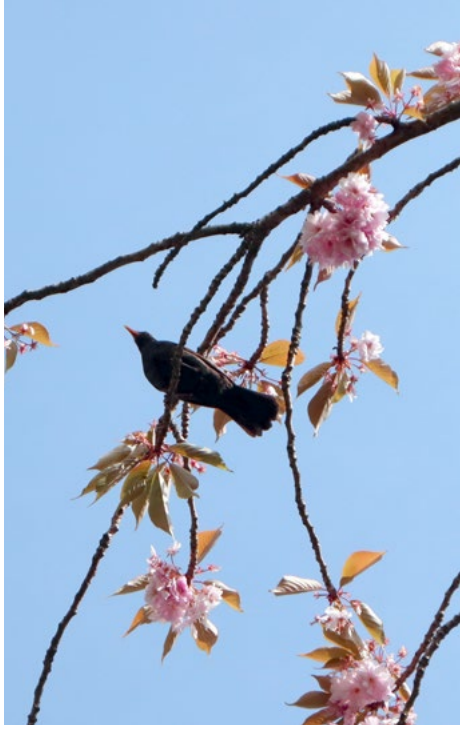
PRIFYSGOL BANGOR UNIVERSITY

Gwasanaethau Campws
Campus Services

Environment Annual Report 2023/24



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INTRODUCTION

This annual Environmental Report outlines the University's performance and achievements during the 2023-24 academic year and reviews progress against 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 transport, and efforts to enhance biodiversity. To facilitate the University's effort to reduce its environmental impacts, 28 objectives and targets were set for 2023-24, which are presented and discussed in this Report.

After a successful external environmental audit in March 2023, the University maintained its ISO 14001:2015 certification for its Environmental Management System. Maintaining the certificate validates the University's environmental procedures and confirms compliance with environmental legislation relevant to its operations, teaching, and research. Substantial updates were made in 2023-24 to update policies controlling water conservation, biodiversity, and travel and transport, which included the approval of the **Water Conservation Standards** and **Amenity Grassland Management Policy**, as well as completing final drafts of the **Biodiversity Policy** and **Travel and Transport Policy** for approval in 2024/25. The updated policies provided new focus and clarity to the University's efforts to reduce water usage, increase the quality and quantity of habitat for wildlife on campus, and promote the sustainable travel hierarchy for commuter, inter-site, and business travel.

Significant steps were taken in 2023-24 to advance the sustainable procurement agenda within the University. Key initiatives during this period included the delivery of sustainable procurement training for operational staff involved in tender development, providing knowledge and tools to integrate sustainability considerations into procurement processes. Additionally, the procurement team continued to define operational targets and measures as part of the ongoing delivery of the University's **Procurement Strategy 2023 - 2026**. These targets will provide a clear framework for tracking and enhancing the environmental performance of our procurement activities.

In 2023/24 the University further reduced its Scope 1 and 2 CO_2e emissions by 107.6 tonnes, which is a decrease of 30% from 2018/19 levels and keeps the University on track to achieve a 25% reduction by 2025.

Another achievement during 2023-24 was the trialling of the **Warp-it** platform to redistribute furniture, office equipment, and other items across the University, and thus boosting the circular economy. The University is committed to reduce its waste, to extend the lifecycle of material resources, and to demonstrate progress towards sustainable operations.

However, many challenges still lie ahead as the University upgrades technology, equipment, and its systems, while also balancing economic concerns. The University's non-construction waste generation was 737.79 tonnes in 2023/24, which is an increase of 13.69 tonnes from 2022/23. The rate of reuse and recycling fell by 0.10%. 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, influencing staff and student behaviour, 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 continued during 2023/24, however no progress was made towards producing a design specification standard for all major refurbishments and new builds. The University continues to improve the communication between contractors and University staff to process data collection to quantify waste, as this is critical for decision-making and effective waste management.

Despite these challenges, the University remains dedicated to building a greener future and continually enhancing its environmental performance. This includes renewed efforts to increase waste reuse and recycling, further reduce carbon emissions from its buildings, procurement, and travel, and promote biodiversity across its estate.

ENVIRONMENTAL MANAGEMENT AND COMPLIANCE

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

- MINIMISING ENERGY AND WATER CONSUMPTION.
- PROMOTING SUSTAINABLE TRANSPORT INITIATIVES.
- ENSURING COMPLIANCE WITH ALL RELEVANT LEGISLATION AND OBLIGATIONS ASSOCIATED WITH OUR ACTIVITIES.
- REDUCING OUR CONTRIBUTION TO GLOBAL CLIMATE CHANGE BY MAKING YEAR ON YEAR REDUCTIONS IN OUR GREENHOUSE GAS EMISSIONS.
- UNDERTAKING TO PREVENT THE POLLUTION OF THE NATURAL ENVIRONMENT
- EMBEDDING SUSTAINABLE DEVELOPMENT AND AWARENESS OF ENVIRONMENTAL ISSUES IN OUR CURRICULA ACROSS THE UNIVERSITY
- PROMOTING AND INCREASING BIODIVERSITY CONSERVATION AND IMPROVEMENT ACROSS THE UNIVERSITY ESTATE
- RAISING ENVIRONMENTAL AWARENESS AND AWARENESS OF THE UN SUSTAINABLE DEVELOPMENT GOALS AMONGST STAFF AND STUDENTS THROUGH IMPROVED COMMUNICATION AND INVOLVEMENT
- EMBEDDING SUSTAINABILITY WITHIN THE PROCUREMENT PROCEDURES
- ESTABLISHING ENVIRONMENTAL OBJECTIVES AND TARGETS AND REPORT PROGRESS ON AN ANNUAL BASIS
- MANAGING WASTE THROUGH REDUCTION, RE-USE, AND THE PROMOTION OF RECYCLING

The University environmental management system is set out according to the ISO 14001:2015, which is an international standard for environmental management systems. ISO 14001:2015 provides a working framework to follow and its clauses provides the necessary references and guidance to deliver an effective EMS. The University currently maintains ISO 14001:2015 certification, which validates its commitment to reduce its adverse environmental impact and improve its overall environmental performance year on year. For more detailed information about the University's EMS, please refer to the Environmental Management pages on the website.

Bangor University's Environmental Policy demonstrates its commitment to minimise the environmental impacts associated with all its activities, including operations, teaching, and research. The Environmental Policy also pledges to reduce overall waste generation by increasing the reuse and recycling of waste items. In accordance with the Policy, the University will work proactively to reduce its energy and water use, encourage sustainable procurement and travel and transport to further reduce its carbon emissions. In addition, it pledges to promote biodiversity conservation and enhancement across its estate and to raise environmental awareness, and promote the UN Sustainable Development Goals amongst staff and students through improved communication and involvement, while also embedding sustainable development and awareness of environmental issues in our curricula across the University

The University's environmental commitments will be monitored by the Campus Environmental Performance Team and measured partly through the setting of objectives and targets linked to the environment and sustainability. The progress achieved against these objectives and targets will be reported annually to the Sustainability Development Group. Moreover, the setting of objectives and targets also drives continual improvement, which is core to the University's certified ISO14001 EMS.

Ensuring compliance involves identifying the legal requirements and other obligations in place that protect the natural environment. Bangor University maintains a Register to document these requirements, and which considers all activities that take place at the University. Regularly reviews of new legislation and licenses, permits and agreements issued by environmental regulators are also required to check and confirm compliance with legal requirements and other compliance obligations

OBJECTIVES AND TARGETS 22/23

IMPACT AREA	TARGET	DURATION	STATUS
T1. Environmental Compliance	Ensure compliance with all relevant legislation and obligations associated with our activities, prevent the pollution of the natural environment and demonstrate compliance	2023 - 2024	Achieved
T2. Waste Management	a. Trial a system (Warp-it) where unused or redundant furniture, stationery and office equipment can be catalogued and made available for redistribution and reuse to staff throughout the University	2023 - 2024	Achieved
	b. Create a process to collect data to quantify (tonnage and waste types) from construction and retrofit waste projects	2023 - 2025	Not started
	c. Produce a report to understand the content of non-recyclable waste from residential buildings to identify opportunities to influence future behaviour	2023 - 2026	Not started
	d. Replace labelling and signage in all catering outlets with the aim to increase consumer recycling rate	2023 - 2024	Achieved
	e. Add general waste receptacles to external recycling multi-bin units where required	2023 - 2024	Achieved
	f. Implement the framework for University-wide procurement of furniture designed with circular economy principles	2023 - 2026	Not started
	g. Achieve Zero waste to landfill and 70% re-use and recycling by 2025	2023 - 2025	Ongoing - behind target
T3 - Procurement	a. Embed sustainable procurement and Scope 3 carbon reduction actions into the Carbon Reduction Strategy in line with the Welsh Government's commitment to decarbonise procurement	2023 - 2024	Achieved
	b. Define operational targets and measures that are outcome based and linked to Bangor University's corporate policies and Procurement Strategy	2024 - 2025	Ongoing - on target
	c. Ensure relevant carbon and environmental KPIs are included within relevant tenders alongside developing guidance to aid measuring, monitoring, and reporting	2024 - 2025	Ongoing - on target
	d. Identify and deliver sustainable procurement training for all operational staff involved in tender development and contract management	2024 - 2025	Ongoing - on target
	e. Communicate sustainability goals and requirements to suppliers alongside broader market engagement actions and communication activities	2023 - 2024	Partially Achieved
T4 - Utilities Water	a. Reduce water consumption by 2% compared to 2022/23, as a function of i) m2 useful floor area and ii) FTE students & staff (through staff and student promotion)	2023 - 2024	Achieved
	b. Produce and approve a University Water Management Plan to reduce water consumption and improve water conservation	2023 - 2024	Achieved

OBJECTIVES AND TARGETS 22/23

IMPACT AREA	TARGET	DATE	STATUS
T5 - Travel and Transport	a. Produce and approve new Travel and Transport Policy	2023 - 2025	Ongoing - on target
	b. Rollout of payment system for public Electric Vehicle charging points across the University's estate	2023 - 2025	Ongoing - on target
	c. Increase the number of electric vehicles in the University fleet by 10% by 2025	2023 - 2025	Ongoing - on target
	d. Support and encourage more sustainable travel modes for commuting and inter-site travel, including continuing liaison with public transport companies (communication)	2023 - 2024	Achieved
	e. Audit the provision of cycling facilities (bike parking, showers, lockers etc) across the University estate	2023 - 2025	Ongoing - on target
	f. Embed the sustainable travel hierarchy outlined in the University's Travel and Transport Policy in all University policy and practice	2023 - 2025	Ongoing - on target
T6 - Biodiversity	a. Establish initial 5 sites dedicated for '30x30' on University land	2023 - 2024	Achieved
	b. Complete baseline biodiversity surveys for initial 5 '30x30' sites	2023 - 2025	Ongoing - behind target
	c. Approve and implement a University Biodiversity Policy and Biodiversity Enhancement Plan	2023 - 2025	Ongoing - on target
T7 - Carbon	a. Reduce the location-based CO2e (for Scopes 1 and 2 emissions) from a baseline year of 2018/19 by 25% by the end of 2025	2022 - 2025	Ongoing - on target
T8 - Construction	a. Produce a design specification Standard for all major refurbishment and new builds	2023 - 2025	Ongoing - behind target
	b. Create a thorough assessment of energy usage, building fabric improvements, in-cycle energy conservation, and other CO2e reducing technologies for each University building (change to core buildings)	2023 - 2026	Ongoing - behind target

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.

	2023/24	2022/23	% CHANGE FROM PREVIOUS YEAR
Total Waste Generated (Metric Tonnes - MT)	737.79	724.10	**+1.89%**
Total Reused and Recycled MT (Percentage of total)	407.84 (55.28%)	399.56 (55.18%)	
Total Sent to Energy Recovery MT (Percentage of total)	329.95 (44.72%)	324.54 (44.82%)	
Total Sent to Landfill MT (Percentage of total)	0.0 (0%)	0.0 (0%)	

MANAGING WASTE AND CIRCULAR ECONOMY

2023/24 waste target

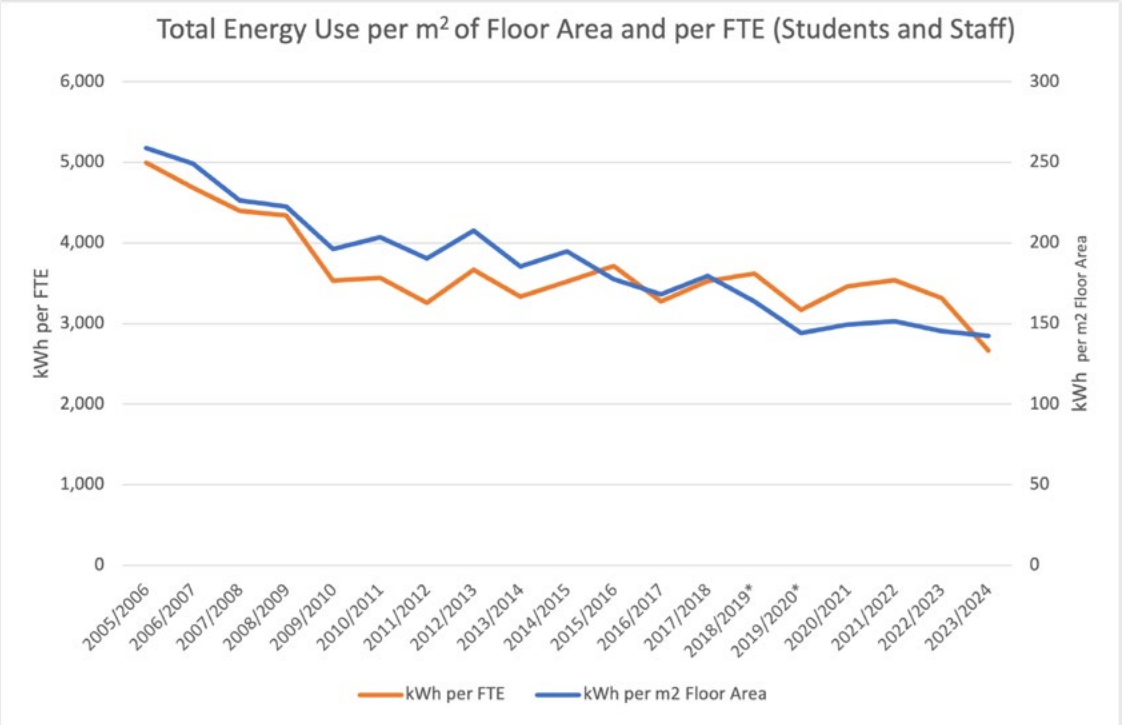
- Trial a system (Warp-it) where unused or redundant furniture, stationery and office equipment can be catalogued and made available for redistribution and reuse to staff throughout the University and thereby quantifying the waste reduction benefit through redistribution vs. buying new
- Create a process to collect data to quantify waste (tonnage and waste types) from construction and retrofit projects
- Produce a report to understand the content of non-recyclable waste from residential buildings to identify opportunities to influence future behaviour
- Replace labelling and signage in all catering outlets
- Add general waste receptacles to external recycling multi-bin units where required
- Implement the framework for University-wide procurement of furniture designed with circular economy principles
- Achieve Zero waste to landfill and 70% re-use and recycling by 2025

Progress against targets

- Warp-it was implemented successfully in 2023/24 but was limited to organic growth rather than University-wide promotion and marketing due to the lack of an equivalent Welsh language version of the platform
- The process to collect data to quantify waste (tonnage and waste types) from construction and retrofit projects is ongoing
- Work continues on the report to understand the content of non-recyclable waste from residential buildings and is due for completion in 2024/25
- Labelling and signage has been updated in all catering outlets to better communicate waste segregation requirements
- The work to formalise a process to collect construction and retrofit waste data is ongoing.

The University raised awareness amongst staff, students and visitors through improved communication, campaigns, and initiatives. The core programmes that ran in 2023-24 were **Better Apart** and **Waste Awareness Week.** In addition, inductions were given to new staff, which included information about the circular economy and waste reduction at the University, as well as the delivery of refresher training sessions to existing staff.

ENERGY CONSUMPTION



*Amended FTE data

	2023/24	COMPARED TO 2018/19	COMPARED TO 2005/06
Total Energy Consumption	31,863,351.97kWh	-15.1%	-31.6%
i. Energy consumption per m2	142.56 kWh/m2	**-12.9%**	**-45.0%**
ii. Energy consumption per FTE	2,666.28 kWh/FTE	**-26.4%**	**-46.7%**

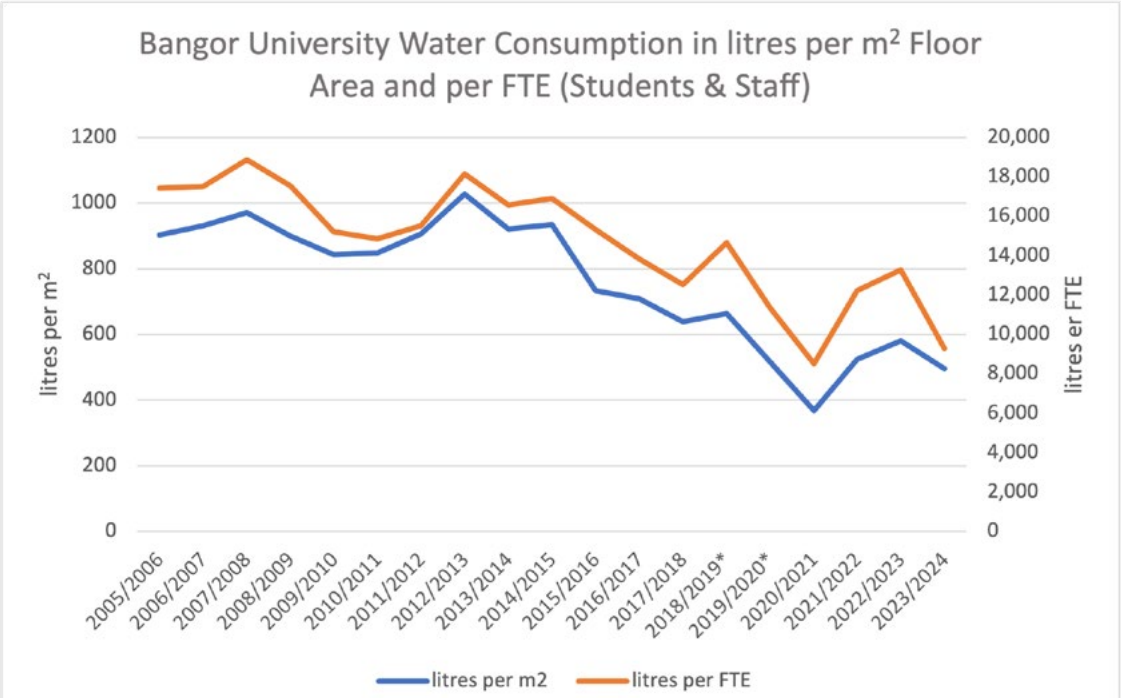
SUMMARY OF ENERGY CONSUMPTION

	2023/24
Total Electricity	13,883,015.10 kWh
Total Gas Consumption	17,261,894.67 kWh
Total Heating Oil Consumption	538,723.80 kWh
Total LPG Consumption	44,932.00 kWh
On-Site Generation (Solar)	134,786.40 kWh

WATER CONSUMPTION

	2023/24	COMPARED TO 2018/19	COMPARED TO 2005/06
Total Water Consumption	110,999.67 m3	-27.0%	-31.6%
i. Water consumption per m2 useful floor area	496.64 litres/m2	**-25.1%**	**-45.0%**
ii. Water consumption per FTE (students and staff)	9,288.29 litres/ FTE	**-36.7%**	**-46.7%**

Rainwater harvesting at two sites measured 116.06 m3 during 2023/24, we hope to increase our capture and measurement in future years.



*Amended FTE data

CARBON, EMISSIONS AND DISCHARGES

During the 2023/24 academic year the University's carbon emissions from Scope 1 and 2 decreased once again to **6,641.66 tonnes CO2e**, compared to 6,749.20 tonnes CO2e in 2022/23 and 9,491.9 tonnes CO2e in 2018/19, based 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	2023/24	COMPARED TO 2018/19
i. Location-based Method	6,641.66 tonnes CO2e	**-30.0%**
ii. Market-based Method	6,641.66 tonnes CO2e	**-30.0%**

A comparison of Scope 1 and 2 activities between 2022/23 and 2023/24 showed a slight reduction in electricity, LPG, and natural gas use, while heating oil and air conditioning and refrigeration F-gases increased, the latter due to improved data collection. Fuel use for our fleet and machinery also decreased, all of which contributed to further reductions in Scope 1 and 2 carbon emissions. This year saw all University solar arrays active, resulting in the highest output since their installation.

University KPI 1.6 Reduce Scope 1 CO2e fossil fuel heating emissions by, on average, at least 3% per annum. The University's KPI to reduce Scope 1 CO2e fossil fuel heating emissions by, on average, at least 3% per annum is running slightly ahead of target minimum, with emissions reducing by 15% (588t) since 2018/19.

Within Scope 3 emissions there was a large drop in water consumption overall, the equivalent of the water held in nearly 8 Olympic-size swimming pools. Additional measurements for rainwater harvesting at Treborth Botanic Garden have captured some use of water for our gardens for the first time. The University continues to explore opportunities to reduce carbon emissions and improve data collection through a variety of methods, campaigns, and feasibility studies.

SCOPE 1 EMISSIONS BY SOURCE	
Gas Consumption	3,157.20 tonnes CO2e
Heating Oil Consumption	132.94 tonnes CO2e
LPG Consumption	9.64 tonnes CO2e
Petrol Consumption	17.18 tonnes CO2e
Diesel Consumption	51.85 tonnes CO2e
Air conditioning & Refrigeration F-gases	126.37 tonnes CO2e
Agricultural Activities	272.00 tonnes CO2e
Scope 1 Total	**3,767.18 tonnes CO2e**

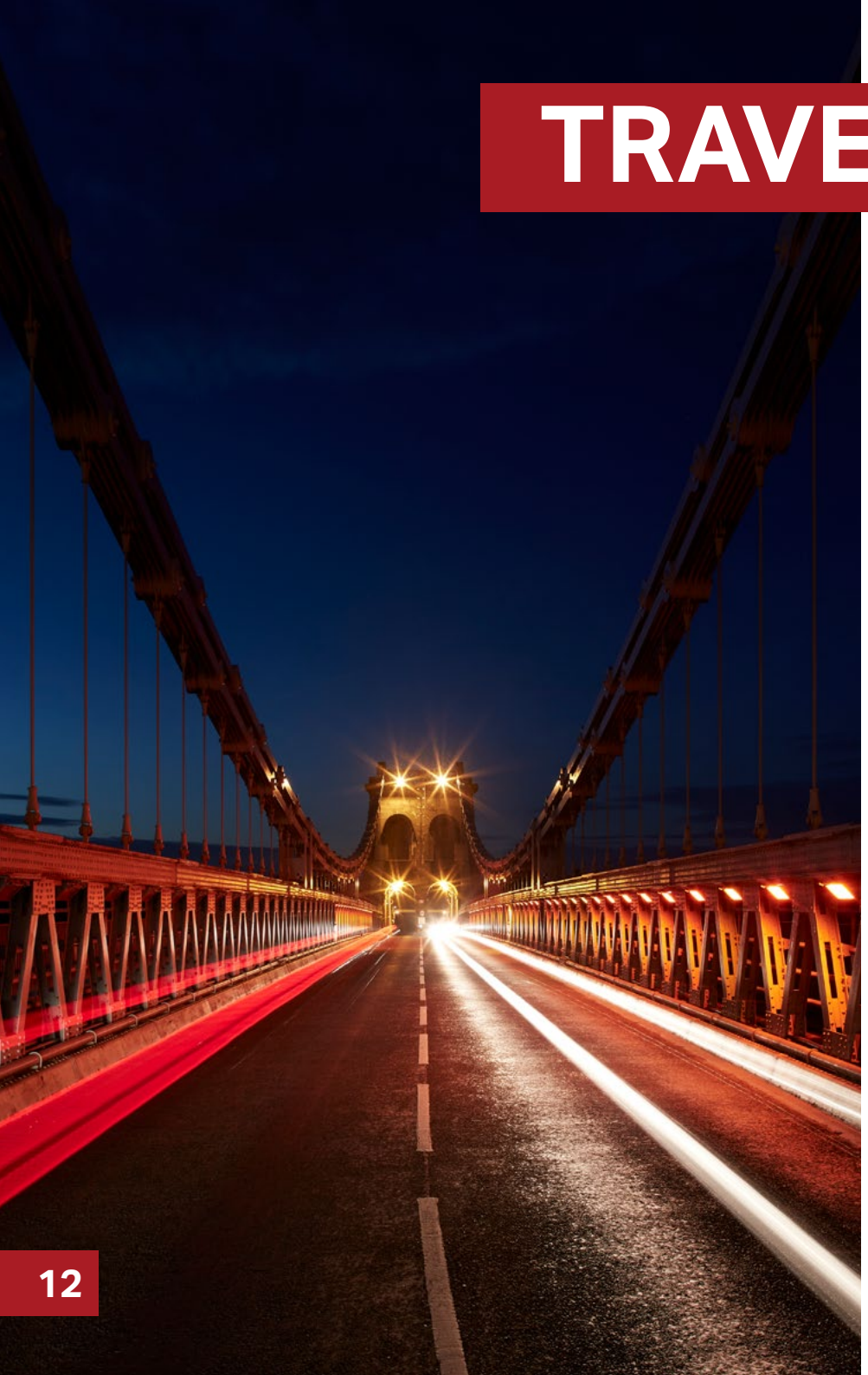
SCOPE 2 EMISSIONS BY SOURCE	
Electricity Consumption - (Location-based Method)	2,874.48 tonnes CO2e
Electricity Consumption - (Market-based Method)	2,874.48 tonnes CO2e

SCOPE 3 EMISSIONS BY SOURCE	
Water Consumption	17.00 tonnes CO2e
Wastewater Produced	18.24 tonnes CO2e
Waste	5.07 tonnes CO2e
Grey Fleet	132.31 tonnes CO2e
Leased Vehicles (Car Hire)	26.80 tonnes CO2e
Business Travel[1]	770.60 tonnes CO2e
Supply Chain (Procurement)	19,687.47 tonnes CO2e
Scope 3 Total	**20,657.49 tonnes CO2e**

SEQUESTRATION BY LAND HOLDINGS	
Sequestration	-894.91 tonnes CO2e

TOTAL REPORTED EMISSIONS - SCOPES 1, 2 AND 3	
Total with location-based electricity	**27,299.15 tonnes CO2e**
Total with market-based electricity	**27,299.15 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

2023/24 travel and transport targets

- Produce and approve new Travel and Transport Policy
- Rollout of payment system for public Electric Vehicle charging points across the University's estate
- Increase the number of electric vehicles in the University fleet by 10% by 2025
- Communicate to support and encourage more sustainable travel modes for commuting and inter-site travel, including continuing liaison with public transport companies
- Audit the provision of cycling facilities (bike parking, showers, lockers etc) across the University estate
- Embed the sustainable travel hierarchy outlined in the University's Travel and Transport Policy in all University policy and practice

Progress against targets

The travel and transport targets for 2023/24 were partially achieved. However, as most of these targets have a duration of two years, they will be further progressed in 2024/25.

Progress achieved during 2023/24 includes:

- A draft **Travel and Transport Policy** was completed in July 2024
- The sustainable travel hierarchy is now embedded in the University's Travel and Transport Policy
- Swarco Ltd. (now Evolt network) were appointed to install an app-based payment system for public electric vehicle (EV) car charging points and 13 EV chargers are now operational across the University
- There were several items in the Staff Bulletin in 2023/24 providing information on travel and transport themes, including training to use the University's new centralised travel agency - Diversity Travel - and the promotion of the Cycle to Work - Salary Sacrifice scheme for staff

Read more about Travel and Transport at the University here: Travel and Transport - Sustainable Travel Guidelines

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 **30x30** 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.

2023/24 Biodiversity targets

- Establish initial five sites dedicated for **30x30** on University land (2023-24)
- Complete baseline biodiversity surveys for initial five **30x30** sites (2023-25)
- Approve and implement a Biodiversity Policy and Biodiversity Enhancement Plan for the University (2023-25)

Progress against targets

- Five sites were selected in 2023/24 and managed differently for the benefit of wildlife and biodiversity. The University's Grounds and Landscape team allowed the grass and wildflowers to grow throughout the spring and summer, which provided food for birds and insects
- Baseline vegetation surveys were completed for the initial five **30x30** sites
- A draft Biodiversity Policy was completed in 2023/24 to be approved by the Sustainability Development Group in 2024/25

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