



**Brunel**  
University  
London

# **Brunel University Carbon Management Plan**

**2022-2025**

## DOCUMENT OWNER

Carbon Reduction Action Group

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# Introduction

Brunel University London (BUL) is committed to reducing its impact on the environment and in January 2020 the University declared a climate change emergency, and re-stated its commitment to research to support sustainability and tackling global challenges.

BUL is a large campus University located in Uxbridge comprising over 70 buildings including 35 halls of residences, academic buildings ranging from 1930 – 2011 builds, some listed (The Lecture Centre is grade II listed, while the Towers A-D are of local interest), recreational buildings including leisure facilities, shops and bars. The University also owns land surrounding the main campus, with the river Pinn running through the campus itself.



# Aspirations and Targets

Greenhouse gas emissions are categorised into three groups or ‘Scopes’ by the most widely-used international accounting tool, the Greenhouse Gas (GHG) Protocol.

- Scope 1 covers direct emissions that occur from sources owned or controlled by the University.
- Scope 2 covers indirect emissions from the generation of purchased electricity consumed by the University.
- Scope 3 includes all other indirect emissions that occur in the University’s value chain

Brunel University London (BUL) has set a target to become net zero in all operational Scope 1 and 2 emissions by 2040, with an interim target in line with the Government’s plan for reducing emissions and the UUK’s new set of commitments on climate action of reducing Scope 1 and 2 emissions by 78% by 2035 compared to a 2009/10 baseline.

Brunel has not currently set a target for Scope 3 emissions but has the intention of accurately collating the emissions over the next 2 years and analysing areas where reductions can be made.



# Strategic Approach

## HEAT AND POWER STRATEGY

BUL has set a target to become net zero in all operational Scope 1 and 2 emissions by 2040; the challenge to reach this target is difficult to minimise and a step change in the way we deliver heat and power to the University is required to achieve the actions necessary to slash our carbon footprint. Over the next couple of years, we will develop a new Heat and Power Strategy that will play a large part in shaping our roadmap to net zero.

The initial focus of the strategy will be to develop sustainable options addressing the following:

- Sources of energy (including options for on-site generation)
- Distribution of the energy
- Future infrastructure requirements

The strategy will look at current sources of heat and power and explore options to use alternative greener sources.

Currently the University's heating infrastructure consists of over 120 decentralised boilers and a couple of small heat networks supplying a few of the Halls of Residences. It is proposed that the heat and power strategy will investigate the optimum method of

supplying heat to the Campus' many buildings. The proposed heating infrastructure will need to be suitable to accommodate the progression to decarbonised low temperature heat supplies. Investigations into the suitability of either a large energy centre and several heat networks or replacement of current decentralised boilers with smaller, improved efficiency, heating systems will be undertaken. The strategy will include a heat decarbonisation plan and explore sources of heating, either the transition over to electrical heating or opportunities for green thermal systems utilising cleaner sources such as biogas, AD or potentially hydrogen.

The strategy will assess the current state of the power infrastructure and any upgrade requirements for future demands; this will include the potential need for large scale on-site renewable integration. It is anticipated that the survey will also include upgrade recommendations to the current infrastructure where energy efficiency opportunities are possible. Opportunities for on-site power generation such as solar farms, solar car ports, wind generation, small scale hydro any other suitable forms of renewable generation will be explored.

Green Tariffs, Power Purchase agreements and offsetting projects will be investigated, if required, to meet interim or challenging emission reduction targets.

The Heat and Power strategy will analyse the following:

Reduction and mitigation of all Scope 1 and 2 carbon emissions in order to achieve 'net-zero' by 2040 via the development of an University wide Heat and Power Strategy which will consider:

ENERGY EFFICIENCY	FUEL SWITCHING	RENEWABLE ELECTRICITY	GREEN THERMAL	OFFSETTING
Energy Management Action Plan (EMAP) Design Policy	Heat De-carbonisation Plan Design Policy	Solar farm Roof mounted solar Solar car ports Wind Hydro	Biogas Hydrogen AD	PPA Investment



## ENERGY MANAGEMENT ACTION PLAN

Over the last 18 months BUL has developed an Energy Management Action Plan (EMAP). The EMAP is a working document in the form of an Excel Workbook. The EMAP calculates Carbon emission reductions from energy efficiency projects, along with cost savings and simple paybacks, allowing high level analysis of potential projects with a few straightforward inputs. The EMAP is regularly reviewed by the Estates' Carbon Reduction Action Group (CRAG) who decide which projects are undertaken. The projects within the EMAP are funded through varying means such as Salix recycling fund, BUL's own annual Green Initiative budget and capital works budget.

## SCOPE 3

Whilst reducing and mitigating Scope 1 and Scope 2 emissions is critical, it is important to understand Scope 3 indirect emissions generated from such activities as travel, water and waste water, waste and procurement.

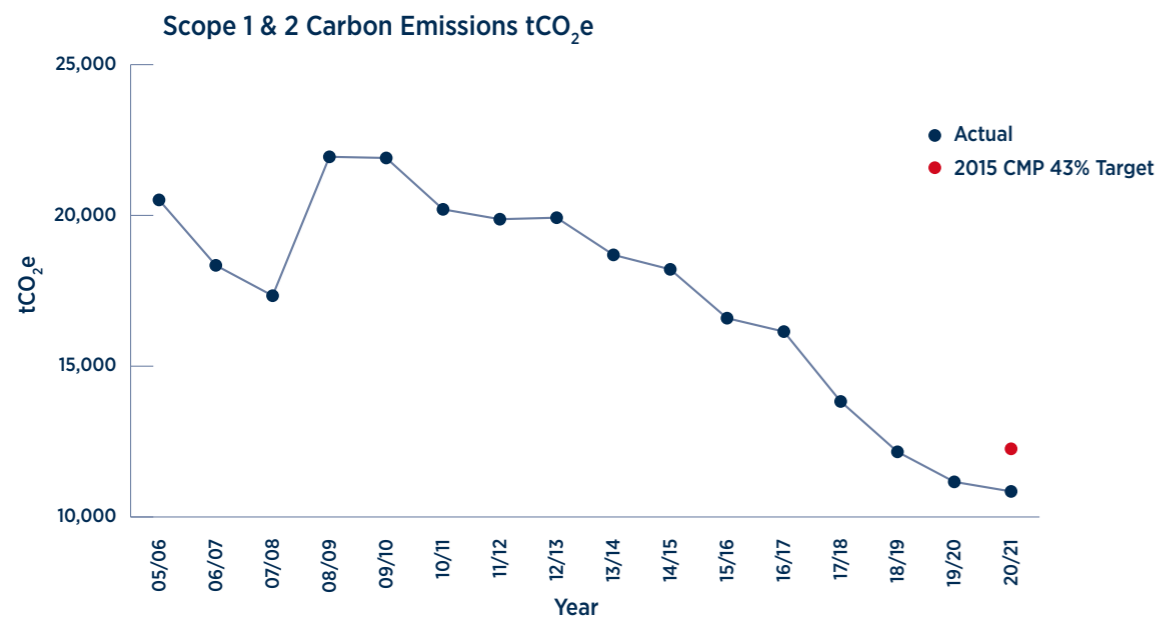
Whilst BUL accurately records emissions from waste, water and business travel, emissions produced from activities such as commuting and procurement are estimated. BUL annually submits Scope 3 emissions to HESA via the Estates Management Report. Over the next two years it is the intention to investigate and collate all Scope 3 emissions accurately and analyse areas where reductions can be made. BUL will quantify Scope 3 emissions using industry standard tools/methods available such as the Higher Education Supply Chain Emissions tool (HESCET) a tool which is formally owned by HEPA / BUFDG.

# The Story So Far

## HISTORICAL AND CURRENT EMISSIONS

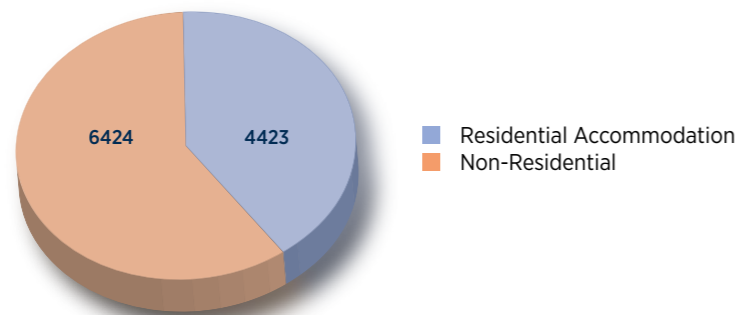
In the Clean Growth Strategy, the Government introduced a voluntary target for the wider public and higher education sectors in England. This target was to reduce greenhouse gas emissions across these sectors by 30% by 2020/21, compared to a 2009/10 baseline.

Brunel set its own more stringent target in the 2015 Carbon Management Plan, this was to reduce its Scope 1 and 2 emissions against its 2005/06 baseline of 21,508 tCO<sub>2</sub>e by 43% by 2020/21 to 12,260 tCO<sub>2</sub>e. This target was surpassed in 2018/19 when the University's Scope 1 and Scope 2 emissions were calculated to be 12,160 tCO<sub>2</sub>e. The graph below shows our progress to date from the original 2005/06 baseline.



The chart below provides the split of 2021/20 scope 1 & 2 emissions produced by residential accommodation and non-residential activities.

**Total Scope 1 & 2 Emissions (tCO<sub>2</sub>e)**



# The Way Forward

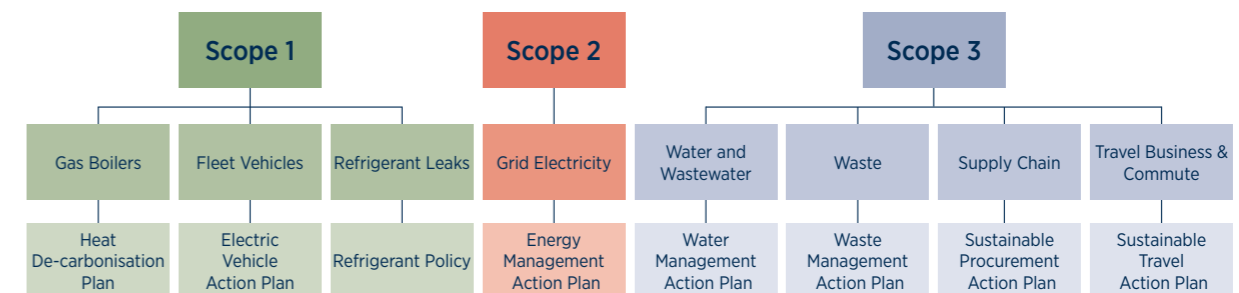
## ACTIONS AND TIMELINES

Brunel University London (BUL) has set a target to become net zero in all operational Scope 1 and 2 emissions by 2040, with an interim target in line with the Government's plan for reducing emissions and the UUK's new set of commitments on climate action of reducing Scope 1 and 2 emissions by 78% by 2035 compared to a 2009/10 baseline.

The University will carry out the following actions:

- Continue to collate, monitor and reduce Scope 1 and 2 emissions in line with the University's targets.
- Develop in depth Heat and Power Strategy (by 2024/25).
- Continue to implement energy efficiency projects recorded in the EMAP.
- Carry out an accurate collation of the University's Scope 3 emissions (by 2023/24).
- Set out the University's Scope 3 reduction targets (by 2024).

The University will aim to identify and report all emissions for Scope 1, 2 and 3 by 2025 using the following principles: Relevant, Accurate, Consistent, Quantitative, Complete, Transparent, Comparable. The University will endeavour to develop a set of action plans or policies to aid BUL's progress to Net Zero. See below an example of how this may look:



## BUDGET

The University has annual budget dedicated to Green Initiatives and an annual budget dedicated to energy efficiency projects. The University has made available budget for the development of the heat and power strategy. Examples of costed projects in the form of an extract from the University's EMAP can be found in the appendix.

# Governance

The Carbon Reduction Action Group (CRAG), chaired by the Associate Director of Environment and Sustainability, is the owner of the Carbon Management Plan. The CRAG reports to the University's Environment Sub-Committee which is committed to overseeing the development and implementation of the University's Environmental Policy and operation of the University's Environmental Management System.

The Environmental Sub-Committee meet every quarter and the Energy Sustainability Manager is responsible for submitting a paper that updates the committee on the University's carbon management performance.

The University encourages student participation and the Environment Sub-Committee includes student representation, giving the opportunity for the student body to contribute to the ongoing development of the Carbon Management Plan.

# Associated Documents

This Carbon Management Plan should be read in conjunction with the following documents:

- Brunel University London Environmental Policy
- Brunel University Waste Management Plan 2022 - 2025
- Brunel University London Water Management Plan 2022 - 2025
- BUL Travel Plan 2020 - 2024



# Appendix

Extract from BUL's Energy Management Action Plan:

DATE OF ENTRY	EMISSION SOURCE	DESCRIPTION	METHOD TO CHECK SAVINGS	ACTUAL FINISH	CURRENT STATUS	UPFRONT COST	FUEL UNITS	EST. ANNUAL SAVING	SYSTEM LIFETIME (YEARS)	ANNUAL FUEL UNITS	ANNUAL COST	ANNUAL kgCO <sub>2</sub> e	LIFE. FUEL UNITS	LIFE. COST	LIFE. kgCO <sub>2</sub> e	SIMPLE PAYBACK (YEARS)
01/08/2020	Electricity	LED replacement of LOCO's bar lighting	Deemed	28/09/2020	Implementation Complete	£8,542	kWh	7,497	8.0	7,497	£1,237	1,592	59,976	£9,896	12,735	6.9
05/11/2020	Natural Gas	Lecture Centre roof insulation	Sub meter data		Opportunity Identified	£1,489,000	kWh	603,522	50.0	603,522	£24,141	111,277	30,176,100	£1,207,044	5,563,869	61.7
05/11/2020	Natural Gas	Lecture Center glazing improvement	Sub meter data		Opportunity Identified	£2,200,000	kWh	1,039,220	50.0	1,039,220	£41,569	191,611	51,961,000	£2,078,440	9,580,569	52.9
05/11/2020	Natural Gas	Lecture Centre - Installing Point of Use water heaters	Sub meter data	31/08/2021	Implementation Complete	£57,816	kWh	384,446	15.0	384,446	£15,378	70,884	5,766,690	£230,668	1,063,262	3.8
12/11/2020	Natural Gas	Howell - Glazing improvements	Sub meter data		Opportunity Identified	£2,640,000	kWh	394,049	50.0	394,049	£15,762	72,655	19,702,451	£788,098	3,632,738	167.5
14/01/2021	Electricity	Lighting upgrade - Isambard Amenity areas	Deemed	31/12/2021	Implementation Complete	£29,220	kWh	19,463	10.0	19,463	£3,211	4,133	194,630	£32,114	41,326	9.1
14/01/2021	Electricity	Lighting upgrade - Outside lights on Saltash, Chepstow, Clifton & Faraday	Deemed		Opportunity Identified	£191,632	kWh	42,282	10.0	42,282	£6,976	8,978	422,816	£69,765	89,777	27.5
14/01/2021	Electricity	Lighting Upgrade - Laundrettes and Post Room	Deemed	31/12/2021	Implementation Complete	£16,176	kWh	20,790	10.0	20,790	£3,430	4,414	207,900	£34,304	44,143	4.7
12/02/2021	Electricity	Lighting Upgrade Bishop & Lancaster Bedrooms	Deemed	31/12/2021	Implementation Complete	£221,000	kWh	179,700	10.0	179,700	£29,650	38,156	1,796,995	£296,504	381,556	7.5
01/06/2021	Electricity	Gaskell 2nd Floor Corridor Lighting	Deemed	31/07/2021	Implementation Complete	£57,328	kWh	40,489	10.0	40,489	£6,681	8,597	404,890	£66,807	85,970	8.6
01/06/2021	Electricity	Phase 1 Street Lighting upgrade - Isambard	Deemed	31/07/2021	Implementation Complete	£34,800	kWh	65,700	10.0	65,700	£10,841	13,950	657,000	£108,405	139,501	3.2
10/01/2022	Electricity	Squash court lighting upgrade	Deemed		Implementation Underway	£7,365	kWh	24,968	8.0	24,968	£4,120	5,301	199,746	£32,958	42,412	1.8

