



Cardiff
Metropolitan
University

Prifysgol
Metropolitan
Caerdydd

Environment & Estates

Carbon Management Plan

2018/19 – 2022/23

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1. Executive Summary

This plan represents the third stage in the University's ambitions to reduce our carbon footprint and our impact on the environment and builds on the University's preceding strategy and implementation plan for carbon management which concluded in 2017/18.

The University's new corporate strategic plan contains a commitment to becoming Net Zero Carbon for Scope 1 and Scope 2 emissions by 2030, and Net Zero Carbon for Scope 3 emissions by 2040.

Underpinning this carbon management plan (CMP) are the core values contained in the University's [Sustainability Strategy](#) in delivering sustainable solutions that make a positive and proactive contribution to the environment.

In 2005/06, the University's carbon footprint for scopes 1 and 2 (covering fuel consumption) was 7,025 tonnes CO₂e. Over the last 12 years, through a combination of energy efficiency measures, behaviour change and improved space efficiency, we have successfully reduced our carbon emissions year on year resulting in the following headline achievements:

- 44% reduction in energy related carbon emissions in 2017/18 compared to a 2005/06 baseline
- Avoidance of 2100 tonnes CO₂ emissions.
- Estimated energy cost savings of approximately £1m compared to not completing energy efficiency projects since 2012/13.

This plan aims to achieve a further 3% per year reduction in the Scope 1 and 2 carbon footprint which equates to 15% by 2022/23 over the 5 year period whilst also setting the direction of travel to meet longer-term targets for 2030 and beyond. This CMP assumes continued investment and implementation in energy efficiency and would culminate in a 60% overall reduction compared to 2005/06. This will generate forecast annual energy cost savings of up to £120k per year.

These targets are currently predicated on existing student numbers and the University's asset as these are factual known baselines that allow carbon emissions to be forecasted. As the Strategic Plan 2017/18 – 2022/23 and wider Estates plans evolve, carbon emissions will be re-forecasted on an annual basis with recent data and the University will demonstrate continued commitment and support to reducing carbon emissions which in turn fosters the development of a sustainable estate.

To achieve this aspiration, we will adopt the following strategic approach:

1. Build upon the success of energy and carbon reduction projects completed in previous carbon management plans.
2. Continually improve the energy efficiency of our estate by eliminating energy waste through close control of plant and equipment;
3. Build on and embed the fostering of energy-aware behaviours throughout the University community via the University's [sustainability engagement strategy](#);

4. Upgrade to more energy-efficient and low-carbon plant and equipment wherever practicable;
5. Improve and optimise control of building plant through the University's building management system (BMS);
6. Explore and develop on site renewable energy generation and procurement of energy from renewable sources;
7. Continue to identify and quantify the carbon impact of the University through its operations and the inclusion of Scope 3 emissions.

Over the last 5 years, the University has spent in the region of £1.8M on energy and carbon reduction activities.

This carbon plan aims to build on the strong energy performance of the University through the promotion of best practice energy efficiency, leading by example and the engagement of students and staff to foster a collective responsibility towards continuous improvement in sustainability across Cardiff Met.

The current CMP continues the strong performance the University has achieved previously and will help the University meet identified sector carbon targets, work towards achieving proposed Welsh Government public sector targets for 2030 and continue the course to achieve the national target of reducing carbon emissions by 80% by 2050 against a 1990 baseline. The development of a Net Zero Strategy for the University will further underpin these ambitions and pave the way towards full decarbonisation of the estate.

Primary responsibility for the delivery of the CMP currently sits with the Environment and Estates Department, however as data acquisition improves specifically within Scope 3, it is expected that responsibilities for delivering this and future strategies will be dispersed across the University to build buy in towards longer terms targets and critical initiatives such as engagement, communication, IT, sustainable procurement and supply chains.

Over the course of this strategy we will aim to develop increasingly robust systems, data and processes within our environmental management system that will facilitate and improve our carbon baseline and reporting to ensure we can successfully align our ambitions with current and future targets.

2. Introduction

Cardiff Metropolitan University recognises that climate change is a real and growing threat and acknowledges the responsibility to ensure environmentally and socially responsible practices in all its activities.

Over the past ten years, the University has made significant progress in reducing the carbon footprint of its activities and embedding sustainability into its operations, teaching and learning and engages positively to forge links with local and wider communities.

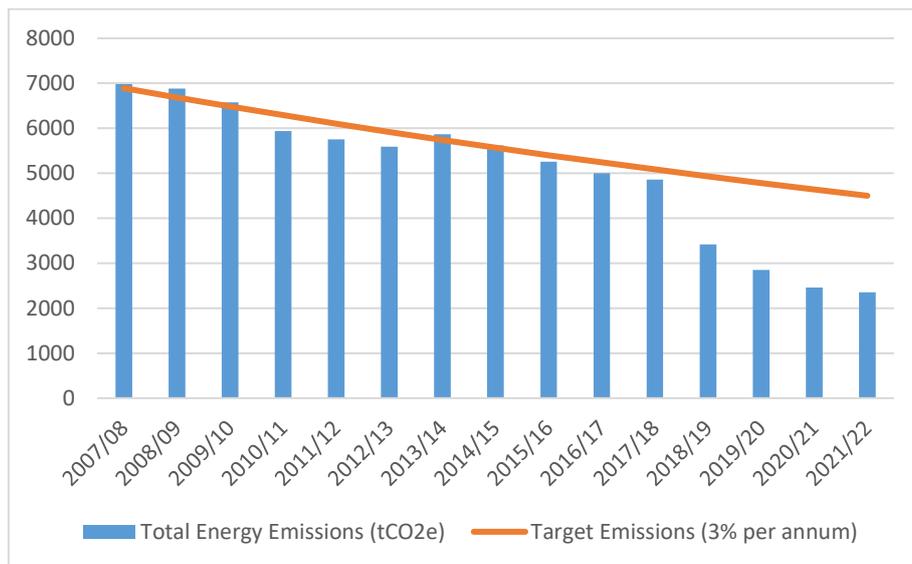
This Carbon Management Plan aims to build on the success of the projects completed within previous strategies to minimise the University's impact on the environment whilst recognising the aspirations for growth in the estate and student numbers in the longer term. It will be broadly aligned with the University's Strategic Plan which builds on the core ethos of EDGES (Ethical, Digital, Global, Entrepreneurial and Sustainable) and underpinning this is the establishment of a values driven University that has sustainability and wellbeing at its heart to achieve 'an aesthetic, practical and environmentally sustainable working environment'.

In 2008/09, the University set an ambitious target of reducing estate wide Scope 1 and 2 emissions by 15% by 2012/13 against a 2007/08 baseline. We were successful in exceeding this target with a 16.3% reduction over the period of the plan. Building on this success and in accordance with the Welsh Government's One Wales Plan, and the HEFCW Carbon Management Policy (W14/09HE)¹ published in 2014, we challenged ourselves to reduce a further 15% in carbon emissions by 2017/18 against a 2012/13 baseline. Over this 5 year period we successfully achieved a 14% reduction, just short of the target but still a combined reduction of 30% in absolute Scope 1 and 2 carbon emissions compared to 2007/08 and 44% since 2005/06. Since 2017/18, the University's emissions have continued to reduce ahead of the annual 3% target, with 2018/19 showing a 30% reduction vs 2017/18, a year that was notably the last of the pre-covid 'normal' operational years. The years during and post covid 2019/20 – 2021/22, the University has continued to achieve an annual reduction in its emissions producing an overall 30% reduction across the period; however moving forward, and without the business disruption caused by Covid, it can be expected that the emissions level will increase inline with a more normal level of business activity on its campuses, and as a direct result of the ambitious growth targets of the University.

The University is therefore planning to respond to this through the development of a new Carbon Management plan, which will feature as a key driver within the University's new campus 2030 masterplan.

¹ http://www.hefcw.ac.uk/documents/publications/circulars/circulars_2014/W14%2009HE%20Carbon%20Management%20Policy.pdf

Figure 1: Total Scope 1 and 2 CO2 emissions vs target

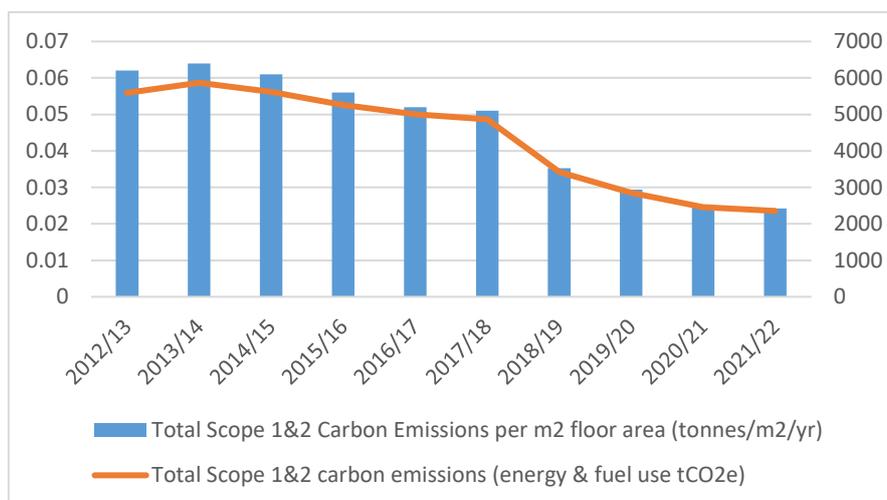


We are very proud of this achievement and as we look ahead, it's important to consider the University's future ambition and associated targets for carbon reduction in accordance with our longer term aspirations.

Over the last five years, despite the sale of our city centre campus (Howard Gardens) in 2017, our estate has steadily continued to grow with the expansion of both our Llandaff and Cyncoed Campuses. This growth equates to 6% in the Gross Internal Area (GIA) compared to 2012/13. Despite this growth, our carbon footprint has continued to fall whilst accommodating the facilitation of new, energy intensive courses and increases to University operating hours.

In terms of efficiency of carbon emissions per m²/yr for Scope 1 and 2 emissions, it can be seen that despite this expansion, these emissions have reduced by 60% since 2012/13.

Figure 2: Total Scope 1 and 2 CO2 emissions per m2 (floor area)



3. Current Achievements

Over the last five years the University has implemented a range of carbon reduction measures which build on the foundations and successful implementation of the first carbon management strategy adopted in 2008/09. These have also contributed to the University's achievements in the People & Planet Green League where the University placed 1st in the UK and Wales out of over 150 universities in 2022/23.

- *Renewable Technology* - The University has installed two Photovoltaic (PV) systems. A 20 kW system was installed on the Cardiff School of Art and Design constructed in 2013 and a further 20 kW system was installed on the newly constructed Sports Complex Phase 1 on the Cyncoed Campus in 2016. The Sports Complex Phase 1 also benefits from low carbon heating via twin air source heat pumps.
- *Welsh Government Lighting Upgrade Loan* – The University was successful in securing £150,000 through the Invest 2 Save scheme to upgrade existing inefficient light fittings to low energy LED fittings. This resulted in the replacement of 1,700 fittings, with energy, cost and carbon savings of 69% following completion of the project.
- *Salix Loan Funding* – in 2016, the University was successful in acquiring £150,000 of Salix funding to continue the upgrade of lighting across the University estate to LEDs over 2 years with the replacement of just over 1500 fittings amounting to energy, cost and carbon savings of 58%. Installing LED lighting is now a standard specification for all capital and minor works. The University was also successfully awarded a further £300,000 to facilitate the upgrade of the aging building management system (BMS) across the entire estate to a Trend 963 controls system over a 2 year period.
- *Renewable electricity* – in October 2017 the University took the decision to have all its electricity supplied from 100% Renewable Energy Guarantee of Origin (REGO) backed sources.
- *Sustainable Travel* – Cardiff Met was awarded the Platinum Level award for Travel Planning in the Workplace by the Welsh Assembly Government in 2016, becoming one of only three organisations in Wales to achieve the award. In December 2018 Cardiff Met was awarded the Cardiff Cycling Award for the 'Most Cycle Friendly Business'. Cardiff Met is continually highlighted by Cardiff Council as an exemplar organisation with regard to Travel Planning and acts as a mentor for other organisations seeking assistance in implementing travel plans in their organisations. By 2021 Cardiff Council's key aim is for 50% of all journeys to be undertaken by sustainable transport. Cardiff Met has already surpassed this with our students having a 76:24 car usage split and a staff modal figure of 46:54 car usage leaving us in reach of the target. The University has funded 5,000 NextBike community cycle scheme

memberships each year, since 2020; allowing its student and staff to have unlimited free use of cycles for upto 30mins each journey.

- *Reducing Waste* - Since 2014/15, Cardiff Met has successfully facilitated the diversion of circa 300 tonnes of waste per annum away from landfill. This has been achieved through diverting the waste, which could not be recycled through our other already established routes, to an Energy Recovery Facility, where over 80% of the content is recovered for energy, with the remaining residual materials identified for recycling via industrial routes. Since 2017/18 all clinical and washroom waste has also been diverted for recycling or to create energy.

Cardiff Met recycles food waste, batteries, waste oil, wooden pallets, electricals, including IT & white goods. Used printer cartridges, mobiles phones, postage stamps and clothing (there are now YMCA banks at all 3 sites) are all recycled for charitable causes.

- *Engagement*: a range of activities include Go Green Week - a whole week dedicated to raising awareness of environmental initiatives on Campus, monthly community days with a focus on a local farmers market, student entrepreneurs, community groups and university initiatives/campaigns. The opportunity for staff and students to attend free green living workshops together held each month encourage the learning of new skills and changing behaviours to live more sustainably.
- *Environmental Management System* - The University recently upgraded to the ISO 14001:2015 International standard for Environmental Management Systems. In addition, the training and mentoring of student groups in Environmental auditing is carried out to provide internal auditing of University processes and systems.
- *Policy Engagement* – staff and students are invited to review and contribute to all environmental policies via planned meetings (see university structure and governance) or working groups and drop in sessions with union representation, SU societies and a part time SU officer.
- *Display Energy Certificates (DECs)* – almost 50% of all buildings across the University estate required to display a DEC are rated as ‘A or B’ demonstrating that these blocks are operating with high levels of energy efficiency and performance.
- *Boiler Upgrades* – end of life or defective boiler plant is replaced with highly efficient, condensing (where applicable) boilers which are more energy efficient, reliable and produce lower levels of carbon emissions from combustion; and associated pump sets and other plant are also specified with high performance equipment.

- *Sub-metering network* – the existing metering network across the University has been developed and improved to reflect the monitoring and targeting required to identify unusual trends in consumption, leaks and areas of high energy usage and is critical to maintaining best practice energy consumption within our buildings.
- *Capital & Minor Works* – all refurbishments are carried out with due regard to energy efficiency measures, opportunities for BMS controls improvements and space utilisation efficiency to optimise learning and working environments for staff and students alike.

4. Drivers for Carbon Reduction

The day to day operation of buildings across Cardiff Met's estate uses significant volumes of energy through heating, lighting and cooling. The reduction in demand for energy, improving infrastructure and facilities and raising awareness of sustainability are key to reducing our carbon footprint, meeting the needs of students, staff and stakeholders and supporting the University's reputation and strategy for carbon reduction.

The following drivers are fundamental to the way in which we currently manage carbon, and how they will be managed in the future. This has implications both financially but also more widely in terms of the University's impact on the environment.

Climate Change

The broad context for this Carbon Management Plan is the growing evidence for global climate change and that greenhouse gases are the primary driver of that change. Against this background, concerted action is required to reduce the emissions of CO₂ and other greenhouse gases.

The Climate Change Act 2008

This legislation commits the UK to a legally binding reduction in CO₂ emissions of 34% by 2020, and an 80% reduction in greenhouse gas emissions by 2050, both compared with 1990 levels. The public sector is expected to lead the way towards meeting the targets and Cardiff Met is on target to achieve the 34% reduction by 2020.

The Carbon Reduction Commitment Energy Efficiency Scheme (CRC)

Originally coming into force in April 2010, this has been the single largest legislative driver facing the HE Sector over the past 8 years. As a mandatory CO₂ emissions trading scheme, in 2017/18 the CRC represented an annual cost of £78,000 for Cardiff Met on our energy emissions following year on year rises in allowances costs. In April 2019, the scheme will be abolished with the cost thereafter being transferred onto the electricity and gas bills as a direct tax.

People & Planet Green League

The University set a target of becoming ranked the number one university in the UK in the People and Planet Green League; a league which assesses, benchmarks and publishes institution's environmental and carbon management performance. The University met this target in Dec 2022, and whilst this a significant achievement, we recognise that this work doesn't end here, and therefore further improvements will be made to ensure this level of performance is sustained. Progress can be viewed on the University sustainability webpages.

Reputation and Brand

As awareness of climate change continues to increase, the appeal for both existing staff and students and prospective students and future employees of working and studying in a sustainably driven University will be key to the University's reputation and brand. A positive and collaborative approach will not only help to secure buy-in but also maintain relations with the local community.

Rising energy costs and energy security

Investment in energy efficiency projects reduces future costs and budget risk as well as carbon emissions. A continued approach to reduction in energy demand through efficiency measures, improving resilience to energy security risks and exploring renewable energy and storage solutions will reduce the University's exposure to risk.

Well-being of Future Generations (Wales) Act 2015

The Act is binding on all public sector organisations in Wales and sets 7 well-being goals for Wales which will drive the actions required to improve the economic, environmental, social and cultural well being of future generations. The Act encourages public bodies to consider the long term, work better with people and communities, look to prevent problems and take a more joined-up approach.

This new law will mean that, for the first time, public bodies listed in the Act must do what they do in a sustainable way.

Decarbonisation

Over the last couple of years, new legislation and changes to existing legislation on energy have driven up costs relating to the consumption of fossil fuels. The UK Government's drive towards decarbonisation comes at a cost that all energy consumers will continue to bear for some years as the transition to a low carbon electrical grid becomes a reality. We are also taxed on the carbon emissions we emit and manage our emissions to ensure we remain compliant with the ultimate aim of mitigating these costs through reduced consumption.

Building Regulations – Part L

This sets out requirements for improved energy efficiency and the effective control of buildings and associated plant, applying to both new buildings and refurbishments.

5. The Business Case

There are significant financial benefits to the University from implementing this Carbon Management Plan. Ultimately, emissions reductions are based on reducing demand for utilities which in turn lead to cost savings, however utility pricing is likely to rise substantially over the coming years and this cannot be influenced by the University. This in turn supports the case for the continued investment in carbon reduction to mitigate the impact of future energy price increases.

Most improvements undertaken within the previous carbon reduction programme have been funded from existing budgets or supported by Welsh Government Salix loan funding which has been secured and utilised for targeted initiatives including the upgrade of LED lighting across the estate and the upgrade of the University's Building Management System.

Going forwards, it is envisaged that current levels of funding will be maintained throughout this CMP up until 2022/23 and therefore it is hoped that university funding along with appropriate loan finance will bridge the funding gap that exists to provide the additional capital required to realise the ambitions of the overarching strategy.

Over the period of the previous Carbon Management Plan, approximately £1.2M has been spent on carbon reduction and energy reduction initiatives. Almost half of this value relates to energy efficiency interest free loans which are being repaid over 3-5 years, and following this payback period, total cost savings year on year will amount to around £170,000 from these projects alone.

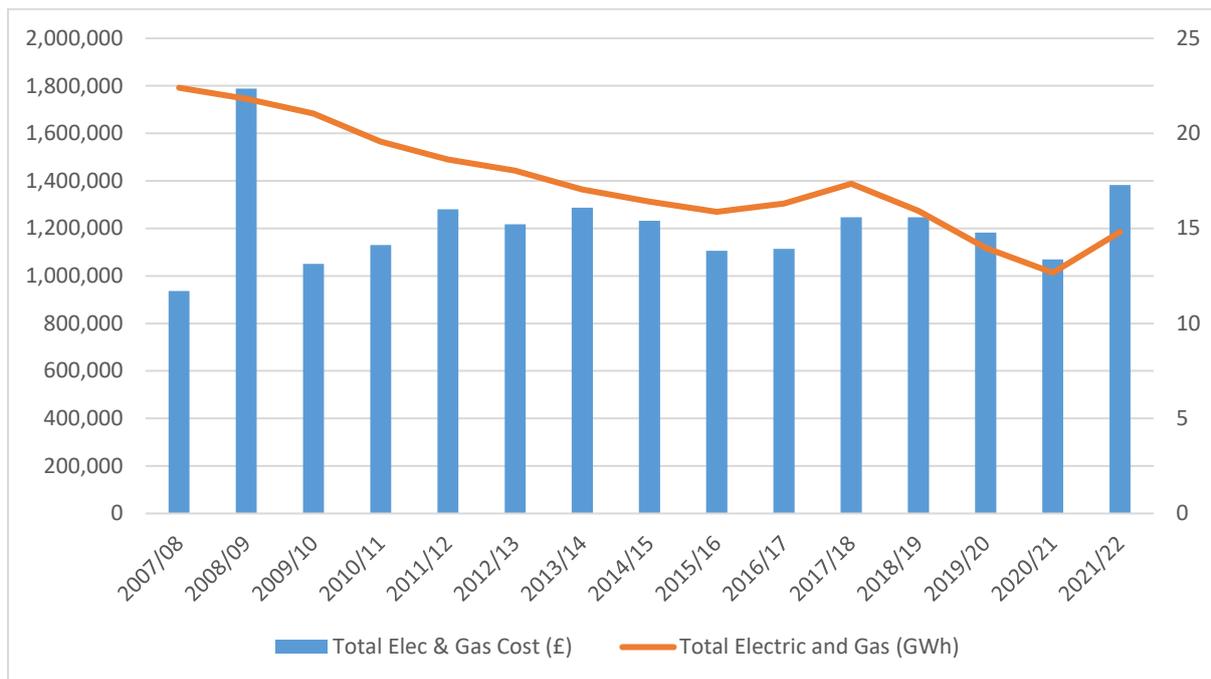
5.1 Rising Energy Prices

In recent years the energy market has become increasingly volatile due to risks associated with security of supply, political events in the UK and around the globe and increasing demand for gas across Europe. Alongside this, energy costs have been rising year on year as a result of increases in the taxes, levies and other charges that now make up around 55% of the energy bill and this trend shows no signs of slowing.

Towards the end of 2017, the University entered into a flexible energy purchasing contract with a dedicated energy broker which affords the opportunity to forward purchase energy when it is deemed commercially appropriate, taking advantage of falling market pricing, but with the assurance that any purchase price will not exceed a maximum price cap. This not only helps to provide budget certainty but will also lead to potential cost savings.

In order to mitigate the risk posed by increasing energy prices, the University aims to ensure all energy is consumed as efficiently and effectively as possible with the principle focus on reducing demand. In support of this, the University plans to use investment from central and loan funding to finance energy saving projects over the 5 years of the Carbon Management Plan to achieve the reduction targets outlined.

Figure 3: Energy costs (electricity & gas) 2007/08 – 2021/22



5.2 Financial Value at Stake

In general, through targeted reductions in electricity and gas consumption and the strategic procurement of utility contracts, the University has largely mitigated the year on year rise in wholesale energy costs although Government taxes on the supply of fuels continues to grow. In 2017/18, the University spent £1.25m on electricity and gas which represents 1.2% of total expenditure.

The Value at Stake (VAS) represents the total savings in energy and carbon related costs that can be obtained through completing energy saving projects to reduce the University’s absolute emissions by 3% per year compared to the 2017/18 baseline. It presents the cost difference that would result if full implementation of energy efficiency projects are undertaken compared to taking no action at all.

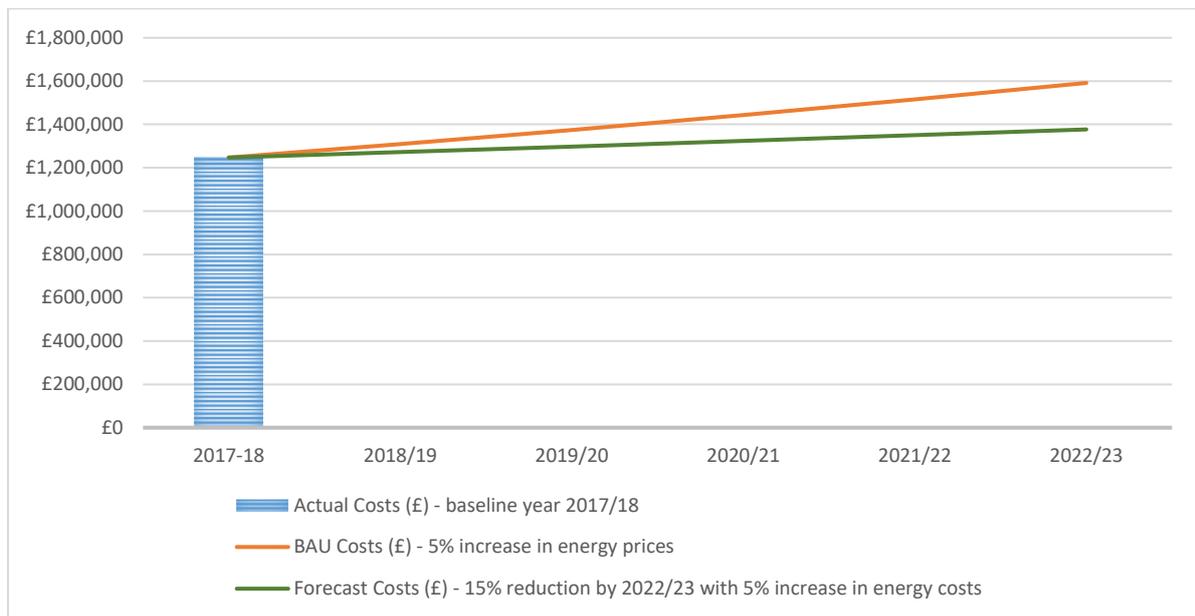
The following scenario proposes an indicative 5% rise in energy costs year on year which is assessed based on current industry linked forecasts.

In the event energy prices rise by 5% year on year and we manage to achieve the 15% reduction in our absolute emissions over the duration of strategy, the energy bill in 2022/23 would be in the region of £1.37m.

The Business as Usual Scenario for the University’s energy costs if we do not implement any energy saving projects and energy prices increase by 5% per annum would be £1.6m in 2022/23.

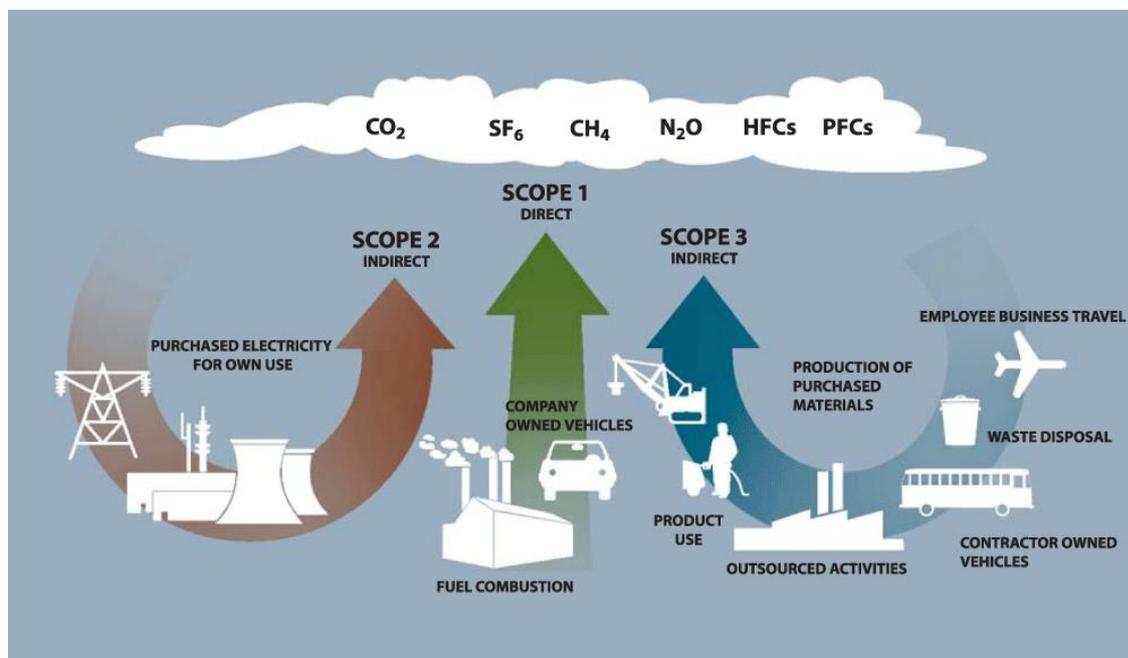
Using the above scenario, the combined savings that can be obtained would be approximately £615,000 in 2022/23 if we were to implement energy efficiency projects and energy prices increase by 5%.

Figure 4: Financial Value at Stake Scenarios for Energy Costs over the period of the Strategy.



6. Our Current Carbon Footprint

Carbon emissions are separated into direct and indirect emissions as defined by the World Resources Institute (WRI) and embodied in the Green House Gas Protocol as illustrated below. This standard is the most widely used international accounting tool for government and business leaders to understand, quantify, and manage greenhouse gas emissions.



Source: <https://www.wri.org/resources/charts-graphs/operational-boundaries-ghg-emissions>

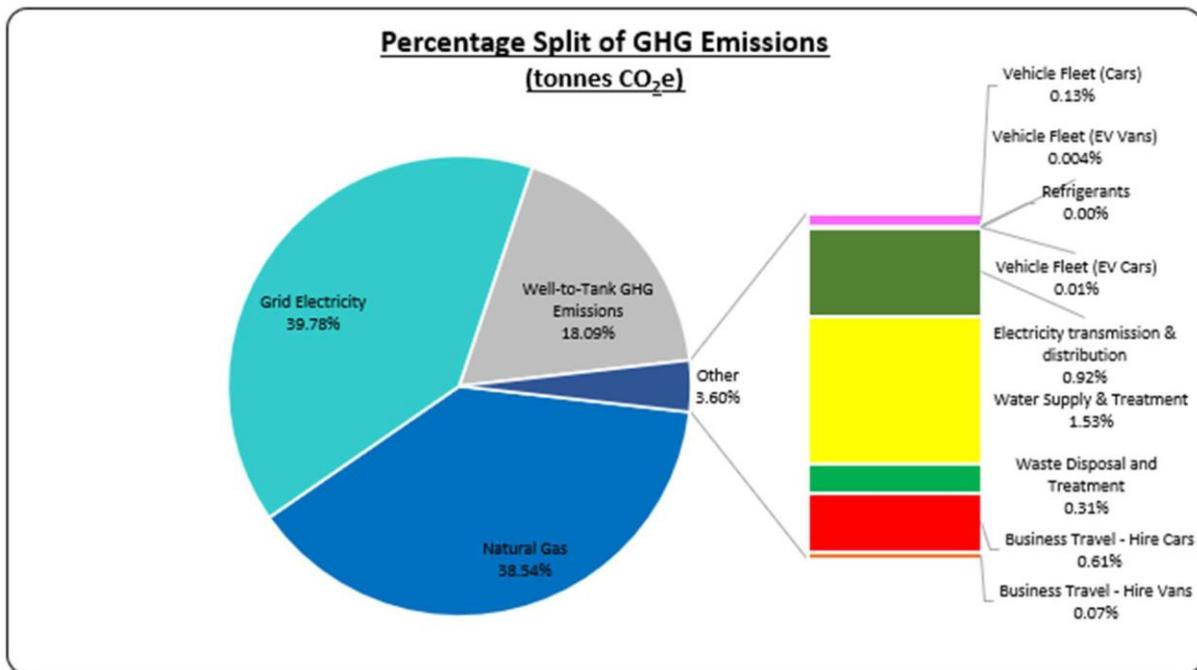
The reduction targets contained within this strategy are primarily applicable to all Scope 1 and 2 emissions as these represent 97% of our current, measured carbon footprint. However, with improving data capture and analysis, we will be including selected scope 3 emissions baselines and reduction targets appropriate to them.

In 2017/18, following improvements in data collection, the University's current carbon footprint totals 5,031 tonnes with 4,863 tonnes (97%) of that comprised of heating and electricity use in our buildings. Although building energy use is the primary focus, all aspects of our carbon footprint need to be effectively managed to ensure we deliver on our commitments.

Emissions Scope

In order to take a more strategic approach to carbon management and to account for the inclusion of new emissions sources as a result of improved data collation, for the purposes of this CMP the University has updated its annual carbon emissions to establish a new baseline for 2021/22 (shown in 6.1 below). This will be used to measure future performance. The 2021/22 emission sources included in the revised baseline are shown below:

Figure 5: Carbon Footprint by Source



Scope 1 Emissions (direct emissions)

- Natural Gas (in academic buildings and university-managed halls of residence)
- Fuel for university vehicles (diesel and petrol)
- Fugitive emissions (leakage of refrigerant gases)

Scope 2 Emissions (indirect emissions)

- Electricity consumption (in academic buildings and university-managed halls of residence)
- Electric vehicles

Scope 3 Emissions (indirect emissions)

- Grid and Electricity Transmission & Distribution
- Waste and recycling
- Water (supply and treatment)
- Well to tank GHG Emissions
- Transport (grey fleet)

In 2019/20, we captured, analysed and reported on other Scope 3 emissions for the first time. This includes data on our business travel and commuting emissions, procurement and supply chain emissions.

This provides us with a baseline on which to improve and develop our systems to increase data accuracy and reliability as we move forwards which in turn will provide us with the opportunity to develop meaningful targets for this impacts in the current and future strategies.

This will also help us to better understand the spread of our material emissions and the actions we need to take forward for the priority areas. This data is indicated in the Scope 3 section below.

6.1 Baseline Carbon Emissions Data

The following table illustrates the University carbon footprint (tCO₂e) from the baseline year 2012/13 for scope 1 and 2 emissions.

Key performance indicators	2012-13 (baseline)	2013-14	2014-15	2015-16	2016-17	2017-18	2021-22	Change from baseline yr
FTE Staff	1,050	1,114	1,176	1,209	1,218	1,078	1346	+28%
FTE Students	8,544	8,432	8,460	8,569	8,548	8,548	10,631	+24%
Total scope 1 and 2 carbon emissions (energy and fuel use tCO ₂ e)	5,593	5,868	5,617	5,259	5,002	4,863	2354	-42%
Total Scope 1 and 2 carbon emissions per staff and students (tonnes/FTE)	0.58	0.61	0.58	0.54	0.51	0.51	0.20	-34%
Total electricity emissions (tCO ₂ e)	3,506	3,710	3,556	3,323	2,970	2,626	1194	-34%
Total gas emissions (tCO ₂ e)	2,081	2,152	2,055	1,931	2,027	2,231	1160	-56%
Total water emissions (tCO ₂ e)	56	62	63	63	67	68	46	-18%

Note: 2021/22 Total emissions include Well to tank, where applicable

6.1.1 Baseline Carbon Emissions Data for Residential partner operators

The following table provides the first set of emissions data for the Universities residential partner properties. This will form the baseline for future performance monitoring for this activity. Unite have been requested to provide a reduction target.

Unite student plc, operate four buildings :- Clodien House, Blackweir Lodge, North Court and The Bakery, on behalf of the University, importantly these will either be on an exclusive or shared occupancy basis with other Universities within the City. Where there is shared occupancy, the emissions will be based on the percentage of occupancy relating to the University.

Key performance indicators	2021-22 (baseline)	Clodien House	Blackweir Lodge	North Court	The Bakery
Students max occupation	1356	380	410	232	334
Cardiff Met students occupation	722	158	258	232	74
Total electricity emissions (tCO ₂ e) (CMet occupancy)	625718 (333162)	167632 (69699)	182228 (114670)	112747 (112747)	163111 (36138)
Total water emissions (tCO ₂ e) Full occupancy (e) estimated (CMet Occupancy)	3804 (2025)	(e)500 (207)	540 (339)	2166 (2166)	598 (132)
Total gas emissions (tCO ₂ e)	No gas at Unite properties				

7. Targets

We will continue to work towards absolute reduction targets but will also adopt relative metrics, which will enable us to assess progress both in terms of the number of staff and students and the size of our estate.

In support of this will be an evolving plan of projects and initiatives that will contribute to the reduction of carbon emissions over the duration of this CMP. This will be developed and maintained in accordance with progress.

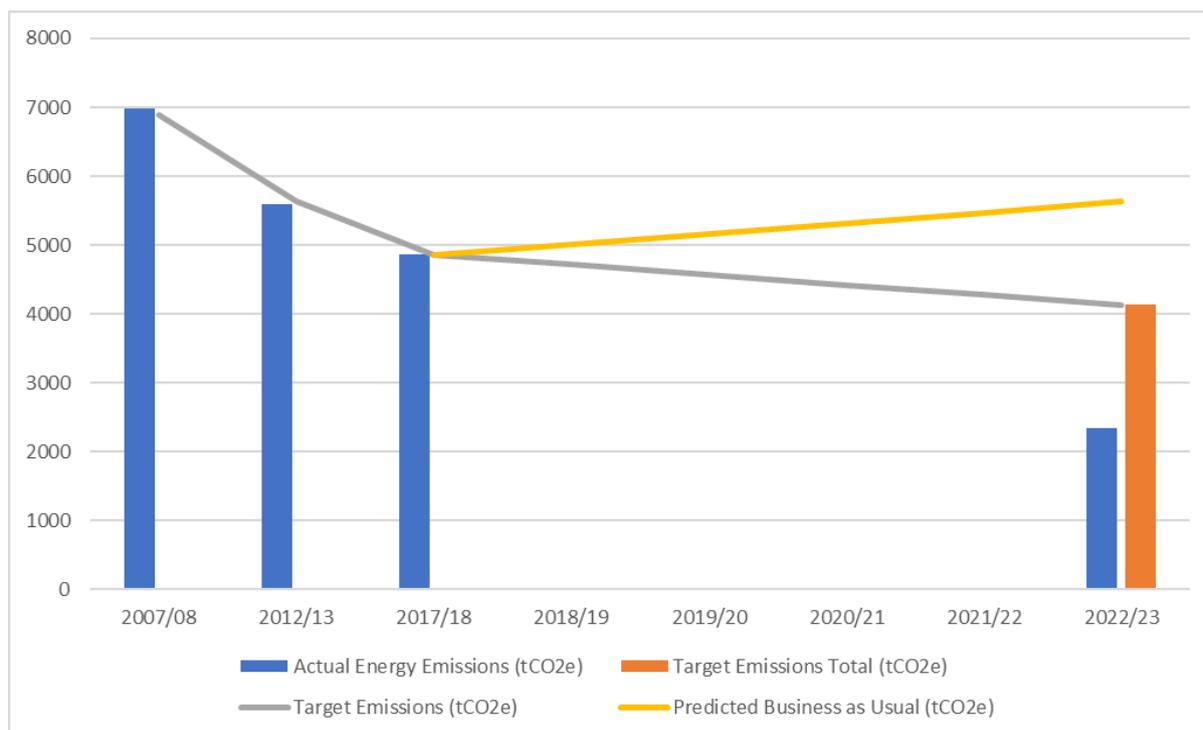
For the period of this Carbon Management Plan, the University will aim to achieve the targets outlined below.

Scopes 1 and 2

Energy

The next milestone will be a target of achieving a further 15% absolute carbon reduction (3% per year) by 2022/23 against a 2017/18 baseline amounting to a total of 45% carbon reduction compared to 2007/08. This target has been exceeded by a significant margin, resulting in a net carbon footprint of 2354 tCO₂e in 2021/22.

Figure 6: Scope 1 and 2 Emissions target compared to baseline year.



However in light of a return to normal business, and the University’s ambitious growth targets, the University’s estate will need to respond and grow accordingly. This will include new build projects and large scale refurbishments, which will in turn challenge the current emissions performance. This also does not however factor in further decarbonisation of the electrical grid and increased uptake of renewables over this period which would reduce the carbon intensity of the fuels consumed.

Scope 3

Scope 3 emissions arise from the activities of the University that are derived from sources not under its direct control such as the procurement of good and serves, business travel, and student and staff commuting. Typically, these represent the majority share of an organisation’s carbon footprint and include various impacts associated with the operations of the University. A baseline for the University’s scope 3 emissions has been developed with a view to including those elements that are material to our activities. In future years, the systems and processes for capturing this data will need to be improved to ensure the accuracy and reliability of this data is as robust as possible. This will then help inform meaningful targets for carbon reduction.

Water

The University is committed to reducing water usage as part of mitigating its environmental impact. A comprehensive network of water meters across the estate assist in identifying pipe leaks, dripping taps or constantly flushing toilets which contribute to savings in water consumption not always visible or noticed. However, the consumption of water and water related emissions has been steadily increasing year on year. Further investment in understanding water usage, opportunities in capital and minor works for including new equipment such as low flow urinals, showers and toilets together with engagement with staff

and students across the campus will be required to help reduce the University’s water consumption and identify opportunities for water savings.

Waste

Now that Cardiff Met has successfully prevented waste going to landfill, the challenge will be to reduce the amount of waste diverted for Energy Recovery, thereby moving this waste stream further up the Waste Hierarchy. This will be a difficult challenge to address, but work has already started to tackle single use Coffee cups in partnership with Keep Wales Tidy, which includes a trial cup recycling scheme at one of our sites. This initiative together with other means of increasing recycling of our waste will help us work towards the Welsh Government longer term recycling targets.

Travel

Cardiff Council introduced a new Travel Strategy 2016/17 and Cardiff Met have agreed to work in partnership with the city towards the achievement of their strategic aims. The next key milestone is to reduce staff single occupancy car journeys to Cardiff Met and the dependency on vehicles to support its activity by 4% by 2021.

As previously referred, the pandemic led to significant disruption to the normal delivery of business for the University, as such the University is developing a new Travel Plan, as contributor to the creation and delivery of its Campus2030 estate.

Scope 3 Baselines and Targets

Area	Baseline (tCO2e)	Baseline Year	Target	Target Year
Water	68	2017/18	10% reduction in tCO2e	2022/23
Waste	90	2013/14	Zero waste to land fill and recycle 70% of waste.	2025
Business Travel	592	2019/20	Reduction of 5% in carbon emissions (tCO2e).	2022/23
Staff Commuting	1,565	2019/20	Reduce staff single occupancy car journeys to Cardiff Met and the dependency on vehicles to support its activity by 5%.	2022/23
Student Commuting	3,376	2019/20	Reduction of 5% in carbon emissions (tCO2e).	2022/23
Student travel from Home to University	4,438	2018-19	Reduction of 5% in carbon emissions (tCO2e).	2022/23
Procurement	4,900	2019/20	Reduction of 5% in carbon emissions (tCo2e) associated with purchased goods and services.	2022/23

8. Structure, Roles & Responsibility

The Vice Chancellor's Executive Group holds ultimate responsibility for the carbon footprint of the University.

The Director of Environment and Estates will report on the carbon footprint and associated energy performance to the Estates and Environment Committee and the Vice Chancellor's Executive Group as required.

The delivery of this plan will be led by the Energy and Environment Engineer with support from the Maintenance Officers within the Environment and Estates Team. This will also include the responsibility for coordinating data collection, verification and reporting progress against targets under the requirements of the ISO14001:2015 standard. Ultimately, all schools and units are responsible for engaging in and promoting sustainable and energy efficient behaviours for the strategy to be successful and internal and external resources will be engaged where relevant and as identified, to assist in delivering the aims of this strategy.

9. Engagement

This success of the delivery of this CMP will rely on all staff and students taking ownership of the ambitions outlined in the document and contributing collectively to achieving the targets. This is supported by the University's Sustainability Engagement Strategy which further encourages staff and students to get involved and suggest innovative ideas for reducing energy and carbon either on a day to day basis or through dedicated focus groups as part of the annual consultations on all policies and strategies. The development and governance of the CMP has been subject to consultation and feedback from the University's Sustainability Committee which is widely represented from key stakeholders across the University.

10. Reporting

Progress against the targets contained in the Carbon Management Plan are monitored and reported through different routes as follows:

- Annual Sustainability and Environmental Report: this report provides a concise breakdown of University wide progress on sustainability to internal and external stakeholders. The report covers the period 1 January to 31 December each year, and reports on the broad spectrum of sustainability achievements with a specific section dedicated to energy, carbon and water use. Carbon reduction performance is underpinned by the completion of improvements which are captured, regularly reviewed (at least quarterly) and reported in the Programme of Improvements document to ensure all works, costs and savings are reported accordingly.
- ISO 14001: the University has operated an externally assessed Environmental Management System since 2008 which includes requirements for aspect owners to provide regular reports on progress against identified targets and objectives such as energy and carbon, waste, recycling, water use and biodiversity. Performance and progress against these objectives is regularly reviewed at the University's Sustainability Committee who provide the high level direction of travel for ongoing sustainability improvements. The EMS is also audited annually by an externally, verified auditor.
- HESA Estates Management Record: the University reports all data for scopes 1 –3 carbon emissions along with many other indicators each year. This information is publicly available and provides a useful metric for benchmarking performance against other University's within the HE sector.
- Webpages: there is a range of sustainability information provided and updated on the University's webpages at the following link: <https://www.cardiffmet.ac.uk/about/sustainability/Pages/default.aspx>. This includes links to Annual Sustainability reports, policies, strategies, the EMS and energy and carbon performance.
- Automatic Metering and Reporting
The University operates an estate wide AMR system across 99% of its buildings that provides the means to monitor and review utility consumption on a half hourly basis, identify anomalies in consumption trends (eg water leaks) and also calculate the savings achieved from implementing energy efficiency improvements. This data is also used to inform building managers of performance against previous years and helps to identify opportunities to for improvements.

11. Financing

Previously, investment for energy and carbon reduction projects has been derived from both internal and external finance. This includes interest free loans via Salix and Invest 2 Save funds. For the purposes of ongoing investment in this strategy, financing will predominantly be provided from internal resources, specifically through year on year maintenance improvement budgets (circa £400k per annum) as many of the projects deliver ongoing energy and carbon savings as well as savings on maintenance costs. In addition to this, the capital projects programme will likely include wide scale refurbishment which in turn will also include opportunities to invest in energy efficient improvements that will contribute to further carbon savings.

“This document has been reviewed by the Sustainability Committee April 2020, comprising of Pro-Vice Chancellor Partnerships and External Engagement, Sustainability Engagement Manager, EMS Aspect Owners, Students’ Union – SU President and SU Part Time Environmental Officer, Trade Unions and School Academic representatives.

If you have any comments or would like to volunteer with Sustainability Strategy / Policy review please contact Sustainability@cardiffmet.ac.uk”

Appendix 1 – Updated Programme of Improvements Until September 2023



Scheme	Number	Budget Cost
Gas fired Heating and DHWS	6	£99,000
LED Lighting Upgrades	286	£110,110

Proposed Heating & Domestic Hot Water Carbon Reduction Plan 2023						
Campus	Building	Proposal	Current Gas Output kW	Proposed Electric Kw Rating	Proposed Date	Budget Cost
Cyncoed	B Block	Remove gas fired cylinder and install point of use water heaters	28	12x 2kW water heater	Apr-23	£15k
Cyncoed	A Block	Remove gas fired cylinder and install point of use water heaters	28	15x 3kW POUH 2k electric showers	Apr-23	£22K
Cyncoed	C Block	Replace 2x gas fired cylinders with electric immersion quick recovery cylinders to supply Centro area. Install point of use water heaters throughout C Block	28	2x 6kW Cylinders. Approx 12 POUH	Aug-23	£35k
Cyncoed	P Block	Remove 2x gas fired cylinders and install electric boiler feeding quick recovery cylinder with the assistance of Air source heat pumps and P.V	190	12kw electric total, 600ltrs + ASHP + P.V	Aug-23	£10k (not including PV)
Llandaff	E Block	Removal of gas - fit electric boiler in attic space	Currently supplied from A Block CT	Electric boiler in attic space -4.8kw electric total, 41.6A/phase for boiler 28kw heat output total	Jul-23	£15k
Llandaff	P Block	Remove gas and switch to 18kw electric total	58kw, 112W@240v, 300ltrs	existing 18kw electric total	June 2023	£2k

Proposed LED Lighting Upgrades 2023						
Campus	Block	Room	Number	Size	Existing Fitting	Budget Cost (£)
Llandaff	M Block	M0.03a	24	6	Single Fluorescent	9240
Llandaff	M Block	M0.04	9	600x600	Modular	3465
Llandaff	M Block	M1.T1	5	600x600	Modular	1925
Llandaff	M Block	M1.T2	6	600x600	Modular	2310
Llandaff	M Block	M1.01c	1	8	Fluorescent	385
Llandaff	M Block	M1.07a	2	6	Fluorescent	770
Llandaff	N Block	N1.02	2	6	Fluorescent	770
Llandaff	N Block	N1.04	20	5	Fluorescent	7700
Llandaff	N Block	N Block 1st floor landing	14		circular fittings	5390
Llandaff	N Block	Illustration rm 1	12	5	Twin fittings	4620
Llandaff	N Block	Illustration rm2	15	5	Twin fittings	5775
Llandaff	N Block	N Block 2nd floor landing	8	1200x600	modular	3080
Llandaff	N Block	N2.01	31	5	Twin fluorescent	11935
Llandaff	N Block	Toilets	3		28-watt 2d	1155
Llandaff	N Block	N Block 3rd floor landing	3	1200x600	modular	1155
Llandaff	N Block	N3.02	8	5	Twin fluorescent	3080
Llandaff	N Block	N3.02b	2	5	Twin fluorescent	770
Llandaff	N Block	N3.01	4	5	Twin fluorescent	1540
Llandaff	N Block	N3.01a	2	5	Twin fluorescent	770
Llandaff	N Block	N0.10	26	5	Twin fluorescent	10010
Llandaff	N Block	N0.11	16	5	Twin fluorescent	6160
Llandaff	N Block	N0.09	16	5	Twin fluorescent	6160
Llandaff	N Block	N Block ground floor toilets	3		28 watts 2d	1155
Llandaff	N Block	N0.08	7	5	Twin fluorescent	2695
Llandaff	N Block	N0.06	1	6	Twin fluorescent	385

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Llandaff	N Block	Corridor	3	5	Twin fluorescent	1155
Llandaff	O Block CSM	O2.36a	2	600x600	Modular	770
Llandaff	O Block CSM	O2.36	4	600x600	Modular	1540
Llandaff	O Block CSM	O3.25P	5	5	Twin Fluorescent	1925
Llandaff	O Block CSM	O3.05P	6	5	Twin Fluorescent	2310
Llandaff	P Block	P1.12	6	600x600	Modular	2310
Llandaff	P Block	P Block 1st floor corridor	4		circular fitting	1540
Llandaff	P Block	P Block back staircase	3		28-watt 2d	1155
Llandaff	P Block	P0.10 kitchen	12	5	twin fluorescent	4620
Llandaff	P Block	Kitchen corridor	1	5	twin fluorescent	385
		Total	286		Total	£110,110