

Greenhouse Gas (GHG) Emissions and Energy Consumption Reporting Criteria

May 2022 - April 2023

Reporting Criteria

Reported greenhouse gas (GHG) emissions and energy consumption within the Berkeley Group Holdings plc (“Berkeley”) 2023 Annual Report are based on its operational boundary, including 100% coverage of St Edward joint venture activities.

The emissions and energy consumption disclosed are aligned to Berkeley’s financial reporting year (1 May 2022 to 30 April 2023) and are considered material to its business.

Scopes 1 and 2

Reporting boundaries

The following reporting parameters are used to report emissions and energy consumption related to scopes 1 and 2:

- Scope 1: direct emissions from natural gas consumed for office, sales and development site activities; biodiesel HVO (Hydrotreated Vegetable Oil), diesel, petrol and liquefied petroleum gas (LPG) purchased directly for development site and modular factory activities; and travel (business and other travel where expensed) in company owned and company leased vehicles utilising conventional fuels as an energy source. Fugitive emissions resulting from air conditioning leakages are newly included in scope 1 emissions figures from 2022/23.
- Scope 2: indirect emissions from electricity and heat consumed for office, sales, development site and modular factory activities; and travel (business and other travel where expensed) in company owned and company leased vehicles utilising electricity as an energy source.

Exclusions from Berkeley’s reported emissions and energy consumption are as follows:

- Pre-development sites with existing buildings in-situ that are to be demolished or refurbished as part of Berkeley’s development work: excluded and not quantified as emissions and energy consumption are either deemed insignificant (e.g. minimal energy consumed in unoccupied buildings for security and/or health and safety purposes) or Berkeley is not responsible for the energy consumed (e.g. buildings occupied by tenants). Once development works (e.g. demolition, excavation or construction) begin, these sites form part of the figures presented.
- Post-development sites where Berkeley has retained the freehold: excluded and not quantified as the purchasers or tenants are the consumers of the energy in this instance. During development works, emissions and energy consumption resulting from the commissioning of gas-fuelled plant to be retained on the development have not been included as this activity is considered to relate to the end use of the development rather than its construction.

UK and global emissions and energy consumption

Berkeley creates homes and neighbourhoods across London, Birmingham and the South of England. As a result, the majority of Berkeley’s emissions and energy consumption are UK-based, resulting from the operations of our regional offices, development sites, sales and marketing suites and modular factory. Business travel in company owned and company leased vehicles is also included in the reporting boundary for the UK.

Global emissions and energy consumption result only from electricity usage in Berkeley's eight international offices located across China, Hong Kong, Singapore, Thailand and the United Arab Emirates (UAE).

Reporting methodology

UK Government Environmental Reporting Guidelines 2019 have been used as the basis for disclosures, with the exceptions listed above. UK Government GHG Conversion Factors for Company Reporting 2022 have been applied to 2023 data (covering 1 May 2022 to 30 April 2023), as 2022 is the calendar year in which the greatest portion of our data falls. UK Government GHG Conversion Factors for Company Reporting 2021 have been applied to 2022 data (covering 1 May 2021 to 30 April 2022). International Energy Agency (IEA) 2022 factors have been applied to overseas electricity figures for 2023, with IEA 2021 factors applied to overseas electricity figures for 2022.

All emissions are calculated as carbon dioxide equivalent (CO₂e). In addition to carbon dioxide (CO₂), the carbon dioxide equivalent (CO₂e) values reported include the global warming potential from methane (CH₄), nitrous oxide (N₂O) and hydrofluorocarbons (HFCs). Remaining gases (perfluorocarbons (PFCs), sulphur hexafluoride (SF₆) and nitrogen trifluoride (NF₃)) are not reported as they are not considered relevant to the direct business activities of the Berkeley Group.

Energy consumption in kilowatt-hours (kWh) has been calculated and reported on a net calorific value (CV) basis.

Emissions and energy consumption have been calculated using raw data values multiplied by their corresponding conversion factor as outlined in the UK Government's GHG Conversion Factors for Company Reporting, or the IEA factor for international electricity consumption in relation to emissions from international offices. 'Average biofuel blend' factors for diesel and petrol conversions have been applied. For business vehicle travel, emissions and energy consumption have been calculated using the raw mileage data multiplied by the corresponding factor for the vehicle fuel type and engine size. The 'average car' factors provided individually for hybrid, plug-in hybrid electric and battery electric vehicles have been used, whilst 'average van' factors have been used for all van vehicles. For plug-in hybrid vehicles, emissions and energy consumption include the conventional fuel use and electricity.

As a conversion factor for the kilowatt-hour per raw unit value is not available for natural gas consumption, the following methodology has been applied using factors disclosed in the UK Government GHG Conversion Factors for Company Reporting 2022: *cubic metres to kilowatt-hour conversion factor = kg/cubic metre figure * kWh/kg (Net CV) figure.*

Scope 2 location-based and market-based reporting

Berkeley has reported both location-based and market-based emissions for scope 2, with the market-based emissions taking into account Berkeley's purchase of Renewable Energy Guarantees of Origin (REGOs) to certify that 100% of UK electricity is from a renewable source (i.e. solar, wind or hydro power). Where REGOs have not been retired for the reporting period at the time of emissions disclosures, accounting for REGOs has been based on a contractual agreement for purchase.

Remaining scope 2 market-based emissions result from electricity use in Berkeley's international offices, purchased heat and business vehicle travel.

Data sources

Office, sales, development site and modular factory activities

Raw data for regional offices, sites, sales and marketing suites and show homes has been collected on a monthly basis as follows:

Directly purchased fuels (scope 1)

- Biodiesel HVO, diesel and petrol purchased in litres based on delivery notes received from the fuel supplier, or where unavailable, based on informed estimations by site personnel based on knowledge of number and quantity of deliveries in a given period or based on volumes delivered in similar preceding months;
- LPG purchased in litres or kilogrammes based on delivery notes received from the fuel supplier, or where unavailable, based on informed estimations by site personnel based on knowledge of number and quantity of deliveries in a given period or based on volumes delivered in similar preceding months;
- Natural gas consumed in cubic metres, hundreds of cubic feet or kilowatt-hours based on monthly meter readings, or where unavailable, estimates based on pro-rated calculations of periods with actual consumption.

Electricity and heat (scope 2)

- Purchased electricity measured in kilowatt-hours based on monthly meter readings, or where unavailable, estimates based on pro-rated calculations of periods with actual consumption;
- Purchased heat measured in kilowatt-hours based on monthly meter readings, or where unavailable, estimates based on pro-rated calculations of periods with actual consumption;
- Renewable energy generated and consumed on-site in kilowatt-hours based on monthly meter readings.

Refrigerant gas losses

Data on refrigerant gas top-ups of air conditioning equipment in place across our office, sales, development site and modular factory activities has been collected at year-end via the Finance teams of Berkeley's operating companies, using maintenance records for the reporting period. Where no top ups have occurred, location level declarations have been used to self-verify completeness.

Business road vehicle travel activities

Raw data for business road travel in company owned or company leased vehicles has been collected at year-end via the Finance teams of Berkeley's operating companies, using monthly expense details or mileage records for the reporting period as submitted by the vehicle driver. Where actual mileage has not been obtained, estimated values have been determined using a range of methods with a key one being to use an individual's typical mileage in a day, week or month to calculate a longer period of time. In 2023, 89% of reported mileage was based on actual data from expenses or mileage logs. Note that in instances where Berkeley reimburses employees for all vehicle travel, other road mileage such as commuter is included.

Data coverage

Data coverage by activity area for 2023 is as follows:

- Regional offices: annual emissions and energy consumption from 100% (22 no.) of permanent offices reported.
- Development sites: annual emissions and energy consumption from 100% (72 no.) of development sites undergoing demolition, excavation or construction works reported.

- Sales and marketing suites: annual emissions and energy consumption from 100% (55 no.) of sales and marketing suites reported, including show homes.
- Modular factory: annual emissions and energy consumption from 100% (1 no.) of technologically advanced manufacturing facilities reported.
- Business road travel: annual emissions and energy consumption from 100% company owned and company leased vehicles reported.

Scope 3

Reporting boundary

Berkeley reports on indirect emissions that occur in its value chain for two scope 3 categories based on an assessment of materiality undertaken in 2020 on data from Berkeley's 2019 financial year (1 May 2018 to 30 April 2019):

- Category 1: Purchased Goods and Services (56% of recalculated 2019 scope 3 emissions as updated based on the data revisions detailed in the section below): the impact of our supply chain due to services, labour and materials procured in the reporting year, in addition to emissions resulting from the purchase of biodiesel HVO and other fuels by contractors for use whilst working on our development sites;
- Category 11: Use of Sold Products (37% of recalculated 2019 scope 3 emissions as updated based on the category 1 data revisions detailed in the section below): the impact of the homes legally completed during the reporting year over a lifetime period of 60 years.

A review undertaken in 2023 has confirmed that these remain our material categories.

Reporting methodology and data sources – Category 1: Purchased Goods and Services

Total emissions arising as a result of purchased goods and services are calculated utilising two raw data sources; spend data and contractor fuel purchase data.

Spend data

The majority (98% in 2023) of category 1 emissions are estimated using a spend-based methodology, by applying conversion factors originating from the cradle-to-gate emissions model Comprehensive Environmental Data Archive (CEDA) Global to financial spend in the reporting year for procured goods and services. The single-country (United Kingdom (UK)) factors of this economic input-output database have been used. CEDA Global factors for the UK use 2018 as their base year and are presented as kgCO₂e/£GBP. Factors for 2022 have been applied to 2023 data (covering 1 May 2022 to 30 April 2023), as 2022 is the calendar year in which the greatest portion of our data falls.

Spend data (i.e. invoices paid) in £GBP is extracted from Berkeley's finance systems for the reporting period, with CEDA category conversion factors applied using the following hierarchy of actions:

1. Exclusion of spend where there has been no related good or service purchased; this applies to intracompany transactions; land purchases; and local authority payments (e.g. S106 contributions);
2. Exclusion of spend related to energy consumption already captured under scopes 1 and 2 emissions reporting (e.g. purchased electricity, natural gas and fuels);
3. Assignment of relevant companies and spend providing services within the following low emission CEDA categories: 'Employment services'; 'Legal services'; 'Accounting, tax preparation, bookkeeping,

and payroll services'; 'Insurance agencies, brokerages, and related activities'; and 'Housing' (covering estate agents and estate management services). Note that spend within these CEDA categories has been specifically identified for analysis due to them being high spend areas that feature across Berkeley's cost codes (see bullet point 5);

4. Assignment of relevant companies and spend providing services within the following high emission CEDA category: 'Waste management and remediation services'. Note that spend within this CEDA category has been specifically identified for analysis due to them being high spend areas that feature across Berkeley's cost codes (see bullet point 5);
5. Use of Berkeley's assigned cost codes and nominal account codes for remaining spend; these track spend against budgets from activities such as 'Piling works' and 'External glazing' through to 'Photography' and 'Office cleaning'. Upon receipt of an invoice, it is assigned to a cost code or nominal account code based on management judgement. Each cost code and nominal account code has been mapped to the most relevant CEDA description, with key areas of note:
 - Of the 400 no. CEDA categories available, 69 have been mapped to Berkeley's internal codes as the most relevant for use;
 - There is an inherent risk of incorrect assignment of invoices to a cost code or nominal account code due to judgement and human error. This risk has been mitigated through detailed cost code and nominal account code analysis reviewing typical high spend suppliers in each code and ensuring the company type of these correlates to the mapped CEDA category. In instances where mixed company types feature as high spend suppliers within a code, to be prudent the CEDA category with a higher emission factor has been selected for use.
 - The CEDA category 'Multifamily residential structures' covers the majority of Berkeley's cost code mappings (43%) and spend included for analysis (68% in 2023); this is as expected as Berkeley procures the services of specialised contractors to complete development works with these contractors typically providing both labour and materials as part of their work packages;
 - Berkeley undertakes minimal procurement directly from manufacturers, with the majority of materials procured via contractor work packages (as noted above). For cost codes where the majority of spend is with material suppliers, we have applied a specific product manufacturing CEDA factor if available. For example, Berkeley's cost code for 'Facing bricks' has been mapped to the CEDA category 'Clay product and refractory manufacturing'.

The conversion factors for each mapped CEDA category are multiplied by the relevant spend data under actions 3, 4 and 5 above. The resulting emissions are summed to calculate a total value of estimated category 1 emissions from spend data.

Note that the above methodology differs to that applied in 2022 and prior years, with the latest CEDA Global factors used in 2023 as opposed to adjusted CEDA v5.0 factors.

We recognise that there will be adjustments to our category 1 emissions reporting methodology over the coming years; over time we plan to move to a hybrid method of reporting, utilising site-specific embodied carbon information based on material volumes as our preferred reporting approach and supplementing this with spend-based data analysis as required. To move in this direction, we have carried out 23 detailed embodied carbon assessments in the last two years.

Contractor purchased fuel data

An element (2% in 2023) of category 1 emissions is calculated using contractor purchased fuel data. Raw data for sites has been collected on a monthly basis as follows:

- Biodiesel HVO, diesel and petrol measured in litres based on declarations from contractors on the amount purchased, supported by delivery notes received by the contractor from the fuel supplier where available;

- LPG measured in litres or kilogrammes based on declarations from contractors on the amount purchased, supported by delivery notes received by the contractor from the fuel supplier where available.

Emissions, including well-to-tank (WTT) have been calculated using raw data values multiplied by their corresponding conversion factor as outlined in the UK Government's GHG Conversion Factors for Company Reporting.

Reporting methodology and data sources – Category 11: Use of Sold Products

To calculate scope 3 emissions related to the use of sold products (i.e. our homes), Berkeley uses details obtained from the Standard Assessment Procedure (SAP) which is the methodology used by the UK government to assess and compare the energy and environmental performance of dwellings. For each home legally completed during the year, the Dwelling Emission Rate (DER) (kgCO₂/m²/yr) is extracted from the SAP calculation spreadsheet produced by the development's specialist energy consultant. This value is multiplied by the floor area of the home and a lifetime period of 60 years. In instances where information for a legally completed home is not available, calculations are undertaken to estimate emissions for the home using the average DER and average floor area of reported homes.

Data coverage

Data coverage by scope 3 category is as follows:

- Category 1: Purchased Goods and Services; spend data was available for 100% of Berkeley's spend with contractors and vendors in the reporting period. Following the removal of excluded spend categories (see above), 68% of the remaining spend was allocated to the CEDA description 'Multifamily residential structures', with other key spend categories being 'Employment services' (8%) and 'Architectural, engineering, and related services' (4%).

Reported emissions resulting from contractors purchasing and using fuels cover 100% (72 no.) of development sites undergoing demolition, excavation or construction works.

- Category 11: Full DER and floor area data was available for 99.6% of the homes that legally completed during the reporting year. The average DER for these homes was used to estimate emissions for remaining homes missing this information to provide 100% coverage.

Outside of scopes

To ensure complete reporting, the biogenic CO₂ of the following energy sources has been accounted for by Berkeley: directly purchased biodiesel HVO, diesel and petrol; and electricity. The biogenic CO₂ is considered 'outside of scopes' as the scope 1 impact of these fuels has been determined to be net '0' since the fuel source itself absorbs an equivalent amount of CO₂ during the growth phase as the amount of CO₂ released through combustion.

Emissions have been calculated using raw data values multiplied by their corresponding conversion factor as outlined in the UK Government's GHG Conversion Factors for Company Reporting. As a conversion factor for the outside of scopes emissions per raw unit value (i.e. miles) is not available for business vehicle travel, emissions have been determined based on calculated energy consumption (on a net CV basis).

Intensity ratio

The intensity ratio (tCO₂e/100sqm) has been calculated using the legally completed floor area across both homes and commercial space during the year (2023: 357,071 sqm; 2022: 360,604 sqm).

This aligns with the intensity ratio for our validated science-based target for scope 3 emissions.

Data revisions

Scope 3 Category 1: Purchased Goods and Services data has been recalculated for financial years 2019 to 2022.

During the year, the updated CEDA Global database was launched which provides multi-regional input-output (MRIO) information, including UK-specific conversion factors for the first time. Compared to CEDA v5.0 which had a 2014 base year, emission factors in CEDA Global have a 2018 base year. The new factors take into account the effect of global decarbonisation activities since 2014 and are based on additional region-specific data sources, such as emission factors published by the Department for Environment Food & Rural Affairs (DEFRA). Together with macroeconomic changes, improvements in global GHG emissions understanding and calculations, and efficiencies in technologies along with an improved use of renewable energy sources, there has been a significant drop in the conversion factors from CEDA v5.0 to CEDA Global.

Prior year data in line with the CEDA Global factor set is presented in Berkeley's 2023 Annual Report.