CLIMATE ACTION AND DISCLOSURE

Climate action is a key priority within Berkeley's business strategy, Our Vision 2030: Transforming Tomorrow, and we continue to develop our approach to this area.

TCFD TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

INTRODUCTION

Berkeley supports the recommendations of the Financial Stability Board's Task Force on Climate-related Financial Disclosures This is our fifth disclosure under TCFD and this year we are pleased to confirm that our disclosures are consistent with the TCFD Recommendations and Recommended Disclosures and align with the UK Listing Rules, save for certain items which we summarise below.

There are certain areas where we have not included climate-related disclosures which will require more time for us to fully consider. In line with current Listing Rules requirements (as referred to in Listing Rule 9.8.6R(8)), these include specific areas within the following TCFD themes: Governance (A2), Strategy (A1, A2 and C3), Metrics (A2) and targets (A3).

We are working to implement these recommendations over the course of the next year.

Berkeley has a long track record of action in relation to climate change. We set our first carbon reduction targets for our operations through the original Our Vision business strategy launched in 2010. Having identified flooding, overheating and water shortage as key issues in our 2014 risk identification exercise, we have also focused on climate change adaptation, creating new homes and places that are more resilient to the challenges of a warmer climate, which embrace the great potential of nature-based solutions.

Today, our direct business operations are carbon neutral, we procure 100% renewable electricity in the UK, have set science-based targets for reducing our scopes 1, 2 and 3 greenhouse gas emissions by 2030 and have been awarded an A- rating for Climate Action and Transparency by CDP.

Looking forward, Climate Action remains a key strategic priority for the business and is embedded within the new Our Vision 2030: Transforming Tomorrow. Berkeley is playing a full role in addressing this global challenge and our climate action programme is holistic, involving transformational changes to our business operations and to the ways in which we design and create new places in partnership with our supply chain.

BUSINESS AMBITION FOR 1.5°C

CDP DISCLOSURE INSIGHT ACTION

SCIENCE BASED TARGETS DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

Royal Arsenal Riverside, Woolwich

CLIMATE PROGRESS AND ROADMAP

2010
Carbon reduction targets set for our operations since the launch of Our Vision in 2010.

2014
Climate change adaptation risk identification exercise identified flooding, overheating and water shortage as the key risks for the homes and places we develop.

2016
All new homes designed to incorporate climate change adaptation measures and a bespoke overheating risk assessment launched.

2018
First public disclosure on TCFD.

Procurement of 100% renewable electricity for UK operations and voluntary offsetting of residual scopes 1 and 2 emissions via verified projects.

2019
Undertook research and implemented the outcomes on designing low carbon homes.

2020
Science-based targets validated by the SBTi and new strategy for climate action launched covering five focus areas.

2022
Completed detailed Climate Scenario Analysis on future climate scenarios to inform our assessment of risks and opportunities.

Taplow Riverside, Taplow

Paperyard, Horsham

GOVERNANCE

The Board takes overall responsibility for the management of all risks and opportunities, undertaking a review of all business risks and opportunities on an annual basis, which includes climate-related risks and opportunities. The Chief Executive has been designated as accountable for the Climate Action strategic priority under Our Vision 2030. In addition, Karl Whiteman has Board level responsibility for Berkeley's wider sustainability programme and oversees the implementation of our actions.

We have Our Vision 2030 and Sustainability Board meetings which take place bi-monthly consisting of the two Executive Directors set out above, the Chief Financial Officer, the Head of Responsible Business and the Head of Sustainability. Climate action is a key topic on each agenda and a summary of progress against goals and targets is provided at these meetings. A consolidated report covering Sustainability and Our Vision 2030 is prepared for the Main Board meetings.

On an ongoing basis, the Chief Executive and Chief Financial Officer have involvement with the decision making process and financial planning at a project level. This includes both considerations prior to the purchase of the land (e.g. flood risk) and financial planning for the construction of the development (e.g. expenditure on any climate-related costs such as energy efficiency measures and low carbon technology).

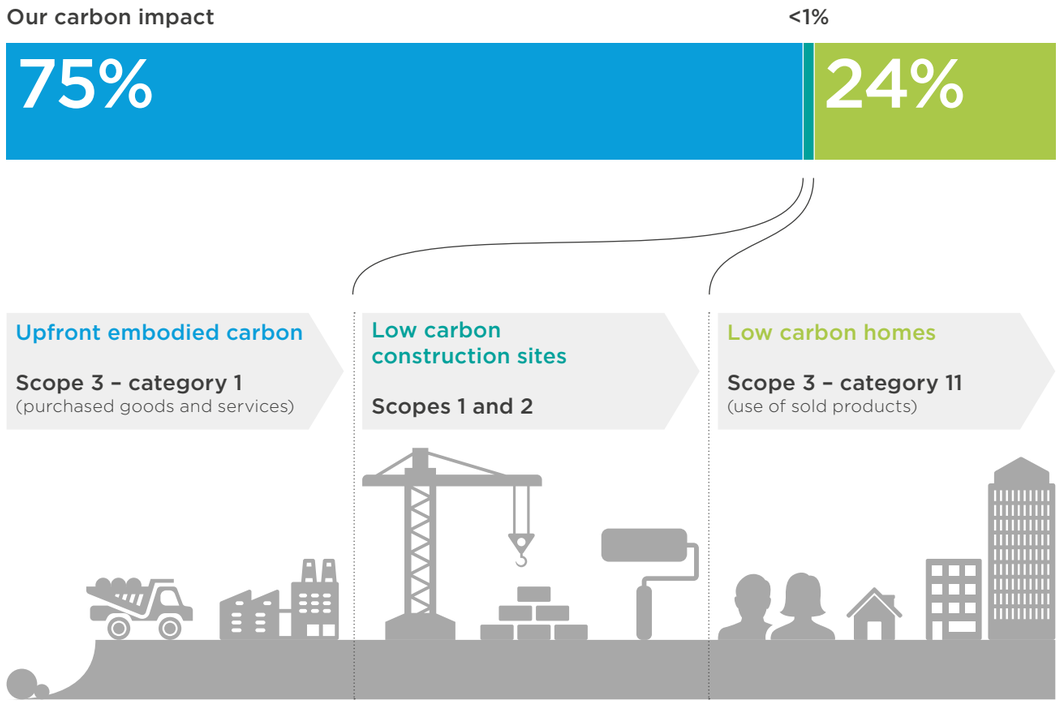
To instil strong governance and accountability within Berkeley's autonomous operating companies, each management team has responsibility for climate action in relation to their specific developments and have a nominated management sponsor within their business. Each operating company maintains a risk register for their business, which includes sustainability and climate change risks, whilst at a development level, the Project Sustainability Tracker and Environmental Risk Register identify risks and monitor action taken.

STRATEGY

Climate Action was identified as a strategic priority for the business within Our Vision 2030, set out in 2020. Our climate strategy is shaped around five focus areas, each with defined targets, to respond to the key areas of risk and opportunities for the business. These are supported by more detailed Sustainability Standards which set our minimum requirements across our operations and our supply chain. Having now undertaken detailed scenario analysis, over the coming year we will complete work to identify the most effective ways to implement the findings of this review into our strategic planning processes.

We have science-based targets for carbon emissions reduction by 2030 covering scopes 1, 2 and 3 which were validated by the SBTi in December 2020. These will help us to drive down emissions significantly during this decade, shaping our transition to becoming a net zero carbon business in the long-term. Berkeley acknowledges the new definition of net zero launched by the SBTi during the year and will be reviewing our strategy in accordance with this.

Our carbon impact



Climate Action focus areas

Focus area	Description	Current actions and next steps
Embodied carbon	**Scope 3 – category 1** (purchased goods and services) These carbon emissions relate to the activities of our supply chain. They arise from the energy used to extract raw materials, process them into construction materials and transport these to our sites, together with the activities of companies who provide a service to us (from consultants to architects and contractors working on our sites).	— We continue to use a spend-based methodology for reporting category 1 emissions, whilst we evolve our understanding and data in this area. — This year we undertook 15 detailed embodied carbon studies of the materials across a range of building typologies, establishing a clear baseline for further action. — We will now launch stretching embodied carbon targets for each building typology and begin to capture site specific data. — We will continue to work with our supply chain to identify carbon intensive materials and manufacturing processes to target reductions.
Low carbon construction sites	**Scopes 1 and 2** This is carbon that is related to our own activities within the Berkeley Group. It comes from energy used on construction sites, sales suites and in our offices.	— This year we have seen a 13% decrease in our absolute scopes 1 and 2 (market-based) emissions, which has been largely driven by an increase in the use of biodiesel HVO (Hydrotreated Vegetable Oil). — We allocated carbon budgets to construction sites to focus attention on emissions reduction. — We will continue to increase the adoption of hybrid and electric machinery on site and further increase the use of biodiesel HVO.
Low carbon homes	**Scope 3 – category 11** (use of sold products) This is carbon from the use of energy by our customers. It is associated with energy usage regulated via the Building Regulations (such as heating, hot water and lighting) and excludes usage from appliances and plugged in devices.	— Alongside our focus on inherently more sustainable urban regeneration, we continued to concentrate on energy efficient building fabrics and low carbon technology, including minimum energy efficiency ratings for domestic appliances and the inclusion of smart meters and energy display devices in our homes. — Produced guidance for our teams on meeting our science-based targets and the expected specifications to meet the future Building Regulations, notably Part L 2021 (in force June 2022) and Future Homes Standard expected to be in force from 2025. — Commenced work to set new minimum energy efficiency standards for new houses, including EPC and fabric energy efficiency ratings. — We will set out a strategy to measure in-use energy performance to compare against the designed performance.
Climate change resilience	Preparing our business for expected changes to climate and taking action to mitigate the risks. Incorporating adaptation measures in the developments we build to ensure more resilient places for our customers and future residents in decades to come.	— We continued to undertake overheating risk assessments on all sites, including dynamic thermal modelling on sites that are at higher risk of future temperature increases. — We continued to implement nature-based solutions and biodiverse landscapes that help to create places that are more resilient to extreme weather, including flooding and drought. 92% of our developments incorporate SuDS. — We will use the output of climate scenario analysis undertaken this year to continue to monitor climate resilience in future homes and developments we build.
Balancing our impacts	In our journey to becoming a net zero business, we must focus our attention on reduction, but we are mindful of balancing our impacts from residual emissions.	— We purchased 100% renewable electricity in the UK (backed by Renewable Energy Guarantees of Origin) covering more than our usage of 26,471 MWh. — 2,322 tonnes of certified carbon offsets were procured, covering more than the remainder of our scopes 1 and 2 emissions. — We will review our approach to offsetting as part of a wider Net Zero strategy for the business to set out the action we will take to become a net zero business.

Berkeley evaluates climate related risks and opportunities as part of our ongoing risk assessment process. This year, in response to the TCFD recommendations, we have expanded this assessment to incorporate future climate scenarios. We have selected climate scenarios drawing from widely used publicly available and peer reviewed sources. These include the Intergovernmental Panel on Climate Change (IPCC) sixth assessment report (AR6) and other representative sources including the International Energy Agency (IEA).

The scenarios we have selected are not intended to be forecasts for the future, but provide mechanisms to assess plausible outcomes against which Berkeley can assess its risks. The climate scenarios are summarised in the table below, against which Berkeley assessed:

1. Risks and opportunities relating to the transition to a lower carbon economy
2. Risks relating to the physical impacts of climate change in relation to Berkeley's land holdings as at 31 October 2021

For transition risks, the representative scenarios assessed are a below 2°C scenario and limiting global warming to 1.5°C (Net Zero 2050 scenario). Where it is possible to differentiate across these two scenarios the assessment focused on the Net Zero 2050 scenario, in line with the Paris Agreement targets.

Summary of scenarios

Net Zero 2050 – 1.5°C scenario	— Actions are taken to reduce emissions in the short-term and consequently high transition risk is experienced — Physical risks are less severe than under the 4°C scenario and broadly similar to the 2°C scenario
Below 2°C scenario	— Actions are taken to reduce emissions in the short-term, albeit slightly less aggressive than the 1.5°C scenario, and consequently high transition risk is experienced — Physical risks less severe than under the 4°C scenario and broadly similar to the 1.5°C scenario
Hot House World - 4°C scenario	— Increased level of warming associated with greater levels of acute and chronic weather events — Geographic climatic shift in the South East of the UK

High emissions and an associated increase in global temperatures is expected to generate changes in acute and chronic weather events that are associated with higher physical risks. Our scenario analysis on the physical risks therefore selected a high emissions 4°C scenario, in addition to the 1.5°C (Net Zero 2050 scenario).

Risks were assessed against the following time horizons:

— Transition risks were assessed in relation to aggressive climate-mitigation measures in both short term (to 2023) and medium term (to 2030) time horizons.

— Physical risks were assessed over the long-term to 2050 and beyond, compared to the current exposure as a baseline position.

Transition risks

Transition risks occur in response to aggressive climate mitigation to move to a less polluting and lower carbon economy. With the support of Willis Towers Watson (WTW), we have identified 14 transition risk drivers under the recommended TCFD categories of Policy & Legal, Technology, Market and Reputation against a 2023 and 2030 time horizon. We assessed these qualitatively, and where possible, quantified potential impacts.
The financial scenarios were identified to understand the potential magnitude of risks and were quantified based on data from external and internal sources.

Of the identified risks and opportunities, there are seven which are set out in the following table as having a potentially greater impact on Berkeley. Against these, the Group has relatively low residual exposure to transition risk in the short term (2023), which could moderately rise in the medium term (2030).


Horlicks Quarter, Slough

Exposure	Low	Medium	High
Risk	○	◐	●
Opportunity	○	◐	●

Transition Risks

Overview	Risk exposure & mitigation	Short-term impact[1]	Medium-term impact[1]
Carbon pricing and **emissions offsets** Carbon pricing includes both direct carbon taxes and the cost of offsetting emissions. Aggressive climate mitigation could lead to implementation of carbon tax regimes, and an increase in the cost of emissions offset.	Since 2018, Berkeley has been carbon neutral in its operations (covering scopes 1 and 2 emissions) through purchasing 100% renewable energy in the UK and offsetting remaining emissions. Berkeley has committed to reducing absolute scopes 1 and 2 GHG emissions by 50% before any offsets by 2030 from a 2019 baseline. Taking into account these targeted scopes 1 and 2 reductions, under a 1.5°C scenario, the additional cost of emissions offset by 2030 is likely to be less than £1 million based on UK carbon price projections from the Network for Greening the Financial System (NGFS). Demand for REGOs which Berkeley procures for its UK electricity generation is expected to rise. In the short term (2023) the additional cost of REGOs is likely to be less than £1 million. By 2030, the supply of REGOs is expected to stabilise as electricity use is anticipated to continue to shift away from fossil fuel sources. The introduction of direct carbon taxes through UK regulation in relation to scopes 1 and 2 emissions, if implemented by 2030, would result in a new annual cost which is likely to be less than £1 million. Under Berkeley's long-term plans to become a net zero business, depending on supply chain actions and technology advances in the meantime, residual scope 3 emissions may need to be offset at a point beyond 2030. The cost of this could be significant given the relative size of scope 3 emissions compared to scopes 1 and 2 (see targets and metrics page 12), over £10 million per annum, although this amount and timing thereof is uncertain.	○ £0 - £1.0 million per annum in relation to the cost of REGOs	◐ Could be £0 - £1.0 million per annum in relation to the cost of scope 1 and 2 emissions. Beyond 2030 this is uncertain, but may exceed £10 million per annum in the event of scope 3 offsets
Planning and design requirements As part of its effort to meet its 2050 Net Zero target it is possible that the UK will need to increase the stringency of building planning and design requirements. The Group would be required to respond to these changing regulations which may have a cost impact.	Berkeley actively participates in Government consultations relating to future Building Regulations to help shape the direction of future regulation. In the short term, homes on future phases of developments that are under construction may require a different heating solution from current planned solutions, for example switching to the installation of air source heat pumps. These changes have been anticipated so there is little additional cost impact expected. In the longer term, planning regulation is not anticipated to lead to significant costs as emerging requirements will form part of development appraisals at the land purchase stage or subsequently.	○ Not anticipated to be an impact	○ Not anticipated to be an impact
Skills shortage impacting ability to install low carbon technology In order to reduce emissions to meet more stringent planning requirements and sustainability targets Berkeley will need access to skilled workers. If sufficient investment and training is not provided, there could be a shortfall in supply of suitably qualified professionals.	Berkeley is exposed to industry wide resourcing issues. Whilst these are currently not specific to low carbon technology, in the medium term there could be an increase in labour shortages, in part due to an aging workforce and the need to upskill workers for net zero. Whilst it is not possible to quantify the financial impact of this we are taking practical steps to mitigate the current skills shortage. Berkeley is part of The 5% Club, maintaining at least 5% of its workforce in formal training and as part of our steps to tackle the industry's skills challenge we have around 140 directly employed apprentices, together with many working on our sites within our supply chain workforce. As an employer of choice we continue to be committed to tackling these issues.	○ Not quantified	◐ Not quantified

Exposure	Low	Medium	High
Risk	○	◐	●
Opportunity	○	◐	●

Overview	Risk exposure & mitigation	Short-term impact[1]	Medium-term impact[1]
Technology evolution The replacement of systems that are dependent on fossil fuels could result in higher costs. There is also a risk that technologies selected at the outset of a planning process could become outdated and obsolete upon building completion as a result of the development of lower emission alternatives. Over the longer-term, increasing pace of technological adaptation may accelerate risk of obsolescence.	Electrification of residential heating is likely to be encouraged through the Future Homes Standard (2025). The pace of our progress may be hampered by planning regulations and at points in time there is a risk we will not be able to deliver optimal technologies as the Building Regulations adjust more slowly to emerging technologies. Berkeley continually assesses nascent technologies and has already invested in heat pumps and photovoltaics and, in some cases, particularly in our out of London sites, we are ensuring we put in place the necessary localised infrastructure upgrades to support additional electrical loads ahead of the Future Homes Standard. Consequently, there are no significant additional costs expected in the short-term. In the longer-term, the inherent risk is that the market for the latest technologies is nascent, which gives a risk of unreliable supply chains and reputational damage should technology selected for our developments not perform as expected. Consequently, the potential costs could be significant, although are considered unlikely as regulation and supply chain testing mean the adoption of untested technologies remains improbable.	○ Not anticipated to be an impact	○ Not anticipated to be an impact
Raw material cost The cost of raw materials could increase if suppliers pass through the impact of Carbon Pricing for high carbon building materials. For example, widely used steel, concrete, cement and glass all have energy intensive production which could require increased energy input costs.	Berkeley has a diverse supply chain drawing material from a wide range of suppliers. The Group regularly assesses its material costs as part of its development appraisals. However, under a 1.5°C scenario energy intensive raw materials such as steel, concrete and glass will be particularly impacted by carbon driven cost increases in the absence of alternative technological advances. In response, Berkeley is undertaking embodied carbon studies to better quantify the emissions within the materials of our developments to inform future design. The marketplace will also evolve as suppliers decarbonise their own direct activities, technology evolves and macro-economic factors impact costs (and house pricing). In the short-term, there is a low exposure to cost increases. Nonetheless, by 2030 the inherent risk from additional raw material costs could be significant (exceeding £10 million per annum) relative to the cost today, although it is inherently difficult to disassociate this cost from other market forces and technology advances (both positive and negative).	○ £0 - £1.0million per annum	◐ Uncertain but may exceed £10 million per annum
Demand supply imbalance There is an inherent risk that by 2030, as energy prices increase, property buyers will favour lower carbon homes and expect greater energy operational efficiency. Conversely, strong sustainability-related credentials evidenced through a proven delivery track record should improve the prospects of higher demand for Berkeley's homes.	Whilst in the short-term the scale of opportunity for higher demand is not necessarily significant, increasing climate awareness and Berkeley's focus on climate action and wider Our Vision initiatives are anticipated to influence customer demand positively over the next decade. Berkeley's focus on urban, brownfield regeneration development is also inherently more sustainable. In addition, customer preference for new build over second-hand housing stock could further support demand for more efficient homes, with the latest technologies. Responding to the increasing barriers to entry as regulation rapidly changes will require experienced and well capitalised companies; this could further reduce the supply of new homes.	○ Not quantified	○ Not quantified

1. Financial impact is shown as increase in costs

In addition to those presented in the tables on the preceding pages there were a further seven risks and opportunities explored which Berkeley assessed as having a very low exposure to, summarised briefly as follows:

Risks

— **Enhanced emissions data capture** requirements may impact the business and supply chain by 2030. For instance, this could include regulatory requirements to produce EPDs or materials passports.

— **Climate change litigation** may increase in the future as claims could be brought against companies for alleged contributions to climate change or a failure to disclose climate change-related financial risks.

Opportunities

— **Electric vehicle use** will rise, with the IEA suggesting that these may form 30% of all passenger journeys by 2030 under a below 2°C scenario. Berkeley has been an early adopter and is expanding its EV charging points alongside the GLA policy and the development of EV infrastructure guidance within Building Regulations (Part S).

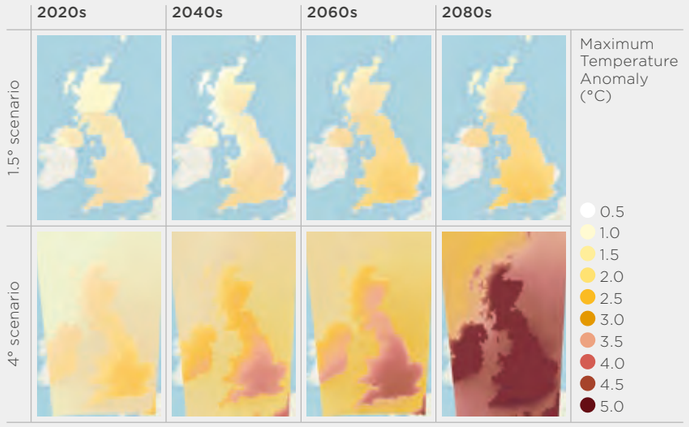
— **Cost and availability of capital** could be impacted by climate change considerations. This year, Berkeley issued a Green Financing Framework and raised a £400 million Green Bond and £260 million green term loan under this framework,, with a commitment to continuing our strategy around climate action and the broader Our Vision 2030 priorities.

— **Reputational risk from investors, stakeholders** and **employee perceptions** are inherent risks which Berkeley is exposed to. For Berkeley, this represents a potential opportunity as we maintain our leading position on sustainability through Our Vision 2030 and through the stakeholder engagement we undertake in relation to our developments.

Physical risks

Berkeley has undertaken a comprehensive physical risk analysis of its land holdings as at 31 October 2021 against current and future climate scenarios with the support of WTW. This analysis concentrates on a longer timescale (to 2050) than transition risks (to 2030) given physical risks typically manifest over a longer period.

Figure 1: UK maximum temperature anomalies under a 1.5°C and 4°C scenario
Temperature variance measured against the 1981 - 2000 baseline, UKCP18 projections (June - August)



Alongside a longer timeframe, many physical risks are likely to increase regionally under higher emissions scenarios. Therefore, to assess our risk exposure, we included a climate scenario focused on the 'Hot House World' which reflects a 4°C rise in global temperatures, in addition to a 1.5°C scenario. This provides an insight into the impact to our homes and developments were the world not to meet the conditions of the Paris Agreement to limit global warming to well below 2°C and preferably to 1.5°C. It should be noted that Governments are aligned to the less than 2°C scenario.

Against the 1.5°C and 4°C scenarios, the impacts of climate change can be broken down into two distinct types of physical risk:

— **Chronic climate risks** – these are linked to irreversible gradual changes due to broad shifts in the climate patterns and are typically widespread geographically; and

— **Acute climate risks** - these are linked to sudden volatile event driven impacts and are normally localised.

Under the 'Hot House World' scenario, there is anticipated to be an increased likelihood of a range of acute and chronic climatic events. Using heat stress as an example, this is illustrated in Figure 1 above, which demonstrates the UK maximum summer time temperature anomalies under a 1.5°C and 4°C scenario compared to a 1981 – 2000 baseline.

For each risk category, we have undertaken an assessment of:

— **Exposure** (i.e. the proportion of homes in our land holdings that will experience the effects of climate change, primarily due to climatic shifts that will impact the whole of our primary operating region in the South East of the UK); and

— **Probabilistic loss modelling** in respect of acute risks (storm and flood events) representing the potential unmitigated and uninsured financial impact.

Exposure

Berkeley's developments are considered exposed in 2050 if they are located in a geographic area where a climate hazard may occur. The degree of that exposure is defined by the frequency and/or severity (intensity) of that particular hazard. To identify potentially material unmitigated exposure, WTW utilised well recognised models from the insurance industry and UK specific climate data.

The analysis showed us that under the 'Hot House World' scenario broad areas of the UK will see an increase in heatwave days, and a corresponding increase in the occurrence of prolonged drought stress. Increases in precipitation with drier summers and wetter winters could also increase the prevalence of subsidence conditions.

The table that follows summarises the predominant physical risks for both the 1.5°C and 4°C scenarios in 2050 and focuses on the exposure for the 4°C scenario.

Chronic risks

Present day risk	Risk under 1.5°C scenario	Risk under 4°C scenario	Exposure in 2050 and beyond under 4°C scenario
Heat stress Present day heat stress is very low throughout the UK such that all of our sites currently have very low exposure (less than five heatwave days in a given year).	Heat stress increases from the current very low level to a generally low risk level by 2050. This could mean over five heatwave days annually.	Heat stress increases gradually and becomes a moderate risk beyond 2050 towards the end of the current century. This could mean frequent heatwaves (more than 20 days annually).	The majority of England and Wales (in particular SE, SW and the Midlands) will be exposed to more material heat stress by mid-century. Correspondingly, 84% of Berkeley's homes will be exposed to heat stress in the decades beyond 2050.
	Berkeley's actions The potential for overheating in our homes arises through heat stress from climate change and the urban heat island effect. We have a minimum Sustainability Standard for all developments to assess overheating risk and incorporate measures to reduce this risk. The risk assessment identifies the homes which are at higher risk to enable more detailed dynamic thermal modelling to be undertaken. The risk assessment identifies potential mitigation measures which may include thicker insulation to external walls, smaller windows with thermally efficient glass, incorporating shading through the design such as brise soleil, to reduce heat gain, balconies and enhanced ventilation. In addition, Berkeley incorporates soft landscaping which can partially mitigate the heat island effect.		
Drought stress Present day drought conditions can be approximated to a low emission scenario in the short-term. Under such a scenario, all of Berkeley's sites currently have a very low exposure to drought (less than 2 months of drought duration in a year).	Drought stress conditions continue to have a relatively low risk (2 to 3 months of drought duration in a year) by 2050.	Drought stress becomes more significant by the 2050's, which would see 3 to 4 months of drought duration annually. The main implications from drought stress are water scarcity and impact on green areas of our developments.	Similar to heat stress, the majority of England and Wales (in particular SE, SW and the Midlands) will be exposed to more material drought conditions by mid-century. Correspondingly, 92% of Berkeley's homes will be exposed to drought conditions of 3 to 4 months annually in the decades beyond 2050. A significantly smaller proportion (5%) of homes could see drought conditions for 6 months of the year.
	Berkeley's actions We follow an integrated water management approach on our developments. We reduce usage by designing water efficient homes with water efficient fixtures and fittings, and then we are managing rainwater by storing and releasing it into natural features to help manage surface water. The management of water run-off through attenuation offers significant opportunities to hold water for reuse in the home and our landscapes. We have Sustainability Standards in place for minimum water efficiency measures, for rainwater harvesting and for SuDS. We also consider the impact of drought on the design of our green spaces by incorporating drought resilient planting.		
Subsidence Present day ground conditions mean that building design addresses the risk of subsidence, with current regulations for high-rise buildings catering for design tolerance.	Subsidence conditions and susceptibility could increase beyond 2050 due to slightly warmer and drier summers as well as wetter winters.	Subsidence conditions and susceptibility for soils like clay are likely to be influenced in the 2030s and further increase beyond 2050 due to warmer and drier summers as well as wetter winters.	Large areas in the South East and Eastern England are exposed to increasing subsidence conditions, including Greater London and the Thames Estuary due to the clay soils. The soil conditions to 90% of Berkeley's current homes could potentially be impacted beyond 2050.
	Berkeley's actions In London, where the risk of subsidence is linked to the underlying London clay, our developments have piled foundations which are engineered to ensure the buildings are anchored deep into the ground. There are additional factors of safety margins for foundations/piling already in place which mitigates against the risk of subsidence. For our housing developments, the foundation design is agreed with specialist consultants to ensure it is appropriate for the underlying geology and risk of subsidence.		

Acute risks

Present day risk	Risk under 1.5°C scenario	Risk under 4°C scenario	Exposure in 2050 and beyond under 4°C scenario
Windstorm Present day exposure to windstorm already exists for all of Berkeley's sites. The main implication from windstorms are physical damage to completed property and construction assets.	There is no current scientific consensus that the UK will see an increase in windstorm intensity and the risk therefore remains unchanged from the present day.	There is no current scientific consensus that the UK will see an increase in windstorm intensity and the risk therefore remains unchanged from the present day.	The typical windstorm hazard could pose a moderate risk for 100% of Berkeley's sites. This does not reflect a change to the present day levels of exposure or probability of such risk.
	Berkeley's actions Each of our developments is designed by specialist teams, selecting appropriate materials and fixing details which can withstand local conditions. In respect of medium to high rise buildings, wind engineering includes dynamic or physical modelling, analysis and testing at the pre-planning stage. Façade design ensures mechanical fixings to areas such as roofs and balconies to resist elements being removed by high wind, as well as other mitigating features such as screening and planting. In terms of the occupation of our buildings, mitigation includes wind alerts from anemometers being communicated to residents with instructions to close windows and secure loose objects from high level amenity spaces. High winds also pose a risk to construction operations. We monitor alerts for high wind events and send bulletins to our site teams ahead of storms to ensure site safety measures are adhered to. Our tower cranes are fitted with anemometers to alert the crane driver and safe lifting team, thus preventing crane operations during high winds.		
Flood In present day conditions, only 6% of Berkeley's sites are deemed to be materially exposed to flooding (between 1 in 100 and 1 in 500 probability), given the predominance of Berkeley's portfolio in London and the flood defences in place in London. The main implication from floods is physical damage to completed property and construction assets.	Across the UK, peak river flows are expected to increase by 2050 and beyond, with the South East expected to experience fluvial peak flow increases of 8%. Consequently, the risk of flood exposure could slightly increase compared to the present day conditions.	Under this scenario it is projected that peak river flows in the South East will increase significantly (by 33%) in the 2050s leading to an increase in river flooding. There would likely be increased exposure to coastal flooding from sea level rise, as well as surface and groundwater flooding from heavy rainfall.	By 2050 there are no further sites exposed beyond the 6% of sites already at risk in the present day. However, the exposure to flooding may increase for these particular sites which could therefore flood more often.
	Berkeley's actions Flood risk assessments have been a standard part of our development planning and design for many years if the developments fall within a flood zone. The flood risk assessments vary in extent based on the potential risk and already include allowances for the effects of climate change. Our homes are designed to the flood risk that is identified in the flood risk assessment. This includes designing to a 1 in 30 year, 1 in 100 year or 1 in 1,000 year flood. Within our developments, design mitigation measures include raising the levels of the lower floors and designing SuDS to hold and store water in times of extreme rainfall.		

Probabilistic loss modelling
In addition to the exposure analysis, we have undertaken a financial impact assessment of the acute risks through probabilistic modelling utilising insurance market recognised catastrophe risk models.
This methodology is widely used in the insurance industry to price insurable catastrophic risk when considering insurance premiums and was performed by WTW.

Using Geographical Information System (GIS) tools and an extensive database of building design characteristics for each site exposed to flood or windstorm in 2050, the potential unmitigated event losses were calculated. The benchmarks used to assess this are defined as a 'severe year' and an 'extreme year', representing probability of 0.5% and 0.1% or a 1 in 200 year return period (a severe year) and a 1 in 1,000 year return period (an extreme year), respectively.

— Windstorm events - there is no current scientific evidence that windstorm intensity and frequency in the UK under a 4°C scenario will lead to a significant change in potential losses from the present day risk that Berkeley's sites already face.

— Flood events - the modelling estimates that by 2050 the physical damage from flooding under a 4°C scenario could exceed £27 million in a severe year (i.e. 1 in 200 year return period) and £60 million in an extreme year (i.e. a 1 in 1,000 year return period).

These figures represent physical loss to the entirety of all sites in our current land holdings which comprised around 63,000 homes at 31 October 2021. It is before any mitigation or adaptation measures and irrespective of insurance or other recovery or consideration of financial responsibility for any such losses. Berkeley already insures against potential losses from catastrophic events and under a 4°C scenario the primary cost exposure for Berkeley could be an increase to insurance premiums for assets under construction.

RISK MANAGEMENT

We recognise climate-related risks as one of the principal risks impacting Berkeley, and since 2018 it has been identified as a standalone risk. To read more about Berkeley's approach to risk management and how we manage risk read more on pages 86 to 101 of the Berkeley Group's 2022 Annual Report.

For climate-related risks, the Head of Responsible Business and Head of Sustainability are responsible for updating Berkeley's risk register at least annually and providing updates on changes to the risk level based on a range of factors such as forthcoming legislation and customer feedback. This information is provided to the Main Board through incorporation into the Group's risk register. The in-depth climate scenario analysis undertaken this year has further informed our risk assessment processes and has been overseen by Karl Whiteman and the Chief Financial Officer.

FOCUS ON: ASSESSING EMBODIED CARBON

Through Our Vision 2030 and our SBTs we have committed to reduce the carbon intensity of the materials and services we use by 40% between a 2019 baseline and 2030. This requires us to significantly reduce the embodied carbon from materials used in our developments, which accounts for around two thirds of our emissions across scopes 1, 2 and 3.

This year we have focused on understanding the impact of the materials we use across a representative selection of buildings. We now have valuable information to help us to understand both where the greatest impacts lie and to develop targeted actions for reduction, in partnership with our supply chain.

Assessing representative projects
15 assessments were completed across a range of building typologies, from houses to mid-rise apartments and tall buildings, together with homes built using modular construction. Assessments were also completed on projects at a variety of stages, from early design through to construction and completion.

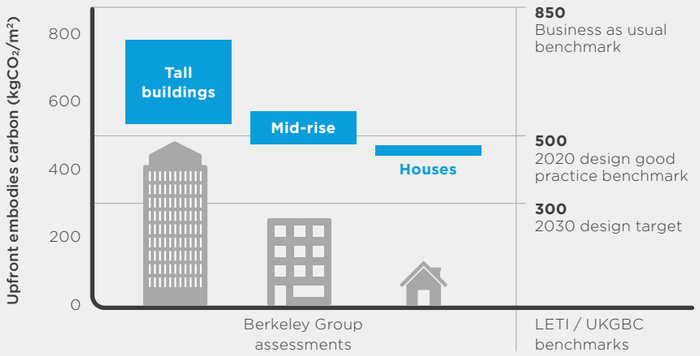
With support of specialist consultants, we calculated the 'upfront' embodied carbon of the materials and the supply chain used to construct our homes before they are legally completed (RICS Modules A1 - A5). This covers extraction, manufacture and transportation of materials.

Benchmarking our performance against industry guidance
The upfront embodied carbon in the materials within the developments varied depending on the typology of development, together with design, sourcing and specification choices made on each site.

We compared this with available industry guidance, such as from the RIBA (Royal Institute of British Architects), UK Green Building Council (UKGBC) and LETI (originally the London Energy Transformation Initiative). This included the business as usual LETI benchmark that gives an estimate of embodied carbon in buildings built without carbon reduction measures and the 2020 LETI benchmark created to define 'good' for embodied carbon for buildings that were designed in 2020.

All Berkeley developments assessed were found to outperform the business as usual benchmark of 850 $kgCO_2/m^2$ for A1 - A5, indicating that our teams are already considering and reducing embodied carbon beyond the norm, with some projects outperforming the LETI benchmark for 2020 of 500 $kgCO_2/m^2$.

Learning lessons from the assessments
At Berkeley, we take a bespoke approach to designing our developments, to ensure they maximise the long-term value of each project. This approach means that the assessments are unique to each development, however, common themes have been identified.



The majority of embodied carbon in our developments, based upon the mix of buildings in our first 15 embodied carbon assessments, arises from the façade, floors, substructure, frame and mechanical and electrical services. In particular, concrete, steel, glass and brick are significant contributors.

By floor area, houses were found to have the lowest embodied carbon, followed by mid-rise and taller buildings. This is largely due to the low impact materials used, like brick and timber, compared to more carbon intense materials such as steel and concrete used in higher rise buildings, together with the incorporation of cladding systems and more complex mechanical and electrical systems.

However, a holistic approach to the assessment is required. For example, housing developments require increased external works, such as the construction of roads, and typically have a lower density translating to higher embodied carbon measured on a per person basis relative to urban brownfield regeneration which also include wider inherent sustainability benefits such as proximity to transport hubs.

The use of natural biodiverse landscaping, sustainable tarmac replacements, etc. will help our housing developments.

The assessments have demonstrated that we should first focus on the design of our buildings to reduce the quantities of material used and then specify materials with lower carbon impact including materials with an increased percentage of recycled content.

Embodied carbon can vary significantly by supplier; for example, steel has multiple production routes of varying carbon intensity and transport distances. Our approach to supporting local suppliers, like the UK steel industry, carries higher embodied carbon due to the manufacturing process compared to European steel.

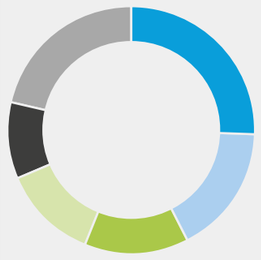
The use of modular solutions may initially increase embodied carbon, predominantly due to the quantity of structural steel used from our UKbased supplier, however we support a just transition to net zero and work with our suppliers to support their decarbonisation journey. This method of production also brings wider benefits, from improved quality to reducing in use carbon in the homes, and therefore a holistic view within our decision-making processes is required.

Next steps
We are now in the process of setting targets for the business for each of the different building typologies. These will provide clear recommendations from the assessments undertaken to date and a routemap to achieve our SBTs.

Every project team will also be required to calculate embodied carbon within the design, and work with designers and the supply chain to drive down the carbon impact across our portfolio.

Our production teams are assessing the practical steps and changes that would be required for typical developments to meet ambitious targets by 2030, in line with our SBTs.

Proportion of embodied carbon



METRICS AND TARGETS

Berkeley monitors a range of metrics to support our targets in the area of climate action. Detailed GHG emissions information is located in the Directors' Report (including disclosure across scopes 1 and 2) on pages 159 to 161 and the ESG table on pages 54 to 55 of the Berkeley Group's 2022 Annual Report. Our key metrics for climate action are included within our SBTs and these will be used toreduce emissions against a 2019 baseline:

Target	Link to focus areas	Metric	Unit	2022	2021	Baseline 2019
Science-based targets						
Reduce absolute scopes 1 and 2 GHG emissions 50% by FY2030 from a FY2019 base year		Absolute scopes 1 and 2 (market-based) emissions	tCO_2e	**2,211** Ⓐ	2,549	3,980
		Percentage change in emissions compared to FY2019 (SBT base year)	%	**-44**	-36	-
		Energy consumption associated with scopes 1 and 2 emissions	MWh	**36,335** Ⓐ	36,833	35,681
		Energy consumption from renewable sources	%	**76**	73	60
Reduce scope 3 purchased goods and services and use of sold products GHG emissions 40% per square metre of legally completed floor area by FY2030 from a FY2019 base year		Absolute scope 3 emissions (categories 1 and 11)	tCO_2e	**1,125,843** Ⓐ	1,041,555	1,096,682
		Scope 3 emissions intensity	tCO_2e/100 sq m	**312**	390	321
		Percentage change in emissions intensity compared to FY2019 (SBT base year)	%	**-3**	+22	-
		Absolute emissions for category 1: Purchased goods and services	tCO_2e	**857,341** Ⓐ	850,937	863,079
		Emissions intensity for category 1: Purchased goods and services	tCO_2e/100 sq m	**238**	319	253
		Absolute emissions for category 11: Use of sold products	tCO_2	**268,502** Ⓐ	190,618	233,603
		Emissions intensity for category 11: Use of sold products	tCO_2/100 sq m	**74**	71	68

Ⓐ 2022 information has been separately subject to limited assurance by KPMG LLP. For further details of the assurance provided in 2022, see the independent assurance report found at www.berkeleygroup.co.uk/sustainability/reports-and-case-studies

Progress against our science-based targets

Scopes 1 and 2
We are pleased to report a 44% decrease in our absolute scopes 1 and 2 (market-based) emissions since the baseline year of 2019 against a target of a 50% reduction by 2030. The decrease has largely been driven by an increase in the use of biodiesel HVO (Hydrotreated Vegetable Oil) on our construction sites. Further information on our scopes 1 and 2 emissions, including our methodology, is contained within the Directors' Report on page 159 of the Berkeley Group's 2022 Annual Report.

Scope 3
We recognise that our most significant impacts, around 99%, occur across our value chain (scope 3), from the activities within our supply chain and from the lifetime energy use of homes by our customers once sold. Since our 2019 baseline year, there has been a marginal decrease in the emissions intensity against our science-based target to reduce by 40% by 2030.

We have been actively working to improve our understanding and the data accuracy of these impacts since we set our SBTs and the impact of this work should lead to demonstrable reductions in the future:

— Embodied carbon (scope 3: category 1) - total estimated emissions arising as a result of purchased goods and services are calculated utilising two raw data sources; spend data and contractor fuel purchase data. We continue to use a spend-based methodology to report the majority (99%) of category 1 emissions, whilst we evolve our understanding and data availability in this area. This year we have refined our reporting to provide more accurate emissions estimations. Over time we plan to move to a hybrid method of reporting, replacing the spend-based data methodology with more accurate site-specific embodied carbon information. This year we have undertaken 15 embodied carbon assessments, as set out on page 68 of The Berkeley Group's 2022 Annual Report.

— Use of sold products (scope 3: category 11) -we continue to use the Dwelling Emission Rate (DER), calculated for homes in line with Government's Standard Assessment Procedure (SAP) methodology to estimate the carbon impact of our homes when in use by residents over their lifetime. This year we have adjusted the calculations to take into account a 60 year lifetime rather than 80 years to align with industry best practice guidance. We anticipate significant reductions in this area in the coming years in light of the more stringent Building Regulations which became effective in June 2022 and the forthcoming Future Homes Standard.

Further detail on our emissions reporting methodology can be found in our reporting criteria on our website:
www.berkeleygroup.co.uk/sustainability/reports-and-case-studies.

METRICS AND TARGETS CONTINUED

We also have broader targets with associated metrics as part of our climate action roadmap:

Target	Link to focus areas	Metric	Unit	2022	2021
Other targets and metrics					
Maintain carbon neutral operations across scopes 1 and 2 emissions using REGOs and verified carbon credits		Purchased electricity backed by REGOs	%	**99.0**	99.2
		Purchased electricity in the UK backed by REGOs	%	**100**	100
		Number of verified carbon credits procured for voluntary offsetting	#	**2,322**	2,675
		Percentage of scopes 1 and 2 (market-based) emissions offset by verified carbon credits	%	**100**	100
Implement measures to manage climate risks for our developments and business		Completed homes in regions with High or Extremely High Baseline Water Stress	%	**85**	88
		Average water efficiency of homes completed	lppd	**104.2**	104.5
		Live development sites that have SuDS	%	**92**	96
		Live development sites that have completed an overheating risk assessment	%	**68**	-
Reduce scope 3 purchased goods and services and use of sold products GHG emissions		Completed homes with an EPC rated A or B	%	**89**	96
		Average DER of completed homes	$kgCO_2/m^2/yr$	**12.85**	12.00
		Average percentage improvement in DER over Target Emission Rate (TER) for completed homes	%	**31**	33
		Completed homes with energy supplied from low carbon or renewable technology	%	**68**	70