Greenhouse Gas Protocol (Location Only) Report for The University of Edinburgh

Assessment Period: August 2012 - July 2013

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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

- Bus and coach
- Cars
- Electricity
- Motorcycle
- Natural gas
- Other fuel(s)
- Rail (train, tram, light rail, underground)
- Taxi
- Air travel
- Composted waste
- Electricity
- Incinerated waste
- Landfilled waste
- Rail
- Recycled waste
- Taxi
- Water supply
- Water treatment

Quality Assurance Assessor

- Kevin Houston - kevin@carbonmasters.co.uk
- Som Narayan - som@carbonmasters.co.uk

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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_2e[1]. The seven Kyoto gases are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), nitrogen trifluoride (NF_3), sulphur hexafluoride (SF_6) 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_2)	1
Methane (CH_4)	25
Nitrous oxide (N_2O)	298
Hydrofluorocarbons (HFCs)	124 - 14,800
Perfluorocarbons (PFCs)	7,390 - 12,200
Nitrogen trifluoride (NF_3)	17,200
Sulphur hexafluoride (SF_6)	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. This protocol is considered current best practice for corporate or organisational greenhouse gas emissions reporting.

Note that this assessment is in compliance with the Scope 2 Guidance, which acts as an amendment to the GHG Protocol Corporate Standard. The subject of this assessment has ensured that no company operations occur in markets which provide product or supplier-specific data in the form of contractual instruments. As a result, all scope 2 emissions are calculated using the location-based method.

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. 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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[1] Carbon dioxide equivalent or CO_2e is a term for describing different greenhouse gases in a common unit. For any quantity and type of greenhouse gas, CO_2e signifies the amount of CO_2 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

Accuracy Overview	tCO_2e/year	%
Actual	98,707	91.1
Estimated	9,620	8.88
Total	108,327	100

Table 2. Data Quality and Availability

Source of emissions	Data quality
Premises	
Electricity	Actual
Fuel oil	Unknown
Natural gas	Actual
Other fuel(s)	Mixed
Water supply	Actual
Water treatment	Actual
Company owned vehicles	
Other fuel(s)	Actual
Business Travel	
Air travel	Actual
Bus and coach	Actual
Cars	Actual
Rail (train, tram, light rail, underground)	Actual
Taxi	Actual
Staff Commuting	
Bicycle	Unknown
Bus and coach	Estimated
Cars	Estimated
Estimated emissions	Unknown
Motorcycle	Estimated
On foot	Unknown
Rail	Estimated
Taxi	Estimated
Student Commuting	

Bicycle	Unknown
Bus and coach	Estimated
Cars	Estimated
Estimated emissions	Unknown
Motorcycle	Estimated
On foot	Unknown
Rail	Estimated
Taxi	Estimated
Waste	
Composted waste	Mixed
Incinerated waste	Mixed
Landfilled waste	Mixed
Recycled waste	Mixed

Assessment Summary for The University of Edinburgh
Gross Overall Emissions: 108,327 tCO_2e

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_2e per full time equivalent. This has been calculated, along with other relevant metrics, in the table below:

Data	KPI
737,000 Thousand GBP Revenue (£)	0.147 tCO_2e per Thousand GBP Revenue (£)
807,000 Floor area (square metres)	0.134 tCO_2e per Floor area (square metres)
8,197 Full Time Equivalent Employees	13.2 tCO_2e per Full Time Equivalent Employee
32,868 Number of students	3.3 tCO_2e per Student

Summary by Activity (tCO_2e)

By Activity	tCO_2e/year	%
Premises	89,409	82.5
Company owned vehicles	455	0.42
Business Travel	8,655	7.99
Staff Commuting	5,156	4.76
Student Commuting	4,302	3.97
Waste	350	0.323
Total	108,327	100

Summary by WBCSD/WRI Scope (tCO_2e)

Scope	tCO_2e/year	%
Scope 1	35,997	33.2
Scope 2	48,869	45.1
Scope 3	23,460	21.7
Total	108,327	100

Summary by Greenhouse Gas

Greenhouse Gas	GWP	tGHG/year	tCO_2e/year
CO_2	1	96,834	96,834
CH_4	25	4.48	112
N_2O	298	1.4	417
CO_2e	1	10,965	10,965
		Total	108,327

Detailed Results

Detailed Summary by WBCSD/WRI Scope

Source of Emissions	tCO_2/yr	tCH_4/yr	tN_2O/yr	Total Emissions (tCO_2e/yr)	%
Scope 1 Total	**35,894**	**2.78**	**0.114**	**35,997**	**33.2%**
Company owned vehicles Total	442	0.0119	0.045	455	0.42%
Other fuel(s)	442	0.0119	0.045	455	0.42%
Premises Total	35,452	2.77	0.0695	35,542	32.8%
Natural gas	35,250	2.76	0.0688	35,339	32.6%
Other fuel(s)	202	0.00406	6.92e-4	203	0.187%
Scope 2 Total	**48,480**	**1.55**	**1.18**	**48,869**	**45.1%**
Premises Total	48,480	1.55	1.18	48,869	45.1%
Electricity	48,480	1.55	1.18	48,869	45.1%
Scope 3 Total	**12,460**	**0.148**	**0.106**	**23,460**	**21.7%**
Business Travel Total	8,231	0.007	0.00434	8,655	7.99%
Air travel	7,995	3.48e-5	3.65e-4	7,995	7.38%
Bus and coach	0	0	0	130	0.12%
Cars	0	0	0	292	0.27%
Rail (train, tram, light rail, underground)	158	0.00639	0.00261	159	0.147%
Taxi	78.3	5.71e-4	0.00137	78.7	0.0726%
Premises Total	4,229	0.141	0.102	4,998	4.61%
Electricity: Electricity - transmission & distribution losses	4,229	0.141	0.102	4,263	3.94%
Water supply	0	0	0	249	0.229%
Water treatment	0	0	0	486	0.449%
Staff Commuting Total	0	0	0	5,156	4.76%
Bus and coach	0	0	0	841	0.776%
Cars	0	0	0	3,771	3.48%
Motorcycle	0	0	0	37	0.0342%
Rail	0	0	0	496	0.458%
Taxi	0	0	0	11	0.0102%
Student Commuting Total	0	0	0	4,302	3.97%
Bus and coach	0	0	0	2,301	2.12%
Cars	0	0	0	1,292	1.19%
Motorcycle	0	0	0	34	0.0314%
Rail	0	0	0	660	0.609%
Taxi	0	0	0	15	0.0138%
Waste Total	0	0	0	350	0.323%
Composted waste	0	0	0	3.89	0.00359%
Incinerated waste	0	0	0	25.1	0.0232%
Landfilled waste	0	0	0	293	0.27%

Recycled waste		0	0	0	28	0.0259%
	Total	**96,834**	**4.48**	**1.4**	**108,327**	**100%**

Summary by Company Unit

Assessment	August 2011 - July 2012		August 2012 - July 2013	
Company Unit	**Total Emissions (tCO_2e)**	**Emissions per FTE (tCO_2e/FTE)**	**Total Emissions (tCO_2e)**	**Emissions per FTE (tCO_2e/FTE)**
The University of Edinburgh	98,599	12.3	108,327	13.2
Academic estate	81,688	-	94,569	-
Accommodation	10,314	-	8,602	-

Annual Activity Data

Source of Emissions	Value	Unit
Business Travel		
Air travel		
Long-haul, average	9,808,474	pass.km
Long-haul, business	1,739,141	pass.km
Long-haul, economy	15,195,034	pass.km
Long-haul, first class	36,543	pass.km
Long-haul, premium economy	796,882	pass.km
Medium-haul, average	4,165,111	pass.km
Medium-haul, business	254,560	pass.km
Medium-haul, economy	6,318,661	pass.km
Short-haul	3,276,793	pass.km
Bus and coach		
Total CO2e emissions (metric tonnes)	130	tonne
Cars		
Total CO2e emissions (metric tonnes)	292	tonne
Rail (train, tram, light rail, underground)		
Eurostar	33,887	pass.km
Train, national	3,339,906	pass.km
Underground	8,522	pass.km
Taxi		
Black cab taxi	239,804	km
Company owned vehicles		
Other fuel(s)		
Diesel	36,058	l
Diesel, retail station biofuel blend	62,396	l
Gas Oil	60,387	l
Petrol, retail station biofuel blend	9,373	l
Premises		
Electricity		
Electricity consumption	99,198,527	kWh
Natural gas		
Natural gas consumption (gross CV)	190,994,931	kWh
Other fuel(s)		
LPG	880,404	kWh
Water supply		
Water supply	722,443	m3
Water treatment		
Water treatment	686,321	m3
Staff Commuting		

Bus and coach			
	Total CO2e emissions (metric tonnes)	841	tonne
Cars			
	Total CO2e emissions (metric tonnes)	3,771	tonne
Motorcycle			
	Total CO2e emissions (metric tonnes)	37	tonne
Rail			
	Total CO2e emissions (metric tonnes)	496	tonne
Taxi			
	Total CO2e emissions (metric tonnes)	11	tonne
Student Commuting			
Bus and coach			
	Total CO2e emissions (metric tonnes)	2,301	tonne
Cars			
	Total CO2e emissions (metric tonnes)	1,292	tonne
Motorcycle			
	Total CO2e emissions (metric tonnes)	34	tonne
Rail			
	Total CO2e emissions (metric tonnes)	660	tonne
Taxi			
	Total CO2e emissions (metric tonnes)	15	tonne
Waste			
Composted waste			
	Composted waste, food & drink	205	tonne
	Composted waste, garden waste	444	tonne
Incinerated waste			
	Incinerated waste, mixed commercial & industrial, with heat recovery	1,196	tonne
Landfilled waste			
	Mixed commercial and industrial waste, landfilled	748	tonne
	Mixed municipal waste, landfilled	497	tonne
Recycled waste			
	Recycled waste, WEEE, open loop	94	tonne
	Recycled waste, glass, closed loop	125	tonne
	Recycled waste, mixed commercial & industrial, closed loop	1,115	tonne

References

Defra/DECC (2012). Guidelines to Defra/DECC's GHG conversion factors for company reporting. Department of Environment Food and Rural Affairs/Department for Energy and Climate Change, London.

Defra/DECC (2014). UK Government conversion factors for greenhouse gas reporting. Department of Environment Food and Rural Affairs/Department for Energy and Climate Change, London.

Defra/DECC (2015). UK Government conversion factors for greenhouse gas reporting. Department of Environment Food and Rural Affairs/Department for Energy and Climate Change, London.; Defra/DECC (2014). UK Government conversion factors for greenhouse gas reporting. Department of Environment Food and Rural Affairs/Department for Energy and Climate Change, London.

Assessment Summary for Academic estate

Gross Overall Emissions: 94,569 tCO_2e

Summary by Activity (tCO_2e)

By Activity	tCO_2e/year	%
Premises	81,072	85.7
Company owned vehicles	353	0.373
Business Travel	8,655	9.15
Student Commuting	4,302	4.55
Waste	188	0.199
Total	94,569	100

Summary by WBCSD/WRI Scope (tCO_2e)

Scope	tCO_2e/year	%
Scope 1	32,024	33.9
Scope 2	44,988	47.6
Scope 3	17,556	18.6
Total	94,569	100

Summary by Greenhouse Gas

Greenhouse Gas	GWP	tGHG/year	tCO_2e/year
CO_2	1	88,695	88,695
CH_4	25	4.04	101
N_2O	298	1.29	383
CO_2e	1	5,390	5,390
		Total	94,569

Assessment Summary for Accommodation

Gross Overall Emissions: 8,602 tCO_2e

Summary by Activity (tCO_2e)

By Activity	tCO_2e/year	%
Premises	8,337	96.9
Company owned vehicles	103	1.2
Waste	162	1.88
Total	8,602	100

Summary by WBCSD/WRI Scope (tCO_2e)

Scope	tCO_2e/year	%
Scope 1	3,973	46.2
Scope 2	3,881	45.1
Scope 3	748	8.69
Total	8,602	100

Summary by Greenhouse Gas

Greenhouse Gas	GWP	tGHG/year	tCO_2e/year
CO_2	1	8,139	8,139
CH_4	25	0.435	10.9
N_2O	298	0.112	33.3
CO_2e	1	419	419
		Total	8,602