

# **Greenhouse Gas Protocol (Dual Reporting) Report for The University of Edinburgh**

**Assessment Period: August 2017 - July 2018**

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# Assessment Details

## Consolidation Approach

Operational Control

## Organisational Boundaries

Operations of The University of Edinburgh

### Included

- The University of Edinburgh
- Academic estate
- Accommodation

## Operational Boundary

- Air travel
- Bicycle
- Bus and coach
- Cars
- Composted waste
- Composted waste (Defra factors)
- Electricity
- Hazardous waste
- Hotel night stays
- Incinerated waste
- Incinerated waste (Defra factors)
- Landfilled waste
- Motorcycle
- Natural gas
- On foot
- Other fuel(s)
- Other fuels, UK (gross CV)
- Rail
- Rail (train, tram, light rail, underground)
- Recycled plastic
- Recycled waste
- Recycled waste (Defra factors)
- Refrigerant gas loss and other fugitive emissions
- Residential waste mass anaerobic digestion (ERWMADI)
- Residential waste mass used to create energy (ERWMENE)
- Taxi
- Water supply
- Water treatment

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# Table of Contents

Introduction	4
Data Quality and Availability	5
Assessment Summary for The University of Edinburgh	7
Detailed Results	10
Detailed Summary by WBCSD/WRI Scope	10
Location-Based methodology	10
Market-Based methodology	11
Summary by Company Unit	13
Location-Based methodology	13
Market-Based methodology	14
Annual Activity Data	15
References	18
Assessment Summary for Academic estate	19
Assessment Summary for Accommodation	22

# Introduction

A greenhouse gas (GHG) emissions assessment quantifies the total greenhouse gases produced directly and indirectly from a business or organisation's activities. Also known as a carbon footprint, it is an essential tool, providing your business with a basis for understanding and managing its climate change impacts.

A GHG assessment quantifies all seven Kyoto greenhouse gases where applicable and is measured in units of carbon dioxide equivalence, or CO<sub>2</sub>e<sup>1</sup>. The seven Kyoto gases are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), nitrogen trifluoride (NF<sub>3</sub>), sulphur hexafluoride (SF<sub>6</sub>) and perfluorocarbons (PFCs). The global warming potential (GWP) of each gas is illustrated in the Table 1.

**Table 1. GWP of Kyoto Gases (IPCC 2007)**

Greenhouse Gas	GWP
Carbon dioxide (CO <sub>2</sub> )	1
Methane (CH <sub>4</sub> )	25
Nitrous oxide (N <sub>2</sub> O)	298
Hydrofluorocarbons (HFCs)	124 - 14,800
Perfluorocarbons (PFCs)	7,390 - 12,200
Nitrogen trifluoride (NF <sub>3</sub> )	17,200
Sulphur hexafluoride (SF <sub>6</sub> )	22,800

This assessment has been carried out in accordance with the World Business Council for Sustainable Development and World Resources Institute's (WBCSD/WRI) Greenhouse Gas Protocol; a Corporate Accounting and Reporting Standard, including the GHG Protocol Scope 2 Guidance. This protocol is considered current best practice for corporate or organisational greenhouse gas emissions reporting. GHG emissions have been reported by the three WBCSD/WRI Scopes.

Scope 1 includes direct GHG emissions from sources that are owned or controlled by the company such as natural gas combustion and company owned vehicles.

Scope 2 accounts for GHG emissions from the generation of purchased electricity, heat and steam generated off-site. As the subject of this assessment operates in markets which offer contractual instruments with product or supplier-specific data, scope 2 emissions are reported using both the location-based method and the market-based method. The location-based method applies average emission factors that correspond to the grid where consumption occurs, whereas the market-based method applies emission factors that correspond to energy purchased (or not purchased) through contractual instruments. Contractual instruments include energy attribute certificates, direct energy contracts, and supplier specific emission rates. The subject of this assessment has ensured that any contractual instruments used in the market-based method have met the Scope 2 Quality Criteria, as defined in the Guidance. Where contractual instruments do not meet the Quality Criteria, or where contractual instruments were not purchased, market-based scope 2 emissions have been calculated using residual mix emission factors. Where residual mix emission factors are not available, market-based scope 2 emissions have been calculated using default location grid-average emission factors, per the Protocol hierarchy. This may result in double counting between electricity consumers, as an adjusted emission factor taking into account voluntary purchases of electricity with specific attributes was not available.

Scope 3 includes all other indirect emissions such as waste disposal, business travel and staff commuting. Reporting of these activities is optional under the WBCSD/WRI GHG Protocol, but as they can contribute a significant portion of overall emissions Ecometrica recommends they are reported where applicable.

A GHG assessment is an essential tool in the process of monitoring and reducing an organisation's climate change impact as it allows reduction targets to be set and action plans formulated. GHG assessment results can also allow organisations to be transparent about their climate change impacts through reporting of GHG emissions to customers, shareholders, employees and other stakeholders. Regular assessments allow clients to track their progress in achieving reductions over time and provide evidence to support green claims in external marketing initiatives such as product labelling or CSR reporting. Ecometrica GHG assessments are designed to be transparent, consistent and repeatable over time.

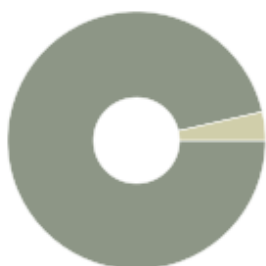
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<sup>1</sup> Carbon dioxide equivalent or CO<sub>2</sub>e is a term for describing different greenhouse gases in a common unit. For any quantity and type of greenhouse gas, CO<sub>2</sub>e signifies the amount of CO<sub>2</sub> which would have the equivalent global warming impact.

# Data Quality and Availability

In order to provide the most accurate estimate of an organisation's GHG emissions, primary (actual) data should be used where it is available, up to date and geographically relevant. Secondary data in the form of estimates, extrapolations and industry averages may be used when primary data is not available. Table 2 details the quality of data submitted for this assessment with the key assumptions used stated below.

## Data Quality Overview



Location-based Accuracy Overview		
	tCO <sub>2</sub> e/year	%
Actual	95,130	96.4
Estimated	3,523	3.57
<b>Total</b>	<b>98,653</b>	<b>100</b>



Market-based Accuracy Overview		
	tCO <sub>2</sub> e/year	%
Actual	64,184	94.8
Estimated	3,523	5.2
<b>Total</b>	<b>67,707</b>	<b>100</b>

**Table 2. Data Quality and Availability**

Source of emissions	Data quality
<b>Premises</b>	
Electricity	Actual
Fuel oil	Unknown
Natural gas	Actual
Other fuel(s)	N/A
Other fuels, UK (gross CV)	Actual
Refrigerant gas loss and other fugitive emissions	Actual
Water supply	Actual
Water treatment	Actual
<b>Company owned vehicles</b>	
Other fuel(s)	Actual
<b>Business Travel</b>	
Air travel	Actual
Bus and coach	Actual
Cars	Actual
Hotel night stays	Mixed
Rail (train, tram, light rail, underground)	Actual

Taxi	Actual
<b>Staff Commuting</b>	
Bicycle	Actual
Bus and coach	Actual
Cars	Actual
Estimated emissions	N/A
Motorcycle	Actual
On foot	Actual
Rail	Actual
Taxi	Actual
<b>Student Commuting</b>	
Bus and coach	Actual
Cars	Actual
Motorcycle	Actual
On foot	N/A
Rail	Actual
Taxi	Actual
<b>Contractor Vehicles</b>	
Other fuel(s)	Actual
<b>Waste</b>	
Composted waste	Estimated
Composted waste (Defra factors)	Estimated
Hazardous waste	Estimated
Incinerated waste	Estimated
Incinerated waste (Defra factors)	Estimated
Landfilled waste	Estimated
Recycled glass	N/A
Recycled metal	N/A
Recycled paper & board	N/A
Recycled plastic	Actual
Recycled waste	Mixed
Recycled waste (Defra factors)	Estimated
Residential waste mass anaerobic digestion (ERWMADI)	Estimated
Residential waste mass used to create energy (ERWMENE)	Estimated

# Assessment Summary for The University of Edinburgh

## Gross Overall Emissions (location-based): 98,653 tCO<sub>2</sub>e

## Gross Overall Emissions (market-based): 67,707 tCO<sub>2</sub>e

### Key Performance Indicators

Absolute GHG emissions will vary over time and often correspond to the expansion or contraction of an organisation. It is useful therefore to use reporting metrics that take these effects into account and monitor relative GHG emissions intensity. A common emissions intensity metric is tonnes of CO<sub>2</sub>e per full time equivalent. This has been calculated, along with other relevant metrics, in the table below:

Data	KPI
984,400 Thousand GBP Revenue (£)	0.1 tCO <sub>2</sub> e per Thousand GBP Revenue (£) (Location-Based)
41,312 Number of students	2.39 tCO <sub>2</sub> e per Student (Location-Based)
929,000 Floor area (square metres)	0.106 tCO <sub>2</sub> e per square metre (Location-Based)
10,454 Full Time Equivalent Employees	9.44 tCO <sub>2</sub> e per Full Time Equivalent Employee (Location-Based)
984,400 Thousand GBP Revenue (£)	0.0688 tCO <sub>2</sub> e per Thousand GBP Revenue (£) (Market-Based)
41,312 Number of students	1.64 tCO <sub>2</sub> e per Student (Market-Based)
929,000 Floor area (square metres)	0.0729 tCO <sub>2</sub> e per square metre (Market-Based)
10,454 Full Time Equivalent Employees	6.48 tCO <sub>2</sub> e per Full Time Equivalent Employee (Market-Based)

### Summary by Activity (Location-Based, tCO<sub>2</sub>e)



By Activity	tCO <sub>2</sub> e/year	%
Premises	67,334	68.3
Company owned vehicles	315	0.319
Business Travel	18,281	18.5
Staff Commuting	7,223	7.32
Student Commuting	5,265	5.34
Contractor Vehicles	57.1	0.0579
Waste	178	0.181
<b>Total</b>	<b>98,653</b>	<b>100</b>

### Summary by Activity (Market-Based, tCO<sub>2</sub>e)



By Activity	tCO <sub>2</sub> e/year	%
Premises	36,388	53.7
Company owned vehicles	315	0.465
Business Travel	18,281	27
Staff Commuting	7,223	10.7
Student Commuting	5,265	7.78
Contractor Vehicles	57.1	0.0844
Waste	178	0.263
<b>Total</b>	<b>67,707</b>	<b>100</b>

Summary by WBCSD/WRI Scope (Location-Based, tCO<sub>2</sub>e)



Scope	tCO <sub>2</sub> e/year	%
Scope 1	36,223	36.7
Scope 2	28,515	28.9
Scope 3	33,915	34.4
<b>Total</b>	<b>98,653</b>	<b>100</b>

Summary by WBCSD/WRI Scope (Market-Based, tCO<sub>2</sub>e)



Scope	tCO <sub>2</sub> e/year	%
Scope 1	36,223	53.5
Scope 3	31,485	46.5
<b>Total</b>	<b>67,707</b>	<b>100</b>

Summary by Greenhouse Gas

Greenhouse Gas	GWP	tGHG/year (Location-Based)	tCO <sub>2</sub> e/year (Location-Based)	tGHG/year (Market-Based)	tCO <sub>2</sub> e/year (Market-Based)
CO <sub>2</sub>	1	84,771	84,771	54,066	54,066
CH <sub>4</sub>	25	5.03	126	2.13	53.3
N <sub>2</sub> O	298	0.953	284	0.392	117
HFC-134a	1430	0.107	153	0.107	153
HFC-143a	4470	0.004	17.9	0.004	17.9
HFC-407c	1773.85	0.0685	122	0.0685	122
HFC-410a	2087.5	0.0155	32.3	0.0155	32.3
CO <sub>2</sub> e	1	13,147	13,147	13,147	13,147
<b>Total</b>			<b>98,653</b>		<b>67,707</b>



# Summary of Scope 2 Market-Based Method for The University of Edinburgh

## Energy Consumed and Emissions By Factor Type In Scope 2 Market-Based Method

Scope 2 Market-Based Energy

Scope 2 Market-Based Emissions



No Data Available

Emission Factor Type	Energy		Market-Based Emissions	
	MWh	%	tCO <sub>2</sub> e	%
Client-supplied market-based instrument	100,734	100	0	0
Residual mix factors	0	0	0	0
Default location-based factors	0	0	0	0
<b>Total</b>	<b>100,734</b>	<b>100</b>	<b>0</b>	<b>0</b>

# Detailed Results

## Detailed Summary by WBCSD/WRI Scope

### Location-Based methodology

Source of Emissions	tCO <sub>2</sub> /yr	tCH <sub>4</sub> /yr	tN <sub>2</sub> O/yr	Total Emissions (tCO <sub>2</sub> e/yr)	%
<b>Scope 1 Total</b>	<b>35,822</b>	<b>1.86</b>	<b>0.0982</b>	<b>36,223</b>	<b>36.7%</b>
Company owned vehicles Total	305	0.00749	0.0315	315	0.319%
Other fuel(s)	305	0.00749	0.0315	315	0.319%
Premises Total	35,517	1.85	0.0666	35,908	36.4%
Natural gas	35,447	1.85	0.0648	35,513	36%
Other fuels, UK (gross CV)	69.5	0.00114	0.00183	70.1	0.0711%
Refrigerant gas loss and other fugitive emissions	0	0	0	325	0.329%
<b>Scope 2 Total</b>	<b>28,294</b>	<b>2.66</b>	<b>0.517</b>	<b>28,515</b>	<b>28.9%</b>
Premises Total	28,294	2.66	0.517	28,515	28.9%
Electricity	28,294	2.66	0.517	28,515	28.9%
<b>Scope 3 Total</b>	<b>20,655</b>	<b>0.511</b>	<b>0.338</b>	<b>33,915</b>	<b>34.4%</b>
Business Travel Total	18,191	0.267	0.278	18,281	18.5%
Air travel	13,719	0.0496	0.229	13,789	14%
Bus and coach	62	8.53e-4	0.00171	62.5	0.0634%
Cars	320	0.0121	0.00676	322	0.327%
Hotel night stays	3,651	0.179	0.0288	3,664	3.71%
Rail (train, tram, light rail, underground)	350	0.0256	0.00885	353	0.358%
Taxi	88.5	1.66e-4	0.00258	89.3	0.0905%
Contractor Vehicles Total	52.4	0.00229	0.0157	57.1	0.0579%
Other fuel(s)	52.4	0.00229	0.0157	57.1	0.0579%
Premises Total	2,412	0.242	0.0439	2,911	2.95%
Electricity: Electricity - transmission & distribution losses	2,412	0.242	0.0439	2,431	2.46%
Water supply	0	0	0	175	0.177%
Water treatment	0	0	0	306	0.31%
Staff Commuting Total	0	0	0	7,223	7.32%
Bus and coach	0	0	0	1,610	1.63%
Cars	0	0	0	4,767	4.83%
Motorcycle	0	0	0	85	0.0862%
On foot	0	0	0	0	0%
Rail	0	0	0	750	0.76%
Taxi	0	0	0	11.3	0.0115%
Student Commuting Total	0	0	0	5,265	5.34%
Bus and coach	0	0	0	2,748	2.79%
Cars	0	0	0	1,375	1.39%

Motorcycle	0	0	0	4.2	0.00426%
Rail	0	0	0	1,106	1.12%
Taxi	0	0	0	31.7	0.0321%
<b>Waste Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>178</b>	<b>0.181%</b>
Composted waste	0	0	0	3.6	0.00365%
Composted waste (Defra factors)	0	0	0	1.85	0.00187%
Hazardous waste	0	0	0	4.94	0.00501%
Incinerated waste	0	0	0	23.4	0.0237%
Incinerated waste (Defra factors)	0	0	0	0.709	7.19e-4%
Landfilled waste	0	0	0	102	0.104%
Recycled plastic	0	0	0	0.0928	9.41e-5%
Recycled waste	0	0	0	19.4	0.0196%
Recycled waste (Defra factors)	0	0	0	14.9	0.0151%
Residential waste mass anaerobic digestion (ERWMADI)	0	0	0	1.63	0.00165%
Residential waste mass used to create energy (ERWMENE)	0	0	0	5.48	0.00556%
<b>Total</b>	<b>84,771</b>	<b>5.03</b>	<b>0.953</b>	<b>98,653</b>	<b>100%</b>

### Market-Based methodology

Source of Emissions	tCO <sub>2</sub> /yr	tCH <sub>4</sub> /yr	tN <sub>2</sub> O/yr	Total Emissions (tCO <sub>2</sub> e/yr)	%
<b>Scope 1 Total</b>	<b>35,822</b>	<b>1.86</b>	<b>0.0982</b>	<b>36,223</b>	<b>53.5%</b>
Company owned vehicles Total	305	0.00749	0.0315	315	0.465%
Other fuel(s)	305	0.00749	0.0315	315	0.465%
Premises Total	35,517	1.85	0.0666	35,908	53%
Natural gas	35,447	1.85	0.0648	35,513	52.5%
Other fuels, UK (gross CV)	69.5	0.00114	0.00183	70.1	0.104%
Refrigerant gas loss and other fugitive emissions	0	0	0	325	0.48%
<b>Scope 2 Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0%</b>
Premises Total	0	0	0	0	0%
Electricity	0	0	0	0	0%
<b>Scope 3 Total</b>	<b>18,244</b>	<b>0.269</b>	<b>0.294</b>	<b>31,485</b>	<b>46.5%</b>
Business Travel Total	18,191	0.267	0.278	18,281	27%
Air travel	13,719	0.0496	0.229	13,789	20.4%
Bus and coach	62	8.53e-4	0.00171	62.5	0.0923%
Cars	320	0.0121	0.00676	322	0.476%
Hotel night stays	3,651	0.179	0.0288	3,664	5.41%
Rail (train, tram, light rail, underground)	350	0.0256	0.00885	353	0.522%
Taxi	88.5	1.66e-4	0.00258	89.3	0.132%
Contractor Vehicles Total	52.4	0.00229	0.0157	57.1	0.0844%

Other fuel(s)	52.4	0.00229	0.0157	57.1	0.0844%
<b>Premises Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>480</b>	<b>0.71%</b>
Electricity: MBI Upstream Emissions	0	0	0	0	0%
Water supply	0	0	0	175	0.258%
Water treatment	0	0	0	306	0.451%
<b>Staff Commuting Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7,223</b>	<b>10.7%</b>
Bus and coach	0	0	0	1,610	2.38%
Cars	0	0	0	4,767	7.04%
Motorcycle	0	0	0	85	0.126%
On foot	0	0	0	0	0%
Rail	0	0	0	750	1.11%
Taxi	0	0	0	11.3	0.0167%
<b>Student Commuting Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5,265</b>	<b>7.78%</b>
Bus and coach	0	0	0	2,748	4.06%
Cars	0	0	0	1,375	2.03%
Motorcycle	0	0	0	4.2	0.0062%
Rail	0	0	0	1,106	1.63%
Taxi	0	0	0	31.7	0.0468%
<b>Waste Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>178</b>	<b>0.263%</b>
Composted waste	0	0	0	3.6	0.00532%
Composted waste (Defra factors)	0	0	0	1.85	0.00273%
Hazardous waste	0	0	0	4.94	0.00729%
Incinerated waste	0	0	0	23.4	0.0345%
Incinerated waste (Defra factors)	0	0	0	0.709	0.00105%
Landfilled waste	0	0	0	102	0.151%
Recycled plastic	0	0	0	0.0928	1.37e-4%
Recycled waste	0	0	0	19.4	0.0286%
Recycled waste (Defra factors)	0	0	0	14.9	0.0221%
Residential waste mass anaerobic digestion (ERWMADI)	0	0	0	1.63	0.00241%
Residential waste mass used to create energy (ERWMENE)	0	0	0	5.48	0.0081%
<b>Total</b>	<b>54,066</b>	<b>2.13</b>	<b>0.392</b>	<b>67,707</b>	<b>100%</b>

# Summary by Company Unit

## Location-Based methodology

Assessment	August 2016 - July 2017		August 2017 - July 2018	
Company Unit	Total Emissions (tCO <sub>2</sub> e)	Emissions per FTE (tCO <sub>2</sub> e/FTE)	Total Emissions (tCO <sub>2</sub> e)	Emissions per FTE (tCO <sub>2</sub> e/FTE)
The University of Edinburgh	108,910	10.9	98,653	9.44
Academic estate	88,125	-	79,453	-
Accommodation	7,501	-	6,712	-

## Market-Based methodology

Scope 2 Market Based Emissions were only computed starting in 2016. No previous year is available for comparison.

# Annual Activity Data

Source of Emissions	Value	Unit
<b>Business Travel</b>		
Air travel		
Long-haul, average class (RFI 1.9)	16,560,531	pass.km
Long-haul, business (RFI 1.9)	2,785,516	pass.km
Long-haul, economy (RFI 1.9)	26,951,247	pass.km
Long-haul, first class (RFI 1.9)	89,859	pass.km
Long-haul, premium economy (RFI 1.9)	2,408,739	pass.km
Medium-haul, average class (RFI 1.9)	7,839,585	pass.km
Medium-haul, business (RFI 1.9)	224,736	pass.km
Medium-haul, economy (RFI 1.9)	7,101,573	pass.km
Short-haul (RFI 1.9)	4,758,788	pass.km
Bus and coach		
Coach	46,207	pass.km
Local bus	509,979	pass.km
Cars		
Average car (unknown fuel)	1,783,777	km
Hotel night stays		
Hotel night stays	116,359	night
Rail (train, tram, light rail, underground)		
Eurostar	8,769	pass.km
Train, national	7,987,623	pass.km
Taxi		
Average taxi	415,507	km
<b>Company owned vehicles</b>		
Other fuel(s)		
Diesel, retail station biofuel blend	80,753	l
Gas Oil	25,993	l
Petrol	11,008	l
<b>Contractor Vehicles</b>		
Other fuel(s)		
Gas Oil	19,230	l
<b>Premises</b>		
Electricity		
Electricity consumption	100,733,772	kWh
Natural gas		
Natural gas consumption (gross CV)	193,046,435	kWh
Other fuels, UK (gross CV)		
Diesel (gross CV)	150,000	kWh
LPG (gross CV)	150,000	kWh

<b>Refrigerant gas loss and other fugitive emissions</b>		
HFC-134a emissions	107	kg
HFC-143a emissions	4	kg
R407c emissions	68.5	kg
R410a emissions	15.5	kg
<b>Water supply</b>		
Water supply	508,419	m3
<b>Water treatment</b>		
Water treatment	431,618	m3
<b>Staff Commuting</b>		
<b>Bicycle</b>		
Bicycle	3.4	mi
<b>Bus and coach</b>		
Total CO2e emissions	1,610	tonne
<b>Cars</b>		
Total CO2e emissions	4,767	tonne
<b>Motorcycle</b>		
Total CO2e emissions	85	tonne
<b>On foot</b>		
On foot	1.4	mi
<b>Rail</b>		
Total CO2e emissions	750	tonne
<b>Taxi</b>		
Total CO2e emissions	11.3	tonne
<b>Student Commuting</b>		
<b>Bus and coach</b>		
Total CO2e emissions	2,748	tonne
<b>Cars</b>		
Total CO2e emissions	1,375	tonne
<b>Motorcycle</b>		
Total CO2e emissions	4.2	tonne
<b>Rail</b>		
Total CO2e emissions	1,106	tonne
<b>Taxi</b>		
Total CO2e emissions	31.7	tonne
<b>Waste</b>		
<b>Composted waste</b>		
Composted waste, food & drink	85.3	tonne
Composted waste, garden waste	515	tonne
<b>Composted waste (Defra factors)</b>		
Composted waste, food and drink waste	308	tonne
<b>Hazardous waste</b>		



Closed loop recycling - mixed commercial and industrial waste	69.9	tonne
Combusted waste, energy recovery, mixed commercial and industrial	161	tonne
Incinerated waste		
Combusted waste, energy recovery, mixed commercial and industrial	1,092	tonne
Incinerated waste (Defra factors)		
Combusted waste, energy recovery, mixed commercial and industrial	33.8	tonne
Landfilled waste		
Mixed commercial and industrial waste, landfilled	1,024	tonne
Recycled plastic		
Open loop recycling - average plastics	4.34	tonne
Recycled waste		
Closed loop recycling - books	4.62	tonne
Closed loop recycling - glass	83.8	tonne
Closed loop recycling - mixed commercial and industrial waste	565	tonne
Closed loop recycling - mixed paper & board	117	tonne
Closed loop recycling - scrap metal	12.5	tonne
Open loop recycling - WEEE - mixed	91.6	tonne
Open loop recycling - WEEE - small	0.96	tonne
Open loop recycling - average construction material	42.2	tonne
Open loop recycling - average plastics	2.52	tonne
Open loop recycling - wood	25.8	tonne
Recycled waste (Defra factors)		
Recycled waste, mixed commercial and industrial, closed loop	711	tonne
Residential waste mass anaerobic digestion (ERWMADI)		
Municipal waste, average, anaerobic digestion	76.2	tonne
Residential waste mass used to create energy (ERWMENE)		
Combusted waste, energy recovery, municipal waste, average	256	tonne

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# Assessment Summary for Academic estate

Gross Overall Emissions (location-based): 79,453

tCO<sub>2</sub>e

Gross Overall Emissions (market-based): 51,472 tCO<sub>2</sub>e

## Summary by Activity (Location-Based, tCO<sub>2</sub>e)



By Activity	tCO <sub>2</sub> e/year	%
Premises	60,781	76.5
Company owned vehicles	282	0.355
Business Travel	18,281	23
Contractor Vehicles	57.1	0.0719
Waste	51.4	0.0646
<b>Total</b>	<b>79,453</b>	<b>100</b>

## Summary by Activity (Market-Based, tCO<sub>2</sub>e)



By Activity	tCO <sub>2</sub> e/year	%
Premises	32,801	63.7
Company owned vehicles	282	0.548
Business Travel	18,281	35.5
Contractor Vehicles	57.1	0.111
Waste	51.4	0.0998
<b>Total</b>	<b>51,472</b>	<b>100</b>

## Summary by WBCSD/WRI Scope (Location-Based, tCO<sub>2</sub>e)



Scope	tCO <sub>2</sub> e/year	%
Scope 1	32,660	41.1
Scope 2	25,782	32.5
Scope 3	21,010	26.4
<b>Total</b>	<b>79,453</b>	<b>100</b>

## Summary by WBCSD/WRI Scope (Market-Based, tCO<sub>2</sub>e)



Scope	tCO <sub>2</sub> e/year	%
Scope 1	32,660	63.5
Scope 3	18,812	36.5
<b>Total</b>	<b>51,472</b>	<b>100</b>

### Summary by Greenhouse Gas

Greenhouse Gas	GWP	tGHG/year (Location-Based)	tCO <sub>2</sub> e/year (Location-Based)	tGHG/year (Market-Based)	tCO <sub>2</sub> e/year (Market-Based)
CO <sub>2</sub>	1	78,274	78,274	50,510	50,510
CH <sub>4</sub>	25	4.57	114	1.95	48.6
N <sub>2</sub> O	298	0.892	266	0.384	115
HFC-134a	1430	0.107	153	0.107	153
HFC-143a	4470	0.004	17.9	0.004	17.9
HFC-407c	1773.85	0.0685	122	0.0685	122
HFC-410a	2087.5	0.0155	32.3	0.0155	32.3
CO <sub>2</sub> e	1	474	474	474	474
		<b>Total</b>	<b>79,453</b>		<b>51,472</b>

# Summary of Scope 2 Market-Based Method for Academic estate

## Energy Consumed and Emissions By Factor Type In Scope 2 Market-Based Method

Scope 2 Market-Based Energy

Scope 2 Market-Based Emissions



No Data Available

Emission Factor Type	Energy		Market-Based Emissions	
	MWh	%	tCO <sub>2</sub> e	%
Client-supplied market-based instrument	91,082	100	0	0
Residual mix factors	0	0	0	0
Default location-based factors	0	0	0	0
Total	91,082	100	0	0

# Assessment Summary for Accommodation

Gross Overall Emissions (location-based): 6,712 tCO<sub>2</sub>e

Gross Overall Emissions (market-based): 3,747 tCO<sub>2</sub>e

## Summary by Activity (Location-Based, tCO<sub>2</sub>e)



By Activity	tCO <sub>2</sub> e/year	%
Premises	6,552	97.6
Company owned vehicles	32.7	0.487
Waste	127	1.89
<b>Total</b>	<b>6,712</b>	<b>100</b>

## Summary by Activity (Market-Based, tCO<sub>2</sub>e)



By Activity	tCO <sub>2</sub> e/year	%
Premises	3,587	95.7
Company owned vehicles	32.7	0.872
Waste	127	3.38
<b>Total</b>	<b>3,747</b>	<b>100</b>

## Summary by WBCSD/WRI Scope (Location-Based, tCO<sub>2</sub>e)



Scope	tCO <sub>2</sub> e/year	%
Scope 1	3,562	53.1
Scope 2	2,732	40.7
Scope 3	417	6.22
<b>Total</b>	<b>6,712</b>	<b>100</b>

## Summary by WBCSD/WRI Scope (Market-Based, tCO<sub>2</sub>e)



Scope	tCO <sub>2</sub> e/year	%
Scope 1	3,562	95.1
Scope 3	184	4.92
<b>Total</b>	<b>3,747</b>	<b>100</b>

### Summary by Greenhouse Gas

Greenhouse Gas	GWP	tGHG/year (Location-Based)	tCO <sub>2</sub> e/year (Location-Based)	tGHG/year (Market-Based)	tCO <sub>2</sub> e/year (Market-Based)
CO <sub>2</sub>	1	6,498	6,498	3,555	3,555
CH <sub>4</sub>	25	0.464	11.6	0.186	4.64
N <sub>2</sub> O	298	0.0614	18.3	0.00762	2.27
CO <sub>2</sub> e	1	184	184	184	184
		<b>Total</b>	<b>6,712</b>		<b>3,747</b>

# Summary of Scope 2 Market-Based Method for Accommodation

## Energy Consumed and Emissions By Factor Type In Scope 2 Market-Based Method

Scope 2 Market-Based Energy

Scope 2 Market-Based Emissions



No Data Available

Emission Factor Type	Energy		Market-Based Emissions	
	MWh	%	tCO <sub>2</sub> e	%
Client-supplied market-based instrument	9,652	100	0	0
Residual mix factors	0	0	0	0
Default location-based factors	0	0	0	0
Total	9,652	100	0	0