



# Annual Environmental Report 2022 / 2023

Energy and Environment Committee



*Cover picture of group of volunteers who helped to plant Miyawaki Forest (see page 20)*  
*Photo by Earthwatch UK*

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# Statement

Professor Chris Fogwill, Chair Energy and Environment Committee



Our vision is to be valued globally for tackling the real-world issues of today to deliver a sustainable future. We work in partnership with business, academia, governments, and other organisations to develop and deliver applied research and innovative science, technology, engineering and management.

Here, the Energy and Environment Committee (EEC) reports progress on our environmental targets. This is largely focused on the performance of our estate and facilities. Our academic contribution to sustainability is featured on the University website. Given the University undertakes world leading research and learning on sustainability and the environment it is important that we are reflecting this in our operations. Key performance indicators highlighted below and through the report are correlated with the Times Higher Education Impact Awards criteria giving an indication of the contribution to the UN Sustainable Development Goals (SDGs).

We remain indebted to our staff and students who contribute to our on-going improvements and to our Energy and Environment Team, Energy and Environment Committee and working group members who lead and coordinate our combined efforts. We are grateful for the on-going support of our contractors who help with the efficient running of the estate.

## Key performance indicators

Issue	Description	Latest	Previous	SDG Contribution	Status	Comments
Carbon	Scope 1&2 emissions tCO2	9,532	9,612	THE – SDG* 13.4.1	A	1% reduction year on year
Carbon	Energy efficiency GJ/m2	0.82	0.90	THE - SDG 7.3	G	More efficient use of energy
Carbon	Renewable energy GWh	3,023	3,298	THE - SDG 13.2.3	A	Reduction in biomass output
Waste	Avoidable waste %	18%	18%	THE - SDG 12.2.4	A	Waste which could have been reduced, re-used or recycled
Waste	Total waste tonnes	988	1052	THE - SDG 12.3.2	G	Decrease despite including Conference Hotel for first time
Travel	Commuting alone by car %	38%	35%	THE - SDG 11.4.1	G	Continuing impact of working from home
Water	Water consumption m3/head	34.4	34.4	THE - SDG 6.2.2	R	No progress
Biodiversity	Biodiversity Action Areas ha	9.0	8.6	THE – SDG 15.2.3	G	In addition, 320 trees planted and additional hedging

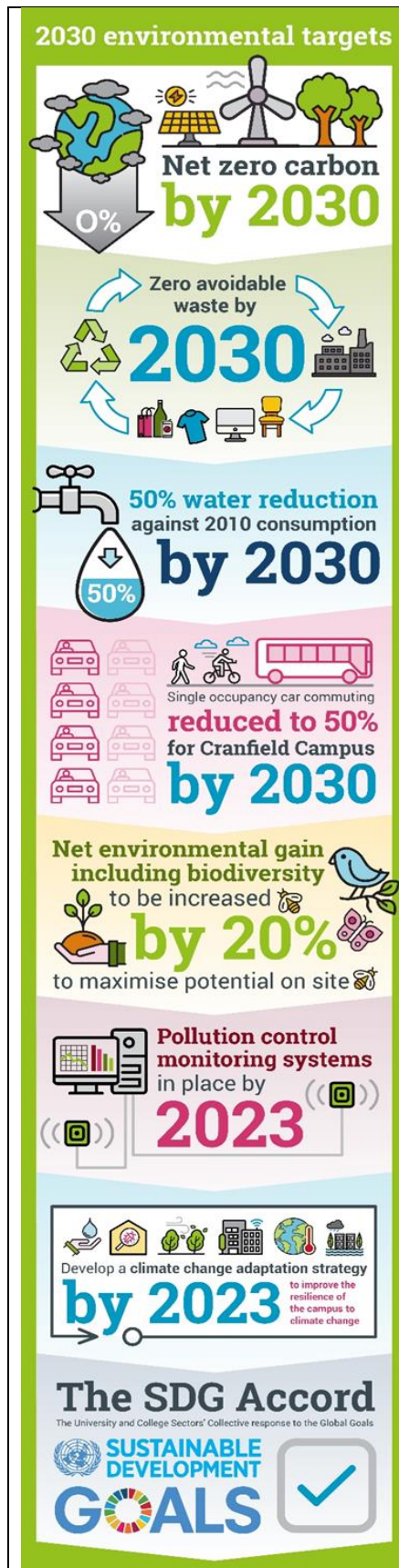
**Above:** table shows key performance indicators for our environmental targets and progress, including SDG (Sustainable Development goal) contribution and comments.

\* THE-SDG refers to the Times Higher Education Impact Awards Sustainable Development Goals categories.

**Note:** There are more indicators and objectives highlighted under each section in the report.



# Environmental Targets



In 2020 the University Council committed to a new set of environmental targets. The strategy for delivering these targets can be found at:

<https://www.cranfield.ac.uk/about/our-sustainable-university/our-2030-environmental-targets>

The targets are to be achieved by academic year 2030/31. They include All Cranfield University activities including the activities of any subsidiaries including MK:U.

The aim of the Net Zero Carbon target is to reduce Scope 1 and 2 carbon emissions as quickly as possible through energy saving and renewable energy. Any remaining emissions will require other measures. The strategy for Scope 3 emissions is still being developed and these emissions will be included as deemed appropriate for the sector.

The Zero Avoidable Waste target aims to minimise waste ending up in landfill or going for incineration and embraces the application of circular economy principles.

The water reduction target aims to be consistent with best practice and future supply pressures in this part of the UK.

The sustainable commuting target continues to focus on promoting alternatives to the car. Walking, cycling and bus are the main options.

Biodiversity will benefit from the new target ensuring any development on site results in a net environmental gain. The masterplan for the University sets out areas for new buildings and also a wildlife corridor where new habitats can be established.

The application of sensors on campus through the Urban Observatory is helping with the monitoring of air, water and soil. This will be developed in the short term to set out new pollution control monitoring and targets.

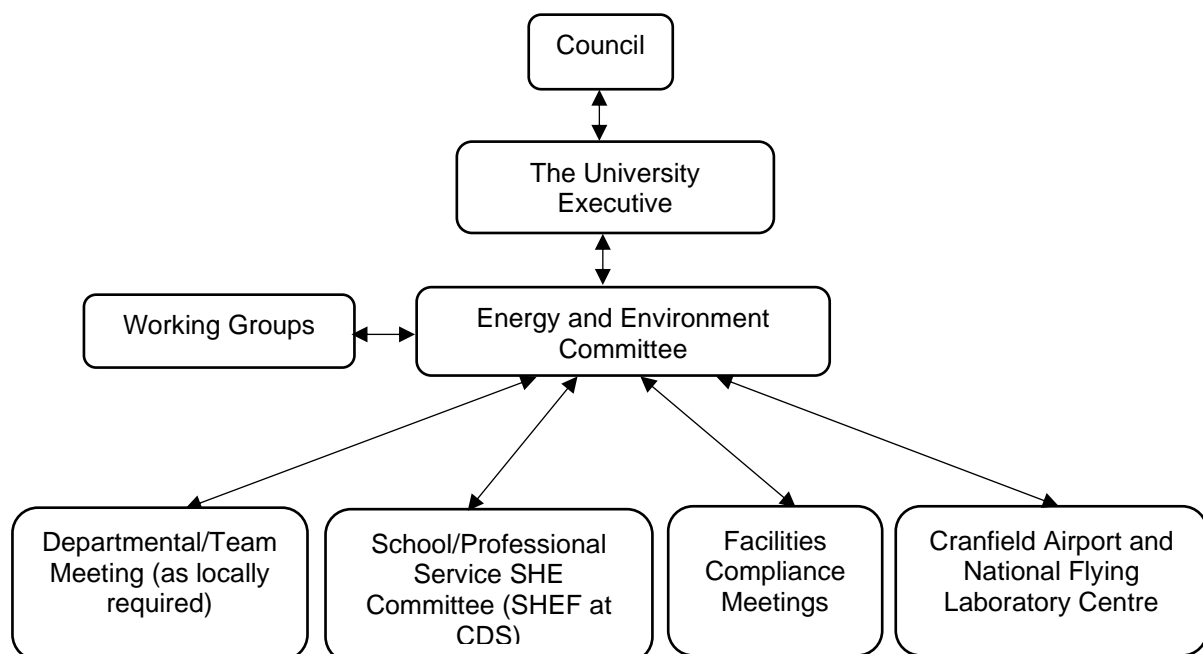
The risks of climate change impacts on the University are being investigated. This will be developed into a climate change strategy.

The University has signed the SDG Accord. This has led to more focus on the SDGs and how the university's contribution can be better communicated and developed.

# Quality assurance

## Governance

The Energy and Environment Committee (EEC) reports to the Cranfield Executive and Council on energy and environmental management issues. The priority of the Committee is to ensure Cranfield University demonstrates a leading capability in environmental performance by providing oversight and direction. The Committee is a sub-committee of the Executive and consists of senior managers from across the University along with student representation and members of the Energy and Environment Team. The Committee has working groups, with members drawn from operational and academic staff and students, to progress key environmental objectives. A dedicated Energy and Environment team facilitates delivery of the objectives and reports progress towards target to the Committee on a regular basis. The Committee aims to ensure a close relationship between EEC's environmental activities across the University and the teaching, learning and research taking place within the Themes on environmental best practice. The Governance structure is outlined below.



*Above: Diagram shows governance structure for the Energy and Environment Committee*

## ISO 14001:2015

Cranfield University operates a university wide environmental management system. The system provides a framework for managing our environmental impacts, risks, and opportunities, for setting environmental objectives and establishing programmes to achieve them. The scope of the certification covers all University operations including Cranfield Defence and Security at the Shrivenham and COTEC sites.

A successful re-certification audit was carried out by BSI in May 2023. In a climate of continuous improvement, the reporting of all environmental incidents and near misses is encouraged.

## ISO 50001:2018

Cranfield University operates a university wide Energy Management System, which provides a framework for managing our energy use. The scope of the certification covers all University operations on the Cranfield campus, Cranfield Defence and Security at the COTEC site and MK:U at Bouverie House. Recertification was achieved in July 2021, with surveillance audits taking place in July 2022 and July 2023.

## Scope of reporting

The environmental targets on page 4 encompass activities taking place on the Cranfield Campus, including subsidiary companies and tenants on site (*see Notes section near end of document*). The University's operation at the Cranfield Ordnance Test & Evaluation Centre (COTEC) is included. The University is not directly involved in the management of Shrivenham Campus, so the University activities there do not contribute to the key performance indicators such as carbon emission in this report (*see Notes section near end of document*).

## Other reporting

In line with the Higher Education Statistics Association (HESA) requirements, the University submits environmental data as part of the annual estate management reporting statistics. This data attempts to exclude tenant data and differs slightly from the data that appears in this report. Under the new Streamlined Energy and Carbon Reporting (SECR) rules, which replaced the Carbon Reduction Commitment (CRC) Energy Efficiency scheme in 2020, the University reports its annual carbon emissions in the University's annual Finance report. That data includes all primary energy use by the University Group, all imported electricity use and all fuel put into University owned vehicles or private or hire vehicles used for Business Travel.

Data submitted to HESA is also used by the '*People and planet University League*' (a student-led, People and Planet voluntary league table of University environmental performance). In People and Planet's University League, comparisons are made per student or per m<sup>2</sup> total floor area. Cranfield is a wholly Postgraduate University undertaking industrial scale research. This makes environmental impacts per student or per m<sup>2</sup> appear high. This annual report focuses on how the environmental performance of the University is improving over time. The University is also participating in the THE (Times Higher Education) Impact Awards. The contribution of the environmental management of the university estate to the SDGs in line with the THE criteria is highlighted in this report.

## Base year recalculation policy

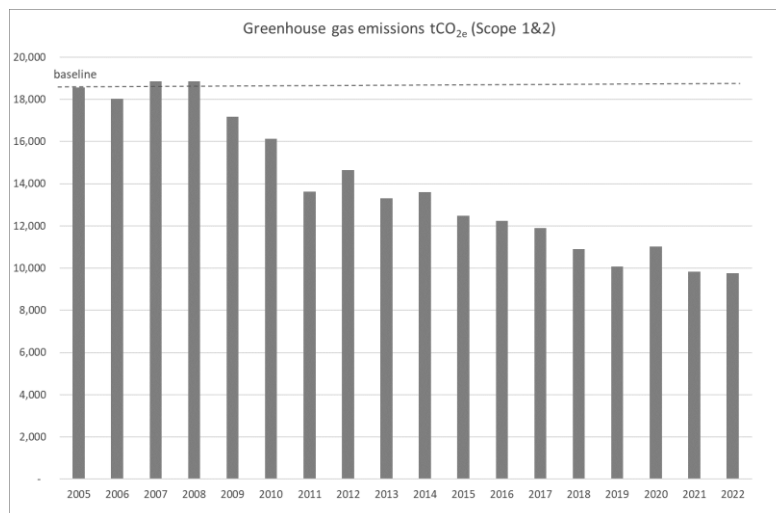
Our base year figures for reporting are reviewed from time to time to ensure like for like reporting. (*see Notes section near end of document*).

# Carbon and Energy



## Progress

Current Scope 1 and 2 emissions are 9,532 tonnes CO<sub>2</sub>. A small reduction compared with the previous year at 9,612 tonnes. Recent investments in renewable energy and energy efficiency infrastructure have yet to take effect. These potentially add up to emissions savings of over 3,000 tonnes of CO<sub>2</sub> and will become apparent over the next two years as the new systems bed in and are optimised. The measures include replacing gas boilers with air source heat pumps, adding buildings to the campus district heating system, improved heating and ventilation controls, insulation, LED lighting, solar photovoltaic installations, and a large battery.



**Above:** Graph showing the amount of greenhouse gas emissions in tonnes of carbon dioxide equivalent scope 1 and 2, from 2005 to 2022. Graph shows a downwards decrease in emissions with time.

**Note:** Year 2005 runs from August 2005 to July 2006, etc.

## Energy trends and efficiency

Total energy used has decreased for a second year, although the longer-term trend is slightly up. Nevertheless, the overall energy efficiency continues to improve with less energy used per building floor area. Renewable energy generation remains high with the enlargement of the solar farm and increased operation of the biomass boiler. The University does not currently purchase “green” electricity as typically green electricity offered on the UK market does not provide additionality. The University is however exploring Power Purchase Agreements for new renewable energy electricity which does provide new capacity.

	2019/20	2020/21	2021/22	2022/23
<b>Total energy used (kWh)</b>	44,841,986	50,176,963	48,022,909	44,050,024
<b>Renewable energy generated/used (kWh)</b>	2,138,441	2,236,208	3,297,839	3,022,661

**Above:** table shows total energy used in kWh and renewable energy generated/used in kWh, year on year, from 2019/20 to 2022/23. Renewable energy generated has increased with time.



	2019/20	2020/21	2021/22	2022/23
<b>Total energy used (GJ)</b>	161,431	180,637	172,882	158,580
<b>Floor area (m2)</b>	169,005	185,856	192,495	193,201
<b>Energy efficiency (GJ/m2)</b>	0.96	0.97	0.90	0.82

**Above:** table shows total energy used in GJ, total floor area in m<sup>2</sup>, and energy efficiency per floor area in m<sup>2</sup> from 2019/20 to 2022/23 showing an increase in energy efficiency per m<sup>2</sup> with time.

### Scope 3 emissions

The measurement of Scope 3 emissions relies largely on third party data based on spend and there is a lag in obtaining and verifying realistic information. As soon as figures are available this report will be updated.

The University has established a Scope 3 working group to develop our reporting, guided by the Standardised Carbon Emissions Framework (SCEF) established in December 2022 by the Environmental Association for Universities and Colleges (EAUC) the environmental and sustainability champion within Further and Higher Education in the UK and Ireland.

### Infrastructure

In early 2022 an £11 Million bid to Public Sector Decarbonisation Scheme secured funding for the insulation of the two large aircraft hangars, further improvements to the district heating with an additional air source heat pump and an additional solar PV array. This has now been largely delivered and complements the district heating project undertaken in 2021/22. The two projects combined are projected to save 3,000 tCO<sub>2</sub>.

A further £4 Million bid to Public Sector Decarbonisation Scheme has secured funding for further improvements to the district heating adding a large heat store and extending the network to the residential estate. Detailed planning for this project is underway and installation will proceed in 2024.



**Above:** photos of hangar 2 (building 84) insulation including cladding and improved hangar doors.



**Above:** photo of new solar farm installed on disused car park early 2023

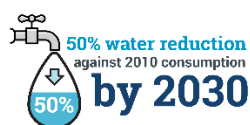
## Table of SDG KPIs relating to Carbon & Energy

The SDG indicators below are taken for the Times Higher Education (THE) Awards criteria. The measures are what the university is doing to meet that indicator.

THE reference	Indicator	Measures	Comments
7.2.1	Energy and Efficient Renovation and Building	New buildings are assessed to the BREEAM standard	Key measures are being incorporated into University design guide / standards to address refurbishments / renovations
7.2.2	Plans to upgrade energy efficiency of buildings	These are set out in the annual Energy & Carbon Plan	See on website: <a href="https://www.cranfield.ac.uk/about/our-sustainable-university/carbon-and-energy-management">https://www.cranfield.ac.uk/about/our-sustainable-university/carbon-and-energy-management</a>
7.2.3	Carbon management and emission reduction process	This is set out in the annual Energy & Carbon Plan	See above
7.2.4	Plan to reduce energy consumption	This is set out in the annual Energy & Carbon Plan	See above
7.2.5	Energy wastage identification	This is set out in the annual Energy & Carbon Plan	See above
7.3.1	Energy use density- Total energy used per floor space	Ratio 0.82GJ/m <sup>2</sup>	Energy used 158,580 GJ Floor space 193,201 m <sup>2</sup>
13.2.1	Low carbon energy tracking	Solar 1.38 GWh Biomass 1.64 GWh	Renewable energy generated and used on site.
11.4.8	New build standards	New buildings are assessed to the BREEAM standard	
11.4.9	Building on brownfield sites	The University is using brownfield for new buildings	This is set out in the campus Masterplan
13.2.2	Total energy used	42,451,366 kWh	
13.2.3	Total energy used from low carbon sources	3,297,839 kWh	Note "Green Electricity" is not purchased as typically this does not provide additionality
13.3.2	Climate Action Plan	Energy & Carbon Plan on website	Climate adaptation strategy being developed
13.4.1	Commitment to carbon neutral university	Net zero carbon by 2030 target	Includes scope 3, but exact definition being developed
13.4.2	Carbon neutrality date	2030	

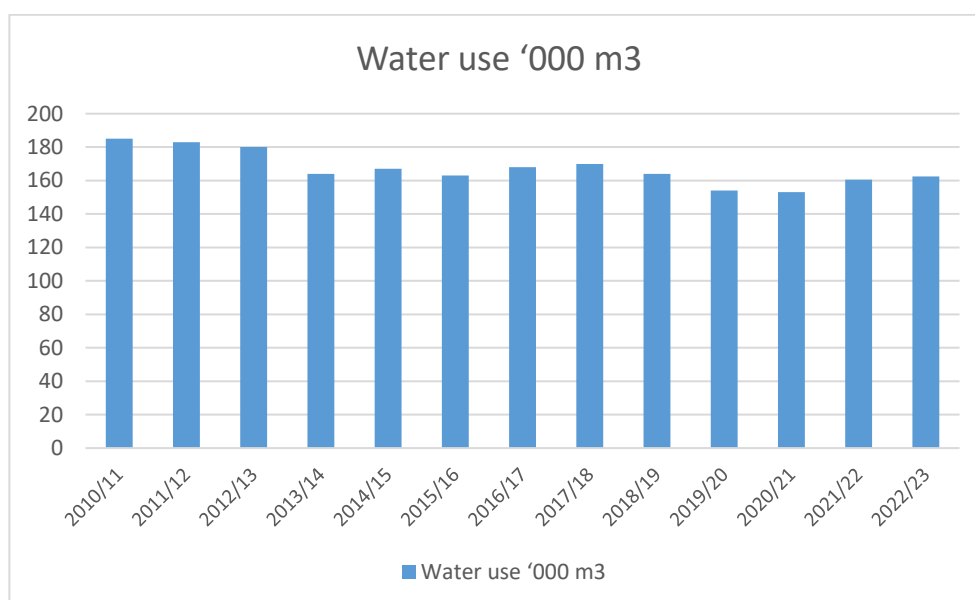
**Above:** Table of SDG KPIs (key performance indicators) relating to Carbon & Energy reduction

# Water



Work has continued to improve water metering and monitoring on the main Cranfield Campus and to encourage the reporting of leaks, so they can be dealt with promptly. Several large leaks were identified on both the technical and residential sides over the last year. Some were linked to frost damage over the Christmas period and others were due to mechanical failures.

A number of urinals were also found to be flushing excessively and timers have been adjusted to reduce the amount of water used. A dedicated section on water saving is included in the Canvas Environmental Awareness Induction, and this has been rolled out to all our students. Water saving tips have also been promoted amongst our staff and student Green Teams. The university has published a Water Management Plan and a Water Management Policy Statement on its website. These give details of the approaches it is taking to reduce potable water use.



**Above:** graph showing water usage in Cubic Meters from 2010/11 to 2022/23. The total usage has dropped slightly, although not significantly. **Note:** the water consumption figure for 2022/23 is estimated due the failure of the main supply meter.

	2020/21	2021/22	2022/23
Total water used (m3)	153,481	160,580	162,478
Staff & Students (FTE)*	4,241	4,671	4,726
Water use efficiency (m3/staff&student)**	36.2	34.4	34.4

**Above:** Table shows year on year comparison of water use and efficiency

\*Includes Cranfield campus, excludes Shrivvenham. \*\* Excludes other Cranfield campus residents such as student partners and children and staff residing on site. The number for these in 2022/23 was 245.

## Table of SDG KPIs relating to Water

The SDG indicators below are taken for the Times Higher Education (THE) Awards criteria. The measures are what the university is doing to meet that indicator.

THE	Indicator	Measures	Comments
6.2.1	Water consumption tracking	Water consumption reduction is key target;	Does not currently include water used by Cranfield University at Shrivenham as water metering and consumption is not under the University's control.
6.2.2	Water consumption per person	34.4 m3/person	162,478 m3 4,726 persons
6.3.1	Wastewater treatment	Wastewater is treated on site	
6.3.2	Preventing water system pollution	Procedures include Spill Prevention and Response, Discharge to Sinks and Drains:	Controlled through ISO 14001 certified environmental management system
6.3.3	Free drinking water provided	Drinking water fountains and filtered water dispensers	
6.3.4	Water conscious building standards	BREEAM assessment on new buildings Compliance with Building Regulations	University Design Standards being enhanced and developed.
6.3.5	Water conscious planting	Plantings are made at the appropriate time of year to avoid water stress	Guidance on suitable drought tolerant plants for the site is being developed
6.4.1	Water reuse policy	A water management policy has been developed and published	Options for water reuse and recycling are being explored
6.4.2	Water reuse measurement	None	This is still in the pilot stage
6.5.2	Promoting conscious water usage	Water conservation is promoted on campus	A project promoting efficient shower usage. Canvas Environmental Awareness module

**Above:** Table of SDG (Sustainable Development Goals) KPIs relating to water reduction, measures, and comments

# Resources and Waste



The university is committed to putting the principles of the Circular Economy into practice by putting processes in place to:

- prevent materials from becoming waste in the first place
- ensure waste that is created is recycled, composted, or sent for anaerobic digestion and not sent to landfill or incineration\*.

\*Recyclable, compostable or digestible waste that ends up in the residual waste stream (waste sent for landfill or incineration with or without energy recovery) is defined as AVOIDABLE.

## Avoidable Waste

The overarching target is to reach Zero Avoidable Waste by 2030. The starting point is to gather information on the materials ending up in the residual waste stream and use best management practices to apply the waste hierarchy to these materials: prevent, reduce, reuse, and recycle.

The audit of recycling and residual general waste bins around the different functional areas of the campus from residential to technical buildings has not happened this year due to contractor staff availability. However this requirement will be written into the new contract going forward to enable audit, analysis and action to take place in 23-24. Previous audit data has been used to calculate avoidable waste figure for 22-23. Of the 998 tonnes of waste produced, 47% was segregated on site and either reused, recycled, composted or sent for anaerobic digestion. Avoidable waste is 18% of total waste. Tonnages are summarised in the figure on the next page.

## Total waste

Total waste produced by the Cranfield campus over 22-23 was less than the previous year.

	2021/22	2022/23
<b>Total waste (tonnes)*</b>	1,052	988**
<b>Staff &amp; Students (FTE)***</b>	4,671	4,726
<b>Waste per staff &amp; student FTE (tonne/person)</b>	0.23	0.21

**Above:** Table showing total waste, number of staff and students, and waste per staff/students for years 2021/22 and 2022/23

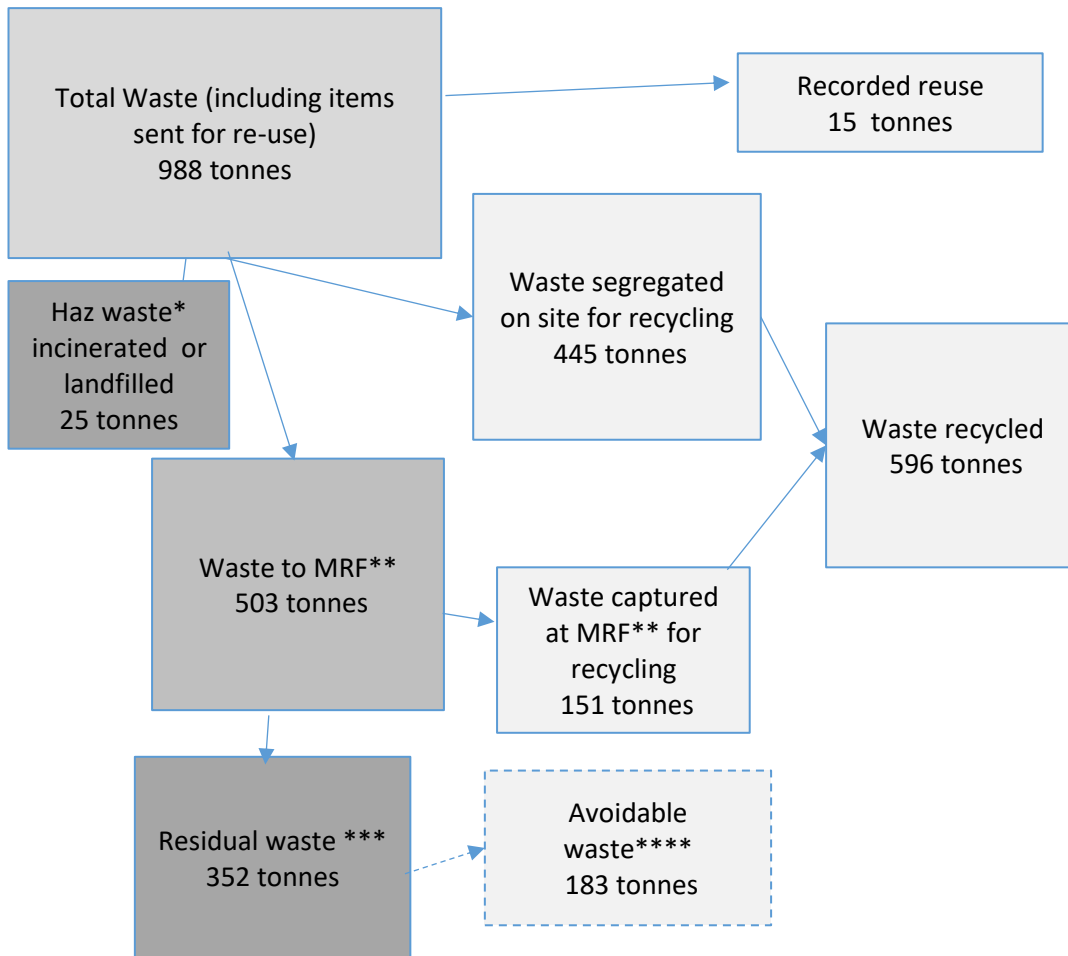
\*Cranfield campus waste only, not including construction waste from development sites.

\*\*22-23 figures include for the first time tonnages from CCCL (85 tonnes). Future reports may amend previous year data to include CCCL estimate.

\*\*\* includes Cranfield and MKU, excludes Shrivenham. Excludes other Cranfield campus residents such as student partners and children and staff residing on site. The number for these in 2022/23 was 245.



## Where the waste goes



**Above:** The diagram shows the breakdown of total waste generated on campus, and how it is managed. 445 tonnes of waste is segregated on site for recycling, and 503 tonnes of waste is sent to Cawley's Materials Recycling Facility (MRF). 183 tonnes of waste disposed of in general waste could have been recycled.

**Notes:** This data is from tonnage information provided by the University's waste contractor. It does not include construction waste from development sites. The avoidable waste figure is based on 2 audits representing 1% of the total residual waste. In future years further audits will be scheduled to gain confidence in the results.

\*Haz waste – hazardous waste which is not recyclable. 5.9 tonnes biomass boiler ash landfilled and the remainder incinerated.

\*\*MRF – Material Recycling Facility.

\*\*\*Residual waste – waste which is sent for incineration with energy recovery and landfill (0.5 tonnes bulky waste landfilled and the remainder energy recovery).

\*\*\*\*Avoidable waste – waste which could have been recycled.

## Sustainable food and beverage policy

Developed by Sustainable Food working group the policy has been approved and commits to drive progress with aims such as reducing single use plastics and packaging, and operating catering services in accordance with the waste hierarchy.

## Recording and monitoring of pre-consumer food waste from catering outlets

The University's Campus Services has placed reduction targets on food waste in an effort to reduce food being wasted during food preparation and service.

## Food wastage (% revenue)

Area	Reduction Target 22/23	Achieved	Reduction Target 23/24
Conference Centre	2.5%	1.92%	1.75%
Mitchell Hall	3.0%	2.79%	2.5%
Cranberries	1.0%	1.27%	1.25%
Overall	2.5%	2.28%	2.0%

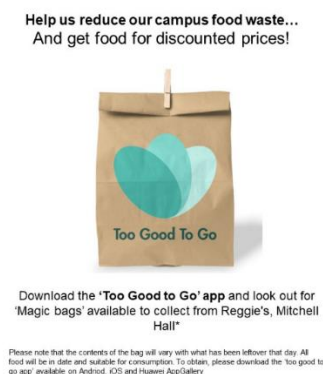
**Above:** The table shows Campus Service's food waste reduction targets per centre with progress made

## Spotlight on disposables

The University's Cranfield Management Development Centre (CMDC) has removed the bottled water from bedrooms, and guests are encouraged to use the tap water which has been certified as potable. This has removed an average of 20,000 bottles from use annually in the CMDC. Mitchell Hall and CMDC operations between them have removed approximately 220,000 disposable cups and 51,000 lids from use in favour of reusable cups.

**Note:** these figures are based on usage at the height of disposable usage which was adversely affected by the covid pandemic

The student Green Team worked closely with staff to promote the reduction of disposable cup use and the use of 'Too good to go' as a scheme to reduce food waste. Efforts to continue reductions in disposable single use plastics are ongoing, this includes take away cutlery being replaced with stainless steel loan cutlery in catered student rooms.



## Reuse of resources

The university's objective to increase the amount of items reused has seen steady progress, made possible by the university's relationship with re-use organisations, Reyooz, Milton Keynes Play Association (MKPA) and Unigreenscheme. These are items such as furniture and equipment which would otherwise have been sent for disposal.

The 22-23 student moveout campaign saw a continued arrangement with the British Heart Foundation's 'Pack for Good' campaign and The NEED Project. The donations provide much needed items for the charity shops and families in need in the local area.



**Above:** diagram showing total donations and money raised for British Heart Foundation in 2022 following the end of year student moveout. This shows that 5 tonnes of items were diverted from general waste and sent to British Heart Foundation shops for resale.

## Procurement of resources

We are working to strengthen our procurement processes to include circular economy principles and sustainability requirements at each procurement stage. One example is our new furniture contract with PRS Office Furniture. They provide a five step approach to sustainable furniture provision: sourcing, fit for purpose, lifespan, delaying end of life through reuse, and recycling.

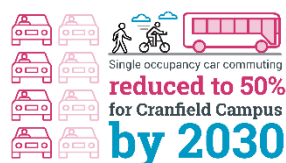
## Table of SDG KPIs relating to Resources & Waste

The SDG indicators below are taken for the Times Higher Education (THE) Awards criteria. The measures are what the university is doing to meet that indicator.

THE	Indicator	Measures	Comments
12.2.1	Ethical sourcing policy	Promoting Fair Trade	Sustainable Food and Beverage policy adopted
12.2.3	Hazardous waste disposal policy	Procedures in place handling and disposal of hazardous waste	Hazardous waste procedure adopted
12.2.4	Disposal to Landfill policy	Target to monitor what goes to landfill/incineration and what can be recycled	Waste Code of Practice adopted
12.2.5	Minimisation of plastic	Single use plastics promotion	Waste Code of Practice adopted
12.2.6	Minimisation of disposable items	Single use plastics policy	Waste Code of Practice adopted
12.2.7	Extending disposal policies to supply chain	Currently ask suppliers for their environmental policies	This is being developed and incorporated within procurement processes
12.2.8	Extending minimisation policies to supply chain	Currently ask suppliers for their environmental policies	This is being developed and incorporated within procurement processes
12.3.1	Waste tracking Amount of waste generated and recycled across the university	Waste and recycling figures made available on web site.  Whole university / partial coverage	Figures in annual environmental report. Does not currently include Shrivenham site as waste management is not under the control of Cranfield University. Does not include COTEC. Aiming to include COTEC 23/24
12.3.2	Amount of waste generated (tonnes)	tonnes	
12.3.2	Amount of waste recycled	tonnes	This figure includes tonnage sent for energy recovery , which is not included in the figures published on page 13
12.3.2	Amount sent to landfill	tonnes	
12.4.1	Sustainability Report	SDG reporting on web site: <a href="https://www.cranfield.ac.uk/sustainable-development-goals">https://www.cranfield.ac.uk/sustainable-development-goals</a> . Also report to EAUC for SDG Accord annually.	

**Above:** Table of SDG (Sustainable Development Goal) KPIs relating to Resources & Waste

# Sustainable Commuting



## Travel Survey

A travel survey in early 2023 confirms the trend seen in 2021 and the impact of working from home on the commute to Cranfield campus. There is a significant impact on the single occupancy car journeys and to a lesser extent the bus journeys.

Journeys/week	2011/12	2013/14	2015/16	2017/18	2021/22	2022/23
Car alone	70%	58%	59%	59%	35%	38%
Car share	13%	11%	13%	10%	5%	7%
Motorbike	1%	1%	1%	1%	0%	1%
Bus	7%	19%	13%	18%	14%	13%
Cycle	6%	8%	8%	7%	5%	4%
Walk	2%	3%	5%	3%	3%	2%
Other	1%	1%	2%	1%	5%	3%
Working at home *Avoided journeys					34%	29%

**Above:** Table shows percentages of staff and student travel modes from 2011/12 to 2022/23 according to travel survey data. Note that most staff travel to campus by 'car alone' if not working from home.

## Uno Bus

The Uno bus service which connects the University to Bedford and Milton Keynes is subsidised by the university for staff and students to use. It is a public bus service and so the local community also benefit from a much more frequent and comprehensive service than anywhere else in rural Bedfordshire. Despite severe restrictions during the Covid pandemic, the service has bounced back and is busier than ever.

Uno set up a stand for welcome week to promote the bus service and provide the students with travel and ticketing information. Several meetings were held with student representatives throughout the year to answer queries and plan improvements to the service. Engagement with students has been ongoing through social media.

## Cycling support and development

The cycle paths to the north and south of campus continue to provide a safer cycling and walking option for staff and students living in Cranfield village. The connectivity with National Cycle Route 51 also provides an option for those prepared to cycle from further afield.

Cycle Saviours continue to provide maintenance 'pop-up workshops' once a month along with the sale of reconditioned bikes. They offer training and employment in the form of an apprentice scheme to those not in school or employment. They salvage old bicycles and what cannot be refurbished is used for repairs or recycled.



In September and October 2022, Cycle Saviours held bicycle sales at Stafford Cripps. All students that attended were advised about road safety for cycling and walking particularly at night. Each student that attended was given a high visibility reflective vest and a leaflet about cycling at the university. Bicycles were also registered on the University cycle registration scheme established to keep track of bicycle owners.



**Above:** photos of Cycle Saviours carrying out repairs on bicycles and refurbished bicycles for sale

### Table of SDG KPIs relating to Sustainable Transport

The SDG indicators below are taken for the Times Higher Education (THE) Awards criteria. The measures are what the university is doing to meet that indicator.

THE	Indicator	Measures	Comments
11.4.1	Sustainable commuting target	Travel plan and surveys; Target reduce single occupancy car commuting to 50% by 2030	Assuming working from home counts as avoided journeys then this target is already met
11.4.2	Sustainable commuting promotion	Support for local bus service, cycling repair workshops, membership of liftshare	The University has a budget which helps to subsidise bus travel and support cycling and car share
11.4.3	Allow remote working	University allows up to three days/week working from home	This has had a big impact on the daily commuting figures
11.4.6	Pedestrian priority on campus	Zebra crossings at all key crossing points	Next year traffic calming being introduced on College Road

**Above:** Table of SDG (Sustainable Development Goals) KPIs relating to Sustainable Transport

# Green Spaces and Biodiversity



The Cranfield campus is a wildlife rich setting, providing opportunities for students, staff and visitors, to enjoy the benefits of experiencing biodiversity. As a landowner and a centre of learning the University has a responsibility to conserve protected species and 'practise what we teach'. Biodiversity will benefit from the new target of 'Net Environmental Gain including biodiversity to increase by 20% to maximise potential on site' by ensuring any development on site results in a positive impact on biodiversity. The masterplan for the University sets out areas for new buildings and also a wildlife corridor where new habitats can be established.

Areas have been targeted for biodiversity actions such as the brook, woodland and several grassland areas. The total biodiversity action area increases year on year with over 9 ha or 10% of the Cranfield Campus seeing some action to increase biodiversity including the expansion of "no mow" areas.



**Above:** photo of biodiversity flower plot near building 44. This is one of the many wildflower plots on campus.

## Sustainability garden

The garden is an area set aside to showcase and develop sustainable gardening practices. Gardening Club, introduced in autumn 2021 has gone from strength to strength this year with active student involvement.



**Above:** photo of students enjoying the Sustainability Garden

## Bee hives

The Grounds contractor Nurture Landscapes continue to maintain bee hives on site. They have held bee awareness days and a honey harvesting event. Honey sales are donated to charity.

## Trees

In February 2023, we worked with Forest of Marston vale to plant over 320 trees and 800 hedging whips around Fedden house field as part of the 'Trees for Climate' scheme. Additionally, we worked with Earthwatch Europe to establish a 'Tiny (Miyawaki) Forest' on campus during March 2023. This accounts for over 600 trees and hedges planted into an area the size of a tennis court, and serves as a part of a nationwide and international project to plant trees to mitigate climate change and to improve biodiversity. A further 20 trees were planted on the main site as part of the 'Queens Green Canopy'. Once matured, trees planted should account for an total of 10,504 square meters area covered.



**Above (top left clockwise):** Photo of trees planed behind Fedden House for the 'trees for Climate scheme', tree planted for 'Queens Canopy' project, students surveying the Tiny (Miyawaki) Forest, and photo of the Tiny Forest after completion.



## Table of SDG KPIs relating to green spaces and biodiversity

The SDG indicators below are taken for the Times Higher Education (THE) Awards criteria. The measures are what the university is doing to meet that indicator.

THE	Indicator	Measures	Comments
14.4.1	Water discharge guidelines and standards	The water treatment works has a discharge consent	Pollution monitoring of the main watercourse through campus is being developed
14.4.2	Minimisation of plastic plan	Single use plastics promotion	Waste Code of Practice
14.5.1	Minimising alteration of aquatic ecosystems	The main watercourse through campus is managed to enhance biodiversity as part of grounds maintenance	
14.5.2	Monitoring the health of aquatic ecosystems	Pollution monitoring of the main watercourse through campus is in place	This needs further development
15.2.1	Events about sustainable use of land	Regular biodiversity walks around campus	
15.2.2	Sustainably farmed food on campus	Sustainable Food and Beverage Policy. Vegetable and fruit production in sustainability garden	Garden only for demonstration and community engagement
15.2.3	Maintain and extend current ecosystems biodiversity	Target for 20% net environmental gain including biodiversity for new developments; Biodiversity Action Plan	Biodiversity Action Plan needs updating
15.3.1	Sustainable use, conservation, and restoration of land policy	This is covered in the Biodiversity Action Plan	Biodiversity Action Plan needs updating
15.3.2	Monitoring endangered species	This is covered in the Biodiversity Action Plan	Biodiversity Action Plan needs updating
15.3.3	Local biodiversity included in planning and development	Target for 20% net environmental gain including biodiversity for new developments	
15.3.4	Alien species impact reduction policy	This needs to be included in the Biodiversity Action Plan	Biodiversity Action Plan needs updating
15.4.1	Water discharge guidelines and standards	The water treatment works has a discharge consent	Pollution monitoring of the main watercourse through campus is being developed
15.4.2	Minimisation of plastic policy	Single use plastics promotion	Code of practice being developed
15.4.3	Hazardous waste disposal policy	Procedures in place handling and disposal of hazardous waste	Code of practice being developed

**Above:** Table of SDG (Sustainable Development Goals) KPIs relating to green spaces and biodiversity

# Climate Adaptation



A strategy for Climate Adaptation has been developed and is awaiting University Executive approval.

# Pollution Monitoring and Control



Cranfield Urban Observatory, with its campus-wide sensor network, is a key component of the Living Laboratory and facilitates research projects, securing links between the expertise, facilities and overall capabilities of our unique campus. As part of this, air, water, and soil sensors have been deployed across the Cranfield campus with the capability of monitoring a wide range of potential pollutants. Data is used both in teaching and learning and as a mechanism to monitor potential pollution on the Cranfield campus. Further analysis will produce baseline parameters from which we can work from in 23-24.

# Community Involvement

2022-2023 was a great year for staff, student and local community engagement. At the start of the academic year, we hosted a popular evening bat walk and set up the Energy Champions network- a keen group of staff and research students who supported us on our mission to save energy on campus. This launched with a workshop session, and was followed up by fortnightly catch-ups. To aid the Energy Champions, a Systemslink online dashboard portal was set up for all to use.

During November, we hosted a variety of events for staff and students as part of our Green Week which included a popular talk on Hydrogen research and Development: H2@CU, a hedgehog themed raffle and cake sale event to raise money for Hedgehog Preservation Society, honey-harvesting taster events, and an off-campus Wildlife Trust conversation volunteering trip. Our enthusiastic Green Team led by Green Officer Louisa Winch, set up the first 'Clothes Swap' shop in the CSA in an effort to curb clothes waste on campus, and give to charity. Jars of honey from the Cranfield campus beehives were sold at the Christmas Fayre to raise money for the Need Project Bedford Food bank and raised over £1000.

The Miyawaki Tiny Forest was planted in February 2023 and is maintained by a group of voluntary tree keepers, who also carry out surveys. Earthwatch UK came back to campus in June to host a community open day. We continued throughout the year to engage staff and students in wildlife walks, litter picks, bee keeping experience events and Gardening Club, based within the expanding Sustainability Gardens. This year, a welcome addition to the



gardens was a bug house with an engraved plaque thanking the student Energy Champions based in Lanchester and Mitchell Hall for their efforts.

For the first time, the student Green Team organised a trip to the Grand Union canal in Cosgrove, Milton Keynes, to support Buckingham Canal Society with footpath clearance and painting as part of a wider project to restore the canal for people and wildlife. To top-up a successful year of engagement, our Green Officer Louisa Winch became a finalist for 'Student Sustainability Champion of the year' Green Gown Award. Overall, just under 1000 people were actively engaged throughout the year, and we saw many more hits via social media.

**Total event engagement:** 945 staff and students

#### Top events:

- Green Week 2022
- Tree planting (Fedden field, Tiny Forest)
- Clothes Swap Shop
- Bee keeping experience



**Above:** Students engaged in running a clothes swap shop at the CSA, and a raffle for 'Hedgehog Preservation Society' during Green Week 2022

#### Communications

There have been regular communications through social media and on the intranet. The following tables show the level of engagement:

Intranet	Hits
Average Intranet hits per month:	461

Social media followers	Followers
Instagram	862
Facebook	472
X	891

Top social media posts	Description	Hits
X	Snow picture of campus	2944
Facebook	Too good to go scheme launch	747
Instagram	'Too good to go' reel	2767

**Above:** Tables showing summary of staff and student engagement on the intranet and via social media.

# Notes

1. **Dates:** Baseline and target years refers to the financial/academic year August to July (for example, for the Carbon target, the baseline year for carbon reporting is financial year 2005/2006 and the net zero target is to be achieved in academic year 2030/2031).
2. **Scope:** Tenants are included where it is not possible to distinguish between what is and is not a direct impact to the University as opposed to an impact of others operating on site. Examples include waste, car travel, some aspects of energy and water consumption and sewage discharges. As measurements and monitoring on site improve, this may become easier to distinguish. Additionally, the University is providing utility and other services to tenants and is in a position as landlord and service provider to influence their behaviour and assist in the reduction of their environmental impacts, whilst at the same time having an interest in minimising the risks to the University. The converse applies to the University's presence at Shrivenham. Here the University occupies space on a MOD site. For many of the targets it is not possible or appropriate to include this space as there is no operational control by the University (it is managed by MOD) and no data.
3. **Base Year Recalculation Policy:** Cranfield University will ensure that its greenhouse gas reporting is up to date, accurate and consistent with current Government guidance. In particular, when there are structural changes that have a significant effect on the baseline and the reported progress towards targets, the baseline and, if necessary, data for years in between will be recalculated.  
**Base year recalculation:** It is important that progress is measured on a like for like basis. This means that any changes in calculation methodologies are applied to the previous figures as well as current figures.  
**Structural changes may include:** mergers, acquisitions, and divestments; outsourcing and insourcing of relevant activities; changes in calculation methods or improvements in the accuracy of factors, such as emission, factors, or activity data that result in a significant impact on the base year figures; discovery of significant errors, or a number of cumulative errors that is collectively significant. The recalculation will be triggered and reported if the structural changes would result in a change of greater than 2% in the total baseline figure. At the same time any errors in the current year reporting greater than 2% will be amended and relevant reports updated, or notes attached explaining amendments.
4. **Changes to data:** Our carbon footprint is recalculated each year for all years in order to account for errors, changes to the scope and material changes to the conversion factors provided by DEFRA for company reporting purposes. They may not therefore compare directly with previous figures reported in the University Financial Statement. See also our baseline recalculation policy above. Note the figures exclude emissions for tenants on Cranfield Campus, Silsoe Campus, COTEC where these can be separately identified. University subsidiary companies are included. The same principle will apply to data for other targets.
5. **Water consumption and discharges figures:** These are for Cranfield Campus, including tenants. COTEC is included. Shrivenham data is not included. Discharges are taken as the average of the three consent targets.
6. **Waste figures:** These are for Cranfield Campus and include some, if not all, tenant waste. Note the key performance indicator for recycling is waste segregated on site. However, the waste contractor further segregates waste at their depot. This elevates the overall recycling performance, and it is this figure, which is reported in the HESA Estates Management Reporting.
7. **Academic expertise:** Wherever possible, the University is making use of its academic expertise and facilities to enhance its response to environmental improvement. The estate is also offering opportunities for research and teaching. Examples of this include audits carried out by students and the University laboratories to analyse local discharges. The new CHP unit is regularly used as a real life demonstration for teaching.
8. **Name:** The Energy and Environment Committee was previously known as the Committee for Energy and Environment (BEE).

## Glossary

AIRC Aerospace Integration Research Centre; EEC Energy and Environment Committee; BOD Biochemical Oxygen Demand; BREEAM Building Research Establishment Environment Assessment Method; CHP Combined Heat and Power; COTEC Cranfield Ordnance Test and Evaluation Centre; CRC Carbon Reduction Commitment; DEFRA Department for Environmental Food, and Rural Affairs; EA Environment Agency; EAUC the Environmental Association for Universities and Colleges; GIS Geographical Information System; HESA Higher Education Statistics Agency; IMEC Intelligent Mobility Engineering Centre; LED Light Emitting Diode; MOD Ministry of Defence; OU Open University; PV Photovoltaic; SECR Streamlined Energy & Carbon Reporting, SHE Safety Health and Environment; SHEF Safety Health Environment and Fire; SUDS Sustainable Urban Drainage System.

# Energy and Environment Committee

## Members in 2022-3:

- Chair, Professor Chris Fogwill, Pro-Vice-Chancellor – School of Water, Energy & Environment
- Ian Sibbald, Director of Finance
- John Street, Director of Facilities
- Phil Longhurst, Director of Partnerships & Professor of Environment and Energy Technology
- Gareth Ellis, Head of Energy and Environment
- Christine Thompson, Corporate Planning Director
- Ginny Ford, Environment Advisor
- Ceri Dawson, Energy Advisor
- David Ford, Director of Information Services
- Geoff Say, Director of Finance and Operations CDS
- Stewart Elsmore, Director of Campus Services
- Rosina Watson, Head of Sustainable Business Group & Associate Professor of Sustainability
- Becky Shepherd, Environment Officer
- Louisa Winch, CSA Green Officer
- Abbi Legate, PA to Director of Energy (Committee Secretary)

## Further information

For further information, please visit our environmental pages on the University Website:

<https://www.cranfield.ac.uk/about/our-sustainable-university>

or the University Intranet: <https://intranet.cranfield.ac.uk/EnergyEnvironment/Pages/default.aspx>

If you have any questions on any other topics outlined within this report or would like to provide us with any feedback, please contact the Energy and Environment Team at [green@cranfield.ac.uk](mailto:green@cranfield.ac.uk).