

Ystadau a Chyfleusterau
Estates and Facilities

System Rheoli Amgylcheddol
Adroddiad Blynyddol 2015

Environmental Management System
Annual Report 2015

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Vice Chancellor's Statement



Once again I am pleased to present Bangor University's Annual Environmental Management Report.

2014 was a significant year in our journey to become sector leaders in sustainability. We not only achieved certification to ISO14001:2004, the globally recognised standard for Environmental Management Systems, we also featured in the top 10% of over 300 Universities worldwide for our commitment to environmental sustainability. This builds upon the Welsh "Green Dragon" environmental certification that we have held since 2009.

I am especially proud of our Student Union's efforts in promoting sustainability, and in particular their lead in the "Love Bangor" partnership which has established effective collaboration between the University, local residents, business and the local authority. The aim of this initiative is to develop a community wide approach to the wider sustainability agenda, tackling issues such as waste and recycling, housing, citizenship and noise pollution, and it is a credit to our students that they are taking a proactive role in these matters.

Bangor's achievements are a clear demonstration to our staff, students and stakeholders at a national and global level that our University is taking its environmental responsibilities very seriously indeed.

I am delighted with the progress we are continuing to make in preserving the quality of our environment. Our accomplishments are a tribute to the commitment of our staff and students who are working together to manage, protect and enhance the natural environment in and around Bangor University.

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

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

Executive Summary

This report is a review of our environmental performance during the 2013/14 academic year (the “reporting period”) and a summary of 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 2013/14 Academic Year, Bangor University:

Consumed:

- **16,780,122 kWh** of mains electricity
- **18,726,407 kWh** of natural gas
- **120,123 litres** of heating oil
- **79,387 litres** of transport fuel
- **175,528 cubic metres** of mains water

Generated:

- **161,730 cubic metres** of sewage
- **691 tonnes** CO₂e from our agricultural activities

Sent to Landfill:

- **420 tonnes** of mixed municipal waste

Recycled:

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

Travelled:

- **2,174,970 miles** on business travel by road

Sequestered:

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

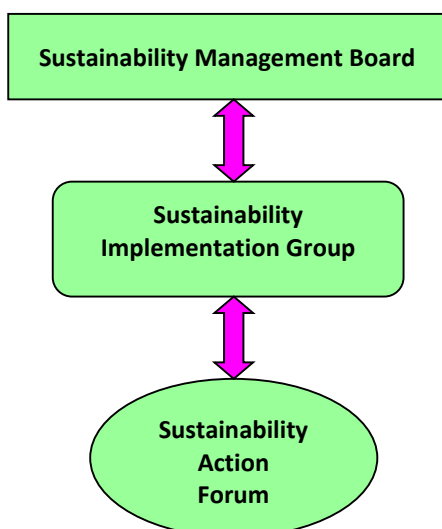
These activities generated a total of **13,389,734 tonnes of CO₂e** from our activities as a University, which represents a **1.6% decrease** on the previous academic year.

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 that extends across 365 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

During the Annual Management Review, which is held in May each year, the Environmental Manager provides the Sustainability Management Board with a report to enable an effective review of the EMS to be undertaken. The Board then addresses any issues arising from the report, and determines whether there is a need for any changes to the policy, objectives and targets, and any other element of the EMS. The minutes of the review are maintained as an EMS record and are available from the Environmental Manager.

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.

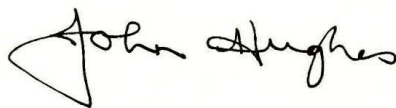
Additionally, we aim to develop a culture of environmental stewardship amongst our staff and students. We understand that our activities have an impact on the environment, and are committed to continual improvement of our environmental performance, and to meeting the requirements of both ISO 14001, and 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.

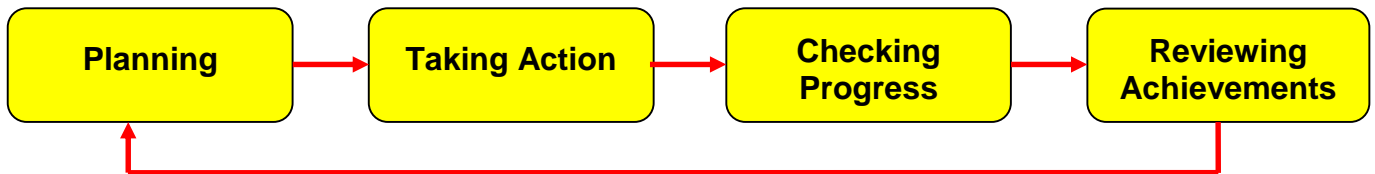
Approved by:



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

Environmental Management System

Our EMS has been designed in accordance with the criteria set out in the ISO14001:2004, and Green Dragon Environmental Standards. The structure of the EMS follows the five tiered Green Dragon approach each stage of which 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 – Green Dragon Level 3
- May 2010 – Green Dragon Level 3
- May 2011 – Green Dragon Level 4
- May 2012 – Green Dragon Level 5
- June 2013 – Green Dragon Level 5
- March 2014 – ISO14001 Certification (valid until 2017)
- June 2014 – Green Dragon Level 5

Both the Green Dragon and ISO 14001 Certificates are verified by externally appointed UKAS accredited bodies. Green Dragon certification is subject to an annual reassessment each June, whilst our ISO 14001 certification is valid for 3 years subject to satisfactory “surveillance audits” each October.

Our EMS currently applies across the entire University estate in North Wales, with the exception of the Prince Madog Research Vessel, a joint venture with P&O which has a separate environmental auditing arrangements.

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. During the reporting period liaison with Natural Resources Wales was undertaken with regard to two existing discharges of abstracted seawater from the School of Ocean Sciences site in Menai Bridge. Applications for Environmental Permits in respect of these discharges were subsequently submitted to NRW and a decision is expected in spring 2015. There has been no requirement from NRW to cease discharging during the intervening period due to the minimal impact on the receiving waters (Menai Strait). The University has recorded no unauthorised contravention of environmental legislation, and has not been responsible for any pollution incidents during the year.

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 2014/2015

From the Aspects and Impacts assessment, we have derived the following objectives and targets for the current academic year (ending 31st July 2015):








T1:	Reduce annual energy associated CO _{2e} emissions by 3% each year. Reduce energy associated CO _{2e} emissions by 40% of 2005/06 levels by 2020 Reduce overall greenhouse gas emissions (CO _{2e}), per FTE (staff and student) by 3% per year.
T2:	Reduce water consumption by 2% annually
T3:	Minimise pollution risks at the University
T4:	Recycle/divert from landfill 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 each year
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 2016 Annual Environmental Report.

Annual Performance: Objectives and Targets 2013/2014 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 decreased by 1.3% since the previous reporting period. This is despite a 10.7% decrease in total energy consumption over the same period. This issue is discussed below, and is a consequence of the carbon conversion factors issued by DEFRA, which are derived from the fuel mix used for the UK National Grid's power generation, and imported power from France. 2014 saw a significant increase (>10%) in the electricity conversion factor.
		B) Reduce energy associated CO ₂ emissions by 40% of 2005/06 (base year) levels by 2014/15.		Energy consumption is now 21% below the base year. This equates to a 7.7% reduction in CO ₂ over the same period.
		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 -2.2%
T2	Maximise efficient use of water	A) Reduce total annual water use by 2% per year.		Water consumption fell by 10.7% compared with the previous year. This reduction is largely attributed to the reparation of a significant leak on the Normal Site and the installation of water efficient shower heads in our Halls of Residences. The volume consumed however, remains higher than in previous years.
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. Further training sessions on spillage procedures have been delivered to key Estates Staff. Applications for 2 Environmental Permits have been submitted to NRW for seawater discharges from the School of Ocean Sciences
T4	Minimise waste to landfill.	A) Recycle 40% of all municipal waste generated.		Recycling /diversion from landfill 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 15.1% 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		During the reporting period, total procurement related emissions increased by 14.9%. However this is largely due to construction, which, if omitted from the assessment results in a reduction of 1.6%. Please refer to text below for a detailed summary.
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 as summarised below.
T8	Biodiversity	A) Ensure Biodiversity considerations are incorporated in University activities		Ongoing biodiversity management plans are continuing at Treborth, and Henfaes. A Biodiversity Action Plan associated with Pontio is in place. Other activities include the construction of a bat roost in 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

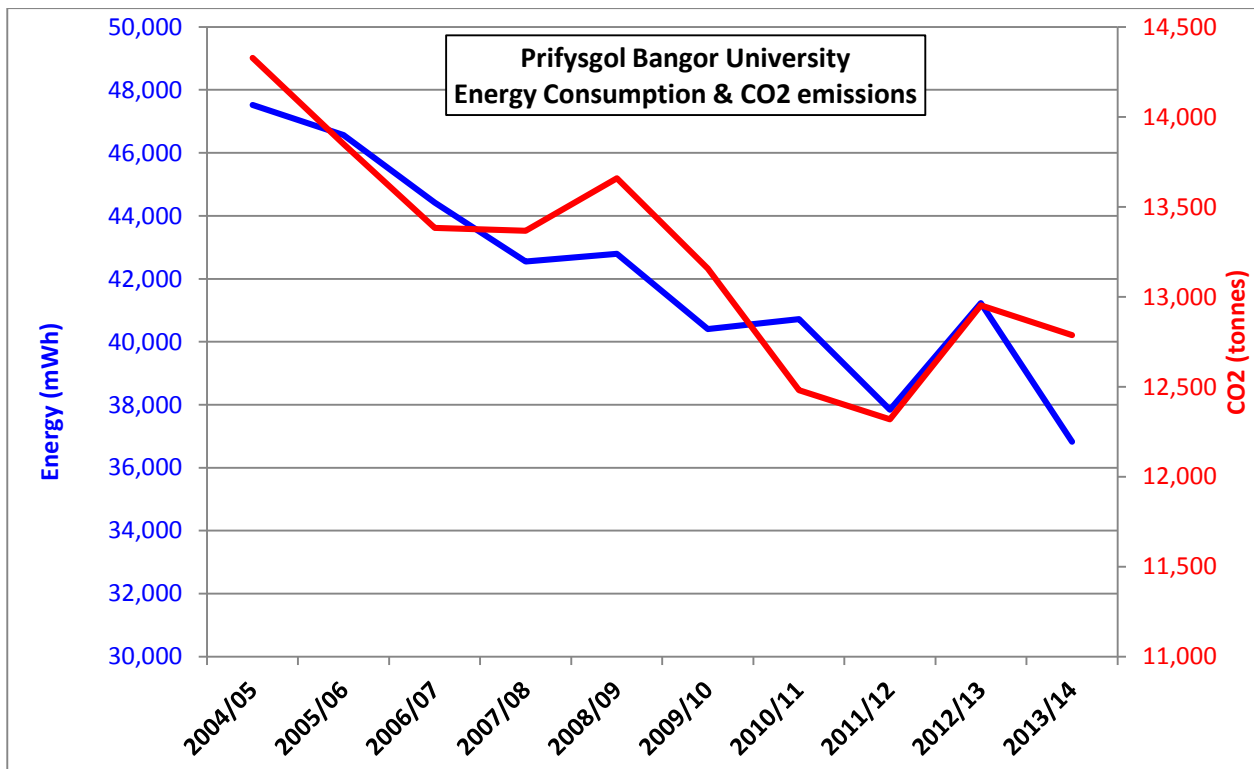
Further details associated with our performance are discussed below.

Objective T1: Energy and Greenhouse Gas Emissions

The University's energy related emission data is reported in accordance with new DEFRA guidelines, and as such is calculated using the DEFRA conversion factors published each year. We aim to reduce our energy related CO₂ emissions by 3% each year, and by 25% of our 2005/06 base year emissions by 2020. Good progress continues to be made and in the reporting period our total energy consumption fell to its lowest level since the 2005/06 base year, a reduction of 21% over the eight year period. This is a significant achievement given that 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%. The financial savings associated with such a reduction in energy usage are clearly significant; at today's energy prices, the cumulative savings since the base year amount to more than £1.5million. Unfortunately however, the reduction in energy consumption, does not equate

to a similar reduction in carbon emissions. This is due to the methodology used by Defra for deriving the carbon conversion factors. Whilst the factors for natural gas and oil remain relatively constant, grid electricity factors can vary considerably depending on the fuel mix used for generation, and the quantity imported from abroad. This amounts to annual variations that often do not reflect the relative reduction in energy consumption. This has been particularly noticeable in the current reporting period, when the emission factor for electricity reached 0.53748, its highest level since the base year, compared with its lowest value of 0.48357 the previous year. It is therefore important to consider the longer term trends in addition to the year on year performance. Had the electricity conversion factors remained as in the previous year, we would have recorded an 8% reduction in carbon emissions this year. Figure 1 below demonstrates that despite annual anomalies, we are making good progress in reducing our energy use and associated carbon emissions over the longer term.

Fig 1: Energy and Carbon Emission trends



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. A Strategic Energy and Water Management Group within the

Estates Department oversees an annual “Invest to Save” Action plan that allocates funding to projects with a favourable payback. During the reporting year this was utilised for the completion of work on the Normal Site that saw the replacement of the inefficient oil heating system with mains gas. It is anticipated that this scheme will reduce our carbon footprint by around 80 tonnes CO₂, and avoid the need to purchase over 100,000 litres of heating oil each year.

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 enables 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 currently planning to launch a web based dashboard display facility to inform building users of “real time” energy use to encourage energy efficiency through competition and target setting, and are planning a number of heating and lighting upgrades during 2014/15, including the installation of horticultural LED lighting in the Memorial Greenhouses.

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

Table 2: Energy Consumption

Energy Trend	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Electricity (kWh)	15,447,781	15,613,647	15,524,732	16,294,314	16,510,229	15,954,994	16,822,639	17,596,934	16,780,122
Gas (kWh)	28,883,921	26,972,176	25,172,241	24,509,823	21,906,655	22,868,122	19,244,758	21,762,870	18,726,407
Burning Oil (kWh)	2,112,135	2,237,660	1,830,143	1,853,113	1,985,899	1,988,009	1,894,549	1,683,248	1,273,304
LPG (kWh)	0	0	0	0	0	0	88,975	43,595	45,593
Total Energy Consumed (kWh)	46,569,362	44,415,966	42,550,086	42,790,036	40,404,893	40,717,665	37,839,620	41,231,231	36,825,426
Annual Variance	-2.00%	-4.62%	-4.20%	+0.56%	-5.57%	+0.77%	-7.07%	+8.96%	-10.69%
Variance on Base Year	Base Year	-4.62%	-8.63%	-8.12%	-13.24%	-12.57%	-18.75%	-11.46%	-20.92%

Table 3: Energy Related Carbon Emissions

CO ₂ (Tonnes)	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Electricity	8,010	7,992	8,300	8,683	8,658	7,829	8,350	8,509	9,019
Gas	5,303	4,952	4,622	4,500	4,022	4,199	3,564	4,005	3,464
Burning Oil	537	439	444	476	477	454	404	438	305
LPG							19	9	10
Total	13,850	13,383	13,366	13,660	13,157	12,482	12,318	12,952	12,788
Annual Variance	-3.33%	-3.37%	-0.13%	+2.19%	-3.68%	-5.13%	-1.31%	+5.15%	-1.27%
Variance on Base Year	Base Year	-3.37%	-3.49%	-1.37%	-5.01%	-9.88%	-11.06%	-6.48%	-7.67%

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 rose to £15.60 in 2014/15 resulting in a carbon cost of over £218,000; the cost will rise further to £16.10 per tonne in 2015/16.

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. A number of water efficiency measures have been implemented, in addition to the repair of a major leak on the Normal Site, and as a consequence our total water consumption decreased by 10.7% compared to the previous year. The volume consumed however, remains higher than in the years prior to the leak; if we discount the leak, water consumption is up by 1% on the previous year, and as such water conservation remains a priority for future action.

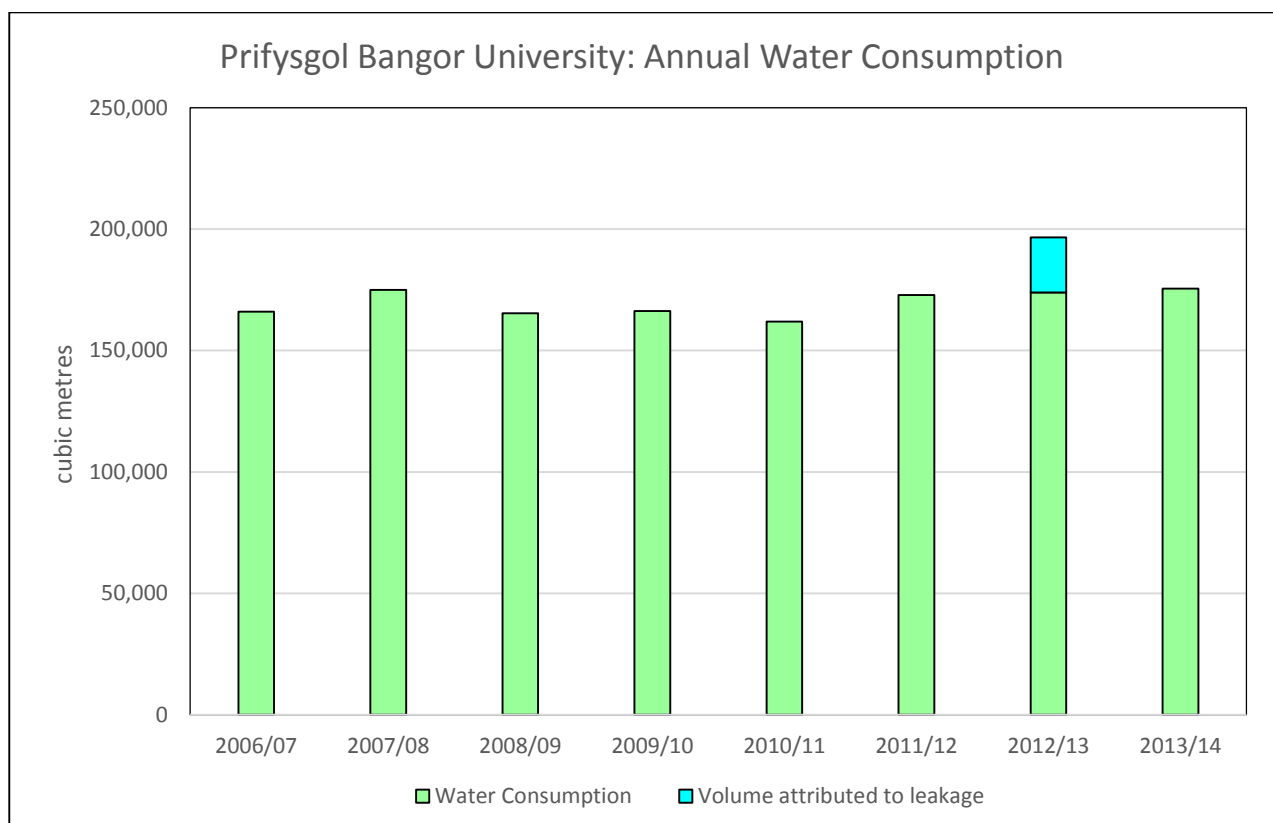
We have expanded our use of waterless urinals following successful trials in the Estates Department; further units have been installed as part of the major refurbishment of our sports centre Canolfan Brailsford, as well as in the new Pontio development. A total of 1,000 replacement water efficient shower heads were installed in our halls of residences, reducing water consumption within the buildings by 14%. A further 840 units are planned for the remaining halls during 2015.

Water consumption is summarised in Table 6 and Fig 2 below:

Table 6: Water Consumption

Water Consumption	2006/2007	2007/2008	2008/2009	2009/2010	2010/11	2011/12	2012/13	2013/14
Cubic metres	166,054	174,937	165,396	166,267	161,950	172,821	196,537	175,528
Annual Variance		+5.35%	-5.45%	+0.53%	-2.60%	+6.71%	+13.72%	-10.69%

Fig 2: Water Consumption Trend



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 Ardudwy, Ynys Faelog, Merion, Henfaes Farmhouse, and the Normal Site. The package sewage treatment plant installed on the Ynys Faelog site in 2012 removed our only crude sewage discharge to the Menai Strait; the discharge has the benefit of an Environmental Permit issued by Natural Resources Wales and is routinely monitored by Estates staff. With the exception of the two seawater discharges referred to above, all relevant activities are either authorised by the relevant regulator, or are the subject of a registered exemptions.

An annual inspection of oil tanks, bunds and spill kits is undertaken, 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. 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 / divert from landfill 40% of our municipal waste was met for the first time in 2011/12, and this subsequently increased to 47% in 2012/13 and this level of recycling was maintained during the current reporting period. A new waste contract was awarded to the local authority (Gwynedd Council) and this commenced on 1st August 2014. The Council have

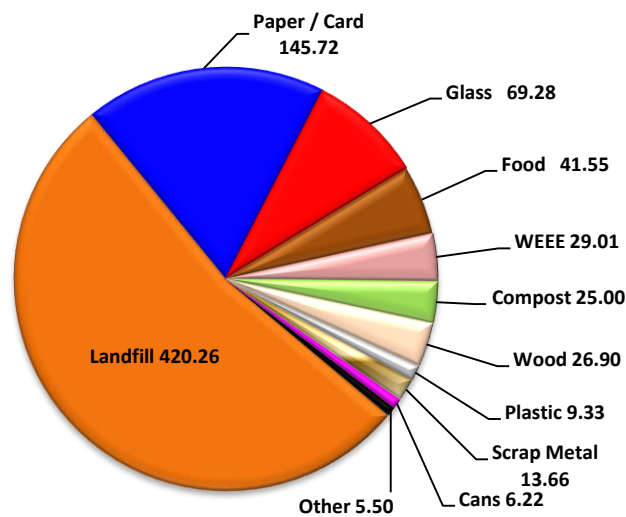
undertaken to increase the volume of University waste diverted from landfill by utilising a new “energy from waste” plant in Gwynedd. This will be reflected in our waste statistics next year.

Our current waste statistics are summarised in Table 7 and Figure 2 below.

Table 7: Waste Statistics

Municipal Waste (tonnes)	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Landfill	624	715	781	820	575	459	409	420
Recycled	211	297	320	346	285	310	360	372
Total	835	1,012	1,101	1,166	860	769	769	792
% Waste Recycled	25%	29%	29%	30%	33%	40%	47%	47%

Fig 2: Bangor University Waste Streams 2013/14 (tonnes)



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 biennial 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 three years have offered free bus travel for staff and students during Climate Week in March. Our Travel Survey is sent to all staff and students on a 2 yearly cycle to gauge the modes of transport used for commuting to and from the University.

Objective T6: Sustainable Procurement

Sustainability is a key strategic objective of the University with the aim of embedding sustainability across all functions. For that reason, the University will no longer produce a separate Sustainable Procurement Policy but will incorporate sustainability objectives into the procurement process as standard and the procurement team will contribute to the University's Sustainability Strategy and Action Plan.

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.

A methodology for reporting on greenhouse gas emissions associated with procurement has been developed within the Higher Education sector with an initial assessment carried out in 2012/13. Using this methodology, we established a 2012/13 figure of 44,793 tonnes CO₂e as a baseline for future years reporting. During the reporting period our Scope 3 procurement emissions rose to 51,464 tonnes CO₂e, an increase of nearly 15%. However this increase is almost entirely due to the construction activities currently being undertaken at the University, which during the reporting year, accounted for almost 30% of the total procurement related emissions. Construction is inevitably a significant variable, and when removed from the assessment, a decrease of 1.6% is evident, despite an increase in non-construction expenditure. In view of the likely future variance in construction expenditure we will report annually on procurement associated emissions including and excluding construction, as shown in Table 8 below.

Table 8: Procurement Related Carbon Emissions

Procurement Expenditure & Emissions	2012/13		2013/14		Annual Emissions Variance
	Expenditure (£million)	CO2e (tonnes)	Expenditure (£million)	CO2e (tonnes)	
Construction	£13.8	7,692	£26.9	14,949	+94.3%
Other	£45.6	37,101	£47.5	36,514	-1.6%
Total	£59.5	44,793	£74.4	51,464	+14.9%

Objective T7: Training, Awareness and Communication

Training awareness and communication are an integral part of our Environmental Management System. During the reporting period a number of initiatives were undertaken including:

- 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
- 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 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 “Stop the Block” campaign with Dwr Cymru Welsh Water to heighten awareness of pollution and flooding associated with sewer blockage

In addition during the reporting period, Bangor University took part in the “Greener Living” initiative, aimed principally at staff and student participation in a range of environmental issues. This initiative, funded by the Higher Education Funding Council for Wales, 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 Botanic Gardens in Treborth, and 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 purpose built 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 2013/14 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 2013-2014

Greenhouse Gas Emissions associated with Bangor University Activities 2013-2014
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Source	Quantity	Conversion(*)	Emissions
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SCOPE 1 - DIRECT EMISSIONS

Natural Gas consumption (kWh)	18,726,407	0.18497	3,463,880 kgCO ₂ e
Heating Oil purchased (litres)	120,123	2.53797	304,869 kgCO ₂ e
Diesel Fuel purchased (litres)	44,239	2.6024	115,128 kgCO ₂ e
Petrol purchased (litres)	35,148	2.1914	77,023 kgCO ₂ e
LPG (kWh)	45,593	0.214508	9,780 kgCO ₂ e

IMPORTED POWER: Scope 2&3

Electricity consumption (kWh)	16,780,122	0.53748	9,018,980 kgCO ₂ e
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SCOPE 3 INDIRECT EMISSIONS

Municipal Waste landfilled (tonnes)	420	289.835514	121,731 kgCO ₂ e
Mains Water consumed (cubic metres)	175,528	0.3441	60,399 kgCO ₂ e
Wastewater generated (cubic metres)	161,730	0.7085	114,586 kgCO ₂ e
Indirect Transport (Grey Fleet)			213,047 kgCO ₂ e
Agricultural			690,650 kgCO ₂ e

Sequestration (Henfaes)			-800,338 kgCO ₂ e
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Total Greenhouse Gas Emissions:			13,389,734 kgCO ₂ e
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Variance on Previous Year	-1.6%
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Future Plans

Bangor University's Strategic Plan 2015-2020 was approved by Council in December 2014. Sustainability is a prominent enabler as follows:

"SUSTAINABILITY: Deliver a financially, socially and environmentally sustainable University

The University operates in a region with unique environmental attributes and places sustainability at the heart of its activities: we aim to become, in all aspects, 'the Sustainable University'. Our ambition embraces not only the infrastructure and operation of university sites and operations, but how the University plans for growth and our role for Wales and beyond. We are not alone in recognising the changes needed to reduce our impact on the world in which we and future generations will live, and for our students to become 'global citizens', but we aim to be at the forefront."

We are committed to achieving an international and 'best in class' reputation for our commitment to sustainable development, and ensuring that our graduates will have a demonstrable knowledge of sustainable development practices gained from their studies and wider experiences of the University. We will enable students, staff, partners, businesses, alumni, and the wider community to implement positive change within their spheres of influence and ensure that the University is positioned at the forefront of global sustainable change.

Objectives include:

- Establishing a high-profile corporate focal point for sustainability – 'the sustainability lab',
- Co-developing a sustainability action plan with outputs that will clearly differentiate our offer in an increasingly competitive Higher Education market – the Environmental Management System will form a key component of this activity.
- Embed sustainability across our functions to integrate all aspects of sustainability into our daily operations, to drive our improvement to optimum performance and to enable measurement of our performance.
- Conduct a programme of sustainability reviews across all Colleges and Service Departments within the University over the period of the plan.
- Develop a globally recognised sustainable reporting framework and participate in disclosure projects e.g. Global Reporting Initiative.
- Ensure clear, concise audience-appropriate messages on sustainability that are relevant to inform the Bangor brand.
- Engage with businesses and other organisations such as Local Authorities in Wales on sustainable business development and resource efficiency.

- Reduce the University's carbon footprint through reducing energy consumption and waste, promoting recycling, and through continued promotion of the University's travel plan and related activities, such as a car share database, better facilities for cyclists, and cost-effective public transport tickets.
- Retention of Level 5 of the Green Dragon Environmental Standard and ISO14001:2004 Certification

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) building, the Marine Centre Wales (Menai Bridge), and the St Marys "Student Village", all of which are due for completion during the 2014/15 academic year.

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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