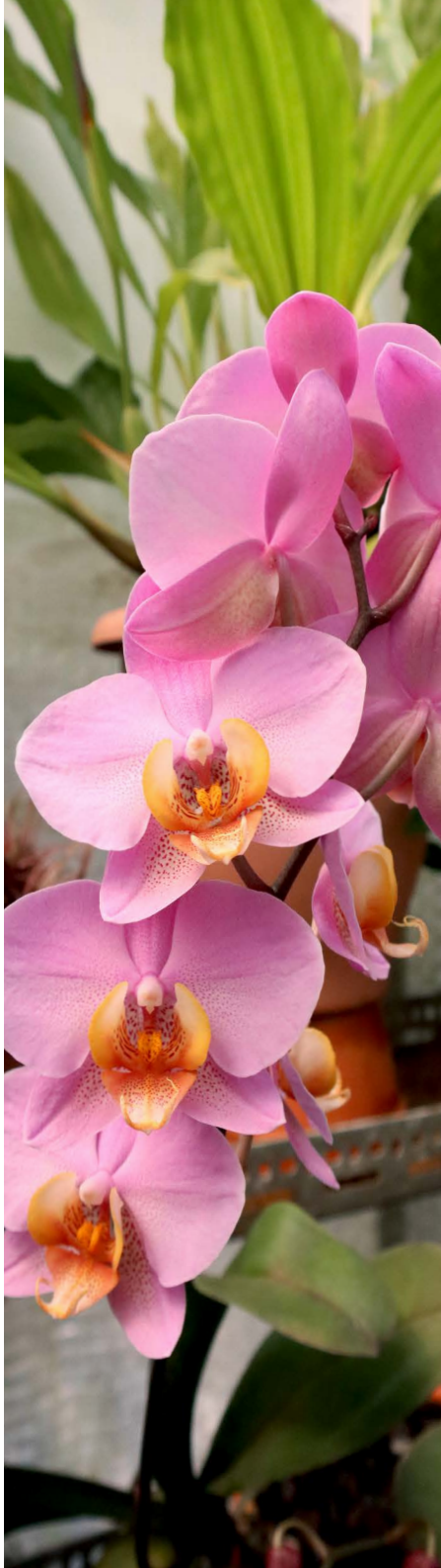
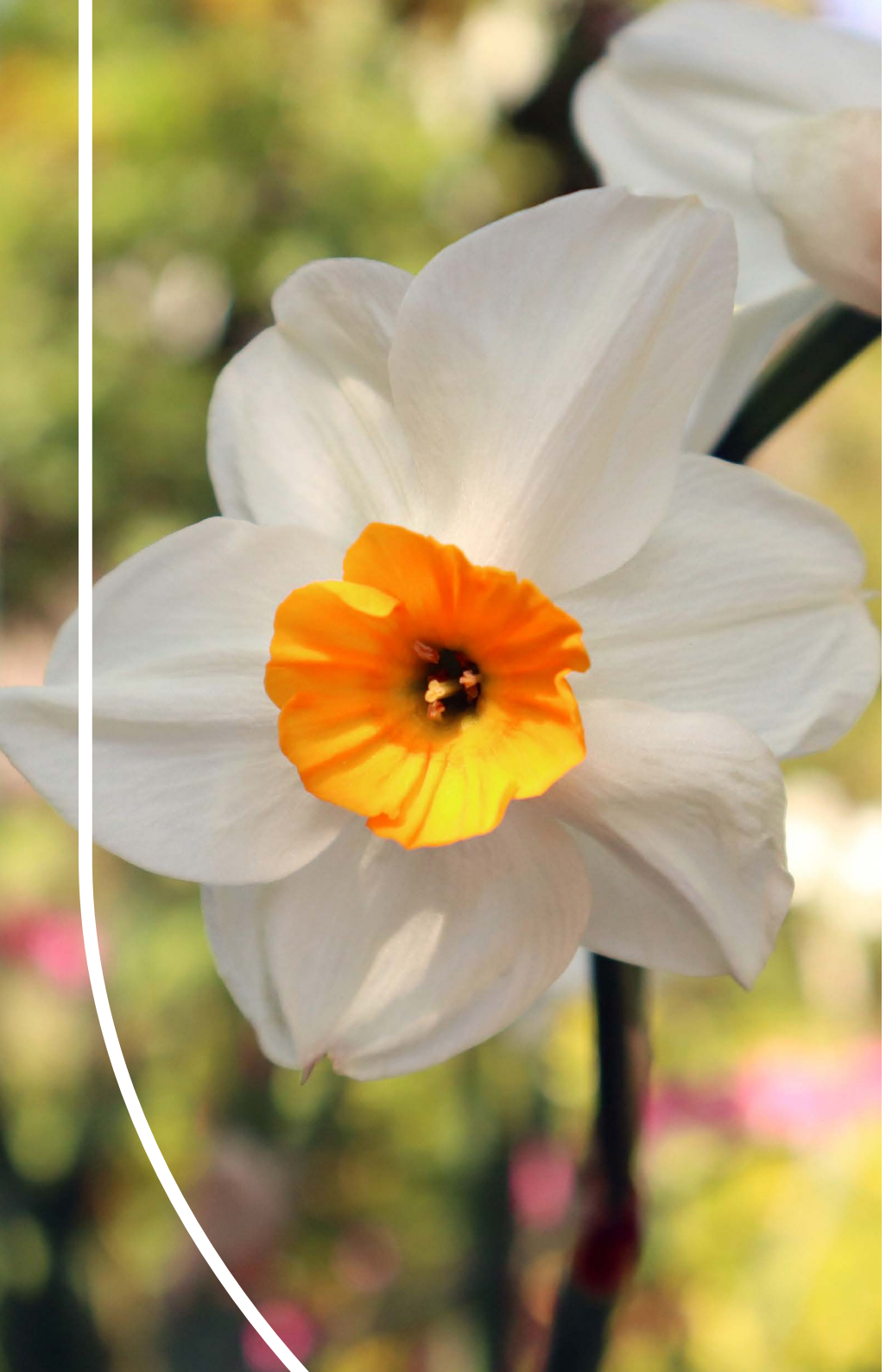
Gwasanaethau Campws
Campus Services

Environment Annual Report 2022/23





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INTRODUCTION

This annual Environmental Report outlines the University's performance and achievements during the 2022-23 academic year, particularly concerning its agreed environmental goals and objectives. The Report also commentates on compliance obligations and evaluates the University's waste generation, energy and water consumption, production of carbon emissions, trends in travel and transportation and efforts to enhance biodiversity.

Seven core environmental objectives and targets were set in 2022-23. Certain targets were chosen to better understand the University's waste generation and carbon emissions from travel and transport and focussed particularly on improving its systems for gathering and analysing data. This included the development of a process to quantify waste from construction and refurbishment projects and defining the calculation of CO_2 equivalent (CO_2e) emissions linked to student travel between their homes and the University. Other objectives aimed to reduce the use of natural resources and increase biodiversity, which drove the creation of new management plans to reduce water consumption at the University and improve grassland habitats for wildlife across the University estate.

In November 2022 the University set a target to reduce Scope 1 and 2 CO_2e emissions by 25% from 2018/19 levels by 2025. The data from 2022/23 confirmed that there had been a 28.9% decrease in emissions since 2018/19 from University buildings, or the equivalent to 2,742 tonnes of CO_2e. Encouragingly, the University's Scope 1 & 2 carbon emissions fell by a further 97.33 tonnes in 2022/23, which maintained the course to achieve a 25% reduction by 2025.

Over 10% of staff participated in the 2023 staff travel survey. The results revealed that 93% of staff surveyed used petrol and diesel powered cars to commute to work, while 7% of staff drove battery electric, hybrid electric or plug-in hybrid electric vehicles. In addition, the survey confirmed that there was significant interest in electric vehicles, with over 45% of staff surveyed stating they had thought about buying one.

The University's non-construction waste generation decreased to 724.1 tonnes in 2022/23, which is a reduction of over 8% from 2021/22. However, the rate of reuse and recycling fell by 2.5%. The University has a target of 70% rate of reuse and recycling by 2025, in line with the Welsh Government's target, and it continues to progress its understanding of waste streams, improve behaviours, enhance recycling facilities and reduce waste wherever possible.

The work to formalise the process to collect data to quantify waste from construction and retrofit projects is ongoing, but the awareness and availability of construction waste data during 2022/23 increased, as did communication between contractors and University staff to catalogue construction waste. The University continues to improve the process of data collection to quantify waste, as this is crucial for informed decision-making and sustainable waste management.

The University continues to monitor and manage aspects of biodiversity as a part of its ISO14001:2015 accredited Environmental Management System and progress on biodiversity is reported annually to the Sustainability Implementation Group. The University has an Environmental Policy that reflects its commitment to biodiversity and environmental sustainability. The University also set a target in 2022 to preserve and enhance 30% of its existing greenspace and establish 30 new sites across campus by 2030. The 30 by 30 in 30 initiative has begun to deliver this goal and 16 sites have already been chosen. Additional sites will be selected and incorporated over the next six years. The new areas will provide rich habitats for local species, establish links to other wild areas near the University estate and help to increase local biodiversity and species abundance.

The urgency of mitigating climate change and advancing environmental sustainability demands unwavering commitment and collective effort. Positive steps are being made to reduce Scope 1 and 2 CO_2e emissions, as well as enhancing waste recycling and reuse initiatives. However, it is crucial to recognise the challenges that lie ahead. Replacing outdated technology and equipment, overcoming deeply engrained habits and practices and addressing economic considerations present formidable hurdles. Despite these challenges, the University is committed to a greener future and to continually improve its environmental performance with renewed efforts to reuse and recycle more of its waste, further reduce carbon emissions from the built estate, procurement and travel and transport and enhance biodiversity across its estate.

ENVIRONMENTAL MANAGEMENT AND COMPLIANCE

BANGOR UNIVERSITY CONTINUES OUR WORK TO MINIMISE OUR ADVERSE ENVIRONMENTAL IMPACTS BY:

Bangor University's core business is to provide high quality teaching and research whilst taking good care of our staff, students, community, whilst also understanding that our activities have an impact on the environment. The University is committed to continually improving its environmental performance and meeting the requirements of ISO 14001:2015, which is an internationally recognised standard of environmental management.

Maintaining ISO 14001:2015 certification ensures that the University reduces its adverse environmental impact and improves its overall environmental performance. It does this by providing a blueprint for our environmental management system (EMS) and building a robust framework to support and deliver the EMS. To gain and retain ISO14001:2015 certified status, the University's EMS is subject to external audits by a UKAS accredited external auditing body. For more detailed information please refer to the Environmental Management pages on the website.

Bangor University will not only seek to protect our natural environment, but also actively pursue opportunities to enhance it, promote a culture of environmental stewardship amongst our staff and students and work towards the goals of sustainable development.

OBJECTIVES AND TARGETS 22/23

IMPACT AREA	TARGET	STATUS
Environmental Compliance	T1 Ensure compliance with all relevant legislation and obligations associated with our activities and prevent the pollution of the natural environment and demonstrate compliance	Achieved
Waste Management & Construction & Refurbishment	T2 Create a process to collect data to quantify (tonnage and waste types) from construction and retrofit waste projects	Ongoing
Utilities – Water	T3 Create a University Water Management Plan to conserve and reduce its consumption of a scarce resource	Achieved
Emissions and Discharges (Scope 3)	T4 Establish a methodology for identifying and calculating CO2e emissions associated with the travel between students' homes and the University	Achieved
Travel and Transport	T5 Undertake a Staff and Student travel survey to quantify commuting CO2e emissions	Partially Achieved
Biodiversity	T6a Create and approve a University Amenity Grassland Management Policy	Partially Achieved
	T6b Create and approve a University Biodiversity Policy	Partially Achieved

MANAGING WASTE AND CIRCULAR ECONOMY

The University has a robust Waste Management Policy which calls for continual improvement in our waste management practices in order to achieve the aims set out in the Towards Zero Waste Strategy 2010, the Wellbeing of Future Generations (Wales) Act 2015 and the Environment (Wales) Act 2016, while also meeting the requirements of the ISO 14001:2015 environmental standard. The University has also adopted the Welsh Government's target to reuse and recycle 70% of total waste produced by 2025. Increasing reuse, recycling, and growing the circular economy effectively reduces carbon emissions and decreases the demand for natural resources. Additionally, reducing waste and reusing more items in the local economy also offers cost savings to the University.

	2022/23	2021/22	% CHANGE FROM PREVIOUS YEAR
Total Waste Generated (Metric Tonnes - MT)	724.10	787.80	-8.09%
Total Reused and Recycled MT (Percentage of total)	399.56 (55.18%)	454.51 (57.69%)	
Total Sent to Energy Recovery MT (Percentage of total)	324.54 (44.82%)	333.29 (42.31%)	
Total Sent to Landfill MT (Percentage of total)	0.0 (0%)	0.0 (0%)	

MANAGING WASTE AND CIRCULAR ECONOMY

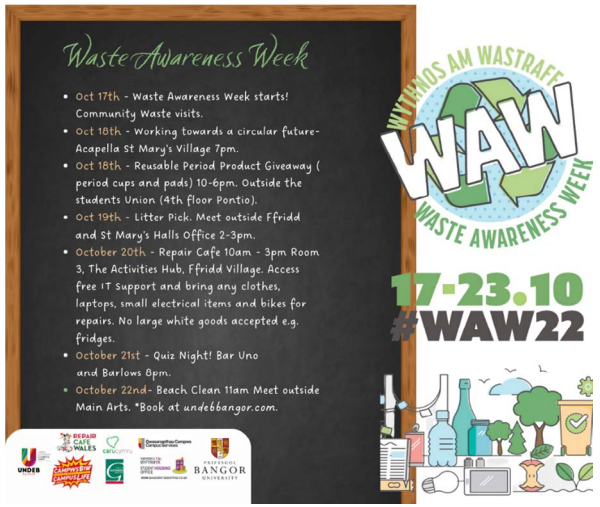
2022/23 waste target

- Create a process to collect data to quantify waste (ton-nage and waste types) from construction and retrofit projects

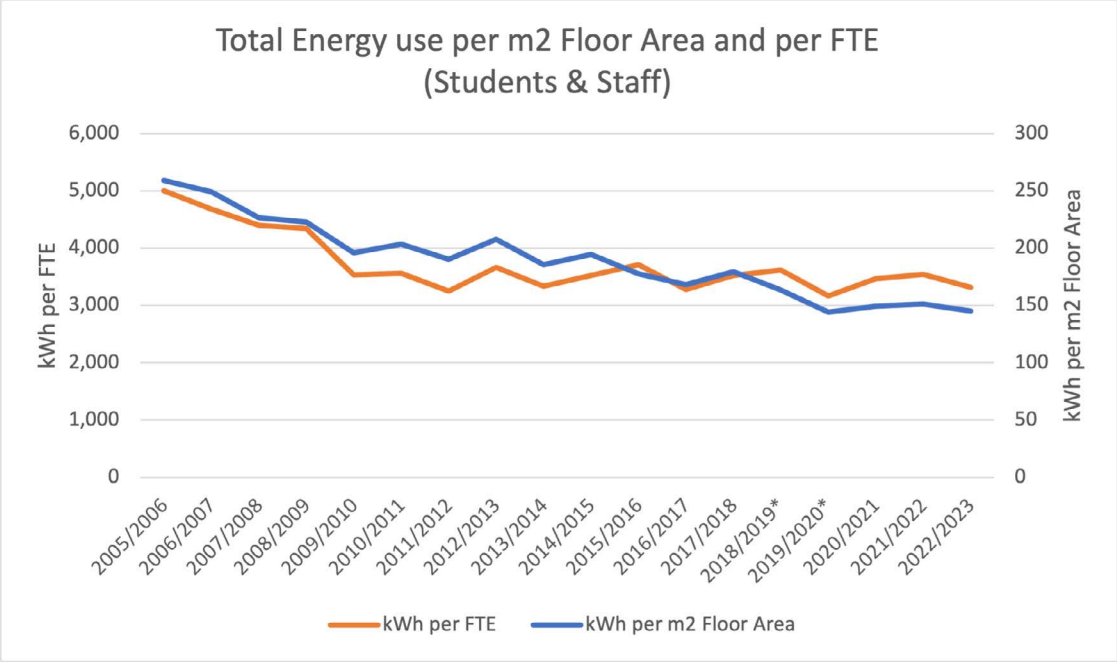
Progress against target

The work to formalise a process to collect construction and retrofit waste data is ongoing. However, constructive communication and an increase in staff awareness of waste pertaining to construction projects was seen during 2022/23. This increased awareness, along with closer working with externally appointed contractors, has resulted in progress towards creating a robust process that can be rolled out. This will result in a transparent and confident waste data collection method for all future construction and refurbishment projects.

The University raised awareness amongst staff, students and visitors through improved communication and involvement, talks, campaigns, and initiatives and the core programmes that ran in 2022-23 were Better Apart, Waste Awareness Week and End of Term Halls Reuse Drive.



ENERGY CONSUMPTION



*Amended FTE data

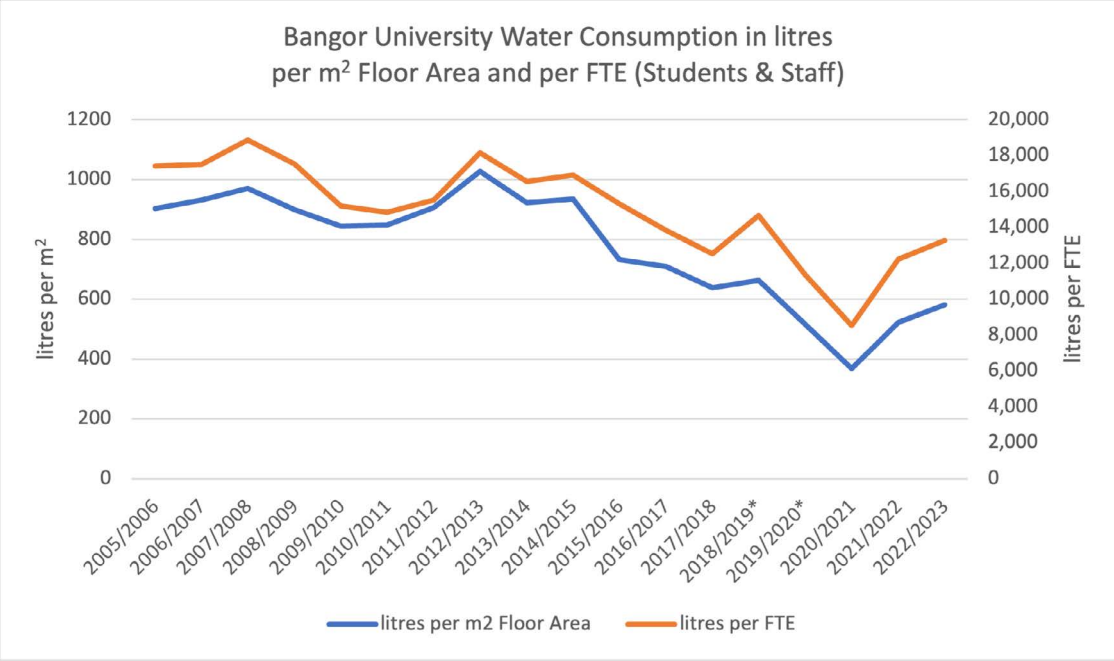
	2022/23	COMPARED TO 2018/19	COMPARED TO 2005/06
Total Energy Consumption	32,492,720 kWh	-13.5%	-30.2
i. Energy consumption per m2	145.38 kWh/m2	**-11.2%**	**-43.9%**
ii. Energy consumption per FTE	3,319.66 kWh/ FTE	**-8.3%**	**-33.6%**

SUMMARY OF ENERGY CONSUMPTION

	2022/23
Total Electricity	13,926,480.45 kWh
Total Gas Consumption	17,964,744.39 kWh
Total Heating Oil Consumption	506,383.20 kWh
Total LPG Consumption	95,112.80 kWh
On-Site Generation (Solar)	110,337.64 kWh

WATER CONSUMPTION

	2022/23	COMPARED TO 2018/19	COMPARED TO 2005/06
Total Water Consumption	129,867.33m3	-14.6%	-20.0%
i. Water consumption per m2 useful floor area	581.06 litres/m2	**-12.4%**	**-35.6%**
ii. Water consumption per FTE (students and staff)	13,268.06 liters/ FTE	**-9.6%**	**-23.9%**



*Amended FTE data

CARBON, EMISSIONS AND DISCHARGES

During the 2022/23 academic year the University's carbon emissions from Scope 1 and 2 decreased slightly to 6,749.20 tonnes CO2e, compared to 9,491.9 tonnes CO2e in 2018/19 on location-based electricity calculations. Market-based emissions remained the same as location-based emissions as no Renewable Energy Guarantees of Origin (REGO) certificated renewable electricity was procured during the year.

TOTAL SCOPE 1 & 2 EMISSIONS	2022/23	COMPARED TO 2018/19
i. Location-based Method	6,749.20 tonnes CO2e	**-28.9%**
ii. Market-based Method	6,749.20 tonnes CO2e	**-28.9%**

A comparison of Scope 1 and 2 activities between 2021/22 and 2022/23 showed a slight reduction in natural gas due to various changes in building use. Despite a reduction in electricity consumption, an increase in UK emission factors increased carbon emissions compared to last year. An increase was also seen in the consumption of LPG gas for our off-grid sites. The UK carbon emission factors saw an improved methodology resulting in a lower carbon emission factor decreasing wastewater treatment. Travel and transport areas, all bar diesel, saw increases in activity, resulting in increased carbon emissions.

In our aim to be as transparent and accurate as possible with our carbon emissions, this year we have been able to report on some of our air conditioning and refrigeration F-gases and have also received data on air and rail business travel booked through the University's travel agency. We hope more accurate reporting on various categories can be enhanced over the forthcoming years.

The University continues to explore opportunities to reduce carbon emissions through a variety of methods, campaigns, and feasibility studies.

SCOPE 1 EMISSIONS BY SOURCE	
Gas Consumption	3,286.27 tonnes CO2e
Heating Oil Consumption	124.96 tonnes CO2e
LPG Consumption	20.40 tonnes CO2e
Petrol Consumption	48.91 tonnes CO2e
Diesel Consumption	37.10 tonnes CO2e
Air conditioning & Refrigeration F-gases	64.13 tonnes CO2e
Agricultural Activities	283.61 tonnes CO2e
Scope 1 Total	3,865.38 tonnes CO2e

SCOPE 2 EMISSIONS BY SOURCE	
Electricity Consumption - (Location-based Method)	2,883.82 tonnes CO2e
Electricity Consumption - (Market-based Method)	2,883.82 tonnes CO2e

SCOPE 3 EMISSIONS BY SOURCE	
Water Consumption	22.95 tonnes CO2e
Wastewater Produced	21.43 tonnes CO2e
Waste	13.76 tonnes CO2e
Grey Fleet	116.72 tonnes CO2e
Leased Vehicles (Car Hire)	27.69 tonnes CO2e
Business Travel[1]	612.95 tonnes CO2e
Supply Chain (Procurement)	34,240.37 tonnes CO2e
Scope 3 Total	35,055.87 tonnes CO2e

SEQUESTRATION BY LAND HOLDINGS	
Sequestration	-895.86 tonnes CO2e

TOTAL REPORTED EMISSIONS - SCOPES 1, 2 AND 3	
Total with location-based electricity	41,805.07 tonnes CO2e
Total with market-based electricity	41,805.07 tonnes CO2e

1 *Business Travel contains only part of the rail and air travel emissions which have been quantified via the University's Travel Agent.

TRAVEL AND TRANSPORT

Travel and transport target

- Undertake a staff and student travel survey to quantify commuting CO2e emissions

Progress against target

The travel and transport target for 2022/23 was partially achieved, as the staff travel survey was completed in July 2023. Although there was much planning and consultation for the student travel survey, it was not completed until December 2023.

The staff travel survey provided useful data to quantify commuting CO2e and modes of transport amongst staff surveyed, as well as providing some insight into inter-site travel and use of cycling facilities. It also gauged staff's awareness and perceptions of the sustainable travel options available to them.

Highlights from the 2023 staff travel survey include:

- 13.7 miles was the average commuting distance
- 93% used petrol or diesel-powered vehicles
- 60% of journeys were completed in single occupancy vehicles (lone drivers)
- 10% of journeys were completed sharing a vehicle with other occupants (car-sharing)
- 3.5% used a battery electric vehicle, while 2.3% and 1.2% used hybrid electric and plug-in hybrid electric vehicles respectively
- 9% of journeys were completed by cycling
- 13% of journeys were completed by walking
- The most common engine sizes in vehicles used by staff surveyed was 1.0 litre (18.6%), followed by 2.0 litre (17.3%), 1.2 litre (14.6%) and 1.6 litre (14%)
- The survey data shows that over 45% of staff who returned data have thought about buying an electric vehicle, but of those 17.1% said that they did not know when they will buy one and 29.8% said that they have decided not to buy one at this stage.
- 35.1% of staff said they would be interested in car-sharing with another member of staff, 13.8% said they already car-share with another member of staff and 51.1% of respondents said that they were not interested in car-sharing.
- 'Cheaper bus and train tickets' was the most selected incentive/alternative to driving amongst staff surveyed (31.2%), followed by 'more frequent bus services' (27.7%) and 'incentives for using public transport' (25.2%)

Read more about the Zero Emission Vehicles here: Campus Services Fleet Goes Electric

BIODIVERSITY

The University set a target in 2022 to preserve and enhance 30% of its existing greenspace and establish 30 new sites to benefit wildlife across its estate by 2030.

This target is being delivered by the 30 by 30 in 30 initiative and the 30 new areas will provide rich habitats for local species, establish links to other wild areas nearby the University estate and help to increase local biodiversity and species abundance.

16 sites were selected for 30 by 30 in 30 in 2022/23, and between May and June 2023 site management plans were produced and plant surveys conducted at many sites along College Road and around the residential halls on the Ffriddoedd site.

Biodiversity targets

The University had two biodiversity targets in 2022-23:

- Create and approve a University Amenity Grassland Management Policy
- Create and approve a University Biodiversity Policy

Progress against targets

During 2022/23 an Amenity Grassland Management Policy was written, as well as an Amenity Grassland Management Plan to support and deliver the Policy. An additional biodiversity target has been set for 2023/24 to approve and implement the Policy and Plan between 2023-25, which will prescribe the various grassland management techniques to be used within 30 by 30 in 30 sites and across the wider University estate.

The target to create and approve a University Biodiversity Policy was partially achieved, as a draft Biodiversity Policy has been written but has not yet been approved.

The University continues to develop its Biodiversity Enhancement Plan and its completion and approval is a biodiversity target for 2023-24.

For detailed information about biodiversity at Bangor University, please go to:
Section 6: The Biodiversity and Resilience of Ecosystems Duty - 2022 Report