Carbon Performance Report for University of Wolverhampton

Prepared for Charlotte Connor

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University of Wolverhampton

For the reporting year which ended 31st July 2023

Carbon Performance Update 2022-23

Organisational boundary

An operational control approach is applied to define the GHG emissions for the University of Wolverhampton. This includes university and residential hall emissions across City Campus North, City Campus South, Telford Campus, Walsall Campus and various other individual buildings. The Wolverhampton Science Park and Skylon Court are excluded as per the Universities Carbon Management Plan.

Reporting period

The reporting period is 1st August to 31st July each year and the energy and carbon emissions are aligned to this period for 2022 to 2023. Energy usage is presented in table 1 and the associated emissions in table 2.

Quantification and reporting methodology

The 2019 UK Government Environmental Reporting Guidelines and the GHG Protocol Corporate Accounting and Reporting Standard (revised edition) were followed. The 2023 UK Government GHG Conversion Factors for Company Reporting were used in emission calculations as these relate to the majority of the reporting period. The report has been reviewed independently by Briar (Briar Consulting Engineers Limited).

The emissions are divided into the direct combustion of fuels and the operation of facilities (scope 1), indirect emissions from purchased electricity (scope 2) and further indirect emissions that occur as a consequence of company activities but occur from sources not owned or controlled by the organisation (scope 3).

The emissions included within the operational boundary are:

- Scope 1: Natural gas, oil and company owned vehicles.
- Scope 2: Purchased electricity (using the location-based methodology).
- Scope 3: Water supply, water treatment and waste disposal.

Electricity, gas, and water consumption were based on invoice records. Waste consumption by disposal method was provided by the waste management company Veolia. In the event of missing data, a pro-rata or direct estimation technique was used to fill the missing period. Company vehicle emissions have been calculated based on fuel usage records. Gross calorific values were used as per Government GHG Conversion Factors.

Table 1. Breakdown of consumption values used to calculate emissions

Energy or utility type	Units	2020/21	2021/22	2022/23
Gas	kWh	44,359,043	37,609,455	35,875,088
Purchased electricity	kWh	7,523,450	7,733,539	9,353,920
Oil	kWh	324,784	654,819	N/A
Transport fuel	kWh	696,510	906,407	805,813
Total Energy	**kWh**	**52,903,786**	**46,904,220**	**46,034,821**
Water supply	Cubic meters	158,594	179,780	131,754
Wastewater (95% of water supplied)	Cubic meters	150,664	170,791	125,166
Waste disposal	Tonnes	250	520	1,206

Table 2. Breakdown of emissions associated with the reported energy use (tCO_2e)

Emission source	2020/21	2021/22	2022/23
Scope 1			
Gas	8,124.8	6,865.2	6,562.6
Oil	83.4	168.2	N/A
University owned vehicles	164.7	217.9	191.5
Scope 1 Total	**8,372.9**	**7,251.3**	**6,754.0**
Scope 2			
Purchased electricity (location-based)	1,597.5	1,495.5	1,937.0
Scope 2 Total	**1,597.5**	**1,495.5**	**1,937.0**
Scope 3			
Category 1: Purchased goods & services:			
Water supply	23.6	24.2	23.3
Category 5: Waste generated in operations:			
Wastewater	41.0	41.9	25.2
Waste disposal	5.3	20.0	41.3
Scope 3 Total	**206.0**	**62.0**	**66.5**
Total gross emissions	**10,040.3**	**8,832.9**	**8,780.8**

Intensity ratio

Three intensity ratios are reported for University of Wolverhampton this year in table 3: tonnes of CO_2e per square meter floor area, per staff member and per student. These ratios provide sector specific relative emission performance over time. The units values used to calculate the intensity ratios are reported in table 4. Floor area is taken from an asset register that includes all buildings, whereas staff and student numbers are based on average values.

Table 3. Intensity ratio comparison over 3 years (tCO_2e per unit)

Unit Description	2020/21	2021/22	2022/23
Floor area (thousands of m^2)	61.3	53.2	52.3
Staff member	4.6	4.0	3.5
Student	0.37	0.33	0.33

Table 4. Unit values used to calculate intensity ratios

Unit Description	2020/21	2021/22	2022/23
Floor area (thousands of m^2)	163.82	165.90	167.81
Staff member	2,200	2,200	2,500
Student	27,000	27,000	27,000

Analysis

Overall greenhouse gas emissions in 2022/23 have reduced slightly this year by 52.1 tCO_2e (1%). Scope 1 emissions reduced by 497.2 tCO_2e (-7%) due to no oil use this year (-168.2 tCO_2e, -100%), lower natural gas usage (-302.6 tCO_2e, -4.4%) and reduced transportation in owned vehicles (-26.4 tCO_2e, -12.1%). Despite these scope 1 reductions, much of this has been negated by an increase in scope 2 emissions of 441.4 tCO_2e (+30%). Scope 2 emissions have increased due to greater electricity energy usage (+1,620,381 kWh or +20%) as the Combined Heat and Power (CHP) plant was down for maintenance for long periods. Scope 2 emissions have also increased because of an increase in average UK emissions per kWh of electricity by 7%.

Although the year-on-year reduction is modest this year, over 3 years the emissions have reduced by 1,259.5 tCO_2e (-13%), from a total of 10,040 tCO_2e in 2020/21. The reduction in gross emissions is also reflected in all three of the intensity ratios calculated (table 3).

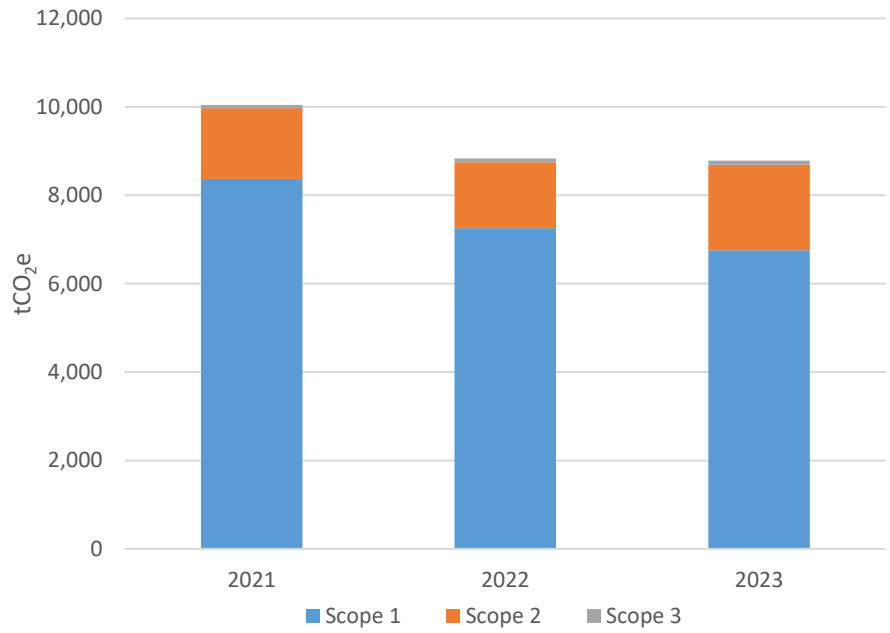

Figure 1. Annual emissions by scope (Years Ending 2021, 2022 and 2023).