the discount rates used to determine the Technical Provisions will have changed broadly in line with those adopted for the shared-cost sections of the RPS, and a funding level of 100% has been assumed.

The climate scenario specifications detailed are reviewed on a regular basis. Following review the Trustee has not altered its definition of short, medium, and long-term in this year's TCFD report (see "Note to reader" in section 5.1). The Trustee will review these definitions prior to next year's TCFD report, including the advantages and disadvantages of maintaining different definitions of short, medium, and long-term for different schemes, sections, or types of benefit arrangement.

[21] *The date of the most recent RPS valuation.*

[22] *The 2021 BTPFSF valuation was completed earlier in 2023.*

5.2 Climate risks to employer covenant

The Pensions Regulator defines the employer covenant as *"the extent of the employer's legal obligation and financial ability to support the scheme now and in the future"*. The strength of an employer covenant is, therefore, driven by a combination of:

- an employer's legal obligation to support a scheme
- an employer's financial capacity to do so, and
- an employer's longevity – the time horizon over which the employer might be expected to support a scheme (given the scheme's duration)

Physical and transition climate change risks could have a bearing on both an employer's financial capacity and longevity. Such impacts could be wide-ranging – affecting, for example, business operations, infrastructure, supply chain, key customers, etc, and vary from employer to employer. Such risks are analysed by Railpen's Employer Covenant team and overseen as detailed in section 4.

5.2.1 Employer covenant and approach to climate risk

The RPS is a multi-employer scheme, and employer covenant is analysed and reviewed on a case-by-case basis. At the present time, the Trustee does not utilise model-driven quantitative climate scenario analysis when reviewing information on employer covenant.[23]

[23] *Where individual employers have undertaken quantitative climate scenario analysis, this could be factored into the covenant analysis where appropriate.*

Short, medium, and long-term climate risks are considered within an employer covenant context using the following three tiers of assessment:

Figure 5.2.1.1: Three tiers of climate risk integration in employer covenant analysis

UK Policy	UK government climate policy, support and regulation of the rail industry – current and forthcoming
Sector risks	Sector-based analysis of climate risks and net zero alignment in UK rail, construction and engineering
Employer-specific risks	Employer covenant specific climate risks, Net Zero alignment assessment, adaptation potential and mitigation efforts

This report focuses on the UK Policy and Sector risks tiers noted above. At an employer-specific level, the covenant strength of each section within the RPS is rated on a 1-6 scale, where "1" is the strongest rating and "6" the weakest[24]. The covenant longevity of each section is also rated, as either Positive, Neutral or Negative, based on an analysis of (1) sector/industry-specific characteristics (including climate-related risks and opportunities), (2) employer-specific governance and management qualities, and (3) employer-specific longevity characteristics. The overall employer covenant ratings therefore take account of credit risk and longevity as well as specific legislative, contractual or other structural support from the rail industry or central, local and/or devolved government where appropriate. We intend to introduce employer-specific analysis in future reports, as appropriate, taking account of Trustee/employer confidentiality concerns.

Rail in the UK is considered the most environmentally friendly form of mass transport and there are a number of initiatives underway within the UK railways industry to decarbonise further and to encourage passenger and freight modal switch towards rail. Where climate factors are financially material to the employer and/or its sector and could therefore impact on the employer's ability to support the section now and in the future, they could impact the covenant and longevity rating positively or negatively. To date, a number of RPS sponsoring employers have already witnessed physical climate-related risk and opportunities e.g. weather-related resilience of railway infrastructure, and transitional risk e.g. the reduction of coal loads within the rail freight industry following the 2015 doubling of carbon tax on coal (please see "Case Study – ROCs transition risk – Coal" in section 5.2.4.2). The covenant impacts of such physical and transitional risks and opportunities have been considered at sector/sub-sector level, and take account of the specific covenant strength characteristics on a section-by-section basis. Going forward, the Trustee, advised by Railpen's Employer Covenant team, intends to adopt and incorporate, where appropriate, Railpen's CRIANZA framework (see section 5.4) within its covenant assessment framework for the purposes of climate integrated covenant analysis.

To date, Railpen has completed a longevity analysis of each sector within which RPS sponsoring employers and their wider groups operate. This analysis includes consideration of the climate-related risks and opportunities prevalent within each sector,

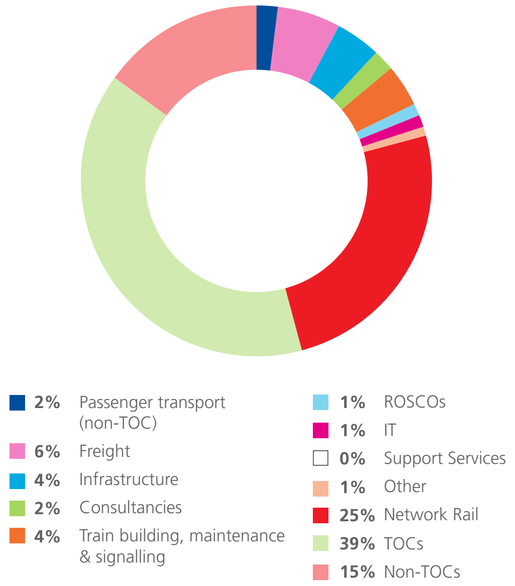
Thinking about climate risks as a regular/required item within employer covenant analysis is a relatively new and developing discipline. Railpen's forward-thinking team co-authored an innovative industry guidance document in 2022, which supports others in analysing climate risks in the context of an employer covenant[25]. Further guidance is expected to be published by The Pensions Regulator on this area later this year.

5.2.1.1 Supplemental data on RPS covenant

The RPS administers pensions for more than 150 companies operating in the rail industry, spanning sectors including government-linked bodies like Network Rail and the train operating companies (TOCs); freight operating companies; train building, maintenance and signalling; passenger transport; infrastructure; ROSCOs (Rolling Stock leasing Companies); consultancies; IT; support services; and others. The BTPFSF is a separate scheme, albeit its sponsoring employer, the British Transport Police Authority, also sponsors a section of the RPS.

Figure 5.2.1.1.1 summarises how the assets under management (AUM) of the RPS and BTPFSF are split between the different categories/sectors.

Employer covenant sector by AUM



[24] *As a separate scheme, however, the BTPFSF is not captured within this 1-6 rating scale. The BTPFSF covenant strength is rated as "Strong", consistent with a "1" rating on the RPS scale.*

[25] *Employer Covenant Practitioners Association, January 2022, "Reflecting climate change impact and risks in employer covenant assessments*

As illustrated in Figure 5.2.1.1.1, the majority of the AUM relate to sections sponsored by government-linked bodies (c. £31bn and 80% of the overall AUM), including the Network Rail section (covenant-rating "1"), the 27 Train Operating Company (TOC) sections (covenant rating 1) and 11 other "covenant 1/ strong" rated sections who benefit from legislative, contractual or other structural support from the rail industry or central, local and/ or devolved government e.g. RSSB and British Transport Police. The aggregate of those sections remain the focus of this report. This year, we also analyse the climate-related covenant issues in relation to the rail Freight Operating Companies ("FOCs") and the trainbuilders, maintenance and signallers, which together account for a further 10% (£3.8bn) of AUM covering 21 sections. The tail of smaller RPS sections (individually each has less than £1.0bn in AUM, and in aggregate these sections account for only 10% of total scheme AUM), will be covered in future TCFD reports as appropriate.

"The rail network plays a vital role in our transport system and the UK economy. It is a fast, safe and reliable way of moving people and goods over long distances, in and around our city centres and internationally. It enables people to get to work, visit friends and family, and do business. It also enables the efficient movement of goods from ports, quarries, and distribution centres to urban centres, and helps alleviate the need for trucks on roads."[26]

Given the social and economic importance of the railways in the UK, the UK government plays a central role in the UK rail industry. The resultant regulatory and contractual relationships between government and key rail companies mean that a number of RPS sponsoring employers benefit from direct and indirect government support.

From an employer covenant perspective, RPTCL recognises where the employer's ability to support the pension liabilities of a section on an ongoing basis benefits from specific legislative, contractual or other structural support from the rail industry or the UK government, usually demonstrated by one or more of:

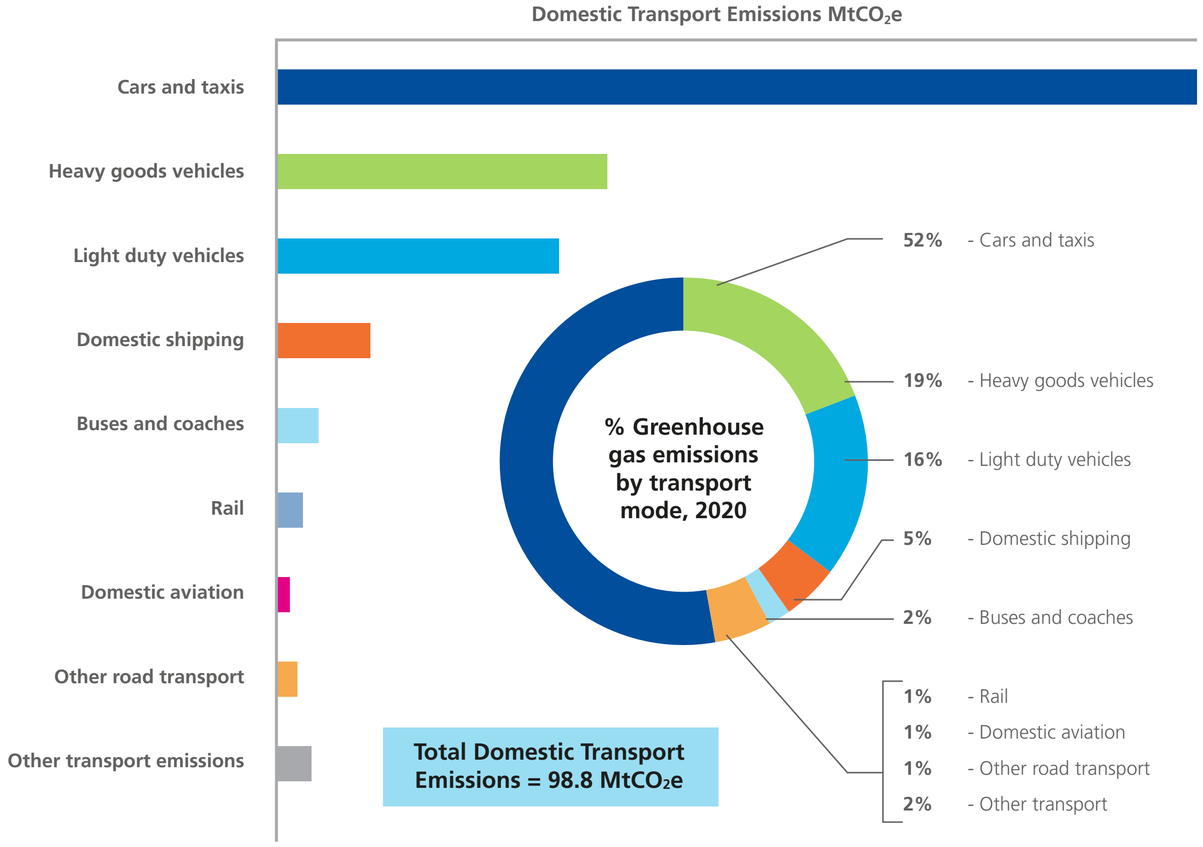
- specific legislative provisions
- a Crown guarantee
- written correspondence from UK central or local government bodies, or devolved government bodies, or
- other specific documented arrangements confirming the effective ongoing support by the industry to the Scheme.

5.2.2 UK Policy

Climate transition risks and opportunities arise as we move to a more sustainable, low carbon economy. In the UK, the transition is likely to be driven partly by changes in legislation and technologies, the impacts of which will vary widely by sector and geography. Transport is the largest contributor to UK domestic greenhouse gas (GHG) emissions, responsible for 24% in 2020. As shown and explained in Figure 5.2.2.1, rail is the least carbon intensive form of mass transport.

[26] *Quotation taken from Department for Transport "Rail Environment Policy Statement", July 2021*

Figure 5.2.2.1 Illustration and description of GHG intensity by transport mode in the UK. Source: Department of Transport document; "Decarbonising Transport: A Better, Greener Britain – One Year On"

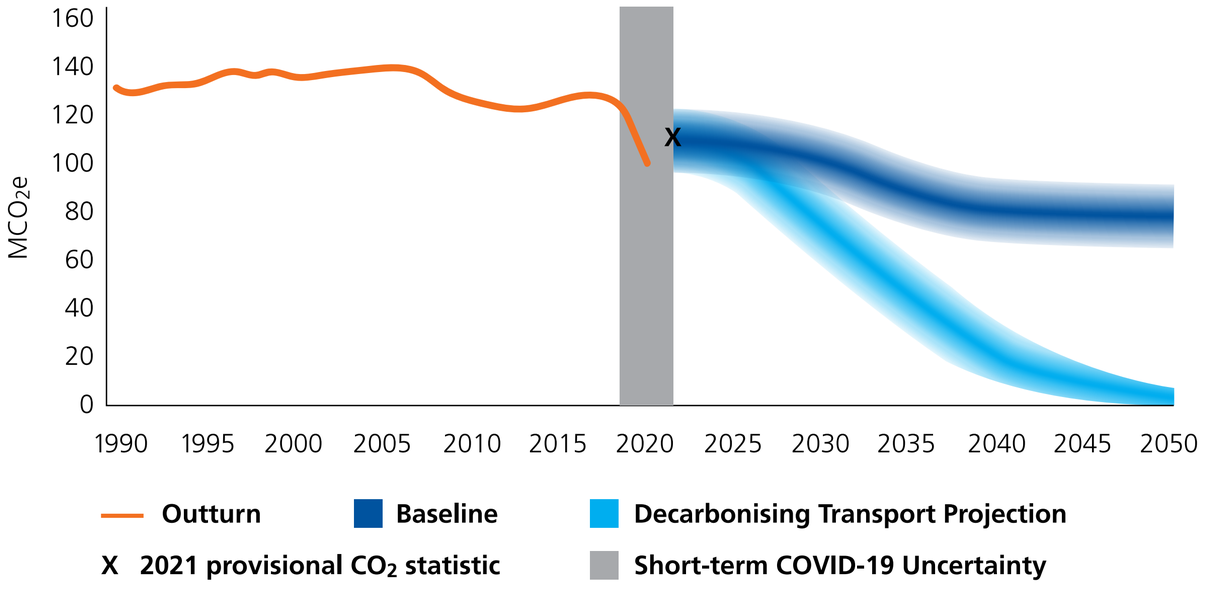


In 2020, greenhouse gas emissions from rail made up just 1% of the UK's domestic transport emissions, despite rail accounting for 9% of passenger miles travelled in Great Britain. In terms of the movement of goods, rail freight trains emit around a quarter of the CO2 equivalent (CO2e) emissions of HGVs, per tonne mile travelled. Even though rail is lower carbon than other long-distance transport modes, it is becoming even less carbon intensive as the National Grid decarbonises.

At a high level, UK government policy aimed at decarbonising transport in the short term is to encourage a modal shift away from the more carbon intensive modes, towards rail, for passengers and freight. It is also aims to encourage the rail industry to decarbonise further in the short, medium and long term.

The "One Year On" report recorded that between 2019 and 2020, transport emissions fell by 19%, largely as people stayed at home in response to the COVID-19 pandemic. Actual transport emissions for 2020 – and provisional estimates for 2021 – are mapped onto the trajectory published in the original Decarbonising Transport: A Better, Greener Britain document, right. To meet net zero by 2050, and the UK government's carbon budgets on the way, the transport industry as a whole must continue to make rapid progress.

Figure 5.2.2.1.1: Decarbonising Transport domestic transport greenhouse gas projection including latest outturn data



The Williams-Shapps Plan for Rail White Paper introduced the creation of Great British Railways. As a public body with responsibility for a major national asset, Great British Railways will have a responsibility to put environmental sustainability at the heart of its operations. The establishment of Great British Railways, a single organisation responsible for track, trains and stations, will better support the delivery of environmental objectives.

A specific duty will be placed on Great British Railways to consider environmental principles across all its operations. It will be accountable for and will lead the sector's delivery of a more environmentally sustainable rail network in line with its mission to make the railway the "backbone of a cleaner, greener public transport network".

Against this backdrop, in July 2021 the Department for Transport set out its key climate-related policy positions in respect of transport in general, and rail in particular, within two key documents:

- "Decarbonising Transport: A Better, Greener Britain", and
- "Rail Environment Policy Statement: On Track for a Cleaner, Greener Railway"

5.2.2.1 Decarbonising Transport: A Better, Greener Britain

The Decarbonisation Plan highlights electrification as the primary method of decarbonising the majority of the rail network. The report claims that electrification will not only decarbonise existing rail journeys, but also has the potential to attract new passengers to rail.

The report notes that in the last 20 years, while the cost of motoring fell by 15%, over the same period the cost of rail fares went up by over 20%. The plan calls for simpler, cheaper fares for public transport to help make trains (as well as buses) better value and more competitively priced. The report outlines that the government will also look to newer technologies such as hydrogen and battery trains, deploying the most appropriate technology for each route across the network. The plan – which will include all transport modes but particularly road, rail and aviation – sets a transition pathway to achieving net zero carbon emissions across the transport sector by 2050.

The rail-specific elements within the Decarbonisation Plan include:

- **Electrification** - To deliver an ambitious, sustainable, and cost-effective programme of electrification guided by Network Rail's Traction Decarbonisation Network Strategy.
- **Hydrogen/battery technology** - Supporting the development of battery and hydrogen trains and will deploy them on the network as we decarbonise.
- **Network capacity** - Building extra capacity on the UK's rail network to meet growing passenger and freight demand and support significant shifts from road and air to rail.
- **Modal shift** - Government will work with industry to modernise fares ticketing and retail to encourage a shift to rail and cleaner and greener transport journeys.
- **Freight** - Government will introduce a rail freight growth target to encourage the continued growth of rail freight.

These initiatives are further developed within the Rail Environment Policy Statement.

5.2.2.2 Rail Environment Policy Statement: On Track for a Cleaner, Greener Railway

The purpose of the Rail Environment Policy Statement (REPS) is to set a clear direction for the rail industry on environmental sustainability and to outline policy priorities for the Sustainable Rail Strategy. The report emphasises how the reform of the rail sector provides an opportunity to transform rail sustainability, noting that in order to support a green recovery from the pandemic, railways can shift away from polluting forms of transport such as planes, cars and lorries, to become the best option for long-distance travel, and improve the whole journey experience. This will include making it easier to get to and from stations by walking, cycling or other public transport; supporting green infrastructure outside cities; modernising fares to compete with air travel; improving freight connectivity through interchanges, and creating better links with freeports.

There is a notable emphasis in the report on the role that rail will have to play in maximising the environmental benefits of moving freight, with GBR having a "statutory duty" to promote rail freight. The report also notes that GBR will develop a methodology to better assess the value of rail freight to support decision making, building on the "Value of Rail Freight" report commissioned by the Rail Delivery Group in April 2021.

The plan lists the following priorities for the rail industry:

- Net zero greenhouse gas emissions from trains by 2050.
- An ambition to remove all diesel-only trains from the rail network by 2040.
- A commitment to a sustainable delivery programme of electrification that delivers a higher-performing net zero railway.
- Air quality targets will be set for all parts of the railway (published in 2022), with the ambition of meeting those targets by the end of 2030.
- The industry will be required to develop air quality improvement plans for all stations identified as having poor air quality.
- Network Rail will achieve net zero biodiversity by 2024 and biodiversity net gain by 2035.
- 100% of Network Rail's cars and vans will be zero emission by 2027.
- Zero waste from railways activities will go to landfills by 2025.
- Targets will be set for renewable energy generation and use at stations.

Traction decarbonisation/electrification plays a significant role in the rail industry's environmental plans. This includes decarbonising rail freight by electrifying more of the network to enable electric rail freight to run on more routes and developing further interventions, in partnership with industry, to help Freight Operating Companies have the confidence and business assurance to invest in new rolling stock to overhaul their largely diesel fleets. There is a defined aspiration to achieve a stable, ongoing rail electrification programme that learns from past mistakes. Great British Railways will lead an efficient electrification programme, working with funders and suppliers to minimise the cost and disruption of further electrification. Future rolling stock procurements will need to consider how to enable the use of hydrogen and battery trains where they are the best way to deliver decarbonisation targets.

In relation to **Passenger Modal Shift**, the policy is to make rail the first option for suitable journeys in the UK and encourage commuters to cycle, walk or take public transport to and from rail stations, making their journey environmentally sustainable from door to door. In the future, each Passenger Service Contract will be designed by Great British Railways to support the needs of passengers and the whole network as part of an integrated system.

In relation to **Freight Modal Shift**, the government is supportive of modal shift from road to rail, wherever possible, to reduce emissions from the freight sector. The government will introduce a rail freight growth target for all areas of the network to provide a common objective for industry collaboration, help provide private operator investment confidence, and galvanise action across local partners and industry. To further grow rail freight in for 2021/22, the government has invested £20 million in the Mode Shift Revenue Support (MSRS) scheme and will continue to work with the rail freight industry, Innovate UK, and the Rail Safety and Standards Board (RSSB) to look at how best to progress options on innovation, research and development to reduce emissions from rail freight.

Political uncertainty around the future of Great British Railways to a degree hampered progress in these areas during 2022. Some progress has been made, e.g. commitment to further electrification of lines as part of the Integrated Rail Plan and funding for a fast charging trial for battery-only trains. In February 2023, the Secretary of State for Transport reaffirmed the government's commitment to the creation of GBR in his Bradshaw Address. We expect that this should reinvigorate the development of the rail decarbonisation programme ahead of GBR becoming formally established, albeit we note the uncertainty that remains in this area.

These policies and plans help clarify the transition risks and opportunities facing the UK Rail sector, and challenge the industry to develop its own plans to meet them. In addition, unlike most other UK sectors, the rail industry is already facing the challenges of physical climate-related risks.

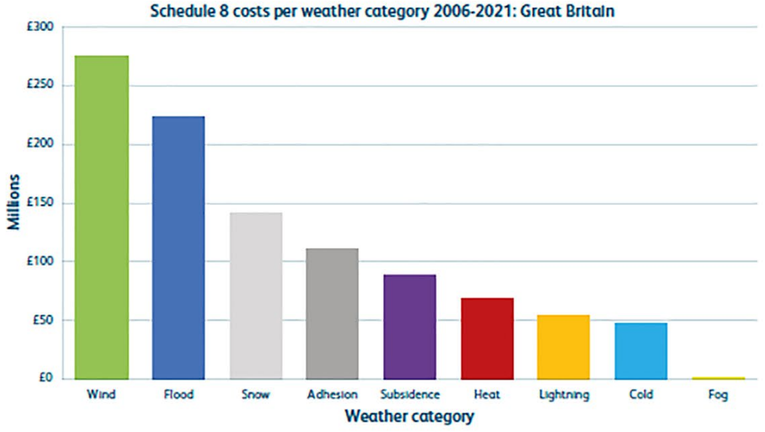
5.2.3 Sector risks: Physical risks

Britain's railway operates in a wide range of weather conditions and is one of the safest in Europe. The increasingly frequent severe and prolonged weather events due to climate change present a growing challenge, with climate changes already affecting the infrastructure, causing significant disruption to the network with impacts felt by customers, staff and the communities in which we live and work. For instance, heavy rainfall may require delays to the arrival or departure of trains. In more challenging cases, trains can be stopped from running, and railway infrastructure may be obstructed and damaged, resulting in costly repairs. In rare more extreme cases, there is a much bigger effect, with widespread delays, the need for more substantial repair work and the potential for severe safety consequences. This was highlighted most recently by the tragic events at Carmont in Scotland in 2020, where volatile weather conditions resulted in the derailment of a passenger train and loss of lives.

Network Rail owns, operates and develops Britain's railway infrastructure including 20,000 miles of track, 30,000 bridges, tunnels and viaducts and thousands of signals and level crossings. Network Rail also manages 20 of the UK's largest railway stations and is responsible for running a safe, reliable and efficient railway that serves customers and communities. Between 2006/07 and 2020/21, Network Rail reported that weather-related incidents caused over 322,000 delay events, 26 million delay minutes and over £1 billion of compensation payments.

The figures in Figure 5.2.3.1 indicate the cumulative costs for each weather impact category from 2006/07 to 2020/21 across the whole network and for England, Wales and Scotland respectively. Nationally, the two biggest challenges come from wind and flooding incidents costing £275 million and £223 million each. There are also significant impacts associated with adhesion and snow, each costing more than £100 million over the same period. While wind, flooding and snow remain the top impacts across all three, flooding has the largest impact in Wales. In Scotland, snow, cold and adhesion are greater challenges than elsewhere, while England and Wales see more issues related to heat, with England seeing the greater impact. Of the three nations, Wales shows the greatest impact from lightning, relative to other regions.

Figure 5.2.3.1: Cumulative costs by weather impact category from 2006/07 to 2020/21 across the rail network in England, Wales and Scotland



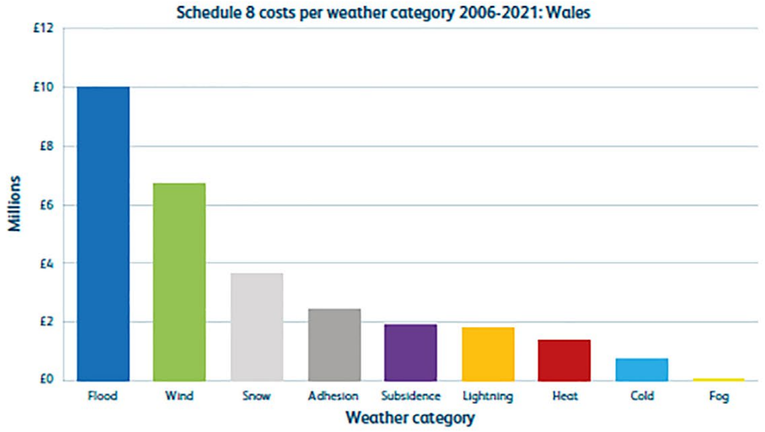


Figure 1-5 – Cumulative Schedule 8 weather category costs 2006/07 to 2020/21 (England)

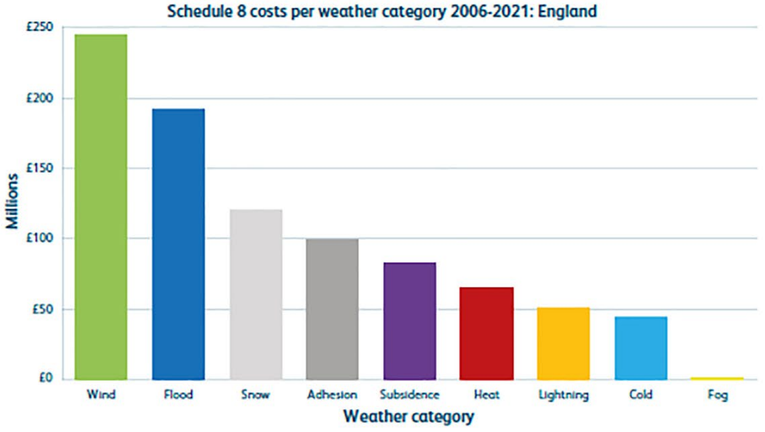
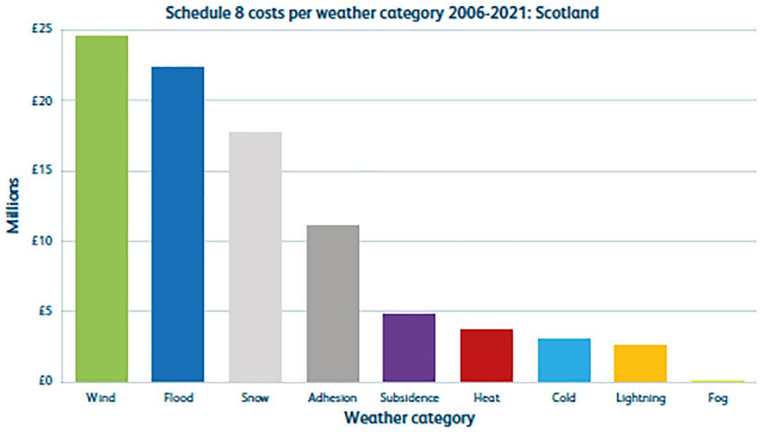


Figure 1-7 – Cumulative Schedule 8 weather category costs 2006/07 to 2020/21 (Scotland)



Source: http://www.networkrail.co.uk/running-the-railway/our-regions

5.2.4 Sector risks: Transition risks and opportunities

5.2.4.1 Government-linked bodies

As noted previously, the regulatory and contractual relationships between government and key rail companies results in a close proximity between the government / Department for Transport (DfT), which set (and ultimately fund) high-level ambitions and policies, and the industry players responsible for meeting those challenges and realising those ambitions.

The rail industry is dominated by Network Rail. Network Rail Limited ("NRL") and its subsidiaries, including the section's sponsoring employer within the RPS, Network Rail Infrastructure Limited ("NRIL"), are a "Non-Classified Arm's Length Public Body of Central Government". NRL is a not-for-dividend company limited by guarantee with a Special Member, the Secretary of State for Transport (SoS). NRIL owns all the assets of the group and carries out all the trading of the group. The SoS, supported by the DfT and in conjunction with the Office of Rail and Road (ORR), has a significant level of control over the strategic, operational and financial activities of NR and the SoS is accountable to Parliament for the activities/ performance of NR. As noted within the Williams-Shapps Plan for Rail, NR is expected to become part of Great British Railways, a new public body.

In addition to Network Rail, the Train Operating Companies (TOCs) and another covenant rated 1 employers are additional categories of key rail companies where the employer's ability to support the pension liabilities of a section on an ongoing basis benefits from specific legislative, contractual or other structural support from the rail industry or the UK government. Great British Railways is to be created via legislation and will become the governing body for the TOCs. The Williams-Shapps Plan for Rail sets out that GBR will manage costs and revenue decisions for the network; that Ministers will hold GBR to account through a structured framework underpinned by legislation; and that Ministers will have statutory powers to set long-term strategy and have powers to issue guidance and mandatory direction to GBR on any matter at any time.

The transition risks and opportunities faced by these key central rail companies are therefore to a significant degree determined by government, and are inherently linked to government's own appetite to fund the accompanying costs in an efficient manner – one that is fair to the taxpayer and the fare-payer

Case study: **Managing climate-related risks at Network Rail**

Since extreme weather events are becoming more frequent and intense, the UK rail network will likely suffer more damage and greater disruption unless there is investment in climate adaptation technologies to improve the climate resilience of the network. To a large degree, such investment by Network Rail provides opportunities for other sub-sectors of the railway industry.

In 2020, Network Rail became the world's first railway company to set an approved science-based target (SBT) aligned to a 1.5C temperature outcome. Through the initial target-setting process, Network Rail worked with Carbon Intelligence to quantify Network Rail's emissions, finding that 66% of overall emissions were in the supply chain. To address this, they set a target for 75% of their suppliers (measured by emissions) to set science-based targets by 2025. These targets extend across the entire value chain of Network Rail and will require collaboration to reduce carbon emissions from Network Rail's own operations and those of suppliers and customers. Since 2020, Network Rail has been working on a Supplier Engagement Programme to educate suppliers and work with them on developing their own ambitious carbon reduction targets. By engaging with the supply chain and asking their suppliers to set science-based targets, Network Rail will create a domino effect that should reduce supply chain emissions by 50% by 2030 and help drive the UK closer to hitting its 2050 net zero target.

Supplier engagement is a task faced with several challenges ranging from the accuracy of GHG data, securing internal buy-in, and education and engagements with very large and complex organisations. Ensuring clear objectives backed up with data enabled Network Rail to overcome some of these challenges. The data gathering process enabled Network Rail to identify 70 high impact suppliers, from which Network Rail could collect further information to understand the individual decarbonisation targets and plans. By collating this information, Network Rail was able to develop a supply chain emissions reduction roadmap.

The UK government and Network Rail's extensive decarbonisation, adaptation, investment, and supplier engagement programme provide strong adaptation initiatives and mitigation efforts to the physical risks faced by the UK rail industry and set the stage for the rail industry to be a "climate enabler" for the UK.

While the UK government is responsible for setting policies and challenges, and Network Rail is primarily responsible for meeting those challenges, the regulatory and contractual arrangements which underpin Network Rail's funding regime are such that Network Rail will only need to meet the challenges that the UK government agree to fund. This results in the covenant strength of the Network Rail section and those of the other sections sponsored by government-linked bodies being substantially protected from the challenges that the employers themselves face.

In addition, the UK government and Network Rail climate transition roadmap provides a template for other employers in the UK rail industry.

Source: Network Rail, EDF, Carbon Intelligence

5.2.4.2 Rail Freight Operating Companies (FOCs)

Rail freight is recognised as one of the least carbon-intensive ways of moving freight. The headline statistic often quoted is that each freight train removes 76 HGV lorries from the UK roads.

Rail freight is a critical part of the UK transport network, linking businesses with ports, quarries, suppliers and other supply chain nodes. The COVID-19 pandemic highlighted the importance of rail freight to the UK economy as a critical part of the UK supply chain – the retail and construction sectors in particular.

UK rail freight has also been noted as having an important role in the UK achieving its statutory net zero target. Some commentators have stated that a much more pronounced shift away from road haulage is required for the UK as a whole to meet its decarbonisation targets. As companies begin to increase their focus on supply chain (scope 3) carbon emissions to achieve net zero, this should further encourage modal shift and increase the demand for rail freight.

Figure 5.2.4.2.1 Rail freight in numbers

Freight lifted: 77.9 million tonnes (5%*)
Freight moved: 17.4 billion net tonne kilometres (9%*)
Freight trains run: 221 thousand - 605 per day

* % of freight lifted/moved - including road, rail & water

£2.45bn
Contribution to the UK economy in 2018/19

£30bn
Value of goods carried each year

19,700
Lorry journeys taken off the road each day (7.2m p.a.)

1.6bn
Equivalent lorry km's avoided p.a.

76%
Reduction of CO_2 emissions compared to road

1.4m
Tonnes of CO_2 emissions saved each year

95%
Arrived with 15 mins of scheduled time 2020/21

30
Each train able to carry the materials to build 30 houses

5,000
Train services provided to Network Rail p.a.

Sources: OPR (2018/19 data), RDG/Deloitte analysis

> **a faster, greener, safer and more efficient way of transorting goods than roads**
>
> ***Network Rail***

The government is supportive of rail freight and is to introduce a rail freight growth target for all areas of the network. On its creation, GBR will have a "statutory duty" to promote rail freight.

In June 2022 the DfT published the "Future of freight: a long-term plan", which sets out a commitment to a long-term cross-modal approach to the freight and logistics sector – covering road, rail, maritime and air. The report highlights the importance of the freight and logistics sector as a whole – including its role in delivering essential goods (medicines, food, fuel etc), contributing £127bn p.a. to the UK economy, and employing >2 million workers. The report is the government's and sector's joint response to the challenges, and will be overseen by a refreshed Freight Council model, holding the government and sector to account on the delivery of these commitments over coming years.

Future of Freight: a long-term plan, June 2022

- The UK rail freight is a fundamental part of the chain which is critical to the UK economy and to achieving net zero. This has been highlighted through recent events (COVID-19 etc) and the Future of Freight plan issued by DfT in June 202 sets out strategic priorities:
  - considering the national freight network more holistically, allowing for better decisions around infrastructure investment;
  - addressing net zero transition challenges, e.g. providing greater clarity over rail electrification plans, to allow the FOCs to invest (e.g. in new locos) and reduce the risk of stranded assets;
  - reviewing planning approval processes and contents (noting the importance of strategic rail freight interchanges);
  - addressing workforce shortages, negative perceptions in the industry, and the lack of diversity; and
  - improving innovation and the adaption / roll-out of technological advances within the sector.
- This plan is based on the wider freight and logistics sector (i.e. also includes road, maritime and air), and we view this more joined-up approach as positive noting that modal shift, from road to rail, remains a key focus to alleviate road congestion and reduce carbon emissions.

Notwithstanding the already strong green credentials of the FOCs, the industry is keen to retain and build on these by further reducing its carbon footprint. This will be achieved primarily through switching to less carbon-intensive forms of traction. This is not without challenges. In keeping with the issues faced by transport in general:

- further research and development is required into the fuels and technology of the future.
- there is investor uncertainty, as there is a lack of clarity around the energy infrastructure and supply network that will be in place in the decades to come – along with concern that it will come at a disproportionately high cost (e.g. the recent energy price volatility, which resulted in some FOCs parking up some of their electric locos).
- there are investor concerns about the risk of stranded assets, and first-mover disadvantages create a barrier to investment in new technologies. Therefore industry and government must work together to build greater certainty and give investors the confidence to invest in new assets, and new energy/fuel generation.

FOC-specific challenges include the following:

- Although 38% of the rail network is electrified, only 5% of freight is transported using electric traction – as even on routes where the majority of the network is electrified, there are lengths of the track that are not, meaning diesel is the preferred option.
- There are only 10 bi-mode (diesel/electric) locos (2%), and only 10% of locos are electric across the FOCs' fleet.
- Electrification of the rail network remains the key limiting factor for wider adoption of alternative (non-diesel) traction. This is not feasible on some parts of the network, however, the pathway to alternative technologies remains unclear. While low carbon fuels have been successfully deployed (e.g. HVO) cost barriers prevent wider use.

Unlike the TOCs, the FOCs operate as private sector companies in the UK so, unlike Network Rail and TOCs, are subject to non-publicly funded transition risks, as experienced in 2015 (see ROCS transition risk - Coal case study).

Despite these challenges, the climate-related opportunities, including the ever-growing desire and push-factors to switch freight from road to rail, results in a positive medium and long-term outlook for the FOCs.

Case study: **ROCs transition risk - Coal**

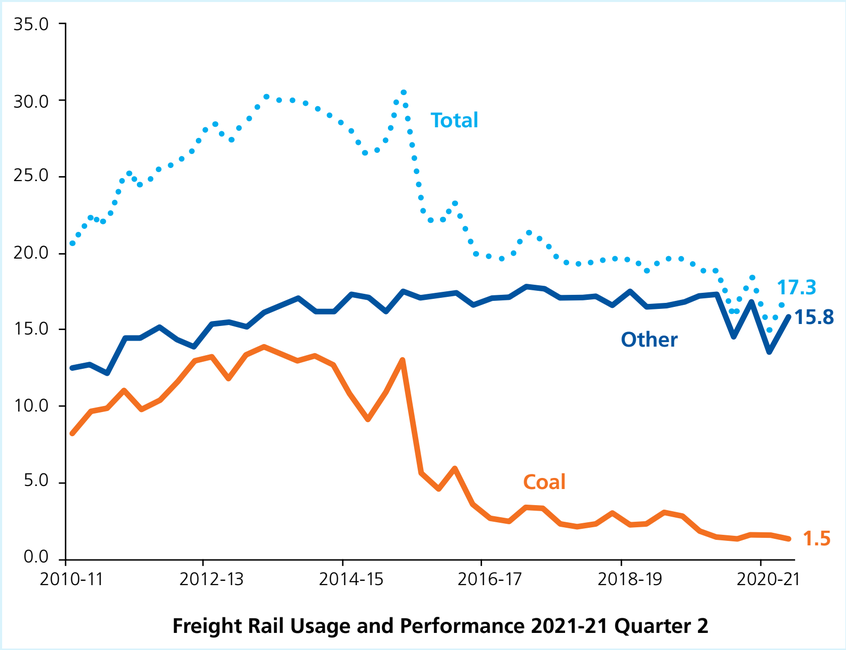
A tax on carbon dioxide emissions was introduced in the UK in 2013, as part of the EU Carbon Price Support initiative, aimed at reducing carbon emissions. Such an initiative falls under the "transitional risk" activities noted previously.

In April 2015, the government doubled the Carbon Tax on coal, leading to the coal-fired power stations stocking up immediately pre April 2015, then demand for coal falling off immediately post April 2015.

From a Climate Policy perspective, this was highly successful. This policy led to the proportion of electricity generated from coal in the UK falling from 40% to almost zero within a five-year period (at least until the recent volatility in energy process).

However, prior to 2015, coal accounted for almost half of all freight moved by rail in the UK. The impact of almost 50% of rail freight companies' customer demand disappearing almost overnight was substantial, particularly given the high capital, long life asset characteristics of the sector. This demonstrates that in circumstances where the employer itself may have good green credentials e.g. rail freight is recognised as one of the least carbon-intensive ways of moving freight – climate-related risks and policies affecting the sponsor's customers and/or suppliers can nevertheless have a material effect on the trading of the sponsor. That said, the green credentials of the rail freight industry, combined with HM Government's policies and statements towards rail freight as an integral part of its UK rail and net zero ambitions, result in the rail freight industry enjoying a very positive outlook.

Figure 5.2.4.2.2 Freight lifted (million tonnes), Great Britain, 2010-11 Q1 to 2020-21 Q2



Freight Rail Usage and Performance 2021-21 Quarter 2

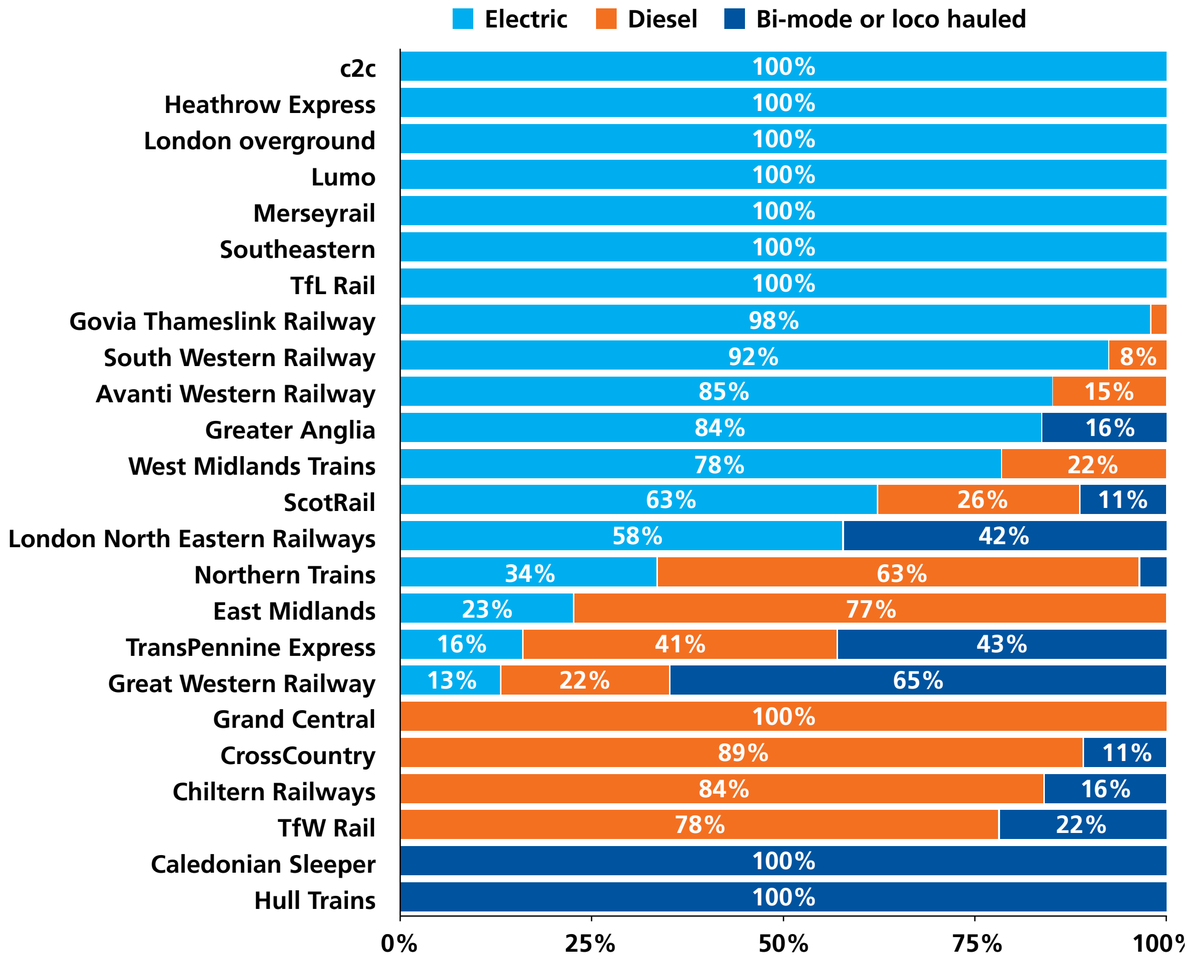
5.2.4.3 Train-builders, maintenance and signalling companies

Climate / environmental impact on new build pipeline

As noted previously, the DfT has challenged the rail industry to remove all diesel-only trains from the network by 2040. The Scottish government is aiming for a net zero railway by 2035. This is an example of climate-related "Transition Risk" for the industry, but for train builders, can also be viewed as a climate-related opportunity.

To remove the diesel trains from the network, fleets with greener traction need to be procured. As at 31 March 2022, 18% of the UK passenger rolling stock was diesel only (2,746 out of a total of 15,277 railways vehicles)[27]. Only seven of the TOCs had all electric fleets as at 31 March 2022.

Figure 5.2.4.3.1 UK rail network, proportion of fleet by fuel source



ScotRail has announced it will replace all diesel trains by 2035, by replacing 65% of its fleet between 2027 and 2035. Cross Country's 'youngest' diesel trains will be 38 years old by 2040, suggesting they will be towards the end of their life.

However other diesel trains may not be life expired by 2040 and new diesels are still being ordered/delivered e.g. Transport for Wales is in the process of taking delivery of new diesel trains, and the new East West Railway is expected to procure new diesel trains.

The increasing prevalence of new fleets presents a risk for maintenance companies, as the Original Equipment Manufacturer (OEM) typically supplies new rolling stock combined with a substantial maintenance contract. Some rail industry figures, however, consider the removal of all diesel trains by 2040 as unachievable. Slower progress in bringing the new greener traction options to the UK market could lead to extended lives for existing fleets which presents an opportunity to provide more maintenance and overhaul work for the existing maintainers.

[27] *Source: https://dataportal.orr.gov.uk/media/2139/rail-infrastructure-assets-apr-2021-mar-2022.pdf*

Pipeline – network constraints

Large parts of the network are non-electrified which restricts use of electric traction to replace diesel. The roll out of electrification has been slow paced with just 2.2km of track electrified in FY22 and 179km in FY21 out of around 10,000km of non-electrified track.

Due to the slow roll out of electrification, the limited visibility on further electrification and some routes being unsuitable for electrification, alternative "green" traction options are under consideration as well as an increased use of bi-mode fleets.

Battery-electric hybrids

- Battery-electric hybrid trains can be used where routes are partially electrified and are being developed by a range of suppliers, including Alstom and Hitachi, in partnership with ROSCOs.
- Chiltern Railways is currently in a tender process for a battery-electric fleet with expected delivery in 2027.

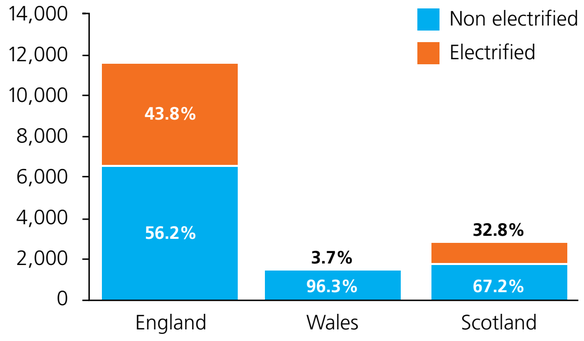
Hydrogen trains

- Hydrogen-powered trains are also in development for the UK market. RSSB published a Hydrogen Policy and Standards Review in October 2022. Further work needs to be carried out to understand several areas, including safety risks, and to confirm technical elements (e.g. to determine where on the network hydrogen storage tanks would be installed) before concluding on the introduction of this technology.
- RPS employer groups have delivered hydrogen trains elsewhere in the world and are ready to take advantage of this opportunity in the UK.

Impact on train builders

- These new traction options provide alternatives to diesel fleets to meet the government's 2040 target. This presents an opportunity for new orders for train builders. However, new technology tends to be expensive for early adopters, which may act as a barrier to these orders being placed.

Figure 5.2.4.3.2 Total and electrified route length by country, great Britain, as of March 2022



European Green Deal

Many of the RPS employers in this sector are part of large groups, the majority of which are based in Europe – Alstom (France), Siemens (Germany), Thales (France) and Stadler (Switzerland). Whilst Hitachi is ultimately headquartered in Japan, the rail division is based in Europe with substantial entities in the UK and Italy.

The European Green Deal is a set of policy initiatives by the European Commission with the aim of making the EU a carbon neutral economy by 2050. The Green Deal aims to make railway the backbone of its mobility strategy, noting it is the lowest carbon form of mass transit. There is support for a modal shift of both passengers and freight onto rail from other forms of transport such as road and air.

- The Green Deal includes a strategy to improve the connectivity of major urban areas across mainline Europe by rail through the development of more high speed lines.
- This positive view of the rail sector in Europe is also illustrated by the decision of the French government to ban domestic flights where it can be made via a rail journey of under 2 ½ hours.
- The EU's strategy to promote growth in European rail is positive to many of the groups which own the RPS employers in this sector.
- This has a positive impact on our view of longevity for the RPS employers where they belong to substantial groups which we expect have a strong long-term outlook.

Rail signalling

Improved signalling systems also have a role to play in freeing up capacity on the network by safely allowing more trains on the network – with less distance between them. Improved signalling, control and traffic management systems can make more efficient use of the network and reduce energy consumption – e.g. making better use of available platforms and lines to reduce unnecessary train acceleration and wait times.

Whilst there may be uncertainty on the forecasts for future growth in passenger numbers, the rail freight sector is modelled to have substantial growth over the next 20 years. A limiting factor to this growth could be network capacity. In terms of the signalling sector, increased capacity and more efficient use of the network is required to deliver the growth in rail freight. This clear demand for increased capacity is a positive for the signalling companies.

RPTCL will continue to engage with the RPS and BTPFSF sponsoring employers (including the tail of employers not discussed in this report) to review their decarbonisation strategies and mitigation efforts to reduce potential climate change-related covenant impacts. We expect to report more on these activities and their impact in future TCFD reports.

5.3 Climate risks to scheme liabilities

This section of the report describes:

- the climate-related risks and opportunities relevant to the schemes over the time periods that the Trustee has identified
- the potential impacts on the schemes' liabilities which the Trustee has identified in those scenarios

In order to do that, we illustrate the impacts of the three climate scenarios (described in section 5.1) on the funding level of the DB sections of the RPS and the BTPFSF. Unless otherwise stated, the results disclosed below aggregate all defined benefit sections of the RPS and the BTPFSF into two "total scheme[28]" views. The analysis has been carried out by WTW (the RPS Scheme Actuary), with financial assumptions informed by asset-side analysis carried out by Ortec Finance (further described in section 5.4).

The analysis considers (i) the asset-side climate impact on investment returns, and (ii) liability-side impacts through potential changes to mortality assumptions in different climate scenarios. The analysis does not consider climate-induced inflationary impacts on liabilities because (a) liabilities have a relatively low degree of sensitivity to inflation and (b) the climate scenarios used assume relatively modest changes to future rates of inflation. The analysis does not adjust discount rates because doing so would risk double-counting the asset-side loss or gain which is accounted for by (i).

The results in Figures 5.3.2.1, 5.3.2.2, and 5.3.3.1 and 5.3.3.2 represent the cumulative impacts to assets and liabilities over the long-term (defined per section 5.1 as 40 years).

Limitations to the analysis include:

- those described in section 5.1
- the impacts on both assets and liabilities of climate scenarios are highly uncertain, and a number of subjective judgements are required in order to calculate the indicative impacts
- other uncertainties related to mortality assumptions (outlined below)

5.3.1 Mortality assumptions

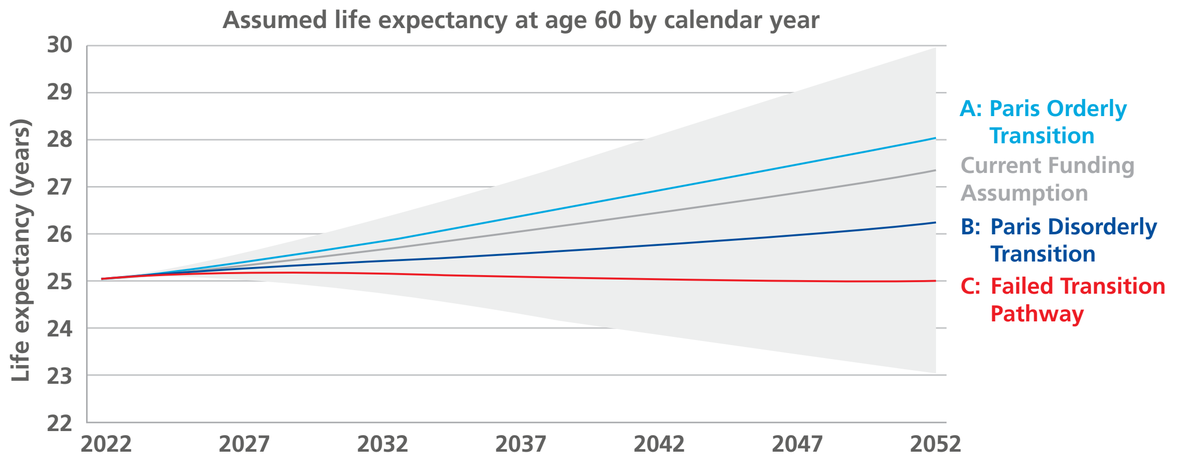
When projecting the expected benefit cash flows of these DB sections, there are direct impacts of climate change on mortality to consider, along with indirect impacts on mortality that may result from behavioural and lifestyle changes. The mortality impacts of climate change scenarios are impossible to predict accurately and will depend on several climate and non-climate related factors and the complex interactions between them. Non-climate related factors include the geographical composition of members, medical breakthroughs, lifestyle choices and the increased rates of diseases associated with these, reduced prosperity, and cuts to health services, e.g. due to the long term consequences of COVID-19.

When considering the potential impact of climate change on the mortality rates for the RPS and the BTPFSF, unlike the assets, the country of interest is almost exclusively the UK. The Met Office's UK Climate Projections (UKCP18) provides estimates of probable UK climate outcomes for a range of global warming scenarios.

Under these projections, global warming is expected to lead to both warmer UK winters and summers. The most obvious direct consequences are a reduction in cold-related winter deaths and an increase in heat-related summer deaths. Translating climate-induced mortality changes in our three scenarios, WTW assumes the following:

- The Paris Orderly Transition leads to a high to very high improvement in longevity
- The Paris Disorderly Transition leads to a moderate improvement in longevity
- The Paris Failed Transition leads to a moderate deterioration in longevity

Figure 5.3.1.1 - Projected changes to life expectancies in different climate scenarios under the typical funding assumptions for the DB Shared Cost Sections of the RPS and the BTPFSF.



[28] *I.e. including defined benefit arrangements, but excluding defined contribution arrangements*

5.3.2 Climate scenario analysis of overall scheme liabilities and assets

The impact of life expectancy changes on scheme liabilities in the three climate scenarios is shown in Figure 5.3.2.1. The data in Figure 5.3.2.1 represent the cumulative climate impact on scheme liabilities over 40 years in each climate scenario, summed and discounted into a present value. The annualised impact on liabilities would be far smaller. The mortality of the RPS and BTPFSF membership (and hence the liabilities of the schemes) will change over a 40-year period for non-climate reasons. The numbers in Figure 5.3.2.1 represent the difference that climate change makes, given hypothetical scenarios, to the way in which liabilities would evolve for non-climate reasons. For example, if in 40 years' time, the RPS's liabilities turn out to be 5% greater for non-climate demographic reasons, WTW's climate modelling suggests that a Paris Orderly scenario would increase this by a further 1.6% (this is the first number in Figure 5.3.2.1).

Figure 5.3.2.1: Impacts of climate change on scheme liabilities in selected climate scenarios

Scenario	Indicative change in value of the overall liabilities for the:			
	RPS (overall)	Shared cost sections	1994 Pensioners	BTPFSF
Paris Orderly	+1.6%	+1.7%	+0.7%	+1.2%
Paris Disorderly	-2.6%	-2.8%	-1.2%	-2.4%
Failed Transition	-5.4%	-5.8%	-2.4%	-4.8%

The scenario analysis suggests that climate change has a low to moderate impact on the schemes' liabilities over the long term. In a Failed Transition scenario, climate change is assumed to diminish liabilities and improve the funding level. Within the RPS, in this analysis, the impacts to liabilities of the 1994 Pensioners Section are more muted than the Shared Cost sections owing to the members of the 1994 Pensioners Section being older. Overall, the analysis suggests that from a liabilities perspective, climate impacts on mortality does not pose a significant challenge to the resilience of the schemes' funding positions.

For comparison, the modelled impacts to asset values over 40 years are shown in Figure 5.3.2.2. The analysis uses the assumed changes to future expected returns provided by Ortec Finance (further described in section 5.4) to apply a one-off shock to the assets under each scenario. The data in Figure 5.3.2.2 represent the cumulative climate impact on asset values over 40 years in each climate scenario, summed and discounted into a present value. The annualised impact on asset values would be far smaller. The value of schemes' the RPS and BTPFSF assets will change over the next 40 years for non-climate reasons. The numbers in Figure 5.3.2.2 represent the difference that climate change makes, given hypothetical scenarios, to the growth in asset value for non-climate reasons. For example, if the RPS's total scheme asset value in 40 years' time turns out to be 150% greater for non-climate reasons, WTW's and Ortec Finance's modelling suggests that a Paris Orderly scenario would decrease this by 5.9% (this is the first number in Figure 5.3.2.2).

Figure 5.3.2.2: Impacts of climate change on assets in selected climate scenarios

Scenario	Indicative change in value of the overall liabilities for the:			
	RPS (overall)	Shared cost sections	1994 Pensioners	BTPFSF
Paris Orderly	-5.9%	-5.9%	-5.3%	-5.8%
Paris Disorderly	-12.3%	-12.4%	-12.1%	-11.7%
Failed Transition	-19.1%	-19.1%	-18.5%	-18.1%

In the climate scenarios analysed, the impacts to asset values are not significantly different between the Shared Cost sections and the 1994 Pensioners Section of the RPS. It is noteworthy that climate impacts are always negative for asset values, regardless of climate scenario. This is explored in more detail in section 5.4.

For the RPS Shared Cost Arrangement (the largest in the RPS), around 75% of the defined benefit sections remain open, while 25% have closed. Over time, the closed sections might be expected to "de-risk" and develop rather different investment strategies compared to open sections. For example, the closed Shared Cost sections might be expected to gradually invest in more defensive asset classes over time. WTW considered what would happen if we were to assume that, in 20 years' time, there had been a shift of 40% of closed section assets from the growth pooled fund to defensive pooled funds. Based on the analysis provided by Ortec Finance and WTW, the negative impacts on asset values would reduce only modestly: by less than 0.5% for the Paris Orderly scenario, around 1% for the Paris Disorderly scenario and around 1.5% for the Failed Transition scenario.

5.3.3 Combined impact on scheme funding

Combining the impacts to investment returns and liabilities, the hypothetical funding levels for the RPS in the three climate scenarios are shown in Figure 5.3.3.1, and for BTPFSF in Figure 5.3.3.2. Similarly to Figures 5.3.2.1 and 5.3.2.2, the numbers in the table represent the difference climate makes over 40 years to the ways in which assets, liabilities, and funding levels change for non-climate reasons.

5.3.3 Combined impact on scheme funding

Combining the impacts to investment returns and liabilities, the hypothetical funding levels for the RPS in the three climate scenarios are shown in Figure 5.3.3.1, and for BTPFSF in Figure 5.3.3.2. Similarly to Figures 5.3.2.1 and 5.3.2.2, the numbers in the table represent the difference climate makes over 40 years to the ways in which assets, liabilities, and funding levels change for non-climate reasons.

Figure 5.3.3.1: RPS, combination of impacts to asset returns and scheme liabilities and resulting impacts to scheme funding level

Scenario	Indicative change in value of the RPS:		
	Assets	**Liabilities**	**Funding Level**
Paris Orderly	-5.9%	+1.6%	-7.3%
Paris Disorderly	-12.3%	-2.6%	-10.0%
Failed Transition	-19.1%	-5.4%	-14.4%

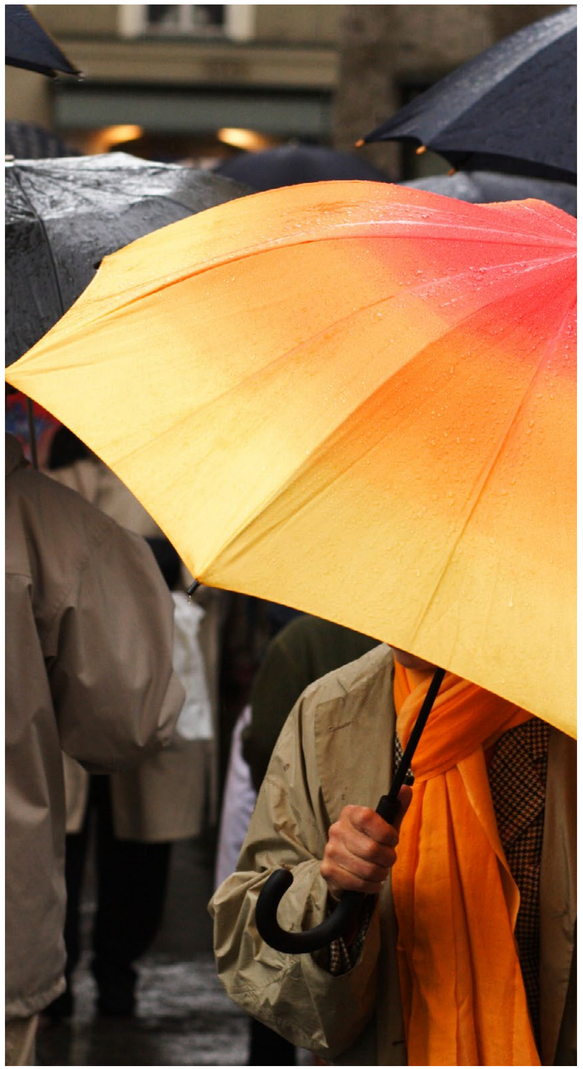
Figure 5.3.3.2: BTPFSF, combination of impacts to asset returns and scheme liabilities and resulting impacts to scheme funding level

Scenario	Indicative change in value of the RPS:		
	Assets	**Liabilities**	**Funding Level**
Paris Orderly	-5.8%	+1.2%	-6.9%
Paris Disorderly	-11.7%	-2.4%	-9.5%
Failed Transition	-18.1%	-4.8%	-13.9%

The scenario analysis suggests that a Failed Transition scenario is worst for the scheme's funding level, even accounting for reduced liabilities. From a pensions perspective as well as a societal perspective, scheme members appear to be better off in the long term in a scenario where the Paris Agreement on climate change is implemented.

The analysis suggests that asset impacts are likely to be greater than impacts to scheme liabilities. This finding is consistent with the prioritisation of the schemes' climate governance activities to date, which have focused on the investment portfolio over scheme liabilities.

WTW (the RPS Scheme Actuary) believes climate change represents a demographic risk to be managed by pension schemes and their sponsors. The Integrated Funding Committee, which agrees integrated funding plans with each scheme and/ or section, has not to date included the outputs of the quantitative scenario analysis in specific integrated funding plans, though this is subject to review based on advice from Railpen and the Scheme Actuary (the Scheme Actuary for BTPFSF is XPS Pensions Group).



5.4 Climate risks to investment returns

5.4.1 Scenario analysis and investment strategy

This part of the report describes:

- the climate-related risks and opportunities relevant to the schemes over the time periods that the Trustee has identified
- the potential impacts on the schemes' assets which the Trustee has identified in its selected climate scenarios
- the resilience of the schemes' investment strategies

From an investment perspective, the Trustee uses a pooled fund lens when reviewing the results of climate scenario analysis. The sections within the schemes, including Defined Benefit and Defined Contribution arrangements, invest in a discrete set of pooled funds permitted by the Statement of Investment Offering which is approved by the Trustee. Each section's investment strategy allocates to pooled funds as required to meet the section's investment strategy.

Adopting a pooled fund lens, rather than a section by section lens, has the following advantages:

- simpler to produce, understand, and communicate
- less costly in terms of fees paid to third parties
- reduced complexity in determining risk management activities and ongoing monitoring

Ortec Finance generates scenario analysis at the asset class level, and these are then translated to the pooled fund level based on individual asset class allocation within each pooled fund (see section 5.4.1.1). The scheme-level climate impacts are then determined based on the pooled fund allocations across the RPS and the BTPFSF.

In order to model impacts to investment returns in different climate scenarios, Railpen's investment portfolio as of 31 December 2021 was mapped to chosen proxy benchmarks (for common asset classes and regions) in Ortec Finance's climate scenario analysis (MAPS) model. While Ortec Finance is a well-established specialist in climate scenario analysis, it is possible that the proxies used in a model are imperfect representations of the RPS or BTPFSF investment portfolio. This might affect the validity of analysis for unlisted asset classes like private equity, infrastructure, and property, which might be proxied using publicly listed benchmarks such as a listed equity index.

For the purposes of this analysis, Ortec Finance assumed no changes to the RPS or BTPFSF allocations to asset classes, sectors and geographies over time. Although this is a necessary assumption to make, it is unlikely that asset allocation will remain constant for decades to come.

5.4.1.1 Supplementary data on asset allocation[29]

The overall asset allocations of the RPS and the BTPFSF reflect the fact that the majority of the assets are within non-maturing sections. Their long investment horizons and ability to tolerate relatively high levels of investment risk leads to asset allocations with significant public and private equity exposures, followed by real assets and bond exposures. These assets are invested globally.

The Growth Pooled Fund is the largest pooled fund in the schemes' portfolios and is a multi-asset fund with exposures (as at year end 2021) across public equities 67%, real estate 10%, credit 7%, total return 5%, and other 11%. The Illiquid Growth Pooled Fund is invested in private markets investments primarily in private equity and private debt

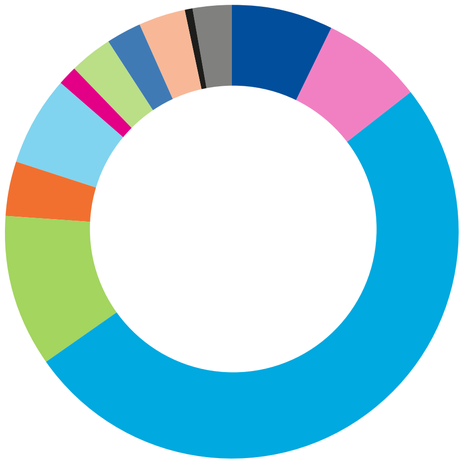
[29] *As at year end 2021, unless otherwise stated. We provide 2021 data as these were the data used for the scenario analysis whose results are reported in this TCFD Report. Neither the asset allocation of the RPS nor the BTPFSF have changed significantly year-on-year, so the conclusions reported last year remain relevant.*

Figure 5.4.1.1.1: RPS asset values as at 31 December 2021

	AUM £m
Defined Benefit Pooled funds	
Growth	**22,731**
Private Equity	**2,557**
Illiquid Growth	**2,442**
Government Bond	**1,429**
Passive Equity	**1,075**
Long Term Income	**1,181**
Short Duration Index Linked Bond	**809**
Global Equity	**660**
Non Government Bond	**375**
Infrastructure	**123**
Long Duration Index Linked Bond	**195**
Cash	**66**
	33,643
Defined Contribution Arrangements and other assets	
BRASS and other AVCs	**1,851**
Substitution orders	**830**
Annuities	**45**
Cash and other assets	**110**
	36,479

Figure 5.4.1.1.2: RPS asset allocation by asset class, 31 December 2021

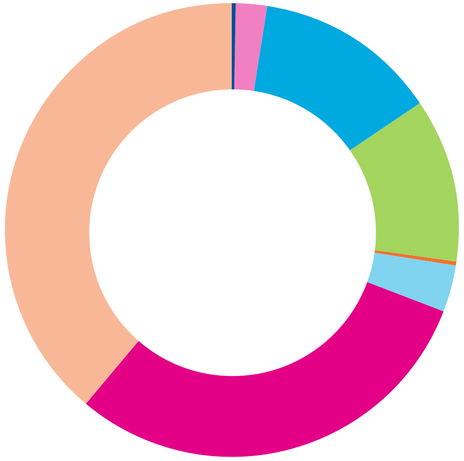
RPS Strategic asset allocation



- **7.4%** Cash
- **7.3%** Government Bonds
- **50.8%** Public Equity
- **10.7%** Private Equity
- **3.9%** Private Debt
- **6.3%** Property
- **1.4%** Infrastructure
- **3.3%** Secure Income
- **2.3%** Corporate Credit
- **3.4%** Sovereign Credit
- **0.6%** Royalties
- **2.6%** Insurance

Figure 5.4.1.1.3: RPS asset allocation by geography, 31 December 2021

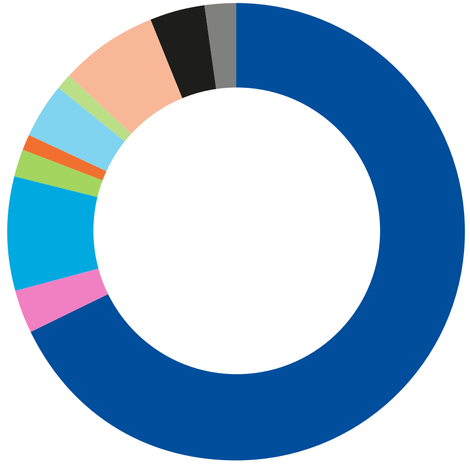
RPS Asset allocation by geography



- **0.4%** Canada
- **2.2%** Dev Asia Ex Japan
- **13.0%** Emerging Markets
- **11.8%** Europe
- **0.3%** GCC
- **3.4%** Japan
- **30.0%** UK
- **38.9%** US

Figure 5.4.1.1.4: RPS asset allocation by pooled fund, 31 December 2021.

RPS Allocation to Pooled Funds



- **68%** Growth Pooled Fund
- **3%** Passive Equity Pooled Fund
- **8%** Private Equity Pooled Fund
- **2%** Global Equity pooled Fund
- **1%** Long Duration Index Linked Bond Fund
- **4%** Government Bond Pooled Fund
- **0%** Infrastructure Pooled Fund
- **1%** Non Government Bond Pooled Fund
- **0%** Cash Pooled Fund
- **7%** Illiquid Growth Pooled Fund
- **4%** Long Term Income Pooled Fund
- **2%** Short Duration Index Linked Bond Fund

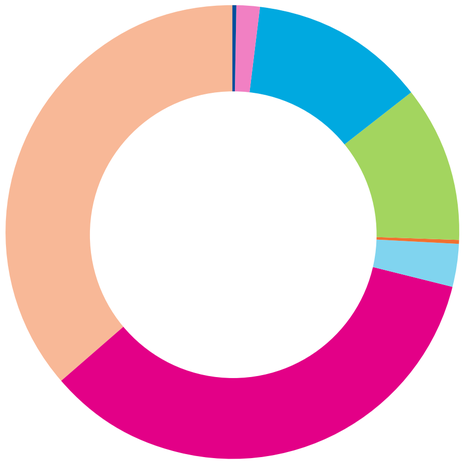
Figure 5.4.1.1.5: BTPFSF asset allocation by asset class, 31 December 2021

BTPFSF Strategic asset allocation

- **7.4%** Cash
- **8.3%** Government Bonds
- **45.1%** Public Equity
- **16.5%** Private Equity
- **6.7%** Property
- **0.2%** Infrastructure
- **8.2%** Secure Income
- **1.2%** Corporate Credit
- **3.3%** Sovereign Credit
- **0.5%** Royalties
- **2.5%** Insurance

Figure 5.4.1.1.6: BTPFSF asset allocation by geography, 31 December 2021

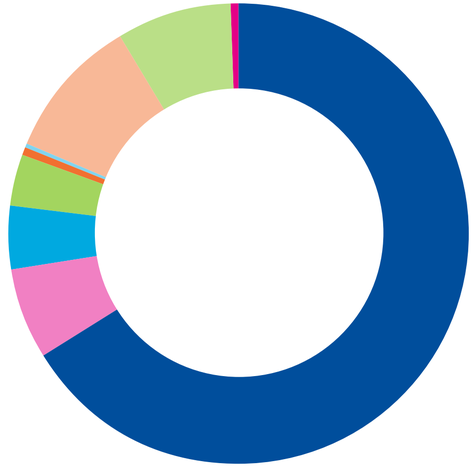
BTPFSF Asset allocation by geography



- **0.3%** Canada
- **1.9%** Dev Asia Ex Japan
- **12.5%** Emerging Markets
- **10.9%** Europe
- **0.3%** GCC
- **3.0%** Japan
- **34.7%** UK
- **36.3%** US

Figure 5.4.1.1.7: BTPFSF asset allocation by pooled fund, 31 December 2021.

BTPFSF Allocation to Pooled Funds



- **66.4%** Growth Pooled Fund
- **6.4%** Private Equity Pooled Fund
- **4.4%** Long Duration Index Linked Bond Fund
- **3.6%** Government Bond Pooled Fund
- **0.2%** Infrastructure Pooled Fund
- **0.1%** Cash Pooled Fund
- **10.1%** Illiquid Growth Pooled Fund
- **8.2%** Long Term Income Pooled Fund
- **0.3%** Short Duration Index Linked Bond Fund

5.4.2 Climate scenario analysis in defined benefit pooled funds and resilience of the investment strategy

Impacts on investment returns at a "scheme-wide" level are discussed in section 5.3.2. This section dives deeper into the drivers of these results.

Figure 5.4.2.1 displays the climate scenario analysis results at a pooled fund level[30].

The data in the table represent the difference in annualised real returns, for some given scenario and time horizon, that climate impacts have on a climate-unadjusted baseline. For example, if your expectation of the Growth Pooled Fund is that its annualised real return over the next years will be 10%, the climate scenario analysis results in Figure 5.4.2.1 suggest this return should be adjusted by -0.4% in a Paris Orderly climate scenario over years 1-10 (this is the first box in the table).

Figure 5.4.2.1: Modelled impacts to future investment returns of DB pooled funds in the three selected climate scenarios

	Paris Orderly			Paris Disrderly			Failed Transition		
Pooled Fund	Years 1-10	Years 1-20	Years 1-40	Years 1-10	Years 1-20	Years 1-40	Years 1-10	Years 1-20	Years 1-40
Growth	-0.4%	-0.3%	-0.2%	-1.4%	-0.8%	-0.5%	-0.4%	-1.6%	-1.1%
Long Duration Index Linked Bond	0.0%	-0.1%	-0.1%	0.0%	0.0%	-0.1%	0.0%	0.0%	-0.1%
Illiquid Growth	-0.6%	-0.3%	-0.3%	-0.7%	-0.4%	-0.4%	-0.4%	-1.4%	-0.9%
Long Term Income	-0.1%	-0.1%	-0.1%	-0.3%	-0.2%	-0.2%	-0.2%	-0.6%	-0.4%
Private Equity	-1.2%	-0.7%	-0.6%	-1.9%	-1.1%	-0.8%	-0.8%	-3.3%	-2.2%
Government Bond	0.0%	0.0%	-0.1%	0.0%	0.0%	-0.1%	0.0%	0.0%	-0.1%
Non-Government Bond	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	-0.1%
Infrastructure	-0.3%	-0.3%	-0.4%	-1.1%	-0.7%	-0.6%	-0.5%	-1.8%	-1.4%
Passive Equity Pooled Fund*	-0.4%	-0.3%	-0.2%	-1.4%	-0.8%	-0.5%	-0.4%	-1.6%	-1.1%
Global Equity Pooled Fund*	-0.4%	-0.3%	-0.2%	-1.4%	-0.8%	-0.5%	-0.4%	-1.6%	-1.1%
Short Duration Index Linked Fund*	0.0%	-0.1%	-0.1%	0.0%	0.0%	-0.1%	0.0%	0.0%	-0.1%

* In order to protect the intellectual property of Ortec Finance, we do not display the actual modelled impacts for these pooled funds, but instead use the return impacts for the Growth Pooled Fund as a proxy for the impacts in the Passive Equity Fund and Global Equity Pooled Fund, and we use the return impacts to the Long Duration Index Linked Pooled Fund as a proxy for the impacts in the Short Duration Index Linked Fund. The actual treatment of these pooled funds in the model differs from the proxied values displayed in this public report.

[30] *The climate scenario analysis is conducted at the underlying investment asset class level first and the results are then translated to the pooled fund level based on the pooled funds' allocations to the individual asset classes.*

The climate scenario analysis on the investment portfolio suggests the following conclusions in respect of the resilience of the scheme-wide investment strategy:

- Expected returns are affected negatively versus baseline across all pooled funds and in every time horizon over the next 40 years. The failed transition has the most negative impacts, suggesting that long-term investors have an economic incentive to support a Paris-aligned transition.
- The greatest climate-related risks relevant to the schemes over the time periods that the Trustee has identified are:
  - Physical climate risk in scenarios, particularly when the transition to a greener economy fails. The regions most affected by the financial impacts of physical climate risk are Asia (South Asia, East Asia, South-East Asia), North America, and Australasia. In terms of sectors, consumer discretionary, industrials, and consumer staples are the most affected by physical risk in the climate modelling used in this analysis. Ortec Finance's analysis suggests the RPS and BTPFSF should be more concerned about potential physical risks than potential transition risks.
  - Transition climate risk when global climate policy is uncoordinated and market reactions are more sudden. Regions like North America, Australasia, and China, are most vulnerable to the risk of a disorderly transition. The RPS and the BTPFSF have significant exposure to the US, in particular to US equities. The US economy, given its position as a net fossil fuel exporter, with low energy efficiency, low carbon pricing and high sensitivity to market sentiment shocks make it exposed to transition risks and this is reflected in the scenario analysis results.
  - In terms of strategic asset allocation, growth assets (notably listed equities and private equity) are modelled to be less resilient across climate scenarios than defensive assets (such as fixed income). However, growth assets are expected to deliver a higher rate of return than defensive assets, even accounting for climate-related impacts in the different scenarios. This suggests that growth investors ought to continue to monitor portfolio risks and take risk reduction actions (including investment stewardship) where beneficial to risk-adjusted investment outcomes. According to the analysis, maintaining a diversified portfolio helps to soften the magnitude of climate risks in different scenarios. Investors should consider the merits of incorporating climate impacts on investment returns in asset-liability modelling.
  - On sector allocations, as might be expected, oil and gas, fossil fuel utilities, road, air and sea transportation, and consumer discretionary sectors, are impacted the most across all three climate scenarios. At the time of analysis, the RPS and the BTPFSF had very low exposure to oil & gas (suggesting the investment strategy might exhibit resilience to Paris-aligned scenarios), but a significant allocation to consumer discretionary (which could undermine investment strategy resilience in the longer term in a Failed Transition scenario). As a result, the RPS and BTPFSF investments in private equity (which are exposed to the consumer discretionary and industrial manufacturing sectors) are modelled as having the greatest impacts to returns (driven primarily by physical risks), followed by public equities. Given the dispersion of climate-related return impacts across sectors and regions, investors and investment risk professionals ought to monitor sector and region exposure.
- The greatest climate-related opportunities relevant to the schemes over the time periods that the Trustee has identified are:
  - regions such as Europe and the UK that could prove to be 'winners' in scenarios where the Paris Agreement is achieved
  - stewarding high emitting companies in which the RPS or BTPFSF have significant investments could enable these companies to realise the opportunities that come with aligning their business models to a lower risk pathway, and could thereby reduce risk at scheme-level (see section 6.4 for more information)
- The timing of risk realisation is scenario-dependent. Scenarios that align with the Paris Agreement experience greater impacts in the short term, but the Failed Transition scenario has greater impacts in the medium and short term. This suggests investors should monitor the global policy response to climate change to attempt to understand which scenario has the greatest likelihood of playing out, and whether action is required in the short or longer term. Investors should also review their selection of scenarios as a scenario not considered in their analysis might unfold.

Ultimately, climate scenario analysis is useful for modelling direction of travel, rather than pin-point accuracy. The most interesting findings lie not in the average performance for portfolios or asset classes, but rather in identifying the outliers (such as certain sectors or certain positions), which improves the efficiency of ongoing risk management.

As a result of climate scenario analysis and other analysis conducted from time to time, the Trustee (or Railpen acting on the Trustee's behalf) intends to:

- Continue to analyse, monitor, manage the highest emitting portfolio companies for transition and physical risks, building on work done to date
- Conduct further analysis of physical risks, and review potential enhancements to analytical capabilities
- Consider the merits of incorporating climate impacts on investment returns in asset-liability modelling
- Continue to identify climate-related investment opportunities
- Review the selection of climate scenarios as appropriate

5.4.3 Climate scenario analysis in defined contribution pooled funds

RPTCL is responsible for three DC arrangements; BRASS, AVC Extra and the IWDC section (IWDC).

- BRASS, the main Additional Voluntary Contributions (AVC) arrangement, is open to all contributing members of the DB sections of the RPS. Within the BTPFSF, however, BRASS is open only to 1970 members, not to 2007 or CARE members
- AVC Extra is the second contribution top-up arrangement for contributing members of the defined benefits sections (other than the Network Rail Section) of the RPS. Within the BTPFSF, AVC Extra is open to 2007 and CARE members and to 1970 members who want to pay AVCs above their BRASS limit.
  - At 31 December 2021, AUM in the BRASS and AVC Extra arrangements was approximately £2bn for the RPS and £8.5m for the BTPFSF
- The IWDC Section is the authorised DC master trust of the RPS for rail industry employees and, other than AVCs, it is the only section in the RPS which provides money purchase benefits.
  - AUM in the IWDC section of the RPS was approximately £228m at 31 December 2021

Climate governance, strategy, and risk management within DC arrangements are described in sections 4 and 5.

In assessing, monitoring and managing climate-related risks in the DC pooled funds, we are primarily interested in physical and transition risks to asset returns. The purpose of this section of the report is to describe climate scenario analysis impact on investment returns in the DC arrangements. The same service providers (Ortec Finance and WTW) are used to produce climate scenario analysis results. The same scenarios and time horizons are selected. The same methodological limitations described above apply to the climate scenario analysis for the DC arrangements.

A consistent DC pooled fund range is used by BRASS, AVC Extra and the IWDC Section of the RPS. These pooled funds are also used as the building blocks of the various default and alternative lifestyle strategies. On a look-through basis, the allocations to each of the DC pooled funds as of 31 December 2021 is shown in Figure 5.4.3.1 for the RPS and Figure 5.4.3.2 for the BTPFSF.

[31] *For the purposes of conducting climate scenario analysis, the DC pooled funds are modelled using a mapping to DB pooled funds that share suitably similar asset classes and risk characteristics. The DC Deposit Fund is not mapped as it primarily invests in money market funds and UK government treasury bills which exhibit close to zero climate risk in commonly used climate scenario analysis models.*

Figure 5.4.3.1: DC section allocations to pooled funds (RPS) as of 31 December 2021

DC Pooled Fund Allocations	BRASS	AVC Extra	IWDC	Total DC	Mapping[31]
DC Long Term Growth Fund	62%	17%	45%	59%	DB Growth Pooled Fund
DC Global Equity Fund	14%	48%	38%	17%	DB Growth Pooled Fund
DC Index Linked & Global Bond Fund	1%	3%	1%	1%	DB Long Duration Inflation Linked Bond Fund
DC Aggregate Bond Fund	1%	22%	12%	2%	n/a
DC Deposit Fund	23%	11%	3%	20%	n/a

Figure 5.4.3.2: DC section allocations to pooled funds (BTPFSF) as of 31 December 2021

DC Pooled Fund Allocations	BRASS	AVC Extra	Total BTPFSF DC	Mapping[31]
DC Long Term Growth Fund	38.7%	2.9%	41.6%	DB Growth Pooled Fund
DC Global Equity Fund	14.3%	15.2%	29.5%	DB Growth Pooled Fund
DC Index Linked & Global Bond Fund	1.9%	1.6%	3.3%	DB Long Duration Inflation Linked Bond Fund
DC Aggregate Bond Fund	5.4%	0.6%	6.0%	n/a
DC Deposit Fund	16.5%	3.2%	19.6%	n/a

Figures 5.4.3.3 and 5.4.3.4 show respectively the modelled impacts of climate risk on the RPS and BTPFSF DC arrangements for the three selected climate scenarios. The data in the tables represent the difference in annualised real returns, for some given scenario and time horizon, that climate impacts have on a climate-unadjusted baseline. For example, if your expectations of the overall DC arrangement is that its annualised real return over the next years will be 10%, the climate scenario analysis results in Figure 5.4.3.3 suggest this return should be adjusted by -0.24% in a Paris Orderly climate scenario over years 1-20 (this is the first box in the table).

Figure 5.4.3.3: Impacts of climate change on DC assets (RPS) in selected climate scenarios

Scenario	Indicative change in value of the overall assets for the:							
	DC (overall)		BRASS		AVC Extra		IWDC	
	Years 1-20	Years 1-40	Years 1-20	Years 1-40	Years 1-20	Years 1-40	Years 1-20	Years 1-40
Paris Orderly	-0.24%	-0.17%	-0.21%	-0.15%	0.00%	0.00%	-0.03%	-0.02%
Paris Disorderly	-0.60%	-0.37%	-0.53%	-0.33%	-0.01%	0.00%	-0.07%	-0.04%
Failed Transition	-1.21%	-0.86%	-1.06%	-0.75%	-0.01%	-0.01%	-0.14%	-0.10%

Figure 5.4.3.4: Impacts of climate change on DC assets (BTPFSF) in selected climate scenarios

Scenario	Indicative change in value of the overall assets for the:					
	DC (overall)		BRASS		AVC Extra	
	Years 1-20	Years 1-40	Years 1-20	Years 1-40	Years 1-20	Years 1-40
Paris Orderly	-0.22%	-0.16%	-0.17%	-0.12%	-0.06%	-0.04%
Paris Disorderly	-0.56%	-0.35%	-0.542%	-0.26%	-0.14%	-0.09%
Failed Transition	-1.13%	-0.81%	-0.84%	-0.60%	-0.29%	-0.21%

Given the similarities in investment strategy between the DC pooled funds and the DB pooled funds, the same findings as laid out in section 5.4.2 apply here. In addition, the activities taken to manage the risks identified in climate scenario analysis of DC pooled funds are the same as those laid out in section 5.4.4 and elsewhere. Rather than duplicate the content, we refer readers to the content on the previous and following pages.

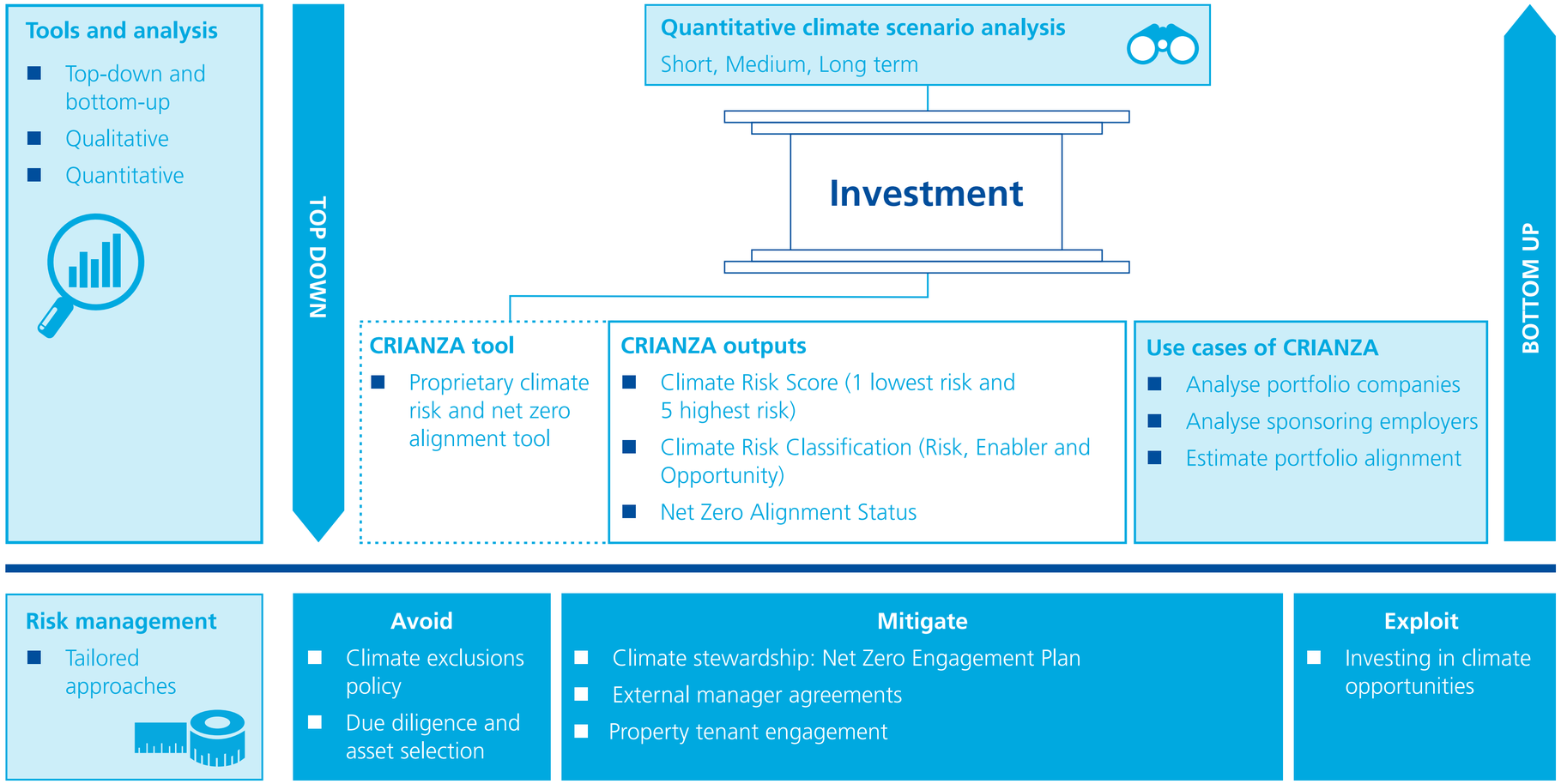
5.4.4 Climate risk integration

This section of the report describes how climate risks are identified and assessed within the investment process, and describes the risk tools the Trustee and the outputs / outcomes of using those particular tools.

Transition and physical risks are identified and assessed using quantitative and qualitative approaches. Once risks have been identified and assessed, their management is achieved through a variety of activities, the nature of which (typically risks are avoided, mitigated, or exploited) depends on the context. Although the focus of this report is on the management of scheme-wide climate risks, the Trustee believes that a bottom-up perspective is important for the purposes of analysing and managing physical and transition risks in an investment decision making-context.

As explained in section 4, day-to-day operation of the schemes is delegated to Railpen, with regular reporting to, and oversight by, the Trustee. Railpen's approach to climate risk integration is documented in the ESG Risk Directive, which is part of the Investment Risk Governance Framework. Railpen's Net Zero Plan goes beyond the Directive and sets goals for the investment portfolio to align with net zero by 2050 or sooner. Figure 5.4.4.1 provides an overview of climate risk integration at the schemes, with a focus on the Investment pillar; explanations are provided in the subsections.

Figure 5.4.4.1: Schematic depicting CRIANZA and scenario analysis for climate risk integration in the investment portfolio



5.4.4.1 Climate risk management in the investment process

Risk identification and assessment are powered by quantitative scenario analysis (explained above), qualitative analysis (for example in assessing the way climate risks could threaten employer covenant strength), and use of Railpen's proprietary CRIANZA framework and tool, which we explain in section 5.4.4.2 below. The rest of this subsection describes climate risk management in the investment process.

Climate change presents various types of investment risks that could present challenges and opportunities for the investment portfolio in a number of ways. Depending on the type of risk, we typically take actions to avoid, reduce, or exploit the risk:

- **Avoid** the risk – for example we have reduced the schemes' exposure to stranded asset risk by excluding thermal coal and tar sands companies
- **Mitigate** the risk – either mitigating climate risk as a systemic risk, or as an idiosyncratic risk. Mitigating climate risk as a systemic risk includes taking measures to align the investment portfolio to net zero by 2050 or sooner, engage policy makers to encourage measures that support a 1.5C temperature outcome, and collaborate with peer investors to help drive down GHG emissions in the real economy. These measures could mitigate the level of systemic risk by reducing the likelihood of a harmful temperature outcome. Mitigating climate risk as an idiosyncratic risk involves analysing potential investments for climate risk, monitoring and engaging companies to encourage them to adopt business plans that manage against physical and transition climate risks, and setting agreements for external managers to mitigate climate risk when managing money on the Trustee's behalf. These measures could mitigate the level of idiosyncratic risk by ensuring companies in our portfolio are more robust to the risks posed by climate change.
- **Exploit** the risk – for example by investing in climate opportunities, as described in section 5.4.5.

As described in section 4, the ESG Risk Directive (where ESG includes climate risks) makes specifications across asset classes in regards to how ESG risks must be measured and managed. The directive notes that different asset classes vary in respect of (i) the nature and materiality of climate and ESG risk and (ii) the availability of ESG risk information. Climate risk in particular varies by asset class, sector, business model, and geography of the underlying holdings. As a result, the approaches for identifying and assessing ESG (and climate risk) vary across asset classes (and in some cases across sectors, business models, and geographies). The selection of approach is driven by factors including: expected climate impact on returns of the asset class, vulnerability to physical and transition risk, availability and quality of data, specific stewardship and engagement mechanisms available, and, potential pathways to net zero alignment. Figure 5.4.4.1.1, which is adapted from a table in the risk directive, shows the climate risk management techniques used across different asset classes.

Idiosyncratic ESG risk is managed by a wide range of actions including climate-related and other portfolio exclusions, ESG risk analysis, securing ownership rights, negotiating contracts and terms, engagement, monitoring, improving asset quality, and supporting value at exit. Systematic ESG risk is managed primarily by engagement (with policy makers, peer investors, and portfolio companies) and shareholder voting.

Figure 5.4.4.1.1: Techniques used to identify and assess climate risks in the investment portfolio. Adapted from Railpen's ESG Risk Directive (ESG includes climate change).

(note: not every technique is applied for every investment transaction; rather the techniques most appropriate for the investment in question are identified and executed accordingly.)

Pooled Fund	Portfolios	Pre-Investment	Asset Management	Divestment/Exit
Growth Pooled Fund	Quantitative Equities	a	e, f, g, h, j	
	Fundamental Equities	a, b	e, f, g, h, j	l
	External Managers	a, c, d	e, j	
	Property	b, d	j	l
Illiquid Growth Pooled Fund	Co-investments (Private Equity, Private Debt, Venture)	a, b, d	e, f, g, i, j	l
	External Managers	c, d	j	
Long Term Income Pooled Fund	Directs	a, b, d	e, f, g, i, j	l
	External Managers	c, d	j	
Equity Pooled Funds	External Managers (Global Equity; Passive Equity)	a, c, d	e, g, h, j	
DC Pooled Funds	Global Equity	As per Equity Pooled Funds above		
	Long Term Growth	As per Growth Pooled Fund above		

Avoid		Mitigate		Exploit	
a	Climate risk exclusions	**d**	Legals and contracts	**j**	Value Creation Plan
b	Climate and ESG Analysis/ Due Diligence	**e**	Ownership rights	**l**	Value at exit
c	External Manager Due Diligence	**f**	Dialogue		
		g	Escalation		
		h	Collaboration		
		i	Monitoring and re-measuring		

From an investment perspective, the priority focus to date has been on public markets portfolios, because (i) this is the largest allocation across the schemes, (ii) climate data is of greater quality and completeness and (iii) quantitative scenario analysis suggests public equities is one of the asset classes most likely to face the higher climate-related impact on returns. As set out in Figure 5.4.4.1.1, climate-related exclusions (thermal coal and tar sands companies) are applied where practicable to Quantitative Equities, Fundamental Equities, External Managers, Equity Pooled Funds and DC Pooled Funds. Each Fundamental Equity investment requires ESG risk (including climate risk) analysis, and large emitters in public markets portfolios are additionally analysed using the CRIANZA framework and tool. We provide detail on risk management in public markets portfolios in section 6.4. We comment briefly below on activities undertaken within private markets and real assets.

5.4.4.2 CRIANZA framework and tool

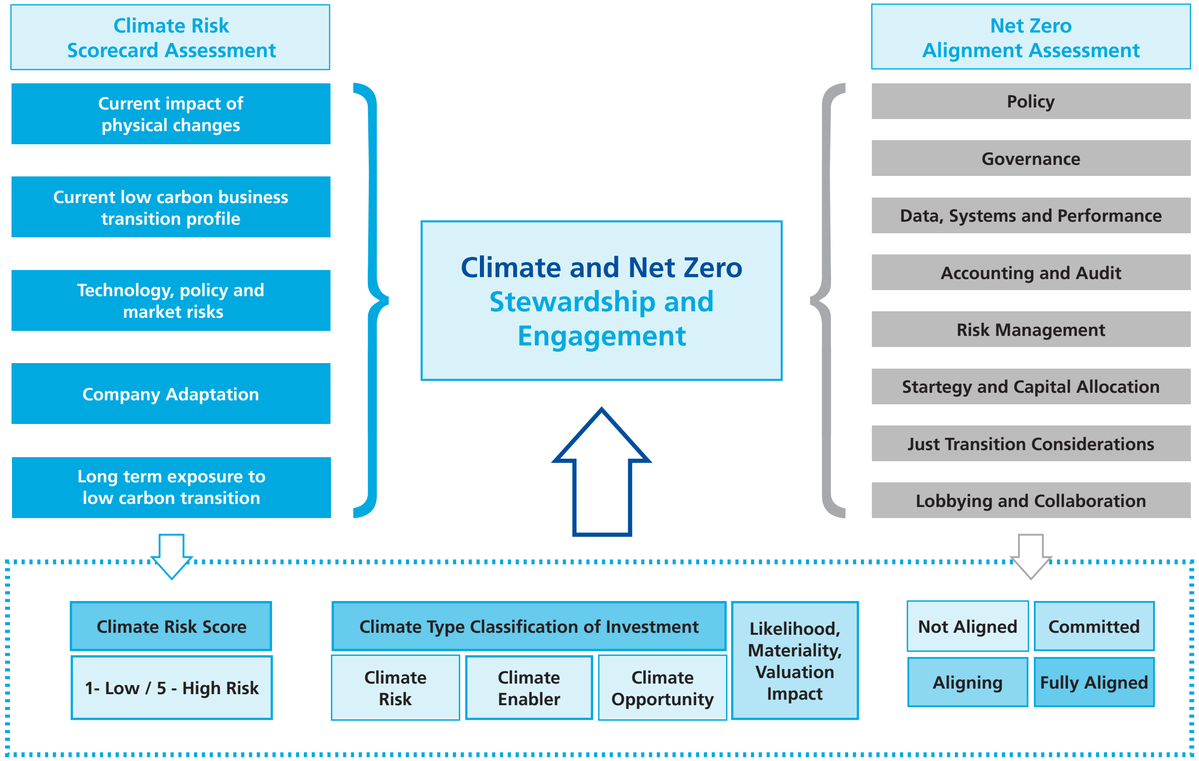
CRIANZA (**C**limate **RI**sk **A**nd **N**et **Z**ero **A**lignment) is a proprietary framework and tool developed by Railpen to assess and score the extent of climate risk and net zero alignment at individual companies, and hence in the portfolio at large. At the present time, CRIANZA is used to assess companies within scope of Railpen's Net Zero Plan (which covers 70% of financed emissions in material sectors in public markets), but it has been designed such that it can be applied across asset classes and to analysis of sponsoring employers in the future. The framework incorporates sector specific features for alignment assessment and physical and transition risk assessment and can be used for risk management, regulatory reporting, and for climate stewardship activities (for example by identifying gaps in a company's current practice, which forms a basis for discussion with a company and can suggest how to direct votes at the company AGM).

CRIANZA produces two types of score for each company: a risk score (companies are scored between 1 and 5 and given a classification as a 'climate risk', 'climate enabler', or 'climate opportunity'), and a net zero alignment status (companies are assessed as being 'not aligned', 'committed' to aligning, 'aligning', or 'fully aligned').

For the risk scores, a combination of third-party data and proprietary methodology are used within the CRIANZA framework and tool to assess a company's physical risk and transition risk. The assessments are updated after learning more about a company during company engagement.

For the alignment scores, the tool uses a milestone-based approach to assess and score a company's alignment with a net zero pathway. This means that companies are expected to do more – i.e. they are expected to reach additional alignment milestones – each year following the baseline assessment. This approach is consistent with the Institutional Investor Group on Climate Change (IIGCC) Net Zero Stewardship Toolkit, which Railpen co-authored. The assessment framework also draws on the Climate Action 100+ Benchmark and the Transition Pathway Initiative (TPI) scoring, with additional proprietary inputs from Railpen.

Figure 5.4.4.2.1: Overview of the CRIANZA assessment methodology



The objective of the portfolio alignment assessment is to enable a feedback loop between company analysis and company engagement, i.e. the insights from the analysis feed into climate stewardship, which ultimately should improve company alignment over time. The Trustee has adopted a target to increase the proportion of portfolio companies rated as "aligning" and "fully aligned" (see section 6). The CRIANZA framework and tool uses sector and asset class specific analysis in its scoring, thereby providing a consistent data and metrics means that enable the Trustee to measure and track progress against this target.

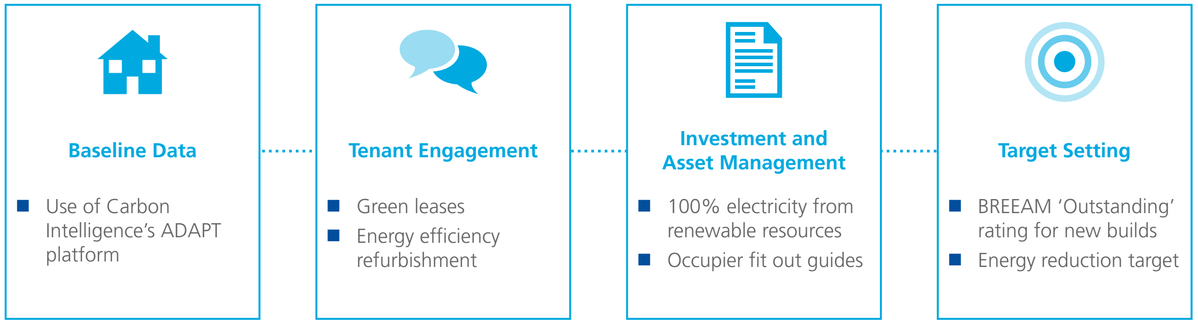
5.4.4.3 Climate risk integration in private markets and property

Private markets represented c11% of schemes' assets at December 2021. Private markets investors are beset by a lower level of climate-related information compared to public markets. In addition, private markets have been a little slower to develop net zero methodologies. Railpen has sought to work with industry peers to develop a private markets methodology for net zero and to that end Railpen has been an active member of the Paris Aligned Investing Initiative's Private Equity Working Group, whose new methodology was published in May 2023.

Our investments in real assets consist mainly of property and infrastructure assets located in the UK. The portfolio is therefore impacted by trends in UK climate data. The UK climate data indicate that there has been, and will continue to be, a shift to a warmer climate. The most recent assessment from the UK Government and the Climate Change Committee (CCC) indicates strong evidence that even under low warming scenarios, the UK will be subject to a range of significant and costly impacts unless significant further policy action is taken in the near-term.

Real assets can be particularly vulnerable to physical climate risks. These risks can be event-driven and acute, like heatwaves, bushfires or floods, or longer-term shifts such as rising sea levels or an increase in major weather events. Financial implications include direct damage to assets, business disruption and indirect impacts from supply chain disruption. Real assets can also be vulnerable to transition climate risks, for example if increasingly stringent climate policy measures affect an asset's ability to generate income, or requires unanticipated capital expenditure. Railpen, acting for the Trustee, takes a number of risk management activities to reduce, mitigate, or exploit physical and transition risks within real assets investing. Figure 5.4.4.3.1 outlines some of these activities in the Property portfolio (c£2bn scheme assets at December 2021).

Figure 5.4.4.3.1: Climate risk management activities in the property portfolio



5.4.4.4 External managers and climate risk integration

Scheme assets are managed by a mixture of internal and external investment managers, although we have significantly reduced the number of external managers over the last few years. Railpen oversees the selection, appointment, and monitoring of external fund managers. Prior to appointment, an assessment of the external manager's approach to climate risk is conducted using Railpen's Manager Assessment Framework (MAF). External managers are expected to align with the schemes' climate exclusion lists, to factor climate risk into investment decision-making, and report to Railpen on portfolio climate risks and, if the external manager is within scope of the Net Zero Plan, the portfolio's alignment to net zero[32]. These expectations are set out in Investment Management Agreements (IMAs), with the Trustee's Statement of Investment Principles being appended to all IMAs.

The output of the MAF is an ESG risk score (ESG risk includes climate risk). To produce the score, Railpen sends a due diligence questionnaire to the external manager. Following review of the questionnaire response and additional analytics, a meeting is arranged to close information gaps and explore areas of concern. Railpen's External Manager team and Sustainable Ownership team members then assign an ESG score, using the assessment criteria in the MAF. A list of actions for follow-up and review is also created. Issues identified in the MAF process might lead to particular clauses in the IMA or side letter. Although many of our external managers score well in the MAF, we have noted some areas for improvement in the climate stewardship and engagement processes and objective-setting at some managers, and are in regular contact to close remaining gaps.

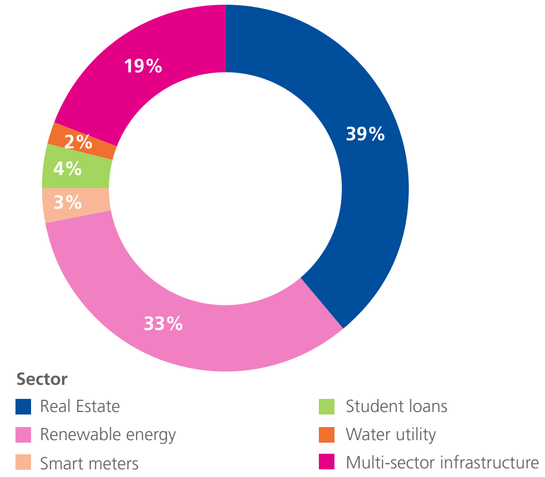
5.4.5 Climate opportunities

This section discloses information about how climate-related opportunities are identified, assessed and managed.

Climate change is likely to present new investment opportunities. These can include technologies that address climate mitigation (such as clean energy, energy efficiency, natural carbon stores), climate adaptation (improved infrastructure resilience, and health, wellbeing and productivity solutions). The UK Government's independent Climate Change Risk Assessment concluded that early adaptation investments deliver high value for money with benefit-cost ratios typically from 2:1 to 10:1 – i.e., every £1 invested in adaptation could result in £2 to £10 in net economic benefits[33]. A recent UK energy strategy aims for 95% of UK electricity to be from low-carbon sources by 2030, and has relaxed some aspects of planning for renewable energy deployment. In identifying climate transition investment opportunities, investors need to attend to valuations to prevent investing beneficiaries' capital in a 'green bubble'.

Railpen's investment teams have been sourcing and investing in the climate transition for several years. Investment ideas are sourced within each individual teams' investment process, as best suits the particular asset class in question. The Long Term Income Fund, for example, sources direct and indirect infrastructure investments into sectors likely to benefit from the UK's climate transition. As shown in Figure 5.4.5.1, about 42% (2021: 36%) of the fund's investments are in renewable energy and smart meters.

Figure 5.4.5.1: Investments in the Long Term Income Fund by sector (as of December 2022)



To date, given the importance of asset valuations noted above, Railpen's (and by association the Trustee's) approach to identifying climate opportunities has been bottom up, as opposed to setting a top down target for such investments. Further work on climate solutions is ongoing at Railpen, for example exploring the opportunity set for climate solutions within private markets, and being lead authors on IIGCC's Climate Solutions Guidance for Listed Equity and Corporate Fixed Income. There might also be investment opportunities arising in relation to biodiversity and natural capital and to support this work Railpen has become a member of the Taskforce for Nature-Related Financial Disclosure (TNFD) forum.

[32] *Relevant external managers are signatories to the Net Zero Asset Managers (NZAM) initiative* [33] *For the avoidance of doubt, this is not an expectation about investment return.*

Figure 5.4.5.2 **Case study: Long Term Income Fund investment in renewable energy**

Carraig Gheal and Tralorg Wind Farms

Carraig Gheal Wind Farm

Tralorg Wind Farm

- Located in Scotland
- Provide significant contribution to UK's decarbonisation agenda and clean energy supply
- Supporting local communities
- Sites produce 190 gigawatt hours of electricity per year
- Powering around 60,000 homes
- Avoided 2,090,000 kg of CO2 Emmisions

Contributing over £3m to local community projects over their life including:

- Local restoration for healthy pasture in the Avich and Kilchrenan community
- Refurbishment of Dalavich village hall in Argyll
- Funding the Quay Zone community leisure centre in Girvan

6. Metrics, targets and the transition to net zero

6.1 Selection of metrics and targets, data availability and limitations

Pension schemes are required by Regulation to select certain climate metrics for the purposes of monitoring and reporting on climate-related risks. In addition, the Trustee is required to set at least one target in relation to at least one of the selected climate metrics. The Trustee has selected the metrics and targets indicated in Figure 6.1.1. The Trustee's selection of climate metrics and targets will be reviewed from time to time as appropriate. Further information on the metrics is available in Appendix B. Since the publication of the previous TCFD Report, the Trustee reviewed its metrics and resolved to retain the same metrics. However, we are reporting this year at additional "levels"; in particular we have included in Appendix E a table of section-by-section climate metrics[34].

Figure 6.1.1: Trustee's selection of climate metrics

	Description	Selection Rationale	Target
Total GHG Emissions[35] (tCO_2e)	This is an **absolute emissions** metric that measures the total greenhouse gas emissions attributable to a portfolio.	Recommended by statutory guidance.	-
Carbon Footprint (tCO_2e/ £m invested)	Also referred to as Financed Emissions, this is a common measure of **emissions intensity** and is interpreted as "the amount of GHGs emitted for each £m invested in the portfolio".	Recommended by statutory guidance. By dividing emissions by the £m invested in the fund, the metric can be used to compare portfolios.	25-30% reduction by 2025 50% reduction by 2030
Portfolio Alignment (%)	Proportion of the portfolio[36], measured by AUM, that is classified either as "aligning" or "fully aligned" to a net zero pathway. Defined in the statutory guidance as a "binary target measurement".	■ Forward-looking metric ■ Simple to understand ■ Linked to industry frameworks such as the Net Zero Investment Framework[37] ■ Conducive to investment stewardship activities, e.g. engaging portfolio companies for net zero alignment	100% of the AUM in material sectors to be rated as "aligning" or "fully aligned" by 2040
Company engagement (%)	Proportion of the portfolio[38], weighted by financed emissions, being engaged.	PCRIG[39]'s definition of best practice recommends disclosing a "process-based" metric.	70% of financed emissions under engagement (or already aligned to net zero) by 2020, rising to 90% by 2030

[34] *For the avoidance of doubt, the Trustee's selection of metrics and targets apply to the railways pension schemes overall, and are the same for the underlying RPS and BTPFSF schemes and relevant DC arrangements.*

[35] *Scopes 1 and 2, as explained in this section*

[36] *Considering companies that are the biggest contributors to the schemes' financed emissions in relevant investment portfolios, as further detailed below*

[37] *Authored by the Paris Aligned Investing Initiative*

[38] *See footnote 28*

[39] *Pensions Climate Risk Industry Group*

Data we have been able and unable to gather: For the purposes of the 2022 TCFD report, the Trustee has obtained Scope 1 and Scope 2 GHG emissions data as far as able to do so[40]. In addition, the Trustee has obtained Scope 3 GHG emissions data although, for Scope 3, data availability is lower, reliability is uncertain, and the risk of double-counting (and thereby potentially overstating the level of risk) is significantly increased compared to Scopes 1 and 2. The Total GHG Emissions and Carbon Footprint metrics cover the schemes' investments in public equities and corporate fixed income unless otherwise stated.

Whilst Railpen, on behalf of the Trustee, has begun to gather GHG data for property and private markets, the quality and availability of GHG data in these asset classes is unfortunately not sufficiently mature for the production of useful metrics at this time. Unlike public markets, gathering GHG data for other asset classes remains time consuming and costly and is not a good use of scheme members' money.

- Property as an asset class suffers from missing data in tenant electricity and gas consumption, leading to a lack of tenant emissions data (tenant emissions comprise the vast majority of a building's GHG emissions, so excluding tenant emissions from property metrics would undermine their usefulness).
- Private equity suffers from persistent data gaps as private companies are usually not required to publish GHG data. Whilst commercial GHG data providers offer estimations or proxies, these are challenged by varying quality of estimation models, cost, and reliance on company financial data that might not be easily accessible.

This year, we have reported some data for the schemes' infrastructure assets (see section 6.2.1), covering four assets worth £213.5m in committed capital. We have been unable to gather GHG data for the remainder of the assets held in this pooled fund for a mixture of three reasons: the data are too costly or time consuming to derive; we are awaiting the result of commissioned analysis, or; we have no right to access the GHG data for that asset. We hope to be able to report increased coverage in future TCFD reports.

Despite the paucity of available GHG data, the Trustee and those acting on the Trustee's behalf monitor and manage climate risks in property, private equity, and infrastructure portfolios, as detailed above. Railpen is a member of several initiatives and working groups with a remit to improve sustainability disclosure[41]. To the extent able, the Trustee aims to report GHG data for additional relevant asset classes in future TCFD reports.

We have reported some information in section 6.2.2 in relation to the schemes' investments in sovereign bonds, and the associated GHG emissions and alignment status. Emissions data are sourced from what was the Department for Business Energy and Industrial Strategy. Gross Domestic Product (GDP) data are sourced from the Office for National Statistics (ONS). For methodological reasons, GHG emissions and alignment metrics associated with government bonds cannot be aggregated to public equities and corporate fixed income, and the information is therefore reported separately.

Methodology: For the Total GHG Emissions and Carbon Footprint metric, emissions are apportioned to our portfolio based on the proportion of each portfolio company's enterprise value (including cash) owned by our portfolio. Using enterprise value (which comprises both equity and debt) to apportion emissions legitimises the aggregation of apportioned emissions across listed equity and corporate fixed income investments. Further information on the metrics is available in Appendix B.

Most of the reported GHG data relate to investments managed internally by Railpen, though several portfolios managed externally are also included in the analysis. The climate metrics for both internally and externally managed investments are calculated by Railpen using a consistent methodology and a consistent set of climate data service providers (i.e. it has not been necessary to combine distinct GHG data from several fund managers based on divergent methodologies).

Data quality and proportion of assets for which data was available (and on which we are reporting): Around three quarters of the schemes' assets have some GHG data used and reported in this TCFD report. We have reported the data coverage and quality on the following pages. However, since our two data providers have different ways of reporting "data quality" we are unable to report the proportion of the data that are "verified" (as opposed to merely "reported"). In addition, the Scope 3 dataset does not allow us to break down the data quality of Scope 3 data into "verified", "reported", and "estimated".

[40] *GHG emission scopes are defined in the Glossary. See category 15 emissions (investment emissions) in the GHG Protocol Technical Guidance for more information.*

[41] *See section 6.4.3*

Coverage and methodology of the alignment metric: Consistent with last year's TCFD Report, the Trustee's chosen alignment metric is a "binary target measurement", calculated through company-specific analysis conducted by Railpen's Sustainable Ownership team, using a proprietary "CRIANZA" assessment framework explained in section 5.4. In order to avoid "greenwashing", this framework sets a high bar for a company to be described as "Aligning" to net zero. The Trustee does not believe that a company can be described as being aligned to the Paris Agreement merely by virtue of having set a quantitative target: any targets should be backed by a credible implementation plan and a demonstrable track record of executing the plan. Over-reliance on a target could lead to an under-appreciation of the level of transition risk faced by a company. Therefore the Trustee has a preference for understanding transition risks using the CRIANZA framework rather than a simple alignment tool. As detailed above, CRIANZA analysis involves a forward-looking assessment of a company's decarbonisation trajectory, exposure to climate-related risks, ability to capitalise on opportunities in the low-carbon transition over time, and overall investment strategy, and thereby determine an alignment status for each company. The alignment status for any particular company can be one of: Fully Aligned, Aligning, Committed to Aligning, or Not Aligned.

The Trustee's alignment metric aims to cover portfolio companies constituting at least 70% of the financed emissions in material sectors across equities and corporate fixed income portfolios[42] (by stating coverage in terms of financed emissions rather than AUM, we prioritise assessing transition risks at the largest emitters rather than simply the largest holdings by market value). Whilst we have commented on the alignment status of our investments in sovereign bonds in section 6.2.2, it is not methodologically possible to combine the alignment status of the investments in sovereign bonds with that of the investments in other asset classes so this information is reported separately. We have not produced alignment metrics for unlisted asset classes because there are no data available[43]. As far as the Trustee has been able to do so, the alignment metrics have been calculated and reported for each DB section and each popular DC arrangement. However, of 107 DB sections, we have not been able to calculate an alignment metric for six. This is due to the listed equities allocation in these sections being managed via index-tracking pooled funds containing too many portfolio constituents to undertake CRIANZA analysis. The Trustee reviews its selection of climate metrics each year.

Methodology used to measure performance against targets: The Trustee has selected climate targets as noted in Figure 6.1.1 and further detailed to the right. These targets are consistent with Railpen's targets in its Net Zero Plan (see section 6.3). Performance against the targets is explained below. The same methodology used in generating climate metrics is used to assess performance against targets. For example, to measure progress on the carbon footprint target, the same methodology is used to calculate the carbon footprint metric in the base year and in the current year, facilitating an observation of the rate of improvement. Measuring performance against targets is subject to the same degree of estimation as is present in the generation of climate metrics.

The 2022 TCFD report produces climate metrics for investment holdings as of 30 December 2022[44]. The base year is, however, December 2020 and the base year metrics are provided in section 6.2.

6.2 Metrics and targets: 2022 data

The metrics and their values as of 30 December 2022 and the base year (December 2020) are as indicated in Figure 6.2.1 below.

Figure 6.2.1: Total schemes climate metrics and targets, 2022

Metric	2022	Base year	Performance	Target
Total GHG Emissions[45] (tCO_2e)	976,192	1,191,915	-18%	-
Carbon Footprint (tCO_2e/ £m invested)	59	70	-16%	25-30% reduction by 2025
Portfolio Alignment (%)	1%	1%[46]	0%	100% by 2040
Company engagement (%)	76%	70%	+9%	70% in 2022, rising to 90% by 2030

The 16% reduction in Carbon Footprint is suggestive of being on track to meet the 2025 target. However, the drivers of this rate of reduction are various, and not always due to intentional climate-related investment decision-making or climate stewardship. For example, owing to lags in reported GHG data, it might be the case that the metrics above are derived from companies' emissions reporting from a time in which the company's operations were significantly interrupted as a result of COVID-19. To the extent this is true, we should expect an increase in reported GHG emissions in future reporting years, once such a company returns to

[42] *Following guidance from the Paris Aligned Investing Initiative's Net Zero Investment Framework*

[43] *As noted in the Statutory Guidance, "It is not meaningful for trustees to try to measure alignment for sections of the portfolio they do not have data for"*

[44] *The alignment metric was calculated in February 2022. This also represents the base year for the alignment metric.*

[45] *The Scopes 1 and 2 GHG emissions. Data Source: Bloomberg, MSCI (Disclaimer in Appendix C).*

[46] *The Alignment Metric was first computed in February 2022*

full operational capacity. In addition, the skew in GHG data (where a small proportion of companies account for a large proportion of total emissions) means that Carbon Footprint data can be significantly influenced by the sale or purchase of a handful of carbon intensive securities.

The Trustee believes it is important that investors' emissions reductions targets are driven as far as possible by activities that lead to emissions reductions in the real world (as opposed to changes in portfolio emissions driven by the act of one investor selling investments to another investor). The steps taken to achieve the climate targets are motivated by this belief. These steps are outlined in section 6.4.

The portfolio alignment metric was calculated through company-specific analysis conducted by Railpen's Sustainable Ownership team, using a proprietary "CRIANZA" assessment framework explained in section 5.4. In order to avoid "greenwashing", this framework sets a high bar for a company to be described as "Aligning" to net zero, and the data shown in Figure 6.2.1 reflect this high bar: very few companies are as of today taking sufficient action to align to a net zero pathway. It should be noted that a further 53% of these companies are rated as "Committed" to aligning to net zero, but are not taking sufficient action to achieve a rating of "Aligning". It should be noted that "performance" for the alignment metric is on a less than 12 month basis as the alignment metric was first computed in February 2022.

Figure 6.2.2: Climate metrics by pooled fund (as of 30 December 2022)

		Total GHG Emissions[47] (tCO_2e)	Carbon Footprint (tCO_2e)/£m invested)	Portfolio Alignment (%)	Data Quality: Reported GHG data (%)	Data Quality: Estimated GHG data (%)	Data Quality: Unavailable GHG data (%)	Total Scope 3 GHG Emissions (tCO_2e)	Scope 3 Carbon Footprint (tCO_2e)/£m invested)	Scope 3 Data Quality: Reported + Estimated GHG data (%)	Scope 3 Data Quality: Unavailable GHG data (%)
Defined Benefit Pooled Funds	**Growth Pooled Fund**[48] int, eq	806,745	57	1	28	48	25	4,413,534	313	75	25
	Passive Equity Pooled Fund ext, eq	47,517	66	n/a	26	63	12	327,038	500	80	20
	Global Equity Pooled Fund ext, eq	54,427	101	n/a	55	40	5	351,165	712	87	13
	Non-Government Bond Pooled Fund ext, fi	15,887	63	n/a	42	39	19	123,519	565	70	30
Defined Contribution Pooled Funds	**DC Long Term Growth Fund** int, eq	37,035	57	1	28	48	25	202,612	313	75	25
	DC Global Equity Pooled Fund ext, eq	11,096	66	n/a	26	63	12	76,370	500	80	20
	DC Corporate Bond ext, fi	3,485	63	n/a	42	39	19	27,092	565	70	30

int internally managed portfolios

ext externally managed portfolios

eq listed equity portfolios

fi corporate fixed income portfolio

[47] *GHG scopes 1 and 2; Source: Bloomberg; MSCI (please see Appendix C for disclaimer)*

[48] *Includes listed equity investments in the Growth Pooled Fund only*

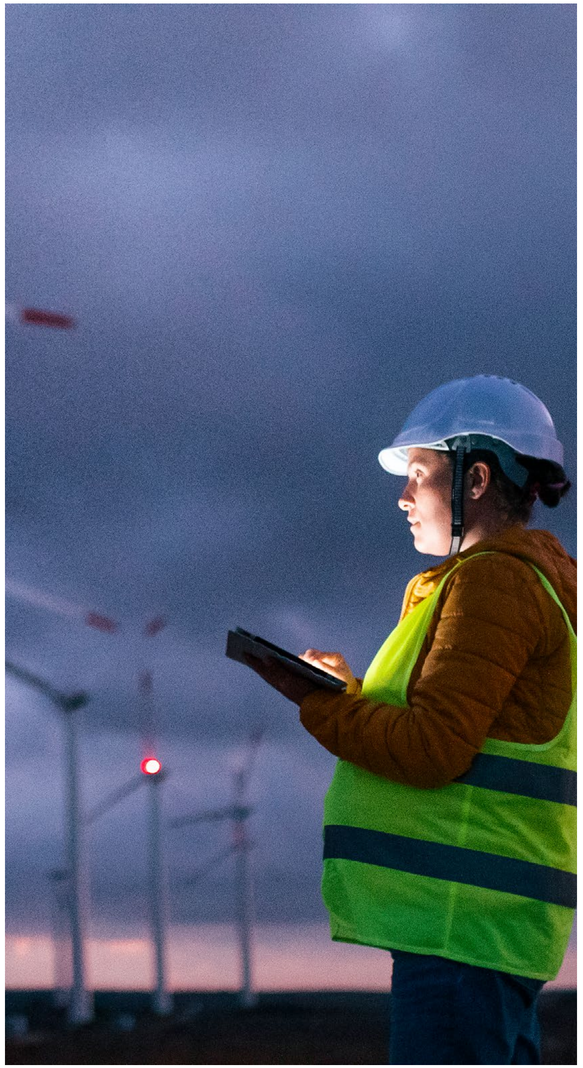
Figure 6.2.3: Climate metrics by scheme (as of 30 December 2022)

	Total GHG Emissions[49] (tCO_2e)	Carbon Footprint (tCO_2e)/£m invested)	Portfolio Alignment (%)	Data Quality: Reported GHG data (%)	Data Quality: Estimated GHG data (%)	Data Quality: Unavailable GHG data (%)	Total Scope 3 GHG Emissions (tCO_2e)	Scope 3 Carbon Footprint (tCO_2e)/£m invested)	Scope 3 Data Quality: Reported + Estimated GHG data (%)	Scope 3 Data Quality: Unavailable GHG data (%)
RPS	**933,300**	**59**	**1**	**29**	**48**	**23**	**5,283,731**	**338**	**75**	**25**
Of which DB sections	881,850	59	1	29	48	23	4,978,661	338	75	25
Of which BRASS	42,444	59	1	28	50	22	251,350	360	76	24
Of which AVC Extra	878	61	1	30	51	19	5,641	418	76	24
Of which IWDC	8,128	58	1	29	48	23	48,078	357	75	25
BTPFSF	**37,666**	**57**	**1**	**28**	**48**	**25**	**206,204**	**313**	**75**	**25**
Of which DB sections	37,459	57	1	28	48	25	204,929	313	75	25
Of which BRASS	135	59	1	29	50	21	814	374	76	24
Of which AVC Extra	73	60	1	31	48	21	461	397	75	25
BRSF	**5,268**	**75**	**1**	**37**	**45**	**18**	**31,669**	**468**	**79**	**21**
Of which DB sections	5,268	75	1	37	45	18	31,669	468	79	21

[49] *GHG scopes 1 and 2; Source: Bloomberg; MSCI (please see Appendix C for disclaimer)*

For the defined benefit pooled funds, the data in Figure 6.2.2 suggest that:

- The pooled funds investing in index-tracking equities (Passive Equity Pooled Fund, Global Equity Pooled Fund, and DC Global Equity Pooled Fund) are more emissions intensive than equity portfolios managed on an active or quantitative basis (Growth Pooled Fund/ DC Long Term Growth Pooled Fund)
- Between the two index tracking equities pooled funds, the Global Equity Pooled Fund is more emissions intensive than the Passive Equity Pooled Fund, potentially due to more emerging markets concentration in the former
- The pooled funds investing in corporate fixed income assets (Non-government Bond Pooled Fund and DC Corporate Bond Fund) are about as emissions intensive as the pooled funds investing in listed equity, suggesting that asset class is not a driver of corporate carbon intensity in listed markets on this occasion
- The pooled funds managed by external fund managers happen to be more emissions intensive than the pooled fund managed internally by Railpen



6.2.1 Metrics: 2022 data – supplement on the Long Term Income Pooled Fund

This year, we have been able to gather GHG data for some infrastructure investments held in the Long Term Income Pooled Fund. We have been able to include four assets covering £213.5m in invested capital. The data are tabulated in Figure 6.2.1.1 below.

Figure 6.2.1.1: Climate metrics for the Long Term Income Pooled Fund (as of 30 December 2022)

	Total GHG Emissions (tCO_2e)	Carbon Footprint (tCO_2e)/£m invested)	Portfolio Alignment (%)	Data Quality: Reported GHG data (%)	Data Quality: Estimated GHG data (%)	Data Quality: Unavailable GHG data (%)	Total Scope 3 GHG Emissions (tCO_2e)	Scope 3 Carbon Footprint (tCO_2e)/£m invested)	Scope 3 Data Quality: Reported + Estimated GHG data (%)	Scope 3 Data Quality: Unavailable GHG data (%)
Long Term Income Pooled Fund[50]	26,365	123	n/a	13	0	87	8,172	38	13	87

Many of the assets in this fund are involved in the climate transition. As such, they will create a net GHG saving during their lifecycle (for example as renewable energy production (from our assets) displaces fossil fuel based generation (from the grid)). However, such data are not reporting requirements and are not displayed in Figure 6.2.1.1. In our view, such assets represent climate opportunities rather than climate risks.

[50] *Two of the assets covered in Figure 6.2.1.1 are renewable biomass energy assets. The production of energy at these assets produces biogenic CO2 emissions. These emissions are considered out of scope as the direct CO2 emissions from these fuels are not included in the scope 1 emissions factors (DEFRA, 2009).*

6.2.2 Metrics: 2022 Data – supplement on sovereign bonds

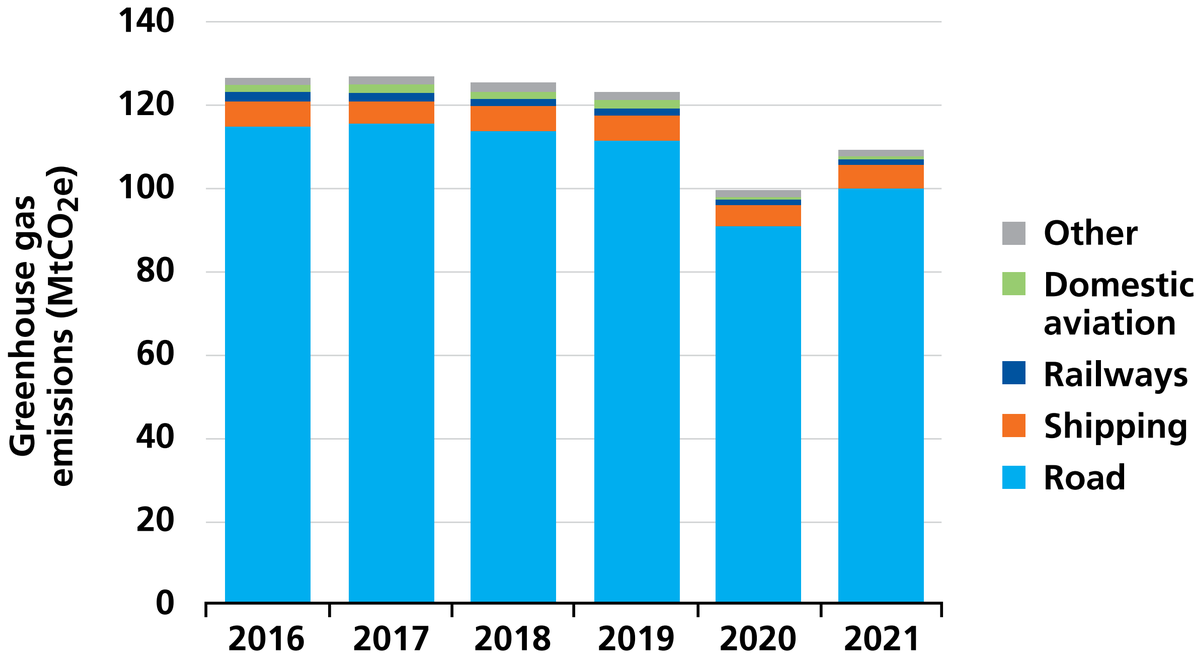
The schemes invest in UK government bonds. In 2021 (the most recent year for which the UK has reported "final" GHG data), net territorial UK GHG emissions were 427m tCO2e[51]. Whilst this increased by about 5% since 2020 (due to coming out of lockdown), UK emissions have decreased by about 50% since 1990. The "carbon footprint" of the UK in 2021 was 184 tCO2e per £m GDP. It is interesting to note that transport emissions were the main factor in the overall UK emissions trend in the last two years, with the greatest contribution coming from road-based travel, and the most carbon efficient form of travel being rail (see Figure 6.2.2.1).

In terms of an alignment metric, the UK has a target to be net zero by 2050, which the government states is consistent with its commitment under the Paris Agreement. In the Climate Change Performance Index (CCPI) 2022[52], which assesses the extent to which countries are protecting the climate, only Denmark, Sweden and Norway rank higher than UK. However, the authors of the CCPI state that no countries achieve their highest (i.e. best) rating and on a global basis governments are not doing enough to prevent warming in excess of the ambitions laid out in the Paris Agreement.

The Trustee does not believe it is meaningful to add data relating to sovereign bond investments to data for other asset classes. Climate scenario analysis suggests that the yields on UK gilts are unlikely to be significantly affected by climate change, suggesting that disclosure and action on other asset classes ought to take priority.

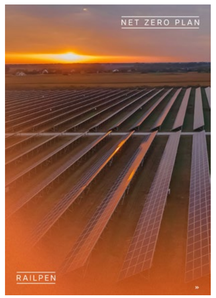
In line with its Net Zero Plan, Railpen engages with climate policy makers in the UK with the aim of supporting a just transition in line with the goals of the Paris Agreement. Some highlights of recent policy engagement are included in section 6.4.2.

Figure 6.2.2.1: UK GHG Emissions by form of transport, 2016-2021



[51] *At the end of 2021 the RPS had £2.6bn invested in various types of UK government bonds*

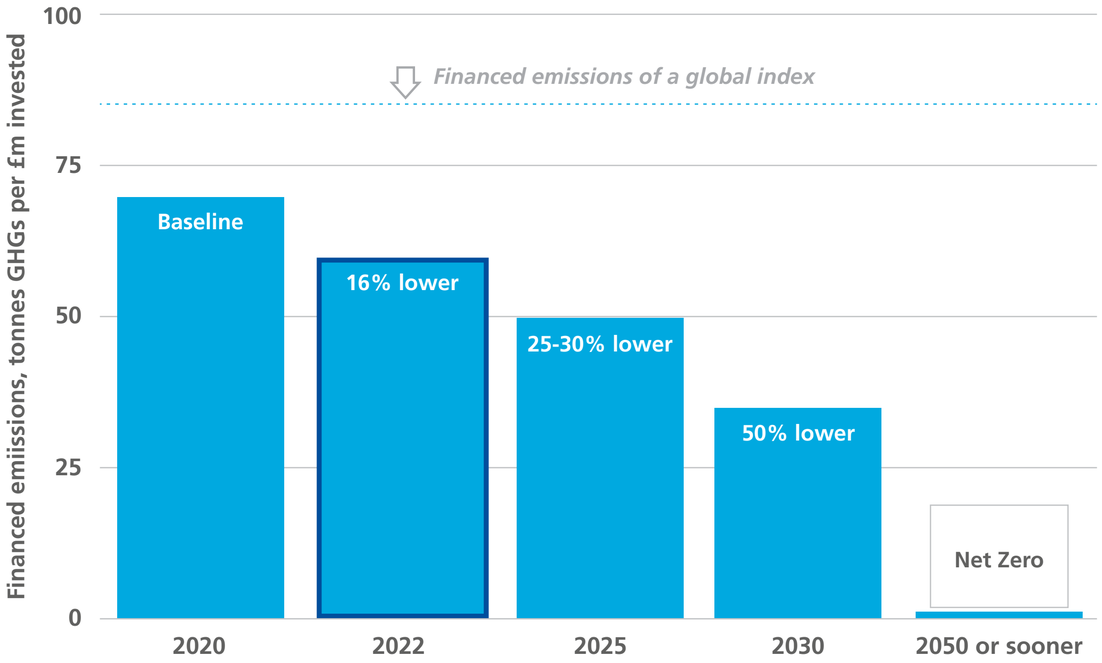
[52] *Source: Germanwatch, accessed via CCPI.org*



6.3 Net Zero Plan

The climate targets selected by the Trustee are consistent with those in Railpen's Net Zero Plan. The targets were developed by drawing on the Paris Aligned Investing Initiative's Net Zero Investment Framework, and other practitioner resources including Partnership for Carbon Accounting Financials (PCAF) and the Institute for Sustainable Futures (ISF). For further information, please refer to Railpen's Net Zero Plan[53].

Figure 6.3.1: Railpen's GHG reduction reference target



6.4. Net Zero Stewardship

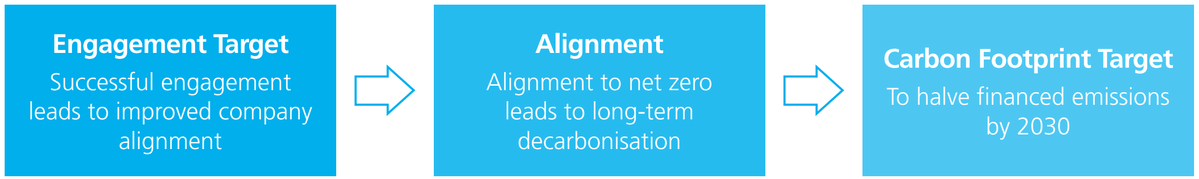
Whilst the ways in which climate-related risks play out are highly uncertain, the Trustee believes it is important to take actions that reduce climate-related risks, including through investment stewardship. Climate stewardship activities are taken on the Trustee's behalf primarily by Railpen. Certain service providers and external fund managers also carry out investment stewardship activities for the Trustee. Done well, climate stewardship can help to reduce the impact of a disorderly transition on companies in the schemes' investment portfolio, or of a shock to the financial system from catastrophic climate change.

Further, as noted above, the Trustee believes it is important that investors' emissions reductions targets are driven as far as possible by activities – primarily stewardship activities – that lead to emissions reductions in the real world (as opposed to changes in portfolio emissions driven by the act of one investor selling investments to another investor). There is a causal connection between engaging companies for improved alignment, and reducing the carbon footprint of the portfolio. Referring to the Trustee's targets set out in section 6.1: the Company Engagement target support the Alignment Target, which in turn supports the Carbon Footprint Target (Figure 6.4.1). At the present time, company engagement is the main step the Trustee is taking to achieve its climate targets.

If engagement proves unsuccessful, disinvestment will be considered. Any potential disinvestments will be weighed in the context of the broader mandate objectives.

Other steps available to the Trustee to achieve its climate targets include asset allocation changes, tightening the existing climate-related exclusions policies (for example lowering the threshold for exclusion of thermal coal and tar sands companies from 30% of revenue to 20% of revenue), or updating mandates and re-negotiating investment management agreements to include climate targets alongside traditional mandate objectives.

Figure 6.4.1: Relationship between Climate Targets



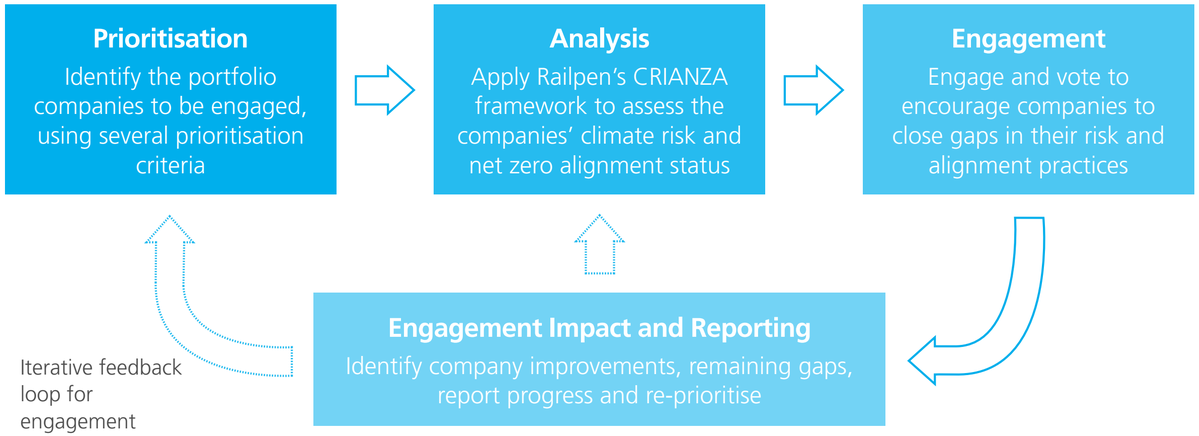
[53] https://cdn-suk-railpencom-live-001.azureedge.net/media/media/dyiflcd5/railpen-net-zero-plan_2020.pdf

6.4.1 Net Zero Engagement Plan (NZEP)

Railpen has set out a Net Zero Engagement Plan (NZEP), the purpose of which is to deliver against the reference targets outlined in the Net Zero Plan (these targets are consistent with the Trustee's targets in section 6.1). By executing on the NZEP, Railpen is taking steps that support the achievement of the Trustee's climate targets.

The NZEP uses a four-step approach of prioritisation, analysis, engagement and voting, and reporting of the decarbonisation impact on portfolio companies (Figure 6.4.1.1). This approach draws heavily on the Institutional Investor Group on Climate Change's (IIGCC) Net Zero Stewardship Toolkit, which provides investors with a foundational process to enhance their stewardship practices to deliver the rapid acceleration in decarbonisation required to achieve net zero by 2050[54].

Figure 6.4.1.1: Four-step approach in Railpen's NZEP



The initial prioritisation of companies for engagement was based on holding amount and financed emissions. However, prioritisation can be enhanced following analysis and/or engagement, so the NZEP operates an iterative feedback loop as depicted in Figure 6.4.1.1. Analysis and/or engagement can improve prioritisation through more informed consideration of: the forward-looking importance of Scope 3 emissions, the expected duration of the holding in Railpen portfolios, expected level of company access and likelihood of achieving change. The current prioritisation is summarised in Figure 6.4.1.2.

Analysis is conducted by applying Railpen's proprietary CRIANZA assessment framework (see section 5.4.4) to the companies in scope for engagement.

The aim of the Engagement phase of the NZEP is to align key emitters to a net zero trajectory, adopt interim and long term targets, and improve climate risk management. This is intended to be achieved through a combination of collaborative engagements (for example via Climate Action 100+), direct engagements with companies, and public policy engagement.

Figure 6.4.1.2: Current prioritisation of companies within the NZEP

	Tier 1	Tier 2	Total
Companies in scope for engagement (#)	30	18	48
Financed emissions (% of total in material sectors)	41%	35%	76%
Companies in Climate Action 100+	19	4	23
Direct engagement	11	14	25

[54] *Railpen co-chaired and co-authored the Net Zero Stewardship Toolkit*

Companies are allocated to tiers based on the form and substance of the engagement activity:

- Tier 1 companies are subject to collaborative and direct engagement including (as appropriate) meetings, calls, and written contact with management, investor relations and the company board. Shares are actively voted for "say on climate" votes in addition to more routine resolutions.
- Tier 2 companies are analysed, monitored, and shares are actively voted. Climate policy engagements targeted on certain jurisdictions may be carried out.

The Net Zero Engagement Plan incepted in 2022. As with last year's TCFD Report, we present some early-stage engagement case studies in Figures 6.4.1.3-6.4.1.6

Figure 6.4.1.3 **Case study: Direct engagement case study for a European airline held in Railpen's Fundamental Equities portfolio**

Background

This company is held in the Fundamental Equities portfolio. It remains the highest emitter in the overall Railpen portfolio (based on financed emissions) and is a key engagement target in Railpen's Net Zero Engagement Plan.

In 2021, we piloted our proprietary CRIANZA framework to assess the company's exposure to climate-related risks, and we identified multiple positive features. As outlined in last year's TCFD Report:

- the company exhibits 'very low' physical risk given the nature of air travel
- the company has a relatively strong current transition profile for the sector due its lower carbon emissions intensity versus peers
- there is also strong climate adaptation potential, albeit offset by the intrinsic high emissions level of aviation

Despite these features, the company's absolute emissions versus Railpen's overall portfolio – and areas identified for improvement in transition planning – still lead to the company be classified a 'Climate Risk'.

Objective

Through Railpen's Net Zero Engagement Plan, we have been in dialogue with the company to improve:

- detail on medium-term targets and the broader transition plan
- the incorporation of climate-related risks in the financial accounts
- alignment of disclosures with the TCFD recommendations

Approach

As the voting rights of non-EU nationals were restricted at corporate airlines in the wake of Brexit (and the company has expressed plans to delist from the London Stock Exchange), it became clear that stewardship through voting would be insufficient going forward. Therefore, we have increased the focus of our efforts on engagement.

We maintain a regular line of communication with the Investor Relations team. In December 2022, we took the additional step to attend the comany's inaugural "Pathway to Net Zero" Investor Day in Dublin to better understand how the company intends to decarbonise.

Outcome and next steps

Despite concerns that the company had not adequately disclosed the details of its transition plan, we believe that management is increasingly engaging in the decarbonisation agenda. For example, the company sponsored a new Aviation environment department at Trinity College Dublin and is fully participating in the European trade association, A4E.

We also commend the company's ambitious intention to adopt Sustainable Aviation Fuel (SAF) as 12.5% of its total flight fuel consumption by 2030, which is ahead of its short-haul European peers. For context, currently only 1% of flight fuel consumption derives from SAF, at roughly four times the cost of petroleum based aviation fuel.

We will continue to work with the company to work towards further disclosure and practice on the areas identified through our analysis.

Figure 6.4.1.4 **Case study: Collaborative engagement case study for a US utilities business held in Railpen's Fundamental Equities portfolio**

Background

The company, one of the largest electric utilities in the US, is held within Railpen's Fundamental Equities portfolio and remains a high emitter (based on financed emissions in Railpen's portfolio). Therefore, the company is one of our key climate engagements through Climate Action 100+ (CA100+).

The company faces environmental challenges due to its exposure to climate transition risks through a diverse portfolio of power generators including fossil fuel power generation and the largest portfolio of renewable power projects in North America. Meanwhile, a nuclear generation fleet adds risks of waste management and pollution. The company also faces high physical climate risks resulting from hurricanes and tropical storms in its core Florida market.

Objective

So far, the focus areas of the engagement have included:

- public disclosure of a net zero commitment
- additional disclosure on climate lobbying activities

Approach

Railpen has been a co-lead investor in the CA 100+ engagement since September 2021.

The initial focus of our engagement had been the public disclosure of a net zero commitment, which we discussed in detail with the company. We were therefore pleased that the company fulfilled our request through the announcement of its plan for 'Real Zero' in June 2022, which included emissions reduction targets and committed to significantly increased renewable energy deployment. Targets have been set to reach a carbon emissions reduction rate of 70% by 2025 (from its 2005 baseline), with interim targets and an aim to achieve Real Zero by no later than 2045.

While this is positive news, the engagement will continue to steer and track the progress around the company's specific climate transition and lobbying activities. Building upon the Real Zero outcome, Railpen refocused its attention on climate lobbying, discussing the company's current practices with Influence Map (an organisation dedicated to understanding the lobbying efforts of corporations) and considering co-filing a shareholder resolution to request disclosure on the same.

Railpen's approach to the current engagement remains one of patient and planned dialogue on the topic, followed by escalation if needed. Through dialogue, we understood that the company has been party to discussions on various aspects of the US Inflation Reduction Act, which provides strong support for climate transition initiatives. While the company believes public disclosure on this topic will be detrimental to the future of lobbying on climate solution incentives, we believe transparency is necessary.

Outcome and next steps

With the aim of highlighting the importance of this issue, we supported a smaller group of shareholders to escalate the engagement to co-filing a shareholder resolution on the topic (although this has since been withdrawn). At the time of this report's publication, discussions are also ongoing with the company on the publication of a separate climate lobbying report.

Figure 6.4.1.5 **Case study: Collaborative engagement case study for a global consumer goods business held in Railpen's Fundamental Equities portfolio**

Background

We are engaged in ongoing dialogue on the company's approach to ESG factors including climate change. Last year, we were pleased that the company continued to make progress on climate reporting by fulfilling our request to incorporate relevant risks in its financial accounts. However, the company remains a globally significant GHG emitter and exposed to climate risks along its extensive supply chain. Consequently, we remained concerned by the absence of a reference to climate change within the Auditor's Report.

Objective

A focus of our voting and engagement over the past year has been improving disclosure on the approach to climate accounting and how the auditor assesses this.

Approach

During our pre-AGM call, we commended the progress on climate accounting since our last conversation, but noted that there continued to be no explicit reference to climate change in the Auditor's Report. We were conscious that the relevant audit firm has incorporated climate considerations into the accounts of other companies that it services, including Royal Dutch Shell. Therefore, we communicated our expectation to see increased disclosure from the Audit Committee on its approach to climate risks and how it is engaging with the firm to improve assumptions/reporting. Ultimately, in recognition of the company's openness to discussion and hesitance to reference climate change without further clarity on audit methodology from the International Accounting Standards Board (IASB), we abstained (rather than voted to oppose) on the ratification of the auditor.

Outcome and next steps

The level of dissent against the approval of the financial statements and ratification of the auditor was below 1%. Nonetheless, the company has since responded to shareholder concerns by including more detail on climate risks within its 2022 Financial Statements. Additionally, the Auditor's Report now contains explicit discussion on the impacts of climate risks and environmental commitments on future cash flows. We look forward to continued engagement and progress on this matter.

Figure 6.4.1.6 Case study: **Collaborative engagement case study for a US utility held in Railpen's Quantitative Equities portfolio**

Background

Our investee company is the parent company of multiple public utilities that operate in south-eastern and southern states of the US. It also develops, constructs, acquires, and manages power generation assets, including renewable energy projects. The company is held within Railpen's Quantitative Strategies portfolio, which is managed internally. The company has been identified as a key emitter in Railpen's portfolio, based on financed emissions, and selected as a target in Railpen's Net Zero Engagement Plan.

The company meets most of the CA100+ Benchmark indicators[55] and Railpen's expectations for the industry, but we have identified scope for improvement around 'just transition' planning. The CA100+ engagement group for this company (Railpen is a co-lead investor in this group) made an initial request for the company to publish a Just Transition Report and this has been fulfilled. The report aligns with the COP 26 UN Declaration, includes information on governance structures, recognises the concept of energy justice and importance of continuous dialogue with unions, alongside a commitment to retraining the workforce.

We believe that the Just Transition Report could be enhanced by committing to:

- early engagement with stakeholders for transition-in projects
- respect for human rights and indigenous communities
- efforts to strengthen supplier Code of Conduct provisions
- quantitative and qualitative metrics about stakeholder engagement activities

Objective

The objective of our engagement is to obtain additional disclosure from the company on a Just Transition Plan that builds upon the principles set out in its Just Transition Report. This aligns with sub-indicator 9.3(a) of the CA100+ Benchmark.

Approach

As co-lead investor in the CA100+ engagement, we have engaged in constructive dialogue on both the production of the company's Just Transition Report, and assisting the company through the important first step to help tell its story. This has involved the formalisation of the company's Just Transition Principles, and reinforcement of its commitment to support key stakeholders, including workers, customers, communities, and contractors, as the Net-Zero Plan is executed.

Outcome and next steps

The engagement continues in 2023 with the company providing provisional support for enhanced reporting on its Just Transition activities, including additional reporting on how the company tracks its fulfilment of its Just Transition Principles.

As the company has the opportunity to contemplate these suggestions and plan for next steps, the engagement group is establishing when and in what form we can anticipate such reporting. We believe that annual reporting, in a form that is manageable for the company and accessible for investors, sets clear expectations for all stakeholders and establishes a defined structure for planning purposes. Therefore, the group will proceed with engagement and potentially design a template for Just Transition reporting at US companies.

6.4.2 Climate policy engagement

Successful climate policy is crucial to support companies, investors, and consumers in transitioning to a low carbon economy. Railpen continued its policy advocacy activities in 2022, promoting progressive climate action towards a goal of Net Zero by 2050 or sooner.

Railpen focuses its policy engagement activities based on an assessment of the importance of the topics to Railpen's Net Zero Engagement Plan, and in recognition of our greater likelihood of influencing domestic policy makers given our relationships with UK policymakers as a UK pension schemes.

Following on from policy engagement conducted in 2021, Railpen's 2022 policy work and interventions were focused on:

- simple and consistent disclosure of climate change information
- the need for standardised alignment assessment frameworks
- the need for simplicity in the portfolio alignment approach as data and disclosure evolve, and,
- taking a holistic approach to climate risk including 'Just Transition' considerations

[55] *This is a framework which assesses CA100+ target companies based on their publicly disclosed information.*

In 2022, Railpen submitted written responses to the following climate-related consultations, conveying a consistent position throughout:

Consultation	Position
Transition Plan Taskforce (TPT) framework for sector-neutral private sector transition plans – led by the UK Centre for Greening Finance and Investment (CGFI) and E3G	■ focus on 'financial materiality', including a suggestion that guidance be provided from ISSB to companies on how to conduct materiality assessments, building on existing frameworks like SASB, and that companies should disclose the results of materiality assessments ■ apply an 'inside-out' approach (also known as 'double materiality'), requiring corporates to consider and report both those issues financially material to their business, and their own systemic impact on the environment, market and society ■ prioritise mandatory basic disclosures first from companies, namely basic quantitative disclosure and standardised qualitative disclosure, followed by investors, due to the investors' dependency on corporate disclosure in implementing their own transition plans ■ take a holistic approach to climate risk, opportunities and transition planning for corporates, that along with the above, also includes i) explicit use and disclosure of science-based approaches and ii) 'Just Transition' and biodiversity considerations in entities' decarbonisation strategies, risk management and capital allocation approaches ■ adhere to best practice principles on offsets and their intended use to address residual emissions versus reaching emissions reductions targets
Glasgow Financial Alliance for Net Zero (GFANZ) on financial sector transition plans	
International Sustainability Standards Board (ISSB) survey on climate-related disclosures – led by the International Financial Reporting Standards (IFRS) Foundation	

Railpen's consultation responses are published on the Railpen website. Additionally, Railpen has been pleased to further share its perspectives with UK government and regulatory officials in direct meetings.

In 2023, Railpen intends to continue its policy engagement on existing priority areas.

Industry Collaborations

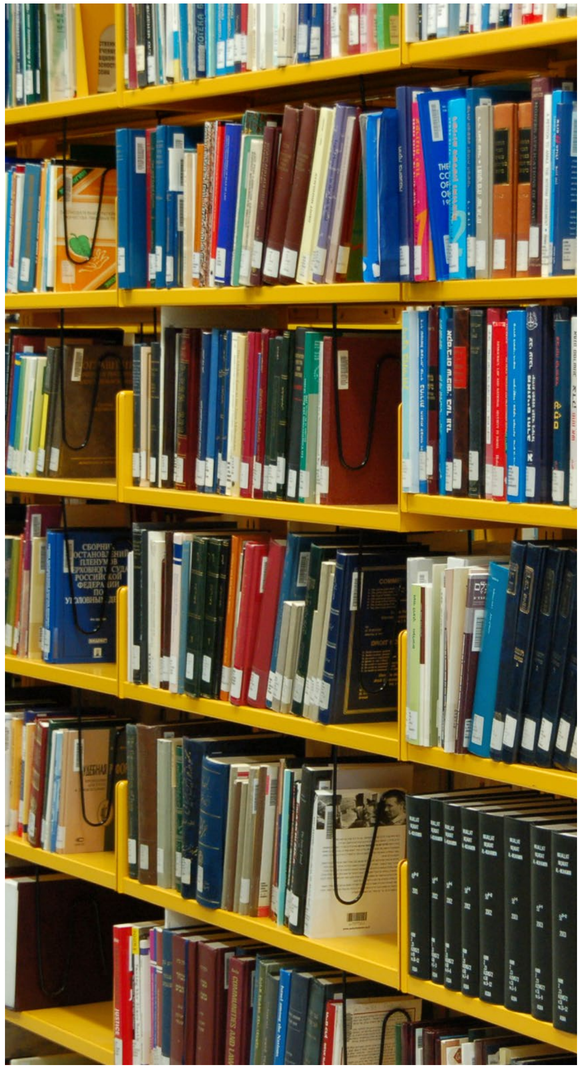
IIGCC The Institutional Investors Group on Climate Change | PRI Principles for Responsible Investment | Transition Pathway Initiative | UKSIF UK Sustainable Investment and Finance Association | Occupational Pensions Stewardship Council | PENSIONS AND LIFETIME SAVINGS ASSOCIATION

6.4.3 Industry initiatives

RPTCL and Railpen are members of a range of industry initiatives. Membership of industry initiatives support our ambitions to have a positive influence on the climate policy agenda, advance Railpen's aims in its Net Zero Engagement Plan, and promote good practice in the investment industry.

In 2022, RPTCL and Railpen have collaborated closely with peer asset owners and industry initiatives in support of the finance industry's push towards Net Zero. We:

- signed the Global Investor Statement on Climate Change
- continued to co-chair the Investor Practices Programme within the Institutional Investor Group on Climate Change (IIGCC)
- joined the Global Steering Group of the Paris Aligned Investing Initiative (PAII)
- participated as a member of the Steering and Advisory Committee for the Transition Pathway Initiative (TPI)
- participated in the UK Transition Plan Taskforce (TPT)
- participated in the Climate Financial Risk Forum (CFRF)
- co-chaired the IIGCC's Net Zero Stewardship Toolkit Working Group
- chaired and helped launch the IIGCC's Bondholder Stewardship Working Group
- contributed to podcasts, webinars, and articles supporting investors looking to set net zero targets



Glossary

- **Aligned to net zero.** A company which, though it might currently be an emitter of GHGs, has a credible commitment to be net zero by 2050 or sooner.
- **Asset class.** A category of financial instrument, constituents of which share similar characteristics. Examples of asset classes include equities (stocks), bonds (fixed income), private equity, infrastructure, and property.
- **AUM.** Assets Under Management. An amount of money managed or invested.
- **CA100+.** Climate Action 100+, a global investor engagement initiative, seeking improved climate disclosure and practice by 161 of the most systemically important GHG emitters.
- **Carbon footprint.** In this report, Carbon footprint refers to greenhouse gases (GHG) associated with some particular investment portfolio, measured in terms of the amount of GHGs emitted per £m invested. See Appendix B for more information.
- **Climate solutions.** Goods and services involved either in mitigating the harmful effects of climate change or in providing climate resilience.
- **Engagement.** Communicating with a person or organisation with the aim of raising an issue or achieving change.
- **ESG.** The collective term for referring to "environmental, social and governance" issues.
- **Financed emissions.** Financed emissions are GHG emissions that result from activities in the real economy financed by an investor's lending and investment portfolios. In this Net Zero Plan, Railpen's financed emissions are normalised relative to the amount of capital invested, and expressed as tCO2e/£m invested. This is referred to by PCAF as "Economic Emissions Intensity". (PCAF (2020) the Global GHG Accounting and Reporting Standard for the Financial Industry).
- **GHG emissions.** Greenhouse gas emissions relate to the emissions of gases that are capable of absorbing infrared radiation and thereby trapping within the atmosphere. The 1997 Kyoto Protocol defines six gases as GHGs: Carbon dioxide, Methane, Nitrous Oxide, Hydrofluorocarbons, Perfluorocarbons, and Sulphur Hexafluoride.
- **IIGCC.** Institutional Investor Group on Climate Change.
- **Material sectors.** Sectors defined as material according to the Paris Aligned Investing Initiative's Net Zero Investment Framework. They are sectors with "NACE" codes A-H and J-L. C.f. see Appendix E to Railpen's Net Zero Plan.
- **Net zero.** A state in which the GHG emissions created by an organisation in a given time period are approximately equal to the GHGs sequestered by the organisation. In this document, "net zero" typically refers to the emissions and sequestration of GHGs associated with companies in Railpen's investment portfolio.
- **Paris Agreement.** The Paris Agreement on climate change is a 2015 global accord seeking to keep the rise in global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the increase to 1.5°C. As of 2021, the Paris Agreement has been signed by 191 countries, and ratified by 186 countries.
- **Physical risks.** Physical risks are those that pertain to the physical impacts that occur as the global average temperature rises. For example, the rise in sea levels could have impacts such as flooding and mass migration. Extreme weather events, such as flooding and fires, could become more frequent and severe, and these incidents could threaten physical assets and disrupt supply chains.

- **Regulations.** Occupational Pension Schemes (Climate Change Governance and Reporting) Regulations 2021, Occupational Pension Schemes (Climate Change Governance and Reporting) (Miscellaneous Provisions and Amendments) Regulations 2021, and Occupational Pension Schemes (Climate Change Governance and Reporting) (Amendment, Modification and Transitional Provision) Regulations 2022
- **RPTCL.** Railways Pension Trustee Company Limited, the corporate trustee of the railways pension schemes.
- **Scope 1 GHG emissions.** An organisation's direct GHG emissions. These might be created as an organisation combusts fossil fuels, or uses fuel in transportation.
- **Scope 2 GHG emissions.** An organisation's emissions associated with the generation of purchased electricity, heating/ cooling, or steam for own consumption.
- **Scope 3 GHG emissions.** An organisation's indirect emissions other than those covered in scope 2. This includes the emissions associated with an organisation's supply chain and its customers.
- **SO.** Sustainable Ownership. The term Railpen uses to describe the incorporation of sustainability factors (including climate change) into the way it invests members' money.
- **Statutory Guidance.** Guidance issued by the Department for Work and Pensions named "Government and reporting of climate change risk: guidance for trustees of occupational schemes".
- **Stewardship.** Stewardship involves using tools such as engagement, voting and advocacy as ways to shape corporate behaviour.
- **Transition risks.** Transition risks arise as we seek to realign our economic system towards low-carbon, climate-resilient solutions. Changes in industry regulation, consumer preferences and technology will take place and impact on current and future investments.
- **Trustee.** Railways Pension Trustee Company Limited, the corporate trustee of the railways pension schemes.
- **Voting, a vote.** Being a shareholder in a company (usually) gives the opportunity to vote on company matters at meetings such as an Annual General Meeting (AGM). The issues we can vote on include executive pay, the election of board directors, a climate change plan, and the financial report and accounts.

Appendix A: Index of statutory reporting requirements

DWP Statutory Guidance Reference	Reporting Requirement	Report Section
Governance		
33	In relation to the governance disclosure requirements, trustees must describe in their TCFD report:	
	■ how they maintain oversight of climate-related risks and opportunities which are relevant to the scheme	4.2
	■ the roles of those undertaking scheme governance activities in identifying, assessing and managing climate-related risks and opportunities relevant to those activities	4.5
	■ the processes the trustees have established to satisfy themselves that those undertaking scheme governance activities take adequate steps to identify, assess and manage those risks and opportunities	4.2; 4.4; 4.6; 4.7
	■ the role of those advising or assisting the trustees with scheme governance activities, and	4.5
	■ the processes the trustees have established to satisfy themselves that the person advising or assisting takes adequate steps to identify and assess any climate-related risks and opportunities which are relevant to the matters on which they are advising or assisting	4.2; 4.4; 4.6; 4.7

DWP Statutory Guidance Reference	Reporting Requirement	Report Section
Governance		
34	To help contextualise these disclosures, trustees should concisely describe: ■ how the Board and any relevant sub-committees are informed about, assess and manage climate-related risks and opportunities and the frequency at which these discussions take place	4.7
	■ whether they questioned and, where appropriate, challenged the information provided to them by others undertaking governance activities – or advising and assisting with governance, and	4.2; 4.6; 4.7
	■ the rationale for the time and resources they spent on the governance of climate-related risks and opportunities	4.7
35	Trustees should also concisely describe, in relation to those who undertake governance activities, or advise or assist with governance of the scheme: ■ the kind of information provided to them by those persons about their consideration of climate-related risks and opportunities faced by the Scheme, and	4.5; 4.7
	■ the frequency with which this information is provided	4.5; 4.7
36	Trustees should describe the training opportunities they provided for their employees in relation to climate change risks and opportunities. Where trustees identified skills gaps, they may also describe whether they encouraged external advisers to provide training opportunities.	4.6
37	Trustees may wish to provide an organogram or structural diagram in their TCFD report, showing which groups / individual roles have responsibilities for governance of climate-related risks and opportunities. This may include executive officers, in-house teams and / or third parties engaged by the trustees. For the avoidance of doubt, there is no expectation that this would involve disclosing personal data of individuals.	4.5

DWP Statutory Guidance Reference	Reporting Requirement	Report Section
Strategy		
92	Trustees must describe in their TCFD report: ■ the time periods which the trustees have determined should comprise the short term, medium term and long term	5.1.2
	■ the climate-related risks and opportunities relevant to the scheme over the time periods that the trustees have identified and the impact of these on the Scheme's investment strategy and, where the scheme has a funding strategy, the funding strategy	5.2, 5.3, 5.4
	■ the most recent scenarios the trustees have used in their scenario analysis;	5.1.1
	■ the potential impacts on the scheme's assets and liabilities which the trustees have identified in those scenarios and, if the trustees have not been able to obtain data to identify the potential impacts for all of the assets of the scheme, why this is the case	5.3, 5.4
	■ the resilience of the Scheme's investment strategy and, where the scheme has a funding strategy, the funding strategy, in the most recent scenarios the trustees have analysed, and	5.3, 5.4
	■ where trustees have concluded that it is not necessary to undertake new scenario analysis outside the mandatory cycle, the reasons for this determination	5.1

DWP Statutory Guidance Reference	Reporting Requirement	Report Section
Strategy		
93	Trustees should also describe in their TCFD report: ■ their reasons for choosing the scenarios they have used, and	5.1.1
	■ the key assumptions for the scenarios used and the key limitations of the modelling (for example, material simplifications or known under/over estimations), and	5.1.1, 5.3, 5.4
	■ any issues with the data or its analysis which have limited the comprehensiveness of their assessment (see section on "as far as they are able" at Part 2 of the Statutory Guidance, paragraphs 1 to 11 above)	5.1.1, 5.3, 5.4.2, 5.4.3
94	Trustees may include information in their TCFD report on any other aspects of the assessment of their investment strategy and, if they have one, funding strategy and scenario analysis that they consider would be helpful to disclose.	n/a

DWP Statutory Guidance Reference	Reporting Requirement	Report Section
Risk Management		
113	Trustees must describe in their TCFD report the processes they have established for identifying, assessing and managing climate-related risks in relation to the scheme, and how the processes are integrated within the trustees' overall risk management of the scheme.	4, 5.1-5.4
114	The report should also include concise information on the following: ■ the risk tools the trustees used and the outputs / outcomes of using those particular tools	4, 5.1, 5.4.4.2
	■ how the trustees have identified, assessed and managed both transition and physical risks for the scheme, and	5.1-5.4
	■ how the trustees' assessment of climate-related risks has impacted the scheme's prioritisation and management of risks which pose the most significant potential for loss and are most likely to occur	4, 5.3.2, 5.4.4.1
115	Trustees should include information on how, if at all, they have used stewardship to help manage climate-related risks to the scheme. The TCFD provides brief supplemental guidance on engagement activity and risk.	6.4
116	Disclosing information about how climate-related opportunities are identified, assessed and managed is encouraged as this will add further insights for members and others into the Scheme's overall approach to climate-related risk.	5.4.5

DWP Statutory Guidance Reference	Reporting Requirement	Report Section
Metrics and Targets		
175	Trustees must describe in their TCFD report the metrics which they have calculated – absolute emissions metric, emissions intensity metric, portfolio alignment metric and an additional climate change metric. If they have been unable to obtain data to calculate the metrics for all of the assets of their scheme, they must explain why this is the case.	6.1
176	When disclosing their portfolio alignment metric, trustees should describe the key components of the methodology (for example, key judgements, assumptions, data inputs and where relevant how the chosen methodology accounts for data gaps) used to calculate their chosen metric.	5.4, 6.1, 6.2
177	If the trustees have chosen to use a metric which is not recommended in this Guidance, they should explain why.	n/a
178	For all metrics, trustees should concisely explain their methodologies and those of any asset managers or third party service providers used, and their rationale for taking the approach that has been adopted.	6.1
179	When reporting total GHG emissions and Carbon Footprint, trustees should report the proportion of assets for which data was available. Trustees should concisely explain where data was estimated, and should indicate any assumptions that have been made that could impact significantly on the results. Where they have data of uncertain quality, trustees should again concisely explain this.	6.1
180	Where trustees report metrics on only a proportion of the portfolio, they should explain the proportion on which they are reporting.	6.1
181	When reporting total GHG emissions and Carbon Footprint, trustees should set out the Scope 1 and Scope 2 emissions of assets separately from the Scope 3 emissions of assets for each DB section and each popular DC arrangement. Trustees may additionally report the Scope 1 and Scope 2 emissions of assets separately. Emissions should be reported in amount of CO2 equivalent (CO2e).	6.2

DWP Statutory Guidance Reference	Reporting Requirement	Report Section
Metrics and Targets		
182	If trustees believe that it is not meaningful, in relation to any metric, to aggregate data across certain asset classes, they should not do so, but should instead report at the most aggregated level which remains meaningful (for example at asset class level). If this approach is necessary, they should also report the proportions of the scheme assets associated with each reported metric (in the above example, the proportion of the portfolio represented by each asset class).	6.2
183	Trustees may choose to disclose some or all of their chosen metrics against a relevant benchmark to identify the relative performance of the portfolio.	n/a
193	Trustees must describe in their TCFD report the target they have set, and the performance of the scheme against the target.	6.1, 6.2
194	Trustees should report concisely on the steps they are taking to achieve the target or targets.	6.3, 6.4
195	Trustees should provide a concise description of the methodology used to measure performance against the target or targets, including any estimations relied upon in measuring progress.	6.1
196	Where trustees have replaced a target, they should briefly explain why. Similarly, where a target has been missed, trustees should offer a brief explanation. Such explanations could help savers and others understand the trustees' conclusions on the events or circumstances that made the target unachievable or not in members' interests.	n/a

Appendix B: Further information in relation to selected climate metrics

Total Greenhouse Gas Emissions

What is it?

This metric measures the total greenhouse gas emissions attributable to a portfolio. Trustees are recommended to report this number, covering at least scopes 1 and 2 GHGs.

Equation

$$\sum_{i}^{n} \left(\frac{\text{value of investment}}{\text{enterprise value incl. cash}_i} * (\text{scope 1 + scope 2 GHGs})_i \right)$$

Equation in Plain English

To calculate this metric, you assess the proportion of a company you own, let's say 1%. Then you work out the company's annual GHG emissions, let's say 100 tonnes of CO2e. Then you apportion yourself your share of the company's emissions, in this case 1 tonne of CO2e. You repeat this exercise for all the companies in the portfolio, and add up all the apportioned emissions.

Advantages over other metrics	Potential drawbacks
Simple to calculate	No normalisation between funds. The larger the investor, the larger the total emissions figure
Easy to communicate	Difficult to translate into exposure to climate risk
Enables trustees to set a baseline for climate action and to understand the climate impact of their investments	Might not be decision-useful

Carbon footprint

What is it?

Also referred to as Financed Emissions, this is the most common measure of portfolio carbon footprint. The interpretation of the metric is "the amount of GHGs emitted for each £m invested in the portfolio". Considering public equities and public fixed income, Railpen's carbon footprint was c70 tonnes GHGs per £m invested at the end of 2020. Trustees are recommended to report this metric.

Equation

$$\frac{\sum_{i}^{n} \left(\frac{\text{value of investment}}{\text{enterprise value incl. cash}_i} * (\text{scope 1 + scope 2 GHGs})_i \right)}{\sum \text{Assets under management}}$$

Equation in Plain English

To calculate this metric, you follow the same steps as for Total Greenhouse Gas Emissions (see left), then divide by your total AUM in £m.

Advantages over other metrics	Potential drawbacks
Can be used to compare asset classes and portfolios to one another and to a benchmark	Uses a scheme's proportional share of equity and debt – an increase in share prices, all else equal, would result in a decrease in the scheme's total emissions
Using the portfolio market value to normalise data is fairly intuitive to investors	Metric does not effectively account for differences in carbon efficiency across companies which are vastly different in size
Metric allows for portfolio decomposition and attribution analysis	

Portfolio alignment metric: proportion of portfolio invested in companies 'aligned' to net zero

What is it?

Portfolio alignment metrics provide a forward-looking metric of carbon exposure that can be applied to a wide range of industries, companies and asset classes. Such metrics estimate expected future emissions associated with a given investment portfolio, fund or investment strategy. Portfolio alignment disclosure using binary targets can help trustees make a forward-looking assessment of an asset owner portfolio's exposure to climate-related risks, their ability to capitalise on opportunities in the low-carbon transition over time, and overall investment strategy. Trustees must select from a menu of "additional climate change metrics", of which the Portfolio Alignment Metric is one option.

Equation

$$\sum \textit{Weight of portfolio companies assessed as "aligning" or "fully aligned"}$$

Equation in Plain English

To calculate this metric, you need to assess the "alignment" status (i.e. alignment to a net zero outcome) of each portfolio company. Then you need to add the weights of the companies categorised as either "aligning" or "fully aligned".

Advantages over other metrics	Potential drawbacks
Lack of widely available, high quality, historical climate-related information, creates the need for forward-looking metrics	Simple metric
Addressing the increasing regulatory expectations - forward-looking understanding of climate-related risk	
Portfolio alignment metric allows for a simple representation of extent of climate risk across portfolios and incorporate ongoing changes in company alignment through engagement and climate data developments	Further work will be needed to improve forward looking quality

Proportion of portfolio where companies are being engaged on climate issues (process-based metric)

What is it?

Engagement is a key route through which trustees can reduce their exposure to climate change risk. The investments they make give them not just voting rights but significant influence over the direction of a company. Asset managers should be using this influence to manage the scheme's exposure to climate change risks and opportunities, highlighting any concerns about the direction of a firm during engagement activity that they undertake. This metric allows a trustee to assess the extent to which an asset manager is prioritising engagement and/or voting on the topic of climate change. Selection of this metric is recommended in the Pensions Climate Risk Industry Group's (PCRIG) definition of best practice.

Equation

$$\sum \textit{Weight of portfolio companies being engaged on climate change}$$

Equation in Plain English

To calculate this metric, you need to identify all companies in the portfolio being engaged on climate change. Then you need to add the weights of the companies that are under engagement.

Advantages over other metrics	Potential drawbacks
Does not require data	Binary measure of engagement with no measure of influence on company direction
Useful for monitoring asset managers	Can be subject to "greenwashing"

Appendix C: MSCI disclaimer

This disclosure was developed using information from MSCI ESG Research LLC or its affiliates or information providers. Although Railpen's information providers, including without limitation, MSCI ESG Research LLC and its affiliates (the "ESG Parties"), obtain information (the "Information") from sources they consider reliable, none of the ESG Parties warrants or guarantees the originality, accuracy and/or completeness, of any data herein and expressly disclaim all express or implied warranties, including those of merchantability and fitness for a particular purpose. The Information may only be used for your internal use, may not be reproduced or redisseminated in any form and may not be used as a basis for, or a component of, any financial instruments or products or indices. Further, none of the Information can in and of itself be used to determine which securities to buy or sell or when to buy or sell them. None of the ESG Parties shall have any liability for any errors or omissions in connection with any data herein, or any liability for any direct, indirect, special, punitive, consequential or any other damages (including lost profits) even if notified of the possibility of such damages.

Appendix D: Principles for effective disclosures

Source: Adapted from the TCFD Final Report, Annex: Implementing the Recommendations of the TCFD (June 2017) 'Appendix 3: Fundamental Principles of Effective Disclosure' (Page 51).

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

Appendix E: Climate metrics by section

	Total GHG Emissions[56] (tCO_2e)	Carbon Footprint (tCO_2e)/£m invested)	Portfolio Alignment (%)	Data Quality: Reported GHG data (%)	Data Quality: Estimated GHG data (%)	Data Quality: Unavailable GHG data (%)	Total Scope 3 GHG Emissions (tCO_2e)	Scope 3 Carbon Footprint (tCO_2e)/£m invested)	Scope 3 Data Quality: Reported + Estimated GHG data (%)	Scope 3 Data Quality: Unavailable GHG data (%)
RPS										
1994 Pensioners	93,626	75	-	37	45	18	562,765	468	79	21
Abellio	411	57	1	28	48	25	2,250	313	75	25
Abellio Scotrail (First Scotrail)	29,558	57	1	28	48	25	161,704	313	75	25
AECOM	672	57	1	28	48	25	3,678	313	75	25
Alpha Trains (UK)	91	57	1	28	48	25	499	313	75	25
ALSTOM Railways	4,728	65	-	32	53	15	34,146	525	76	24
Alstom Signalling Shared Cost	708	57	-	28	48	25	3,876	313	75	25
AMCO	21	57	1	28	48	25	116	313	75	25
Amey Rail	3,027	57	1	28	48	25	16,560	313	75	25
Angel Trains	1,877	57	1	28	48	25	10,267	313	75	25
Anglia Railways	4,131	57	1	28	48	25	22,599	313	75	25
Atkins	5,401	57	1	28	48	25	29,546	313	75	25
ATOC	1,727	57	1	28	48	25	9,446	313	75	25
Atos	6,700	59	1	33	44	23	42,781	399	73	27
Babcock Rail	4,415	57	1	28	48	25	24,154	313	75	25
Balfour Beatty	4,621	57	1	28	48	25	25,281	313	75	25

[56] *GHG scopes 1 and 2; Source: Bloomberg; MSCI (please see Appendix C for disclaimer)*

	Total GHG Emissions[56] (tCO_2e)	Carbon Footprint (tCO_2e)/£m invested)	Portfolio Alignment (%)	Data Quality: Reported GHG data (%)	Data Quality: Estimated GHG data (%)	Data Quality: Unavailable GHG data (%)	Total Scope 3 GHG Emissions (tCO_2e)	Scope 3 Carbon Footprint (tCO_2e)/£m invested)	Scope 3 Data Quality: Reported + Estimated GHG data (%)	Scope 3 Data Quality: Unavailable GHG data (%)
RPS										
BAM Nuttall	7	57	1	28	48	25	40	313	75	25
Bombardier Transport (Signal)	870	66	1	26	63	12	5,985	500	80	20
Bombardier Transport (UK)	1,940	57	1	28	48	25	10,612	313	75	25
Bombardier Transport C2C	394	57	1	28	48	25	2,158	313	75	25
BR	2,903	57	1	28	48	25	15,883	313	75	25
British Transport Police	6,575	57	1	28	48	25	35,968	313	75	25
BT	99	57	1	28	48	25	543	313	75	25
BUPA Occupational Health	112	57	1	28	48	25	614	313	75	25
Caledonian Sleepers Shared Cost	354	57	1	28	48	25	1,938	313	75	25
Carlisle Cleaning Services	15	57	1	28	48	25	80	313	75	25
Clientlogic	65	57	1	28	48	25	354	313	75	25
Colas Rail	3,800	57	1	28	48	25	20,791	313	75	25
Crossrail	1,766	57	1	28	48	25	9,659	313	75	25
CSC Computer Sciences	21	57	1	28	48	25	116	313	75	25
DB Cargo (UK) Limited	47,931	65	-	30	57	13	339,043	514	78	22
East Coast Main Line	21,480	57	1	28	48	25	117,511	313	75	25
East Midlands	13,692	57	1	28	48	25	74,903	313	75	25
Eurostar	13,804	57	1	28	48	25	75,517	313	75	25
Eversholt Rail	388	57	1	28	48	25	2,122	313	75	25

[56] *GHG scopes 1 and 2; Source: Bloomberg; MSCI (please see Appendix C for disclaimer)*

	Total GHG Emissions[56] (tCO_2e)	Carbon Footprint (tCO_2e)/£m invested)	Portfolio Alignment (%)	Data Quality: Reported GHG data (%)	Data Quality: Estimated GHG data (%)	Data Quality: Unavailable GHG data (%)	Total Scope 3 GHG Emissions (tCO_2e)	Scope 3 Carbon Footprint (tCO_2e)/£m invested)	Scope 3 Data Quality: Reported + Estimated GHG data (%)	Scope 3 Data Quality: Unavailable GHG data (%)
RPS										
First Great Western	39,212	57	1	28	48	25%	214,519	313	75	25
Freightliner	9,147	57	1	28	48	25%	50,039	313	75	25
GB Railfreight	1,922	57	1	28	48	25%	10,515	313	75	25
Gemini Rail Services Shared Cost	61	57	1	28	48	25%	336	313	75	25
Global Crossing Section	1,115	57	1	28	48	25%	6,098	313	75	25
Govia Thameslink	18,216	57	1	28	48	25%	99,654	313	75	25
Great Eastern Railway	8,938	57	1	28	48	25%	48,896	313	75	25
Hitachi Rail Europe Limited Section	1,088	57	1	28	48	25%	5,952	313	75	25
HS1	216	57	1	28	48	25%	1,181	313	75	25
Hull Trains	344	57	1	28	48	25%	1,881	313	75	25
Intelenet Global BPO (UK)	2	57	1	28	48	25%	9	313	75	25
Island Line	313	57	1	28	48	25%	1,714	313	75	25
ISS Transport Services	37	57	1	28	48	25%	201	313	75	25
Jacobs UK	850	57	1	28	48	25%	4,651	313	75	25
Keolis Amey Operations	14,450	57	1	28	48	25%	79,053	313	75	25
London & South Eastern Railway	31,049	57	1	28	48	25%	169,863	313	75	25
London Eastern Railway (West Anglia)	4,150	57	1	28	48	25%	22,706	313	75	25
London Overground	7,905	57	1	28	48	25%	43,246	313	75	25
London Underground	48	57	1	28	48	25%	261	313	75	25

[56] *GHG scopes 1 and 2; Source: Bloomberg; MSCI (please see Appendix C for disclaimer)*

	Total GHG Emissions[56] (tCO_2e)	Carbon Footprint (tCO_2e)/£m invested)	Portfolio Alignment (%)	Data Quality: Reported GHG data (%)	Data Quality: Estimated GHG data (%)	Data Quality: Unavailable GHG data (%)	Total Scope 3 GHG Emissions (tCO_2e)	Scope 3 Carbon Footprint (tCO_2e)/£m invested)	Scope 3 Data Quality: Reported + Estimated GHG data (%)	Scope 3 Data Quality: Unavailable GHG data (%)
RPS										
Merseyrail	7,577	57	1	28	48	25	41,453	313	75	25
Mitie Facilities Services	4	57	1	28	48	25	22	313	75	25
MTR Crossrail	3,045	57	1	28	48	25	16,658	313	75	25
National Express Services	79	57	1	28	48	25	431	313	75	25
Network Rail	232,975	57	1	28	48	25	1,274,557	313	75	25
New Cross Country	16,044	57	1	28	48	25	87,774	313	75	25
Northern (ex North East)	21,857	57	1	28	48	25	119,577	313	75	25
Northern (ex North West)	18,869	57	1	28	48	25	103,228	313	75	25
Omnibus	1,228	57	1	28	48	25	6,721	313	75	25
Owen Williams Railways	347	57	1	28	48	25	1,900	313	75	25
Porterbrook	1,145	57	1	28	48	25	6,264	313	75	25
QJump	51	57	1	28	48	25	277	313	75	25
QSS Group	152	57	1	28	48	25	831	313	75	25
Rail Gourmet UK	420	57	1	28	48	25	2,300	313	75	25
Railpen Limited	2,269	57	1	28	48	25	12,412	313	75	25
Resonate Group (Link)	497	57	1	28	48	25	2,716	313	75	25
Resonate Group (Rail)	998	57	1	28	48	25	5,460	313	75	25
Resonate Group (TCI)	378	57	1	28	48	25	2,068	313	75	25
RSSB	2,569	57	1	28	48	25	14,054	313	75	25

[56] *GHG scopes 1 and 2; Source: Bloomberg; MSCI (please see Appendix C for disclaimer)*

	Total GHG Emissions[56] (tCO_2e)	Carbon Footprint (tCO_2e)/£m invested)	Portfolio Alignment (%)	Data Quality: Reported GHG data (%)	Data Quality: Estimated GHG data (%)	Data Quality: Unavailable GHG data (%)	Total Scope 3 GHG Emissions (tCO_2e)	Scope 3 Carbon Footprint (tCO_2e)/£m invested)	Scope 3 Data Quality: Reported + Estimated GHG data (%)	Scope 3 Data Quality: Unavailable GHG data (%)
RPS										
SERCO	1,049	57	1	28	48	25	5,737	313	75	25
Siemens	118	57	1	28	48	25	645	313	75	25
SNC Lavalin Rail and Transit Limited	1,596	57	1	28	48	25	8,732	313	75	25
Socotec UK Limited	259	57	1	28	48	25	1,416	313	75	25
South Western Railway	34,948	57	1	28	48	25	191,192	313	75	25
Southern	28,167	57	1	28	48	25	154,096	313	75	25
Specialist Computer Centres	31	57	1	28	48	25	169	313	75	25
Stadler - Greater Anglia	56	57	1	28	48	25	305	313	75	25
Stadler Rail	243	57	1	28	48	25	1,327	313	75	25
Swirl Service Group	2	57	1	28	48	25	9	313	75	25
Thales Information Systems	59	57	1	28	48	25	325	313	75	25
Thales Transport & Security	6,166	57	1	28	48	25	33,731	313	75	25
The Chiltern Railway Company Limtied (Maintenance)	1,088	57	1	28	48	25	5,953	313	75	25
The Chiltern Railway Company Limited	5,895	57	1	28	48	25	32,252	313	75	25
Torrent Trackside	17	57	1	28	48	25	92	313	75	25
TransPennine Express (ATN)	4,394	57	1	28	48	25	24,039	313	75	25
TransPennine Express (NWT)	2,624	57	1	28	48	25	14,356	313	75	25
Transport for Wales	75	57	1	28	48	25	408	313	75	25
Trenitalia c2c	4,588	57	1	28	48	25	25,098	313	75	25

[56] *GHG scopes 1 and 2; Source: Bloomberg; MSCI (please see Appendix C for disclaimer)*

	Total GHG Emissions[56] (tCO_2e)	Carbon Footprint (tCO_2e)/£m invested)	Portfolio Alignment (%)	Data Quality: Reported GHG data (%)	Data Quality: Estimated GHG data (%)	Data Quality: Unavailable GHG data (%)	Total Scope 3 GHG Emissions (tCO_2e)	Scope 3 Carbon Footprint (tCO_2e)/£m invested)	Scope 3 Data Quality: Reported + Estimated GHG data (%)	Scope 3 Data Quality: Unavailable GHG data (%)
RPS										
TSP Projects	1,339	57	1	28	48	25	7,324	313	75	25
Unipart Rail - NRS	1,537	57	1	28	48	25	8,407	313	75	25
Unipart Rail-Railpart	1,209	57	1	28	48	25	6,612	313	75	25
Unisys	39	57	1	28	48	25	215	313	75	25
UPS	43	57	1	28	48	25	233	313	75	25
Voith	52	57	1	28	48	25	287	313	75	25
Wabtec Rail	44	57	1	28	48	25	241	313	75	25
West Coast Partnership	26,637	57	1	28	58	13	145,724	511	79	21
West Coast Traincare	7,216	65	-	29	48	25	50,710	313	75	25
West Midlands Trains	19,885	57	1	28	48	25	108,785	313	75	25
Westinghouse Rail Systems	3,443	57	1	28	48	25	18,837	313	75	25
Worldline IT Services UK Ltd	1,540	57	1	28	48	25	8,426	313	75	25

[56] *GHG scopes 1 and 2; Source: Bloomberg; MSCI (please see Appendix C for disclaimer)*

	Total GHG Emissions[57] (tCO_2e)	Carbon Footprint (tCO_2e)/£m invested)	Portfolio Alignment (%)	Data Quality: Reported GHG data (%)	Data Quality: Estimated GHG data (%)	Data Quality: Unavailable GHG data (%)	Total Scope 3 GHG Emissions (tCO_2e)	Scope 3 Carbon Footprint (tCO_2e)/£m invested)	Scope 3 Data Quality: Reported + Estimated GHG data (%)	Scope 3 Data Quality: Unavailable GHG data (%)
BTPFSF										
BT Police 1968	32	57	1	28	48	25	173	313	75	25
BT Police 1970	37,427	57	1	28	48	25	204,756	313	75	25

	Total GHG Emissions[57] (tCO_2e)	Carbon Footprint (tCO_2e)/£m invested)	Portfolio Alignment (%)	Data Quality: Reported GHG data (%)	Data Quality: Estimated GHG data (%)	Data Quality: Unavailable GHG data (%)	Total Scope 3 GHG Emissions (tCO_2e)	Scope 3 Carbon Footprint (tCO_2e)/£m invested)	Scope 3 Data Quality: Reported + Estimated GHG data (%)	Scope 3 Data Quality: Unavailable GHG data (%)
BRSF										
BR Superannuation Fund	5,268	75	-	37	45	18	31,669	468	79	21

[57] *GHG scopes 1 and 2; Source: Bloomberg; MSCI (please see Appendix C for disclaimer)*

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