

ENVIRONMENTAL SUSTAINABILITY REPORT 2011

Submitted by the Sustainability Office, Property and Facilities Division, on behalf of the Sustainability Steering Committee





"Achieving sustainability will enable the earth to continue supporting human life as we know it."



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VICE-CHANCELLOR'S MESSAGE



The University of Queensland continued its commitment to leadership in sustainability throughout 2011 through its learning, discovery and operational activities.

This report highlights the significant achievements for the year including:

- Formation of the Sustainability Engagement Working Group
- Installation of Australia's largest photovoltaic array at St Lucia campus
- Construction commencing on the new carbon neutral, living building which will house the Global Change Institute
- Installation of Public Place Recycling Facilities
- Focusing Transport Systems activities on sustainable solutions
- Development of UQ Sustainable Purchasing Guidelines
- Celebrations for World Environment Day with staff and students at a sustainable breakfast
- Continued expansion of the Green Office program to 120 representatives in over 100 areas
- Development of the Green Labs program and the commencement of the pilot phase
- Record numbers attending UQ's Ride to Work Day
- Introduction of the Sustainability Pledge
- Introduction of a new Sustainability Logo

I would like to acknowledge the significant contribution of many staff, students and the broader community committed to embedding sustainability at UQ. The continued involvement and enthusiasm from many areas enables the University to make positive changes in sustainability.

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Professor Deborah Terry Vice-Chancellor The University of Queensland



DEPUTY DIRECTOR PROPERTY AND FACILITIES' MESSAGE



The latest reports on climate change are quite alarming and Australia is relatively vulnerable and exposed to the potential impacts.

The Australian Government recently released sobering advice that the opportunity to avoid climate change altogether has passed and the CSIRO has reported that Australian average temperatures are projected to rise by 0.6 to 1.5 degrees Celsius by 2030 and 1.0 to 5.0 degrees Celsius by 2070.

The University of Queensland is committed to be a leader in emissions reductions with sustainability initiatives including carbon objectives, action plans and mitigation programs. It is recognised that reducing carbon emissions in the face of ongoing development and population growth is a key challenge.

The University acknowledges environmental leadership is critical to ensure that practices meet the best practice embedded in UQ's environmental curriculum.

Action with a sense of urgency and responsible responses to climate change are crucial. The University is lead and well supported in these endeavours by the executive, dedicated staff, students, the greater UQ community and industry partners.

Geoff Dennis Deputy Director Property and Facilities Division The University of Queensland

CORPORATE SUSTAINABILITY

Sustainability Steering Committee

The Sustainability Steering Committee (SSC) is UQ's peak sustainability management group reporting directly to the Vice-Chancellor.

SSC has provided leadership throughout 2011 in embedding sustainability on all UQ campuses and sites.

In 2011 the SSC oversaw a number of corporate and operational initiatives supporting the University's sustainability strategies, including:

- sustainability policy being placed at the corporate level of the University's new policy and procedures library (PPL)
- work of the Teaching and Learning Working Group towards UQ's commitments to Education for Sustainability under Tallories and Universitas 21
- a gap analysis of electricity metering and a subsequent installation program
- Land for Wildlife status achieved at Gatton Campus
- Submission of UQ's annual National Greenhouse and Energy Report and UQ's first Energy Efficiency Opportunities Report.

Sustainability Engagement Working Group

The Sustainability Steering Committee approved the formation of the Sustainability Engagement Working Group in late 2010. This group was formed in 2011 with representation from the broad UQ community. The Engagement Working Group is tasked with engaging stakeholders to embed sustainability at UQ.

The group met twice during 2011 to identify and prioritise key sustainability projects. Three Project groups are being formed to review business travel, cycling as a modal choice and procurement of paper and print.

Staff Development

The sustainability courses offered through UQ's Staff Development Program was expanded during 2011.

The traditional training in the Environmental Management System and Emergency Procedures / Spill Kits continued to offer education in the University's duty of care and correct environmental practices.

New courses to educate and support staff on ways to reduce their environmental impact were introduced in the following areas:

- Introducing a Sustainable Culture at UQ
- Sustainability at UQ: Reducing Energy at Work
- Sustainability at UQ: Purchasing at Work
- Sustainability at UQ: Recycling & Minimising Waste

The new courses were well received and continue to be offered in the 2012 Staff Development Program.

Environmental Sustainability Report 2011



Sustainability

Sustainability Website

UQ's Sustainability Website was further developed throughout 2011. A number of new areas were added focusing on engagement. The Sustainability Pledge was launched in mid 2011 to encourage staff and students to make simple changes to make a difference for sustainability. Nearly 500 pledges were made in the 6 month period.

New feature areas were added to focus on engagement and raise the profile of "Latest News" and "Sustainability Events" on campus. Additional sections on Sustainable Procurement and also Sustainable Food were added to the site.

The UQ Sustainability Website continues to provide a wealth of information and resources.

http://www.uq.edu.au/sustainability/



UQ'S STRATEGIC THEMES

Learning

The University of Queensland is intent on making environmental sustainability a core teaching and learning principle.

The Sustainability in Teaching and Learning working group is currently exploring ways to embed sustainability education into undergraduate programs at the University of Queensland. Ideally, all University of Queensland graduates will be equipped with a basic understanding of the concept of sustainability, and the challenges of achieving it. The working group is currently developing a proposal, and hopes to implement this proposal by 2013.

The Global Change Institute is actively developing a two-unit undergraduate course *Global Issues in Sustainability*.

Students will be expected to undertake a series of activities that will develop their understanding of sustainability as a core principle of business, education and society in general.

Discovery

Sustainability is a key outcome for many faculties and institutes at The University of Queensland. Development of new technologies and efficiency gains are the main drivers of much of the research, but many of the discovery projects have implications for future global sustainability.

Energy, business, mining, food security, environmental conservation, urban planning, water security, architecture and construction share this sustainable focus.

Australian Water and Environmental Research Alliance

Griffith University and The University of Queensland are acknowledged leaders for research into water and environmental sciences. Both institutions have been active in this space since the 1970s and are highly experienced in undertaking 'translational' research – aimed at linking basic discovery research with practical problems to provide evidence-based solutions to the environmental and related social issues of our rapidly changing region.

It is therefore appropriate that the two universities have joined forces to establish the Australian Water and Environmental Research Alliance (AWERA) which packages the complementary strengths of the institutions into a single research service entity.

Australian Sea Level Rise Partnership

Rapid changes in sea level as a result of climate change are emerging as a major issue for Australia, where over 75% of the population lives within its coastal zone. While the latest international scientific consensus estimates that the global ocean will rise by a minimum of 1 metre by 2100, we are ill-prepared to respond to the impending challenges for coastal ecosystems, human communities and infrastructure. This project will define the challenges, vulnerabilities and solutions for part of Australia's coastal geography and build a major program on sea level rise.



LEARNING • DISCOVERY • ENGAGEMENT

Competitive Power Report - Part 1

A new report by the Global Change Institute has found that Australia's power system is among the world's least resilient. Historically Australia's ample supply of coal has underpinned its power system but with increased concerns over carbon emissions, Australia's fossil-fuel based power system now represents a risk for consumers and investors alike.

Queensland Alliance for Agriculture and Food Innovation (QAAFI)

QAAFI aims to improve the competiveness and sustainability of tropical and subtropical food, fibre and agribusiness sectors through high-impact science. One way the institute seeks to achieve this is by identifying and establishing key research projects based on whole-ofindustry issues that address the future sustainability and competitiveness of Queensland's sub-tropical and tropical agricultural sectors.

Changing Currents in Governance and Management

Australia's marine environments are at risk from the impacts of human-induced climate change. The School of Geography, Planning and Environmental Management is examining the barriers to implementing adaptation and policy responses as well as investigating institutional governance, intervention strategies and decisionmaking processes for the conservation of marine biodiversity and the integrated management of marine reserves in a changing climate.



Australia's marine environments are at risk from the impacts of human-induced climate change.

New Projects on the Horizon

The Global Change Institute has initiated multiple small seed grant funded research projects which commenced in 2011. Some of these projects include:

- Theorising Climate Change Narratives for the Humanities
- Is all carbon created equal? The organisational ecology of blue carbon
- CarbonLab: Learn. Action. Benefit.
- Adaptation to global change in irrigated landscapes in the Queensland Murray-Darling Basin: understanding the influence of technology and socio-economic drivers on land use patterns
- Incorporating climate change adaptation and resilience-building needs within management of socialecological systems

- Australian Sea Level Rise Partnership (ASLRP)
- Treading water in a changing climate: The vulnerability of Australia's tropical islands to sea level rise
- Defend or retreat? Adapting to the impacts of sea level rise as a result of rapid climate change
- Sink or swim: Effect of interacting stressors on linked-ecosystem response to sea level rise
- Capturing Coral Reef & Related Ecosystem Services project
- Coral Reef Targeted Research & Capacity Building for Management Program
- Intergovernmental Panel on Climate
 Change Fifth Assessment
- Reconciling dietary guidelines to increase fish consumption with the sustainability of global seafood production
- SeaChange
- UQBlue
- Catlin Seaview Survey
- Future Food Landscapes: projecting and mapping the climate-induced reorganisation of Australia's cropping lands
- Governing Food Security in Australia in an era of climate change: a sociological analysis
- The impact of Foreign Direct Investment (FDI) on global land use
- Facilitating access to the algal economy: supporting sustainable fuel, material and food supply

UQ'S STRATEGIC THEMES (CONTINUED)

- Assessment of the emerging bioenergy and bioremediation crop Pongamia pinnata for the northern Australian landscape
- Modelling the effects of battery storage on intermittent generation
- Delivering a competitive Australian power system
- Determining the benefits of embedded storage within a localised solar powered distribution network
- Energy policy, environmentaleconomic regulation and its impact on competition policy in Australian energy markets
- UQ Solar
- Solar Flagships Program: Solar Dawn
- Impact of sea level rise and coral mortality on reef disturbance regimes and sediment dynamics at reef island shorelines
- Next generation satellite tools for understanding change in coral reef ecosystems due to multiple global stressors
- Australian Water & Environmental Research Alliance (AWERA)
- SeqWater, The University of Queensland and Griffith University Strategic Research Partnership
- Integrating conservation planning and fisheries management to ensure food security and biodiversity conservation in the Coral Triangle.

Engagement

Sustainable energy solutions for post-earthquake Japan

In October 2011 UQ signed a Memorandum of Understanding (MOU) with the Wakasa Wan Energy Research Centre in Japan. The MOU is expected to provide opportunities for collaborative research into sustainable energy solutions for post-earthquake Japan. The Wakasa Wan Energy Research Centre houses the world's biggest lens for sunlight collection, a small synchrotron facility and several cutting-edge electron microscopes.

UQ will aid in furthering research towards sustainable energy options with the development of sustainable materials for global energy challenges. The MOU has been facilitated by UQ's School of Mechanical and Mining Engineering.

Sustainable Mining Communities

The resources boom in Australia has led to significant changes in the locations of employment in the mining sector, however little is known about the implications of these changes on the sustainability of mining. A three year project is looking to develop a more holistic understanding of these communities to identify key planning dimensions that need to be addressed in order to achieve quality of life and socially sustainable community outcomes within mining regions. Planning for socially sustainable communities is about the cost of social infrastructure and services as well as social and political licences to operate. Governments, corporations and communities require modelling, analysis and advice in order to coordinate and plan for sustainable communities, services and infrastructure.



The Wakasa Wan Energy Research Centre in Japan



Food Security

The challenge is to feed a human population that will grow from 7 billion to 9 billion by 2050, and to do so in an equitable and sustainable manner.

A special forum – Moving from emergency responses to famine towards resilient food systems in Africa was staged at the Embassy of Australia, Washington DC to engage with leading US-international agencies involved in food programs worldwide.

A key outcome was a commitment from participants towards collaborations on resilient food systems for Africa, and discussions are continuing to develop this into a concrete action plan between the US and Australian partners during 2012.

The Global Change Institute (GCI) hosted a workshop for leading organisations involved in food mapping and food production projections in Australia has led to the development of three key gaps in Australia's knowledge of its food systems. GCI is working on multiple projects including Future food landscapes: projecting and mapping the climateinduced re-organisation of Australia's cropping lands, a major sociological analysis is also underway on governing food security in Australia, and a final project on New farm owners: finance companies and restructuring of Australian and global agriculture.

The Coral Triangle Initiative

During 2009, the Coral Triangle nations identified the lack of local capacity in marine conservation to be the major impediment in achieving agreed sustainability goals to protect their environmental assets. Australia was approached to provide education and training in this key area.

The Australian Institute of Marine Science, the Australian National University, Charles Darwin University, James Cook University and The University of Queensland formed an alliance with the aim of improving the regions marine resource management through targeted educational programs. This collaborative partnership has designed and can now implement the first of these programs upon the development of a viable business plan and the subsequent formalisation of funding arrangements between the alliance partners.

Insight Seminar Series

Each year the Global Change Institute hosts a number of events showcasing a range of national and international speakers from across a broad field of global change issues. The series has become very successful and continued to be well attended throughout 2011. Audiences in 2011 included people from the University, business and general communities.



The program has included high profile speakers including:

- Jill Duggan, Directorate-General for Climate Change within the European Commission for the EU Emissions Trading Scheme
- Bernard Salt, social demographer: the issue of 'Big Australia'
- Tim Lang, Professor of Food Security, The City University, London
- Professor David Carpenter, The University of Albany (NY), Environmental exposures linked to ADHD
- Professor Barry Brook, Sir Huber Wilkins Chair of Climate Change, School of Earth and Environmental Science and Director of the Environment Institute, University of Adelaide
- Dr Lorraine Stephenson, Chief Clean Energy Advisor, Office of Clean Energy
- Mr Phillip Keogan, Executive General Manager, Energy Sustainability and Market Development, Ergon – Australia's Energy Future



CAMPUS SUSTAINABILITY

Energy

Energy Utilisation and KPIs

Electricity is the dominant form of energy used by the University in its buildings and other facilities. During 2010/11 the University used over 150,000 kWh of electricity across all it sites. The pie chart below shows the distribution of use. The St Lucia campus consumed over 70% of this total, followed by the Gatton and Herston campuses. During 2011 a major effort was made to improve the level of sub-metering of electricity, especially on the St Lucia campus. The objective is to be able to measure and compare the electricity consumption of all major buildings (larger than 5000 m²). There are 34 large buildings and at the end of 2011, 17 had their electricity use benchmarked. The aim is to have enough sub meters installed by the end of 2012 to enable all major buildings to be benchmarked.

UQ Energy Use (FY2010-2011)



Photovoltaic

Australia's largest photovoltaic array was officially launched in 2011, despite significant interference from the Brisbane floods during construction. The 1.22 megawatts system was installed on the rooftops of 4 buildings at the University of Queensland's St Lucia campus.

The energy produced from the 5004 flat panel polycrystalline silicon solar panels is saving over \$200,000 and 1,700 tonnes of carbon emissions each year.

The UQ Solar system has been set up to allow researchers to experiment with different ways of storing and collecting energy consistently, and how best to feed energy from stand-alone generating plants into the electricity grid.

A large-scale zinc-bromine battery storage system enables researchers to investigate new methods of energy storage to assess how it can best be released to the grid when most needed during peak times.

A 6 x 7 metre 8.4 kilowatt Concentrating Photovoltaic tracking array has also been installed to enable research on another form of solar power technology.

Live data on energy production can be viewed online with the establishment of the UQ Solar website.

The Solar Research Resource Centre opened its doors to visitors, educating over 500 visitors each year on how UQ is harnessing solar power, placing the University at the forefront of solar research internationally. Government and Industry groups, visiting universities, school and university students have toured the centre,



Solar panel Arrays at UQ St Lucia - concentrating Photovoltaic Array

accessing live data on energy generation and enjoying the unique experience of a rooftop tour.

Design and installation drew on the combined resources and significant expertise of UQ academics and engineers, working with industry leaders.

This project has involved industry partners Brisbane firm Ingenero, Trina Solar, Brisbane-based RedFlow, Energex and the Queensland Government.

UQ Solar

In June 2011, an interactive desktop display was developed as part of the 1.2 MW photovoltaic project. The display shows the energy and power generated in real time by each of the 4 main PV arrays at St Lucia as well as the solar focus installation. Users can choose to view data from all sites combined or any one of the installations individually. The display also enables users to navigate back in time and look at a system's performance on previous days.

A weather overlay is available to show temperature or sunlight levels on the same graphs as the energy or power data. The display keeps track of the best days for energy production and peak power generation. Tickers roll over to show the amount of money saved and the carbon emissions reduced by the PV display being viewed. The display has a download function which is increasingly being used by students to obtain data to address assignments, other course work and research.

A navigation bar at the top of display takes users to an interactive map and hence to web pages with technical information (such as panel type) for all the UQ PV installations; these are located at St Lucia, Gatton, Morton Island Research Station and Heron Island. While currently only energy data for St Lucia is displayed on the interactive live display there are plans to connect the other sites during 2012. The PV display can be accessed via the UQ solar website by selecting

"View Live Data":

http://www.uq.edu.au/solarenergy/



v2.8 Program bull by SmarterSoft

CAMPUS SUSTAINABILITY (CONTINUED)

Renewable Energy Projects

While UQ is well known for its large scale PV installations, solar electricity is not the only renewable energy source under consideration at the University. The Gatton campus has a major solar-LPG hot water system and similar systems have been installed elsewhere. During 2011 another solar hot water system was installed at the Moreton Bay Research Station. This is used to preheat water for the station's 90 person accommodation block.

Another form of renewable energy under active consideration for use at UQ sites is high temperature solar thermal. This can be used to produce electricity, air conditioning via absorption chilling, or hot water – which in turn can be used for space heating. While solar thermal and photovoltaic technologies use solar energy in a fairly direct way, heat pumps use indirect solar energy: the sun heats the atmosphere and a heat pump takes and concentrates this energy. There is scope for greater use of heat pumps for space and water heating at UQ.

Other renewable technologies applicable to UQ, particularly at the Gatton campus include anaerobic digestion of animal and other farm wastes to produce biogas. This gas can be used directly to produce heat or in a turbine to produce heat and power. A project based on the piggery unit at Gatton is under investigation.



Anaerobic digestion of animal and other farm wastes produce biogas, which is another renewable technology option, particularly at UQ Gatton

Small scale renewable energy projects completed in 2011 will save, or generate, over 100MWh of electricity equivalent per year. This will save the university around \$40,000 per annum at current electricity prices.

Energy Efficiency Projects

A wide range of energy assessments and reviews were carried out during 2011. As required by the Energy Efficiency Opportunity Act 2006, the University provided details of these activities to the Commonwealth Government and also released a public report.

Following on from the assessments and reviews a range of energy efficiency projects were undertake at various UQ sites. These projects ranged from lighting retrofits, improvements to the operation of air conditioning, modification to cold room controls; heat recovery and reuse, installation of insulation and pipe lagging, application of window films to reduce solar gain and load on airconditioning systems.

Energy efficiency projects saved approximately 325 MWh of electricity valued at just over \$75,000. The average payback for these projects was 5 years.

Transport

Transport Systems

2011 saw the restructure of UQ Traffic & Parking (UQ T & P). Parking regulation has moved to Security, and Customer Service to PF Assist. Parking administration, systems, infrastructure support, policy and planning have been renamed *Transport Systems* and incorporated into the portfolio of the Deputy Director, Property & Facilities. A new suite of sustainability aligned tasks have been assigned to the Manager, Transport Systems to reflect oversight of existing transport systems and development of new, sustainable transport systems for UQ.

Modal Survey

A transport modal survey was commissioned for the St Lucia campus by the Site Planner. The survey provides important data for the formulation of Site and Master Plans. The data also zeroes in on where transport policy is adequate or where it needs attention. Informed planning of the estate ensues and indicators for targeted policies on procedural and behavioural change are identified.

Zero Emissions Vehicles

Three Zero Emission Vehicles (ZEV) were purchased to replace Property & Facilities vehicles damaged in the January 2011 flood. The Faculty of Science has also taken the initiative to replace a petrol vehicle with a ZEV. Other organisational units have expressed interest in replacing petrol vehicles with ZEV's. Negotiations with Mitsubishi Australia resulted in the loan of the all-electric iMiev for a week. Interest in the technology and operational capability of both the ZEV's and the iMiev has been high. User feedback has also been extremely positive.



Zero Emission Vehicles (ZEV) were purchased at UQ

Bike Racks

A program of replacing the old pedestal type bicycle racks with design competition winning racks has been initiated. The underpinning goal is to replace old infrastructure with the new racks whilst attaining an overall increase in the number of bicycle racks on the St Lucia campus.





Leigh Burgess, Project Officer Environmental, Geoff Dennis, Deputy Director, Properties and Facilities, Di Farmer MP, Member for Bulimba, Ms Jenny Pickles, General Manager, Packaging Stewardship Forum and Dr Trish McGee, Program Manager, Packaging Stewardship Forum

Recycling and Waste

Public Place Recycling

UQ's public place recycling program was launched in March 2011 by Di Farmer, the State Member for Bulimba representing the Minister for Environment and Resource Management Kate Jones. The program includes the installation of over 40 new "recycling stations" at St Lucia campus alone and additional stations will be installed across multiple campuses during 2012.

The University's long-term commitment to sustainability aims to ensure that more than 50% of UQ's public area general waste is recycled, effectively removing 10 tonnes of recyclables from landfill each year. The program campaign is a joint venture between the University and the Packaging Stewardship Forum of the Australian Food and Grocery Council.

Water Refill Station Trial

Semester 2 saw the installation of a trial water refill station at the St Lucia campus. The trial aims to raise staff and student awareness of the environmental and financial impact of bottled water. With approximately 66% of disposable water bottles being placed in the general waste, reduction of disposable water bottles will reduce waste on campus. Plans exist to install a series of stations across multiple campuses in 2012 following the success of the trial station.

Resource Exchange Events

A new initiative was introduced in 2011 to recycle furniture and equipment that would otherwise be destined for landfill. The decanting of UQ buildings prior to refurbishment typically leaves the office



space with resources that are no longer required by the previous tenants.

Resource exchange events were organised in 2011 enabling UQ offices access to free furniture and equipment to relocate within UQ. Items are checked for OH&S compliance prior to being offered for reuse in a new home. These events reduce waste to landfill and enable UQ offices to take free pre-loved resources without the need to procure new equipment.

Purchasing

Sustainable Purchasing Guidelines

UQ recognises that waste management begins with sustainable procurement to reduce the amount of product purchased and disposed of thereby saving natural resources and limiting environmental pollution. Sustainable purchasing guidelines were developed in consultation with internal and external stakeholders to help staff to include sustainability in their procurement processes. Guidelines have been developed defining standards for suppliers accompanied by an assessment form for sustainable vendors.

Sustainable Food Web pages

In October 2011, five new sustainable food pages were launched to raise awareness of the environmental impact of food choices on campus. The web site provides information on sustainable food choices, why consider sustainable foods, as well as information on sustainable food in the office, for events and for vendors on campus.

A Green Office sustainable morning tea promotion was held to promote the new web pages with a competition for the most sustainable food choices.

< Zhang Le, 1st year architect student, refilling water using the newly installed water station at staff house road, outside Steele Building.

CAMPUS SUSTAINABILITY (CONTINUED)

Water

Water Management

Water management remains a significant focus for UQ. Across its four campuses and numerous sites, University operations consumed approximately 672 ML of town water during the year.

With the majority of this consumption concentrated at our campuses in the Southeast of the state, much of this consumption is still dictated by permanent water restrictions. Throughout 2011, Property and Facilities plumbers continued to prioritise response to leaks and randomly audited approximately 10% of the building stock to identify noncompliant or faulty fixtures and fittings and take corrective action. Investment in rainwater tanks and infrastructure to use this as an alternative to town water saw UQ utilise 1.7 ML of water for toilet flushing and other non-potable purposes. More non-potable water was also sourced from UQ Lakes for landscape and oval irrigation during this period.

Floods

Much of Queensland experienced disastrous flooding in late 2010 and early 2011. The University was not exempt. Our two largest campuses, Gatton, on the banks of Lockyer Creek, and St Lucia on a bend in the Brisbane River were inundated. Several other sites, such as Pinjarra Hills (also on the Brisbane River) and Darbalara (near Laidley) were also affected.



Students at UQ St Lucia Lakes

With the academic core on higher ground, it was mainly support facilities and infrastructure that was affected. However, this introduced some unique environmental situations and tests of our design principles and staff capabilities:

- Our St Lucia chemical and chemical waste stores located and designed for the flood plains were inundated. Both performed as designed and no chemical was lost.
- The Gatton Campus sewage treatment plant was completely submerged but operations were restarted within a day of water receding and within operating parameters within a week.

 Playing fields were contaminated with infectious bacteria which were treated naturally and returned to play without compromising the soil or grass health.

Some projects are still ongoing including rebuilding on sites with contaminated soil and stabilisation of the Brisbane River bank which suffered extensive scouring. These projects are due to be completed in 2012.

Biodiversity

UQ is committed to managing, maintaining and enhancing its environment. As a result, its campuses and its lakes attract and support a great variety of biodiversity.

Eel Management Plan

During the January flood, large sections of the St Lucia campus were inundated, including the St Lucia Lakes Precinct. This gave rise to an increase in the number of freshwater eels in the main lake. Environmental consultants were engaged to provide recommendations to stabilise and manage the freshwater eel population. The population has declined to pre-flood levels.

The floods in 2011 affected UQ St Lucia campus (pictured) and the UQ Gatton campus





Gatton Land for Wildlife

UQ added its third site to the Wildlife Conservation Partnerships Program, Land for Wildlife. The most recent UQ addition to the program is the UQ Gatton Environmental Park. UQ's other Land for Wildlife areas include the Indooroopilly Mine, and the Lakes Precinct, the river bank (along John Oxley walk) and the Alumni Teaching Gardens at the St Lucia campus.

Gatton Environmental Park

The Gatton Environmental Park Precinct Landscape Master Plan review is underway. The objectives of the review are to enhance biodiversity and the intrinsic values of the area, and to identify potential carbon sequestration opportunities.



The UQ Gatton Environmental Park



An artists impressions of the new global change institute, at the Press conference to launch the Global Change Institute at UQ St Lucia

Built Environment

UQ has used 2011 to refine its approach to Sustainable Development. "Green" principles have been pursued in all development for many years, guided by tools like GreenStar but not with formal participation.

In 2010 during the planning of our 2 latest buildings, Advanced Engineering Building (AEB) and Global Change Institute (GCI), the decision was made to formally demonstrate UQ can, and does, build Sustainable Buildings.

AEB broke ground in February 2011 and has been essentially designed through UQ's standard processes. It is currently targeting national best practice under Greenstar's Educational Building Tool for design and construction, with determination of the design rating in early 2012.

GCI which commenced in late 2011 is further challenging our design philosophy by targeting International Best Practice Greenstar and participation in the *Living Building Challenge*. Both of these targets require UQ to go beyond our existing design principles. The sustainable elements in these buildings include:

- Utilising natural ventilation
- Passive cooling systems
- Task air
- Recycled materials used throughout the construction.

The construction of both these buildings will continue through 2012. However UQ will concurrently revise and improve its design standards. This will ensure the successful sustainability elements discovered through the AEB and GCI projects are captured and become core requirements of construction and refurbishment going forward.



The Global Change Institute construction begins

CAMPUS SUSTAINABILITY (CONTINUED)

Risk

UQ's Carbon Emissions

During the 2010/11 financial year, UQ emitted a total of 188,607 tonnes of carbon dioxide equivalent (t CO_2 -e) emissions.

The University's key greenhouse gas emissions result from:

- Electricity consumption
- Commuting
- Extraction and transmission of fossil fuels
- Waste management (Scope 3)

In addition to these, UQ has also calculated its emissions from fleet transport and non-transport vehicles, generators and equipment fuels; natural gas and liquefied petroleum gas (LPG); sulphur hexafluoride (SF_e) contained in electrical switchgear and scientific apparatus; embodied energy in paper; and the indirect emissions associated with the extraction and transmission of electricity, gas and fuels used by the University.

National Greenhouse and Energy Reporting

In October 2011, UQ submitted its third annual report to the Commonwealth Government under the National Greenhouse and Energy Reporting (NGER) Act 2007 to comply with the University's statutory reporting obligations. The report details UQ's Scope 1 and Scope 2 carbon emissions for the 2010/11 financial year.

Comprehensive monitoring and reporting of the University's greenhouse gas emissions is an ongoing requirement, therefore UQ will submit a NGER report annually.

UQ's emissions during the 2009/10 and 2010/11 financial years

Scope	Source	Emissions (t CO ₂ -e)		
		FY 2009/10	FY 2010/11	% Change
Scope 1	Natural Gas and LPG Purchased natural gas Purchased LPG	349 730	388 740	11.2% 1.4%
	Transport and Stationary Fuel UQ owned fleet transport vehicles UQ owned fleet non-transport vehicles, generators and equipment	1,268 154	1,145 217	-9.7% 40.9%
	Sulphur Hexafluoride Electrical switchgear Scientific apparatus	5 2	5 3	0.0% 50.0%
	Waste On-site incineration (Pinjarra Hills) On-site wastewater treatment (Gatton Campus)	717 299	720 320	0.4% 7.0%
Scope 1 To	otal	3,524	3,538	0.4%
Scope 2	Electricity Purchased directly from an electricity retailer Sourced through a third party (HIRS)	123,506 180	134,723 177	9.1% -1.7%
Scope 2 To	otal	123,686	134,900	9.1%
NGER Tota	al (Scope 1 and 2)	127,210	138,438	8.8%
Scope 3	Commuting Staff and student commuting emissions to St Lucia campus	22,148	22,148	0.0%
	Waste General waste to landfill Off-site incineration Off-site wastewater treatment	1,437 72 2,539	6,648 86 2,539	362.6% 19.4% 0.0%
	Paper Embodied energy from paper purchased	353	353	0.0%
	Extraction and Transmission of Fossil Fuels Natural gas LPG UQ owned fleet transport vehicle fuels UQ owned fleet non-transport vehicle, generator and equipment fuels Purchased electricity	37 65 96 8 18,040	65 62 87 16 18,165	75.7% -4.6% -9.4% 100.0% 0.7%
Scope 3 Total		44,795	50,169	12.0%
		170.005	100 607	0.70/

- 1. Scope 3 emissions shown were estimated from available data.
- 2. Staff and student commuting, off-site wastewater treatment and embodied energy in paper emissions are assumed to be stable.
- 3. General waste to landfill figures and off-site incineration figures were obtained from a desktop waste audit undertaken by a student in 2011.

N.B. Italics denotes Scope 3 emissions



UQ emissions breakdown for 2010/11 Carbon Footprint



National Greenhouse and Energy Report 2010/11

The following table details the energy and emissions reported for the 2010/11 financial year.

NGER Energy and Emissions report 2010/11					
Тс	onnes (CO	2-e)		GJ	
Scope 1	Scope 2	Total of Scope 1 & 2	Energy Con- sumed	Energy Produced	
3,538	134,900	138,438	586,139	1,767	

Energy Efficiency Opportunities

In December 2011, UQ submitted its first annual report to the Commonwealth Government under the Energy Efficiency Opportunities (EEO) Act 2006. UQ is required to undertake comprehensive energy assessments and report publicly and to the government on energy saving opportunities identified.

UQ's first EEO public report is available online at the UQ Sustainability Website.

Water Efficiency Management Plans

Annual performance reports against the objectives of our Water Efficiency Management Plans (WEMPs) were submitted to Queensland Urban Utilities in October. These reports indicated that 3 of the 4 sites requiring WEMPs met our target of consuming less that 1.1 kL/m² GFA (Gross Floor Area). It was only the Pinjarra Hills site that exceeded this target. This was not unusual due to the small number of buildings but high outdoor usage on this rural site and consumption was still within the target overall (total UQ consumption vs total GFA).

The overall result is excellent but in compiling the data, some weaknesses in our systems were identified. To address these, a new contract, to better resource cooling tower compliance items was introduced and a more detailed audit program will be established with the Asset Services section of Property and Facilities in 2012.

Licensing and Approvals

Gaps in UQ's compliance activities have been identified as a result of changes to operations and legislation. Projects are in place to close these gaps which primarily involve the campus wide review of Environmentally Relevant Activities and submission to administering agencies to review and consolidate development conditions. Due to the complexity of these projects, these are not scheduled to be resolved until 2012.

Environmental Aspects

A number of projects, including emerging research, potentially requiring licences or approvals were identified during the year. Commonly, these were identified early in the planning phase allowing project managers to proactively address the risk by revising designs to minimise, if not eliminate, potential for environmental harm. This approach has negated the need for any new licences or permits during 2011.

Managing Risk in 2012

In 2012, it is aimed to introduce a number of tools to assist the University community to proactively and independently address their environmental legal risks. The review and expansion of the Environmental Legal Register, previously a Sustainability Office (Property and Facilities Division) tool is to be completed and it is intended to make this document publically available.

EMS procedures, which have been available to the University community since 1997, will also be reformatted, expanded and migrated to the University's Policy and Procedures Library during the year. The improvement and increased profile of these tools is expected to make it simpler for employees and supervisors to be aware of and meet their environmental legal responsibilities.

CAMPUS SUSTAINABILITY (CONTINUED)

Campus Engagement

Green Office

The Green Office program grew to 120 representatives in 100 areas during 2011. Events were held during the year to coincide with the promotion of each of the sustainability themes on campus. Green Office representatives had the unique opportunity to join a roof top tour of Australia's largest PV Array installation which is housed at the St Lucia campus. A sustainable morning tea competition was held during November and the School of Nursing and Midwifery were awarded first place with Global Change Institute very highly commended.

Green Office Awards were presented at World Environment Day to recognise the significant contribution of representatives to sustainability at UQ. Awards were given to:

- Best New Green Office Area,
 Edla Ward, Assurance and Risk Management Service
- Best Green Office Initiative, Justine Greig, Office of Marketing and Communications
- Most Motivated Green Office Representative/Team, Michael Biscak, UQ International

Green Labs

The Green Labs program materials were developed in early 2011 ready for the opening of the pilot program. Ten representatives from 8 labs at St Lucia and Herston joined the pilot program which commenced on 21 October with information sessions. New participants attended training and are participating in the pilot to test the materials and provide feedback to further develop the program prior to Green Labs being opened to all UQ labs in 2012.

World Environment Day

World Environment Day was celebrated by 80 UQ staff over a sustainable breakfast at the UQ Club. Dr Paul Dargusch presented *Forests: Nature at Your Service* and Mr Maurie McNarn presented the prestigious Annual Green Office Awards.

A smaller group joined a tour of Veolia's Ti Tree landfill facility after the breakfast. The tour provided an insight into the final location of general waste once removed from UQ's campuses.



Market Day at UQ St Lucia – The UQ Sustainability stall has proved popular with students and staff

New Staff Expos and O-Week Market Days

The presence of a UQ Sustainability stall at each semester's New Staff Expo and Student Market Day has proved a very popular way to engage new members of the UQ community. These stalls promoted the 8 sustainability themes and included a specific promotion to raise sustainability awareness at each event. The following promotions were held in 2011:

- Australia's largest PV Array, including a chance to win a roof top tour
- Sustainability Pledge
- Subscribe to Sustainability News
- Public Place Recycling



The three winners of the Green Office Award (from left): Edla Ward (Assurance and Risk Management Service), Michael Biscak (UQ International) and Justine Greig (Marketing & Communications)



National Tree Planting Day

Over 400 trees were planted by UQ staff, students and family members to celebrate National Tree Planting Day. Planting was conducted at St Lucia, Ipswich and Gatton campuses with UQ providing trees and equipment plus a light morning tea. Many of the trees planted at St Lucia replaced established vegetation that was lost in the January 2011 floods.

Ride-to-Work Day

The 2011 National Ride-to-Work Day attracted record numbers of staff and students with 150 people attending the annual event. A number of market stalls were held at the finish line as cyclists enjoyed a breakfast. A number of participants were existing cyclists and there was a significant number of cyclists who rode to University for the first time.

Student contributions to Sustainability Engagement

During 2011 six UQ students were involved in sustainability programs including the Green Office program, Green Labs program, Waste Minimisation project and Carbon Mitigation project.

The University benefits from the contribution and enthusiasm that these students bring to these programs and projects. Students gain broad exposure to multiple schools and departments within UQ and gain valuable experience in engaging the community to embed sustainable practices.



National Tree Planting Day at UQ was celebrated by planting over 400 trees. Planting was conducted at UQ St Lucia, Ipswich and Gatton



Ride-to-Work Day at UQ St Lucia





UQ SUSTAINABILITY STRUCTURE

The Sustainability Steering Committee was established in 2009 to lead UQ's Carbon and Sustainability strategy.

The Committee's membership comprises:

- Mr Maurie McNarn, Executive Director (Operations) and University Secretary (Chair)
- Professor Max Lu,
 Senior Deputy Vice-Chancellor
- Professor Michael McManus, Deputy Vice-Chancellor (Academic)
- Professor Alan Lawson,
 Deputy Vice-Chancellor (Research)
- Professor Ove Hoegh-Guldberg, Director, Global Change Institute
- Mr Brett Cunningham, Deputy Director, Sustainable Minerals Institute
- Professor Andrew Griffiths, Director, Sustainable Business Unit, School of Business

- Professor Stephen Walker, Executive Dean, Faculty of Science
- Mr Geoff Dennis, Deputy Director, Property and Facilities Division
- Mr Graham Bethune, Director, Office of Marketing and Communications
- Mr Andrew Betts, Chief Financial Officer
- Professor Alan Rix, Pro-Vice-Chancellor
- Mr Colin Finke, President, UQ Student Union
- Mr Stuart Green, Manager Sustainability, Property and Facilities Division (Secretary)

In 2011, the Sustainability Engagement Working Group was established, tasked with the development of UQ sustainable processes and procedures.

The Renewable Energy Group and Sustainability Teaching and Learning Working Group have continued with their focus through 2011.

The Sustainability Office, Property and Facilities Division, works in conjunction with the Sustainability Steering Committee and Working Groups and other internal and external stakeholders, to progress the UQ Sustainability Program.



Lake Galletly at UQ Gatton was created in 1980 as a habitat and haven for waterbirds. The lake was constructed under Jim Galletly's (former student/staff) direction by students studying the Wilderness Reserves and Wildlife program. An important part of the lake's design is the island in the middle, which provides safety for breeding birds against feral cats and other predators.





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