

Ystadau a Chyfleusterau
Estates and Facilities

System Rheoli Amgylcheddol
Adroddiad Blynyddol 2014

Environmental Management System
Annual Report 2014

Ricky Carter

Rheolwr yr Amgylchedd
Environmental Manager

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Vice Chancellor's Statement



I am delighted to present Bangor University's 2014 Annual Environmental Report.

One of the key priorities of our Strategic Plan is to position ourselves as a global University, with a reputation for sustainability. In November 2011 we signed the Welsh Government's "Sustainable Development Charter" to publicly demonstrate our commitment to achieving this objective; our stated ambition within this commitment being to develop and implement our Environmental Management System (EMS) and attain Level 5 of the Green Dragon Environmental Standard. We successfully achieved this in May 2012, and since then, have built upon our success by not only retaining the Green Dragon Standard, but by attaining certification to the globally recognised standard for Environmental Management Systems ISO14001. This clearly demonstrates to our staff, students and stakeholders at an international level that Bangor University is taking its environmental responsibilities very seriously indeed.

I am particularly proud of our Students' Union's environment and sustainability achievements in the past year. Not only did they retain the "Gold" standard in the NUS Green Impact Awards they were also named as the "Student Union of the Year" in the non-trading category, and won the Ecologist Communication Award for their one-minute "Flash Garden" video.

I am delighted with the progress we have made, and are continuing to make in preserving the quality of our environment. Our achievements are a tribute to the commitment of the many staff, students, and members of the local community who are working in partnership to manage, protect and enhance the natural environment in and around our University.

A handwritten signature in black ink that reads "John G. Hughes". The signature is written in a cursive style with a large initial 'J'.

**Professor John G. Hughes,
Vice-Chancellor Bangor University**

Executive Summary

This report relates to our environmental performance during the 2012/13 academic year (the “reporting period”) and to the actions we are currently taking at Bangor University to achieve continual environmental improvement. It describes our environmental monitoring data and key performance indicators in those areas where we have the greatest potential to impact upon on the environment. Our energy usage, water consumption, waste generation, and transport emissions are summarised, and performance is assessed in terms of compliance with the objectives and targets we had established for the reporting period.

Key Findings

During the 2012/13 Academic Year, Bangor University:

Consumed:

- **17,596,934 kWh** of mains electricity
- **21,762,870 kWh** of natural gas
- **172,437 litres** of heating oil
- **70,923 litres** of transport fuel
- **196,537 cubic metres** of mains water

Generated:

- **176,479 cubic metres** of sewage
- **3,160 tonnes** CO₂e from staff and student commuting
- **707 tonnes** CO₂e from our agricultural activities

Sent to Landfill:

- **409 tonnes** of mixed municipal waste

Recycled:

- **360 tonnes** of waste (47% of total)

Travelled:

- **2,314,129 miles** on business travel by road, generating 414 tonnes CO₂e

Sequestered:

- **800 tonnes** CO₂e at our landholdings at Henfaes Farm

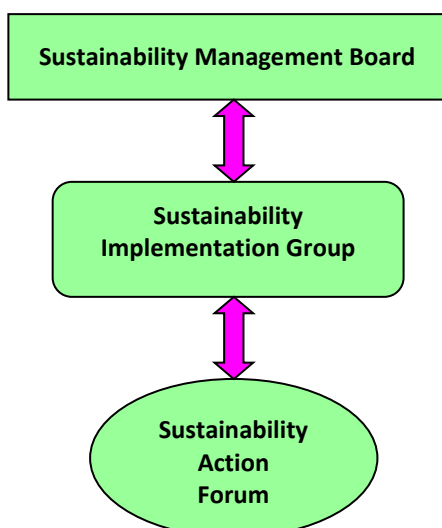
These activities generated a total of **16,771 tonnes of CO₂e** from our activities as a University, which represents a 0.8% increase on the previous academic year.

Introduction

Bangor University is committed to excellence. Our mission statement describes our overarching aim to be a *“leading research-led University with an international reputation for teaching and research, that fosters the intellectual and personal development of its students and staff, provides a supportive multicultural environment, promotes widening access and inclusiveness, and supports the economic, social and cultural well-being of Wales and the wider community it serves. Bangor University will be recognised regionally, nationally and internationally as a centre of excellence for a varied portfolio of academic programmes and for the high quality of the experience it provides for its students and staff”*.

Our Environmental Policy (page 7) states that we aspire to be sustainable by means of a balanced consideration of financial matters, our staff and students, the local community and of the environment around us. We have over 11,000 students and 2,000 members of staff located within an estate of 210 buildings across 346 hectares. We are committed to the highest quality of teaching, research, knowledge transfer and enterprise and reaching out to the community, whilst at the same time taking good care of our staff and students. We will not only protect our natural environment at both local and regional levels, but will actively seek opportunities to enhance it.

In accordance with our Environmental Policy we aim to develop a culture of environmental stewardship amongst our staff and students. We understand that our activities have an impact on the environment, and are committed to continual improvement in our environmental performance. In this respect we have established the following structure for implementing our sustainability agenda:



The Sustainability Management Board is tasked with overseeing the evolution and implementation of a Sustainability Agenda for Bangor University and for reporting to the University Executive Committee. Specific Actions are achieved through the multifunctional Sustainability Implementation Group, supported with input from the wider Sustainability Action Forum. All three groups include both staff and student representation. In addition we have informal Sustainability Think Tanks which meet monthly.

Senior Management Review

Each year the Sustainability Management Board holds an Annual Management Review meeting. This is used as the pivotal means of ensuring that the Environmental Management System is fully implemented and effective. This meeting is undertaken to the requirements of Green Dragon Level 5 / ISO 14001: 2004 and all pertinent aspects are reviewed and actions taken as required. The review meeting is structured in accordance with the following agenda:

- Introduction
- Actions from Previous Meeting
- Environmental Policy
- Significant Environmental Aspects
- Objectives and Targets
- Current Performance
- Improvement Opportunities / Invest to Save Initiatives
- Environmental Incidents /Corrective and Preventative Action
- Internal Audits
- Legal Compliance
- Communications (Internal / External)
- Training and Awareness
- Recommendations

The Environmental Manager is required to provide sufficient information to enable an effective review to be undertaken. The Board then addresses any issues including the possible need for changes to the policy, objectives and targets, and any other element of the system in the light of the Environmental Manager's report. The minutes of the review are maintained as an EMS record.

At the Senior Management Review meeting held on 16th May 2014, members resolved to endorse this report and current EMS documentation, and to approve the environmental Objectives and Targets for the forthcoming year.

Environmental Policy



PRIFYSGOL
BANGOR
UNIVERSITY

Environmental Policy

Bangor University has over 11,000 students and 2,000 members of staff located within an estate of 210 buildings across 365 hectares. This includes significant activities undertaken outside the city of Bangor, particularly in Menai Bridge and in Wrexham. We are committed to providing teaching and conducting research of the highest quality whilst simultaneously taking good care of our staff and students. We aim not only to protect our natural environment both locally and regionally, but to actively seek opportunities to enhance it.

Additionally, we aim to develop a culture of environmental stewardship amongst our staff and students. We understand that our activities have an impact on the environment, and are committed to continual improvement of our environmental performance, and to meeting the requirements of both ISO 14001, and the Green Dragon environmental standards. This is fundamental to achieving our goal of becoming a leader in effective environmental management within the higher education sector in Wales.

We will adopt the following key principles within our approach:

- To minimise our environmental impacts and work towards the goals of sustainable development
- To ensure compliance with all relevant legislation and regulations associated with our activities
- To manage waste through reduction, re-use, and the promotion of recycling
- To reduce energy and water consumption, and promote green transport initiatives
- To reduce our contribution to global climate change by making significant reductions in our greenhouse gas emissions
- To work with suppliers who themselves have sound ethical environmental and sustainability policies
- To undertake all necessary steps to prevent the pollution of the natural environment
- To raise environmental awareness amongst staff and students through improved communication and involvement
- To embed sustainable development and awareness of environmental issues in our curricula across the University
- To establish environmental objectives and targets and report progress on an annual basis

This Environmental Policy will be reviewed annually by the Sustainability Implementation Group, endorsed by the Sustainability Management Board, and reported to the University Executive. It is also communicated to the wider University population and is publicly available on the University's website.

Approved by:

(Professor John Hughes, Vice-Chancellor, Bangor University)

EMS Document 1C: Environmental Policy; Issue 5

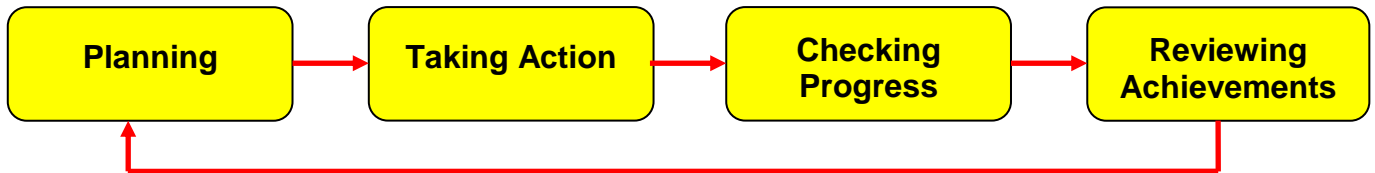
Date of issue: 1st September 2013

Valid until: 30th August 2014

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Environmental Management System

Our EMS has been designed in accordance with the criteria set out in the Green Dragon Environmental Standard, which are also reflected in the requirements of ISO14001. This is a five tiered approach to environmental management that enables organisations to develop a phased approach to their EMS. Each tier incorporates the cyclical process of:



to achieve the key principles of:

- **Continual Environmental Improvement**
- **Compliance with Environmental Legislation**
- **Pollution Prevention**
- **Communication of Environmental Issues.**

Our progression through the Green Dragon and ISO14001 Environmental Management Standards is summarised below:

- May 2009 – Level 3
- May 2010 – Level 3
- May 2011 – Level 4
- May 2012 – Level 5
- June 2013 – Level 5
- March 2014 – ISO14001 Certification

Our EMS currently applies across the University estate, with the exception of the Prince Madog Research Vessel.

The Environmental Management System is subject to ongoing monitoring by the Sustainability Implementation Group, and is reviewed annually by the Sustainability Management Board.

Legislation

The foundation of any Environmental Management System is an understanding of, and compliance with, relevant environmental legislation. As such, we have developed a register of legislation that is applicable to the University's activities. The register is updated by the Environmental Manager who is responsible for ensuring that relevant environmental licences, registrations, and authorisations are in place, and for evaluating compliance with relevant legislation. The majority of the University's formal authorisations currently relate to the Environmental Permitting Regulations, and the Energy Performance of Buildings Regulations.

Aspects and Impacts

Our EMS incorporates an assessment of all aspects of the University's activities that have the potential to impact upon the environment. A total of 41 discrete aspects have been identified and have been evaluated in terms of their potential environmental impact (which may be positive or negative). The criteria used for evaluation are described within the EMS and relate to the potential consequences associated with each aspect, and the likelihood of such an occurrence. This includes a consideration of relevant legislation, potential environmental damage, current controls, and risk of emergency situations. From this exercise, those Aspects that have the greatest potential to adversely impact upon the environment have been identified, and appropriate objectives and targets developed to minimise those impacts. Our "Significant Aspects" have been determined as our:

- Energy consumption and associated carbon emissions
- Water Consumption
- Oil and Chemical storage and use
- Waste generation
- Travel and Transport

The impacts associated with these aspects relate to the use of natural resources, greenhouse gas emissions, pollution risk, and the decreasing availability of landfill sites.

The Aspects and Impacts register and evaluation process is reviewed annually by the Sustainability Implementation Group, and reported to the Sustainability Management Board.

Objectives and Targets 2013/2014

From the Aspects and Impacts assessment, we have derived the following objectives and targets for the current academic year (ending 31st July 2014):








- | | |
|------------|---|
| T1: | Reduce annual energy associated CO ₂ emissions by 3% each year.
Reduce energy associated CO ₂ emissions by 40% of 2005/06 levels by 2020
Reduce overall greenhouse gas emissions (CO ₂ equivalent), by 3% per FTE (staff and student) per year. |
| T2: | Reduce water consumption by 2% annually |
| T3: | Minimise pollution risks at the University |
| T4: | Recycle 40% of municipal wastes generated at the University |
| T5: | Reduce business travel related emissions by 20% of 2005/06 levels by 2016 |
| T6: | Reduce procurement related carbon emissions (methodology under review). |
| T7: | Enhance awareness of environmental sustainability amongst staff and students |
| T8: | Ensure that biodiversity considerations are, where applicable, incorporated in University activities |





A report of performance against these targets will be incorporated in the 2015 Annual Environmental Report.

Annual Performance: Objectives and Targets 2012/2013 Review





Performance in terms of our objectives and targets for the reporting period is summarised in Table 1 below.

Table 1: Summary of Performance against 2012/13 Targets

Ref	Objective	Targets	Status	Notes
T1	Maximise efficient use of energy, and reduce greenhouse gas emissions.	A) Reduce annual energy associated CO ₂ emissions by 3% each year.		Actual energy related carbon emissions increased by 5.2%. This is due to an (un-normalised) increase of 9% (*) in energy consumption attributable to the following factors: <ul style="list-style-type: none"> • Colder winter and spring during 2012/13 resulting in an 18% increase in number of “degree days” during year. • Increasing IT provision in Deiniol, resulting in 10% increase in electricity • Improved heating system in Alun Roberts Tower (heating inadequate in previous years) <p>(*When normalised, this becomes a 3% decrease on previous year).</p>
		B) Reduce energy associated CO ₂ emissions by 25% of 2005/06 levels by 2014/15.		Energy consumption is currently 11.5% below the base year (or 13.6% when “normalised”). This equates to a 6.5% reduction in CO ₂ (or 8.2% using the “normalised” energy figures)
		C) Reduce overall greenhouse gas emissions (CO ₂ equivalent), by 3% per FTE (staff and student) per year. (Base Year: 2010/11)		Annual variance was +6.65% due to factors described in T1(A)
T2	Maximise efficient use of water	A) Reduce total annual water use by 2% per year.		Water consumption increased by 12% on previous year. This has been attributed to two major leaks that took several months to locate and resolve; one on Science Site and one on Safle’r Normal.
T3	Prevention of pollution	A) Minimise pollution risks at the University		There have been no pollution incidents at the University. The greatest risk is from heating oil, which is gradually being replaced with gas where practicable. Training sessions on spillage procedures have been delivered to key Estates Staff..
T4	Minimise waste to landfill.	A) Recycle 40% of all municipal waste generated.		Recycling during the year reached 47%
T5	Reduction in business travel undertaken by University staff and students.	A) Achieve 20% reduction in vehicular business travel CO ₂ emissions by 2016 (relative to 2005/06 base year).		Emissions are currently 13.3% lower than base year

T6	To embed a process for consideration of Sustainable Procurement issues within the wider procurement process	A) Achieve Level 3 of the Public Sector Sustainable Procurement Action Framework (SPAF)		Level 3 achieved. Following developments in Welsh public procurement policy, future sustainable procurement performance will be measured on an annual basis against the Welsh Public Sector Procurement Maturity Model
		B) Reduce procurement related carbon emissions by 3% each year		A new national methodology has been developed during 2012/13 during which Bangor's procurement emissions totalled 44,793 tonnes CO ₂ e. This will form the basis of future performance monitoring.
T7	Awareness and Communication	A) Enhance awareness of Environmental Sustainability amongst staff and students		A number of awareness campaigns have been held throughout the year
T8	Biodiversity	A) Ensure Biodiversity considerations are incorporated in University activities		Ongoing biodiversity management plans at Treborth, and Henfaes a Biodiversity Action Plan associated with Pontio the development of a bat roost advance of the St Mary's development.

Key to Table 1

	Target met (or on course to be met)
	Target not met but improvement in performance since last year
	Target not met and deterioration in performance since last year
	Insufficient data to assess performance

Further details associated with our performance are discussed below.

Objective T1: Energy and Greenhouse Gas Emissions

The University's energy related emission data has recently been recalculated in accordance with new Defra guidelines. We aim to reduce our energy related CO₂ emissions by 3% each year, and had initially established a target to reduce our 2005/06 base year emissions by 25% by the end of the 2014/15 academic year. Good progress continues to be made and in the reporting period our energy related emissions per staff and student (FTE) were 26% lower than in the base year. However the above targets relate to absolute emissions and as such are challenging in the context of continuing developments at the University. For example our staff and student (FTE) numbers have increased by 21% since the base year, and in the same period we have provided an additional 400 student bedrooms within our halls of residence, an increase of more than 13%. Current developments associated with our Estates Strategy, in particular Pontio and St Marys, will inevitably impact on our energy consumption and associated emissions, and, as a consequence, the Sustainability Management Board has revised the University's long term carbon reduction target to 40% of 2005/06 levels by 2020. Whilst the annual 3% reduction target

remains, the medium term target has been withdrawn. We are actively monitoring our energy and water usage using the Automated Metering and Monitoring and Targeting facility that records consumption in our main buildings on a half hourly basis, and we are committed to investing in energy and water efficiency measures to achieve our short and longer term targets. During the year, we have undertaken a range of “Invest to Save” initiatives including Replacement of oil heating on Safle’r Normal with mains gas This will not only reduce our carbon footprint at the site by more than 80 tonnes CO₂e, but will remove one of our most significant pollution risks, given that over 100,000 litres of heating oil are currently used at the site, in a sensitive area adjacent to the Menai Strait. As well as being more cost effective, gas produces less carbon emissions than burning oil, and the projected cost savings of around £40,000 per year represent a potential payback period of less than 4 years.

In accordance with the Energy Performance of Buildings Regulations, we have placed Display Energy Certificates (DECs) in the foyer / reception areas of 53 of our buildings (i.e. those exceeding the 500 m² floor area threshold currently specified in the Regulations). These DECs provide a publicly available indication of the energy efficiency of the building. This information will enable us to identify the least efficient buildings and prioritise efficiency measures accordingly.

The Regulations also require formal inspection and certification of air conditioning units exceeding 12kW; all relevant systems at the University have valid Inspection Certificates which are valid until 2017. We are working closely with external partners to identify the actions necessary to reduce our energy related emissions, and in conjunction with the Carbon Trust have produced a “Carbon Routemap” to complement our Carbon Management Strategy.

We are using the Display Energy Certificate (DEC) ratings, the Carbon Routemap, and our half-hourly Automated Metering System to prioritise our future actions associated with energy efficiency. For example, working closely with building users, our Estates and Facilities Department has made significant reductions in the energy use and carbon emissions (and therefore costs) in our “BREEAM Excellent” Environmental Centre Wales (ECW) building. We will be applying the same methodology to other buildings in the future. In the interest of transparency and awareness our DEC Certificates have been mapped and are available on line.

Our energy and associated emissions are summarised in Tables 2 and 3 below.

Energy and Emissions – Key Statistics

Table 2: Energy Consumption

Energy Trend	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Electricity (kWh)	16,168,354	15,447,781	15,613,647	15,524,732	16,294,314	16,510,229	15,954,994	16,822,639	17,596,934
Gas (kWh)	29,238,718	28,883,921	26,972,176	25,172,241	24,509,823	21,906,655	22,868,122	19,244,758	21,762,870
Burning Oil (kWh)	2,112,135	2,112,135	2,237,660	1,830,143	1,853,113	1,985,899	1,988,009	1,894,549	1,683,248
LPG (kWh)	0	0	0	0	0	0	0	88,975	43,595
Total Energy Consumed (kWh)	47,519,207	46,569,362	44,415,966	42,550,086	42,790,036	40,404,893	40,717,665	37,839,620	41,231,231
Annual Variance		-2.00%	-4.62%	-4.20%	0.56%	-5.57%	0.77%	-7.07%	8.96%
Variance on Base Year		Base Year	-4.62%	-8.63%	-8.12%	-13.24%	-12.57%	-18.75%	-11.46%

Table 3: Energy Related Carbon Emissions

CO ₂ (Tonnes)	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Electricity	8,453	8,010	7,992	8,300	8,683	8,658	7,829	8,350	8,509
Gas	5,368	5,303	4,952	4,622	4,500	4,022	4,199	3,564	4,005
Burning Oil	507	537	439	444	476	477	454	404	438
LPG								19	9
Total	14,328	13,850	13,383	13,366	13,660	13,157	12,482	12,318	12,952
Annual Variance		-3.33%	-3.37%	-0.13%	2.19%	-3.68%	-5.13%	-1.31%	5.15%
Variance on Base Year		Base Year	-3.37%	-3.49%	-1.37%	-5.01%	-9.88%	-11.06%	-6.48%

Under the UK Government's "Carbon Reduction Commitment- Energy Efficiency Scheme" Bangor University is required to purchase carbon allowances for every tonne of energy related carbon we produce. The scheme is intended as a financial incentive for organisations to reduce their carbon emissions, and therefore contribute to the UK's statutory reduction targets set out in the 2008 Climate Change Act, i.e. an 80% reduction in 1990 greenhouse gas emissions by 2020.

The initial cost of allowances was set at £12 per tonne of CO₂, and our first payment (for the year ending 31st March 2012), amounted to £146,000. This rate per tonne rises to £15.60 in 2014/15 which will result in a carbon cost of over £218,000.

Objective T2: Water

The use of mains water has implications for a natural resource, which, unless controlled can impact on aquatic ecosystems. In addition the energy used in the treatment and distribution of water, and in sewage disposal has an associated carbon footprint. In view of this our target is to reduce our water consumption by 2% each year. This is challenging given the increasing number of students and we will continue to work with both staff and students in raising awareness of the need to conserve water. A number of water efficiency measures have been implemented, however despite these interventions our water consumption has increased by more than 13% since the previous year. This increase is almost entirely due to a leak on the Normal Site, which took several months to locate and repair. During the year installed over 1,000 water efficient shower heads in our Halls of Residences in an initiative jointly funded with Dŵr Cymru Welsh Water. Ongoing monitoring indicates that water consumption in halls fitted with the shower heads has decreased by approximately 14% since September 2013.

Following a successful trial in the Estates Office, we have expanded our use of waterless urinals, with units installed in Rathbone and Arduwy, and additional plans for installations in the Maes Glas Sports Centre, and the new Pontio development.

Water consumption is summarised in Table 6 below:

Table 6: Water Consumption

Water Consumption	2006/2007	2007/2008	2008/2009	2009/2010	2010/11	2011/12	2012/13
Cubic metres	166,054	174,937	165,396	166,267	161,950	172,821	196,537
Annual Variance		5.35%	-5.45%	0.53%	-2.60%	6.71%	13.72%

Objective T3: Prevention of pollution

No pollution incidents were reported during the period, and considerable effort continues to be made to reduce such risks. All of our heating oil storage facilities have now been banded, or replaced with modern double skinned polyethylene tanks, and all oil and chemical storage areas have been provided with spill kits and defined spillage procedures. We are, wherever practicable, replacing oil heating with gas or lpg, which not only reduces our carbon footprint, but also removes a potential source of pollution. To date we have removed oil heating from Arduwy, Ynys Faelog, Merion, Henfaes Farmhouse, and the Normal Site. A new package sewage treatment plant has been installed on the Ynys Faelog site removing a crude sewage discharge to

the Menai Strait. The new discharge has the benefit of an Environmental Permit issued by Natural Resources Wales.

An annual inspection of oil tanks, bunds and spill kits has been formalised, and records retained within the EMS. All of our bulk chemicals are stored in a purpose built chemical/solvent store which underwent a major refurbishment in 2010, and well defined procedures are in place to minimise the risk of pollution.

Our Pollution Prevention Plan, which is available on our website, includes an Environmental Incident Reporting Procedure for anyone discovering an environmental incident such as pollution, or fly tipping on University premises. This is also available on the University’s website. Contractors working on the Estate are required to sign a declaration to comply with a range of “Contractor Standards and Working Practices” which includes conditions for protection of the environment during works, as well as receiving a Health, Safety and Environment induction prior to the commencement of work.

Objective T4: Minimisation of Waste sent to landfill

Our target to recycle 40% of our municipal waste was met for the first time in 2011/12, and this subsequently increased to 47% in 2012/13. The quantity of waste sent to landfill is also at its lowest level, thereby reducing costs associated with the landfill tax. Recycling banks are now available in all academic and residential buildings, and food waste recycling collections are now also available in many academic and administrative buildings as well as all halls of residence and catering outlets. The Estates Department has for some years been a “binless” office, and during the reporting period, the approach was trialled in two additional buildings. Despite some initial concerns, both buildings have now adopted the system which is contributing to our overall recycling rates.

Table 7: Waste Statistics

Municipal Waste (tonnes)	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Landfill	624	715	781	820	575	459	409
Recycled	211	297	320	346	285	310	360
Total	835	1,012	1,101	1,166	860	769	769
% Waste Recycled	25%	29%	29%	30%	33%	40%	47%

Objective T5: Travel and Transport

We aim to reduce our vehicular business travel emissions by 20% of the 2005/06 base year by 2016. A travel hierarchy has been established within our Sustainable Travel and Transport Policy,

and greater use of video/telephone conferencing is actively encouraged. Although not formally adopted, the various actions identified within our draft Travel Plan are being implemented and monitored by means of a biannual staff and student travel survey. A Cycle to Work Scheme was launched during 2012, and we are continuing to work closely with the local authority to identify opportunities to encourage the use of public transport and improved cycle routes.

We have successfully worked with Arriva Buses Wales to negotiate staff and student discounts, and for the past two years have offered free bus travel for staff and students during Climate Week in March.

Objective T6: Sustainable Procurement

We have developed a discrete Sustainable Procurement Policy and Strategy that aims to ensure that a thorough assessment of the environmental and social as well as the financial implications is undertaken during the procurement of goods and services. This will be achieved through the use of the Value Wales Sustainability Risk Assessment Tool and through training of key procurement staff.

We have achieved our target of attaining Level 3 of the Sustainable Procurement Action Framework (SPAF) and although this has now been replaced by the Welsh Public Sector Procurement Maturity Model we intend to continue to deliver sustainable procurement initiatives with the same enthusiasm.

We had established a methodology to report on greenhouse gas emissions associated with our supply chain, with an aim to reduce such emissions by 3% annually from a 2007/08 base year. However, a more reliable methodology has now been developed within the HE sector with an initial assessment carried out in 2012/13. Using this methodology, we will use the 2012/13 figure of 44,793 tonnes CO₂e as a baseline for future years reporting.

Objective T7: Training, Awareness and Communication

Training awareness and communication are an integral part of our Environmental Management System. SIG has produced a discrete “Communications Strategy”, and is working to raise the profile of environmental issues wherever practicable. Recent examples include:

- Sustainability “Maps and Compasses” sessions for new staff
- Annual “Switch Off This Christmas/Easter” energy saving campaigns
- A Sustainability stall at Serendipity during Freshers’ Week
- An Energy Stall during Science Week, and “Kill-a-Watt for Bangor” campaign
- A Sustainability Pledge, which to date has been signed by over 2,000 staff and students
- Inclusion of sustainability issues within the Welcome Week presentation for new students
- An “Environmental Management at Bangor University” module for second year Environmental Management students, and for the MBA in Environmental Management.
- Training of Domestic Staff in Waste Awareness
- Training of Estates Manual Staff in Environmental Awareness, Environmental Incident Reporting and Spillage Procedures.
- Inclusion of environmental requirements in all new job descriptions
- Continuation of a programme of monthly Sustainability “Think Tank” sessions involving staff and students.
- A number of Schools and Departments (e.g. Psychology and Business) are including an introduction to sustainability in some of their modules.

In addition Bangor University took part in the HEFCW funded “Greener Living” initiative, aimed principally at student participation in a range of environmental issues. The initiative included 4 discrete projects:

- **Blackout Wales** – a co-ordinated audit by students of University buildings with the objective of highlighting wastage and quantifying savings.
- **Green Impact** – an interdepartmental competition encouraging staff teams to implement simple sustainability actions; the implementation of the actions being audited by student teams.
- **Student Switch-off** – an inter-Hall energy competition for students in University accommodation
- **Snap it Off**- encouraging students to upload photographs of energy wastage onto the web, and seeking resolution by University staff.

Objective T8: Biodiversity

We have an established Biodiversity Policy, and considerable work is undertaken in many areas of our Estate to enhance biodiversity in particular at our Botanical Gardens in Treborth, and at our agricultural holding at Henfaes where proactive steps are being taken to enhance biodiversity and control of invasive species. As part of the Pontio development on the Deiniol Road site a bespoke Biodiversity Action Plan for the College Park and surrounding area has been prepared. A bespoke bat roost has been developed on the St Marys site to facilitate the refurbishment and construction of the new Student Village development. The derelict buildings

had been home to a number of bat species, and their disturbance is being carried out in accordance with a licence issued by Natural Resources Wales.

Greenhouse Gas Emissions

The Kyoto Protocol describes six key greenhouse gases, namely:

- Carbon dioxide (CO₂);
- Methane (CH₄);
- Nitrous oxide (N₂O);
- Hydrofluorocarbons (HFCs);
- Perfluorocarbons (PFCs); and
- Sulphur hexafluoride (SF₆)

Bangor University's greenhouse gas emissions for the 2012/13 reporting year (calculated as CO₂ equivalents) are summarised in Table 8 below. As members of the Gwynedd Local Service Board (LSB) we aim to contribute towards significant carbon reductions in the County as described in our Carbon Management Strategy, which is complemented by specific Action Plans relating to energy, waste and transport.

Table 8: Greenhouse Gas Emissions 2012-2013

Source	Quantity	Conversion	Emissions	
SCOPE 1 - DIRECT EMISSIONS				
Natural Gas consumption (kWh)	21,762,870	0.1840	4,005,239	kgCO ₂ e
Heating Oil purchased (litres)	172,437	2.538	437,645	kgCO ₂ e
Diesel Fuel purchased (litres)	46,950	2.6008	122,108	kgCO ₂ e
Petrol purchased (litres)	27,328	2.3104	63,139	kgCO ₂ e
LPG (kWh)	43,595	0.21452	9,352	kgCO ₂ e
SCOPE 2 - IMPORTED POWER				
Electricity consumption (kWh)	17,596,934	0.48352	8,508,470	kgCO ₂ e
SCOPE 3 INDIRECT EMISSIONS				
Municipal Waste landfilled (tonnes)	409	289.895514	118,567	kgCO ₂ e
Mains Water consumed (cubic metres)	196,537	1.0526	206,875	kgCO ₂ e
Indirect Transport (Grey Fleet - personal vehicles)			233,193	kgCO ₂ e
Indirect Transport (Commuting)			3,159,705	kgCO ₂ e
Agricultural			707,000	kgCO ₂ e
Sequestration (Henfaes)			800,000	kgCO ₂ e
Total Greenhouse Gas Emissions:			16,771,291	kgCO₂e
			Variance on Previous Year	+0.8%

Future Plans

We aim to realise continual environmental improvement through the defined procedures and protocols set out in our Environmental Management System, and to ensure that the wider issues of sustainability are incorporated into the goals and plans of every dimension of the University's activities. Our Estates Strategy incorporates sustainability as an integral consideration in the future development of our Estate and all of our new buildings will be designed to achieve the

BREEAM “Excellent” rating as a minimum. The most notable of these developments currently in progress are the multi-million pound Pontio (Deiniol Road) and SEACAMS (Menai Bridge) developments both of which are due for completion in September 2014. The standard will also be applied to the redevelopment of the St Mary’s site as a 600 bed “Student Village” due to open in September 2015.

Our strategic aim is to proactively further the social and economic, as well as the environmental, aspects of sustainability throughout the University, including:

- Improving the dissemination of issues relating to sustainability and the environment throughout the University’s staff and student population.
- Developing further our “One Planet Living” approach to sustainability, including a discrete “Bringing Sustainability to Life” website
- Embedding sustainability training in staff development
- Retaining Level 5 of the Green Dragon Environmental Standard and ISO14001 Certification
- Developing a cross cutting curriculum for all students, irrespective of background or discipline.
- Continuing to make a recognised contribution to the body of research associated with sustainability and sustainable development
- Awarding contracts on the basis of whole-life costs and including the use of community benefit clauses in contracts, where feasible
- Cataloguing and formalising biodiversity assets and the ecosystem services they provide
- Promoting integrated transport issues in partnership with Gwynedd Council and other public bodies

The success of these future plans can only be realised by maximising the participation of all staff, students, and external stakeholders, and through improved communication and reporting of all applicable issues.



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