

## University of Cambridge

### Environmental Sustainability Data Assurance Methodology Statement for the 2018/2019 reporting year

#### Introduction

The University of Cambridge published its Environmental Sustainability Vision, Policy and Strategy in 2015

[https://www.environment.admin.cam.ac.uk/files/environmental\\_sustainability\\_vision\\_policy\\_and\\_strategy\\_for\\_web.pdf](https://www.environment.admin.cam.ac.uk/files/environmental_sustainability_vision_policy_and_strategy_for_web.pdf)). This sets out our aims, targets and key implementation mechanisms under nine themes and contains a number of key performance indicators (KPIs). Progress against the ambitions with this policy is reported annually in an Environmental Sustainability Report (<https://www.environment.admin.cam.ac.uk/Annual-Report>).

In July 2019, the University announced a new, ambitious science based target (SBT) for carbon reduction. This commits us to reduce energy-related (scope 1 and 2) carbon emissions to absolute zero by 2048, with a steep 75% decrease on 2015 emissions by 2030. The University has also expressed an aspiration to be ten years ahead of its SBT decarbonisation pathway at all times and to reach zero carbon by 2038 (<https://www.cam.ac.uk/news/university-of-cambridge-adopts-science-based-target-for-carbon-reduction>).

It is important that the University's environmental sustainability data is as accurate as possible to enable us to measure our progress against targets, as well as reduce our negative and enhance our positive environmental impact. This is why we have chosen to gain a public limited assurance opinion of our 2019/20 environmental sustainability data.

#### Scope of reporting

As the table below shows, a number of the key metrics included in our Environmental Sustainability Report refer directly to the University's carbon emissions (scopes 1, 2 and 3). A number of the other metrics (for example, water consumption, waste and staff commuting figures) are used as part of our carbon emissions calculations.

For this reason, for many of our metrics, we have defined the scope of what we include when measuring our progress according to international best practice guidance on carbon emissions reporting ([ghgprotocol.org/corporate-standard](http://ghgprotocol.org/corporate-standard)). Under this guidance, there are a number of different approaches that an organisation can take to define which operations and activities need to be included when calculating and reporting its carbon emissions. The University has adopted what is known as the Operational Control approach, under which the buildings, activities and operations included in our calculations and reporting are those over which the University has direct control or significant influence.

It should be noted that, to date, our reported carbon figures and related metrics refer only to buildings that are occupied by the academic portion of the University – that is, the institutions that are directly involved in delivering the University's teaching and research; and the administrative departments and non-school institutions that support teaching and research.

Currently, the buildings and activities of other parts of the wider University are not included in our reported figures (Figure 1) In practice, this means that our reported figures do not include the buildings and activities of Cambridge Assessment, Cambridge University Press or the North West Cambridge Development, except for those buildings on the development that provide an academic-related function (such as the Post-Doc Centre). Nor are the University's commercial property portfolio or rural estate included in our reported figures.

The University owns a number of subsidiary organisations<sup>1</sup> but does not have operational control over all of these. Subsidiaries over which the University does not have operational control are excluded from our metrics. Of the subsidiaries over which the University does have operational control, those based in buildings that form part of the North West Cambridge Development, or are occupied by Cambridge Assessment and Cambridge University Press are currently excluded from our metrics. Some of the University's subsidiaries are located overseas and we will undertake further work to confirm whether the University has operational control over these.

Under best practice and the Operational Control approach to carbon emissions reporting, our figures *should* include emissions arising from the wider University, including the North West Cambridge Development and buildings occupied by Cambridge Assessment and Cambridge University Press. We are working with representatives from across the wider University to achieve this. For this reason, the scope of our carbon metrics and many of the metrics that are used in our carbon emissions calculations will change over the coming couple of years.

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<sup>1</sup> As listed in the University's Annual Report and Accounts, available at <https://www.cam.ac.uk/about-the-university/view-and-download-the-annual-report>.

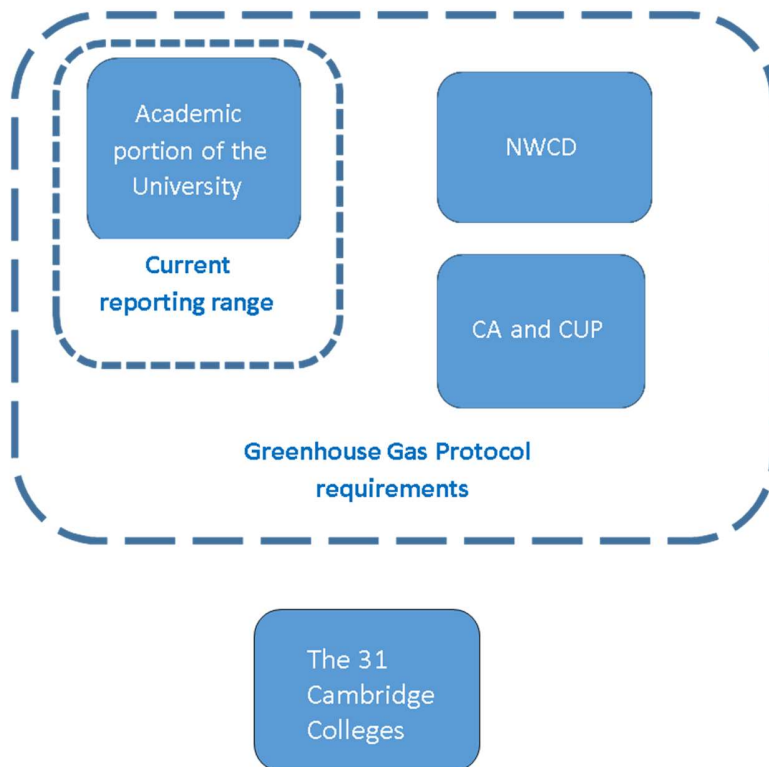


Figure 1: The University's current carbon emissions reporting range versus what should be included in the University's reported figures according to best practice and the Operational Control approach.

It is important to note that the 31 Cambridge Colleges are each separate legal entities (from the University, and each other) and under the Operational Control Approach are out of scope of the University's reported metrics.

New University buildings are brought into scope of our reported figures from the date that they are handed over to the University by the building developer. This is the point at which the University gains operational control over the building and assumes responsibility for utilities used in the building.

The table below summarises all of the metrics included in our University's Environmental Sustainability Report, and for each indicates:

- Whether the metric is one of our Key Performance Indicators (KPI), or data used in our carbon emissions calculations, or both.

- Whether the scope of the metric aligns with the Operational Control approach outlined above.

Where the scope of a specific metric differs to that defined under the Operational Control approach, further information is provided in the section for that metric, below.

<b>Metric</b>	<b>Type of metric</b>	<b>Scope aligns with Operational Control approach?</b>
Energy use (kWh)	Part of our carbon calculations	Yes
Total Scope 1 and 2 carbon emissions (energy and fuel use) (tonnes)	KPI	Yes
Carbon emissions from water use (tonnes)	KPI	Yes
Total Scope 1 and 2 carbon emissions per staff and students (tonnes/FTE)	KPI	Yes
Carbon emissions from water use per staff and student (tonnes/FTE)	KPI	Yes
Total Scope 1 and 2 carbon emissions per total income (tonnes/£1000)	KPI	Yes
Carbon emissions from water use per total income (tonnes/£1000)	KPI	Yes
Total scope 3 emissions (tonnes)	Part of our carbon calculations	Yes

Percentage of energy generated from onsite renewable or low carbon sources (%)	KPI	Yes
Total water consumption (m <sup>3</sup> )	KPI and part of our carbon calculations	Yes
Total water consumption per staff and student (m <sup>3</sup> /FTE)	KPI	Yes
Waste sent to landfill (tonnes)	KPI and part of our carbon calculations	Broadly, with some exceptions
Waste mass generated per FTE staff and students (tonnes/FTE)	KPI	Broadly, with some exceptions
Percentage of waste generated that is recycled or composted (construction and non-construction waste) (%)	KPI	Broadly, with some exceptions
The percentage of new buildings that are certified at least BREEAM Excellent or equivalent	KPI	Yes
The percentage of buildings that have a minimum Display Energy Certificate rating of 'D'.	KPI	Yes
External awards for sustainable construction/design.	KPI	Yes
Percentage modal split for commuting by staff single occupancy car journey	KPI and part of our carbon calculations	No as this metric is not linked to buildings.

Percentage modal split for commuting by staff car share	KPI and part of our carbon calculations	No as this metric is not linked to buildings.
Percentage modal split for commuting by staff bus	KPI and part of our carbon calculations	No as this metric is not linked to buildings.
Percentage modal split for commuting by staff train	KPI and part of our carbon calculations	No as this metric is not linked to buildings.
Percentage modal split for commuting by staff cycle	KPI and part of our carbon calculations	No as this metric is not linked to buildings.
Percentage modal split for commuting by staff walk	KPI and part of our carbon calculations	No as this metric is not linked to buildings.
Percentage modal split for commuting by staff motorbike	KPI and part of our carbon calculations	No as this metric is not linked to buildings.
Percentage modal split for commuting by staff other	KPI and part of our carbon calculations	No as this metric is not linked to buildings.
Per capita carbon emissions from flights	KPI	Yes
Number of institutions participating in Green Impact	KPI	No

Number of members of the Environment and Energy Coordinator Network	KPI	No
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The University's reporting year runs from 1<sup>st</sup> August to 31<sup>st</sup> July every year.

## Reporting specifics and methodology

### Normalisation

As detailed in the following sections, a number of our reported metrics are normalised against a series of factors, as a way of contextualizing our performance in specific areas. The normalisation factors that we apply are explained below:

- a) Staff and student numbers  
Several KPIs are specified per FTE (Full Time Equivalent) staff and student.

Staff FTE is defined as the number of direct employees of the University during the reporting period 1 August to 31 July, and the figure is obtained from central University records calculated by the Planning and Resource Allocation Office (PRAO). Staff FTE comprises of non-residential staff and residential staff including all academic, research, support, administrative and technical staff. It includes staff employed under a contract of employment and/or for whom the University is liable to pay class 1 NI contributions. It does not however include non-academic atypical staff (such as temporary workers), University of Cambridge Local Examinations Syndicate (UCLES) employees, or contractors. The FTE figure is not reduced for maternity leave or employees on long-term sick as they are still employees of the University. One limitation of the staff FTE figure is that HR records can be backdated after the point the listing is run.

Data on student numbers is submitted by the University to the Higher Education Statistics Agency (HESA), who conduct validation checks, reformat the data and calculate the student FTE figure. The student FTE figure represents the full-time equivalence of a student on a credit-bearing course of study during the HESA-defined reporting period of 1 August to 31 July. Where a student is studying part-time and will spend less than eight weeks in the UK as part of their course of study, these student numbers are not included in the submission to HESA, on which the FTE calculation is based. In their FTE calculation, HESA exclude the following students on a course of study:

- where any of the course of study is not taught by the University of Cambridge;
- student is dormant for the year;
- student is on sabbatical for the year;
- student is writing-up their thesis, having completed their formal period of study.

There is a student FTE figure for taught students and a FTE figure for research students. We include both taught and research students in the FTE figures we apply.

b) Per capita emissions

Our KPI on emissions from flights is specified per capita. 'Per capita' is slightly different to FTE staff and students.

Per capita refers to the FTE number of staff employed by the University and the number of research students enrolled at the University, but it excludes the number of undergraduate students enrolled at the University. This is because the vast majority of the University's air travel is carried out by staff and research students. Some undergraduate students take flights for international field trips, but these are minor in terms of spend and distance compared to flights by staff and research students.

c) Total income

Total income is defined as the total teaching and research income of the University's Academic Group. The Academic Group includes the University's academic departments and associated administrative services, and the subsidiary companies of the University, as listed in the University's Annual Report<sup>2</sup>.

The Academic Group excludes Cambridge Assessment, Cambridge University Press and the Cambridge Trusts.

The total income figure is taken from the University's Annual Report, as relevant to our reporting year.

It should be noted that the University does not have operational control over all of the subsidiaries included in the total income figure for the Academic Group. Some of the subsidiaries are located in buildings that are neither owned nor managed by the University. In line with best practice guidance on carbon emissions reporting, therefore, these subsidiaries should be excluded from the income figure we apply for normalisation of our environmental sustainability metrics. In practice, however, it is not feasible to separate out the income from those subsidiaries over which the University does not have operational control.

This means that the total income figure is not directly comparable, in terms of coverage, with our environmental sustainability metrics. However, on analysis, we believe that this is the most appropriate income figure to use for normalisation of our metrics, as it is the income figure that aligns *most closely* with the Operational Control approach.

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<sup>2</sup> <https://www.cam.ac.uk/about-the-university/view-and-download-the-annual-report>.



## Carbon

**Definition:** Carbon represents emissions of carbon dioxide from the University's operational estate and associated activities. Subject to available data, our figures include:

- Scope 1 emissions – those arising directly from our estate and operations as a result of the fuel we consume in our buildings (for example, in gas boilers) and University-owned vehicles.
- Scope 2 emissions – emissions that arise upstream from the University's estate and operations as a result of the electricity and steam that we procure and consume.
- Scope 3 emissions – those that arise either upstream or downstream from the University estate and operations. The Greenhouse Gas Protocol identifies 15 different categories of scope 3 emissions but at present, due to difficulty in obtaining data, we only report on emissions from the waste we produce, the water we consume, the travel undertaken by our staff and students (commuting and business travel) and our supply chain.

The Greenhouse Gas Protocol covers seven different greenhouse gases in total, the six other than carbon being methane, sulphur hexafluoride, perfluorocarbons, hydrofluorocarbons, nitrous oxide and nitrogen trifluoride. It is highly probable that some, if not all, of these gases are in use across our estate, for research purposes or, in the case of hydrofluorocarbons, in refrigeration and air cooling units. However, to date we have not been able to collect data on these emissions and they are not included in our reported figures.

### **Relevant KPIs:**

- Total scope 1 and 2 emissions (energy and fuel use)
- Carbon emissions from water use
- Total scope 1 and 2 emissions per staff and student
- Carbon emissions from water use per staff and student
- Total scope 1 and 2 emissions per total income
- Carbon emissions from water use per total income
- Per capita carbon emissions from flights

**Unit:** Tonnes of carbon dioxide equivalent (tCO<sub>2</sub>e).

**Method:** We follow the Greenhouse Gas Protocol Corporate Standard for carbon emissions reporting.

We begin by collecting annual data for the following emissions sources:

Emissions source	Unit of measurement	Source(s) of data
<b>Scope 1</b>		
Natural gas	kWh/ year	See the Energy section below.
Oil		
Biomass		
Diesel and petrol used in University-owned vehicles	litres/year	Departmental fuel account cards and receipts, showing amount of fuel purchased. Further details are provided below.
<b>Scope 2</b>		
Purchased electricity	kWh/year	See the Energy section below.
Purchased heat and steam		
<b>Scope 3</b>		
Water and wastewater	m <sup>3</sup> /year	See the Water section below.
Waste	tonnes/year	See the Waste section below.
Business travel	km travelled/ year	Report on purchased flights, train journeys etc. from the University's preferred supplier for travel services.  Report on expenditure on flights, train journeys, car hire, taxis etc. from the preferred provider of University staff credit cards.  University's financial records, for staff and student expense claims for flights, train journeys, car hire, taxis etc.  Further details are provided below.
Staff commuting	km travelled/ year	The annual staff travel survey – see the section on Staff Commuting, below.
Purchased goods and services	£ expenditure /year	University's financial records. Further details are provided below.

Further information on how we compile our energy, waste, water and staff commuting figures, and use these to calculate our carbon emissions, is provided in the following sections.

In this section, we provide an overview of how we compile our emissions figures for fuel use in University vehicles, University business travel, and purchased goods and services.

a) Diesel and petrol used in University-owned vehicles

To establish fuel use by University-owned vehicles, details of the vehicles and fuel consumption figures are required. An initial vehicle list is established from the University's insurance record. The University has a preferred fuel card provider and the annual report is acquired for the financial year, which contains fuel type and volume data. Both of these records are sourced from sections of the Finance Division.

Many of the vehicles on the insurance list will be fueled exclusively using fuel cards and so consumption is captured by the annual fuel card report. After cross-referencing these two records there are always a significant number of vehicles that do not appear in the fuel card report and so associated fuel consumption is unaccounted for. The departments that own the vehicles are then contacted individually and asked for missing details or updates on their vehicles that may not be captured in the insurance list and all fuel consumption records.

Returns from departments vary in quality and timeliness. Returns that have fuel type and volume can simply be added to the totals. Returns that are solely expense claims are converted to fuel volume using the average from the fuel card report data set. If fuel type is not identifiable from departmental returns, a judgement call is made based on the type of vehicle. Vans can be assumed to run on diesel and tractors without a registration number can be assumed to use red diesel, for example.

b) Business travel

Business travel is defined as travel undertaken by University staff or students for work or research purposes. It includes domestic and international travel. We include travel via the following modes in our figures:

- Air
- Rail
- Bus and coach
- Taxi
- Car and van hire
- Privately-owned vehicles
- Ferry.

Air travel makes up the vast majority of the University' expenditure on business travel, followed by rail.

Air travel and rail data are collected from three sources:

- Report on purchased flights and rail journeys from the University's preferred supplier for travel services.
- Report on expenditure using University staff credit cards from the University's preferred supplier for credit card services.
- University's financial records, for staff and student expense claims (Accounts Payable data).

The report received from the University's preferred travel services supplier contains flight information (including class) from which flight distances can be calculated and appropriate carbon conversion factors can be applied.

The University's expenses system records and credit card report do not provide the key information needed to calculate carbon emissions from flights (for example, distance travelled, or class of flight). Carbon emissions for these journeys are estimated by converting from the amount spent (£). This is done using an average spend-to-carbon ratio calculated from the more complete data of the report from the University's preferred travel services supplier.

Further manipulation is then necessary to combine the results from these three data streams whilst minimising the risk of double-counting or under-counting.

A similar methodology is conducted on rail data from the same three sources.

There are some notable limitations to how our air and rail emissions figures are calculated. Currently, three different sources of data must be manipulated independently as none will capture all flights to a high degree of confidence or accuracy. None of the raw data is collected for the purpose of carbon reporting and so flights are recorded in a wide variety of ways and formats, even within one data set. Bespoke coding script has been developed in-house to attempt to extract meaningful spend data attributable to flights or rail from the data sources, then manipulate it to produce a reasonable estimated carbon emissions figure.

For two of the worked datasets, flight data needs converting from spend to carbon emissions. This is done using a conversion factor derived from the third dataset, which has an output of distance travelled. By doing this, a suite of assumptions are made about the third data set and how it may or may not be consistent with the other data sets. These include value-for-money of the flights purchased, the average class travelled and proportion of short-haul to long-haul flights.

For these reasons, our KPI on per capita emissions from flights is reported with a disclaimer of having a large degree of potential error, to reflect the quality of the raw data and the complexity of the calculation methodology.

Finally, it should be noted that our data on flights and rail journeys relates to the date that the travel booking was made, not the date of travel itself. This probably means that, for any given reporting period, some journeys that were taken during the reporting period are excluded from our reported metrics, and conversely that some of the journeys included in our reported metrics were taken outside of the reporting period. This is a consistent issue from year to year, therefore we believe it introduces minimal error to the metrics for any given reporting period.

For business travel by modes of transport other than air or rail, the Accounts Payable spend figures are filtered by transaction code, which divides up travel expenses into taxi, car hire, van hire, etc. Travel spend attributed to generic transaction codes is allocated to the travel mode in the same ratio. Carbon emissions for these journeys are calculated by converting the amount spent (£) into distance travelled (km), using spend-to-distance ratios from such sources as car mileage expense reclaim rates.

c) Purchased goods and services

We estimate emissions from the University's supply chain based on the economic input-output approach. This converts the amount spent (£) on different categories of goods and services (for example, lab consumables and equipment, building and construction materials) directly into tCO<sub>2</sub>e. This is a simplistic method, which does not necessarily reflect the true carbon impact of our different areas of spend. Therefore, these figures provide an indication of the magnitude of our total supply chain emissions, rather than reflecting the impact of specific purchased goods and services.

For calculating our 2018/19 figures, we have used a free tool available through the Greenhouse Gas Protocol website<sup>3</sup>.

Once we have compiled figures for each of the carbon emission sources listed in the table above, we convert them into tonnes of carbon dioxide equivalent, using the carbon conversion factors published annually by the Government<sup>4</sup>. These factors are valid for 1 August – 31 July of each year and are published retrospectively, typically in June of each year. For example, the conversion factors for the reporting period 1 August 2018 – 31 July 2019 were published in June 2019. When calculating our emissions, we apply the most recent factors across our data for the entire reporting period. For 2018/19, this means we have applied the carbon conversion factors published in 2019.

**Assumptions made or limitations of the data:** There are currently some notable limitations to our reported carbon figures:

- a) Data gaps: There are some emissions sources that we do not currently report, simply because we do not have access to robust or complete source data. This includes:
  - Fugitive emissions (scope 1): These are emissions that occur as a result of refrigerant leaks from air conditioning/ cooling units across the estate.
  - Energy used in leased buildings (scopes 1 and 2): There are some leased buildings that the University has operational control over, but for which we do not currently have access to energy consumption data.
- b) Estimates: The figures we report for business travel and purchased goods and services (both scope 3) are estimates, based on the data we have access to and methodologies developed. The specific limitations of these figures are set out above.
- c) Scope: Our reported carbon figures currently relate to the estate and operations of the academic portion of the University. Emissions arising from other parts of the wider

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<sup>3</sup> <https://quantis-suite.com/Scope-3-Evaluator/>

<sup>4</sup> <https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting>

University, including Cambridge Assessment, Cambridge University Press and the North West Cambridge Development, are not included in our reported figures.

We have identified various initiatives to improve the accuracy and completeness of our reported emissions figures. For example, we plan to carry out a screening assessment across all 15 categories of scope 3 emissions to determine their magnitude and where we should focus our future data collection efforts; we intend to carry out a similar exercise for emissions of the other greenhouse gases, besides carbon, across our estate; and we are working to expand the scope of our reported emissions to align with the Operational Control approach. We are prioritising these according to our ability to influence the data collection process, as well as the significance of the emissions source.

## Energy

**Definition:** Energy is defined as the annual consumption of electricity, gas, steam and fuel in buildings over which the University has operational control. Principally these fuels are used either to generate power for use in electrical equipment or to produce heat for space heating, hot water or process heat in support of research activities.

### **Relevant KPIs:**

- Percentage of energy generated from onsite renewable or low carbon sources.

**Unit:** Kilowatt hours (kWh)

**Method:** Energy data are primarily collected through metering of the University's electricity and gas supplies, the majority of which are now automated. In addition, we have hundreds of automated sub-meters to provide additional granularity where required. Energy generated on the University's site from renewables is also metered. The majority of metered electricity and gas is now automated data and supported by manual readings, however some meters rely solely on manual readings. This is particularly prevalent with the University's steam supplies at the hospital's site (Cambridge Biomedical Campus).

Manual meter readings are requested by E&E on at least a quarterly basis to the Facilities Management (FM) team, with additional ad-hoc meeting also requested on occasion. Non-AMR solar PV readings are either requested of the responsible building manager (in most cases twice per year) or included in the FM readings. Members of E&E will take photographic readings of all visible meters when attending plant rooms and sites, for update and verification.

Data for biomass and oil consumption are reliant on records of the delivery of these fuels to recipient sites/buildings. Delivery notes are used to validate invoicing which is fed into the energy management software, Systems-Link.

Data is captured for energy in three formats within SystemsLink, namely invoice data (billing records), direct data (manual readings) and profile data (automated readings). Preference is generally made towards profile data which can then support accurate billing. When producing the SystemsLink report the best of data preference used is Invoice-Profile-Direct, this is because AMR related invoices are underpinned by the (preferred) profile data and it addresses

a nuance in the SystemsLink software where sometimes the absence of profile data can be misinterpreted as zero consumption. The best of data report is reviewed manually line by line to check for these discrepancies, check underlying data and select the most appropriate figure for a given month.

All electricity and gas data is collected as kWh units. For older gas meters kWh our conversions are provided by the supplier within their invoices.

For biomass and oil, delivery notes are generally detailed in metric tonnes and litres respectively, therefore a conversion factor is applied calculate the respective kWh to provide a common energy unit with other sources. These conversion factors are sometimes displayed on the invoice for biomass, however in their absence BEIS GHG conversion factors for company reporting are used to derive the appropriate factor<sup>5</sup>. As deliveries of these fuels is intermittent the delivery volume is apportioned to the time period since the previous delivery.

Steam supplies are metered in lbs/steam or m<sup>3</sup> steam and invoiced in lbs. A conversion factor is used to derive the associate kWh. The conversion factor is derived from a web-based engineering calculations tool<sup>6</sup>.

The figures relating to the consumption of each fuel type are then converted in to carbon emissions by applying the relevant carbon conversion factor, and the resulting figures are summed, together with emissions from fuel used in University-owned vehicles (see above), to give our total scope 1 and 2 carbon emissions figures.

#### **Assumptions made or limitations of the data:**

Where there is an absence of automated metering, there is a limitation on the accuracy of the data for a specific time period as consumption will be evenly apportioned across the days/months between two manual readings.

On occasion where suppliers or facilities and maintenance operatives are unable to attend meters regularly, there may be a gap or absence of manual meter reading data for some supplies (including some generation assets). In this circumstance, and in the absence of any other supporting data, the previous years reported consumption/generation figure will be applied as an estimated figure.

#### Water

**Definition:** Water is defined as the annual consumption of water as a result of the University's activities in buildings over which the University has operational control.

#### **Relevant KPIs:**

- Total water consumption

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<sup>5</sup> <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2019>

<sup>6</sup><https://www.abraxasenergy.com/energy-resources/toolbox/conversion-calculators/power/>

- Total water consumption per staff and student
- Carbon emissions from water use
- Carbon emissions from water use per staff and student

**Unit:** Cubic metres (M<sup>3</sup>)

**Method:** Water consumption data is currently reliant on readings taken by the supplier and by the Facilities Management (FM) team in some circumstances. Limited data is available from automated sub-meters in some newer buildings. The University therefore uses billing/invoice data to record consumption data. Data is input into SystemLink as with energy above, however there is a higher reliance on invoice and direct data formats for the purpose of reporting performance.

The water consumption data is used to calculate carbon emissions from water use as follows:

- The amount of water used is converted into emissions by applying the water supply carbon conversion factor from the set published by government.
- Our carbon figure also needs to take account of the emissions caused by the disposal and treatment of our wastewater. Our wastewater is not metered therefore we estimate it as 90% of the amount of water we have used. This is based on the calculations made by the University's wastewater services provider. We then convert this figure into carbon emissions by applying the water treatment carbon conversion factors.
- We sum both figures to calculate total emissions from water use.

**Assumptions made or limitations of the data:** A lack of automated readings means a higher degree of estimated billing takes place this can either inflate or underestimate the consumption at particular sites.

As with Energy above, in the absence of sufficient meter readings or invoices to cover the entire reporting period, an estimate of annual water consumption is made based on the 12-month period prior to the last reading.

### Waste

**Definition:** Waste is defined as the approximate annual mass of waste arising as a result of the University's activities, including construction waste produced by contractors. The University's contractors and suppliers of services provide waste mass equivalents for the waste they remove from University premises and projects.

**Scope:** For the most part, the scope of our waste figures aligns with the Operational Control approach. Where it is possible to disaggregate the data, buildings that form part of the University's commercial property portfolio are excluded from the figures. However, in some cases, commercial spaces are integrated within, or share collections with, University buildings or University activities, in which case the waste arising from these spaces is included in the figures.

**Relevant KPIs:**



- Waste sent to landfill
- Waste mass generated per FTE staff and student
- Percentage of waste generated that is recycled or composted

**Unit:** Metric tonnes

**Method:** Data on waste is collected from a number of internal and external sources. Each year, contractors and suppliers are contacted to request data on waste collected from the University, divided by end destination/treatment method. Figures are collected for construction waste and for operational waste. For construction waste, only 'major' projects are included (those classed as 'Major' under the University system of governance) in the reporting.

Totals are produced for each category as follows:

- Recycled - the annual mass of waste (tonnes) sent for recycling
- Incineration - the annual mass of incinerated waste (tonnes)
- Composting - the annual mass of waste (tonnes) that is composted
- Anaerobic digestion - the annual mass of waste (tonnes) that is sent for anaerobic digestion
- Landfill - the annual mass of waste (tonnes) sent to landfill
- Energy - the annual mass of waste (tonnes) that is used to create energy e.g. used for biomass boilers or combined heat and power. Exclude waste that is incinerated with no energy recovery
- Other - other methods of disposal offsite. This may include mechanical biological treatment and offsite autoclave, as well as 'other reuse', such as refurbishment for re-sale
- Hazardous – waste which is disposed of via specialist hazardous treatment methods.

Using the above data, three KPIs are produced:

- Waste sent to landfill (tonnes). This is the total amount of the 'Landfill' category outlined above, for both operational and construction waste.
- Waste mass generated per FTE staff and student (tonnes/FTE). This is the total of all waste categories excluding hazardous, divided by the total Full Time Equivalent number of staff and students.
- Percentage of waste generated that is recycled or composted (construction and non-construction waste) (%). This is the total sum of the 'recycled' and 'composting' categories as a proportion of the total amount of waste (excluding hazardous waste).

The waste figures are also used to calculate carbon emissions from waste, which forms part of our total scope 3 figure, as follows:

- The waste figures are categorised according to both the type of material (paper/cardboard, plastic, metal, food and green waste etc) and how the waste is processed (recycled, composted, digested anaerobically, landfill, etc).
- For each category of material versus processing method (for example, paper/cardboard recycled, paper/cardboard landfill, etc) the relevant carbon conversion factor is applied.

- It should be noted that the government published carbon conversion factors do not cover certain types of hazardous waste, for example inedible oils, solvents, clinical waste, therefore these waste streams are not included in our carbon figures.

**Assumptions made or limitations of the data:** Data used is provided by the University's contractors and suppliers of services, and while checks are made on this, the accuracy of externally provided data cannot be guaranteed. Some data is provided in volume rather than mass, in which case standard conversion factors (WRAP waste volume to mass conversion factors) [JC4] [CP5] [JC6] [PL7] are used to convert these to weights using the most appropriate or relevant available factor. End destinations of waste are based on categories reported by suppliers, however no guarantee can be made of the precise definition of end destinations of waste disposal. There may be some waste contractors being used at a local (departmental) level on a small scale within the University, data from these are not routinely captured. Some on-site disposal or reuse of waste, for instance small scale composting and mulching, may occur across the University and is not recorded. While the reporting period is from 1 August to 31 July each year, some raw data is provided which accounts for periods which do not align precisely to this reporting window, in which case the data is factored proportionally to take account of the average likely waste produced inside and outside of the reporting period (for instance for 6 in-scope months from a total 12 months of data, the total figure is divided by 2).

#### Display Energy Certificates

**Definition:** Display Energy Certificates (DECs) provide an assessment of the energy performance of an individual building modelled against a nominal benchmark building of the same size, construction and approximate operational use. It is a legal requirement that all publicly accessible buildings over 250m<sup>2</sup> commission a DEC assessment and publicly display their performance certificate within the premises. Buildings over 1000m<sup>2</sup> require an annual certificate to be generated whilst smaller buildings certificates are valid for ten years.

**Scope:** University Buildings with a floor-space greater than 250m<sup>2</sup> which are at least in part accessible to the general public. The University has adopted the approach the any building where key card access is required upon entry do not need a DEC as they are not accessible by the general public.

#### **Relevant KPIs:**

- The percentage of buildings with a Display Energy Certificate that have a minimum rating of 'D'.

**Unit:** A score from 0-130 and A-G grading for each individual building

**Method:** The University contracts a qualified DEC assessor to conduct the assessment on an annual basis. The DEC assessor uses energy data related to the buildings feed to standardised software model which applies the Government's methodology for the production of Operational Ratings, Display Energy Certificates and Advisory Reports.

**Assumptions made or limitations of the data:** The certificate's accuracy (of reflection of performance) is limited by data granularity and the applied benchmark within the assessment

model. Not all buildings at the University have their own metered supply and therefore in some cases floor-space apportionments of electricity and gas supplies to multiple buildings must be applied. As a research-intensive University, many of the buildings do not fall into conventional benchmark categories to compare energy performance against a wider cohort.

## BREEAM

**Definition:** BREEAM Environmental Assessment rating of ‘Excellent’ or higher achieved during the reporting period. BREEAM is a widely accepted standard for assessing the holistic environmental impact of buildings in terms of health and wellbeing, energy, water, materials, waste, pollution and biodiversity.

The wording of the KPI permits an assessment methodology “equivalent” to BREEAM Excellent. This allows flexibility to trial alternative standards. An alternative may also be appropriate where an unusual building typology is proposed that does not fit neatly within the standardisation imposed by BREEAM. Equivalence in this case shall be subject to approval by the Estates Division Project Quality Team.

**Scope:** The KPI applies to new build projects classed as ‘Major’ under the University system of governance. This aligns with the capital projects process whereby ‘Major Projects’ are subject to review by the University Buildings Committee. A ‘Major Project’ is currently defined by the Planning & Resources Allocations Office as projects greater than £2m (see <https://www.prao.admin.cam.ac.uk/capital-planning>). A ‘Major Projects Portfolio Report’ listing all projects in this category is issued at least twice each term and this is the document used to identify new buildings that are subject to the KPI. Building refurbishments and infrastructure projects are also listed in the ‘Major Projects Portfolio Report’, but are not subject to this KPI.

### **Relevant KPIs:**

- The percentage of new buildings that are certified at least BREEAM Excellent or equivalent.

**Unit:** Individual new building classed as a Major Project.

**Method:** Award of BREEAM Final Certificate (or for the agreed equivalent once compliance has been confirmed by a nominated sustainability champion within 1 year of completion). The Sustainability Advisor will maintain a tracker and use this to record if this has been received and the location of the certification. The date of the certification shall determine the reporting year (not the completion date of the building).

**Assumptions made or limitations of the data:** For unusual building functions, or highly constrained sites, ‘Excellent’ certification may not be possible. In these instances the building will be reported as non-compliant with the KPI, however a commentary may be added where it is appropriate to recognise that best endeavours have been applied in maximising the BREEAM rating, together with an explanation of why certain credits were not achievable.

## Awards for Sustainable Construction and Design

**Definition:** an award specifically relating to environmental sustainability given by a reputable body external to the University during the reporting year. Awarding bodies might include the RIBA, CIBSE, IStructE, Cambridge Design and Construction Awards, BREEAM, Passivhaus Institute and other similar reputable bodies that use a jury of professionals as part of the awarding process. The award title and awarding body will be recorded for transparency.

**Scope:** Major and minor construction projects, including refurbishments.

### **Relevant KPIs:**

- External awards for sustainable construction/design.

**Unit:** Number of awards received.

**Method:** The Sustainability Advisor will maintain a tracker and use this to record if an award has been received and the location of the award (typically a link to the awarding body's website). The date of the award announcement shall determine the reporting year.

**Assumptions made or limitations of the data:** There is no methodological process that guarantees that the University will be aware of all awards made as the decision to enter an award is generally taken by third parties such as designers and contractors.

## Staff Commuting

**Definition:** The staff commuting mode share is the percentage of respondents travelling by each transport mode during a neutral week in October (Monday-Friday).

**Scope:** Staff employed by the University working on a University site or remotely and contractors or volunteers based at a University site for 2 days or more per week. This excludes staff employed by CA, CUP and the Colleges. Staff who were on annual leave during the survey week can still complete the survey and note that they did not travel.

### **Relevant KPIs:**

- Percentage modal split for commuting by different modes.

**Unit:** Percent (%).

**Method:** This data is collected through an annual staff travel survey conducted online (via Survey Monkey). The mode share is calculated by calculating respondents' daily travel modes during the week (Monday to Friday), which is the mode the respondent used to travel the greatest distance each day. The weekday travel mode is then calculated by taking the most common daily mode for each respondent. If there is no clearly identifiable mode (e.g. if someone walks for 2 days and cycles for 2 days), the respondent is classed according to the following order: Walk, Cycle, Universal Bus, Bus, Train, Taxi, Car – Driver, Car Share – Driver, Car Share – Passenger, Motorcycle/Scooter, Worked from home.

The staff commuting figures are also used to calculate carbon emissions from staff commuting, which forms part of our total scope 3 figure, as follows:

- Data for distance travelled to work is captured by the annual staff travel survey. These figures are then averaged for each travel mode, for weekdays and weekends. These weekday and weekend averages are added together in proportion, then multiplied by the number of weeks in the year.
- These figures are then multiplied by the number of staff, with the mode share applied (developed for the KPI already outlined). This results in a total, annual commute distance figure for each travel mode. These distance figures are each converted to carbon by applying the relevant carbon conversion factor, and the results are summed to give total carbon emissions from staff commuting.

**Assumptions made or limitations of the data:** Limitations to this data include that the mode share is based on the main mode of transport Monday-Friday, rather than a weighted average which will skew the figures. In addition, only Monday-Friday commuting patterns are considered and the questionnaire used to obtain this data is complex and has scope for human error whilst being completed. 'Working from home' is reported under 'other' for the purposes of the annual report.

## **Green Impact**

**Definition:** The Green Impact KPI measures the number of Green Impact awards won by teams taking part in the University of Cambridge's Green Impact initiative. Green Impact is an international initiative run by SOS-UK (Students Organising for Sustainability – UK) which supports staff and students in improving the environmental performance of their places of work and study. At the University of Cambridge the scheme is tailored to the specific context of the organisation, including awards aimed at laboratories and the Cambridge Colleges. Prizes are available for participants at the end of each academic year, based on the number of sustainability-themed 'actions' that they complete. The KPI measures the number of awards presented at the end of each year, usually in June.

**Scope:** The Green Impact initiative is open to all parts of the University of Cambridge, including those within the Operational Control scope, and those outside of it (including the Colleges, Cambridge Assessment and Cambridge University Press). Individual Green Impact teams each determine their own 'scope', typically depending on the areas that their team represents, and these can include buildings, departments, institutes or laboratories, as well as the Cambridge Colleges.

### **Relevant KPIs:**

- Number of institutions participating in Green Impact.

**Unit:** The KPI measures the number of awards.

**Method:** At the end of each Green Impact year, each team receives an audit facilitated by SOS-UK and the University's Environment and Energy Section, conducted by trained student auditors. During the audit process, each team's evidence is verified to confirm they have

achieved a given award level. Once this is confirmed, an award for each successful team is ordered from a third party supplier. The list of winners is published on the Environment and Energy Section website.

**Assumptions made or limitations of the data:** In some cases, the number of awards will be different from the number of teams as some teams will enter for two awards (for instance a conventional award and a 'Labs' award), while some teams may not complete their submission or it will not meet the required standards at audit, and therefore will not be presented with an award. 'Special' awards, which are a means of extra recognition for individuals and actions based on a nomination and judging process, are not included in the figures as these awards are separate from the core Green Impact process and are not subject to an audit process.

### **Environment and Energy Coordinators**

**Definition:** This KPI measures the number of Environment and Energy Coordinators (EECs). Environment and Energy Coordinators are staff volunteers who provide a local focus point for environmental and energy issues in their department or institution. Environment and Energy Coordinators are expected to offer advice and support to staff and students, feedback issues to the Environment and Energy Section and help with the management of any environmental initiatives or projects in their workplace. EECs are part of a network who share ideas, practices and information from across the University. Regular networking events as well as training are run for the EECs network. A 'role description' is available for EECs.

**Scope:** The EECs network is open to all parts of the University of Cambridge including Cambridge Assessment, Cambridge University Press and the Colleges. EECs can represent any part of the University, including a whole department, institution, or a specific building or buildings. Some larger departments and buildings can have two or more representatives who share the EEC role.

### **Relevant KPIs:**

- Number of members of the Environment and Energy Coordinator Network.

**Unit:** Number of individuals.

**Method:** The Environment and Energy section maintain a register of Environment and Energy Coordinators. When a new EEC joins the network they receive a short induction, at which point they are then added to the register, as well as relevant mailing lists. When EECs leave their role or the University they are removed from the register. In order to collect the data for this KPI, a sum total of the number of EECs on the register is taken immediately after the end of the reporting period (1 August).

**Assumptions made or limitations of the data:** The Environment and Energy section rely on EECs providing information on their status, for instance whether they are leaving the University, and therefore there may be cases where departed EECs display on the register. As the EEC role is voluntary and EECs sit within a range of roles with different types and levels of responsibility, involvement of EECs is varied and there is no guarantee of whether an EEC is 'active' at a given time.

### **Prior year adjustments**

In the event that errors are found in prior years' data, an assessment will be made as to the extent which this affects the prior year's data, and the amount of work required to rectify it. Should the error be relatively minor (changing the totals of any KPI by less than 1%), or the work required to update the prior data be too extensive, then no change will be made. However future reports will include a note outlining the error identified, and an estimate of the likely effect this has on the prior year(s) totals.

If the error is identified as major (changing any given KPI by more than 1%) and the work to update the data is considered reasonable, a change will be made to the totals and the new figure(s) will be highlighted in future reports as part of a summary of prior years' data, along with a summary of the change made.