# Task Force on Climate-Related Financial Disclosures (TCFD) Report

For the year ended 31 March 2022



# **TCFD Report**

Climate change creates financial risks that pose a global threat to activity across all industries, representing long-term uncertainty for the investment community. Rising occurrences of extreme weather events can impact financial systems by disrupting normal activity and lowering asset values, with consequences for a wide range of sectors, while the shift to a low-carbon economy can present transitional risks.

There are also opportunities inherent to this transition. The Company was launched in 2018 to deliver long-term capital growth to shareholders through a geographically diverse portfolio of utility-scale battery storage systems integrated into high renewable penetration power grids. Climate risk management is, therefore, an important step in improving accountability and providing investors with the transparency they need to increase their support of a greener future.

The Financial Stability Board established the Task Force on Climate-Related Financial Disclosures (TCFD) to improve market transparency around the financial risks posed by climate change.

Following 18 months of consultation, the TCFD published 11 climate-related financial disclosure recommendations in 2017 structured around four thematic areas: governance, strategy, risk management, and metrics and targets.

The UK is the first G20 nation to require climate risks based on TCFD recommendations to be reported. This followed the publication of the UK's Net Zero strategy and forms part of the government's commitment to making its financial system the greenest in the world<sup>1</sup>.

In phases from 2021 to 2025, new legislation<sup>2</sup> requires certain listed companies and financial institutions, such as pension schemes, asset managers and insurers, to provide climate disclosures. The Company does not fall within the scope of these requirements but has chosen to align voluntarily, as it believes in the TCFD's purpose and the benefits of the exercise.

As London's first listed energy storage fund, with an operational portfolio spanning grids in four countries to date, the Company is in a key position within the energy transition space to understand and mitigate risks posed by the climate crisis. Those identified by the Company range from physical risks caused by the increasing frequency and severity of extreme weather events, which can impact construction and operation phases while heightening health and safety risks for those working on site, to transitional risks around variations in policy and market dynamics.

Identifying and managing these risks allows the Company to optimise and grow its portfolio of energy storage assets to better contribute to the integration of renewable generation and deliver accurate disclosures to help investors make informed decisions.

Energy storage is crucial in accelerating the low-carbon transition necessary to limit global temperature increases to below 1.5C. It can also support national climate mitigation and decarbonisation targets, such as the UK's ambition to reach net zero emissions by 2050. The Company is, therefore, committed to ensuring the market has access to timely information needed to support its activity.

The voluntary adoption of TCFD recommendations is part of the Company's sustainability journey and represents an ongoing commitment to improving climate risk management. It follows the Company's decision to align with the European Union's (EU) framework on sustainability-related disclosures in the financial services sector (SFDR).

Choosing to align with the TCFD recommendations and SFDR means the Company has committed to increasing its level of data capture and disclosure to form a more complete understanding of its environmental impact, risks and opportunities. It also signifies the Company is committed to improving its reporting capabilities to allow shareholders to track its progress.

The Company also became a signatory of the United Nations Principles of Responsible Investment in July 2021 and will participate in the next reporting period in 2023, when the new framework is in place.

The Company has published its inaugural ESG and Sustainability Report in August 2022 to highlight and quantify the measures it has established to further its sustainable impact and will continue to deliver regular updates. GSF is committed to publishing an annual ESG and Sustainability Report in which it will include updates on all chosen frameworks.

These efforts have allowed the Company to improve its understanding of climate risks and opportunities specific to its business and consider where future improvements can be made. This work will grow further as the Company continues to develop its sustainability strategy and push forward the low-carbon transition.

<sup>1</sup> https://www.gov.uk/government/news/uk-to-enshrine-mandatory-climate-disclosures-for-largest-companies-in-law

<sup>2</sup> https://www.gov.uk/government/news/uk-to-enshrine-mandatory-climate-disclosures-for-largest-companies-in-law

### Governance

# Ensuring accountability and responsibility for climate-related risks and opportunities

#### Board's oversight of climate-related risks and opportunities

In the context of global uncertainties surrounding international relations and climate change, the Board of Directors has been working to ensure sustainability and climate issues are embedded throughout the Company's business strategy.

The Board has ultimate responsibility for monitoring and managing the Company's climate-related risks and opportunities. It has established the means to deliver this work through the Investment Manager, which identifies the Company's principal risks, including climate-related ones.

The Investment Manager reports to the Board every quarter and as needed to keep the Directors apprised of progress or developments. This allows the Board to set and approve the Company's sustainability and ESG strategies and carry out regular reviews of the Company's climate commitments and disclosures.

# The Investment Manager's role in assessing and managing climate-related risks

The Investment Manager's responsibilities cover creating, implementing, monitoring, and reporting the Company's sustainability strategy. This includes meeting the requirements set out by SFDR. In addition to adopting and reporting on TCFD, the Company also considers the UN Sustainable Development Goals (SDGs) and Principles for Responsible Investment (PRI) frameworks within its investment decision-making.

The Company's energy storage assets require complex management and optimisation to effectively balance the variability of renewable electricity generation and support its integration into the energy mix. This activity contributes towards the transition to a low-carbon economy and is a central pillar of the Company's sustainability strategy. The Investment Manager's ESG team regularly collaborates with the in-house Commercial, Construction, and Asset Management Team to review and work on implementing the Company's sustainability strategy. Together, they form more meaningful policies and risk mitigation strategies for pre-operational and operational assets and enhance the pre-investment due diligence on pipeline opportunities.

In addition to its sustainability capabilities, the Investment Manager retains advisors that lead the Investment Manager's impact agenda and guide the Company's approach to sustainability.

The Company engaged third-party experts to conduct a formal climate risk assessment. As part of this assessment, ten of the

Company's assets were reviewed for physical risks. Further details of the climate risk assessment can be found in the Strategy section, below.

### Strategy

#### Embedding climate resilience into the business strategy

Climate-related risks and opportunities have the potential to materially impact the Company. It has, therefore, chosen to adopt the recommendations set out by the TCFD to better identify and manage its risk exposure and explore potential opportunities.

Climate-related risks and opportunities can be categorised as transitional and physical. Transitional opportunities arose as growth of renewable energy and low carbon sector fuelled a need for flexible assets capable of managing grid intermittency. Between 2010 and 2022, the installed capacity of wind and solar generation in the UK grew from less than 5 GW to over 41 GW³. This prompted the economic case for battery energy storage to emerge when transmission system operator National Grid ESO established a market for grid services that could respond quickly and efficiently to variations in supply and demand stemming from the UK's wider adoption of renewable energy generation sources. Since entering the UK market in 2018, the Company has also entered the Irish, North American and European markets.

The continuation of this decarbonisation process fuels the sector's growth and has resulted in further opportunities for the Company as similar markets emerge worldwide. Global renewable electricity capacity is expected to increase by 305 GW annually in the five years to  $2026^4$ , driven by policy support in numerous countries and improved financing for maturing technologies. This growth will increase demand for flexible energy solutions like energy storage. Transitional climate-related considerations are, therefore, an integral pillar of the Company's strategy.

#### Physical risk assessment

The Company conducted a formal physical climate risk assessment to assess the likelihood of it being materially affected by climate-related risks or opportunities. This analysis looked at ten of the Company's 25 assets – located across the United States, Great Britain, Ireland, and Germany – identified internally as those most exposed to climate-related risks and representative of the locations in the Company's portfolio. The Company intends to conduct risk assessments on an annual basis in the future.

The analysis evaluated the following hazards for the location of each asset: water stress, heatwaves, wildfire, sea level rise, flooding, and tropical cyclones.

<sup>3</sup> https://www.gov.uk/government/statistics/energy-trends-section-6-renewables

<sup>4</sup> https://www.iea.org/reports/renewables-2021/renewable-electricity?mode=market&region=World&publication=2021&product=Total

### The climate change scenarios

Climate change scenarios are used to form projections of future greenhouse gas (GHG) emissions and assess possible impacts of climate change on the Company, helping it to better align its strategy. Three scenarios have been considered and are set out in figure 5.

Figure 5: Climate change scenarios

# Strong Mitigation 1.8°C by 2100

This scenario covers the optimal sustainable path, also referred to as the Green Road (SSP1-RCP2.6). It encompasses socioeconomic and representative emissions pathways consistent with a gradual and pervasive global shift towards a more sustainable future. Carbon emissions begin to decline around 2020, and global mean temperatures will rise approximately 1.8°C by 2100, a key goal of the Paris Climate Agreement.

# Middle of the Road 2.4°C by 2100

This scenario covers a middle path with challenges to climate mitigation (SSP2-RCP4.5). In this scenario, overall emissions continue to rise through mid-century before beginning to decline. This causes environmental systems to experience degradation and climate change to worsen through the end of the century. This is a likely scenario if governments and policy reflect a strong sense of urgency towards climate adaptation. Global mean temperatures will rise approximately 2.4°C by 2100, but greater emissions raise the risk of tipping points.

# High Emissions 4.3°C by 2100

This scenario covers a future where the world continues its current trajectory, also referred to as Fossil-Fuelled Growth (SSP5-RCP8.5). Global markets are increasingly integrated, and total population and per-capita consumption have increased. Emissions peak around 2090, and global mean temperatures rise approximately **4.3°C by 2100**.

These scenarios are modelled over a 30-year timespan to 2051, which aligns with the Paris Agreement and national targets such as the net zero 2050 target set by the UK government. These scenarios are consistent with the TCFD recommendations to assess climate resilience under multiple climate scenarios, including a 2 °C or lower scenario.

Figure 6: Hazard findings

Hazard	Scenario	United States⁵	Great Britain <sup>6</sup>	Ireland	Germany
Heatwaves	1	Medium	Low	Low	Low
	2	Medium	Low	Low	Low
	3	High	Medium	Medium	Medium
Wildfire	1	Medium	Low	Low	Low
	2	Medium	Low	Low	Low
	3	Medium	Low	Low	Low

The Company's assets face the most significant exposure to heatwaves and wildfires on a global basis. The degree of exposure to sea level rise, flooding, and tropical cyclones was low for all locations across all scenarios.

All the United States assets in the Climate Risk Study were located in Texas

<sup>6</sup> The Great Britain assets in the sample were located in North East England, Eastern England, South West England, and Wales.

### **Impact**

High temperatures caused by heatwaves (refer to Figure 7) may reduce a battery's design life by increasing the degradation rate and contributing to a higher likelihood of safety failures. As a result, the Company aims to effectively manage temperatures to address the vulnerability of its assets to heatwaves. The Company's assets are designed with local environmental conditions accounted for including consideration for climate change and realistic extremes of high and low temperatures. As the fleet covers a wide range of geographic areas, no over-arching range of ambient temperature conditions is applied. Anticipated temperatures range from -20C to +40C, with a likelihood of foot room or headroom, factored in.

In the strong mitigation scenario, four of the ten assets assessed were identified to be at medium risk from the impact of heatwaves, with the remaining six assets deemed low-risk. The same impact applies to the assets if global mean temperatures rise approximately 2.4°C by 2100 (i.e. middle-of-the-road scenario). If global mean temperatures rise approximately 4.3°C by 2100 (i.e. high emission scenario), nine of the ten assets assessed are at medium to high risk of impacts from heatwaves.

Figure 7: Hazard findings - Heat Wave

		Scenarios		
Site Name	Location	Strong Mitigation	Middle	High Emissions
Snyder	Texas, US	Medium	Medium	High
Mineral Wells	Texas, US	Medium	Medium	Medium
Sweetwater	Texas, US	Medium	Medium	High
Blue House	County Durham, UK	Low	Low	Medium
Boulby	North Yorkshire, UK	Medium	Medium	Medium
Brook Hall	Wiltshire, UK	Low	Low	Medium
Cenin	Bridgend, UK	Low	Low	Medium
Lower Road	Essex, UK	Low	Low	Low
Porterstown	County Kildare, Ireland	Low	Low	Medium
Cremzow	Carmzow-Wallmow, Germany	Low	Low	Medium

# Identified risks

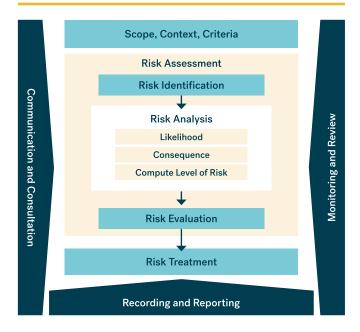
Figure 8: Identified risks

Category	Category overview	Climate factor	Risk/Opportunity impact	
Transitional risk	The risk to the Company from the transition to a lower carbon economy.	Regulation	Policy and legal – differences in local, national and global requirements.	
Transitional risk	The risk to the Company from the transition to a lower carbon economy.	Investor preference	Market – new dynamics and non-linear relationships affecting the size of the supply, demand and costs.	
Transitional risk	The risk to the Company from the transition to a lower carbon economy.	Investor preference	<b>Reputation</b> – shifts in societal awareness, interconnected issues driving impacts and actions, often enabled by the internet.	
Transitional opportunity	Changes in the business landscape from the transition to a net-zero society.	Sustainable financing	Access to capital – potential future reduction in debt financing due to the fund's eligibility for green financing.	
Transitional opportunity	Changes in the business landscape from the transition to a net-zero society.	Valuation	Increase in the Company's share price – increased market capitalisation due to investor appetite for companies contributing to the energy transition.	
Physical risk	The risk to the Company from the physical impacts of climate change linked to extreme weather events.	Regulatory policy and legislation	Environmental pollution – caused by an inability to recycle batteries at the end of life, irresponsible use of natural resources as raw materials, biodiversity disruption at battery energy storage sites, and uncontrolled and excessive emissions from the facility.	
Physical risk	The risk to the Company from the physical impacts of climate change linked to extreme weather events.	Exposure to extreme weather conditions and changes in climate and weather patterns	Location - number of Special Purpose Vehicles (SPVs) exposed or affected, projected loss or damage to project infrastructure or supply chain, projected or identified the cost of business interruption, insurance costs.	
Physical risk	The risk to the Company from the physical impacts of climate change linked to extreme weather events.	Exposure to extreme weather conditions and changes in climate and weather patterns.	Financial – projected or identified impact on revenues and expenditures, change in operating and capital costs, and insurance costs.	
Physical risk	The risk to the Company from the physical impacts of climate change linked to extreme weather events.	Exposure to extreme weather conditions and changes in climate and weather patterns.	<b>Reputation</b> – environmental impacts could trigger opposition from local communities and associations.	
Physical risk	The risk to the Company from the physical impacts of climate change linked to extreme weather events.	Exposure to extreme weather conditions and changes in climate and weather patterns.	<b>Health &amp; Safety</b> – incidents of injury caused by natural disasters at a site.	
Physical risk	The risk to the Company from the physical impacts of climate change linked to extreme weather events.	Exposure to extreme weather conditions and changes in climate and weather patterns.	<b>Delayed commissioning</b> – delays in construction, permitting etc., caused by natural disasters at a site	
Physical risk	The risk to the Company from the physical impacts of climate change linked to extreme weather events.	Exposure to extreme weather conditions and changes in climate and weather patterns.	<b>Total or partial damage to assets</b> – caused by natural disasters at a site.	

# **Risk Management**

The TCFD recommends that organisations disclose their processes for identifying, measuring and managing climate-related risks and describe how these processes are integrated into the organisation's overall risk management. Figure 9 illustrates the Company's risk management process.

Figure 9: GSF Risk Management Process



### Scope, Context and Criteria

Climate-related risks have been embedded within the Company's Risk Policy as a stand-alone risk and integrated into relevant subsections of others, such as operational and credit risks.

### Risk and opportunity assessment three-step process:

- a) Identification: the Company's climate-related risks are identified through:
  - Technical due diligence activities during investment in new facilities.
  - · Invitation to Tender process for EPC projects.
  - Sustainability workshops carried out as part of EPC projects.
  - Regular discussions within the Investment Manager's teams.
  - Advisory services and recommendations from specialist consultants knowledgeable in industry best practices and climate change risk assessment.

- b) Analysis: the Company assesses the likelihood and impact of each risk and opportunity to determine a risk rating of high, medium or low. This has included engaging with an external consultant to conduct a climate change risk assessment covering ten Companies' assets in various geographical locations. The assessment findings have been used to identify and organise the Company's portfolio's vulnerability to specific climate hazards and the probability of that climate hazard occurring.
- c) **Evaluation**: the Company will, in future, aim to benchmark climate-change risk ratings and assessment findings against its internal risk criteria.

#### **Risk Treatment**

The Company's risk management framework requires introducing climate-change mitigation controls once the risk is identified, assessed and evaluated. This includes assigning a risk owner responsible for developing and implementing the controls.

### **Recording and Reporting**

The Company's risk management framework requires that climate-related risks are recorded in a risk register and reported to the Board and business units and externally to stakeholders.

### Communication and consultation

Risk managers are required to communicate regularly with key stakeholders to create a sense of inclusion, understanding, and continuous improvement. This facilitates a risk-aware culture, improving alignment with business goals and objectives and helps individuals become aware of their role within the day-to-day risk management process.

Climate change has recently been integrated into the Company's EPC Invitation to Tender process. The Company has also started to request O&M contractors report data that will enable the Company to measure and monitor climate-related risks.

### **Metrics & Targets**

### Assessing climate-related risks and opportunities

The Company's climate-related risks and opportunities are primarily assessed using the following metrics:

- Renewable Energy Stored
- Total Net CO<sub>2</sub>e emissions avoided
- · Greenhouse Gas Emissions

#### Renewable electricity stored

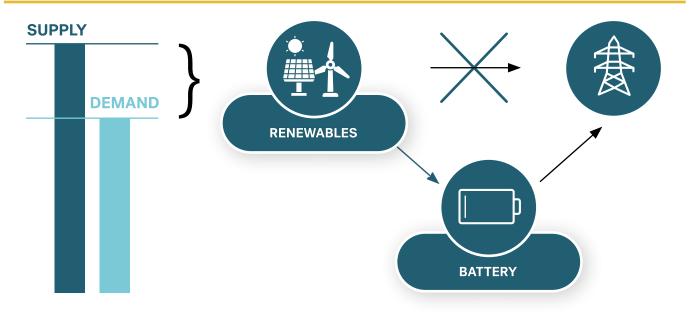
The Company's battery energy storage systems play a crucial role in decarbonising the grid systems in which they operate. In doing so, the Company also supports national Net-Zero targets and decarbonisation goals of grid operators.

To help quantify the benefits of battery energy storage assets, the Company has chosen to measure and disclose the amount of renewable electricity its assets store. During the 2021-22 fiscal year, the Company's assets stored **7,885 MWh** of renewable electricity, which is enough to power over 2,000<sup>7</sup> households in London for a year. This process is illustrated in figure 10.

Generation from renewable energy assets, like wind and solar farms, varies throughout the day as conditions change. The sun does not always shine, and the wind does not always blow, meaning supplies can dip below what is needed or has been planned for by grid operators. Renewable assets can also generate more than expected during particularly sunny or windy periods, making balancing the grid challenging and sometimes requiring curtailment.

Battery storage can enable the excess electricity produced by renewables to be discharged back into the system when needed.

Figure 10



<sup>7</sup> https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\_data/file/1079141/subnational\_electricity\_and\_gas\_consumption\_summary\_report\_2020.pdf

### Share of non-renewable electricity stored.

The Company's assets are key to supporting global targets for increasing integration of renewable energy but does so by operating within grids that carry a mix of renewable and non-renewable energy; therefore, the Company has chosen to measure the amount of renewable energy that its assets store.

The Company used half-hourly transmission system electricity data on the percentage of renewables generation as a proportion of the electricity generation mix to determine that 30% of the electricity consumed by its portfolio was from non-renewable sources. This is a direct result of the energy mix of each grid system in which the Company's assets operate.

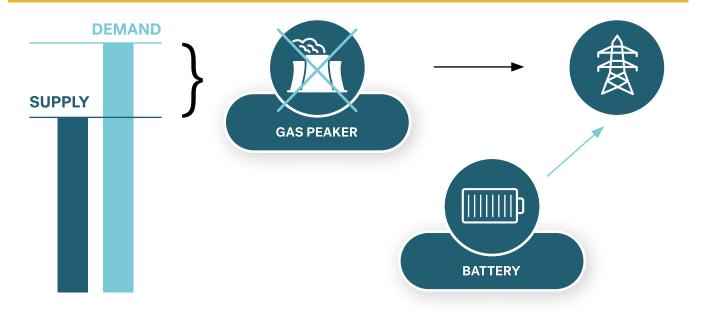
As part of its ongoing work to facilitate the integration of renewables using energy storage, the Company is contributing to a reduction in non-renewable electricity. The Company, therefore, expects to see this share of stored electricity fall over time.

### Net CO<sub>2</sub> equivalent emissions avoided

The Company's activities avoided **5,454 tCO<sub>2e</sub>** emissions during the 2021-22 fiscal year that would otherwise have been emitted using traditional grid electricity. This is equivalent to taking 4,700 cars off UK roads<sup>8</sup>.

The methodology used to calculate these avoided emissions is based on the difference between using the Company's operational portfolios and conventional generation. The first scenario assumes batteries are used to import electricity when generation exceeds demand before later exporting to the grid when the inverse scenario occurs, while the second substitutes this function with gas-fired peaking capacity. An illustration of this can be seen in figure 11.

Figure 11



<sup>8</sup> Annual car mileage 2021 - 5,300: https://www.gov.uk/government/statistical-data-sets/nts09-vehicle-mileage-and-occupancy. Average car emissions 2020 - 221.4 g/mi: https://www.nimblefins.co.uk/average-co2-emissions-car-uk

The approach used to calculate this metric is aligned with the EU methodology for assessing avoided emissions from generators and follows guidance from the Greenhouse Gas Protocol and the European Commission.

While it aims to demonstrate the contribution of the Company's activities to climate mitigation, the Investment Manager has identified shortfalls in the currently accepted EU methodologies for assessing net CO<sub>2</sub> emissions avoided for battery storage systems. The approach does not, for example, capture the total value attributable to a battery storage asset as an "energy vector" utilised by transmission system operators, such as National Grid Electricity System Operator (ESO). The Company's battery storage assets can provide ancillary services, such as frequency response, and deliver within the ESO's Balancing Mechanism by importing and exporting electricity from the grid.

The method also assumes that only generation by natural gas-fired peaking plants would be used in place of electricity dispatched by the battery storage asset. There are other electricity storage and production plants, such as pumped hydroelectric plants and other battery storage facilities, that could have been dispatched. However, due to the lack of available data needed to quantify this, the Company has taken the existing approach, which has been deemed appropriate by third parties.

The Investment Manager intends to develop a more sophisticated model that would allow a better assessment of emissions avoided by battery energy storage systems. This could be achieved through further research, scientific collaboration, and engagement with relevant stakeholders, industry partners, and/or in-house.

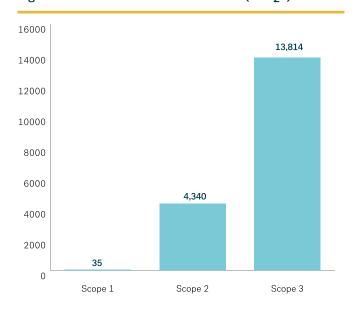
### Greenhouse gas emissions

During the 2021-22 fiscal year, the Company committed to greater data capture and disclosure levels. A third-party specialist was engaged to assist with calculating the Company's greenhouse gas (GHG) emissions, broken into three subsections aligned with current industry standards.

The first (Scope 1) concerns emissions from sources the Company owns or controls directly, while the second (Scope 2) calculates emissions the Company caused indirectly through the energy it purchases. The third (Scope 3) measures emissions from the Company's activities throughout its value chain from sources the Company does not own or control. The latter accounted for over three-quarters of the total calculated emissions.

A breakdown of the Company's GHG emissions and related metrics is shown in table 5.

Figure 12: Greenhouse Gas Emissions (tCO2e)



Scope 3 emissions during the fiscal year 2021-22 accounted for the largest proportion of emissions and were primarily caused by waste generated during the construction and acquisition of capital goods related to EPC services and the impact of electricity commercialised downstream.

Emissions stemming from asset management, operations, maintenance, transportation and distribution of materials and equipment were negligible. Those related to losses between importing and exporting electricity on-site and from within the transmission and distribution system were also minimal.

While the Company will look to broaden its emissions reporting going forward, it is also working to improve accounting methodologies for energy storage. These assets are considered both energy consumers and generators, which can result in emissions from consumed energy being unduly allocated and impacting the accuracy of emissions inventories associated with storage.

Through its Investment Manager, the Company is working in collaboration with others to confirm an appropriate methodology for emissions from battery storage.

Table 5: Reported metrics for the year ended 31 March 2022

Metric Category	Metrics	Performance
GHG Emissions	Scope 1 emissions	35 tCO <sub>2</sub> e
	Scope 2 emissions	4,340 tCO <sub>2</sub> e
	Scope 3 emissions	13,814 tCO <sub>2</sub> e
	Total Emissions	18,189 tCO <sub>2</sub> e
	Carbon Footprint	87.11 tCO <sub>2</sub> e/ M£
	Weighted average carbon intensity	0.20 tCO <sub>2</sub> e / M£
Transition Risks	Exposure to companies active in the fossil fuel sector	No exposure
	Share of non-renewable energy consumption and production	30.1%
	Energy consumption intensity per high-impact climate sector	0.31 GWh / M£
Climate-Related Opportunities	Net CO <sub>2</sub> emissions avoided	5,454 tCO <sub>2</sub> e
	Total renewable electricity stored	7,885 MWh

### Targets used by the organisation to manage climate-related risks and opportunities

- · Continue to evaluate the data disclosed within this report and expand reporting to cover other cross-industry metric categories.
- · Evaluate and set appropriate, quantitative targets for metrics in line with the strategy of the Company.
- Contribute to a greater reduction of the share of non-renewable electricity consumed in the grids that the Company operates in.
- Increase research and development investment to improve the methodology of calculating emissions associated with energy battery storage.