



Water Resilient Policy



University
of Exeter

Overview

The Water Resilient Policy aims to integrate water management into areas where water use is taking place and to maximise the influence of the University in reducing its water use through education and research, its operations and ambitions.

Document Owner:	Sustainability Team
Reviewers:	Andy Seaman, Energy Manager Guy Head, Senior Mechanical Engineer Paul Mucklow, Director of Engineering & Direct Works Dr Peter Melville-Shreeve, Engineering Director of Estate Services The Energy Consortium Pennon Water South West Water WAVE
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1. Principles

The UK could face serious water shortages within the next 25 years as our population grows, and climate change brings hotter, drier summers. Without positive action on increasing supply, demand reduction and a significant reduction in wastage the UK could see future supply deficits which could be across the entire country or have more sporadic lasting impacts on specific regions. Winters in the south west UK are predicted to be warmer and wetter, and rainfall events in summer to be more intense which leads to additional challenges for dealing with waste water and surface run-off.

Environmental sustainability and climate change are the greatest issues facing humankind in the twenty first century: they are a major focus of Exeter's research and teaching activities and a key responsibility for the staff, students and governors of the University, as set out on our Environment and Climate Policy – target 1 and 30.

The Water Resilient Policy aims to promote conscious water usage on campus and integrate water management into areas where water use is taking place and to maximise the influence of the University in reducing its water use, ensuring sustainable supply of water and managing waste water discharge through education and research, its operations and ambitions.

Water use Reduction of 25% by 2030 and 50% by 2040:

All Campus activities/operations shall contribute to minimise the impact of water use and achieve the following Building related targets (Environment Agency Best Practice Benchmarks) :

- a) Higher & Further Education Buildings: 0.4 cu.m/m²/year
- b) Sports Facilities : 0.0305 cu.m/visitor/year
- c) Residences (Based on) 45 cu.m/bedspace/year
- d) Overall a 0.75 m³/m² in potable water by 2030.

The University aims to be a leader within the University sector as set out in the Environment and Climate Emergency Policy – Goal 4.

2. Responsibility

The Climate and Environmental Crisis Board is accountable for ensuring the Policy is implemented. Implementation of the water resilience programme will be embedded in all new decisions/ operations and activities and incrementally embedded into existing processes, contracts and tenders on renewal. All employees have a responsibility to ensure that the aims and objectives of the policy are met.

POLICY AIMS: The University requires its staff, students, partners and suppliers to

- a) Respect, embrace, and actively support the University agenda for water resilience across all our operations and activities,
- b) Proactively act in ways to support water resilience, raising awareness and recognising positive action, whether it be teaching, researching or other University related activity,
- c) Demonstrate commitment to managing, minimising and mitigating the impacts on water resilience from operations, activities, research and education,
- d) Seek to minimise the environmental impact through environment and climate emergency conscious decision making including systems design and choice of products, partners and suppliers,
- e) Evaluate performance and transparently report on decisions, outcomes and actions; providing commentary and explanations holding ourselves to account,
- f) Demonstrate compliance with all relevant legislation as a minimum, and where possible exceed it,
- g) Demonstrate commitment to improve continually and monitor environmental performance, report openly and transparently to support greater recognition of the benefits of environmental change and ensure that outcomes do not create a detriment to any group with protected characteristics within our community.

The University will embrace the water resilience agenda both strategically and globally through its development of water reduction initiatives, Climate Action plans and staff, student and community engagement. We will strive to minimise negative impacts and optimising positive opportunities delivering our water reduction targets; recognising our global and local reach, through the diverse operations, partnerships and programmes.

3. Vision for Water Management 2021-2030

The University of Exeter Water Resilient Policy has been broken down into three key categories which reflect the journey of water management on campus:

- a) Water Supply
- b) Water Use
- c) Waste Water Discharge

Together they address sustainable water management through: identifying where water is used excessively, changing user behaviours to reduce usage and monitoring the effectiveness of water use; strategies ensuring that University systems and procedures are in place to ensure supply and discharge infrastructure is managed effectively; investing in water efficiency technologies; and maintaining appropriate levels of water quality in all water systems.

4. Summary of Water Recommendations

- a) Measure and benchmark virtual water footprint: Develop policy to guide more sustainable practices (e.g. procurement etc.) based on evidence
- b) Identify best practice technologies
- c) Minimise unnecessary water usage
- d) Maximise alternative water reuse (rain, greywater) before ground water or potable water
- e) Minimise storm water discharge to match greenfield runoff rate. Control rainwater leaving site to demonstrate flood management exemplar
- f) Reduce Leakage on our systems: Monitor and minimise leakage of water on campus to enable test bed for leakage technologies to be developed
- g) Embedded real time data collection and visualisation across campus water systems: Share data with key user to drive better behaviour and accountability of water usage
- h) Undertake Whole Life costing for all water fixture and fittings including embedded carbon.
- i) Review opportunities for new technologies to improve water hygiene and reduce water consumption and energy use associated with temperature as a water hygiene control mechanism.
- j) Protect and enhance aquatic ecosystems on and off campus by implement nature-based flood management and water quality protection measures.

5. Water Supply

The University is in the catchment area of South West Water for management of water supply and waste water treatment. South West Water have management systems in place which are certified to ISO9001:2008, ISO14001:2004, ISO27001:2005 and ISO17025:2005 to ensure water quality and to minimise environmental impacts. Find out more about SWW's environmental policy [here](#).

5.1 Water Leaks

Aim: To reduce water leakage losses through prompt identification and repair of water leaks on our supply network Key objectives:

- a) monitor water supply meter readings on a monthly basis (comparing to previous month as well as same month in previous year) to identify potential leaks
- b) The Engineering and Direct Works Team to respond to all reports of leaks promptly to investigate if further action should be taken
- c) All confirmed leaks to be reported to the current water supplier within 24 hours All significant leaks (e.g. large bore high volume pipes, pressurised systems) to be repaired within 24 hours where possible
- d) The Engineering and Direct Works Team to respond to all reports of water wastage such as dripping taps within a maximum of 10 days
- e) Carry out non-intrusive leak detection surveys at 5 yearly intervals, and repair any leaks found, to ensure the integrity of the water distribution mains is being maintained.
- f) The Engineering and Direct Works Team to monitor water leaks in heating system to ensure there are no significant leaks.
- g) The Engineering and Direct Works Team to ensure water storage is kept to a minimum by adjusting tank levels or removing tanks when required. This is part of the ACOP L8.
- h) Install a leak detection system from the main incoming meters to each building to monitor for leaks on each leg of water main.
- i) Replacement or lining of external metallic pipework to minimise future water losses.

5.2. Abstraction of Groundwater

Aim: To reduce consumption of potable water through utilisation of groundwater abstraction Key objectives:

- a) Maintain groundwater Abstraction database.
- b) Where water abstraction licences are in place they are in accordance with relevant regulations and the conditions set out within the licence are met.

5.3. Water Supply Network

The University of Exeter has numerous water supply networks on the 3 campuses that needs to be maintained. These networks supply both University buildings and 3rd party users e.g. UPP, INTO and Northcott Theatre and is required to ensure a reliable supply of water.

Aim: To effectively manage our water supply network through ensuring a clean and reliable service for all University users and ensure that water supplies are managed efficiently.

Key objectives:

- a) Estates Services to ensure that services drawings are kept up-to-date including:
 - I. Keep the water services network drawings up to date, ensuring meter locations are fully visible
 - II. Update the water services network drawing when new builds or alterations are complete
- b) The Engineering Team to review water network condition and produce an upgrade programme to eliminate water leakage.
- c) Where we have 3rd party users that are supplied off our network their consumption will categorise as upstream/Downstream. We will inform them of any issues with their water meters.
- d) Continue to assess the suitability and cost-effectiveness of water efficiency technologies such as greywater and rainwater harvesting systems.

5.4. Purchasing Water

The water and wastewater markets in England were de-regulated in 2017 giving the opportunity to purchase these services from alternative suppliers.

Aim: Manage the University's contract for purchase of water and wastewater services to ensure value for money.

Key objectives:

- a) Review current water and wastewater procurement services through the existing frameworks such as The Energy Consortium's (TEC) OJEU compliant framework which is fully compliant with EU and UK Procurement Regulations.
- b) The Energy Manager review's the contract arrangements on a regular basis, contingent on the framework agreement.

6. Water Use

6.1. Water Efficiency

Aim: Minimise water consumption through water efficient fixtures Key

objectives:

- a) Estates service to develop minimum specifications for water fixtures and fittings using maximum flow rates where appropriate.
 - i. WC : 1.5 litres effective Flush Volume
 - ii. Wash-hand basin taps : 3 litres/min
 - iii. Showers : 6 litres/min
 - iv. Urinal (waterless)
 - v. Greywater and rainwater system
 - vi. Kitchen tap: kitchenette : 5 litres/min
 - vii. Kitchen taps: restaurant (pre-rinse nozzles only) : 6 litres/min
 - viii. Domestic sized dishwashers : 10 litres/cycle
 - ix. Domestic sized washing machines : 30 litres/use
 - x. Waste disposal unit : 0 litres/min
 - xi. Commercial sized dishwashers : 3 litres/rack
 - xii. Commercial or industrial sized washing machines : 4.5 litres/kg
- b) Undertake annual review of minimum standard to take account of innovations in the market
- c) Estates Service and Technical Services to develop minimum specifications for water fixtures and fittings using maximum flow rates where appropriate for research based activates.
- d) Estates Service and Academic staff to identify all research based water use activates
- e) Review the opportunities for new technologies to improve water hygiene and reduce water consumption and energy use associated with temperature as a water hygiene control mechanism.
- f) Prioritise water-conscious planting across the estate to minimise water usage e.g. via the use of drought tolerant plants.

The University utilises the International Standards of BREEAM (Building Research Establishment's Environmental Assessment Method) on projects to ensure our water management is to the highest standards. Find out more about the BREEAM water assessment criteria [here](#).

6.2. Education and Awareness

Aim: Empower staff and students to take water reducing measures through awareness raising and educational activities.

Key objectives:

- a) Ensure water efficiency is incorporated into all Climate Action Plans to encourage staff and students to use less water and align with the E&CE Benchmarking and communication strategies.

6.3. Monitoring

Aim: Monitor water consumption to identify opportunities to reduce consumption Key

objectives:

- a) Undertake a review of the current coverage and accuracy of the existing water metering's from main incoming meters to buildings.
- b) Automatic meter readings (AMR) – By having AMR meters and checking the recorded data it is possible to identify water leaks and wastage from observing water use during unoccupied periods, and by comparing current usage with that at the same time in the previous year.
- c) Install additional water meters where existing metering is considered not to be sufficient.
- d) Ensure Water meters are installed on large water using process over 200 cubic meters per year
- e) Benchmark water use across the University to be able to prioritise buildings with water use levels above a certain threshold; and spreading experience of successful water efficiency interventions at the University.
- f) Produce and update a rolling 52 year water action plan considering water efficiency options.

7. Wastewater Discharge

7.1. Infrastructure

The University has a large foul sewerage network for wastewater on its campus's, which needs to be maintained. The foul sewerage network additionally connects to buildings operated by 3rd party users e.g. UPP, and where there are issues with the foul sewerage network the University works with these 3rd party users as required.

Aim: To effectively manage our foul sewerage network through ensuring service drawings are updated, infrastructure is maintained and third-party users foul water services are managed efficiently.

Key objectives:

- a) To work closely with the Estates Projects team to ensure that services drawings are kept up-to date including:
 - i. Keep the foul sewerage services network drawings up to date
 - ii. Refer to the foul sewerage services network drawings when undertaking new builds
 - iii. Update the foul sewerage services network drawing when new builds are built
 - iv. Undertake a review of high risk areas on the foul drainage system
 - v. Plan and undertake a programme of repairs to the foul drainage system
 - vi. Identify where surface water may be entering the foul water drainage system, and take action to prevent this, incorporating nature-based solutions such as high nature value sustainable urban drainage systems.
 - vii. When new buildings are being developed assess the effect on the foul drainage system to prevent the flow limit being exceeded
 - viii. Monitoring and reviewing the effluent to ensure that we are aligned with our Trade effluent agreements.

7.2. Preventing Pollution to Water Ways

Aims: to reduce pollution of all kinds entering waterways

Key Objectives:

- a) Implement our Single Use Plastics Policy – Adopting a whole institution approach, apply circular economy principles, develop pragmatic solutions with impact and work in partnership with third parties who provide retail, catering and residential services on our campuses. This will ensure we use less single-use plastics, utilise alternative materials and adopt sustainable disposal solutions wherever possible.
- b) Sustainable Procurement Policy - Procure goods and services in ways that maximise efficiency and effectiveness while minimising social and environmental impacts and risks.
- c) Waste Standard & Hazardous Waste Compliance Briefing Note – Setting out the requirements of the management of waste (including storage and disposal) and that risks are adequately controlled.
- d) LEAF Green Chemistry - designing and implementing chemical processes and products that can reduce or eliminate the use of hazardous substances. It also deals with minimising or eliminating the generation of hazardous waste products and correct disposal.
- e) Biodiversity Strategy – setting out our on-campus watercourse management.
- f) Incorporating nature-based flood and pollution management solutions into campus where possible (see section 8).
- g) Sustainable Design Guide - informs decisions on sustainable design and construction, including rainwater harvesting, SuDS and supporting biodiversity by mitigating against water quality.

The University of Exeter Environmental Management System (EMS) is certified to ISO14001:2015. The EMS Policy Aims set out our commitment to manage, minimise and mitigate the impact of our operations and activities, including pollution prevention and impact minimisation. This is achieved through legislative compliance, monitoring of our aspects, impacts and risks and a suite of Operational Controls, including:

- a) Emergency Response Procedures for the management of spills (inc., oil and chemical)
- b) Grounds Management (inc., ponds and watercourse management, hazardous materials, waste and chemical management) ii. Energy, Water & Carbon Management
- c) Waste Management

Our EMS is subject to internal, second party and external audits and second party Compliance Evaluations (legislation).

The University is committed to a target of zero for all pollution incidents.

Contaminated wastewater is disposed of responsibly with 'consent to discharge' in place where appropriate.

Emergency Procedures

Aim: Ensure Pollution Prevention Policies and Procedures (as above) are followed and communicated, legislative compliance is monitored, and Emergency procedures are reviewed, tested and communicated regularly to maintain compliance.

Key objectives:

- a) Engineering and Direct Works to review annually its procedures to avoid incidences of water

pollution.

- b) Our Environmental Management System (EMS) meets the requirements of ISO14001:2015 and is UKAS certifier accredited.
- c) Conduct compliance and performance audits of our EMS.
- d) Conduct annual reviews of our EMS operational controls. 10 of 13
- e) Review and update our Aspects and Impacts register, as a minimum annually.
- f) Monitor and meet our compliance with environmental legislation using our legislation database and report to University Compliance Committee on selected environmental legislation upon request.
- g) Carry out root cause analysis on reported spills.
- h) Monitor the performance of our EMS, including targets (such as zero pollution incidents and legislative compliance) and hold top management reviews.

The University operates an Environmental Management System (EMS) in line with and certified to ISO14001. This system contains Environmental Procedures relating to Spills/Pollution Response, available on the ISO:14001 Environmental Management SharePoint site.

7.3. Surface Water Run Off

Aim: to reduce surface water run -off from campus.

Key objectives:

- a) Where new buildings are constructed the possibility of installing Sustainable Urban Drainage systems is to be assessed and installed as appropriate.
- b) Take an integrated water management approach, where water is controlled and made available for water reuse before being controlled using SuDS.
- c) Investigate surface water pathways across campus to identify if surface water runs 1 into foul drains.
- d) Investigate options for and implement a system for identifying and marking surface water drains
- e) Ensure system for marking vulnerable drains is incorporated into the spill response training
- f) Investigate opportunities to retrofit biodiversity rich SuDs on campuses

¹SUDs provide a method for allowing surface water drainage to be collected, stored and released in to the natural environment (ponds, watercourses, the ground) over a period of time helping to prevent the surface water system being overwhelmed and helps prevent local flooding as a result.

7.4. Trade Effluent

Aim: Maintain the existing Trade Effluent consents. The University has 7 trade effluent agreements in place with Southwest Water which are defined as Minimum Discharge Exception Certificate. These are reviewed every 2 years with South West Water.

Key objectives:

- a) Undertake yearly review of existing Trade Effluent agreement to ensure they are up to date with current process being undertaken
- b) Review Trade Effluent sampling point and update drawings
- c) University's Strategic Waste and Resource Manager will ensure records for trade effluent consents up

to date and are available on request.

- d) University's Strategic Waste and Resource Manager will update the consents where changes in use/new buildings result in changes to where and what type of Trade effluent is discharged by the University

8. Watershed management and maintaining freshwater ecosystem health and biodiversity

Aim: to minimise our negative impacts and enhance positive impacts on aquatic ecosystems both on and off campus.

Key objectives:

- a) To ensure the safety of water entering the wastewater system via our Legionella/Water Hygiene Management Standard which also sets out the duties and responsible persons of the Water Safety Group
- b) To use the EMS Aspects and Impacts register to capture emissions and discharges, pollution of land, run off to controlled waters and impact on biodiversity and health.
- c) Implement the Nature Positive Strategy which incorporates targets for
 - i. increasing the biodiversity value of campus habitats including ponds and waterways
 - ii. reducing surface water run-off from campus, using biodiversity rich SuDs (see section 7.3),
 - iii. having protected habitat corridors on campus which incorporate water courses
 - iv. understanding and reducing impact of all our activities on biodiversity, including aquatic biodiversity, by carrying out a Biodiversity footprint analysis, and then taking action to reduce it.
- d) Review biodiversity strategies/action plans specific to each campus to include actions to increase aquatic species diversity in ponds and watercourses, particularly the Taddiforde Brook and ponds in the Higher Hoopern Valley at Streatham campus, and entrance pond at Penryn. Plans encompassing watercourse management to reduce over-nitrification, control of aquatic weed that may have detrimental effect on oxygen levels, reduce build-up of silt and excessive organic material and provide semi-natural habitats and margins around freshwater habitats (where possible), reducing the likelihood of pollution entering water courses and providing safe areas/additional habitats for freshwater species.
- e) Implement nature-based flood management schemes on campus where appropriate, in collaboration with responsible agencies and authorities.
- f) Incorporate water resilience into the Sustainable Design Guide for new construction and refits - informs decisions on sustainable design and construction, including rainwater harvesting, SuDS and supporting biodiversity by mitigating against water quality.
- g) Incorporate assessment of freshwater habitats into the Biodiversity Monitoring plan, implemented as part of the Nature Positive Strategy
- h) Incorporate information and data on our impacts on aquatic ecosystems into teaching activities.

University research and projects support the monitoring of health of aquatic ecosystems and management of water through various research and projects including:

Aquatic Resources Centre (ARC)

Improving our understanding of how chemicals entering the environment affect aquatic

organisms; monitoring current and predicting future global impacts of ocean acidification and climate change; assessing the impacts of anthropogenic noise pollution on aquatic ecosystems; working towards sustainable aquaculture;

Centre for Resilience in Environment, Water & Waste (CREWW)

A state-of-the-art CREWW Microplastics Lab enabling further ground-breaking work on microplastics

- Waterverse –developing a Water Data Management Ecosystem (WDME) with the aim to improve usability of data and the interoperability of data-intensive processes.
- Understanding Combined Sewer Overflows (CSO) discharge impacts
- Groundwater Infiltration Risk Map of Sewer Networks - to generate a risk map for a pilot study in the SWW sewer network, highlighting areas most prone to ground water infiltration and enabling SWW operations staff to proactively target site investigations
- Nature for Climate Change, Peatland Grant Scheme - Building on a decade of research case studies at the University of this project continues to support and evaluate peatland restoration in collaboration with the South West Peatland Partnership.
- Upstream Thinking 3 - ambition is to cover 50,000 hectares of biodiversity and water quality improvement through restoration and intervention.
- Catchment Systems Thinking Cooperative – aiming to revolutionise the way crucial data about England and Wales’ water environment is gathered and shared, in particular on the health of the nation’s rivers.

Centre for Water Systems - research addresses the provision of safe drinking water to large urban areas

- Blue Heart is a 6-year project, funded by Defra's Flood and Coastal Resilience Innovation Programme (FCRIP), which aims to champion innovative approaches to flood resilience and climate adaptation in Eastbourne and southern Wealden.
- The NATALIE project, funded by the European Commission's Horizon Europe programme, addresses existing and threatening climate risks and proposes the application of Nature-Based Solutions (NBSs) to help resolve them.
- Resilientogether – Defra initiative in the Pix Brook catchment, aiming to better monitor, respond and adapt to changing flood risks.