

University for the Common Good

Carbon Footprint Report for 2022-23

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Executive Summary

Glasgow Caledonian University (the University) reports its greenhouse gas emissions (GHG) annually, with reports used to improve performance, meet compliance obligations and track progress towards the University's own environmental commitments.

The overall reporting approach is unchanged, with the University following the GHG Protocol Standards and adhering to the principles of accuracy, completeness, consistency, relevance and transparency. The reporting boundaries (operational control) and remaining the same.

In 2022-23 the University's GHG emissions' inventory was 50,244 tonnes CO_2e , nearly 50% increase on the previous reporting period (2021-22) and pre-pandemic levels (2018-19). They are also 27% higher than the 2014-15 baseline.



Figure 1 The University's GHG emissions (tonnes CO₂e by scope) since 2014-15.

The increases are mainly in travel emissions (104%), energy emissions (10%) and supply chain emissions (9%). Increases in travel emissions were dominated by an increase in emissions from international student travel (which increased 120%) and student commuting (which increased by 48%). The former was driven by an increase in the number of students (68%) that need to take long-haul flights to the UK and the proportion of students driving to the campus in Glasgow. A deterioration in the emission factors for flights (with increases ranging from 21-35%) also contributed to the increase. Increases in energy are attributed to higher gas consumption (9% increase) and a higher emission (7% increase) factor for purchased electricity. Gas consumption was higher because the Energy Centre's operation was not interrupted by its 1-month half-life service. Supply chain emissions were higher (9%) due to a higher spend on goods and services.



Figure 2 GHG emissions by activity category for 2022-23 compared to the previous reporting period (2021-22), prepandemic (2018-19) and the University's baseline (2014-15).

These increases will undoubtedly generate further discussion and reflection on how the University reconciles its carbon neutrality ambitions with how it operates its Estate as well as the positive impact it has on its student and alumni population.

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Introduction

Glasgow Caledonian University (the University) reports its greenhouse gas emissions (GHG) annually and through its Environmental Management System uses them to benchmark performance, target improvements and assess progress towards environmental commitments and meet compliance obligations.

The 2022-23 reporting period is considered a normal operating period with no exceptional circumstances affecting University operations. This report outlines how the University's GHG emissions reflect the return to a predominantly pre-pandemic operating model.

Data & Methodology

The University reports its GHG emissions according to the GHG Protocol Standards¹ and adheres to the reporting principles of: accuracy, completeness, consistency, relevance and transparency. The reporting boundaries (operational control) and overall methodology for the 2022-23 GHG emissions inventory are the same as those used in previous reporting periods.

Whilst the general approach and datasets have not changed (Table 1), the 2022-23 inventory incorporates the following changes:

- Emissions for business flights are calculated by class, but for clarity in reporting they have been aggregated for reporting purposes.
- Emissions from Capital Projects have been disaggregated from the HEPA Tool (formerly HESCET) data for Purchased Goods & Services.

There have also been a number of corrections and updates in emission factors. These are highlighted in relevant sections below.

It is also noted that although the data and calculations in this report were not subject to independent verification or quality assurance, they benefited from a peer review exercise with the University of St. Andrews (in collaboration with the EUAC – Scotland).

¹ Greenhouse Gas Protocol – <u>Corporate Standard</u> and <u>Corporate Value Chain (Scope 3) Standard</u>.

Emission	Scope	Emission Activity	Data quality observations
Category			
Organisation's buildings	1	Gas consumption	High quality data derived from gas meter readings.
Organisation's	1	Refrigerant Gases	High quality data derived from contractors' measurements of
buildings			systems' fluorinated gas charge.
Organisation's vehicles	1	Business travel (own fleet)	High quality data derived from fuel card reports.
Purchased	2	Electricity (Nat. Grid)	High quality data derived from electricity meter readings.
Purchased Goods	3	Water	High quality data derived from water meter readings.
& Services			
& Services	3	(formerly HESCET tool)	Low-medium quality data. Derived from spend data. <u>Excl.</u> capital goods (reported separately).
Other fuel & energy rel. activities	3	Electricity (transmission & distribution losses)	High quality data derived from electricity meter readings.
Other fuel & energy rel. activities	3	Well-to-tank emissions from fuels/energy reported as scope 1 and 2	High quality data derived from consumption data (as detailed above.
Waste Generated	3	General Waste &	Medium-high. Data for Glasgow derived from contractors'
in Operations		recycling	weighing systems. C. Court and GCU London based on historic estimates.
Waste Generated	3	Wastewater	High quality data derived from water meter readings.
in Operations			Assumed 95% of purchased water becomes wastewater.
Business travel	3	Travel (business – not owned)	Medium/High. Derived from supplier records and expenses claims systems,
Business travel	3	Well-to-tank emissions for fuels used in 'Travel (business – not owned)' (above)	High. Derived from supplier records.
Employee commuting	3	Travel (commuting – staff)	Low quality data derived from estimates of number of staff on-campus and observations about how they travelled during the pandemic.
Employee commuting	3	Working from home (staff)	Medium. Derived from Scottish Government intensity factor for FTE.
Downstream	3	Travel (commuting –	Low quality data derived from estimates of the number of
transportation and distribution		students)	students on-campus and an assumption that modes of travel
Downstream	3	UK domiciled students –	Low and based on the assumption that there was no need for
transportation		travel home.	travel because the majority of students worked from home.
and distribution			
Downstream	3	International students –	Low and based on the assumption that there was no need for
transportation	-	travel home.	travel because the majority of students worked from home.
and distribution			
Investments	3	Investments	Medium. Derived from carbon intensity of portfolio value.
Capital Goods	3	Procurement - HEPA tool	Low-medium quality data. Derived from spend data.
		(formerly HESCET tool)	

Table 1 Observations on data quality for the University's GHG emissions inventory. New emission categories are identified in **bold** text and new activity datasets in **bold underlined** text. 'Downstream transportation and distribution' emissions were formerly reported as 'employee commuting'.

Inventory & Emissions

In 2022-23 the University's GHG emissions' inventory was 50,244 tonnes CO₂e, nearly 50% increase on the previous reporting period (2021-22) and pre-pandemic levels (2018-19). They are also 27% higher than the 2014-15 baseline. The increase is in Scope 3 emissions and primarily attributed to international student travel.

Figure 3 and Table 2 provide a summary of the University's current and historic GHG emissions. Figure 4 provides a breakdown by Activity Category in each Scope, whilst Figure 5 provides a breakdown by thematic grouping. Trends within the thematic groupings are discussed in the next sections. Appendix A contains the University's full GHG emissions' inventory for 2022-23.



Figure 3 The University's GHG emissions (tonnes CO_2e by scope) since 2014-15.

Scope	Academic Year	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
1	Direct combustion of fuels and other fugitive emissions.	4,598	4,794	4,745	4,589	4,974	5,136	4,970	4,171	4,763
2	Electricity from the National Grid.	2,784	2,902	2,613	1,881	1,576	998	601	1,040	1,116
3	Other up- and downstream activities out-with the University's operational control.	32,232	34,509	28,200	30,625	27,623	22,415	11,022	28,403	44,365
Total		39,615	42,205	35,557	37,095	34,173	28,549	16,593	33,614	50,244

Table 2 Emissions (tonnes CO_2e) by scope for since 2014-15.



Figure 4 GHG emissions by activity category for 2022-23 compared to the previous reporting period (2021-22), prepandemic (2018-19) and the University's baseline (2014-15).



Figure 5 GHG emissions by thematic grouping for 2022-23 compared to the previous reporting period (2021-22), prepandemic (2018-19) and the University's baseline (2014-15).

Trends & Observations

The 2022-23 reporting period is considered a normal operating period with no exceptional circumstances affecting University operations and with emissions reflecting a return to a predominantly pre-pandemic operating model. The sections below explore how emissions in each of the thematic groups have changed since the previous reporting period (2021-22), how they compare with the pre-pandemic operating model (2018-19) and the University's baseline (2014-15).

Travel

In the 2022-23 reporting period, travel activity at the University emitted 27,936 tCO₂e, (56% of total reported emissions).

Reported emissions include well-to-tank (WTT) emissions for fuels associated with business travel as these provide a more comprehensive insight into the climate impact of the University's business travel choices.

Travel emissions are significantly higher than previous reporting periods, with the increase primarily associated with international student travel, which increased from 9,487 tCO₂e in 2021-22 to 21,002 tCO₂e in 2022-23(an increase of 120%). Student commuting also increased since the previous reporting period from 3,267 tCO₂e in 2021-22 to 4,859 tCO₂e in 2022-23 (an increase of 48%). A breakdown of emissions in this category is provided in Figure 6.



Figure 6 GHG emissions from travel to, from and on-behalf of the University for 2022-23 compared to the previous reporting period (2021-22), pre-pandemic (2018-19) and the University's baseline (2014-15).

The increase in emissions from international student travel to the UK (Glasgow/home) is driven by a rise in the University's international student population which grew 62% between 2021-22 and 2022-23 (from 3,570 to 5,794 individuals).

The majority of this increase was in international students that would have had to take long-haul flights to Glasgow. It is recognised that many of these students could also be based at the University's London Campus, but had the methodology and data used permitted such a differentiation, it is unlikely that there would have been a significant reduction in reported emissions from international student travel to/from the UK. Given significance of these emissions and development of the London Campus, a review of the methodology is perhaps warranted for future GHG inventory reports.

A change in the emission factors for short and long-haul flights, increased 21% and 35% between 2021-22 and 2022-23 (respectively), also contributed to the increase in emissions from international student travel.

The other area of travel that increased was student commuting to the Glasgow Campus (there isn't sufficient data to estimate emissions for students commuting to the London Campus), which increased 48% since the previous reporting period. This increase is still significantly lower than the 2014-15 baseline and is attributed to an increase in student numbers (and by association distance travelled). These are derived from the 2022 Student & Staff Travel Survey (unpublished) and do not reflect the introduction of free bus travel to under 22s in Scotland (Feb 2023) or the Glasgow Low Emission Zone coming into force for cars (June 2023).

Supply Chain

Supply chain emissions are primarily estimated from spend-based intensity factors for spend with suppliers the University does not have direct 'activity' data. In 2022-23 emissions attributed to the University's supply chain contribute 14,790 tCO₂e to the University's GHG inventory (29% of all reported emissions). This represents a 9% increase on the previous reporting period (but with Capital Goods now reported separately) and an overall upward trend (Figure 7).



Figure 7 Supply chain emissions (tCO₂e) for 2022-23 compared to the previous reporting period (2021-22), pre-pandemic (2018-19) and the University's baseline (2014-15).

Supply chain emissions are derived from spend with 822 suppliers, with the top 50 suppliers (by GHG emissions) being responsible for nearly 78% of total supply chain emissions.

The main source of emissions (by Proc HE category²) is software supplies which represented 38% of all supply chain emissions (Table 3). The top 10 Proc HE categories account for 73% of supply chain emissions.

² Proc HE is a national Commodity Coding convention used by the HE Sector and Local Authorities.

Proc HE category description	tCO ₂ e	No.	% supply chain	Rank
		Suppliers	emissions	
IT Software including Bespoke Licences	5,637	57	38.10%	1
Maintenance				
Catering Services Outsourced at a fixed site	1,884	2	12.74%	2
Coach Hire (Direct)	890	7	6.02%	3
Laboratory Support Equipment Accommodation	530	35	3.58%	4
Accessories				
Temporary & Recruitment Employment Agencies	400	22	2.71%	5
(Staff)				
Data Information Services	374	14	2.53%	6
Building Related Professional Services	366	15	2.47%	7
Laboratory Capital Equipment	347	21	2.35%	8
Bespoke IT Solutions	301	1	2.04%	9
Other/General Travel and Transport Supplies and	279	4	1.89%	10
Services				

Table 3 Top 10 Proc HE categories for GHG emissions (tCO2e) in the University's supply chain in 2022-23.

It is noted that it appears emissions for some suppliers in the Proc HE categories are over estimated and where data can be sourced, the University should seek primary data (e.g. coach hire, not reported separately because in previous reporting periods it was deemed not to be a material source of emissions and a cursory review of coach bookings suggested that was also the case for the present reporting period).

In addition to the above, it is also noted that the methodology for estimating supply chain emissions is not sufficiently sensitive to reflect the University's individual procurement decisions, it helps identify hot spots to focus on and suppliers to engage to understand how they can support the University's climate commitments.

Energy

In 2022-23 the University emitted 6,867 tCO₂e (14% of all reported emissions), 10% higher than the previous reporting period (2021-22) but 9% lower than the 2014-15 baseline. 67% of emissions were attributed to gas, 16% to purchased electricity and the remainder 17% to transmission and distribution losses of purchased electricity and well-to-tank emissions for all purchased energy (Figure 8).



Figure 8 GHG emissions for energy use at the University (including 'other energy emissions' such as transmission and distribution losses and well-to-tank emissions) for 2022-23 compared to the previous reporting period (2021-22), prepandemic (2018-19) and the University's baseline (2014-15).

Historically (prior to 2021-22) emissions from energy were reported primarily for consumption (electricity transmission and distribution losses were also reported). Figure 9 is therefore included to provide a like-for-like comparison of historic emissions from energy consumption only.



Figure 9 Energy consumption emissions only (i.e. without scope 3 emissions for transmission and distribution losses or well to tank emissions).

Although there is a generally downward trend in emissions from energy use there was a 12% increase in emissions since the previous reporting period due to an increase in gas consumption (following the University's Energy Centre being offline for a month in the previous reporting period for its half-life refurbishment). A deterioration in the emission factor for purchased electricity (which was 7% more carbon intense than the previous reporting period) also contributed to this increase.

It is anticipated that energy emissions will continue to fall as a result of further demand reduction, improved efficiency and further supply decarbonisation. There may also be an additional opportunity to accentuate this trend by considering space utilization and productivity.

Other

Emissions from other activity, which includes capital projects (reported separately for this reporting period), investments, refrigerants, waste and recycling, wastewater and water were 659 tCO₂e (Table 4). In this group, there were reductions in emissions from investments and waste and recycling. Emissions from refrigerants (used in the University's cooling systems and linked to equipment condition) were higher than in the previous reporting period (but within historical fluctuations). Water and wastewater, which are linked to on-campus activity, were marginally higher. There is insufficient data to report any trends in emissions from capital projects.

Source	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Capital Projects									439
Investments							140	72	55
Refrigerant Gases	61	225	162	100	25	103	159	42	135
Waste & Recycling	67	62	84	81	17	13	3	14	13
Wastewater	34	32	14	27	27	7	2	4	5
Water	17	16	15	14	14	3	1	2	3
Total	179	335	275	222	82	125	306	134	659

Table 4 Other emissions in the University's emission inventory (below the 1% materiality threshold) since 2014-15.

It is anticipated that emissions in this group will remain below the materiality threshold (i.e. 1% of total reported emission).

Closing Remarks

Although the 2022-23 inventory reflects normal operating conditions for the University, it records a 50% increase in total reported emissions due to increases in travel (primarily international student travel and student commuting), energy use and procurement activity.

These increases will undoubtedly generate further discussion and reflection on how the University reconciles its carbon neutrality ambitions with how it operates its Estate as well as the positive impact it has on its student and alumni population.

Appendix A - Full GHG Emissions Inventory

Glasgow Caledonian University's full GHG emissions inventory for 2022-23 is presented below. A spreadsheet with this and previous inventories is available from: https://www.gcu.ac.uk/aboutgcu/commongood/sustainability/data

Emission Category Sco	ope 💽	Emission Activity	Source •	Q *	Qty (U)	EF (U)		EF Source	tonnes CO2 *
Organisation's buildings 1 Organisation's buildings 1	1 1	Gas consumption Gas consumption	City Campus	23,620,015 1.643.692	kWh kWh	0.1829 kg CO2	2e.kWh 2e.kWh	Defra: Fuels (Energy gross - CV) 2023 Defra: Fuels (Energy gross - CV) 2023	4,320.78 300.68
Organisation's buildings 1	1	Refrigerant Gases	R134A	3.50	kg	1,300 kg CO2	2e.kg	Defra: Refrigerant & Other (2023)	4.55
Organisation's buildings 1 Organisation's buildings 1	1	Refrigerant Gases	R410A R404A	43.4	кg kg	1924 kg CO. 3,943 kg CO.	2е.кg 2e.kg	Defra: Refrigerant & Other (2023) Defra: Refrigerant & Other (2023)	83.52 9.19
Organisation's buildings 1 Organisation's buildings 1	1	Refrigerant Gases	R407C	23.5	kg kg	1,624 kg CO	2e.kg	Defra: Refrigerant & Other (2023)	38.20
Organisation's buildings 1	1	Refrigerant Gases	R453a		kg	1,765 kg CO	2e.kg	https://nationalref.com/products/r453a/ (31/8/	
Organisation's buildings 1 Organisation's vehicles 1	1	Refrigerant Gases Business travel (owned vehicles)	Petrol	1,828	kg litres	2,729 kg CO 2.10 kg CO	2e.kg 2e.litre	Defra: Refrigerant & Other (2023) Defra: Fuels - Petrol Diesel (average biofuel blent	- 3.83
Organisation's vehicles 1	1	Business travel (owned vehicles)	Diesel	1,009	litres	2.5121 kg CO	2e.litre	Defra: Fuels - Diesel (average biofuel blend) 2023	2.53
Purchased Electricity 2 Purchased Electricity 2	2	Electricity (National Grid) Electricity (National Grid)	City Campus C. Court	4,252,800 538,555	kWh kWh	0.2071 kg CO 0.2071 kg CO	2e.kWh 2e.kWh	Defra: UK electricity Defra: UK electricity	880.65 111.52
Purchased Electricity 2 Purchased Electricity 2	2	Electricity (National Grid) Electricity (National Grid)	C. Court	353,788 242,810	kWh kWh	0.2071 kg CO2	2e.kWh 2e.kWh	Defra: UK electricity Defra: UK electricity	73.26 50.28
Purchased Good & Service: 3	3	Water	Glasgow	28,066	m3	0.1000 kg CO	2e.m3	PBCCD Template EF(2023)	2.81
Purchased Good & Service: 3 Purchased Good & Service: 3	3 3	Water Supply chain (not otherwise accounted for)	London HESCET dataset (redacted - no Capital Goods)	619	m3 HESCET kgCC	0.1767 kg CO HESCE	2e.m3 ET kgCO2e.£	DEFRA: Water Supply 2022 HESCET Spreadsheet 2022-23	0.11 14,789.91
Capital Goods 3 Capital Goods 3	3 3	Capital Projects	HESCET dataset (redacted - Capital Goods only) HESCET dataset (redacted - "Deskton, Lapton, Tablet Pu		HESCET kgCO	HESCE	T kgCO2e.£	HESCET Spreadsheet 2022-23 HESCET Spreadsheet 2022-23	311.42
Other fuels & energy relate 3	3	Electricity (T&D lossed - National Grid)	All	5,387,953	kWh	0.0179 kg CO2	2e.kWh	Defra: T&D - UK Electricity 2023	96.53
Other fuels & energy relate 3 Other fuels & energy relate 3	3 3	Electricity (purchased) WTT Electricity WTT for T&D losses	All	5,387,953 5,387,953	kWh kWh	0.0459 kg CO2 0.0040 kg CO2	2e.kWh 2e.kWh	DEFRA: WTT UK electricity (generation) 2023 DEFRA: WTT UK electricity (T&D) 2023	247.31 21.39
Other fuels & energy relate 3	3	Gas (purchased) WTT	All	25,263,707	kWh	0.0302 kg CO	2e.kWh	DEFRA: WTT Fuels 2023	763.22
Other fuels & energy relate 3 Other fuels & energy relate 3	3	Diesel (purchased) WTT	Diesel - All	1,828	litres	0.5809 kg CO. 0.6110 kg CO.	2e.litre 2e.litre	DEFRA: WTT Fuels 2023 DEFRA: WTT Fuels 2023	0.62
Waste Generated in Opera 3 Waste Generated in Opera 3	3 3	Waste & Recycling (C&I) - London Waste & Recycling (C&I) - London	Landfill [Est.] Mixed Recycling [Est.]		tonnes tonnes	kg CO2 kg CO2	2e.tonne 2e.tonne	Defra: Waste Disposal 2023 Defra: Waste Disposal 2023	
Waste Generated in Opera 3	3	Waste & Recycling (C&I) - London	Combustion [Est.]	7.80	tonnes	21.2808 kg CO2	2e.tonne	Defra: Waste Disposal 2023	0.17
Waste Generated in Opera 3 Waste Generated in Opera 3	3	Waste & Recycling (C&I) - Campus Waste & Recycling (C&I) - Campus	Combustion	3.33	tonnes	21.2808 kg CO	2e.tonne 2e.tonne	Defra: Waste Disposal 2023 Defra: Waste Disposal 2023	- 0.07
Waste Generated in Opera 3 Waste Generated in Opera 3	3	Waste & Recycling (C&I) - Campus Waste & Recycling (C&I) - Campus	Mixed Recycling Organic: Food & drink waste AD	255.06 7.47	tonnes tonnes	21.2808 kg CO 8.9124 kg CO	2e.tonne 2e.tonne	Defra: Waste Disposal 2023 Defra: Waste Disposal 2023	5.43 0.07
Waste Generated in Opera 3	3	Waste & Recycling (C&I) - Campus	Glass – Recycling	5.68	tonnes	21.2808 kg CO	2e.tonne	Defra: Waste Disposal 2023	0.12
Waste Generated in Opera 3 Waste Generated in Opera 3	3 3	Waste & Recycling (C&I) - Campus Waste & Recycling (C&I) - Campus	Paper - Recycling Metal - Recycling	14.74	tonnes	0.9849 kg CO2	2e.tonne 2e.tonne	Defra: Waste Disposal 2023 Defra: Waste Disposal 2023	- 0.01
Waste Generated in Opera 3	3	Waste & Recycling (C&I) - Campus	Cardboard - Recycling	9.96	tonnes	21.2808 kg CO2	2e.tonne	Defra: Waste Disposal 2023	0.21
Waste Generated in Opera 3 Waste Generated in Opera 3	3	Waste & Recycling (C&I) - Campus	WEEE (mixed) – Recycling	26.86 25.16	tonnes	21.2808 kg CO 21.2808 kg CO	2e.tonne	Defra: Waste Disposal 2023	0.57
Waste Generated in Opera 3 Waste Generated in Opera 3	3	Waste & Recycling (Municipal) - CCourt Waste & Recycling (Municipal) - Ccourt	Landfill [Est.] Combustion [Est.]	102.82	tonnes tonnes	kg CO2 21.2808 kg CO2	2e.tonne 2e.tonne	Defra: Waste Disposal 2023 Defra: Waste Disposal 2023	- 2.19
Waste Generated in Opera 3	3	Waste & Recycling (Municipal) - Ccourt	Food Waste – AD [Est.]		tonnes	kg CO	2e.tonne	Defra: Waste Disposal 2023	-
Waste Generated in Opera 3 Waste Generated in Opera 3	3 3	waste & Recycling (Municipal) - Ccourt Waste & Recycling (C&D) - Campus	Wixed Recycling [Est.] Wood - recycling	63.73 17.90	tonnes tonnes	21.2808 kg CO 21.2808 kg CO	∠e.tonne 2e.tonne	Defra: Waste Disposal 2023 Defra: Waste Disposal 2023	1.36 0.38
Waste Generated in Opera 3 Waste Generated in Opera 3	3 3	Waste & Recycling (C&D) - Campus	Metal: scrap metal - recycling Plastics: average plastics - recycling (open loop)	42.20	tonnes	0.9849 kg CO	2e.tonne 2e.tonne	Defra: Waste Disposal 2023 Defra: Waste Disposal 2023	0.04
Waste Generated in Opera 3	3	Waste & Recycling (C&D) - Campus	Plasterboad - recycling	77.60	tonnes	21.2808 kg CO	2e.tonne	Defra: Waste Disposal 2023	1.65
Waste Generated in Opera 3 Waste Generated in Opera 3	3 3	Waste & Recycling (C&D) - Campus Waste & Recycling (C&D) - Campus	Average construction - recycling (open loop) WEEE - mixed - recycling	46.08 6.70	tonnes tonnes	0.9849 kg CO 21.2808 kg CO	2e.tonne 2e.tonne	Defra: Waste Disposal 2023 Defra: Waste Disposal 2023	0.05
Waste Generated in Opera	3	Waste & Recycling (C&D) - Campus	Average construction - landfill	11.52	tonnes	1.2340 kg CO	2e.tonne	Defra: Waste Disposal 2023	0.01
Waste Generated in Opera 3 Waste Generated in Opera 3	3	Wastewater	London	26,663 588	m3	0.2013 kg CO 0.2013 kg CO	2e.m3 2e.m3	DEFRA: water treatment 2023	5.37
Business Travel 3 Business Travel 3	3 3	Travel (business - not owned) Travel (business - not owned)	Grey fleet - Average car - unknown Grey fleet - Average motorbike	21,770	miles miles	0.2682 kg CO2	2e.mile 2e.mile	Defra: Business travel - land (cars (average - unkr Defra: Business travel - land (motorbike - average	5.84
Business Travel 3	3	Travel (business - not owned)	Hired – Medium petrol car	21,742	miles	0.2868 kg CO	2e.mile	Defra: Business travel - land (cars (by size)) 2023	6.23
Business Travel 3 Business Travel 3	3	Travel (business - not owned) Travel (business - not owned)	Hired – Medium diesel car Hired – Medium hybrid car	3,923	miles	0.2690 kg CO. 0.1755 kg CO.	2e.mile 2e.mile	Defra: Business travel - land (cars (by size)) 2023 Defra: Business travel - land (cars (by size)) 2023	1.06 0.07
Business Travel 3 Business Travel 3	3	Travel (business - not owned)	Hired – Medium BEV Taxis - Black Cab (Glasgow)	109	miles	0.0847 kg CO	2e.mile 2e.km	Defra: Business travel - land (cars (by size)) 2023 Defra: Business travel - taxi - black cab - km (202	0.01
Business Travel 3	3	Travel (business - not owned)	Coach	10087.921	km	kg CO2	2e.mile	Defra: Business travel - land - bus 2023	-
Business Travel 3 Business Travel 3	3 3	Travel (business - not owned) Travel (business - not owned)	Air – D - Average Air – D - Economy	426,775	km km	0.2726 kg CO	2e.pass.km 2e.pass.km	Defra: Business travel - air - with RF 2023 Defra: Business travel - air - with RF 2022	- 116.33
Business Travel 3	3	Travel (business - not owned)	Air – D - Economy	114,872	km km	0.2726 kg CO	2e.pass.km	Defra: Business travel - air - with RF 2022	31.31
Business Travel 3	3	Travel (business - not owned)	Air - D - Business Air - SH - Average	5,452	km	kg CO	2e.pass.km 2e.pass.km	Defra: Business travel - air - with RF 2022 Defra: Business travel - air - with RF 2023	-
Business Travel 3 Business Travel 3	3 3	Travel (business - not owned) Travel (business - not owned)	Air - SH - Economy Air - SH - Economy	618,940 141,543	km km	0.1829 kg CO 0.1829 kg CO	2e.pass.km 2e.pass.km	Defra: Business travel - air - with RF 2023 Defra: Business travel - air - with RF 2023	113.19 25.88
Business Travel 3	3	Travel (business - not owned)	Air - SH - Business	10,656	km	0.2743 kg CO2	2e.pass.km	Defra: Business travel - air - with RF 2023	2.92
Business Travel 3 Business Travel 3	3	Travel (business - not owned) Travel (business - not owned)	Air - LH -Average Air - LH -Economy	1,092,936	km	0.2001 kg CO	2e.pass.km 2e.pass.km	Defra: Business travel - air - with RF 2023 Defra: Business travel - air - with RF 2023	- 218.71
Business Travel 3 Business Travel 3	3	Travel (business - not owned)	Air - LH -Economy	171,544	km km	0.2001 kg CO2	2e.pass.km 2e.pass.km	Defra: Business travel - air - with RF 2023 Defra: Business travel - air - with RF 2023	34.33 116 91
Business Travel 3	3	Travel (business - not owned)	Air - LH -Business	141,027	km	0.5803 kg CO	2e.pass.km	Defra: Business travel - air - with RF 2023	81.84
Business Travel 3 Business Travel 3	3 3	Travel (business - not owned) Travel (business - not owned)	Air - LH - First Air - Int - Average		km km	kg CO2 kg CO2	2e.pass.km 2e.pass.km	Defra: Business travel - air - with RF 2023 Defra: Business travel - air - with RF 2023	
Business Travel 3	3	Travel (business - not owned)	Air - Int -Economy	1,243,112	km km	0.1346 kg CO	2e.pass.km	Defra: Business travel - air - with RF 2023	167.38
Business Travel 3	3	Travel (business - not owned)	Air - Int -Premium economy	195,128	km	6.1346 kg CO.	2e.pass.km	Defra: Business travel - air - with RF 2023	-
Business Travel 3 Business Travel 3	3 3	Travel (business - not owned) Travel (business - not owned)	Air - Int -Business Air - Int -First	118,853	km km	0.3904 kg CO kg CO	2e.pass.km 2e.pass.km	Defra: Business travel - air - with RF 2023 Defra: Business travel - air - with RF 2023	46.41
Business Travel 3	3	Travel (business - not owned)	Rail – National - TMC	341,493	km km	0.0355 kg CO	2e.pass.km	Defra: Business travel - air - with RF 2023	12.11
Business Travel 3	3	Travel (business - not owned)	Rail - International	492	km	0.0045 kg CO	2e.pass.km 2e.pass.km	Defra: Business travel - air - with RF 2023 Defra: Business travel - air - with RF 2023	0.00
Business Travel 3 Business Travel 3	3	Travel (business - not owned) Travel (hotels)	Rail - International Hotel nights - aggregated	1,744	km	0.0045 kg CO2	2e.pass.km 2e.room.night	Defra: Business travel - air - with RF 2023 Defra: Hotel 2023	0.01
Business Travel 3	3	Travel (hotels)	Hotel nights - aggregated				2010011116		
Business Travel 3 Business Travel 3	3 3	Travel (business - not owned) - WTT Travel (business - not owned) - WTT	Grey fleet - Average car - unknown - WTT Grey fleet - Average motorbike - WTT	- 21,770	miles miles	0.0703 kg CO kg CO	2e.mile 2e.mile	WTT- pass vehs & travel- land 2023 WTT- pass vehs & travel- land 2023	1.53
Business Travel 3	3	Travel (business - not owned) - WTT	Hired – Medium petrol car - WTT	21,742	miles	0.0797 kg CO	2e.mile	WTT- pass vehs & travel- land 2023	1.73
Business Travel 3	3	Travel (business - not owned) - WTT	Hired – Medium hybrid car - WTT	427	miles	0.0357 kg CO	2e.mile	WTT- pass vehs & travel- land 2023	0.02
Business Travel 3 Business Travel 3	3 3	Travel (business - not owned) - WTT Travel (business - not owned) - WTT	Hired – Medium BEV - WTT Taxis - Black Cab (Glasgow) - WTT	109 16.888	miles km	0.0188 kg CO 0.0763 kg CO	2e.mile 2e.km	WTT- pass vehs & travel- land 2023 WTT- pass vehs & travel- land 2023	0.00
Business Travel 3	3	Travel (business - not owned) - WTT	Coach - WTT	-	km km	kg CO2	2e.mile	WTT- pass vehs & travel- land 2023	-
Business Travel 3 Business Travel 3	3	Travel (business - not owned) - WTT	Air – D - Economy	541,647	km	0.03350 kg CO	∠e.pass.km 2e.pass.km	WTT- business travel- air with RF (2023)	- 18.15
Business Travel 3 Business Travel 3	3	Travel (business - not owned) - WTT Travel (business - not owned) - WTT	Air – D - Business Air - SH - Average - WTT	5,452	km km	0.03350 kg CO2 kg CO2	2e.pass.km 2e.pass.km	WTT- business travel- air with RF (2023) WTT- business travel- air with RF (2023)	0.18
Business Travel 3	3	Travel (business - not owned) - WTT	Air - SH - Economy - WTT	760,483	km	0.0225 kg CO	2e.pass.km	WTT- business travel- air with RF (2023)	17.10
Business Travel 3 Business Travel 3	3 3	Travel (business - not owned) - WTT Travel (business - not owned) - WTT	Air - LH -Average - WTT	10,656	km	0.0337 kg CO kg CO	∠e.pass.km 2e.pass.km	WTT- business travel- air with RF (2023) WTT- business travel- air with RF (2023)	0.36
Business Travel 3 Business Travel 2	3	Travel (business - not owned) - WTT Travel (business - not owned) - WTT	Air - LH -Economy - WTT Air - LH -Premium economy - WTT	1,264,480	km km	0.0246 kg CO	2e.pass.km 2e.pass.km	WTT- business travel- air with RF (2023) WTT- business travel- air with RF (2023)	31.12
Business Travel 3	3	Travel (business - not owned) - WTT	Air - LH -Business - WTT	141,027	km	0.0714 kg CO	2e.pass.km	WTT- business travel- air with RF (2023)	10.07
Business Travel 3 Business Travel 3	3	Travel (business - not owned) - WTT Travel (business - not owned) - WTT	Air - LH - Firstv - WTT Air - Int -Average - WTT		km km	kg CO2 kg CO2	2e.pass.km 2e.pass.km	WTF- business travel- air with RF (2023) WTT- business travel- air with RF (2023)	-
Business Travel 3	3	Travel (business - not owned) - WTT	Air - Int -Economy - WTT	1,436,240	km km	0.0166 kg CO	2e.pass.km	WTT- business travel- air with RF (2023)	23.78
Business Travel 3	3	Travel (business - not owned) - WTT	Air - Int -Business - WTT	118,853	km	0.0480 kg CO	2e.pass.km	WTT- business travel- air with RF (2023)	5.71
Business Travel 3 Business Travel 3	3 3	Travel (business - not owned) - WTT Travel (business - not owned) - WTT	Air - Int -First - WTT Rail – National - WTT	- 341 493	km km	0.0090 kg CO	2e.pass.km 2e.pass.km	WTT- business travel- air with RF (2023) WTT- pass vehs & travel- land 2023	-
Business Travel 3	3	Travel (business - not owned) - WTT	Rail – National - WTT	282,197	km	0.0090 kg CO	2e.pass.km	WTT- pass vehs & travel- land 2023	2.53
Business Travel 3 Business Travel 3	3	Travel (business - not owned) - WTT Travel (business - not owned) - WTT	Rail - International - WTT Rail - International - WTT	492 1,744	km km	0.0012 kg CO 0.0012 kg CO	2e.pass.km 2e.pass.km	WI I- pass vehs & travel- land 2023 WTT- pass vehs & travel- land 2023	0.00
Employee Commuting 3	3	Travel (commuting - staff)	Rail	2,629,131	km km	0.0355 kg CO	2e.pass.km	Defra: Business travel - land - rail (2023) Defra: Business travel - land - rail - light rail and t	93.24
Employee Commuting 3	3	Travel (commuting - staff)	Public bus	1,154,544	km	0.1184 kg CO	2e.pass.km	Defra: Business travel - land - local bus (not Lond	1.94
Employee Commuting 3 Employee Commuting 3	3 3	Travel (commuting - staff) Travel (commuting - staff)	Car - Average - unknown Motorcycle/ Moped (average)	1,863,901 20,483	km km	0.1666 kg CO 0.1137 kg CO	2e.km 2e.pass.km	Defra: Business travel - land (cars (average - unkr Defra: Business travel - land - motorbike 2023	310.60 2.33
Employee Commuting 3	3	Travel (commuting - staff)	Coach	99,548	km	0.0272 kg CO	2e.pass.km	Defra: Business travel - land - coach 2023	2.71
Downstream transportatic 3	3	Travel (commuting - staff) Travel (commuting - students)	Rail - National	468.00 25,371,311.63	km	0.3338 kgCO2 0.0355 kg CO2	2e.pass.km	DEFRA: HUMEWORKING - HOMEWORKING (office equ Defra: Business travel - land - rail (2023)	0.16 899.74
Downstream transportatio 3 Downstream transportatio	3	Travel (commuting – students) Travel (commuting – students)	Underground Public bus	400,531	km km	0.0286 kg CO	2e.pass.km 2e.pass.km	Defra: Business travel - land - rail - light rail and t Defra: Business travel - land - local bus (not Lond	11.46
Downstream transportatic 3	3	Travel (commuting – students)	Car - Average - unknown	6,825,981	km	0.1666 kg CO	2e.km	Defra: Business travel - land (cars (average - unkr	1,137.47
Downstream transportatic 3 Employee Commuting 3	3 3	Travel (commuting - students) Travel (commuting - students)	Motorcycle/ Moped (average) Coach	20,879 3,286.471	km km	0.1137 kg CO 0.0272 kg CO	2e.pass.km 2e.pass.km	Defra: Business travel - land - motorbike 2023 Defra: Business travel - land - coach 2023	2.37 89.33
Downstream transportatio 3	3	Travel (end-of-term UK domicilled)	Coach	385,431	km	0.0272 kg CO	2e.pass.km	DEFRA: Business Travel - land - bus 2023	10.48
Downstream transportatio 3 Downstream transportatio 3	3	Travel (end-of-term UK domicilled)	Air - Domestic (average)	544,238 699,305	km	0.1000 kg CO.	2e.pass.km 2e.pass.km	Defra: Business travel - air (average passenger) w	90.69 190.61
Downstream transportatio 3 Downstream transportatio 3	3 3	Travel (end-of-term UK domicilled) Travel (int. stu. to Glasgow)	Rail - National Air – Long-haul (average)	2,103,739	km km	0.0355 kg CO	2e.pass.km 2e.pass.km	DEFRA: Busines travel - land - rail 2023 Defra: Business travel - air (average passenger) w	74.60
Downstream transportatic 3	3	Travel (int. stu. to Glasgow)	Air – Short-haul (average)	3,603,408	km	0.1859 kg CO	2e.pass.km	Defra: Business travel - air (average passenger) w	669.94
Investments 3 Investments 3	3 3	Investments	Endowment A Endowment B	- 0.3029	\$ million \$ million	12.7000 T CO2 12.7000 T CO2	e.\$ million e.\$ million	[ESG Report] [ESG Report]	- 3.85
Investments 3	3	Investments	Pension (New Blood)	4.0342	\$ million	12.7000 T CO2	e.\$ million	[ESG Report]	51.23

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