



# **UCA Energy & Environment Report 2017/18**

October 2018

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## 1 Introduction

This report prepared by the UCA Sustainability Officer, summarises the University's environmental performance and related actions at its four campuses; Farnham, Epsom, Rochester and Canterbury in Academic year 2017/18 (August 2017 to July 2018).

The report incorporates a review of the progress of UCA's third Carbon Management Plan (CMP3).

## 2 Summary

### Governance

All academic course teams are required to reflect upon Education for Sustainable Development (ESD) in relation to their courses in preparation for course validation and periodic review. ESD is now part of the remit of course validation panels.

The Sustainable Travel Group was formed in 2018 to develop Sustainable Travel Plans for each campus.

### Staff & student engagement in Sustainability

There are forty-seven members of staff in the Environment and Sustainability Workplace Group, an online social media community for sharing comments and suggestions on sustainability.

UCA Student Union and UCA worked together on *Go Green Month* in March 2018, with a programme of engagement activities on sustainability across all campuses.

### Water and waste management

In 2017/18 UCA consumed almost 54,000 cubic metres of water at a cost of £75,000. Over the last three years, repairs to underground leaks are estimated to have reduced annual consumption by 14%. In 2017/18 this saved over 9,000 cubic meters of water and reduced water supply cost by £4,500.

The total weight of waste collected in 2017/18 is estimated at 577 tonnes (346 tonnes general waste and 231 tonnes of recyclables), a 10% increase compared to the previous year. The proportion of total waste recycled in 2017/18 has remained unchanged at around 40% of total waste.

A new waste service agreement is being rolled out to all campuses, which consolidates services, under one provider. The new waste service will provide improved management information, cost efficiencies and facilitate programmes to improve waste avoidance and recycling.

### Energy consumption & carbon emissions

The University's overall energy consumption (grid electricity and natural gas) in 2017/18 was 14.39 million kilowatt hours (kWh), a 4.7% increase in consumption compared to the previous year and a 3.8% increase in the overall cost of energy to £1.11 million. The increase was related to higher gas consumption for heating during the relatively cold winter of 2017/18 and the first full-year of operation of Hopfield House in Farnham. The replacement of gas fired

glass kilns and glory holes with new efficient equipment in Farnham had the notable effect of negating increases in gas consumption for heating. Planned Maintenance and Energy Efficiency projects also contributed to reducing the potential for increases in energy consumption and included improvements to heating and lighting in student accommodation at all campuses and the replacement of North-light windows in Farnham Fine Arts Department contributed to this reduction.

The University surpassed its 2020 target for absolute carbon emissions reduction last year. Progress has continued in 2017/18 with carbon emissions from energy consumption in buildings at 3,429 tonnes, exceeding the 2020 target by 483 tonnes. Emissions in 2017/18 were 12% lower than emissions in 2016/17 and 44% lower than the 2005 baseline of 6,188 tonnes.

Based upon current expectations UCA is projected to exceed its Carbon Emissions target and reduce absolute carbon emissions by 48% by 2019/20 (3,129 tonnes) compared to its 2005 baseline (6,188 tonnes).

Carbon Management Plan 4.0 will be published in 2019 to take the Carbon Management Programme beyond 2020.

### **Sustainable Transport**

A Sustainable Travel Plan has been developed for Farnham campus. Plans for Rochester, Canterbury and Epsom will be produced in 2019. A number of initiatives have been launched to encourage more sustainable modes of transport and reduce reliance on single occupancy car travel including UCA Liftshare car sharing community, staff and student discounts on public transport and initiatives to improve facilities for cyclists.

## **3 Governance**

Board-level responsibility for Sustainability is held by the Vice Chancellor (VC) and operational responsibility is held by the Deputy Vice Chancellor (Corporate Resources).

A University Sustainability Officer (SO) was appointed in 2016 as part of the Estates & Facilities team. The main job function of the SO is *'to act as the University champion in promoting sustainability and sustainable management techniques through the development and implementation of University-wide environmental and sustainability policies, practices and management systems'*.

The SO reports progress and seeks input on the Sustainability Programme at Campus Operations Group Meetings and submits papers to the University Leadership Team for review and approval. The annual report is submitted for review and approval to the University Audit and Risk Committee and is reported to the Board of Governors.

The Sustainable Travel Group (STG), chaired by the SO, was formed in 2018, to develop Sustainable Travel Plans at each campus and to reduce the environmental impact of staff and student travel. STG membership includes staff from Estates & Facilities, Human Resources, Health & Safety and a representative from the Students Union.

In 2014/15 The Learning and Teaching Committee, began a programme of academic support and development to incorporate Education for Sustainable Development (ESD) in all

UCA courses.

ESD is embedded in UCA's academic quality assurance programme. All academic course teams are required to reflect upon ESD in relation to their courses in preparation for course validation and periodic review. ESD is part of the remit of validation panels in considering courses for approval. Key documents to Course Leaders, including guidance on ESD from QAA and the HEA to help in preparation of course documentation for review. An example of the learning resources on ESD made available to course teams is available on the UCA learning and teaching website [UCA Learning and Teaching Sustainability](#).

#### **4 Staff and Student engagement in Sustainability**

An Environment & Sustainability Group for staff to post and share information on UCA Workplace, an internal social media platform, launched in 2017 and by October 2018 had forty-seven staff members across all campuses.

In June 2018, UCA Students' Union (UCASU) took part in the National Union of Students (NUS) Green Impact awards and were presented with a 'Very Good' Award in recognition of achievements in sustainability. This award recognises improvements since 2016, when the UCASU received a Bronze award under the previous grading scheme for NUS's Green Impact Awards.

UCASU and UCA hosted *Go Green March* in March 2018 ([UCASU Go Green March](#)), with over forty events and activities across UCA's four campuses to engage staff and students in sustainability issues. Events included Meat-free Mondays and vegan options in canteens, Swishing events (clothing exchange), Green Discussion Forums, movie screenings, talks from local 'green' businesses and Non-governmental Organisations, a pop-up Repair Café and a free Bike repair and maintenance session with the Bikestart charity. In September 2018, the Sustainability Officer took part in the Fresher's Week Fairs, distributing information and meeting with new students.

In June 2018, UCA students and staff operated a stand at the Farnham Sustainability Fayre 2018, showcasing student art inspired by nature and constructed from found objects and recycled materials. Over two hundred local Farnham residents visited the stand, which also highlighted key elements of the University Sustainability programme.

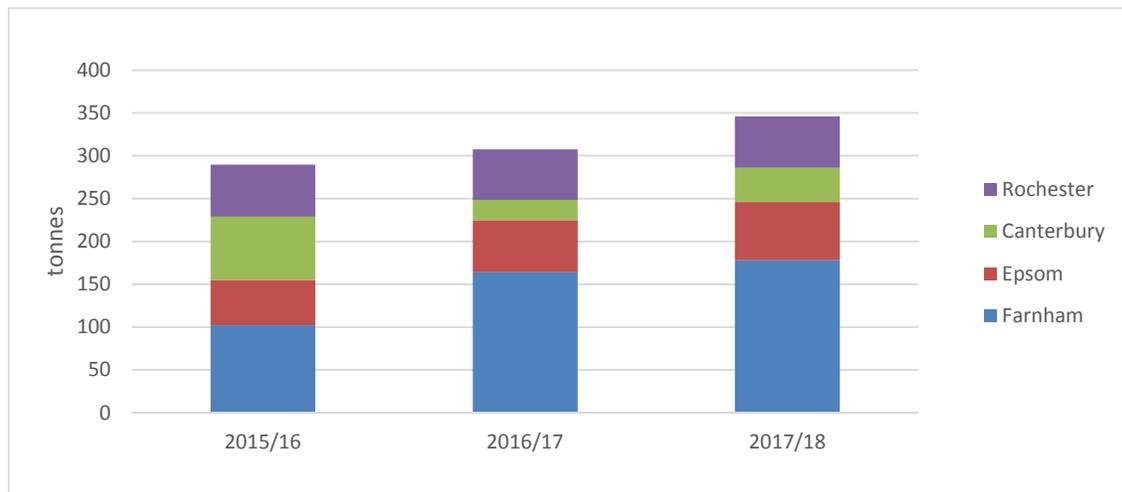
In 2015 The Centre for Sustainable Design® (CfSD), which recently became part of UCA's Business School for the Creative Industries, set up a collaboration with Transition Town Farnham to establish Farnham Repair Café (FRC). FRC is a place where local people can seek advice and get free assistance from local volunteers to repair and extend the useful life of broken or faulty products, including electrical and mechanical products, furniture, clothing, textiles and bikes. Between January 2015 and October 2018, FRC has attracted almost 2,000 visitors and achieved 710 fully repaired products, diverting over two tonnes of products from disposal to landfill ([Farnham Repair Cafe](#)). During the course of its operation, eleven Farnham students and two UCA members of staff have regularly volunteered their time and expertise to assist with repairs and help run the Repair Café. CfSD has published a number of research reports and conference papers on Repair Cafés ([CfSD research](#)).

## 5 Waste Management

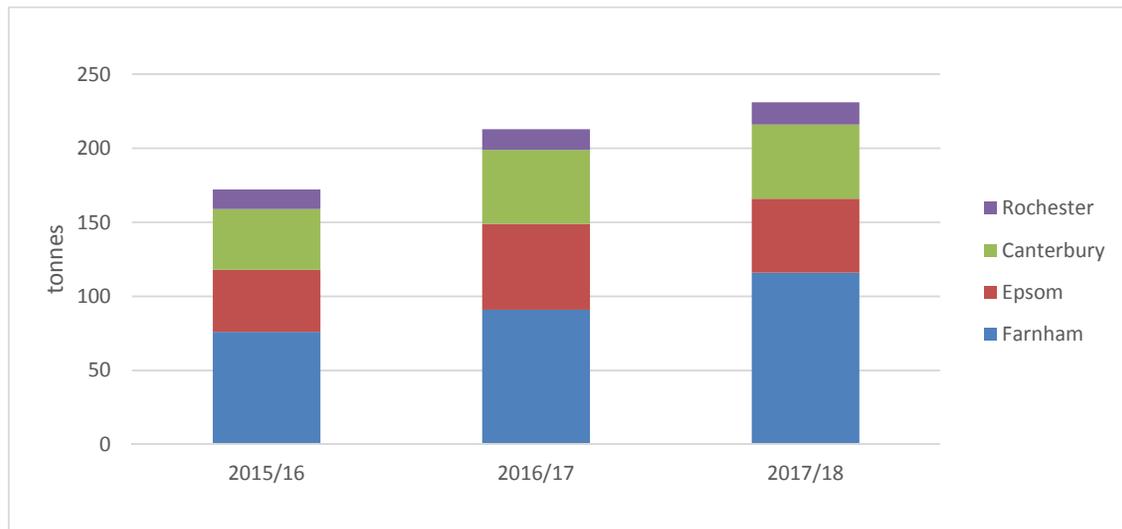
The total weight of waste collected in 2017/18 is estimated at 577 tonnes (346 tonnes general waste and 231 tonnes of recyclables), a 10% increase compared to the previous year. The proportion of total waste recycled in 2017/18 has remained unchanged at around 40% of total waste.

General waste collected from UCA sites, for landfill or incineration increased by 12% between 2016/17 and 2017/18 (Graph 1), mainly due to increases at Farnham and Canterbury campuses. At Farnham additional waste was generated from continued office relocation works, while at Canterbury there was a significant increase in waste generated following end of year degree shows.

Graph 1. Estimated annual weight in tonnes of general waste collected at UCA campuses over the last three years.



Graph 2. Estimated annual weight in tonnes of waste for recycling collected at UCA campuses over the last three years.



The estimated weight of materials collected for recycling has increased over the last three

years (Graph 2), with a 9% increase to 231 tonnes recycled between 2016/17 and 2017/18.

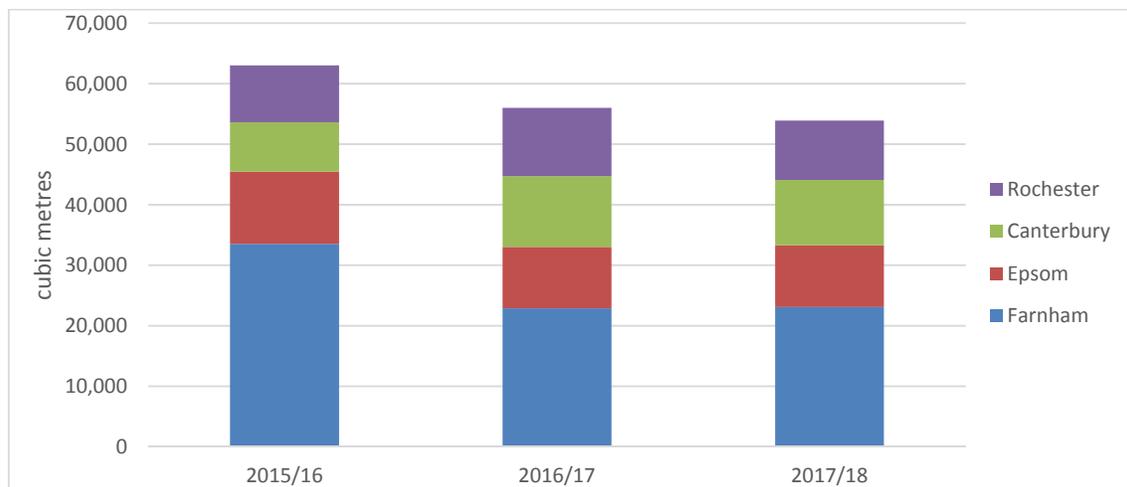
In December 2016, the University began to transition from a number of existing waste service contracts at each campus to one consolidated waste service provider across all four campuses. The transition to Suez Waste Services Limited will be complete by February 2019. The new waste services are provided to the University under the South Coast Affinity Group (SCAG) agreement, which has provided services to seven other Universities in the region. As part of the SCAG agreement UCA shares the ambition of diverting waste away from landfill for reuse and recycling.

It is anticipated that the new consolidated service will deliver cost and management efficiencies, and significant improvements in data quality. Previously, the weight of waste collected has been estimated based on the assumed weight of waste in different container types. Under the SCAG agreement, actual weights are provided via refuse vehicle on-board weighing equipment. Improved data quality will enable the University to establish an accurate baseline on waste arisings in order to set and monitor waste avoidance and materials recycling targets.

## 6 Water Consumption

There is a downward trend in annual water consumption at UCA over the last three years (Graph 3), which is significantly related to the repair of leaks in pipework. A major leak in underground pipework at Farnham was located and repaired in spring 2016. Two smaller leaks were identified and repaired in Canterbury and Rochester in late 2017, which resulted in reduced consumption at both locations in 2017/18.

Graph 3. Annual water consumption (cubic metres) at UCA campuses and associated Halls of Residence



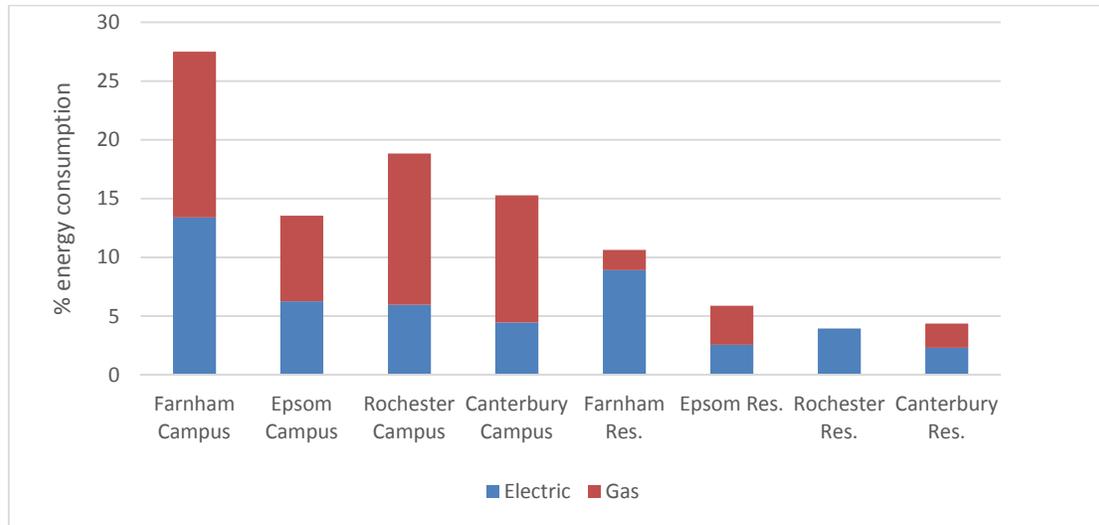
Over the last three years, repairs to underground leaks are estimated to have reduced annual consumption by 14%, saving over 9,000 cubic meters of water and almost £4,500 off the cost of water supply in 2017/18. The total cost of water supply in 2017/18 was approximately £75,000.

During 2018/19, new water tanks are scheduled to be installed at Farnham campus, which will improve the efficiency of water distribution around campus.

## 7 Energy Consumption

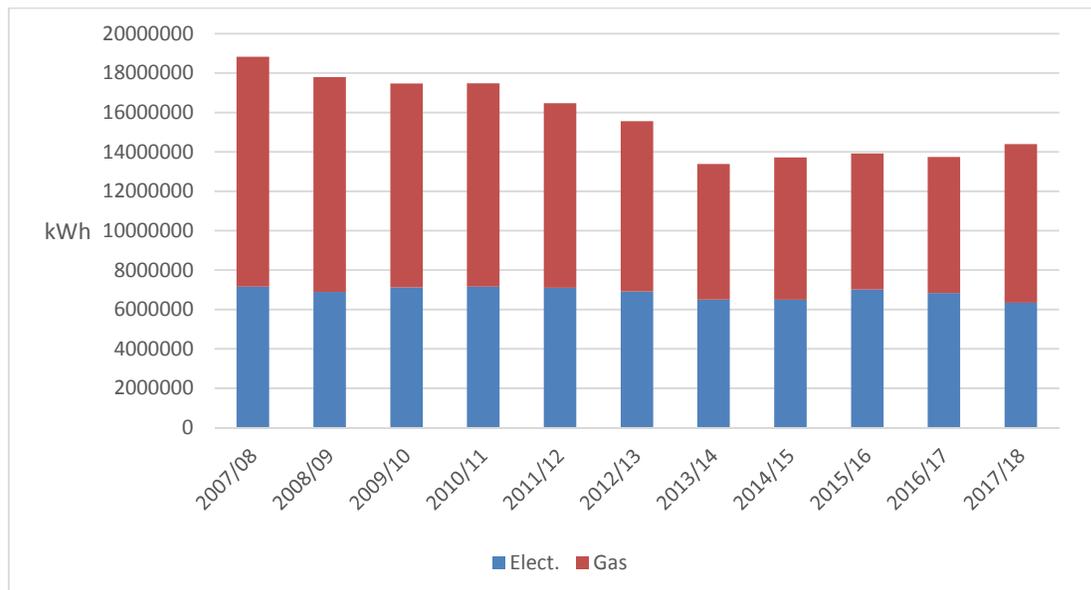
Farnham is the largest UCA campus and together with its associated Halls of Residence accounted for 38% of UCA energy consumption in 2017/18 (Graph 4).

Graph 4. Percentage of total energy consumption (kWh) in 2017/18 of gas and electricity at each UCA campus and Student Halls of Residence (Res.)



The University's overall energy consumption (grid electricity and natural gas) in 2017/18 was 14.39 million kilowatt hours (kWh) which is a decrease of 24% compared with 2007/08 (Graph 5).

Graph 5. Annual energy consumption (kWh) of natural gas and grid electricity.



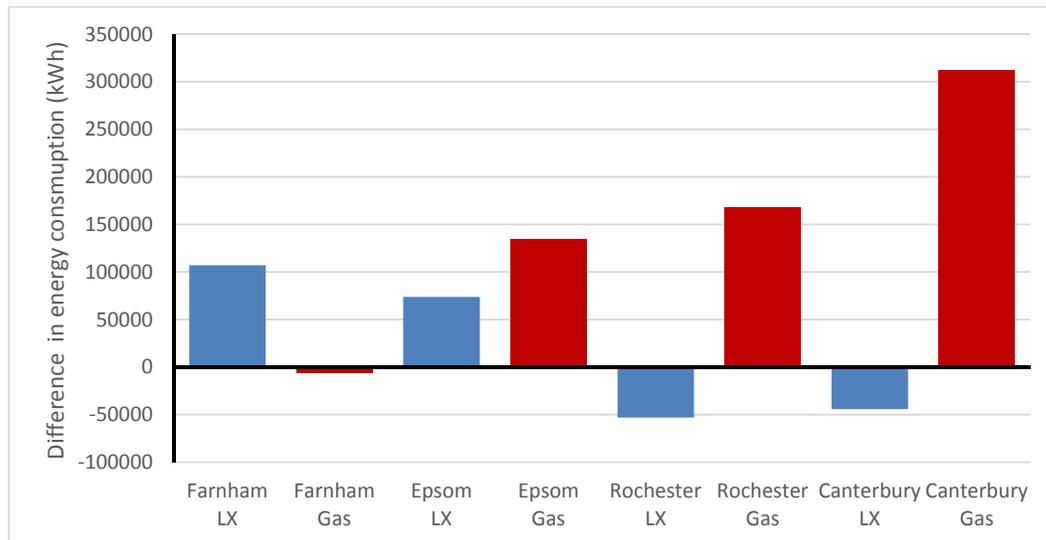
There was a 4.7% increase in energy consumption between 2016/17 and 2017/18 and consequently a year on year increase of 3.8% in the overall cost of energy to £1.11 million in 2017/18.

The winter of 2017/18 was colder for longer than in 2016/17, which increased demand for heating, as indicated by the significant uplift in gas consumption. Reference to weather station data (Heathrow, EGLL) confirms a 13% year on year increase in the duration of temperatures below 15.5°C; the temperature at which space heating systems are switched on. Despite the fact that the majority of student accommodation is electrically heated, overall electricity consumption reduced in 2017/18. In addition, 2017/18 was the first full year of operation for Hopfield House, a new 792m<sup>2</sup> administrative building at Farnham Campus, which generated almost 20,000 kWh of electricity from an array of Solar Photovoltaic panels.

The effects of efficiency projects undertaken during 2016/17 and 2017/18 have had a significant effect in reducing the potential increases in consumption from the New Build and the relatively cold winter. In 2017/18, a new efficient gas-fired glass kiln and glory holes and new electric kilns were installed in Farnham. Efficient North-light windows were installed in the Fine Arts studios in Farnham, and energy efficient space and water heating was installed in Farnham Student Village.

The significant downward trend in consumption prior to 2015/16 is due to twenty-three projects undertaken from 2010 and 2015/16, which are described in CMP3. In addition, the divestment from Maidstone campus in 2012 had the effect of reducing overall gas consumption by 15% and electricity consumption by 8% in 2013/14.

Graph 6. Comparison of annual energy consumption (kWh) in 2017/18 and 2016/17. Differences in electricity (LX) and gas consumption at each campus are shown.



Energy consumption in 2016/7 and 2017/18 is compared in Graph 6. The effect of the colder winter in 2017/18 is clearly demonstrated through increased gas consumption for heating at all campuses except Farnham. The gas kiln replacement at Farnham and downtime during installation have effectively cancelled out the increased consumption of

gas for heating. The old gas-fired kilns that have been replaced were very inefficient and historically accounted for approximately 20% of all gas consumption at Farnham campus.

The increase in electricity consumption at Farnham is largely attributable to the increased consumption from the first full year of operation of Hopfield House. Other differences in electricity consumption are more difficult to explain.

Project recommendations for a network of utility sub-meters were finalised in spring 2018. The installation of sub-meters at Farnham and Canterbury campuses will be complete by December 2018. The sub-meter network will enable accurate monitoring of consumption in specific areas on each campus, to assess the effects of energy efficiency measures and identify opportunities to reduce consumption. It is expected that the network will be extended to Rochester and Epsom, following review of the system at Farnham and Canterbury.

## **8 Carbon Management Plan**

The University approved its third Carbon Management Plan (CMP3) in February 2016. CMP3 details plans between academic years 2015/16 to 2019/20 to continue to reduce carbon emissions resulting from University buildings. CMP3 also documented the University's progress in managing and reducing carbon emissions since the publication of CMP2 in 2013.

CMP3 established a 2014/15 baseline for carbon emissions from buildings (grid electricity and natural gas) of 4,576 tonnes and reconfirmed the key reduction target set by UCA in CMP1;

- to reduce absolute carbon emissions from University buildings (gas consumption and electricity use) by 37% by 2019/20 to 3,912 tonnes against the 2005 baseline of 6,188 tonnes.

It is important to note that HEFCE had required universities to report on the progress of reducing absolute carbon emissions each year to 2019/20 against a 2005 baseline. On the disestablishment of HEFCE in spring 2018, responsibility for carbon emissions reduction in the Public and Higher Education sectors passed to the Department for Business, Energy and Industrial Strategy (DBEIS). The DBEIS has issued guidance for emissions reporting in the Higher Education Sector for 2018 to 2020 effectively continuing the HEFCE programme of carbon emissions reduction and reporting to 2020 but on a voluntary basis.

### **8.1 Carbon Emissions**

The University exceeded its 2020 target for absolute carbon emissions reduction last year. Progress has continued in 2017/18, carbon emissions from energy consumption in buildings was 3,429, exceeding the 2020 target by 483 tonnes. Emissions in 2017/18 were 12% lower than emissions in 2016/17 and 44% lower than the 2005 baseline of 6,188 tonnes.

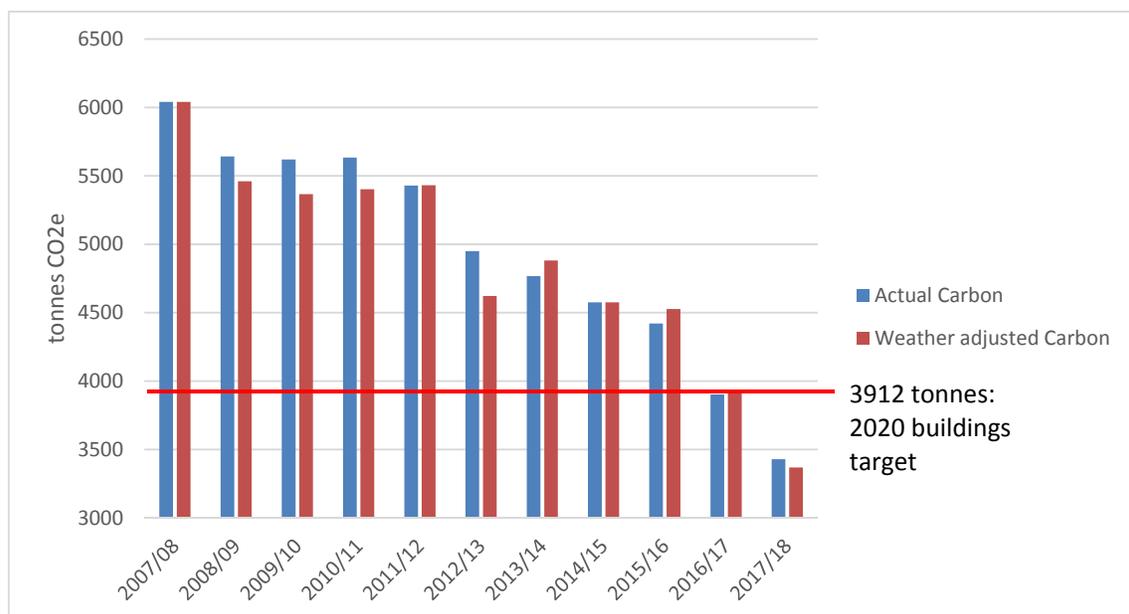
The projects described in Section 7 and CMP3 have contributed to significant reductions in carbon emissions at UCA but there are two externalities that have also influenced recorded carbon emissions for UCA and other organisations,

- The annual changes in energy (kWh) to carbon conversion factors (kgCO<sub>2</sub>e) provided by UK Government.
- The effects of annual differences in winter weather conditions on energy consumption for heating.

The UK Government's annually published carbon conversion factors for grid electricity are a reflection of the average mix of energy generation types in the UK in a given year. Consequently the carbon conversion factors vary from year to year, based largely on the proportions of renewable and non-renewable types of electricity generation. The Carbon conversion factor for grid electricity (generation, transmission and distribution) in 2017/18 (1 kWh = 0.31 kgCO<sub>2</sub>e) was 20% lower than in 2016/17 (0.38 kgCO<sub>2</sub>e). This has significantly reduced the calculated carbon emissions from electricity consumption at UCA. The annual carbon conversion factors for natural gas are based upon the average calorific value of supplied gas in a given year, which does not vary significantly.

The weather, in particular the external temperature, can have a significant effect on the annual energy consumption of a building. In years where the winter is relatively cold and prolonged, the heating energy consumption will tend to be higher. Conversely, when winters are relatively mild, the annual energy consumption is likely to be lower. So to compare the energy consumption of a building or organisation over time it is desirable to adjust the heating energy consumption to exclude the effects of variations in the external temperature and so give a better reflection of changes in underlying energy efficiency over time. Weather corrections have been applied to the UCA emissions data using 2007/08 as the baseline year and use degree day recordings from Heathrow (EGLL) weather station. Graph 7, shows actual carbon and weather corrected carbon emissions from 2007/08 to 2017/18.

Graph 7. Actual and weather-corrected Carbon emissions (tonnes CO<sub>2</sub>e) from the consumption of grid electricity and gas. Weather corrections are calculated with 2007/08 as the baseline and use degree day data from Heathrow (EGLL) weather station. The 2020 target is marked as a red line.



It is evident (Graph 7) that the relatively colder winter of 2017/18 compared to the base year 2007/08 has the effect of reducing weather adjusted emissions in 2017/18. In other words if the weather conditions had been the same in each of these years, then emissions would have been reduced in 2017/18 which further indicates that energy efficiency measures and a reduced carbon conversion factor for electricity have contributed to UCA's drop in emissions.

## 8.2 Energy & Carbon Emissions Projections

CMP3 provides future projections of UCA carbon emissions from 2015/16 to the target year of 2019/20. Projections were based on the carbon reducing impact of future planned maintenance projects (PMP) with carbon reducing potential and carbon reduction projects (CRP) as well as the impact of development projects (eg new buildings) which would have the effect of increasing energy consumption and subsequent carbon emissions.

Since the publication of CMP3 in January 2016, there have been amendments to the timing of future projects with carbon reducing potential. In addition, a new Film and Media Centre and a new Modular Administration Building is due to open in Farnham in 2019, which will add to UCA energy consumption and subsequent carbon emissions.

Table 1, shows current expectations of step changes; significant projects which alter energy consumption and therefore carbon emissions (if conversion factors remain unchanged) between 2018/19 and 2019/20.

Minor amendments to the timing of planned maintenance projects (PMP) with carbon reducing potential and carbon reduction projects (CRP) have been made since the publication of CMP3. Projects expected to be undertaken from 2018/19 to 2019/20 are given in Annex 1.

Table 1. Estimated step changes in overall energy consumption at UCA

		% addition to total UCA energy consumption
<b>2018/19</b>	New Film & Media Centre building in Farnham	+0.43%
<b>2018/19</b>	New Modular Admin. Building	+0.22%
<b>2019/20</b>	Demolition of Main Hall	-0.44%

Table 2, provides details of the expected carbon savings of PMP and CRP projects. The energy to carbon conversion factors used in the following projections are those published by UK government for 2016. By 2019/20 expected projects will contribute an annual reduction of 290 tonnes of carbon compared to 2017/18 and over the two years the projects will have saved 336 tonnes in carbon emissions.

Table 2. Projected carbon savings (tonnes) from Planned Maintenance Projects (PMP) and Carbon Reduction Projects (CRP) expected to go ahead between 2018/19 and 2019/20 (CMP3 target year)

	18/19	19/20
PMP annual Carbon saving	46	138
CRP annual Carbon saving	0	106
<b>Total annual Carbon savings</b>	<b>46</b>	<b>244</b>
<b>Cumulative annual Carbon savings</b>	<b>46</b>	<b>290</b>

Project costs (PMP and CRP) and the resulting annual savings on fuel bills are shown in Table 3. The total cost of projects; the majority of which are planned maintenance projects (PMP), over the two year period is estimated to be £1.46 million, while the saving on reductions to fuel bills over the two-year period is estimated to be £0.16 million.

Table 3. Project costs and savings (£ 000's). Planned Maintenance Projects (PMP) and Carbon Reduction Projects (CRP) expected to go ahead between 2018/19 and 2019/20 (CMP3 target year)

	18/19	19/20
PMP cost	535	752
CRP cost	0	177
<b>Total cost</b>	<b>535</b>	<b>929</b>
PMP annual saving on bills	23	40
CRP annual saving on bills	35	0
<b>Total annual savings on bills</b>	<b>58</b>	<b>40</b>
<b>Cumulative annual savings on bills</b>	<b>58</b>	<b>98</b>

Graph 8, shows the actual emissions in 2016/17 and three future scenarios for UCA carbon emissions between 2018/19 and 2019/20.

- The Business As Usual Scenario (BAU) shows the annual effects on carbon emissions if no further action is taken to reduce emissions. BAU includes the step changes (Table 1) in energy consumption from new buildings at Farnham. BAU also includes a 0.7% annual increase in energy consumption, based on the likelihood of increased appliance use and inefficient behaviours. The 0.7% increase is based on research from the UK government’s Department for Business, Enterprise and Regulatory Reform.
- The Target Scenario shows the annual change in emissions from 2017/18 required to meet the 2019/20 target of 3,912 tonnes absolute carbon emissions.
- The BAU – Projects Scenario shows the effect of future CRP and PMP projects (Annex 3). The scenario data are calculated by subtracting from the BAU Scenario, the expected savings in carbon emissions achieved from CRP and PMP projects.

Based upon current expectations UCA is projected to exceed its Carbon Emissions target to reduce absolute carbon emissions by 48% by 2019/20 (3,129 tonnes) compared to its 2005 baseline (6,188 tonnes).

Graph 8. Actual emissions in 2017/18 and predicted annual carbon emissions 2018/19 to 2019/20, from the Business As Usual (BAU), Target and BAU-Projects Scenarios



### 8.3 Carbon Management Plan 4.0

Since the third iteration of the University Carbon Management Plan (CMP3) in June 2016, the University has made considerable progress in reducing absolute carbon emissions and as detailed above is expected to significantly exceed its 2020 emissions reduction target. The University estate has grown since 2016 and will continue to do so beyond 2020. In 2021/22 there are plans to open additional Student Accommodation in Farnham and other future developments are under consideration. It is therefore necessary to develop a new Carbon Management Plan, that will enable the University to plan for the future and develop new emissions reduction targets to take the Carbon Management Programme beyond 2020.

Carbon Management Plan 4.0 will be developed and published in 2019.

## 9. Sustainable Transport

Electric Vehicle Charge points have been installed at Farnham, Rochester and Canterbury campuses with installation at Epsom campus in November 2018. The new charge points are smart phone operated and by the October 2018, there were five registered staff users. It is anticipated that demand will significantly increase.

In spring 2018, staff and students at each UCA campus were invited to participate in a sustainable travel survey to understand the mode and pattern of commuter travel to and from campus, and to ask for suggestions on what improvements could be made to improve provisions for more sustainable modes of transport.

A Sustainable Travel Plan for Farnham campus published in spring 2018 aims to increase the proportion of staff and students using more sustainable modes of transport and decrease current reliance on car travel. Targets to transition to more sustainable travel modes have been set for 2022. Survey results for student and staff 'modal split' for commute to and from Farnham and the projected modal split in the Target Year of 2022 are given in Table 4.

Table 4. Average weekday Modal Split for Farnham staff and students in 2018 (current state) and in 2022 (target year)

Mode	Student (2018)	Student (2022)	Staff (2018)	Staff (2022)
Bus	7%	9%	3%	6%
Cycle	2%	4%	4%	7%
Walk	38%	38%	11%	13%
Car Single Driver	28%	15%	72%	40%
Car Share	10%	19%	4%	25%
Train	15%	15%	6%	9%

To encourage staff and students to travel to and from the campus more sustainably, UCA has implemented or will soon be implementing a range of initiatives, including:

- The launch in May 2018 of UCA Liftshare, a car sharing community open to UCA Farnham staff that will be launched to Farnham students in November 2018 and to

staff and students at Canterbury, Epsom and Rochester in December 2018. UCA Liftshare allows staff and students to arrange car sharing journeys and record when these take place;

- Since May 2018 in partnership with Stagecoach bus services Farnham staff have been able to access discounts on bus fares and apply for free one-month trial bus tickets to see if commuting by bus works for them;
- Since September 2018, Farnham students have been able to purchase bus season tickets at a discount of over 20% off the normal price;
- In November 2018, new improved and covered bicycle shelters will be installed in Farnham;
- In March 2018 the Bikestart charity, ran a repair and maintenance session at Farnham campus for students and staff, to help repair bikes and provide maintenance advice to cyclists. Over 40 staff and student bikes were repaired at the session and there are plans to repeat this service on regular basis.

Sustainable Travel Plans will be developed for Epsom, Canterbury and Rochester in 2019.

**Annex 1 – Planned Maintenance Projects (PMP) and Carbon Reduction Projects (CRP) which are expected to go ahead during the last two years (2018/19 to 2019/20) of Carbon Management Plan 3 (CMP3) or postponed. Estimates of project cost and carbon saving are as shown in CMP3, unless otherwise stated. Implementation will be dependent upon prevailing needs and priorities over the next two years.**

	CMP3 Ref #	Campus	Project	Cost	Annual Saving – Year 1 Financial	Annual saving Year 1 tCO2e	Expected Implementation year + Notes
<b>CRP</b>	21	Canterbury	Install automatic lighting controls. Block G	£37,514	£4,702	19.2	19/20 Note: postponed one year from CMP3
<b>PMP</b>	14	Rochester	T8/T12 lighting and install automatic lighting controls.	£272,098	£24,384	99.5	19/20 Note: postponed one year from CMP3
<b>PMP</b>	12	Rochester	Boiler replacement - gas-fired condensing boilers.	£480,000	£15,912	38.9	19/20 Note: postponed one year from CMP3
<b>PMP</b>	18	Rochester	Install Double Glazing Phase 2	£711,520	£11,189	27.4	20/21 Note: postponed four years from CMP3
<b>PMP</b>	15	Rochester	Install Double Glazing Phase 1	£711,520	£11,189	27.4	20/21 Note: postponed four years from CMP3
<b>CRP</b>	14	Rochester	BEMS Control. North and South Blocks	£139,200	£30,124	87.1	19/20 Note: postponed two years from CMP3
<b>PMP</b>	13	Rochester	Replace heating distribution system and heat emitters	£1,780,716	£18,048	44.2	20/21 Note: postponed one year from CMP3

CMP3 Ref #	Campus	Project	Cost	Annual Saving – Year 1 Financial	Annual saving Year 1 tCO2e	Expected Implementation year + Notes	
		and install and zone controls and TRVs. Phase 1					
<b>PMP</b>	16	Rochester	Replace heating distribution system and heat emitters and install and zone controls and TRVs. Phase 2	£1,780,716	£9,400	23	21/22 Note: postponed two years from CMP3
<b>PMP</b>	New	Canterbury	Boiler replacement gas-fired condensing	£400,000	£15,000	36	18/19 Note: Additional to projects described in CMP3
<b>PMP</b>	9	Farnham	Boiler replacement gas-fired condensing boiler Blue zone	£135,000	£8,287	10	18/19 – installed October 2018 Note: Location, costs and savings amended from CMP3
<b>PMP</b>	New	Farnham	Main boiler upgrades	TBC	TBC	TBC	2018/19 Note: Additional to projects described in CMP3