UNIVERSITY OF WINCHESTER

Carbon Management Plan Annual Monitoring Report 2020/21

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Document Author:	Mat Jane – Head of Environment and Building Services Anna Wyse – Environment and Sustainability Manager Jo Meekley – Environment and Sustainability Officer Adam Boulton – Energy and Estates Technician
Responsible Person and Department:	Mat Jane – Head of Environment and Building Services
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Summary:

This report details progress against targets set in the University of Winchester Carbon Management Plan for the year 2020/21

Contents

EXECUTIVE SUMMARY

This report details progress against targets set in the University of Winchester Carbon Management Plan. To avoid an overly long document, only key headline achievements and areas of concern are covered.

Key Points

- Continued reductions in carbon emissions in absolute terms and relative to the size of the estate.
- Carbon emissions reduction target for scope 1 & 2 by 2021/22 already exceeded.
- On track for achieving carbon emissions reduction 2030 target for scope 1 & 2.
- Significant improvements in renewable energy purchasing with the introduction of 100% renewable gas (biomethane) purchasing and therefore market-based emissions.
- The University is now Net Zero for Scope 1 & 2 emissions and the Scope 3 emissions currently measured. Carbon credits have been purchased to offset scope 3 emissions currently measured.
- Publication of Scope 3 Gap Analysis Report

Area	Description	Progress by 2020/21	Target	By When
Carbon	Total Carbon Emissions for Scope 1 & 2	-40%	-55%	2030
	Carbon Emissions (scope 1 & 2) Intensity by Floor Area	-66%	-65%	2025

Recommendation

The Committee is recommended to note the report

Chief Operating Officer

INTRODUCTION

This report details progress against targets set in the University of Winchester Carbon Management Plan, the baseline year for the Carbon management Programme is the 2006/7 academic year, against which all carbon data is measured. The information within the document is for the 2020/21 academic year.

It should also be noted that due to the global pandemic in 2020, the figures and results may not be representative compared to a 'business as usual' scenario.

CLIMATE EMERGENCY

In September 2019, the university declared a climate emergency. This followed the publication in May 2019 of the Committee on Climate Change (CCC) comprehensive report 'Net Zero –The UK's contribution to stopping global warming', advising the UK government to set a net-zero carbon emissions target by 2050. As a result, the UK set a net-zero target in June 2019. Several reports since then have underlined the need to act rapidly on climate change. These include the WMO 'State of Global Climate 2021', showing that the last 7 years are the warmest on record and the IPCC 'Report Climate Change 2021', demonstrating that climate change is widespread, rapid and intensifying.

The university is a signatory to the SDG Accord –a global higher education accord overseen by the EAUC and other international academic bodies designed to support the advancement of the Sustainable Development Goals (SDGs). This commits the University to aligning its operations with the SDGs. The university has also signed the Accord's Climate Emergency Letter', which declares a climate emergency and commits the university to becoming carbon neutral by 2030 with an aspiration to get there by 2025.

The next step here is for the university to build a detailed roadmap to understand how this target will be achieved.

UNIVERSITY OF WINCHESTER TARGETS

NET ZERO TARGETS

The University of Winchester has committed to being Net-Zero by 2030 but has also signalled its aspiration to be Net-Zero carbon by 2025. This was achieved in for 2019-20 for Scope 1 and 2 emissions (fleet vehicle fuels have been offset by purchasing carbon credits) The university has been successful in reducing Scope 1 and 2 emissions by over 90% since our baseline year of 2006. This has been achieved by reducing energy consumption on campus, purchasing both renewable electricity and green gas and switching to an electric fleet. A £3.2 mil capital programme funded by the PSDS (Public Sector Decarbonisation Fund) currently on-going in 2021/22 will contribute to a significant reduction in gas emissions on site and lower energy consumption overall from Spring 2022.

Those emissions which cannot be realistically reduced or avoided, which are mostly Scope 3 emissions, will then be offset through funding an equivalent amount of carbon offsets through a certified emissions

offsetting scheme. In 2021, the University purchased its first carbon offsets via the EAUC Carbon Coalition for our 2019/20 emissions covering our Scope 1 and 2 emissions and those Scope 3 emissions we directly control (business travel, waste and water consumption). Offsets were carefully chosen using science-based targets (SBTs) and based on their longevity.

In 2020/21, the University also published its Scope 3 Gap Analysis Report which provided the first measurement of the whole Scope 3 emission footprint. This highlighted the challenge ahead, with Scope 3 emissions comprising around 95% of the total carbon footprint. Further work is planned for the 2021/22 academic year to identify and quantify all scope 3 sources that the university generates which are not currently accurately measured. Once the scope 3 emissions of the University have been fully quantified, the university Carbon Management Plan will be updated to reflect the change in scope of the plan and inform the Net-Zero strategy.

A "net-zero" target refers to reaching net-zero carbon emissions, but differs from zero carbon, which requires no carbon to be emitted.

Net-zero refers to balancing the amount of emitted greenhouse gases with the equivalent emissions that are either offset or sequestered. This should primarily be achieved through a rapid reduction in carbon emissions, but where zero carbon cannot be achieved, offsetting through carbon credits or sequestration through rewilding or carbon capture and storage needs to be utilised.

It is very important to highlight that carbon offset should never be an alternative solution to carbon reductions. It is proposed that our use of an offset is an interim mitigation measure, in addition to the University commitment to continue to reduce emissions where they are possible to do so.

CARBON MANAGEMENT PLAN – TARGETS

The university created its initial Carbon Management Plan in 2006/07 and having achieved its initial 2015 targets of 30% reduction per m2, following a successful emissions reduction programme, a review of the CMP was undertaken a revised plan was launched in September 2016. The revised 2015/16 CMP set new ambitious targets for reducing emissions to 2030, the targets approved in this plan were;

- 30% absolute carbon reduction against its 2006/07 baseline by 2020/21
- 55% absolute carbon reduction against its 2006/07 baseline by 2030/31
- 65% carbon intensity reduction against its 2006/07 baseline by 2025/26

These targets are key to help in reducing the amount of CO2 the university generates and therefore reduce the amount of CO2 to offset to achieve Net-Zero by 2025.

The University of Winchester has committed to a long-range target of a 55% reduction by 2030, against a 2006/07 baseline. This target is based on total emissions (absolute) and is aligned with the level of decarbonisation required to limit global warming to 2˚C. It will be a challenging target to achieve, given the expected growth in the size of the campus.

In order for the University of Winchester to demonstrate progress against its ambitious 55% reduction target, an emissions intensity target of a 65% reduction by 2025, against 2006/07, has also been set. This

target has been designed to stretch the University in its efforts to deliver a low-carbon campus and deliver a challenging carbon reduction pathway aligned to the climate science.

UNIVERSITY OF WINCHESTER CARBON FOOTPRINT 2019/20

SCOPE, BOUNDARY AND REPORTED EMISSIONS

The infographic below shows the scope and boundary of the carbon footprint emissions covered in this report.

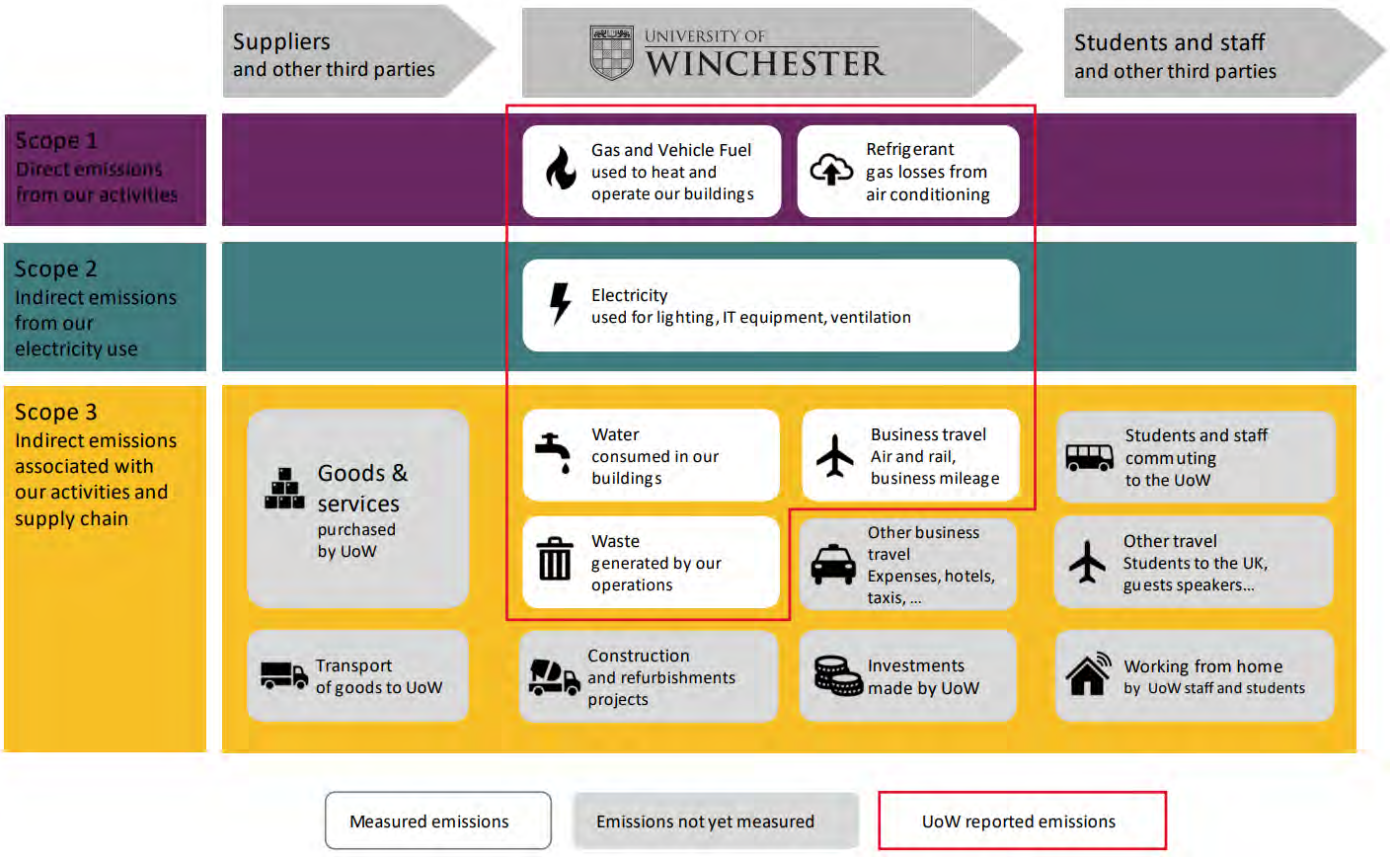

FIGURE 1 – EMISSIONS SCOPE AND BOUNDARY

The following table shows the current emission levels from the sources being measured as part of the University of Winchester Carbon Management Plan. Further work is planned to increase the scope of the CMP to cover all Scope 3 emissions to inform the University ambition to be 'Net-Zero' by 2025. The table is based upon grid conversion factors and the location based emissions approach rather than market based emissions which make allowance for green energy procurement.

Type of Emissions	Emissions sources	Carbon Emissions 2006/7 Baseline Year (tCO2e)	Carbon Emissions 2020/21 (tCO2e)	% Change
Scope 1 Direct emissions from our activities	**Fossil Fuels** Fuels used to heat and operate our buildings **Vehicle fuels** Fleet vehicle fuel consumption **Refrigerant Losses** Losses from refrigerant based systems	1,721 tCO2e 38.5 tCO2e 0 tCO2e	1,018 tCO2e 10.8 tCO2e 0 tCO2e	-40.8% -72% n/a
Scope 2 Indirect emissions from our electricity use	**Electricity** Used for lighting, IT, equipment, ventilation	1,843 tCO2e	940 tCO2e	-49%
Scope 3 Other indirect emissions associated with our activities and supply chain	**Water** consumed **Water** discharged to sewer **Waste** generated On campus Construction projects **Business travel** Air and rail travel booked for business related work Grey fleet usage	26.3 tCO2e 437 tCO2e 372 tCO2e	18.14 tCO2e 8.6 tCO2e -37 tCO2e (assumed 90% reduction on 2018/18 due to CV-19 travel ban on 2020/21)	-31% -90% -90%
Total Emissions		4211 tCO2e	2,220 tCO2e	-47%

FIGURE 2 – OVERALL EMISSIONS BY SCOPE

SCOPE 1 & 2 EMISSIONS

LOCATION VS MARKET BASED EMISSIONS SCOPE 1 & 2

GHG Protocol reporting methodologies allow organisations to report two figures for carbon emissions from energy.

Location-based methodology reporting means that emissions from electricity and gas are based on the energy grid conversion factors for the chosen energy type (the UK grid average emissions intensity).

Market-based methodology reporting means that emissions from energy are determined by the emissions factor of the specific energy supplier and tariff being purchased- allowing organisations to demonstrate their commitment to the environment & carbon reduction through purchasing renewable energy.

The university has purchasing renewable electricity to cover 100% of its demand since 2008/09, meaning that, under the market-based methodology, carbon emissions are much lower. In 2019/20 the university also purchased 47% of its annual gas demand from renewable gas generation (biomethane). In the 2020/21 reporting year the University increased its annual purchasing of renewable gas to 100%.

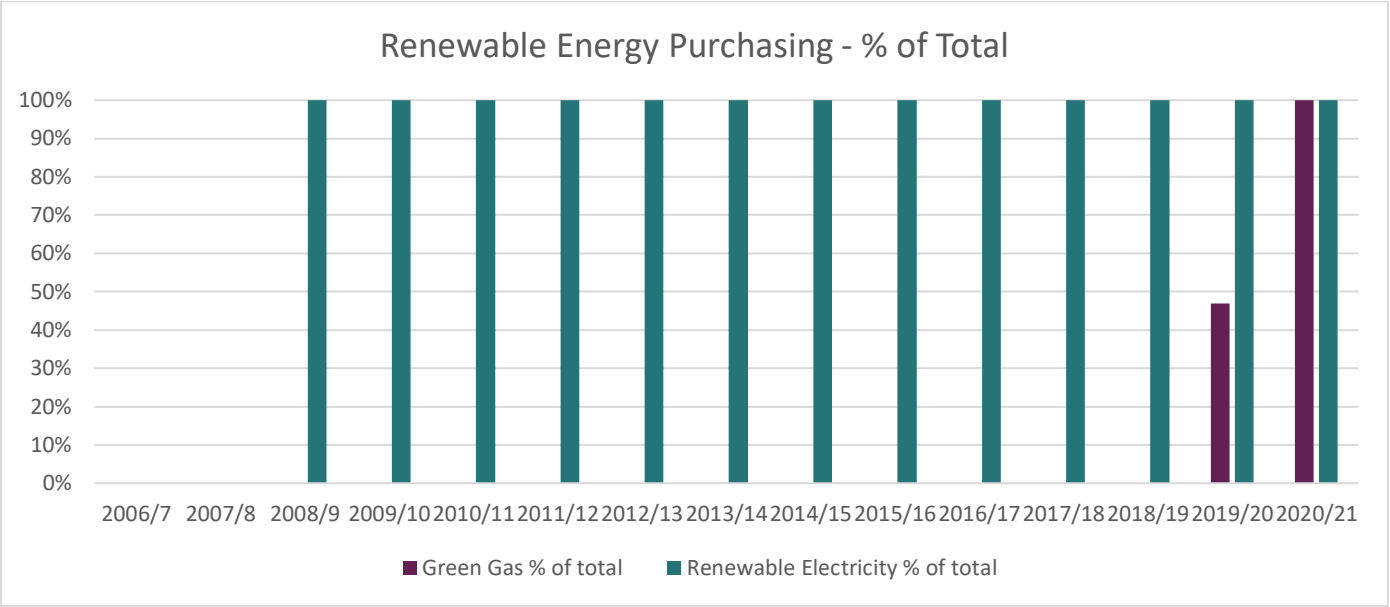

FIGURE 3 – RENEWABLE GAS AND ELECTRICITY PURCHASING BY YEAR (% OF CONSUMPTION)

GREEN GAS PROCUREMENT

In 2019-20, the University took a decision to purchase biogas, or 'green gas', which is methane generated from anaerobic food digestion. Initially 47% of total supply purchased was green gas increasing to 100% in 2020-21. This replaces grid gas generated from fossil fuels. From 2021-22, gas purchased will be generated at the same anaerobic digestion plant that the University disposes of its own food waste.

Biomethane is carbon neutral. It releases emissions when burnt but is made from organic materials that absorbed carbon dioxide when they grew. Burning it releases the same amount of carbon dioxide so, overall, it doesn't add more CO2 to the atmosphere. For these reasons, emissions from gas supply are reported as 'out of scope' in accordance with GHG Protocol but should be reported by the organisation but not included in the total carbon footprint. Therefore, out of scope emissions for green gas consumption have been calculated at 1299 TCO2e in 2020/21 according to the latest Defra Greenhouse Gas Reporting Conversion factors.

SCOPE 1 AND 2 EMISSIONS - LOCATION BASED REPORTING

Location based emissions per m2 of estate have reduced by 66% in 2020/21 when compared to the 2006/07 baseline year and have reduced by 5% when compared to the previous year (2019/20).

Absolute location-based emissions have reduced by 40% in 2020/21 when compared to the baseline year and increased by 4% when compared to the previous academic year (2019/20), this was due to the construction of the West Down Centre building which represented a 10% increase in the size of the estate.

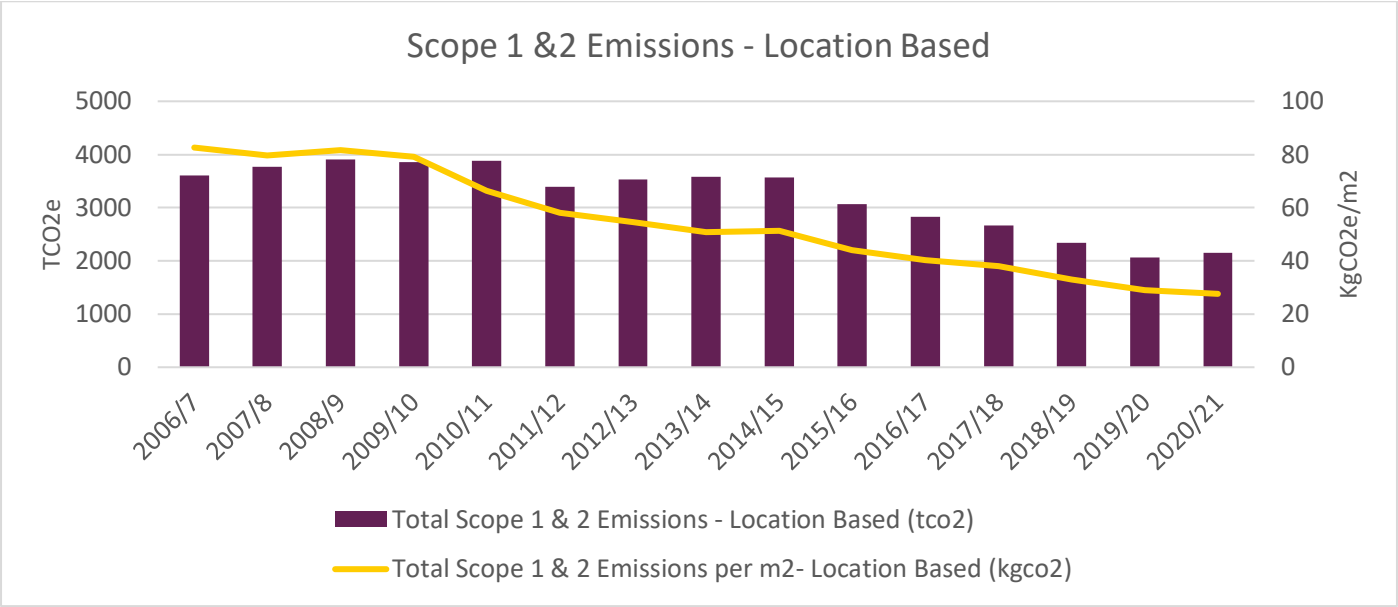

FIGURE 4 – SCOPE 1 & 2 ENERGY EMISSIONS – LOCATION BASED

SCOPE 1 AND 2 EMISSIONS - MARKET BASED REPORTING

Market based emissions per m2 of estate have reduced by 99% in 2020/21 when compared to the 2006/07 baseline year and have reduced by 96% when compared to the previous year (2019/20). This significant reduction in emissions is due to the university purchasing 100% renewable electricity since 2008/09 and as of the 2020/21 academic year purchasing 100% of annual gas consumption through a renewable tariff.

Absolute market-based emissions have reduced by 99% in 2020/21 when compared to the baseline year and reduced by 97% when compared to the previous academic year (2019/20). Again, this was due to switching to 100% green gas compared to 47% green gas purchased in 2019/20.

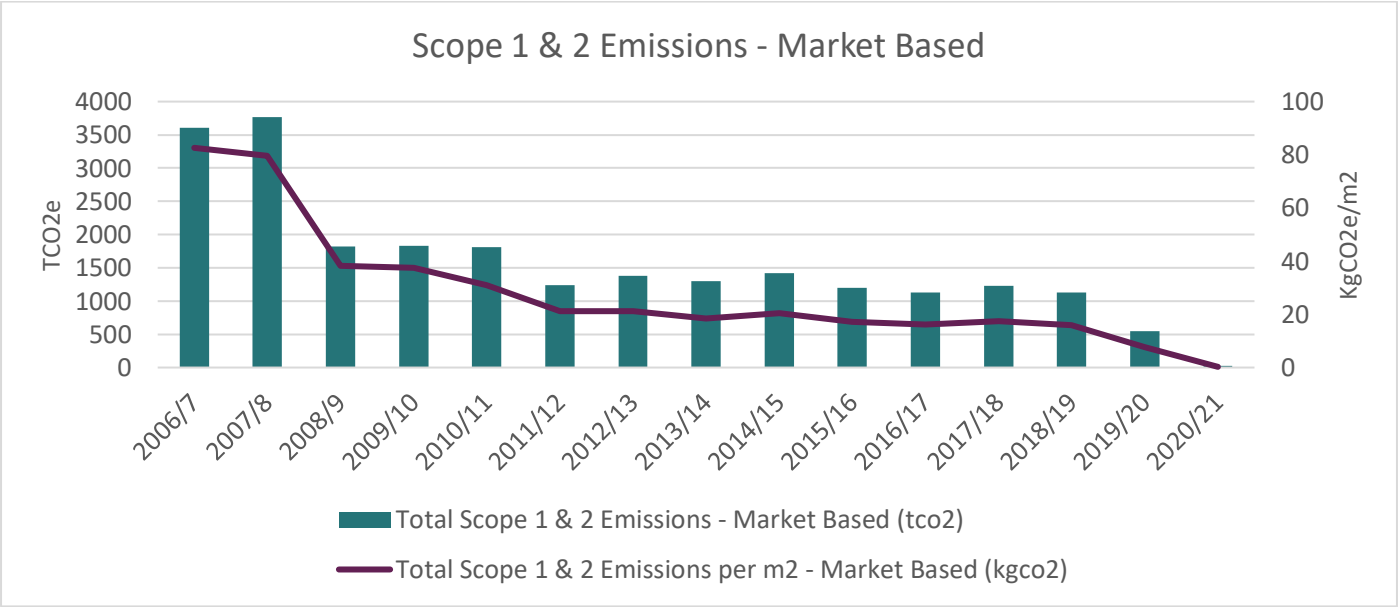

FIGURE 5 – SCOPE 1 & 2 ENERGY EMISSIONS – MARKET BASED

MARKET VS LOCATION BASED REPORTING

The following below shows the savings the university has made in terms of scope 1 and 2 emissions by purchasing from renewable supplies. The small amount of remaining emissions for 2020/21 is from vehicle fuel consumption and a small amount of heating oil purchased to heat the Covid-19 testing centre with a temporary boiler.

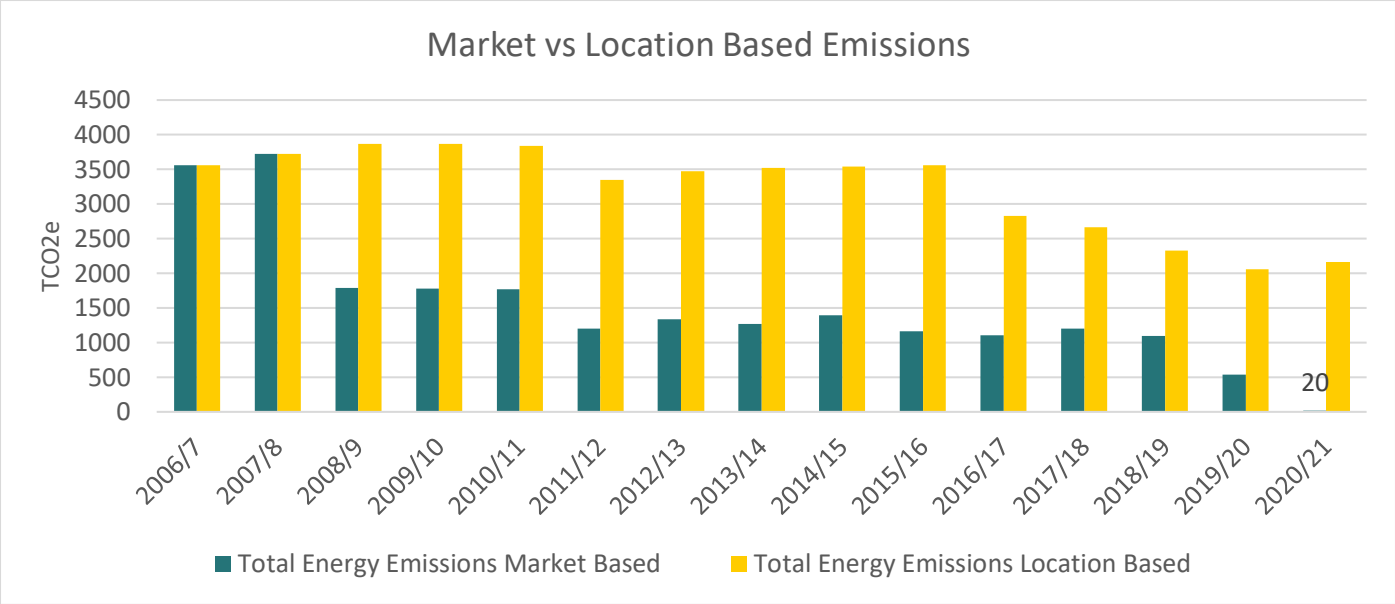

FIGURE 6 – MARKET VS LOCATION BASED EMISSIONS

SCOPE 1 AND 2 EMISSIONS AVOIDED

The University has gradually increased the amount of electricity generated on-site since its first solar photovoltaic installation in late 2011. Whilst the amount of energy generated has stayed the same until the new solar installation in the WDC in 2021, the amount of emissions avoided is reducing year on year. This is because the carbon associated with grid electricity is reducing as the amount of renewable energy generated in the UK increases and therefore less carbon is saved from renewable generation. However there are further benefits to producing energy on site such as reducing reliance on the grid and improving energy security as well as avoiding operational cost.

Under the £3.1 mil Public Sector Decarbonisation Grant that the University was awarded in February 2021, solar panels will be installed on a further 4 buildings. This will increase our generation capacity by 200%. This should boost the emissions avoided for the next academic year with the panels due to be commission by December 2021.

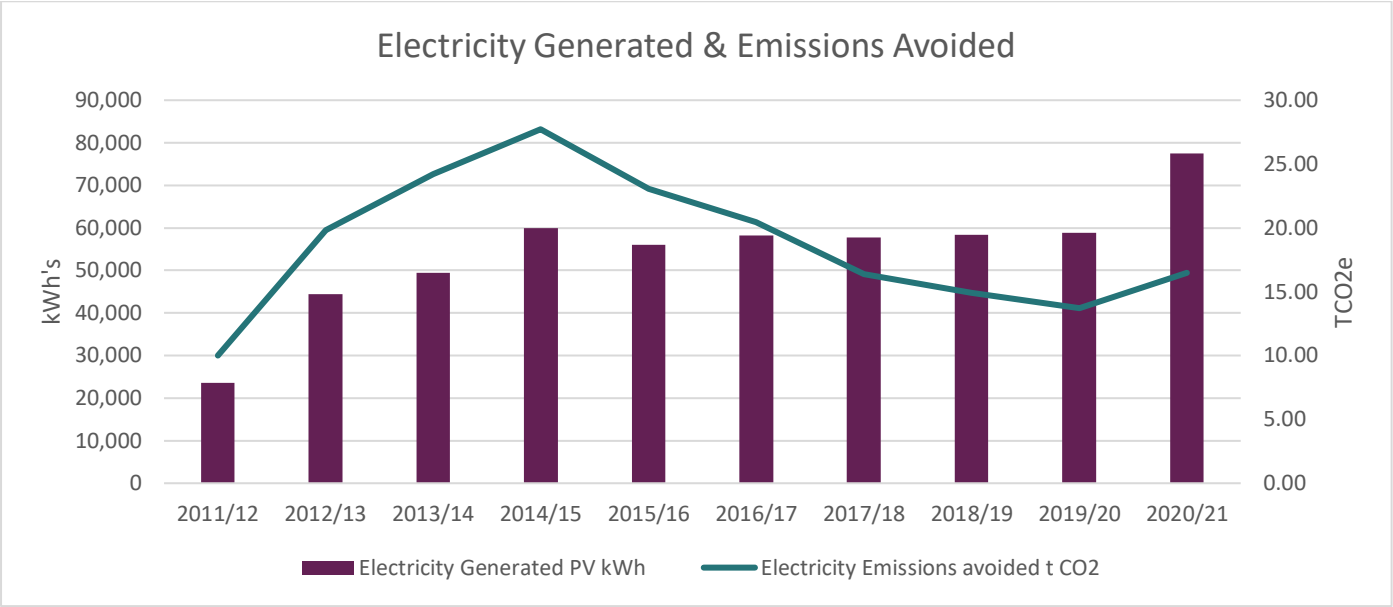

FIGURE 7 – SOLAR PV GENERATION AND EMISSIONS AVOIDED

ESTATE BUILDING EFFICIENCY

The following table shows the efficiency of each building in terms of Scope 1 and 2 emissions relative to the floor area of the building. The table also shows energy consumed within that building generated from renewables associated with that building.

It should be noted that the carbon emissions from the new constructed West Downs Centre are surprisingly high for its first full year of operation. However, this building is mechanically ventilated and, due to the pandemic, heat recovery has been disabled due to Covid risk which will significantly impact on its energy performance by increased gas usage. As the building moves to full occupation and final commissioning in the 2021/22 academic year, the project team will launch the soft landings process and ensure the building is correctly commissioned for the seasons which will reduce its energy consumption further.

It should also be noted that as the university procures 100% renewable gas and 100% green gas these buildings can be viewed as Net-Zero in their operation.

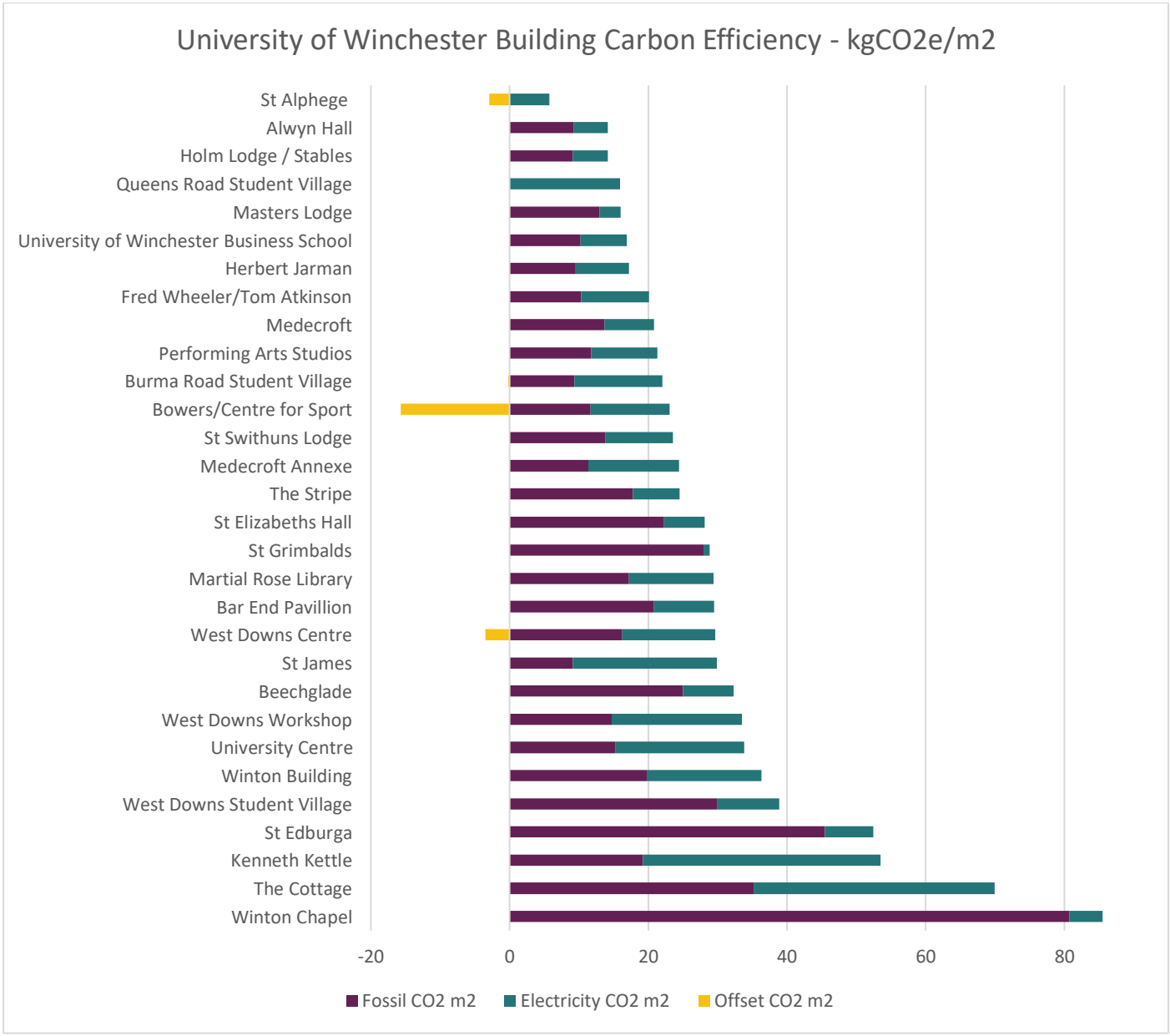

FIGURE 8 – BUILDING CARBON EFFICIENCY 2020/21

SCOPE 3 EMISSIONS

This report currently only looks at the carbon emission data, a detailed breakdown of the quantitative emissions sources data such as waste generated, recycling rates, water consumption etc. can be found in the University of Winchester Environment Strategy Report for the corresponding 2020/21 academic year.

Note that scope 3 emission data from business travel is currently calculated using the 2015/6 data set. The data from that year is extrapolated by staff and student FTE by year. This was the last year of good quality data, collected for the voluntary submission for the ESOS scheme. It should be noted that due to the Business Travel ban imposed during the CV-19 pandemic the extrapolated figure for business travel, flights and public transport has been adjusted by -90% of the 2018/19 data.

As part of the university commitment to collecting Scope 3 data, processes to collate good quality data for these emission sources will be implemented in 2021/22.

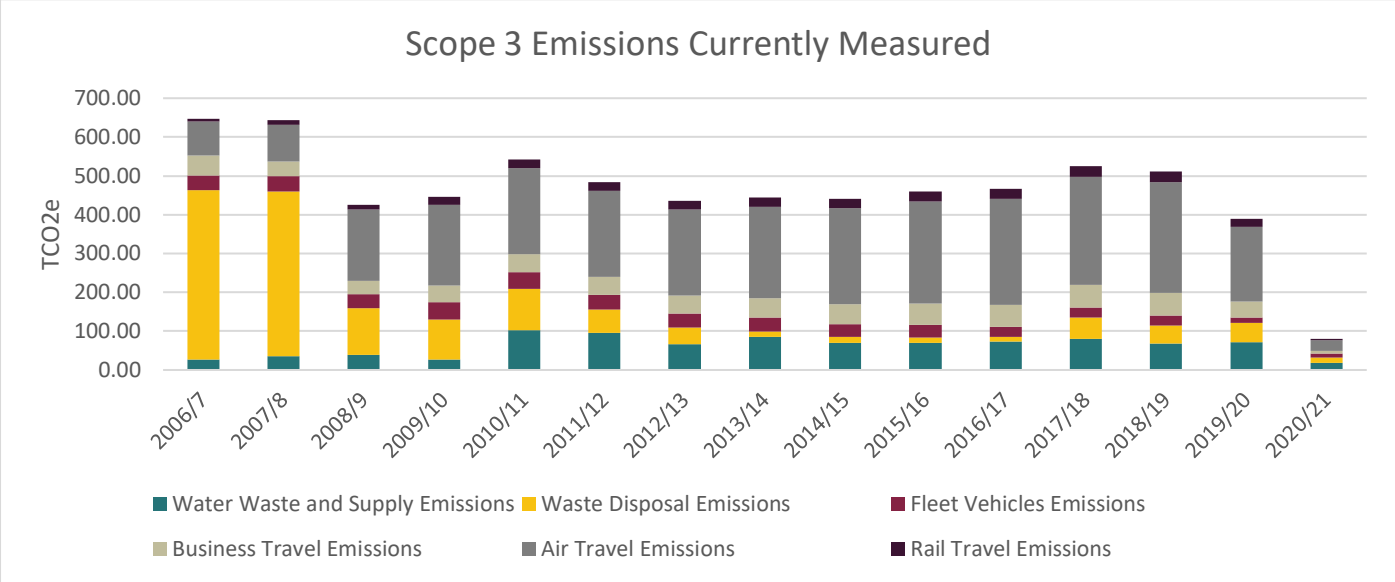

FIGURE 9 – SCOPE 3 EMISSIONS BY YEAR

In 2020/21 a travel ban was put in place due to the global pandemic. Business travel emissions for this year have therefore been estimated at 10% of the 2018/19 academic year and may be lower than the actual emissions reported and therefore not completely representative. In addition, water and waste emissions have also reduced significantly as a result of the pandemic.

As of 2020/21 (based upon the estimated data) the university has seen an 89% reduction in the reported scope 3 emissions compared to the 2006/07 baseline. There has also been shown to be an 82% reduction in scope 3 emissions in 2020/21 when compared to the previous academic year, this is expected to be due in main to the reduction in travel in 2020/21 due to the covid-19 pandemic and significant improvements in water consumption and reduced waste generation.

However, a significant proportion of the university scope 3 emission are not currently quantified. A large part of the emissions footprint for scope 3 will be linked to goods and services provided by the University supply chain. Tackling these emissions will rely on working in partnership with suppliers, encouraging them to make plans for going net-zero across their own operations. Where it is not possible to avoid emissions, robust carbon offsetting or sequestration will need to be identified to mitigate any unavoidable carbon.

TOTAL REPORTED CARBON EMISSIONS (LOCATION BASED)

The following table details the carbon emissions for all activities currently measured and reported on by the university. The emissions reported are summarised as;

- Scope 1 – fossil fuels & vehicle fuels (using location-based factors)
- Scope 2 – electricity (using location-based factors)
- Scope 3 – water consumed and wastewater, waste & business travel

Year	Total CO2e t	kgCO2e per FTE	kgCO2e per m2
2006/07	4211.3	890.7	96.5
2007/08	4370.5	901.3	92.3
2008/09	4292.5	810.6	89.9
2009/10	4262.6	739.5	87.4
2010/11	4376.4	711.9	74.8
2011/12	3834.1	620.9	65.7
2012/13	3926.1	637.8	60.8
2013/14	3984.8	608.8	56.6
2014/15	3979.1	579.6	57.2
2015/16	3492.5	480.0	50.2
2016/17	3268.4	431.3	46.6
2017/18	3158.6	409.5	45.1
2018/19	2827.8	358.4	39.8
2019/20	2440.4	299.0	34.4
2020/21	2225.5	264.8	28.5
% change 2019/20 to 2020/21	-9%	-11%	-17%
% change against Baseline	-47%	-70%	-70%

FIGURE 10 – SCOPE 1, 2 AND 3 EMISSIONS

Thanks to a very successful carbon reduction strategy the university has managed to successfully reduce absolute carbon emissions by 47% in 2020/21 based on the 2006/07 baseline despite significant growth of 79% in the size of the estate. This means that the university has already achieved the 2020/21 target of a 30% reduction and is in a very good position to meet the 2030/31 targets of an absolute reduction of 55%.

The university has spent around £2 million on energy efficiency and carbon reduction projects in the last 10 years, with a further £3.1mil spend on carbon reductions from our PSDS funded capital works in 2021. These projects have significantly reduced the carbon intensity of the estate with carbon emissions relative to floor area (per m2) having reduced by 70% by 2020/21 since the 2006/07 baseline year.

The university has also seen a reduction in carbon emissions per head of staff and student FTE by 70% in the same time period.

It should be noted that in addition to the work done as part of the Carbon Management Plan, the decarbonisation of the grid has also helped the university in the achieving part of the above targets. The lockdown due to the Covid-19 pandemic will also have had an impact on the amount of carbon emissions and energy consumed by the campus between April and July 2020.

CARBON CREDITS

In 2021, the University participated in the newly formed Carbon Coalition via our membership of EAUC (The Alliance for Sustainable Leadership in Education). Drawing on the expertise and purchasing power of EAUC, 386 tCO2e were purchased by The Carbon Coalition on our behalf in line with the COP26 Universities' Principles on Offsetting incorporating Science Based Targets and longevity.

The 386 tCO2e represented our Scope 1 and 2 emissions plus directly purchased Scope 3 emissions (water and wastewater, waste generated on campus and business travel) for the academic year 2019-20. It is proposed that a similar approach is adopted for 2020-21 with Carbon Credits purchased the same emission sources.

Retirement links are contained in the University of Winchester Carbon Coalition Certificate in Appendix 1.

CONCLUSION & LOOKING FORWARD

The university is currently on track to achieve its emissions reduction ambitions, 2019/20 saw the sixth consecutive year of significant improvement in absolute carbon emissions reduction. The university has successfully reduced its total carbon emissions for scope 1 & 2 by 43% in 2019/20 and has also reduced its carbon emissions intensity by floor area by 65% - therefore having already met the 2025 target.

The university has moved to recently purchasing 100% green gas (biomethane), which means that instead of buying traditional fossil fuels the university is stimulating demand for renewable gas that does not contribute towards climate change. This means 100% of gas and electricity supplied to campus is now purchased through renewable tariffs.

To continue with the fantastic progress the university has made in energy efficiency and carbon reduction, 2021/22 will see the University of Winchester complete its RE-FIT project, an energy saving framework for the public sector. The University was successful in receiving a grant for £3.12m to undertake a number of decarbonisation projects which will be completed in March 2022.

Energy efficiency projects being implemented as part of the PSDS scheme include:

- 34 air source heat pumps to 15 buildings replacing gas boilers.
- LED lighting upgrades and lighting controls
- BMS installation, upgrade and optimisation
- 150 kWp Solar Photovoltaics on 6 buildings

Staff and student engagement will also continue to be a priority, encouraging building users to use the buildings in a sustainable manner.

As an interim measure, on its journey to Net-Zero the university will also be looking at recognised and certified offsetting programmes via the Carbon Coalition of Universities. The university will continue to ensure there is a robust methodology in place to measure, reduce and mitigate our carbon emissions, and work to the ethos that carbon offset should never be an alternative solution to carbon reduction.

APPENDIX 1: CARBON CREDIT CERTIFICATE

Carbon Coalition

Delivered by eauc
The Alliance for Sustainability Leadership in Education

Carbon Credit Certificate

MyCarbon, in its capacity as the Appointed Fund Manager, does hereby certify that on the 20th October 2021, 386 tonnes of carbon were offset on behalf of:

University of Winchester

Amount Offset: 386 tonnes of CO_2e

Retirement Links:

- https://registry.goldstandard.org/credit-blocks/details/203803
- https://registry.goldstandard.org/credit-blocks/details/218389
- Markit Environmental Registry – Public Reports
- 1.28 tonnes removed by Climeworks. Confirmation No. SO-00284* 24.06.2021

Toby Green, Director

Michael Greenhough, Director

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Provided by Carbon Green Ltd.
www.mycarbon.co.uk