50UEA
Fifty Years of the University of East Anglia

UEA ENVIRONMENTAL REPORT

2013

Focus on Future Skills

Contents

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www.uea.ac.uk/50years

Cover Photo: Courtesy of Dr Iain Barr, School of Biological Sciences

A new species for UEA campus: Willow Emerald *Lestes viridis*
This species of damselfly is expanding its range in the UK northwards. It was first found in Norfolk in 2009 and is slowly colonising the very best habitats. It needs good quality water with willow and alder nearby as it lays eggs into the bark of trees that overhang water. It was first found at UEA in August 2013 and subsequent searches revealed up to 55 individuals along the river and the water soldier pond. They certainly have arrived and like the restored pond area!

Forewords

Professor Edward Acton
Vice-Chancellor

2013 marked 50 years of successful innovation, creativity and academic prowess, giving us an opportunity to reflect on all we have achieved so far and to look ahead to the many ways in which we will continue to resolve the world's grand challenges.

Our pioneering, multidisciplinary research on the environment demonstrates the need and scale of the challenge that faces us. It plainly adds to our voice and credibility, if what we do in our own setting echoes and draws upon this extraordinary wealth of knowledge.

Our current construction of the new Enterprise Centre which we firmly believe is going to be the lowest carbon public building in the UK symbolises our achievements to date. It's commitment to enterprise underpins our belief that it is very much part of the University's role to spread and embed a real understanding of both the imperative and the economic good sense of a low carbon way forward.

We are determined to deliver a student experience second to none and to demonstrate this is thoroughly compatible with sustainability. We believe that our focus on Future Skills will deepen the already exceptional academic experience and ensure sustainability principles are propagated: Enabling our graduates to respond positively to the challenges and opportunities in an unknown future.

Professor Philip Gilmartin,
Dean of Faculty of Sciences and Chair of UEA Sustainability Board

Having recently taken over the role of Chair of Sustainability Board I am pleased to introduce this, our fourth, annual environmental report.

We faced a number of challenges in 2013 which have noticeably impacted on our greenhouse gas emissions, but we are not complacent and are developing new approaches and establishing a firm strategic framework in order to undertake our core business in a more environmentally sustainable way. Having achieved the Platinum EcoCampus award in March 2014, we aim to maximise the benefits of resource efficiency by achieving ISO 14001 (the International standard for Environmental Management Systems).

In order to capitalise on our estates-focussed activities and fulfil both corporate plan and environmental policy commitments we are making great progress embedding sustainability in the curriculum and wider student experience through our Future Skills Initiative. This presents benefits to students, the community and business partnerships: Maintaining our emphasis on offering an unparalleled educational experience.

About Us

UEA is a research-led, campus university located about 3 miles from Norwich city centre in Norfolk.

We welcomed our first 87 students in 1963 - a cohort studying Biological Sciences and English Studies. 50 years on we welcomed 14,199 students studying across four faculties and 28 schools, supported by a staff of 3,700 (full and part-time).

We have built a reputation for excellence in student satisfaction, learning, teaching and research and in April 2013 we were voted first for student experience in the Times Higher Education Student Experience Survey.

We rank in the top 1% of HE institutions in the world and are a leading member of the Norwich Research Park, one of Europe's biggest concentrations of researchers in the fields of environment, health and plant science.

UEA welcomes its first students in 1963

About this Report

This report is presented in the same format as in previous years in order to aid comparison of data over time.

It illustrates our progress during the period Jan to Dec 2013 by using standardised key performance indicators in accordance with the principles of the Global Reporting Initiative (GRI) G4 guidelines. Our greenhouse gas (GHG) emissions are reported according to the GHG Protocol (see 2012 report) although it should be noted that changes to Defra emissions factors have resulted in changes to our historical data[1].

The majority of data is reported for August 2012 to July 2013 to tie in with Estates Management Statistics submitted annually to the Higher Education Statistics Agency (HESA): It is indicated where this is not the case. The data sources used to monitor performance remain the same as in our 2012 report.

Our activities are unchanged but our floor area increased by 1% in 2013 (230,327m^2, of which 37%, 84,467m^2 is residential space).

An early vision of the campus by Denis Lasdun Circa 1962

About Our Environmental Impacts

We take a comprehensive approach to environmental sustainability, demonstrating real commitment, and reflecting our position in the field of environmental research and as a low carbon exemplar.

Our outstanding Norwich[2] campus has grown considerably over the last half century and now occupies over 146 hectares of land which supports rare species and wildlife sites of county significance. It hosts listed buildings, low energy buildings, the Sainsbury Centre for Visual Arts, UEA Sportspark, and energy generation plant.

We undertook a full review of our activities in 2009, listing the aspects of our operations that affect the environment and programming measures to minimise negative and promote positive environmental impacts.

These impacts relate to resource use; climate change; emissions and pollution control, waste and biodiversity.

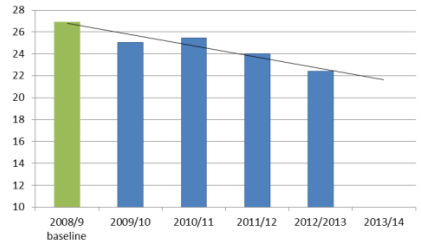
We also have significant influence through learning and teaching; our students can contribute positively to reducing the possibility of dangerous climate change and maximise the opportunities offered by changing environmental, social and economic climates, whilst studying at UEA and post-graduation.

[1] National Grid electricity emission factors are now presented as a yearly average (previously a five year rolling average). Scope 2 and 3 transmission and distribution losses have been reported together to maintain consistency with previous years.

[2] University Campus Suffolk (established 2005) and UEA London (established 2010) are not currently included in the scope of our environmental management activity as these are joint ventures. Together they comprise approximately 5% of the gross internal area of the University

Our Headline Performance

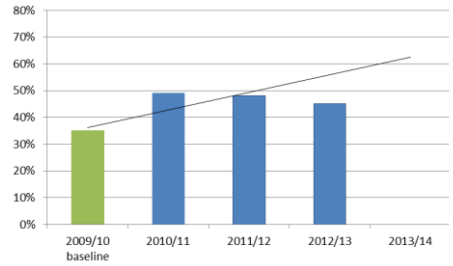
Fig 1. Water Consumption per Student (m^3)



	Total water used	Water used/ student
2012/13	318,660	22.44
2011/12	324,535	24.01
2010/11	362,097	25.45
2009/10	358,542	25.05
2008/09	382,987	26.88

Fig 2. Waste Diverted from Landfill (%)

(Excluding construction waste)



	Waste diverted from landfill	Waste reused/ recycled (tonnes)	Waste to landfill (tonnes)
12/13	45%	561	691
11/12	48%	621	689
10/11	49%	588	625
09/10	35%	359	653
08/09	30%	438	1,013

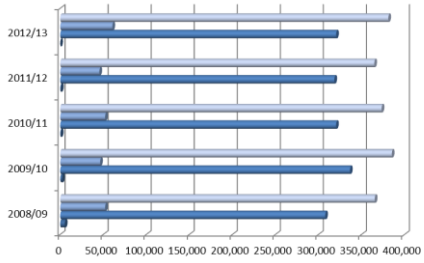
Table 1. Construction Waste

	Landfill diversion	Recycled/ reused (tonnes)	Landfill (tonnes)
12/13	98.0%	7,889	177
11/12	88.4%	35	5
10/11	85.5%	3,691	628
09/10	68.0%	184	86
08/09	2.5%	260	10,168

Overall 2013 has been a mixed year in terms of performance improvement. Significant progress has been made in some key areas. Our water consumption is down over 16% on 2008/9 (Fig 1). The expansion of food waste collection for composting to the whole campus in October 2013 has shown very promising results for diverting more waste from landfill (Fig 2). Our Future Skills Initiative has surpassed expectations in building support across campus for Education for Sustainable Development (ESD) within the curriculum.

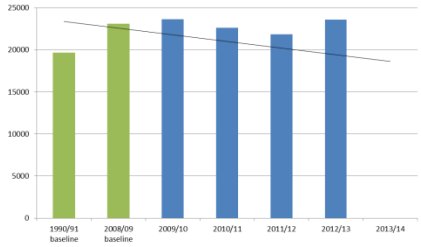
We have been less successful in reducing our emissions of greenhouse gases. A 4% increase on 2008/9 levels (Fig 4), is the result of challenges presented in commissioning our biomass plant coupled with an extremely cold winter (2012/13) and failure of one of our Combined Heat and Power (CHP) engines. This required us to import significantly more electricity at a higher carbon cost (Fig 3). Boiler replacement during 2014 will continue to affect our emissions but longer term reductions will be made as a consequence.

Fig 3. Energy Use (Gigajoules)



	Total energy imported	Electricity used (National Grid)	Gas used	Oil used
12/13	381,117	60,628	320,488	1
11/12	364,807	45,507	318,412	888
10/11	373,325	52,157	320,411	757
09/10	385,144	46,359	336,545	2,240
08/09	365,328	52,154	307,794	5,380

Fig 4. Scope 1 and 2[1] GHG Emissions (tonnes CO_2e)



	Total scope 1 and 2	Scope 1 emissions	Scope 2 emissions
2012/13	23,629	15,488	8,144
2011/12	21,845	15,580	6,274
2010/11	22,648	15,539	7,109
2009/10	23,632	16,879	6,753
2008/09 baseline	23,100	15,380	7,720
1990/91 baseline	19,650	-	-

Table 2. Scope 3 GHG Emissions (tonnes CO_2e)

	Waste emissions	Water and wastewater emissions
2012/13	2,103	295
2011/12	2,189	291
2010/11	2,123	325
2009/10	Not available	322
2008/09	Not available	344

Table 3. Summary of Other Key Performance Indicators

Key Performance Indicator	2008/9	2009/10	2010/11	2011/12	2012/13	On-target?	Reporting Period	pg
Job specific environmental training (hours, number of staff trained)	Not available	Not available	86 hours 162 staff	71 hours 112 staff	152 hours 99 staff	n/a	Jan-Dec	-
Area of habitats protected with documented plan	0%	100%	100%	100%	100%	n/a	Jan-Dec	7
Number of IUCN Red List Species and national conservation list species on site	Not available	Not available	157	156	162	n/a	Aug-Jul	7
Emissions of Ozone depleting substances CO_2e	193 tonnes	515 tonnes	190 tonnes	299 tonnes	162 tonnes	On target	Aug – Jul	14
Emissions of Ozone depleting substances (CFC-11 equivalent)	1.5kg	3.7kg	0kg	1.2 kg	1.3 kg	On-target	Aug – Jul	14
Number of environmental complaints	Not available	61	25	20	16	n/a	Jan-Dec	-
Number of environmental compliments	Not available	23	18	17	6	n/a	Jan-Dec	-
% sustainable catering spend	Not available	Not available	45% of total spend	65% of total spend	69% of total spend	Target achieved	Jan-Dec	15
Fuel used in fleet vehicles (petrol)	4,731 litres	3,997 litres	4,495 litres	4,217 litres	3,910 litres	Target under review	Aug – Jul	15
Fuel used in fleet vehicles (diesel)	12,930 litres	12,097 litres	12,404 litres	14,631 litres	31,173 litres[3]	Target under review	Aug – Jul	15
Travel to work: single occupancy car journeys	Not available	53% staff 13% students	Not available	33% staff 9% students	30% staff 10% students	On-target	Aug – Jul	15
Number of significant environmental incidents[4]	Not available	Not available	Not available	5	1	Target not met	Jan-Dec	19
Environmental fines from regulator	£0	£0	£0	£0	£0	Target achieved	Jan-Dec	19

[3] Includes fuel use data for twelve additional vehicles

[4] An environmental incident is a failure to implement required environmental controls that may lead to environmental pollution, contamination or damage, or that has potential to do so. A 'Significant Incident' is an incident that has caused such environmental damage, pollution or contamination.

Sustainable Environmental Management

Environmental policy commitments:

- Implement an Environmental Management System certified to ISO14001 via the EcoCampus scheme
- Develop the sustainability agenda at UEA
- Empower and motivate staff to support EMS implementation
- Effectively communicate to share knowledge and learning

Context

Higher education is often a formative time for students, as many leave home for the first time and are typically open to new ways of doing things. This is a significant opportunity to help them adopt or maintain 'green' attitudes and behaviours and give them new skills; improving their experience.

Making a change at this point in their lives is likely to endure and its impact be amplified; e.g. it may extend to their future workplaces and their families.

Universities can also influence the wider community, e.g. through their staff, their interactions with the community, and their considerable purchasing power.

Strategy

Since completion of our Initial Environmental Review in 2009, a coordinated and systematic approach to sustainable environmental management has been implemented by a team of experts led by the Sustainability Director and guided by our Environmental Policy and related plans.

Our policy demonstrates our commitment to, amongst other things: protection and enhancement of the natural environment; improved process efficiency; pollution prevention; and, addressing climate change issues. Our Corporate Plan commits UEA to significant growth and to demonstrating outstanding sustainable quality. Thus, the decisions we make need to embrace a whole life costing approach if they are to promote a sustainable future.

By implementing a formal Environmental Management System (EMS) we minimise environmental risk and liability through controls and performance improvement; achieve resource efficiency with resultant cost savings; and, receive external recognition of our actions e.g. evidence of effective environmental management is becoming increasingly important in research grant applications.

	Progress	Target 2014
Achieve EcoCampus Platinum Award and certification to ISO14001 by Dec 2013	Platinum Award achieved March 2014. Target date changed in order to complete the required environmental audits	**Achieve certification to ISO14001 by Dec 2014**
Develop a tangible vision of a sustainable UEA by Dec 2013	This target has been superseded by the Future Skills Initiative (see page 11)	
5% of staff are CarbonCrew volunteers	1% of staff were CarbonCrew volunteers in 2013. A change of focus to Green Impact Award teams has been made to drive change at school level. There are 18 relevant buildings on campus and there were 14 Green Impact Teams in 2012/13	**18 Green Impact Award Teams across campus by Oct 2015**
	Green Flats were set up in 2012 following a proposal from two MBA students. By bringing together groups of likeminded students the aim is to promote green living and explore ways in which residences can reduce their carbon footprint and waste. There was one flat of eight people in 2012/13 and 24 Green Flat residents in two flats in 2013/14	**Accommodate 100 students in Green Flats by Oct 2014**

Reaping the Benefits – UEA Internal Audit Programme

Our internal audit programme, implemented as a key part of EcoCampus Platinum, highlighted the need to improve legal compliance in certain areas and the need to manage contractors on site more effectively. This on-going process demonstrates our commitment to achieving performance improvement.

The EMS also facilities implementation of controls to manage new and up-coming legislation: From December 2015 the new Energy Savings Opportunity Scheme (ESOS)[5] will require 'large enterprises' to introduce a regime of regular energy audits to identify cost-effective energy efficiency measures. UK legislation is expected in spring 2014. This has prompted a change in job roles of Sustainability Team staff which is currently underway.

Having realised benefits from implementation of our EMS we are now embarking on implementation of ISO50001, Management System for Energy (see page 13). This will support compliance with GHG emissions reporting requirements.

[5] EU Energy Efficiency Directive (2012/27/EU)

CarbonCrew Cornerstone

The CarbonCrew continue to be the cornerstone of our environmental exchange between dedicated sustainability staff and students and our departmental colleagues; championing the cause of the natural environment throughout their daily interactions and through a series of dedicated events and networking opportunities delivered in collaboration with the ADAPT Group[6].

The CarbonCrew Energy Action Day in May and Freshers Week in October saw the CarbonCrew out in the Square with a few surprises! Student CarbonCrew campaigns such as 'Use the Stairs Week' and recycling competition between faculties are continually promoting awareness across campus.

1st Class Degree
in the People and Planet
Green League 2013

Making a Green Impact

UEA is a Green Impact University[7] (and Student's Union), with the awards successfully driving action for our CarbonCrew and achieving performance improvements within schools and divisions. Taking part in the Green Impact Awards provides us with a "bottom-up" system of checking our policy goals are being accorded to on a practical, day to day level and provides a framework for recognising the environmental achievement of our hard working staff, celebrated by awards presented in May 2013: 14 teams participated achieving six Bronze awards, one Silver, one Gold and one Lab award.

CarbonCrew staff and students team up at the Green Impact workshop in January 2013, facilitated by Jo Kemp from the Green Impact Awards

Our 2013 Green Impact Award Winners

Our Incredible Edibles guerrilla gardening project growing salad, herbs and vegetables in The Square was nominated for the Anglia in Bloom Grow Your Own Award 2013

Award Winning Volunteers

The Campus Conservation Project has undertaken key work to maintain and enhance habitats on campus including scrub management on the marshes, using the new dredging spoon on the Water Soldier Pond, and building up a woodpile for nesting birds and mammals over the spring and summer.

Using the new dredging spoon on the Water Soldier Pond

The Campus Conservation Project and UEA Wildlife Trail were highly commended at Norwich City Council's Eco Awards in February 2013

[6] www.adaptlowcarbongroup.co.uk

[7] www.green-impact.org.uk

Biodiversity and Landscape

Environmental policy commitment:

- Maintain and enhance biodiversity

Context

Our outstanding 146 ha campus contains a wide variety of habitat types and rare and protected species.

We have legal obligations to protect this biodiversity, including a responsibility for five County Wildlife Sites, over 3,000 species including 162 red list, Biodiversity Action Plan and notable species.

Strategy

Informed by a comprehensive biodiversity audit and on-going monitoring our Grounds Maintenance and Conservation Plan (2011) establishes the management principles for all at UEA to follow and respect. Work on delivering the plan is overseen by our Biodiversity Team.

50 hectares of our campus are also within the Higher Level Stewardship Scheme to deliver significant environmental benefits over 10 years.

A coloured zoning system indicates the vulnerability of each ecosystem to potential mismanagement and detailed management plans are in place for the most vulnerable habitats.

Target 2013	Progress	Target 2014
No net loss of species for the campus on an on-going basis	Achieved 2013: We recorded an additional 209 species via our monitoring programme (table 4)	No net loss of species for the campus on an on-going basis
Reduce nutrient levels in the Water Soldier Pond to those beneficial for nutrient poor plants by September 2013	We have been successful in reducing nutrient levels indicated by lowered growth of duckweed. Water soldier was reintroduced from a local population. Sludge, tree removal and monitoring is ongoing	Reduce nutrient levels in the Water Soldier Pond to those beneficial for nutrient poor plants by September 2014
Halt scrub encroachment in University Fen, Bluebell Marsh and Butterfly Meadow (CWS) by December 2015	Our scrub removal and thinning programme continues and all areas are responding positively and should be approaching their former quality over the next two years	Halt scrub encroachment in University Fen, Bluebell Marsh and Butterfly Meadow (CWS) by December 2015
Incorporate biodiversity enhancements in all new build projects by December 2015	On track for achieving level of biodiversity required for BREEAM Outstanding/Excellent	Incorporate biodiversity enhancements in all new build projects by December 2015

Table 4. Summary of all Taxa Recorded at UEA

Group	Number of species recorded -2011	Number of species recorded -2012	Number of species recorded (cumulative total) -2013	Red list, BAP and notable species -2011	Red list, BAP and notable species -2012	Red list, BAP and notable species -2013
Fish	18	18	18	1	1	1
Amphibians and reptiles	8	7	7	4	3	3
Birds	206	207	207	49	49	49
Mammals	35	35	35	6	6	6
Arthropods (including insects)	1881	2034	2233	95	95	101
Plants	318	318	324	2	2	2
Fungi	350	350	354	-	-	-
Other lower plants and allies	94	94	94	-	-	-

2013 THE AWARDS Outstanding Contribution to Sustainable Development SHORTLISTED

Shortlisted for the Times Higher Education Award and Green Gown Award finalist for our grazing Highland cattle

Green Gown Awards 2013 finalist

Anglia in Bloom Silver Guilt Award 2013 in the urban category

Bats Galore!

UEA campus is widely known as one of the best places to see bats in the Norwich area and is mentioned in the book 'Where to Watch Mammals in Britain and Ireland' (Moores 2007).

During June-August 2013, UEA and Norwich Bat Group undertook a bat survey to find out as much as possible about the species and habits of bats on campus.

Using bat detectors we uncovered an impressive ten species of bat living and feeding here.

A bat walk led by the Norwich Bat group and staff from the School of Biological Sciences introduced bats to UEA staff, students and members of the local community. Seven species were seen and activity levels recorded. At one site we recorded over 30 feeding bats at once. Rich concentrations of insects in the wetter habitats at UEA are clearly favourite hunting places for our protected species.

We also identified where these bats roost during the day. Some use our ancient oak trees, which hold roosts of Noctule, Brown Long-Eared and Soprano Pipistrelle bats. Daubenton's bats roost under one of the bridges and in a drainage duct into the broad, Natterer's, Pipistrelle and Brown Long-eared bats use our buildings.

Quite where the other species live is an ongoing mystery that the 2014-16 biodiversity audit will hope to partially solve.

For those wanting to experience the bats at UEA we run dusk walks with experts and will be hosting Bat Blitz events in 2014 and 2015. Table 5 below suggests the bat species found at UEA and the chances of finding these on a one hour dusk walk in June-September in warm, still conditions.

A natural cavity in a tree likely to hold bats; note the brown staining beneath the hold

Our nature conservation work has benefitted from 4290 volunteer hours equating to £27,069

Table 5. Bat Species and Where to See Them

Species	Habitat	Status at UEA	Likelihood of finding it on a 1 hour dusk walk %
Soprano pipistrelle	All – commoner near water	Abundant	100
Common pipistrelle	All	Abundant	100
Noctule	All – flying high	Common	95
Natterer's bat	Along the river	Frequent	10
Daubenton's bat	Along the river and on The Broad	Common	80
Brown long-eared bat	Woodland	Common	5
Nathusius' pipistrelle	Near to water	Restricted	10
Barbastelle	Flying over	Rare	3
Brandt's/ Whiskered	Along the river and in woodland	Rare	n/a
Serotine	Woodland edge	Rare	5

UEA Rookery

The Blackdale plantation (located in one of the more urban areas of the campus) is one of our oldest wooded areas, providing excellent habitat for many species in this increasingly built up environment.

The large oak trees hold roosts of three species of bat; the woodpeckers enjoy the holes in the older trees and the diversity of insects is among the highest on campus.

A new addition is the roost of corvids (members of the crow family) - quite unusual in an urban area. In 2013 there were up to 1,600 birds using the trees as a winter roost site and 11 pairs of rooks remained to breed. The flock of black birds is quite a sight on a blustery winter's day over the main car park.

Blackdale plantation is also a site of education, used by the nursery school and other groups so that young people can learn about wildlife in a safe environment.

A UEA rook showing a characteristic large silver bill and glossy black feathers. This bird was caught in a safe trap and released unharmed as part of our ongoing monitoring of birds on campus

The Built Environment

Environmental policy commitment:

- Effectively control the environmental impacts of facilities maintenance, campus development and refurbishments

Context

World-leading facilities are essential to attract and retain highly qualified staff and students, but with development comes the need to decouple growth from carbon emissions and reduce potential exposure to climate change risks (99% of UEA's direct carbon emissions are building related).

Despite the need for extensive consideration of the impacts of construction, it is the use of buildings over their occupied lifetime that produces the most dramatic opportunities for reduction of environmental impact. Heating our buildings constitutes the main source of our CO_2e emissions and by designing them in an intelligent and forward thinking manner we can help to reduce the environmental burden of maintenance and continued infrastructural development.

Strategy

UEA campus has been a leader in the field of low energy buildings for twenty years. These buildings have been the recipients of major awards and the subject of numerous studies.

We recognise that reducing environmental impact is best achieved through long term planning and our Conservation Development Plan (2006) and Landscape Strategy (2009) include details of the integrated development of the Campus. Our Design Guide specifies our requirements.

Using BREEAM (Building Research Establishment Environmental Assessment Method) provides an environmental benchmark to which buildings can be measured. Providing impartial certification to the level of design and construction we employ.

Our Building Management System allows us to monitor building performance and environmental champions in our projects and maintenance departments are improving operational practices on a day to day basis.

Target 2013	Progress	Target 2014
All new build projects to achieve BREEAM excellent or above, on-going target	Target not met as Norwich Medical Research Building (NMRB) has achieved BREEAM Good. All other new buildings are on track to achieve a BREEAM Excellent rating. The NRP Enterprise Centre is on track for BREEAM Outstanding and Passivhaus certification	**All new build projects to achieve BREEAM excellent or above, on-going target**
Review BREEAM refurbishment model by Dec 2013	Target date changed. The BREEAM model is as yet unavailable. SKA model was used for initial stages of Employability Centre design. Further trial projects are being identified	**Review BREEAM refurbishment model by Dec 2014**

Julian Study Centre

Building 57, named the Julian Centre after Julian of Norwich, believed to be the first woman to publish a book in the English language, is a striking new four storey (2,000m^2) building: To date, the lowest carbon building on campus.

Opened in November 2013 (only 24 months from feasibility to occupation) it provides teaching facilities (Including 2 lecture theatres and 7 seminar rooms) a Café and break-out/collaboration spaces.

Designed by Pick Everard, the Centre combines UEA's sustainable low-carbon ethos with innovative construction. The BREEAM 'Excellent' rated building has received nothing but positive feedback from users and has already won a prestigious award.

The building is constructed from prefabricated cross-laminated timber (CLT) walls and precast Termodeck concrete plank floors with a large glazed façade and some intermediary steelwork. After modelling a range of possible construction methods this configuration was determined as producing the optimum combination of embodied and operational carbon emissions for the (50 year) lifetime of the building. The combination of CLT and Termodeck is believed to be a construction world first and is truly innovative.

RIBA

THE Julian Centre has already won a prestigious award with the RIBA and Norfolk Construction Excellence and has been shortlisted for the ICE (Institute of Civil Engineers) and BCI (British Construction Industry) awards

The Julian Centre has established new standards of construction at UEA and has exceeded expectations including in its energy performance. The CLT superstructure has an air leakage rate approaching Passivhaus standards (2M3/ (hr.M2) at 50 Pa) - exceeding the air permeability test, as set out in the Building Regulations by 500%! This is coupled with extremely low U values (heat loss) achieved through high levels of insulation, part triple glazing, low emissivity glass and attention to detail. LED lighting and other low energy devices have been used wherever possible to lower the building's electrical load.

Carbon is sequestered in the timber, while the thermal mass of the floor planks warms or cools the air passing through their hollow cores to reduce the emissions from heating and cooling. This ingenious approach saves approximately 2,500 tonnes CO_2 compared with a standard CLT frame - equivalent to over 300 million cups of tea!

Buildings of this type (Termodeck) take several years to commission correctly and reach their optimum efficiency. With this in mind, it is impressive that the Julian Study Centre has already surpassed the energy efficiency of UEA Zuckerman Institute for Connective Environmental Research (ZICER building); Low Energy Building of the year 2005.

Flagship Enterprise

Building has started on the Norwich Research Park (NRP) Enterprise Centre; a flagship low carbon building design which meets the highest standards for energy performance and sustainability: BREEAM Outstanding and Passivhaus certification. We aim to complete construction in April 2015.

Embodied energy (i.e. the energy consumed in manufacturing and transporting construction materials and through on site construction activities) has been a major focus of the design. Thetford timber, Norfolk straw and thatch are among the novel combination of materials to be used and the building is on target to be below 500kgCO_2e/m^2 to meet the 'Low Carbon' criterion.

Innovation in design, build and post-occupancy have been considered throughout the consultation and design process to ensure the building achieves Passivhaus standards of an overall annual primary energy demand of <120kWh/m^2.

As well as providing teaching space the Centre will also fulfil a vital environmental role: Bringing together all elements of the University's low carbon and climate change innovation activities, and includes a new Centre for the Built Environment (part of the University's Adapt Low Carbon Group) to showcase, monitor and test new sustainable products and bio-based materials from local companies.

It will also act as an incubator for new start-up businesses to enhance opportunities for students, graduates and staff across the NRP.

For more information about the project visit www.adaptcbe.co.uk

Construction of Crome Court, our new 231 bed, student residence is well underway and on-track to achieve a BREEAM Excellent Award. Built using similar materials and techniques to the Julian Centre, it includes grey water recycling to flush toilets and a green, living wall to complement the landscape of the campus. It is anticipated that 69% of the building's energy will be provided by renewable sources

The building is named after John Crome (1768-1821), landscape artist and founder of the Norwich School of Painting

We are approaching the last stages of the restoration and refurbishment of the Grade II listed Earlham Hall. After several years of painstaking work we have preserved as much original structure, features and fabric as possible - under the watchful eyes of English Heritage and the local Conservation Officer. It has been a very challenging project but the end result is pleasing to see. The School of Law now reoccupy the building*

Education for Sustainable Development (ESD)

Environmental policy commitments:

- Embed sustainability into teaching, learning and research

Context

Higher education must ensure that the sustainability agenda stays current and future leaders have the knowledge and motivation to act to ensure a society, economy and ecology that are viable now and long-term.

The Quality Assurance Agency (QAA) has published guidance[8] asking Higher Education Institutions (HEIs) to demonstrate that sustainability has been embedded in curriculum and engagement.

Research conducted by the National Union of Students and the Higher Education Academy (HEA)[9] has consistently shown over the last three years that over two-thirds of students expect their institutions to implement sustainable development in their courses.

Strategy

Developed from a series of funded projects, the UEA Future Skills Initiative aims to ensure that our students are able to contribute practically and conceptually to bringing about a more sustainable world. By integrating sustainability 'perspectives' into learning and teaching activities across the University we aim to improve the student experience, raise the profile of the university and address the increasing emphasis placed on Education for Sustainable Development within the HEA and the wider HE sector.

The new Learning and Teaching Strategy commits to promoting international citizenship, 'equipping our students to address contemporary global issues and challenges'. A working group of the Learning and Teaching Quality Committee led by the Academic Director of Taught Programmes has been established to deliver the Future Skills Initiative.

Target 2013	Progress	Target 2014
Develop and implement a formal ESD strategy by December 2013	Achieved March 2014. Our new Learning and Teaching Strategy aims to promote international citizenship. Its implementation is supported by the Future Skills Handbook	
Develop a student-staff handbook on 'how to get sustainability skills into your degree programme' by June 2014	National handbook workshop held February 2014. Three student interns have been employed to develop an internal BlackBoard site to present the handbook. A national publication will develop from this	**Develop a student-staff handbook on 'how to get sustainability skills into your degree programme' by June 2014**

Future Skills Initiative

Work on embedding Education for Sustainable Development started in 2010 with the development of the Sustainable Healthcare Education Network. Funded through a teaching fellowship in 2012, a well-positioned core group then investigated how best to understand, develop and implement ESD practice across all academic disciplines. The Higher Education Green Academy Change Programme (2013) provided the ideal framework to progress this highly committed initiative and enabled us to develop a more strategic approach.

What emerged is a well-grounded Future Skills Initiative: a student-staff collaboration which has translated ESD concepts; deepening interdisciplinary collaboration, employability definitions, and links to other corporate priorities – adding value and improving efficient use of existing resources.

The focus on future skills offers fresh language to overcome misconceptions or narrow definitions of 'sustainability', making it relevant to students and those managing and delivering learning and teaching across campus.

"The Future Skills Initiative is the next step in UEA's strategy to ensure that sustainability becomes more deeply embedded in the educational experience of our students via the development of key skills and capacities. Our students are the next generation of senior managers, decision-makers, employers and agents of change in organisations of all kinds and the Future Skills Initiative will help to ensure that they are able to contribute in a positive way to practice and thinking around sustainability issues".

Adam Longcroft
Academic Director of Taught Programmes

The short term impacts of the Green Academy have galvanised the campus. Over the course of the year the Future Skills Initiative has evolved from an ad-hoc group of enthusiasts to a formally constituted Working Group of the Learning and Teaching Committee, endorsed by Senate.

[8] QAA (2014), Education for Sustainable Development: Guidance for UK Higher Education Providers, QAA. Gloucester. UK

[9] Drayson, R., Bone, E., Agombar, J. and Kemp, S. (2013), Student attitudes towards, and skills for, sustainable development, HEA. York. UK

Zombie Outbreak

During the 50th Anniversary weekend celebrations in September 2013, Mark Haddon, author and UEA graduate searched for inspiration for a zombie tale set at UEA. In wondering aloud what such an outbreak might look like he was interrupted by experts presenting possible scenarios for and consequences of a zombie outbreak to the audience. Experts utilised epidemiology to show how zombies might be created and popular culture to demonstrate how we might respond. The Future Skills initiative then explored questions of survival and the ways in which our graduates are equipped to deal with anything - even the zombie apocalypse!

Our Top Tips for Getting Started on ESD

- Keep sustainability identifiable among other priorities
- Use a variety of methods to communicate, including extensive one-on-one discussions
- Include people who challenge and question
- Create opportunities for sharing ideas
- Create constructive alliances with other campuses

Future Skills Handbook

One of the main vehicles for change has been the development of the UK's first collaborative student-staff handbook, ''Getting Sustainability into Your Degree Programme'.

The handbook explores in an accessible, concentrated form how to prepare graduates for employment in a fairer and more sustainable world. It asks three fundamental questions:

- In what way is your discipline related to a more sustainable world?
- What knowledge and skills should your graduates have in order to contribute to bringing about a more sustainable world, as citizens and as leaders?
- How should that knowledge and skill be acquired?

As an iterative and continually additive process it is a catalyst to encouraging debate and co-creation of the curriculum, developing greater student ownership of and innovation in course content, structure and assessments; increasing motivation, involvement and enthusiasm.

The handbook emphasises a creative change agenda rather than 'sustainability' per se, encouraging new ways of learning and assessment. We are currently testing approaches to an 'Edge of Chaos' Module which explores 'wicked' problems from different disciplinary viewpoints and a 'Future Skills for a Future World' Module which places students in interdisciplinary groups to work on a project to solve a problem identified by a local community, industry or professional host.

The Future Skills Initiative has two broad aims:

Articulate the relationship between our academic disciplines and emerging sustainability concepts to inform teaching, learning and research - to capture constructively the varied – even contradictory - ways in which our academic departments understand and teach about sustainability-related values and topics

Link sustainability pedagogy, research, and practice (estates and operations) to improve student experience and employability - to draw together the practical and theoretical ways in which the campus community engages in this area to create a richer student experience, and graduating attributes, informed by contemporary concerns and pedagogical approaches

We are working with the National Union of Students and Education for Sustainability (EfS) networks on how to disseminate the handbook nationally.

We want every graduate to be able to articulate sustainability within the context of their discipline and apply it in practice – one of our next goals is to define how these will be demonstrated and assessed for recognition in the University Skills Award, currently under development.

The Future Skills Handbook has been drafted by UEA students and academics supported by a number of cross campus workshops and reviewed at a national workshop supported by the HEA (Feb 2014)

For more information contact: futureskills@uea.ac.uk

Energy and Climate Change

Environmental policy commitments:

- Minimise consumption of non-renewable energy and emissions of greenhouse gases

Context

UEA campus has been a leader in the field of Combined Heat and Power (CHP) generation since 1999. We normally generate around 70% of our own energy using high efficiency CHP generators, utilising an absorption chiller and district chilled water main to maximise use of previously waste heat.

Some 99% of emissions covered by the headline carbon reduction target (scope 1 and 2) are building related, with over half of these emissions resulting from electricity use and a third from heat use. Thus, reducing energy consumption is a high priority for reducing our carbon footprint.

Strategy

We act to achieve the UK Government mandate of 80% reduction in CO_2e by 2050 from a 1990 baseline (enshrined within the Climate Change Act 2008) and HEFCE (Higher Education Funding Council for England) emissions reduction targets.

We are also obligated to the European Union Emissions Trading Scheme (EU ETS) and the Carbon Reduction Commitment (CRC) Energy Efficiency Scheme.

Our Carbon Reduction Plan (2012) establishes a programme of actions to meet our realistic but challenging targets. Our strategy focuses on energy minimisation and renewable generation: Generating more of our own energy via natural gas and biomass CHP. Action is driven by our cross-departmental Carbon Reduction Team.

Target 2013	Progress	Target 2014
Reduce $kgCO_2e$ from direct emissions (scope 1 and 2) by 44% (absolute emissions) over 2008/9 levels by July 2015 (35% compared to 1990 baseline)	4% increase on 2008/09 levels (23,468,000 kg CO_2e – 2008/9 baseline 23,100,000 kg CO_2e)[1] Target date revised to 2020 – see below	**Reduce $kgCO_2e$ from direct emissions (scope 1 and 2) by 44% (absolute emissions) over 2008/9 levels by July 2020 (35% compared to 1990 baseline)**
Generate at least 70% of electricity used on the main campus averaged over each academic year	59% (due to 1 CHP engine being offline for a significant part of the winter)	**Generate at least 70% of electricity used on the main campus averaged over each academic year**
Reduce electricity used on the main campus by 15% compared to a 2008/09 baseline by Jul 2015	2.2% increase (0.557 GJ/m^2 - 2008/9 baseline 0.545 GJ/m^2). Target changed from absolute reduction providing a more effective indicator	**Reduce electricity used on the main campus/m^2 by 15% compared to a 2008/09 baseline by Jul 2020**
Reduce heat used for heating and hot water by 10% compared to a 2008/09 baseline by July 2015	1% reduction (0.605 GJ/m^2 - 2008/9 baseline 0.611 GJ/m^2). Target normalised and changed from absolute reduction providing a more effective indicator	**Reduce heat used/m^2 for heating (normalised against Degree Days) and hot water by 10% compared to a 2008/09 baseline by July 2020**
	Effective data management is important to achieving future resource efficiencies	**Implement ISO50001 by December 2015**

Meeting our Carbon Reduction Target

A 4% increase on 2008/9 levels is the result of challenges presented in commissioning our biomass plant coupled with an extremely cold winter (2012/13) and failure of one of our CHP engines, requiring us to import significantly more electricity at a higher carbon cost (see table 6). We have also extended our reduction target date which is now in line with UK national and HEFCE targets.

Prior to these problems we were generating up to 80% of our own energy demonstrating the potential emissions reductions achievable. Boiler replacement during 2014 will continue to affect this but longer term reductions will be made as a consequence.

Carbon intensity data demonstrates we have maintained a steady state despite a 92% increase in floor space since 1990. Our focus on low carbon development and effective resource management aims to improve on this.

Fig 5. Carbon Intensity (Scope 1 and 2, kg CO_2e/student)

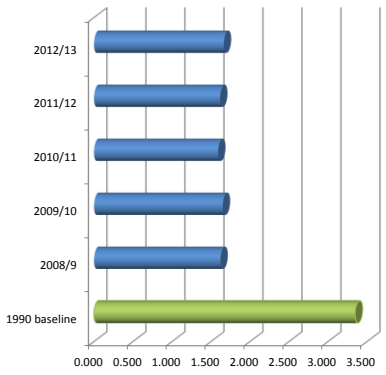


Fig 6. Carbon Intensity (Scope 1 and 2, kg CO_2e/m^2)

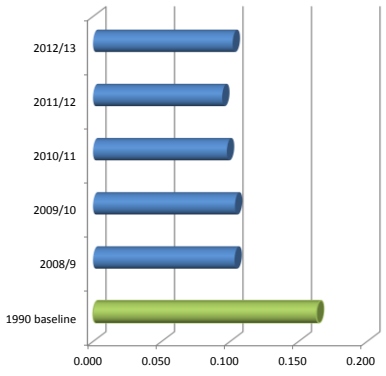
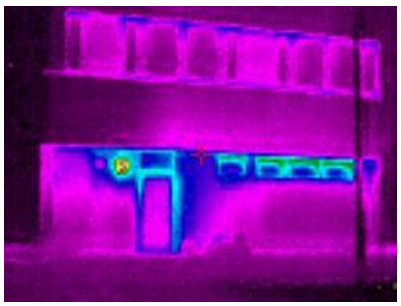


Table 6. Energy Generation and Use (Gigajoules)

	2008/09	2009/10	2010/11	2011/12	2012/13
Total electricity generated	74,709	84,636	79,290	86,627	73,715
Total heat generated	141,520	147,140	145,668	134,458	157,001
Total energy used	280,426	288,822	286,998	277,670	302,798
Total electricity used	121,883	124,140	125,276	125,539	129,185
Total heat used	133,384	139,187	137,183	126,672	146,240
Electricity used (National Grid)	52,238	46,359	52,154	45,507	60,628
Total gas used	307,794	336,544	320,411	318,412	320,488
Total oil used	5,380	2,240	757	888	1
Renewable energy generated	Not available	80	72	82	76
Electricity sold back to National Grid	84	1,425	919	1,641	140



The door and windows of the kitchen area in the Edith Cavell Building showed no obvious sign of draughts until this thermal image was taken

Server Room Success

A free cooling project in Computer Suite 1 (a server room for the Computer Centre) was completed in June 2013. Free cooling uses natural air flows rather than refrigeration for cooling.

Analysis using Power Usage Effectiveness (PUE - a measure of heating and cooling) has demonstrated this is now 58% more effective, reducing energy use by 9%. An additional 30Kw (52%) of IT load has been installed but using 11Kw (9%) less energy to cool it.

Old PUE

Total Input 121Kw = 2.05
IT Load 59Kw

New PUE

Total Input 110Kw = 1.20
IT Load 89Kw

LED as Standard

LED lighting is now standard in all lighting refurbishments. A project replacing T12 lighting in the Library stairwells with LED's will reduce overheating and save around £8,400 p.a.

Our Science Faculty uses around 20% of total site energy. A management review of energy use starting with -80º freezers should demonstrate further significant savings over the coming semesters.

Emissions to Air

Environmental policy commitments:

- Prevent pollution

Context

Other emissions to air which cause significant environmental impacts such as damage to the Ozone layer and acid rain also need to be controlled. There are legal requirements regarding general air quality and management of specific emissions.

Strategy

Our most significant aspect is the use of refrigerants and we have planned maintenance schedules and have prioritised phase out of all systems containing Ozone-depleting substances (ODS), namely R22 (HCFC22)[10].

Refrigerants also contribute to GHG emissions and our strategy is to choose substitutes which minimise these.

Target 2013	Progress	Target 2014
Achieve zero emissions of HCFC-22 (R22) refrigerant by July 2014	23kg of R22 were emitted, equivalent to 1.3kg CFC-11e or 162 kgCO_2e. Three units were de-commissioned	**Achieve zero emissions of HCFC-22 (R22) refrigerant by July 2016**

Table 7. Refrigerant Gas Emissions (kg)

Refrigerant Loss (kg)	HCFC-22	HFC-134a	R404a	R407c	R410a	R508b
GWP[11]	1700	1300	3300	1610	1725	13,396
2012/13	23	1	15	26	7	0.3
2011/12	21	2	23	89	5	0
2010/11	0	1	6	91	1	0
2009/10	67	0	0	219	3	0
2008/09	28	6	18	36	0	0

[10] Ozone Depleting Potential is a relative index indicating the extent to which a chemical product may cause ozone depletion. CFC-11 provides the reference point for comparison of emissions from different products, where CFC-11 has an ODP = 1.0. R22 has an ODP of 0.055.

[11] Global Warming Potential (GWP) is an index which refers to the extent to which a substance contributes to global warming, using CO_2 as the reference value. Where CO_2 has a GWP=1.

Sustainable Procurement

Environmental policy commitments:

- Minimise consumption of non-renewable and environmentally sensitive resources by embedding integrated life-cycle approaches in decision making

Context

Over 60% of organisations' carbon emissions are estimated as stemming from purchasing products and services[12] leaving all organisations vulnerable to potential exposure to climate change risks within their supply chains.

Estimating carbon emissions from purchasing is complex but these risks can be reduced by making purchasing decisions that minimise resource use and waste disposal impacts.

HEFCE are planning research in order to identify better methods of estimating the carbon emissions arising from the procurement of goods and services (currently based on expenditure).

Strategy

In order to reduce our impacts we have adopted the DEFRA approved Flexible Framework; developed for Government by the Sustainable Procurement Task Force. We have maintained level 3 of the Framework and continue to work with the Southern Universities Purchasing Consortium (SUPC) to apply market pressure for the increased production of sustainable products and services.

Our Procurement Policy sets out our commitment to protecting the environment and society through our purchasing decisions, with guidance provided in our buyers guides.

Our Sustainable Food Policy sets out specific purchasing goals for our Catering Department which focus on the use of local suppliers, reducing food miles and increasing the purchase of sustainable food products.

We have established Sustainable Procurement Champions across campus to ensure these policies are implemented.

Target 2013	Progress	Target 2014
Achieve a minimum of 60% of total catering food spend on sustainable produce on an on-going basis	Target achieved in 2013 - 69% of all food stuffs purchased locally from within the East Anglian Region and 100% of fresh food products purchased locally from within East Anglia	**Achieve a minimum of 60% of total catering food spend on sustainable produce on an on-going basis**
Set recycled content and paper reduction targets	Trials undertaken indicated increased cost of recycled paper. Reduction target set initially to offset cost of future content target	**10% reduction in A4 copier paper consumption on 2013/14 levels by Dec 2016**

What our Students Said

We asked our students about their priorities for sustainable purchasing at a World Café held as part of the Carboncrew Action Day in May 2013.

Having undertaken a review of current practice against the Promoting Poverty Aware Procurement on Campus (PPAPC)[13] commodity guidance, these areas were then used as the basis of the prioritisation exercise.

The areas where students expressed the most concern were plastic, paper, electronics and apparel.

Sitting Pretty

Waste prevention was a key factor in purchasing decisions made for a project to refurbish a 137 fixed seat lecture theatre in the Faculty of Science. Disposal of the old seating created a significant amount of potentially avoidable waste. A key issue was the construction of the fixed seating; whole rows had to be replaced even though only some seats we were worn or damaged.

The new seating is constructed from Forestry Stewardship Certified (FSC) timber, fabrics that can be recycled and a steel frame; only the foam has to go to landfill. The seating can be separated so individual seats can be replaced if necessary – saving a significant amount of waste and money.

A Taste of UEA Residences

Produced by the Dean of Students' in collaboration with our Catering Division, 'A Taste of UEA Residences' is a cookbook for students using recipes from students past and present. The aim is to enhance the culinary abilities and enjoyment of all our student residents and promote healthy eating and the use of local products. All the meals can be made using the equipment we provide in UEA accommodation.

A cookbook will be placed in every residence kitchen and available online in 2014 for housemates to use as inspiration.

[12] Sustainable Development Commission (2008) NHS England Carbon Emissions Carbon Footprinting Report

[13] www.eauc.org.uk/promoting_poverty_aware_procurement_on_campus

Transport

Environmental policy commitments:

- Minimise consumption of non-renewable energy and emissions of greenhouse

CarbonCrew
Reducing Our Impact

Context

Around a quarter of domestic GHG emissions in the UK come from transport (DoT 2012). At UEA, limited car parking availability on campus also presents a serious challenge if we are to continue to thrive and grow.

Although the percentage contribution of fleet vehicles to our scope 1 carbon emissions is small compared to that of buildings, significant cost savings can be achieved with reduced fleet vehicle use and business travel (scope 3).

Strategy

The UEA Travel Plan sets out our commitment to reducing use of motor vehicles, particularly for single occupancy car journeys. The plan seeks to balance personal freedom of choice with benefiting local people by reducing traffic volumes; and, protecting the environment by reducing emissions of greenhouse and other gases.

We continue investment in public transport, cycling and walking and monitor progress via an annual travel survey, undertaking a detailed survey every five years. Delivery of the plan is overseen by our Travel Coordinator.

A new Transport Special Interest Group has been established to review the Travel Plan in 2014-15.

Target 2013	Progress	Target 2014
Achieve single occupancy car journeys: 44% staff and 5% students by July 2014	30% staff and 10% students from 2013 survey results	**Achieve single occupancy car journeys: 44% staff and 5% students by July 2014**
Investigate feasibility of implementing reliable carbon emissions monitoring systems for business travel and commuting by December 2013	Target date extended Business travel: A travel management company is currently being engaged who will provide data on carbon emissions Commuting: Miles travelled data is being collected as part of the five yearly travel survey in order for carbon emissions to be estimated	**Investigate feasibility of implementing reliable carbon emissions monitoring systems for business travel and commuting by December 2014**
Reduce fleet vehicle fuel use by 35% over 2008/9 levels (4,731l petrol, 12,930l diesel) by July 2015	-17% (3,910 litres petrol) +141% (31,173 litres diesel) Data for twelve additional diesel vehicles now included. Target will be reviewed during 2014 to address the new baseline conditions and new carbon reduction target (see page 13)	**Target under review**

Space Saving Cycle Parking

With cycling on the rise and little available space, providing additional cycle parking is a challenge.

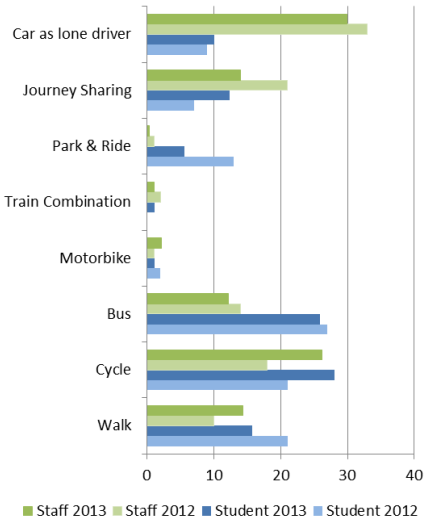
One novel solution is the Julian Study Centre space saving bike parks. These are easy to use, improve cycle visibility and can store 20 bikes; making them approximately 30% more space efficient than traditional Sheffield stands.

In total, we created 110 new cycle parking spaces in 2013.

Travel Survey 2013

Our 1998 baseline was 74% staff, 30% student single occupancy car journeys. Our 2013 survey suggests these figures have dropped to 30% staff, 10% students: A particularly significant achievement when set against growth of the University. Although based on a small sample (376 staff and students), when compared with the 2012 results (figure 7) these do demonstrate favoured modes. Trends should be highlighted in the results of the more detailed five yearly travel survey expected in July 2014.

Figure 7. Comparison of 2012 and 2013 Travel Survey Results (%)



Waste and Recycling

Environmental policy commitments:

- minimise the production of waste through reduction, reuse and recycling

Context

Waste means that important natural resources have gone into making a product that is now defunct and that will take up important areas of our countryside if sent to landfill; causing localised environmental problems, GHG emissions as a result of waste transport and processing operations, and other environmental impacts.

There are a number of regulatory requirements relating to managing waste, including applying the waste hierarchy; resource efficiency; and, reduction in carbon emissions (scope 3). Disposal costs for landfill are rising fast (landfill tax is currently £80/tonne).

Strategy

Waste can be avoided at multiple stages through the waste hierarchy; by e.g. reducing packaging from suppliers, by re-using furniture elsewhere in the University, by recycling paper, glass and other materials.

UEA Waste Strategy (2012) coordinates waste management activity in line with our environmental policy and an extensive array of waste regulation. It promotes good waste management practices and focuses on increasing our recycling rates and reducing waste to landfill. Our Waste Manager coordinates implementation of the strategy.

Even with rising waste management costs UEA saved £9,000 in 2013 by reducing, segregating and diverting waste.

Target 2013	Progress	Target 2014
Achieve 70% landfill diversion of UEA waste (excluding construction waste) by July 2015	45% (561 tonnes diverted from landfill)	**Achieve 70% landfill diversion of UEA waste (excluding construction waste) by July 2015**
Reduce kgCO_2e emissions from UEA waste (excluding hazardous and construction waste) by 48% over 2010/11 levels by July 2015	Target dropped as performance indicator is currently of limited use in driving change. Note: Scope 3 emissions	
Achieve an 85% landfill diversion of UEA construction waste by July 2015	Target achieved - 98% diversion rate. Improvements in data collection identified via internal audit are being implemented	**Achieve an 85% landfill diversion of UEA construction waste by July 2015**
Send 100% of food waste for composting by July 2013	Target achieved - 100% of buildings segregating and sending food waste to compost	

Food for Thought

55% landfill diversion rates were achieved in October 2013 with the expansion of food waste composting to residences. All of our buildings are now segregating food waste; equating to over 90 tonnes being diverted from landfill annually (figure 8).

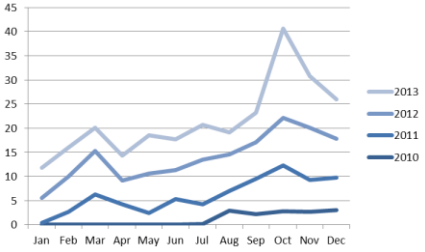
Easy to use and clean compost bins are in every kitchen and residents are responsible for segregating the waste and taking this out to external wheelie bins; with financial penalties if internal bins are left in an unacceptable condition.

Table 8. Hazardous Waste Production (kg)

	2008/09	2009/10	2010/11	2011/12	2012/13
Fridges/ freezers	3,640	1,785	4,230	10,366	11,500
WEEE	700	650	8,817	28,510	25,500
Batteries	401	1143	1,350	1,170	6,800
Tubes/ lamps	800	1,898	2,287	1,710	1,570
Printer cartridge	Not available	420	800	540	600
Chemical waste	Not available	805	3,242	17,050	7,506
Asbestos	Not available	920	962	7,560	43,390

Norfolk County Council Love Food Hate Waste programme give away advice and goodies during Freshers week to help reduce food waste and save everyone money

Figure 8. Food Waste Composting (tonnes)



Compostable plant based packaging in our catering outlets is helping to divert more waste from landfill. The palm leaf tableware is free from chemicals and completely compostable – simply natural leaves pressed into shape!

Water

Environmental policy commitments:

- minimise consumption of non-renewable energy and emissions of greenhouse gases
- minimise consumption of non-renewable and environmentally sensitive resources by embedding integrated life-cycle approaches in decision making
- Prevent pollution

Context

East Anglia is the driest region in the country making water conservation a high priority and long term supply a concern. Awareness of the vulnerability of UK water supply has been heightened by water shortages in recent years.

Significant cost and carbon savings can be made through resource efficiency. UEA water supply and disposal costs are approximately £750,000 together with the unknown potential costs of exposure to climate change risks.

There are a range of legal requirements relating to the protection of water resources thus prevention of water pollution is also an imperative.

Strategy

Our draft Water Management Plan (2012) outlines water consumption issues and also considers our discharges and how we can protect the important water resources we have on our campus and minimise the possibility of groundwater contamination.

The Plan focuses on water efficient appliances and equipment and awareness-raising. Action is coordinated by the Waste Manager.

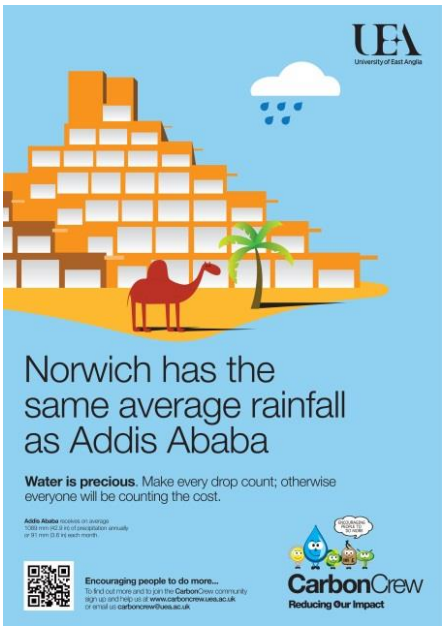
Significant savings have been made through leak detection enabled by detailed monitoring of consumption.

A Water Special Interest Group has been established comprising staff from across the University. The group is looking in detail at high volume consumers and establishing actions to further reduce consumption.

We have saved £129,000 since 2008/9 by reducing water consumption

CarbonCrew
Reducing Our Impact

Target 2013	Progress	Target 2014
Reduce water consumption by 20% per student over 2008/9 levels by July 2014	16.5% reduction achieved (22.44 m3/s/a)	**Reduce water consumption by 20% per student over 2008/9 levels by July 2014**
Reduce CO_2e emissions from water and waste water by 20% per student over 2008/09 levels by July 2014	Target dropped - requirement to use a national emissions factor means the performance indicator is of limited use in driving change. Note: Scope 3 emissions	



Down the Drain

Our surface water drains all flow into The Broad on campus. The Broad is a County Wildlife Site which supports many protected species and surface water run-off therefore presents a significant pollution risk.

We have mapped our drainage system through extensive survey and have installed sluice gates (used to control water flow) on the main outfalls into The Broad to minimise the impact of large discharges e.g. fire water.

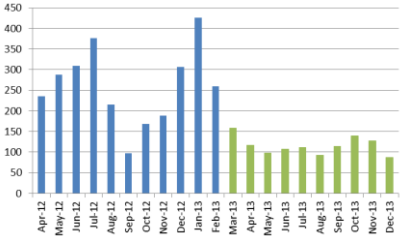
Feeling Flush

We've been messing about with our loos! By installing a flush counter we found out one of our toilets is flushed on average 60 times a day, using an estimated 76m^3 of water every year.

Waterless urinals fitted during a refurbishment in the Registry building in March 2013, have proven to be extremely effective saving over 1,000 m^3 in the first six months of operation (see figure 9). The same urinals fitted in the library have been less successful and have been replaced.

A new toilet which uses 1.5 litres of water per flush is now being trialled. Using only 19m^3 per year this could potentially save 57m^3 of water annually.

Figure 9. Registry Building Water Consumption (m^3)



Emergency Preparedness

Environmental policy commitments:

- prevent pollution and appropriately manage environmental risks from accidents, incidents and emergencies

Context

Emergency circumstances can present the most challenging environmental situations for organisations to deal with and can have the most widely recognised environmental impact.

By minimising the risks of pollution legal compliance can be improved and potential liability from incidents which cause harm to the environment can be avoided.

Strategy

Our Environmental Emergency Response Plan details how we would respond to any critical situation that could arise and we continue to review the effectiveness of these procedures and to train our staff in competent emergency management techniques.

We have invested in spill kits and other environmental protection equipment and continue to monitor and improve our response to incidents through our reporting process.

An environmental incident is a failure to implement required environmental controls that may lead to environmental pollution, contamination or damage, or that has potential to do so. A 'Significant Incident' is an incident that has caused such environmental damage, pollution or contamination.

Target 2013	Progress	Target 2014
Zero significant environmental incidents and zero fines from environmental regulators on an on-going basis	One significant incident was reported in 2013 relating to disturbance to protected bird nests by a subcontractor installing netting in preparation for refurbishment work at Norfolk Terrace. A nest survey and contractor induction had been undertaken and avoidance measures put in place but works progressed in violation of restrictions. The subcontractor was asked to leave site. Two minor incidents were also reported. No fines were imposed during 2013	**Zero significant environmental incidents and zero fines from environmental regulators on an on-going basis**

Our Incident Reporting Form is available from the Environment and Sustainability web pages: http://www.uea.ac.uk/estates/environmentalpolicy/emergency-response

Where we go from here...

Carbon reduction will be our main focus in 2014. With challenges still to be overcome in the commissioning of our biomass plant, the need to achieve further savings through resource efficiencies is imperative. By implementing effective monitoring and targeting, ownership of our carbon reduction target at the school level will drive actions; implemented with the help of our CarbonCrew.

Student experience is always our main priority and with a focus on future skills and demonstrating sustainable living we aim to deepen understanding of the tensions inherent in, and some of the solutions to, changing the way we do things.

Grow your own chilli plant with the CarbonCrew – our champions are crucial to engaging our community.

CarbonCrew
Reducing Our Impact

www.carboncrew.uea.ac.uk

Authors: UEA Sustainability Team and Pro-Vision Environmental
June 2014

Pro-Vision Environmental
Practical environmental solutions