Commercial Services & Estates Department Water Management Strategy 2022 - 2027

Statement of Support

I support the commitment of the Commercial Services & Estates Department to manage water sustainably and to reach our target to reduce our water consumption by 2% year on year starting from the 2016/17 baseline.

R. Moore

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1 Introduction

The Commercial Services & Estates Water Management Strategy document is designed to support delivery of improvements under the University's Environmental Management System (EMS) certified to ISO14001:2015.

The Water Management Strategy provides an oversight of the reasons why it is necessary to reduce water consumption and improve water efficiency in our buildings. Further, the Strategy details the methodologies used, together with the underlying targets, to achieve the required reduction in overall water consumption.

2 Drivers for Sustainable Water Management

The following drivers are fundamental influences to the way in which we currently manage our water supply, use and discharge from the campus, and how this will be managed in the future.

2.1 Legal Compliance

2.1.1 Legislation

The University is required to ensure that pipework and fittings meet the requirements of the Water Regulation advisory scheme and the water supply regulations. This means that we must ensure that water fittings are installed, connected and arranged to prevent waste, misuse, undue consumption and contamination of the water supply.

2.1.2 Water Discharge Consents

The University is subject to limitations on the volumes of water discharge to the local authority sewer systems. Currently our agreed discharge rates should not exceed 35 l/s.

2.1.3 Abstraction

The University has access to a borehole for the abstraction of ground water. The University is required to monitor any volumes that are abstracted and to obtain an abstraction license should the daily volume exceed 20m^3.

2.1.4 Internal Procedures

The Commercial Services & Estates Maintenance Section follow set procedures to ensure compliance with relevant legislation. Approved Code of Practice (ACOP L8) is used for the testing and monitoring of water systems. This ensures stagnant water levels in tanks are kept to a minimum by reducing the volumes of tanks through control levels reducing the need to run off or dump excessive water.

2.2 Environmental Impact

Using water purchased from the utility supplier results in CO^2 emissions from the energy used to abstract it, to treat it for drinking, to deliver it to the point of use, and to treat the wastewater so it can be discharged. The University's monitors CO^2 emissions from potable water consumed and waste-water treated on an annual basis.

2.3 Financial Implications

Decreasing water consumption will have a significant financial benefit through reductions in water bills. Based on the 2021/22 data, water, and the associate waste-water costs were over £900,000 for the year. A reduction in water consumption will have a significant impact on the University's utility bills.

2.4 Local Drivers

2.4.1 Environment Policy

The University of Kent's Sustainability Policy was last updated and signed by the Vice Chancellor and Chair of Council in October 2021 and sets out our objectives and commitments to sustainability and environmental management including:

- Improving energy and water efficiency through investing in the Estate to reduce carbon emissions in line with the University's target to achieve net zero scope 1 & 2 emissions by 2040.
- Putting in place appropriate controls to protect the environment, prevent pollution and work to reduce emissions and discharges to air, land and water.

2.4.2 ISO14001:2015

The University of Kent operates an Environmental Management System (EMS) certified to ISO14001:2015. This system requires us to identify our significant environmental aspects and develop a programme of improvement, identify relevant legislative requirements and ensure operational control in order to achieve continuous improvement in environmental performance.

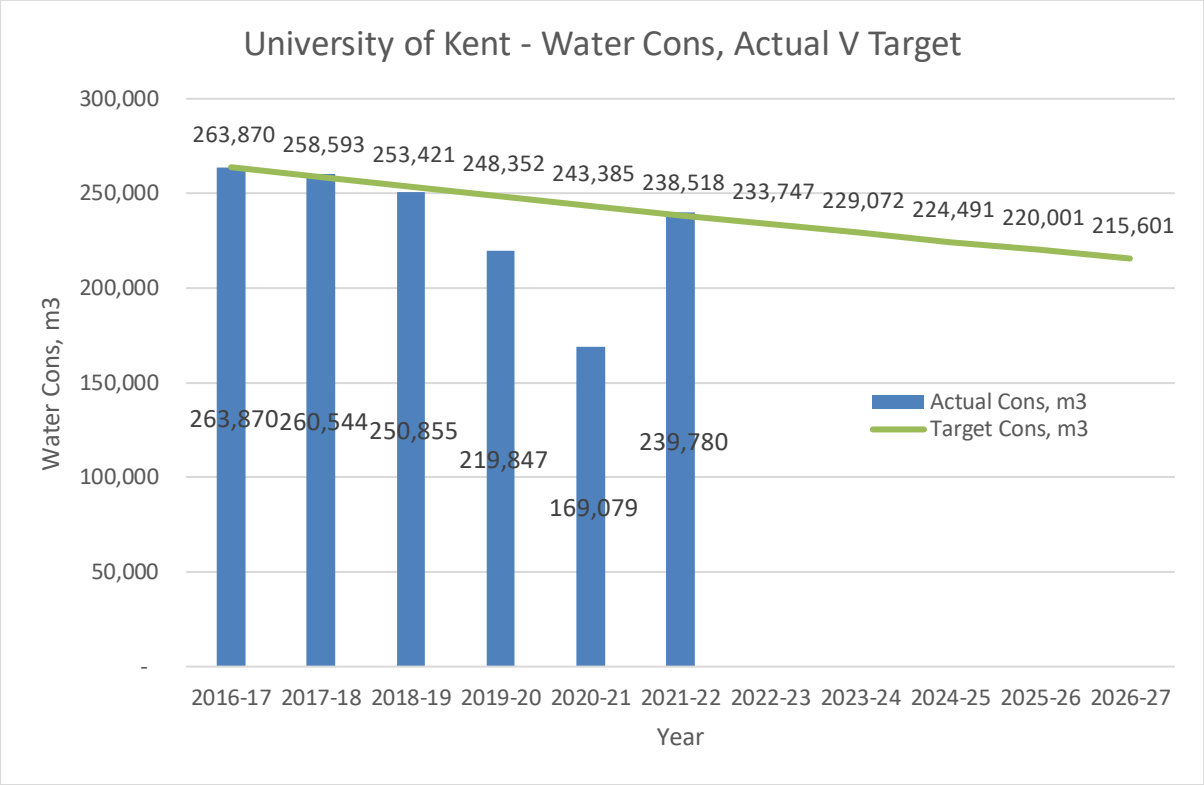
2.4.3 Energy Risk Management Group (ERMG)

In addition to reporting on performance against the targets and KPIs in this strategy under the EMS, the information arising from implementing this strategy will be fed back to the ERMG by the Energy Engineer. This Group can instruct action be taken based on the information supplied.

3 Progress 2016/17 – 2021/22

3.1 Performance against targets

Between 2016/17 and 2021/22 our annual water consumption varied dramatically as shown in the graph below. The water consumption was very low in 2019/20, and 2020/21 due to the impact of covid. Water consumption levels have increased back to more normal levels in 2021/22, and was 0.5% over the target projected from the 2016/17 baseline. During the period 2016/17 and 2021/22 some new buildings were built, and the total floor area of the University buildings increased by 2.3%.



3.2 Baseline and Targets

Based on a 2% reduction per year, from a 2016/17 baseline, our target water consumption targets for the next 5 years are as follows.

Year	Water Consumption (m^3)
2016/17 (Baseline Year)	263,870
2022/23	233,747
2023/24	229,072
2024/25	224,491
2025/26	220,001
2026/27	215,601

3.3 Water Management successes

During the period 2016/17 to 2021/22 there have been several issues resulting in excess water usage. These have include identifying and repairing leaking water mains in a timely manner, both externally, and internally for buildings. For example at Darwin College, and

Eliot College. Another area where issues have been identified and fixed includes issues with water using equipment not operating correctly resulting in large volumes of water being wasted, for example, there was a faulty water softener control valve at Keynes, which was replaced.

The University has a range of fittings and equipment within its buildings due to the age of the site. The result of this is that some of the older installations are less water efficient. Over time where washroom refurbishments have been undertaken water saving equipment has been fitted. Additionally where required this new equipment has been added on to existing maintenance agreements.

4 Vision for Water Management 2022-2027

The Commercial Services & Estates Department's Water Management strategy 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

4.1 Water Supply

4.1.1 Water Leaks

Aim: To reduce leakage losses through swift identification and repair of significant water leaks on our supply network

Key objectives:

- The Energy Engineer to 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
- The Maintenance section to respond to all reports of leaks within I hour to investigate if further action should be taken
- 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
- The Maintenance section to respond to all reports of water wastage such as dripping taps within a maximum of 20 days

- 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.
- The Maintenance section to monitor water volumes in the district heating system to ensure there are no significant leaks.
- The Maintenance section 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.
- Installation of check water meters by the Energy Engineer as required.

4.1.2 Abstraction of Groundwater

Aim: To be in a position to possibly replace the use of some potable water through utilisation of groundwater abstraction if required.

Key objectives:

- Install borehole pump and meter at grounds maintenance yard.
- Check feasibility of replacing some potable water usage if required.

4.1.3 Water Supply Network

The University has a large water supply network on the Canterbury campus that needs to be maintained. The water supplies in to the site are metered. In addition to the University buildings these meters additionally supply 3rd party users e.g. UPP, and where there are issues with the water supply network the University works with these 3rd party users as required. The University has drawings showing the existing water supply network, including supplier meter locations. When new buildings are built these drawings are to be referred to.

Aim: To effectively manage our water supply network through ensuring service drawings are updated and third-party users water supplies are managed efficiently.

Key objectives:

To work closely with the Estates Projects and Technical Support teams to ensure that services drawings are kept up-to-date including:

- Keep the water services network drawing up to date
- Refer to the water services network drawing when undertaking new builds
- Update the water services network drawing when new builds are complete

Where we have 3rd party users that are supplied off our network their consumption will be discounted from our assessments of the University's water consumption. We will inform them of any issues with their water meters. We will compare the relative performance of their buildings with the University buildings and standard benchmarks; if they deviate significantly from these comparators, we will advise the 3rd party of this to encourage them to reduce water consumption.

4.1.4 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:

- Set up a single contract covering both water and wastewater services through the Energy Consortium's (TEC) OJEU compliant framework which is fully compliant with EU and UK Procurement Regulations.
- Review the contract arrangements on a regular basis, contingent on the framework agreement.

4.2 Water Use

4.2.1 Water Efficient Fixtures

Aim: Minimise water consumption through water efficient fixtures

Key objectives:

- The Technical Support team has developed a Combined Standard Equipment Specification including specifications for water efficient water fixtures and this is to be used by the Projects Team.
- Ongoing servicing of automatic urinal flush controllers

4.2.2 Education and Awareness

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

Key objectives:

- Ensure water efficiency is incorporated into our communications and engagement activities, and within the FutureProof programme to encourage staff and students to use less water.
- Work with Kent Hospitality and Kent Union to identify opportunities to raise awareness in students living on campus, especially around preventing fat, oil and un-flushable items entering the sewerage system.

4.2.3 Monitoring

Aim: Monitor water consumption to identify opportunities to reduce consumption

Key objectives:

- 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.
- Install additional check water meters where existing metering is considered not to be sufficient.
- 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.

4.3 Waste Water Discharge

4.3.1 Infrastructure

The University has a large foul sewerage network for wastewater on the Canterbury campus, 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. The University has drawings showing the existing foul sewerage network, and the surface water network. When new buildings are built these drawings are to be referred to.

The foul sewerage network incorporates a series of pipes and pumping stations. Further, the flow offsite is metered at the main outfall. Maintenance of the pumping stations and the main outfall is essential to prevent possible uncontrolled discharges of wastewater from the system.

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:

- Put in place arrangements to maintain the waste water flow rate below the limit level of 35 litres/second in line with planning discharge consents
- To work closely with the Estates Projects team to ensure that services drawings are kept up-to-date including:
    - Keep the foul sewerage services network drawings up to date
    - Refer to the foul sewerage services network drawings when undertaking new builds
    - Update the foul sewerage services network drawing when new builds are complete
- Where we have 3rd party users that have drains connected in to the foul water network on site the material from these will flow through the foul outfall monitoring station. We will install flow inhibits at large local pumping stations to inhibit flow in peak flow situations. We will advise the 3rd party users if we see any significantly high usage through their water meters. We will advise them if we note any rainwater entering their foul mains.
- Undertake a review of high risk areas on the foul drainage system
- Plan and undertake a programme of repairs to the foul drainage system
- Identify where surface water may be entering the foul water drainage system, and take action to prevent this
- When new buildings are being developed assess the effect on the foul drainage system to prevent the flow limit being exceeded

4.3.2 Emergency Procedures

For the Foul Drainage System at the Canterbury Campus there are 2 types of emergency condition that can occur:

1) **Exceeding Flow Rate:** The main foul wastewater outfall is monitored and shows an alarm if the flow rate exceeds the flow limit of 35 l/s. The inhibit system is set up to

turn off the foul wastewater pumping stations in stages if the flow rate approaches the flow limit.

2) **Local Pumping Station Failure:** The foul wastewater pumping stations have alarms fitted and have emergency procedures in place. These include High Limit alarms in the Storage Tanks, and pump failure alarms.

The Foul Drainage System – Emergency Procedure: This details how the alarms for these issues are signalled, and the action to be taken in the event that either or both occur.

Aim: Ensure Emergency procedures are reviewed, tested and communicated regularly to maintain compliance

Key objectives:

- Assistant Director: Energy & Hard FM to ensure there is a robust procedure in place to deal with emergency situations.
- Head of Maintenance to ensure regular checks of the operation of the inhibit system for the pumping stations.
- Head of Maintenance to check emergency procedures in the event of a Pumping station failure supported by the Energy Engineer.
- Head of Maintenance to put in place arrangements to monitor flow rate and keep auditable records of planned maintenance and emergency incidents.

4.3.3 Surface Water Run-Off

Aim: Where new buildings are constructed the possibility of installing Sustainable Urban Drainage systems is to be assessed, and installed as appropriate.

SUDs 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.

Gulley's are maintained on a 6-monthly basis in accordance with a procedure (P23e) produced as part of the PPM system.

Key objectives:

- Where surface water is identified to be entering the foul water system the drainage arrangements are to be modified to re-direct the surface water to flow through an appropriate surface water pathway.

4.3.4 Trade Effluent

Aim: Maintain the existing Trade Effluent consents.

Key objectives:

- The Energy Engineer will ensure records for trade effluent consents up to date and are available on request.
- The Energy Engineer 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.