Energy Plan 2025/26

Executive Summary

This document reviews building energy efficiency, looking at energy use per m^2 of floor area. It also sets out a plan for energy management for the current year and up to July 2026. This plan is a fundamental part of the University's ISO 50001:2018 certified Energy Management System (EnMS) and will also contribute to ESOS submissions.

The sustained, high unit cost of energy has continued to drive action to reduce energy wastage across the university Estate. The wide-ranging energy campaign, which began in 2022, to identify and implement energy savings, is still ongoing. It includes energy awareness promotion, an Energy Champions Network (comprising staff and student members), building audits, improved operational efficiency of HVAC systems, a review of building usage, and regular data monitoring.

Works are shortly due to begin on a large Ground Source Heat Pump installation to supply the campus district heating network, and to further extend the network. This has been made possible through a grant secured from the Public Sector Decarbonisation Scheme (PSDS3c). This follows success with earlier rounds which have seen the district heating network updated with air source heat pumps, improved buildings controls, LED lighting, extra solar installations, battery storage (PSDS2), insulation of the two largest buildings onsite (PSDS3a), thermal storage and the expansion of the heat network to the residential estate (PSDS3b). Further energy efficiency improvements and renewable infrastructure projects are necessary to help the university meet its targets; however, it will no longer be eligible to apply for PSDS grants going forwards and the Salix Revolving Green Fund has now closed.

Recommendation to prioritise the following objectives:

1. Seek to continually improve energy management through ISO 50,001.
2. Continue to improve the District Heating system and building HVAC system operation.
3. Seek to identify and implement all no-cost opportunities for reducing energy wastage.
4. Continue to develop and improve the campus HV electricity system.

Energy Planning

Following an audit of its Energy Management System (EnMS) in 2023, the energy planning process adopted by the university was clarified and is described in detail in the university's EnMS manual.

For each internal and external issue which has an impact on the university's Energy Management System, potential risks, opportunities and the actions to address them are identified. These are reviewed each year, through a formal management review process and combined with findings of an energy review to inform key objectives. These objectives are also reviewed annually to ensure continued alignment with the university's Energy Policy, and to take account of progress and operational constraints.

Buildings and Significant Energy Uses

The majority of energy use on site is associated with buildings in the form of heating, cooling, lighting, small and large power use. There are also centralised IT servers (with a mirror on site for backup), a sewage works, an airport, and a street lighting network.

The building energy uses split out into offices, teaching and meeting spaces, research spaces and equipment, workshops, hotels, halls of residence, flats, family houses, aircraft hangars, bus depot, kitchens, restaurants, and other eating outlets.

The energy to heat and power the buildings is delivered in a number of ways. Over 50% of the electricity for the campus is generated on site by a 1.4 MW combined heat and power unit along with 1.45 MW and 900 kW solar PV farms. The CHP also provides the base load heat for a district heating system which supplies most of the buildings on the technical site. A biomass boiler and air source heat pump also provide heat to this district heating system with gas boilers providing back up. Only one building on the technical site is still heated with oil, and when possible, this will be converted to district heating. The remaining buildings, including those which are residential, are heated with gas boilers, except for Chilver and Baroness Young Halls, which are electrically heated.

The new buildings being delivered as part of the Masterplan are having an impact on the campus energy consumption. Many are technical buildings with significant process energy demands in addition to building HVAC systems. They include the AIRC building, AIRC Test Cells, IMEC building, new Glasshouse, FAAM, Agri Tech, UKCRIC 1 and 2, and DARTeC. Two industrial scale research facilities for generating hydrogen are due to be brought into commission in 2025. One will significantly increase site gas consumption; the other is expected to significantly increase our electrical demand. Further research facilities are currently under construction.

There are over 1000 electricity meters monitoring demand. When grouping these into major loads and building loads, the top 10 account for 40%.

The table below shows the top 10 electricity users (with the next 5 in grey) with the year-on-year change.

Table 1: Data for the top 10 electricity users for the reporting periods 22/23 and 23/24

Building	Electricity Use 22/23		Electricity Use 23/24		Annual change
	kWh	kWh/Sqm	kWh	kWh/Sqm	
Baroness Young Halls	2,093,007	107	1,941,017	99	-7%
C052A (inc Solt Building)	1,170,583	159	1,288,340	175	10%
IT Servers	1,515,097	N/A	1,198,231	N/A	-21%
C057	759,253	436	989,484	568	30%
Mitchell Hall	691,316	90	671,265	87	-3%
C083 (inc IMEC)	776,049	99	655,017	89	-16%
C239 Conf Hotel	591,531	80	635,886	86	7%
C052	650,508	60	619,138	57	-5%
C300 Martell	537,217	104	542,529	105	1%
C055	416,323	129	421,140	131	1%

Stringfellow Halls	513,729	64	410,331	51	-20%
C320	277,567	59	350,695	75	26%
C240 CMDC	322,454	112	298,218	104	-8%
C070	273,014	201	292,044	215	7%
C085	570,335	105	232,035	43	-59%

* Building 52a and Building 57 contain high energy use research equipment. Changes in electricity consumption from year to year can be significantly impacted by the nature of contract work being delivered. A correction has been made to B57 data for 22/23.

** In late 2023 / early 2024, a significant portion of the IT servers were relocated to the new data centre, which has been designed to be more energy efficient.

*** Stringfellow Halls 3 and 5 were vacant for a large part of reporting period 2023/24, with students being relocated to BYH.

**** Building 85 was under renovation for most of reporting period 2023/24 as part of PSDS3 works.

The above electricity sites will be reviewed on a regular basis using data from the University's Half Hourly Automatic Metering System.

There are 186 gas meters monitoring demand. Most (55%) of the gas imported is used to fuel the CHP which produced 34% of the electricity consumed in 23/24. Excluding the CHP, the top 10 users of gas account for 95% of natural gas consumption.

The table below shows the top 10 gas users (with the next two in grey) with the year-on-year change.

Table 2: Data for the top 10 gas users for the reporting period 22/23 and 23/24

Building	**Gas Use 22/23**		**Gas Use 23/24**		**Annual change**
	kWh	**kWh/Sqm**	**kWh**	**kWh/Sqm**	
Gas for District Heating	3,510,486	42	3,194,895	38	-9%
Gas for houses	2,445,861	162	2,160,108	143	-12%
Mitchell Hall	2,009,931	261	2,004,106	260	0%
Lanchester	2,049,641	182	1,597,836	142	-22%
CMDC	1,455,945	506	1,502,927	523	3%
Stringfellow	1,110,919	139	769,838	97	-31%
Test Area	611,572	399	744,940	487	22%
C300 Martell House	612,206	118	686,382	132	12%
Fedden	587,418	202	540,441	185	-8%
Conference Hotel	446,531	61	468,245	63	5%
C046 Welding	216,539	183	191,888	162	-11%
Sports Centre	160,471	72	154,282	69	-4%

* A reduction in the number of students requiring family accommodation is reflected in the drop in housing gas use.

** Use of the Lanchester Hall accommodation was reduced in the 2023/24 reporting period.

*** Stringfellow Halls 3 and 5 were vacant for a large part of reporting period 2023/24, with students being relocated to BYH.

**** Improvements to B46 gas usage are believed to be due to improved thermostatic control, through behaviour change, and timeclock adjustment of the building's independent heating system.

Degree days in 2023/24 were 1,506 compared with 1,659 in 2022/23 a decrease of 9%. The gas for District heating does not allow for the other sources of heat including CHP waste heat and biomass heat and so a year on year comparison is difficult. It is good to see a decrease in gas overall, reflecting a return to normal ventilation regimes after Covid.

The top 10 gas sites will also be reviewed on a regular basis using the gas supplier's Half Hourly data.

Energy Costs

Electricity and gas prices remain high in 2025 although they have fallen slightly from the 2022/23 peak, future prices are uncertain with the potential for relatively small increases in electricity and decreases in gas possible. This still provides a significant imperative to reduce energy wastage but limits funding available for improvements, except for very quick payback measures.

Energy Management

The university's Energy Management System is based on ISO50001:2018. The manual documents how the system works, setting out responsibilities, the policy, the various procedures, tracking legislative changes to maintain compliance and setting a system for monitoring and targeting energy savings.

There are over 40 statutory annual DECs (Display Energy Certificates) and 31 ten year DECs (excluding new builds).

Training is provided to all staff and students (awareness training and online training). Training needs for FMs and Green Team members should be reviewed.

Monitoring and Targeting is being deployed on the operation of the District Heating and CHP with monthly reviews of performance. The maximum demand of the site is also being closely monitored and targeted during winter to reduce the risk of blackout. As described above. the top 10 electricity and gas users are monitored on a more frequent basis.

KPIs

The university has two KPI's specifically relating to energy:

1) To monitor building energy use on a kWh per m^2 basis
2) To reduce building energy demand per m^2 floor area

In addition to this ISO 50,001:2018 requires us to report progress against a fixed baseline.

Table 3: Changes in building energy demand by floor area

Building Energy Demand by floor area over last 5 years (kWh/m2)

	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Electricity consumed*	93	81	78	84	94	74
Heat consumed**	165	142	145	128	103	110
Change in Elec efficiency		-13%	-16%	-10%	1%	-21%
Change in Heat efficiency		-14%	-12%	-22%	-37%	-33%

*Electricity consumed excludes electricity specifically used for heating and also specific research activity
** Heat consumed includes electricity for heating, CHP waste heat and assumes a boiler efficiency of 80% where fuel and not heat is metered; specific research activity is excluded. Heat demand is adjusted for Degree Days.

The dramatic improvement in heat efficiency between 2019 and 2023 was helped by a number of factors:

(i) New highly efficient student accommodation in Baroness Young Halls
(ii) Improvements to heating scheduling since Covid.
(iii) Large hangar space not being heated during refurbishment.

In terms of electricity consumed, not all research process loads have been identified and decoupled from normal building loads and so increased research activity may be hiding improvements in buildings energy efficiency. Detailed building audits will help to identify further research process loads.

Energy Saving Opportunities

Improving energy efficiency of buildings

Reductions in heating requirement though improved control of heating systems, better insulation and air tightness are a key focus of ongoing improvements. Alternatives to gas boilers are also being sought.

Lighting is the main electrical load in some buildings. Replacing fluorescent lights with LED lighting and improved control can reduce this consumption by more than 50%. Opportunities to upgrade lighting to LED will continue to be sought. There are still opportunities in many of the buildings across campus, including CMDC, the Conference Hotel, Mitchell Hall, and a number of car parks.

Modern motors with improved control can significantly reduce the electrical loads associated with air handling and heating systems. Our Mechanical Engineering Team have been asked to identify opportunities as part of their operation and maintenance of the heating and ventilation on site. They are also implementing a programme of works to improve the efficiency of compressed air systems across site.

Behaviour change

Alongside the University Energy Policy there is an Energy Code of Practice which provides more detail for the interpretation of the energy policy. This helps manage expectations and ensure operations are efficient. This code is reviewed annually.

All staff and students are given awareness raising training either through presentation (students) or via an on-line training platform (staff). Staff and students who are keen to volunteer to help improve the environment at Cranfield are organised in “Green Teams” and, more recently, an “Energy Champions Network.” They are supported to help with campaigns to save energy.

Energy Campaign

Given the sustained high unit cost of energy, there is a continued emphasis on immediate energy savings. Staff and student Energy Champions have been recruited to help identify no cost and low-cost opportunities for cutting energy wastage across the site. Energy data has been made available, which is updated on a weekly basis.

A review of operations with laboratory mangers, cleaning management, security, IT, and technical managers has helped identify opportunities to reduce energy use without affecting operations. Profile energy data is reviewed weekly to check for anomalies, such as sudden increases or decreases, which might indicate equipment or procedural failures, which can then be followed up.

More building temperature sensors have been installed to help prevent overheating whilst comfort is maintained. Temperature settings have been optimised and timings controlled more effectively. This has included the setting of TRVs to a set maximum consistent with 21 degrees C. Cooling in summer has also been restricted, in air-conditioned buildings where constant temperature is not required. Buildings have had hours of operation set to avoid heating, cooling and lighting being used unnecessarily.

In 2025 a program of detailed building energy audits was launched to understand exactly where energy is being used, whether it can be reduced and by what means.

Salix Projects

In 2024/25, the university implemented its final projects using the amended Salix Revolving Green Fund.

The annual summary of the Commissioned Salix Revolving Green Fund is shown below:

Table 5: Annual summary of commissioned Salix RGF

Commissioned (Salix Year)	No of Projects	Annual kWh Savings	Annual Carbon Savings tCO_2e	Project Costs	Annual Savings	Average Payback / Years
2024/2025	3	178,424	38	£223,104	£33,932	6.9
2023/2024	0	0	0	0	0	N/A
2022/2023	0	0	0	0	0	N/A
2021/2022	2	60,073	16	£125,239	£13,611	9.2
2020/2021	2	141,960	39	£181,076	£28,576	6.3
2019/2020	6	101,282	132	£137,388	£28,924	4.7
2018/2019	5	310,380	149	£164,124	£32,114	5.1
2017/2018	4	210,942	91	£187,378	£37,029	5.1
2016/2017	4	154,979	49	£62,861	£12,667	5.0

2015/2016	6	308,408	157	£173,588	£36,631	4.7
2014/2015	12	383,479	119	£124,265	£40,633	3.1
2013/2014	11	377,587	131	£136,290	£45,918	3.0
2012/2013	11	470,628	162	£194,209	£48,897	4.0
2011/2012	8	767,842	262	£208,862	£67,459	3.1
2010/2011	2	17,712	10	£6,487	£3,069	2.1
2009/2010	11	1,684,911	567	£217,901	£118,959	1.8
Totals	**87**	**5,168,607**	**1,922**	**£2,142,272**	**£548,419**	**3.9**

In addition to the above, the following one-off loan funded projects have been completed.

Table 6: Completed one-off loan funded projects

Completed	Loan	Project	Carbon Savings tCO_2e	Annual kWh Savings	Project Costs	Annual Savings	Payback / Years
Apr 2018	SEELS 2017	1 MW PV farm in field	439	1,037,660	£1,262,609	£211,683	6.0
Jan 2018	SEELS 2017	B052 LED Lighting Upgrade Various	56	128,262	£27,680	£26,165	1.1
Dec 2017	SEELS 2017	B114 LED Lighting Upgrade	29	64,989	£43,255	£13,258	3.3
Dec 2017	SEELS 2017	B083 LED Lighting Upgrade Various	25	57,976	£14,077	£11,827	1.2
Dec 2017	SEELS 2017	B070 LED Lighting Upgrade Room F10	4	9,903	£3,187	£2,020	1.6
Nov 2017	SEELS 2017	Lanchester LED Lighting Upgrade Various	151	345,468	£208,881	£70,476	3.0
Sep 2017	SEELS 2017	B052 LED Lighting Upgrade F243-F251	4	7,981	£4,896	£1,628	3.0
Jul 2017	SEELS 2017	B045 LED Lighting Upgrade Throughout	16	39,009	£36,892	£7,958	4.6
Mar 2015	HEFCE RGF	Biomass Boiler (Wood chip replacing Gas)	527	20,767	£1,000,000	£154,638	6.5
Oct 2014	SEELS 6	District Heating Control Improvements (Pressure sensors)	289	1,560,000	£242,520	£66,898	3.6
Mar 2013	SEELS 5	Pipe insulation (B30,37,39,40,85,88)	59	322,348	£27,075	£9,348	2.9
Mar 2013	SEELS 5	Cavity Wall Insulation (Mitchell Hall)	19	104,714	£16,158	£3,560	4.5
Mar 2013	SEELS 5	Martell BMS improvements	107	375,337	£43,354	£20,977	2.1

Mar 2013	SEELS 5	Adiabatic coolers	74	141,988	£127,443	£29,817	3.3
Nov 2012	SEELS 4	DH Pipework improvements and Thermal Store	616	3,353,755	£638,772	£128,449	5.0
Jul 2010	SEELS 3	UPS Upgrade (IT Servers)	72	133,200	£71,362	£20,797	3.4
		Totals	**2,488**	**7,703,357**	**£3,768,160**	**£779,499**	**4.8**

And the following projects grant funded through BEIS/Salix PSDS2 in 2021/22

Table 7: Projects funded through BEIS/Salix PSDS2 in 2021/22

Measure	Project Costs	kWh Savings	Savings	CO2 savings
DH distribution improvements	£417,881	137,018	£4,111	25
Upgrading and installing new BMS	£1,012,616	1,111,421	£34,012	208
LED Lighting	£870,506	1,156,055	£100,929	619
Solar Farm	£465,215	452,927	£36,724	225
Battery	£811,195	-	£0	-
Air source heat pump (air to water)	£1,430,433	1,601,984	-£75,639	412
Connect B108 & B045 to existing district heating	£133,968	-	£12,505	11

Total PSDS2 Project Cost £5,141,814; Grant £4,993,701

And BEIS/Salix PSDS3 in 2022/23

Table 8: Projects funded through BEIS/Salix PSDS3 in 2022/23

Measure	Project Costs	kWh Savings	Savings	CO2 savings
Hangar insulation	£8,861,828	4,220,154	£211,008	776
Upgrading and installing new BMS	£82,249	195,710	£9,785	36
New heating	£804,697	271,539	£13,577	50
Solar Farm	£817,085	791,635	£106,978	393
Air source heat pump	£880,493	1,375,000	-£11,957	202

Total PSDS3 Project Cost £11,446,352; Grant £11,279,371

Table 9: Projects funded through BEIS/Salix PSDS3b

Measure	Project Costs	kWh Savings	Savings	CO2 savings
Thermal stores	£1,181,161	1,086,300	£108,630	200
BEMS - not remotely managed	£165,076	187,078	£18,708	34
Mitchell Hall Connection to DH	£314,222	136,103	£40,831	98
Conference Hotel Connection to DH	£987,497	75,628	£22,688	54
Stringfellow halls Conection to DH	£1,513,147	136,103	£40,831	98

Total PSDS3B Project Cost £4,161,101; Grant £3,661,769

Table 10: Projects funded through BEIS/Salix PSDS3c

Measure	Project Costs	kWh Savings	Savings	CO2 savings
GSHP	£6,702,420	2,611,319	-£528,643	974
BMS	£200,000	119,963	£11,996	36
Martell House Connection to DH	£1,164,963	-	£0	38
Fedden Flats Connection to DH	£825,054	-	£0	40

Total PSDS3C Project Cost £8,892,437; £7,825,344

The Salix RGF has now closed, and the university is no longer eligible to apply for PSDS funding due to a change in the rules.

Action Plan

The immediate plan for the current year is set out below:

Action	Resources required	Measure(s) of success	Who	By When
1) Reduce building energy consumption related to HVAC systems	- Financial, - Mechanical engineering support, - BMS engineering & controls support, - Monitoring capability (staff & infrastructure)	HVAC system operation and maintenance is further optimised and building electricity baseloads related to HVAC system operation are seen to drop as a result. Any pumps which are currently on plug tops are rewired so that they can be controlled through BMS.	PM, GE, MR & CD	July 2026
2) Improve resilience of Energy Centre and DH network	- Financial, - Mechanical engineering support, - Electrical engineering support, - Monitoring capability (staff and infrastructure)	- Electrical supply for the biomass boiler is relocated to a different transformer. - All key pumps and heat sources in the Energy Centre are linked to a back-up generator. - Regular monitoring is in place for DH leaks, - Operational procedure for swiftly locating and managing DH leaks is in place. - Campus heating system becomes more reliable. - The requirement for temporary electric heating is reduced	JS, DC, Mechanical Team, CD	July 2026
3) Improve stability and control of site HV network	- Financial, - Electrical Engineering, - Consultancy/ advice, - Competent contractors, - Monitoring capability (staff and infrastructure)	Electrical engineer and E+E team have clear sight of load distribution across network. Physical mechanisms are in place to prevent export and blackout	GE, CD & DC	July 2026
4) Improve energy monitoring capability across site	- Financial, - E+E staff time, - Electrical engineering staff time, - Consultancy / expert advice, - Competent contractors, - IT support, - Mechanical engineering support	Metering and monitoring strategy is finalised. Meters are installed across the HV network on all plinths. All incomers and max demand can be monitored on a near real-time basis.	CD, GE, DC, PM	July 2026

Action	Resources required	Measure(s) of success	Who	By When
	- Support to shut some buildings down to undertake works - Reliable hardware and software,	Faulty building meters are replaced, and AMR is improved. IQ Vision sends data to SystemsLink		
5) Further reduce building energy wastage via energy saving campaign activities	- Monitoring capability (staff & infrastructure) - Staff time to drive energy campaign through meetings, training, roadshows, and messaging, and record and follow up on actions	Detailed building energy audits undertaken and no-cost opportunities progressed with actions recorded. Other opportunities for savings shared with senior management for financial consideration. Energy Champion energy saving ideas and progress with actions recorded. Data analysis and/or feedback from building users and Facilities Managers indicating success of actions	CD, BW, Energy Champions	July 2026
6) Improve communication between E+E Team and FEAS regarding research energy use and project proposals	- Staff time (E+E and FEAS) - Monitoring capability (staff & infrastructure)	- E+E team are engaged early in planning discussions for projects which may have high energy use. - Research loads can be identified and potentially decoupled from building loads. - FEAS have better understanding of project operational costs (financial and environmental) for decision making and budgeting	CD, GE, HW, VM, FEAS PI's	July 2026
7) Maintain EnMS and associated documents. Demonstrate improvement	- E+E staff time plus additional staff time potentially seconded from elsewhere in the university, - Support from Senior Management Team & all elements of the university which are covered by the EnMS	EnMS and all associated documentation is up to date. Re-certification to ISO 50,001:2018 is secured.	CD, GE, GF	Aug 2025

ESOS Reporting

Notification of compliance was submitted for the 3rd compliance period.

An action plan for compliance period 6th Dec 2023 – 5th Dec 2027 has been submitted and is shown below.

	Possible answers	Record answer in this column	Record answer in this column	Record answer in this column	Record answer in this column	Record answer in this column	Record answer in this column	Record answer in this column
		MEASURE 1	MEASURE 2	MEASURE 3	MEASURE 4	MEASURE 5	MEASURE 6	MEASURE 7
Enter a name for this measure		Improvements to, and extension of District Heating	Extension of District Heating and Installation of GSHP	Building 37 District Heating Connection	LED Lighting in B61, B62, B88, B300	B83 Compressor replacement with VSD upgrade	B91 Compressor replacement with VSD upgrade	New energy efficient Datacentre
Is this measure a result of an energy savings opportunity reported in an energy audit?	Yes / No	No	No	No	No	No	No	No
Was the measure identified as a result of an alternative compliance route or other source? (optional)	Alternative compliance route							
	Other source							
Does the measure relate to any of the following schemes? (optional)								
Climate Change Agreement (CCA)								
Streamlined Energy and Carbon Reporting (SECR)								
UK Emissions Trading Scheme (UK ETS)								
UN Race to Zero		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Science-Based Targets Initiative (SBTi)								
Carbon Reduction Plans (required in the procurement of major government contracts)								
Other								
Implementation date for the measure		31/03/2025	31/03/2026	31/03/2025	31/03/2025	31/03/2025	13/12/2024	01/01/2024
Estimate the total energy savings expected from this measure by organisational purpose (kWh)								
Buildings		3,395,675	4,256,245	130,101	235,563	110,133	145,000	762,986
Transport								
Industrial processes								
Other								
Total estimated energy savings from this measure		3,395,675	4,256,245	130,101	235,563	110,133	145,000	762,986
How were the total energy savings estimates calculated?	Energy audit							
	Alternative compliance method							
	Some other reasonable estimation	Yes	Yes	Yes	Yes	Yes	Yes	Yes

SECR reporting

SECR data for 2022/2023

	Energy Purchased kWh		tCO_{2e}				
Fuel Type	**2022/23**	**2021/22**	**Sc 1**	**Sc 2**	**Sc 3**	**2022/23**	**2021/22**
Gas	34,815,330	37,835,753	6,417.1			6,417.1	6,906.5
Electricity	13,345,446	12,186,252	-	2,763.5	239.2	3,002.6	2,572.0
Biomass	1,636,900	2,389,428	17.6			17.6	30.9
Gas Oil	406,128	246,330	105.6			105.6	64.0
Aviation Turbine Fuel	462,583	641,815	114.8			114.8	160.5
Diesel	282,550	231,980	67.5			67.5	55.7
Aviation Spirit	150,099	117,323	35.6			35.6	28.2
Petrol	14,205	9,771	3.2			3.2	2.2
Burning Oil	31,003	28,363	7.6			7.6	7.1
LPG	0	1,893	-			-	0.4
Sub-Total	**51,144,244**	53,688,908	**6,769.0**	**2,763.5**	**239.2**	**9,771.6**	9,827.5
Business Travel (mile (rental/employee owned vehicles where fuel is purchased)	254,122	110,013			108.8	108.8	69.6
Total Gross tCO_{2e}			**6,769.0**	**2,763.5**	**347.9**	**9,880.4**	9,897.1

Note: Numbers shown in the table above are rounded to the nearest whole number or tenth.

The Intensity Ratio in 2022/23 for all emissions reported in table is 4.49 tCO_2e/£100,000 turnover. In 2021/22 it was 4.92 tCO_2e/£100,000 on the same basis.

Notes:

1. The methodology used follows the UK Government Environmental Reporting Guidelines. The University has an energy management system certified to ISO50001. Data from invoices is used unless this relies on estimates otherwise the University has extensive automatic meter reading and manual reading processes. Where no data is available, estimates have been used in a few very minor instances amounting to less than 0.3% of the total. These estimates are based on existing data. The reporting period is August 2021 to July 2022. Government greenhouse gas emission factors for 2022 have been used.
2. The University generates more than half of its electricity from an on-site gas fuelled CHP with an output of 1.4 MW and also a 1.45 MW solar farm (with 0.9 MW solar farm just installed) and other smaller roof mounted PV systems. The output of the CHP in 2022/2023 was 6,904,220 kWh consuming 19,174,297 kWh of gas, and the output of the solar installations was 1,385,761 kWh. Note this means the overall consumption of electricity was 21,635,427 kWh.
3. More detailed information on the progress of the University towards reducing its greenhouse gas emissions and other aspects of environmental performance can be found in the annual environmental report on the website www.cranfield.ac.uk.

Conclusions and Recommendations

In terms of our KPIs, good progress is being made in improving heating energy efficiency and more needs to be done to improve electrical efficiency. There are still significant opportunities for further energy efficiency improvements and renewable energy investments. Continued investment in these measures will contribute to our target being achieved, so it will be necessary to identify a funding mechanism to replace the PSDS and Salix RGF schemes in the future.

Recommendation to prioritise the following objectives:

1. Seek to continually improve energy management through ISO 50,001.

2. Continue to improve the District Heating system and building HVAC system operation.

3. Seek to identify and implement all no-cost opportunities for reducing energy wastage.

4. Continue to develop and improve the campus HV electricity system.

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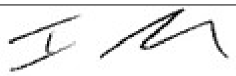
Signature	
Name	Ian Sibbald
Title	Director of Finance and Chair of Energy and Environment Committee

Document Review

Version	Amendment	By	Date
2.2	First Approved Issue of original Carbon Management Plan	John Street William Stephens	Feb 2009
2.2	Updated Version of original Carbon Management Plan	John Street William Stephens	Jul 2014
2017/18	New format for ISO 50001	Gareth Ellis	Apr 2018
2017/18v2	Verification of Tasks added to Action Plan	Gareth Ellis	Jun 2018
2018/23	Annual Updates	Gareth Ellis	Spring
CU SHE PLAN 07 2024/25	Annual update and split from combined Energy and Carbon Plan into two separate documents	Ceri Dawson	Mar 2024
CU SHE PLAN 07 2025/26	Annual update	Ceri Dawson	March 2025