

# Carbon Management Plan 2017 – 2020

## 1. Foreword

The University of Huddersfield recognises that the construction and operation of its estate is its largest source of greenhouse gas emissions. Through efficient management and design, we can manage our emissions to reduce our impact whilst expanding and improving our campus for our students, researchers, guests and staff.

Having a sustainable estate is beneficial not just environmentally, but also helps to reduce the financial impact of its running costs and provides a healthy working environment for the wellbeing of its users.

As we undertake new construction projects and refurbishments the principles established in this document will help us to achieve the Universities objective of a high quality and sustainable estate that is adaptable to the ever changing needs of its users.

Mr Colin Blair MBE DL  
Director of Estates and Facilities  
24 May 2018

## 2. Introduction

The University of Huddersfield has developed this revised Carbon Management Plan to manage its Greenhouse Gas Emissions and to help achieve its target of reducing the emissions per square meter of gross internal area by 20% by 2020 from a 2005 baseline.

This document has been produced utilising the Higher Education Funding Council for England (HEFCE) carbon management strategies and plans guidance document

The Universities first Carbon Management Plan was produced in 2010 in conjunction with the Carbon Trust. Since that time the university's estate has significantly changed and expanded with numerous buildings demolished, major refurbishments undertaken on existing and purchased stock and to date five new buildings constructed. The university now has two new buildings currently under construction and plans in place for future development and major refurbishments.

The University of Huddersfield is predominantly located one on site to the south of Huddersfield town centre, with one additional property leased in the centre of Huddersfield to provide a free Legal Advice Clinic to the residents of the town.

Previously the university maintained satellite campuses in Barnsley and Oldham, however these have now been sold and the university has purchased land adjoining its existing Huddersfield campus to develop with construction underway on the Barbara Hepworth Art, Design and Architecture building due for completion in 2020.

The university does not own or operate any residential accommodation for students

### **3. Policy**

The University of Huddersfield Environment and Sustainability Policy (2017) commits to the following policies;

- *Commit to using primary raw materials [including fossil fuels, energy and water] in an efficient manner and promote their conservation, thus helping to reduce greenhouse gas emissions and conserving University resources.*
- *Continually improve its energy and water efficiency, by adopting high standards for new buildings and refurbishments and to reduce consumption through implementing new energy and water efficiency measures. New buildings shall achieve the Energy Performance Certificate (EPC) 'A' rating*
- *Adopt sustainable factors into all new buildings and refurbishments, and aim for the highest environmental standards possible whilst achieving its academic priorities. To meet this objective the University will achieve the Building Research Establishment Environmental Assessment Method (BREEAM) 'Excellent' rating for all new buildings and will incorporate sustainable interventions into refurbishments.*
- *Set and report on clearly defined and quantifiable environmental objectives and targets*

This document will outline the principles of how these policy goals will be met and improvements implemented

Please note that the policies and targets relating to the reduction of travel related carbon emissions will be identified and implemented through the university's revised Travel Plan 2017-2022

### **4. Strategic Context**

The Carbon Management plan is designed to enable the delivery of the following elements of the University of Huddersfield Strategy Map 2013 - 2018

- E7 To improve core processes and performance
- E5 To maintain financial strength

### **5. Governance**

The Carbon Management Plan has been developed within Estates and Facilities and the Director will be responsible for its implementation and review. The plan will, where appropriate, be incorporated into the Estates Strategy and be reportable to the Estates Development Committee.

## 6. Carbon footprint definition

The boundary of the organisation includes all university Non-Residential buildings and utilities supplies plus emissions from the use of university owned vehicles.

At the point of publication, the university does not own and is not responsible for the management of any Residential properties.

Scope	Definition	Examples
<b>Scope 1:</b> Direct Emissions	Emissions from the combustion of fuels	<ul style="list-style-type: none"><li>- Fuel used in University owned vehicles</li><li>- Natural Gas used to Heat or undertake other activities in the universities estate</li></ul>
<b>Scope 2:</b> Electricity Indirect Emissions	Emissions allocated from the purchase and supply of Electricity from the National Grid	<ul style="list-style-type: none"><li>- Purchase of electricity from utilities suppliers</li></ul>
<b>Scope 3:</b> Indirect Emissions	Emissions that are associated with the activities of the organisation but are not under its control	<ul style="list-style-type: none"><li>- Waste</li><li>- Water</li><li>- Commuting by staff and students</li><li>- Emissions from the procurement of goods or services</li><li>- Provision of residential accommodation for students</li></ul>

## 7. Baseline, Performance and Targets

In its previous Carbon Management Plan the university was striving to achieve a campus level target against an ever expanding and changing campus portfolio. This has led to the university's carbon footprint<sup>1</sup> increasing by 6.6% from the 2005/06 academic year to 2015/16 [Fig.1] and the Gross Internal Area (GIA) increasing by 7.4%.

The way the university operates has changed over time including longer operating hours, 24 hour access operation of some buildings, increasing energy intensive research activities, increased provision of food outlets and sports facilities as well as increased student and staff numbers.

---

<sup>1</sup> This document will refer to two carbon footprint calculations. Firstly the original 2005 baseline produced for HECFE and secondly a revised baseline produced using updated guidance from DEFRA 'Environmental Reporting Guidelines' – June 2013. Unless explicitly stated discussion of carbon performance will be referring to the revised baseline.

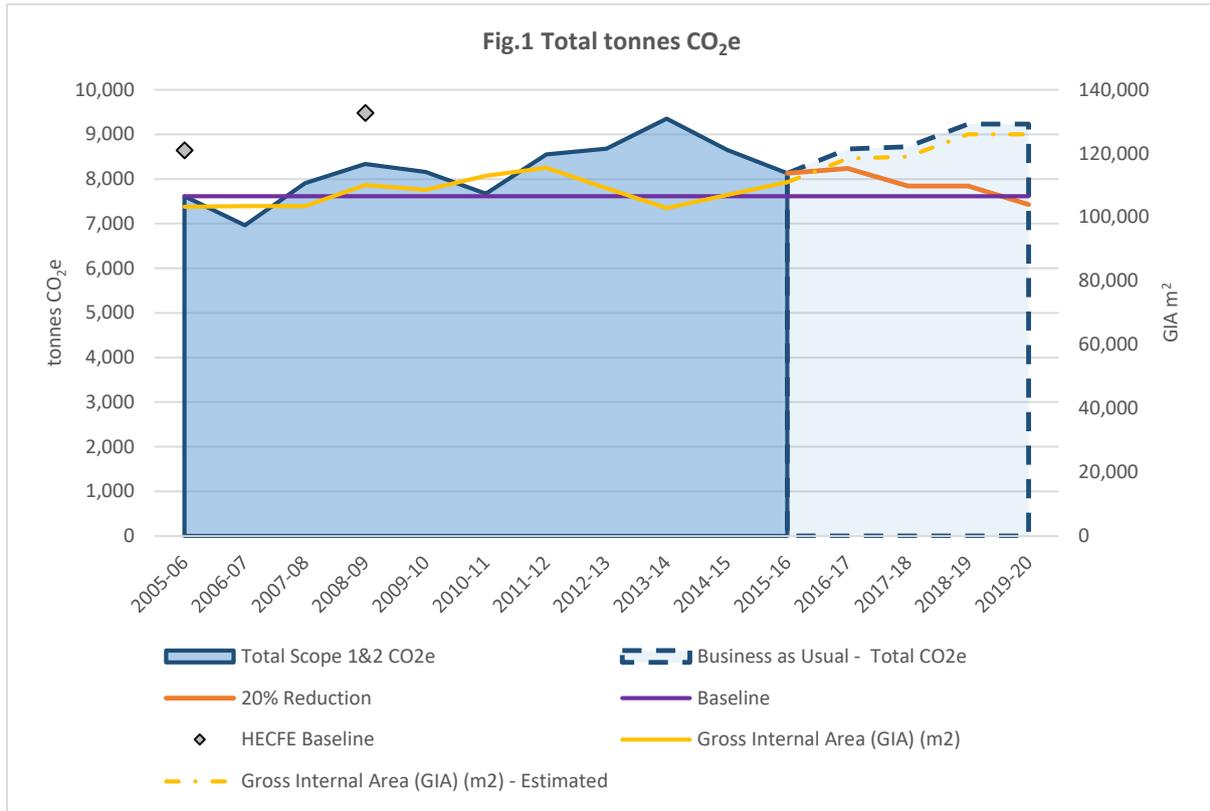


Fig.1 represents the university's total Carbon footprint and the size of its estate. As can be seen the university is estimated to increase in size to approximately 126,500 m<sup>2</sup> gross internal area. With a 20% reduction in emissions per m<sup>2</sup> the university will be able to improve its performance

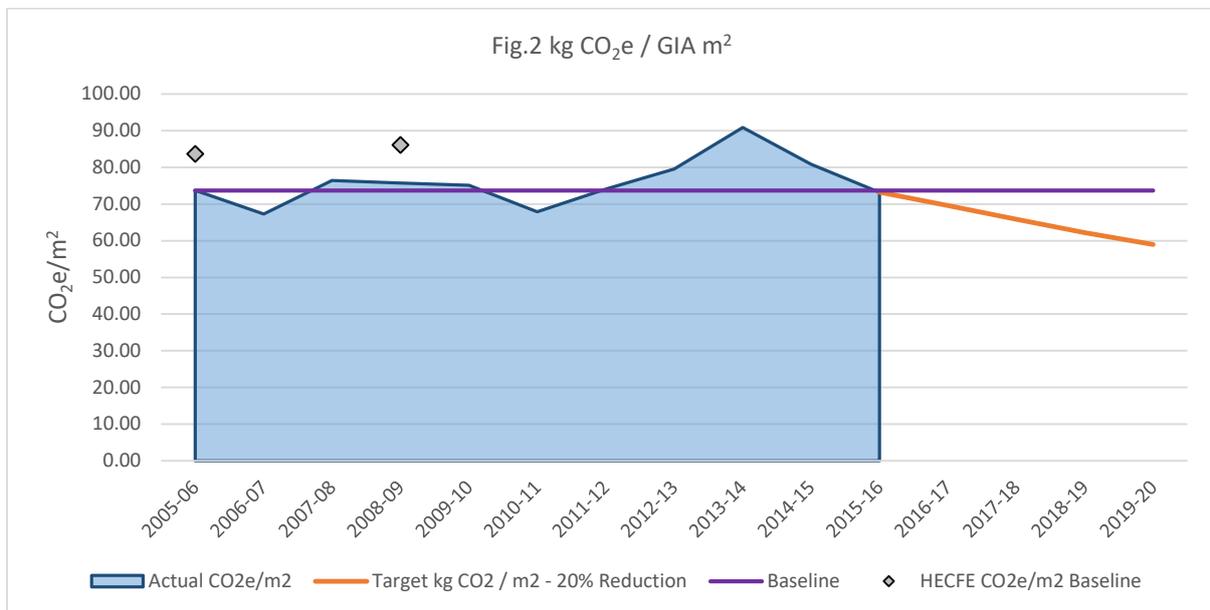


Fig.2 represents the carbon emissions per m<sup>2</sup> of the university. As can be seen the university is at the same level of its 2005 baseline in the last full reporting year (2015-16).

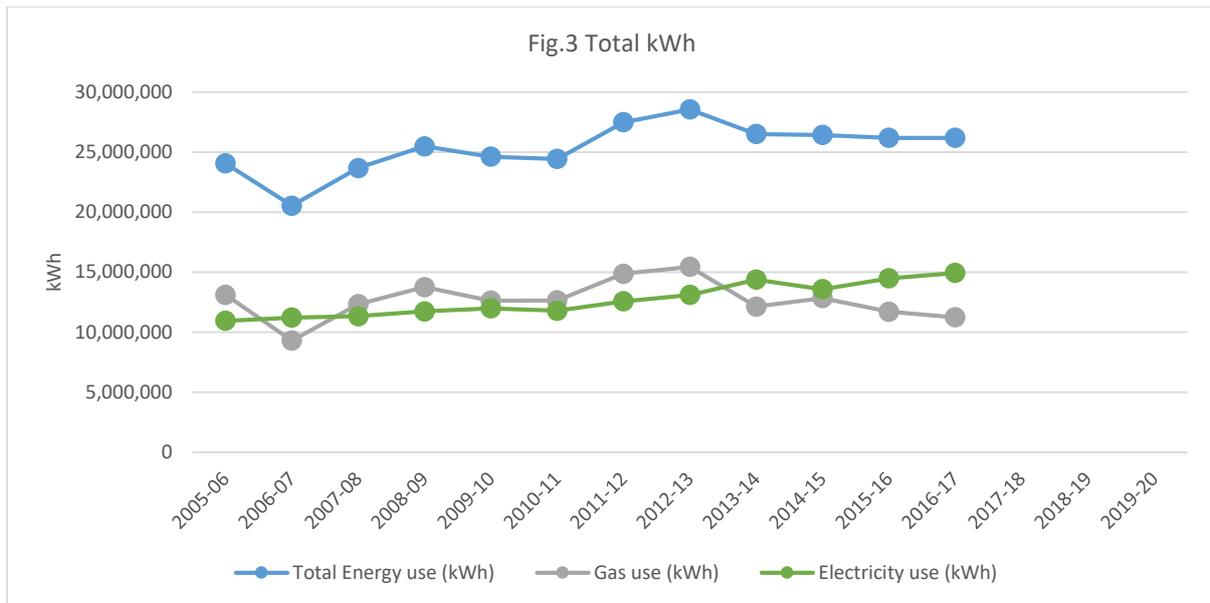


Fig.3 represents the consumption of natural gas and grid supplied electricity since 2005. As can be seen there is an upward trend of electricity consumption over the period whilst gas use has recently decreased. And has a pattern of consumption more closely linked to the weather.

The upward trend of electricity consumption is significant as electricity supply has more than twice the Carbon footprint of natural gas consumption per kWh.

### Targets

#### Scope 1 & 2 Emissions from the operation of our buildings

The following targets are based upon a 20% reduction in kg CO<sub>2</sub> per m<sup>2</sup> of Gross Internal Area of the University of Huddersfield. The Total kg CO<sub>2</sub> figure applies this target to the expected growth of the Universities Estate over the target period

	2005/06	2015/16	2016/17	2017/18	2018/19	2019/20
	Baseline	Actual	Target	Target	Target	Target
Target kg CO <sub>2</sub> / m <sup>2</sup>	73.7 (83.6 HECFE Baseline)	73.24	69.4	65.8	62.1	59.0
Total tonnes CO <sub>2</sub>	7,614 (8,641 HECFE Baseline)	8,127	8,226	7,830	7,826	7,432

The intention of using a normalised value (kg CO<sub>2</sub> per GIA m<sup>2</sup>) is to enable the comparison over time as the university's estates expands or contracts

## **8. Understanding our campus**

We will improve data acquisition across the estate with all major areas measured with half-hourly data for gas and electricity. We will seek to improve knowledge of water use and improve performance

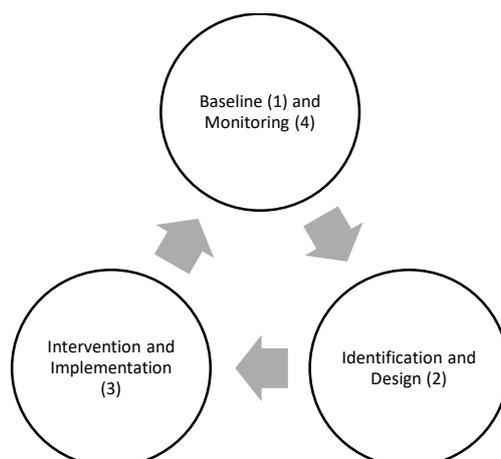
All buildings will be benchmarked and monitored for performance [please see section 8]

New buildings and major refurbishments will have targets for performance developed at design stage with the aim to have efficiency of operation throughout its whole life at the forefront.

We will undertake exercises to utilise knowledge from staff, students and contractors to understand how our estate operates and where efficiencies and improvements can be made

We will review our vehicles and procure more efficient options suitable for the role intended including electric, hybrid and high-efficiency combustion vehicles.

## 9. Process for identifying opportunities for improvement in current buildings



	Stage	Key processes	Notes
1	Baseline	Establish Baseline consumption of each building	<i>Where required install or improve metering provision</i>
		Benchmark buildings using suitable standard (e.g. CIBSE Guide F - Energy Efficiency in Buildings 2012)	
		Rank buildings based upon size of footprint and/or density of energy use (kWh/m2)	
2	Identification and design	Identify energy consumption within building	<i>Heating source(s)</i>
			<i>Cooling source(s)</i>
			<i>Small power (Inc. Vending machines, IT and AV equipment)</i>
			<i>Lighting (Including external lighting where applicable)</i>
			<i>Infrastructure (e.g. Lifts, catering equipment, lab equipment)</i>
			<i>Other (e.g. specialised research equipment)</i>
		Calculate cost of intervention and determine financial payback period factoring;	<i>energy use</i>
	<i>maintenance costs</i>		
	<i>improvements to delivery of services</i>		
	<i>lifespan of intervention</i>		
3	Intervention and Implementation	Design, procure and install equipment to improve performance	
		Adjust controls to reduce consumption	
4	Monitoring	Monitor over time to ensure opportunities have been recognised	
		If opportunities not recognised identify cause and implement steps to remedy	

## 10. Implementation of Carbon Management Policies

The following processes will be undertaken to achieve the targets established in this document

Project	Description	Responsibility	Completion
Electricity Sub-Metering	Installation of new data logging metering Panels in substations for; Schwann [Complete], Joseph Priestley Building, Technology Building, Firth Street	<ul style="list-style-type: none"> <li>- Electrical Engineer</li> <li>- Carbon and Energy Reduction Officer</li> </ul>	End 2017
Gas Sub-Metering	Implementation of Automatic Meter Readers on all gas meters supplying UoH	<ul style="list-style-type: none"> <li>- Gas Supplier</li> <li>- Carbon and Energy Reduction Officer</li> </ul>	Early 2017
LED Lighting Replacement	Replacement of fluorescent luminaires with modern efficient LED Luminaires. Prioritising areas with older T8 and T12 designs, areas with a high level of maintenance and areas of long operating hours. All refurbishments where lighting is to be replaced will be done so with LED's and where suitable lighting controls	<ul style="list-style-type: none"> <li>- Refurbishment Project Managers</li> <li>- Carbon and Energy Reduction Officer</li> <li>- Electrical Engineers</li> </ul>	Ongoing
Building Management System (BMS) Review	Identification of opportunities for efficiencies in programming building control for heating and cooling.	<ul style="list-style-type: none"> <li>- Mechanical Services Engineer</li> <li>- Carbon and Energy Reduction Officer</li> </ul>	Ongoing
Building usage investigations	Use of data sources to identify patterns of usage by staff and students to enable streamlined and efficient use of buildings, especially in out of hour's operations. Sources include, PC login data, door access information, timetabling & room bookings	<ul style="list-style-type: none"> <li>- Carbon and Energy Reduction Officer</li> <li>- Computing and Library Services</li> <li>- Security</li> <li>- Staff responsible for timetabling</li> </ul>	Ongoing
Awareness Raising and behaviour change	Launch sustainability awareness raising campaign. Incorporate activities and information relating to energy efficiency including "switch it off" / "blackout" event(s)	<ul style="list-style-type: none"> <li>- Estates and Facilities</li> <li>- Huddersfield Students Union</li> <li>- Central marketing</li> </ul>	October 2017
Conservation measures	Design out need or opportunity for unnecessary energy use in new buildings and refurbishments. E.g. use of lighting controls, desk module power outlets with limited amperage rating via control fuse to prevent use of personal heaters or kettles	<ul style="list-style-type: none"> <li>- Refurbishment Project Managers</li> <li>- Carbon and Energy Reduction Officer</li> <li>- Electrical Engineers</li> </ul>	Ongoing

### 11. Building CO<sub>2</sub> footprints

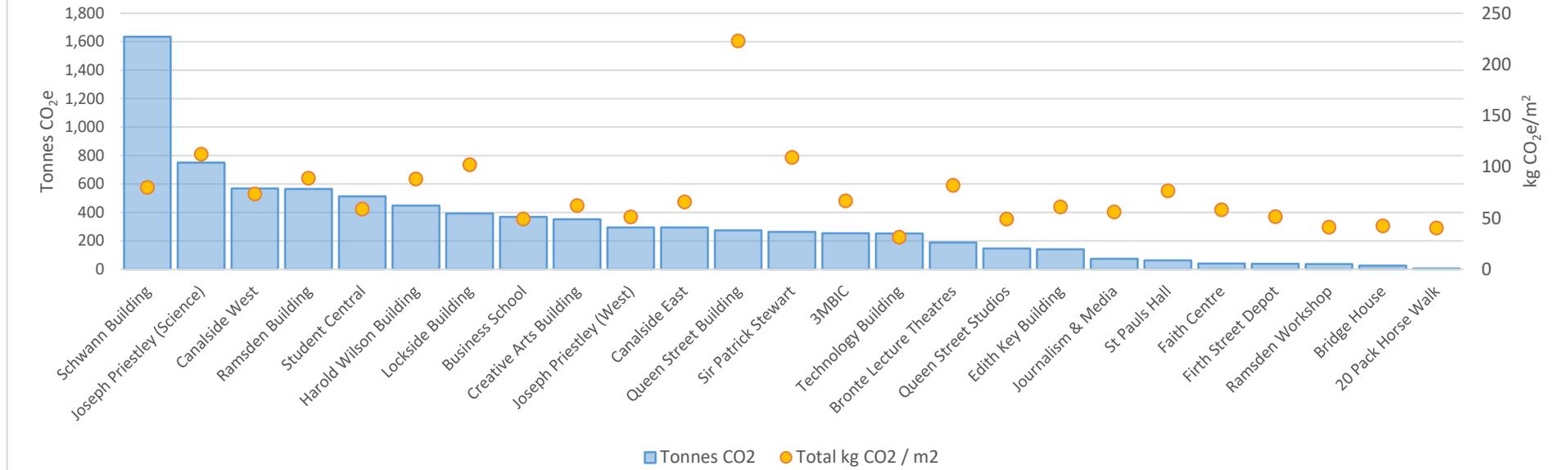
Building Name (ranked by total Tonnes CO <sub>2</sub> )	Tonnes CO <sub>2</sub>	% of Total UoH Footprint	Total kg CO <sub>2</sub> / m <sup>2</sup>	Electricity kg CO <sub>2</sub> / m <sup>2</sup>	Gas kg CO <sub>2</sub> / m <sup>2</sup>	Gross Internal Area m <sup>2</sup>	Notes
Schwann Building	1,486	20.4%	72.6	57.4	15.2	20,466	<i>District heating system for Schwann, Business School and Student Central Also contains Data Centre and 24hr Library</i>
Joseph Priestley (Science)	676	9.3%	101.4	74	27.4	6,670	<i>District heating system for Joseph Priestley (Science, Ramsden building and Ramsden Workshop)</i>
Ramsden Building	514	7.1%	81.1	53.7	27.4	6,345	<i>District heating system for Joseph Priestley (Science, Ramsden building and Ramsden Workshop)</i>
Spärck Jones Building	513	7.0%	66.4	48.9	17.5	7,727	
Student Central	473	6.5%	54.3	39.1	15.2	8,714	<i>District heating system for Schwann, Business School and Student Central</i>
Harold Wilson Building	406	5.6%	80	56.1	23.9	5,075	<i>24hr Security Hub located in building</i>
Lockside Building	359	4.9%	93.3	60.2	33.1	3,841	
Charles Sikes Building	344	4.7%	45.9	30.7	15.2	7,512	<i>District heating system for Schwann, Business School and Student Central</i>
Creative Arts Building	321	4.4%	56.6	38.1	18.5	5,655	
Joseph Priestley (West)	267	3.7%	46.5	31.9	14.6	5,751	
Haslett Building	267	3.7%	59.9	41.3	18.6	4,460	
Sir Patrick Stewart	244	3.3%	101.5	52.9	48.6	2,400	
Queen Street Building	242	3.3%	197.5	172.5	25	1,226	<i>Contains IT data centre</i>
Technology Building	239	3.3%	29.6	11.4	18.2	8,087	
3MBIC	226	3.1%	59.3	51.4	8	3,806	
Bronte Lecture Theatres	174	2.4%	75.2	45.5	29.7	2,313	<i>Heating system serves Journalism and Media building</i>

Building Name (ranked by total Tonnes CO <sub>2</sub> )	Tonnes CO <sub>2</sub>	% of Total UoH Footprint	Total kg CO <sub>2</sub> / m <sup>2</sup>	Electricity kg CO <sub>2</sub> / m <sup>2</sup>	Gas kg CO <sub>2</sub> / m <sup>2</sup>	Gross Internal Area m <sup>2</sup>	Notes
Queen Street Studios	133	1.8%	44.6	31.4	13.2	2,990	
Edith Key Building	127	1.7%	55	40.8	14.2	2,309	
Journalism & Media	73	1.0%	54.7	25	29.7	1,331	<i>Heating provided by Bronte Lecture Theatres</i>
St Pauls Hall	62	0.8%	74.2	15.7	58.5	833	
Cockcroft Building	37	0.5%	38.4	11	27.4	971	<i>District heating system for Joseph Priestley (Science, Ramsden building and Ramsden Workshop)</i>
Firth Street Depot	36	0.5%	48.4	20.6	27.8	746	
Faith Centre	36	0.5%	50.7	50.7	0	711	<i>Electric Heating</i>
Bridge House	24	0.3%	38.9	25	13.9	617	
20 Pack Horse Walk	5	0.1%	35.3	35.3	0	152	<i>Electric Heating</i>
Oastler Building	N/A					8,077	<i>New building opened April 2017</i>
Sir John Ramsden Court	N/A					751	<i>Ground up refurbishment opened April 2016</i>

Footprints calculated for Aug 2015 – July 2016 reporting period

Where there are joint systems for heating and hot water the emissions are allocated by Gross Internal Area

Fig.4 Building Footprints



**POLICY SIGN-OFF AND OWNERSHIP DETAILS**

<b>Document name:</b>	Carbon Management Plan
<b>Version Number:</b>	V1.0
<b>Equality Impact Assessment:</b>	
<b>Approved by:</b>	Senior Management Team
<b>Date Approved:</b>	24 May 2018
<b>Next Review due by:</b>	31 May 2023
<b>Author:</b>	Carbon and Energy Reduction Officer
<b>Owner (if different from above):</b>	
<b>Document Location:</b>	<a href="https://www.hud.ac.uk/media/policydocuments/Carbon-Management-Plan.pdf">https://www.hud.ac.uk/media/policydocuments/Carbon-Management-Plan.pdf</a>
<b>Compliance Checks:</b>	Published annual report of carbon emissions and performance against targets
<b>Related Policies/Procedures:</b>	

**REVISION HISTORY**

<b>Version</b>	<b>Date</b>	<b>Revision description/Summary of changes</b>	<b>Author</b>
V1.0	May 2018	First major redraft under the new Policy Framework	Carbon and Energy Reduction Officer