



# Environmental Management Plan 2017-2020



UNIVERSITY  
OF WOLLONGONG  
AUSTRALIA

Stands for  
purpose



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## 1 Introduction / Background

UOW is committed to the principles of environmental sustainability and in accordance with the Strategic Plan 2016-2020 the University will:

- Focus on the highest environmental standards in newly built infrastructure and in managing the costs of energy and transport provision;
- Build on our leadership in transdisciplinary research through further collaboration in research and education to explore and tackle large scale global social, environmental and economic challenges; and
- Sustain a vibrant environment for engagement, inquiry and creativity by providing world-class academic facilities, recreational and social amenities, and residences within planned, efficient campuses that stand out for their natural beauty.

The Environmental Policy formalises UOW's commitment to supporting environmental sustainability and applying such principles. The University aims to ensure that teaching, research and support activities are aligned with the Environmental Policy. To facilitate the achievement of this UOW will:

- Implement and maintain a structured Environmental Management System based on continual improvement and regular review to ensure that it remains relevant to operations;
- Focus on management of energy, water and materials use, minimisation of pollution, communication and engagement, research teaching and learning, and maintaining the harmonious built and natural campus environment;
- Identify, assess, prioritise and record environmental aspects and impacts;
- Comply with environmental law and regulations;
- Set an example to the community through the adoption and implementation of principles of environmental protection and sustainability.

The Environment Management Plan (EMP) contains specific objectives, strategies and measures to assess overall performance. The actions contained within the EMP relate to Australian Campuses where UOW has operational control or an ability to influence operational control (e.g. Student Resident Accommodation). The previous EMP (2014-2016) enabled significant improvements in the use of energy, water, waste management and campus biodiversity. This EMP aims to continue to deliver on those improvements and support UOW to achieve its strategic objectives.

UOW also demonstrates its commitment to implementing environmental sustainability as a signatory to the Talloires Declaration. The Declaration, signed by over 400 international education institutions, references a ten-point action plan. The EMP addresses this commitment by highlighting how environmental sustainability and literacy is incorporated into UOW's teaching, research, operations and outreach functions.

## 2 Guiding Principles of the Environmental Management Plan

The EMP specifies aims and objectives related to the Environmental Policy and its commitments under the Tallories Declaration, and provides strategies and measures to allow environmental performance to be assessed.

The EMP has been prepared to address the aspirations of the UOW community and provide direction towards being self-sufficient in energy and water use; and to achieve zero waste to landfill.

UOW aims to achieve these aspirations by implementing a priority hierarchy that focuses on undertaking structural and behavioural changes to reduce demand for and manage the supply of energy, water and materials, to use renewable resources and recycle and then offset what cannot be reduced or eliminated.

A number of assumptions underpin the ultimate success of the EMP:

- Environmental management is a part of UOW's continual improvement processes;
- The scope includes environmental aspects and impacts over which UOW has or influences operational control;
- The principles of life cycle costing are integrated into all levels of procurement;
- Environmental leadership and resources are available to drive change;
- An attitude of cooperation will prevail across all functions.

### 3 Strategic Context

The Environment Management Plan (EMP) supports the UOW's Strategic Plan, Campus Master Plan and Environmental Policy as well as being required as part of the Environmental Management System and Risk Management Policy and associated processes (refer Figure1).



Figure1. Strategic Context

The Wollongong Campus Master Plan identifies the vision and goals that guide the development of the Wollongong Campus and provides aims and objectives for the Wollongong Campus including environmental aspects such as energy and water use, the built environment, transport and access, management of the campus landscape and biodiversity.

### 4 Consultation

Extensive consultation has been undertaken in developing the EMP including the following activities:

- Online survey from 25 May to 22 June 2016. The survey was open to staff, students, contractors and members of the public. A total of 225 people participated, 125 (55%) students, 99 (44%) staff.
- Focus groups held at Wollongong campus during August 2016, attended by 32 staff and students.
- Pop-up consultation stalls were held at various locations with over 70 participants during August and September 2016. Events included; 2 August - The Yard, 24 August - Building 40 student space, 25 August - McKinnon Lawn, 2-4 August Shoalhaven Campus and 1 September - Innovation Campus.

The key priorities identified through the consultation were:

- Reducing the University's energy consumption and carbon footprint.
- Reducing the amount of waste sent to landfill and increasing the amount of recycling conducted.
- Increasing public transport options and improving access to campus for cyclists and pedestrians.
- Supporting the campus community to reduce their environmental impacts at UOW.

These priorities have been incorporated into the EMP along with other comments and strategies received during the consultation process. In addition, priorities, comments and strategies have been referred for incorporation into other documents such as energy, waste, transport and water implementation plans related to the Wollongong Campus Master Plan.

## 5 Targets & Strategies

### 5.1 Energy and Carbon Management

UOW is a large consumer of energy with electricity representing approximately 93% of its Wollongong greenhouse gas emissions. As operations continue to grow, reducing energy consumption and greenhouse gas emissions will be a challenge. Expanding the generation of onsite renewable energy and maximising energy efficient equipment will be a focus as UOW works towards being self-sufficient in energy and achieving carbon neutrality.

#### Targets

- Reduce non-renewable energy consumption to below 0.53 GJ/m<sup>2</sup> by 2020 <sup>1</sup>
- Increase onsite generation of renewable energy by 2020 (GJ)<sup>2</sup>
- Reduce greenhouse gas emissions by 5% by 2020 (kgCO<sub>2</sub>e/m<sup>2</sup>)<sup>3</sup>

Strategies and Actions	Performance Indicators	Reported Via	Responsibility
Develop and Implement Energy Management Action Plans for all UOW Australian Campuses that will: <ul style="list-style-type: none"> <li>• Identify opportunities through audits.</li> <li>• Utilise energy efficient equipment e.g. LED lighting.</li> <li>• Increase the proportion of onsite renewable energy e.g. Solar PV</li> <li>• Encourage campus users including tenants to improve energy management</li> <li>• Target procurement opportunities</li> <li>• Monitor energy consumption against localised targets</li> <li>• Investigate opportunities for alternative energy technologies</li> </ul>	Action Plan implementation Non-renewable energy consumption (GJ/m <sup>2</sup> ) <sup>4</sup> Generation of renewable energy (GJ) <sup>5</sup> Greenhouse gas emissions (kg CO <sub>2</sub> e/m <sup>2</sup> ) <sup>6</sup> Energy consumption at UOW Student Accommodation Residences (GJ/m <sup>2</sup> )	EAC	FMD
Develop and implement energy conservation and carbon reduction education and awareness programs for staff and students	Program implementation	EAC	FMD

<sup>1</sup> Based on UOW Council KPI.

<sup>2</sup> Based on 2016 levels, excludes residential accommodation. Specific target to be determined following the completion of a feasibility study in 2017 and documented in the Energy Management Action Plan

<sup>3</sup> kgCO<sub>2</sub>e/m<sup>2</sup> based on 2016 levels includes Wollongong, Innovation, Shoalhaven and Residential Campuses.

<sup>4</sup> Total gigajoules of energy (grid electricity and town gas) consumed per square metre of building area as a 12-month rolling total

<sup>5</sup> Renewable energy generated and consumed onsite as a 12-month rolling total.

<sup>6</sup> Based on Scope 1 and 2 greenhouse gas emissions reported under the National Greenhouse and Energy Reporting Act 2007.

## 5.2 Water Management

UOW operations include a range of activities that impact on potable water consumption. These include sports field maintenance, provision of food services, research, as well as general campus use. Growth in operations and climatic factors will continue to pose a challenge to reduce water consumption. Minimising water use, increasing water capture and reuse and improving monitoring will be a focus as UOW works towards being self-sufficient in water management.

### Targets

- Continuously reduce potable water use to below 8.5 KL/EFTSL by 2020 <sup>7</sup>
- Reduce potable water use by 5% by 2020 (KL/m<sup>2</sup>) <sup>8</sup>

Strategies and Actions	Performance Indicators	Reported Via	Responsibility
Develop and Implement a Water Management Action Plan for Wollongong, Innovation and Shoalhaven Campuses that will: <ul style="list-style-type: none"> <li>• Identify opportunities through audits</li> <li>• Increase the proportion of water capture and reuse</li> <li>• Implement metering for irrigation systems</li> <li>• Minimise the use of potable water for irrigation, water features and other onsite uses</li> <li>• Encourage all campus users including tenants to improve water management practices</li> <li>• Focus on procurement opportunities</li> <li>• Monitoring water consumption against localised targets</li> </ul>	Action plan implementation  Potable water use (KL/EFTSL) <sup>9</sup>  Potable water use (KL/m <sup>2</sup> ) <sup>10</sup>	EAC	FMD
Develop and implement water education and awareness program for staff and students	Program implementation	EAC	FMD

<sup>7</sup> Based on annual TEFMA bench-marking, includes Wollongong Campus and excludes residential accommodation. This indicator may vary during periods of abnormally low rainfall.

<sup>8</sup> Based on 2016 levels, includes Wollongong Campus and excludes residential accommodation.

<sup>9</sup> Total KL of potable water consumed per EFTSL. KL of water as a 12-month rolling total, EFTSL for previous year.

<sup>10</sup> Total KL of potable water consumed per square metre of building area as a 12 month rolling total.

### 5.3 Materials Management

There are various environmental and financial costs in managing waste materials. As UOW expands so will the use of facilities and associated waste materials that will be generated. The focus for materials management will follow a hierarchy of avoiding and reducing waste before reusing and recycling, and finally treatment and disposal. Improved systems, infrastructure and education will support campus users to adopt practices that will assist in achieving the aspiration of zero waste to landfill.

#### Targets

- Reduce waste sent to landfill by 2020 (kg/EFTSL)<sup>11</sup>
- Divert 75% of materials from landfill by 2020<sup>12</sup>
- Recycling rate of 70% by 2020<sup>13</sup>
- No adverse environmental impacts from the management of other wastes<sup>14</sup>

Strategies and Actions	Performance Indicators	Reported Via	Responsibility
Develop and implement Waste Management Action Plans for Wollongong, Innovation and Shoalhaven Campus that will: <ul style="list-style-type: none"> <li>• Identify opportunities through audits of the waste types and volumes generated</li> <li>• Increase recycling and organic waste diversion</li> <li>• Improve waste collection services and infrastructure</li> <li>• Promote and support reuse programs</li> <li>• Improve monitoring of waste streams at all campuses</li> </ul>	Action Plan implementation Waste sent to landfill (kg/EFTSL) Waste diverted from landfill % Recycling rate % Other waste collections (kg)	EAC	FMD
Encourage UOW PULSE to develop and implement a waste management action plan that address issues such as low carbon food options, single use packaging, waste wise events and recycling infrastructure.	Action Plan implementation	EAC	PULSE
Develop and implement waste and recycling education and awareness programs as well as programs aimed to foster conscious consumption and green procurement practices for staff and students.	Program implementation	EAC	FMD

<sup>11</sup> Kg of waste as a 12-month rolling total, EFTSL for previous year, excluding residential accommodation

<sup>12</sup> Based on the NSW targets. Kg of waste diverted from landfill/ total kg of waste generated from Wollongong operations excluding residential accommodation

<sup>13</sup> Based on NSW target. Kg of material recycled / total waste collected from Wollongong operations, excluding residential accommodation

<sup>14</sup> Wastes that cannot be managed via standard collection services. These wastes include for example hazardous waste, electronic waste, soft plastics, litter.

## 5.4 Campus Environment

UOW's Australian campuses are located within a range of urban and regional settings. Improved environmental management of these built and natural environments will strengthen the relationship of campuses with the cultural and ecological attributes of the area as well as positively impact on the wellbeing of campus communities. UOW will provide world class academic facilities, recreational and social amenities and residences within planned, efficient campus that stand out for their natural beauty.

### Targets

- Greater than 90% of students satisfied with the campus environment (Wollongong Campus)
- New buildings and major refurbishments designed to best practice ecological sustainable development standards
- Increase native species planted <sup>15</sup>

Strategies and Actions	Performance Indicators	Reported Via	Responsibility
Develop and implement Action Plans under the Wollongong Campus Master plan that will: <ul style="list-style-type: none"> <li>• Identify and maintain existing biodiversity values</li> <li>• Manage habitat and reduce threats e.g. bush regeneration, preference for planting of native species with local provenance, pest management, litter reduction</li> <li>• Identify and manage the threat of flood and bushfire</li> <li>• Improve and raise awareness of the campuses (e.g. tree walks, art and cultural heritage, water and energy story)</li> <li>• Explore opportunities for green roofs and walls</li> <li>• Highlight the significance of the existing trees</li> <li>• Encourage the use of public and active transport options and minimise the use of private vehicles</li> </ul>	Action plan implementation Student survey satisfaction level Delivery of educational initiatives Number of native species planted	EAC	FMD
Review and implement Ecological Sustainable Development Guidelines for the design of new buildings, refurbishments of existing buildings and major maintenance activities.	ESD standards reviewed and implemented	FMD	FMD

<sup>15</sup> Native Australian species with local provenance preferred where suitable

## 5.5 Environmental Leadership

The world is facing complex social, environmental and economic challenges and as a global leader in discovery and learning UOW is working to transform people and the world we live in. Environmental leadership will continue to be demonstrated through research groups such as the Sustainable Building Research Centre (SBRC), SMART Infrastructure, Australian Centre for Cultural Environmental Research (AUSCCER) and the Global Challenges Program. UOW will continue to build on our leadership in transdisciplinary research through further collaboration in research and education to explore and tackle large scale global social, environmental and economic challenges.

### Targets

- Celebrate UOW's reputation as a place for outstanding transdisciplinary research
- Promote UOW's reputation as an environmental leader in teaching, research and applied environmental management

Strategies and Actions	Performance Indicators	Reported Via	Responsibility
Demonstrate environmental leadership through showcasing and sharing examples of environmental initiatives, policies and processes, research and teaching achievements of the university, staff and students.	Initiatives	EAC	FMD (collating)
Support sustainability in teaching and learning through facilitating: <ul style="list-style-type: none"> <li>• Local networks for sustainability teaching and learning practice</li> <li>• Integration of academic programs and the campus environment (e.g. living laboratories)</li> <li>• Student opportunities for internships, work experience and research within the Environment Unit</li> <li>• Updates of UOW course information on the <a href="http://sustainability.edu.au">http://sustainability.edu.au</a></li> </ul>	Implement initiatives	EAC	FMD

## 5.6 Governance, Systems and Practices

UOW fosters a low appetite for environmental risk and this is reflected in the systems used to manage environmental aspects and impacts. Large organisations face challenges to ensure environmentally sustainable principles are integrated into all procedures and practices and therefore a continuous improvement approach will be taken to ensure best practice environmental management is achieved.

### Targets

- Compliance with all relevant policy, procedures and legislative requirements
- Continuous improvement in our systems and procedures to reduce environmental risk

Strategies and Actions	Performance Indicators	Reported Via	Responsibility
Maintain governance structures that address environmental risks and compliance: <ul style="list-style-type: none"> <li>• Environmental Advisory Committee implementing the EMP</li> <li>• Finance and Resources Committee - reviewing environmental performance</li> <li>• Risk, Audit and Compliance Committee - overseeing legislative compliance</li> </ul>	EMP implemented Reports to FRC Compliance with legislation	EAC FRC RACC	FMD
Implement an Environmental Management System that addresses all functions and activities and interrelates with existing systems and processes (e.g. Risk management & Workplace Health and Safety).	EMS reviewed and implemented	EAC & FRC	FMD
Build capacity within the UOW community so that they can better understand the environmental impacts of their practices: <ul style="list-style-type: none"> <li>• Maintaining/support environmental networks</li> <li>• Providing training and support programs</li> <li>• Recognise students, staff and work areas for their environmental performance</li> </ul>	Functioning networks Training sessions provided Awards/recognition issued	EAC	FMD
Implement a procurement policy that: <ul style="list-style-type: none"> <li>• Supports the purchase of materials in line with the aspirations of the EMP</li> <li>• Considers the full life cycle cost including resource use and disposal</li> <li>• Promotes purchase of; recycled content, less toxic/hazardous alternatives, low embodied energy and energy efficient equipment</li> </ul>	Policy and guideline developed and implemented	EAC	FINANCE

## 6 Glossary of Terms

**Active Transport:** Modes of travel such as walking and cycling that involves physical activity.

**Biodiversity:** The variety of organisms, plant and animal life, in an area.

**Conscious Consumption:** Awareness of the impact of purchasing decisions on the environment and health and wellbeing.

**Carbon Footprint:** The sum of the carbon emissions from an individual, organisation or facility.

**Carbon Neutrality:** Having a net zero carbon footprint by offsetting the carbon emissions generated.

**Embodied Energy:** The total sum of the energy necessary to produce a service or product from its beginning to its final use.

**Energy Efficient:** Using less energy to achieve the same outcome.

**Environmental Sustainability or Ecological Sustainability:** An ideal in which the demands on the environment are met without reducing the capacity for life now or in the future.

**Greenhouse Emissions:** Gases that are released into the atmosphere as the result of human related activities and impact the greenhouse effect.

**Greenhouse Gas:** Gases in the atmosphere that absorb and emit radiation within the thermal infrared range. This process is the fundamental cause of the Greenhouse Effect. The main greenhouse gases in the Earth's atmosphere are water vapour, carbon dioxide, methane, nitrous oxide and ozone.

**Green Procurement:** Purchasing products and services that reduce environmental impacts.

**Green roofs and walls:** Vegetated wall and roof surfaces.

**Green Star:** An environmental sustainability rating system for buildings.

**Habitat:** The natural environment of an organism, a place in which it can live and grow.

**Life Cycle Costs:** The total cost of a system, product or service over its entire life. It includes the costs of; production, transportation, installation, operation, maintenance and disposal.

**Living Laboratory:** Applying research to the management of campus facilities or utilising the campus as a demonstration site for teaching.

**Local Provenance:** Plant species that have been propagated from locally sourced seed or cuttings from plant species that are endemic to the Illawarra.

**Low Carbon Food:** Foods that have a lower carbon footprint generated as a result of production, transport, distribution, packaging, storage, preparation, reprocessing or disposal.

**Modal Shift:** Movement away from higher polluting transport options, e.g. single occupant vehicular travel, to more environmentally sustainable options, e.g. public transport, cycling, walking and carpooling.

**Other Waste:** Items that cannot be managed via standard collection services, e.g. hazardous waste, electronic waste, soft plastics, discarded litter etc.

**Organic Waste:** Surplus materials derived from living matter, e.g. food and vegetation waste.

**Potable Water:** Water that is safe to drink or to use for food preparation, without risk of health problems. UOW's potable water is supplied by a government authority and meets drinking water standards.

**Recycled Content:** Items made in part or entirely from recycled materials.

**Self-sufficient in energy and water use:** Producing electricity onsite and capturing and reusing water without the need for external energy or water supply.

**Single-use Packaging:** Disposable food packaging designed for one use.

**Scope 1 Greenhouse gas emissions:** Emissions generating Greenhouse gases as a direct result of an activity e.g. using diesel in a vehicle or burning gas to heat water.

**Scope 2 Greenhouse gas emissions:** Emissions generating Greenhouse gases indirectly through the consumption of an energy commodity e.g. electricity use.

**Talloires Declaration:** Declaration signed by over 400 educational institutions outlining commitment to environmental sustainability in operations and teaching and research.

**Waste Streams:** Various waste materials, differentiated by collection method, reprocessing technique or disposal location.

**Wastewise Events:** Events hosted with the intention to reduce the waste generated and to divert the most amount of waste possible from landfill.

## 7 Acronyms

AUSCCER	Australian Centre for Cultural Environmental Research (AUSCCER)
CO <sub>2</sub> e	Carbon dioxide equivalent
DVC(R&I)	Deputy Vice-Chancellor (Research and Innovation)
EAC	Environmental Advisory Committee
EFSTL	Equivalent Full Time Student Load
EMP	Environmental Management Plan
EMS	Environmental Management System
ESD	Ecological Sustainable Development
FMD	Facilities Management Division
FRC	Finance and Resources Committee
FTE	Full Time Equivalent
GJ	Gigajoules
Kg	Kilograms
KL	Kilolitre
KPI	Key Performance Indicator
KgCO <sub>2</sub> e	Kilograms of Carbon Dioxide equivalent
KWh	Kilowatt hours
LED	Light Emitting Diode
M <sup>2</sup>	Metres squared
MJ	Mega joules
NGER	National Greenhouse and Energy Reporting
PV	Photovoltaic
RACC	Risk, Audit and Compliance Committee
SBRC	Sustainable Buildings Research Centre
TEFMA	Tertiary Education Facilities Management Association
UOW	University of Wollongong
Yr	Year

## 8 References and Related Documents

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## 9 Version Control Table

Version Control	Release Date	Author/Reviewer	Approved By	Amendment
1	10/05/2017	David Low, Environment Manager	Chief Administrative Officer	Draft Document
2	28/11/2017	Environment Manager	Chief Administrative Officer	Document revised based on comments received via consultation