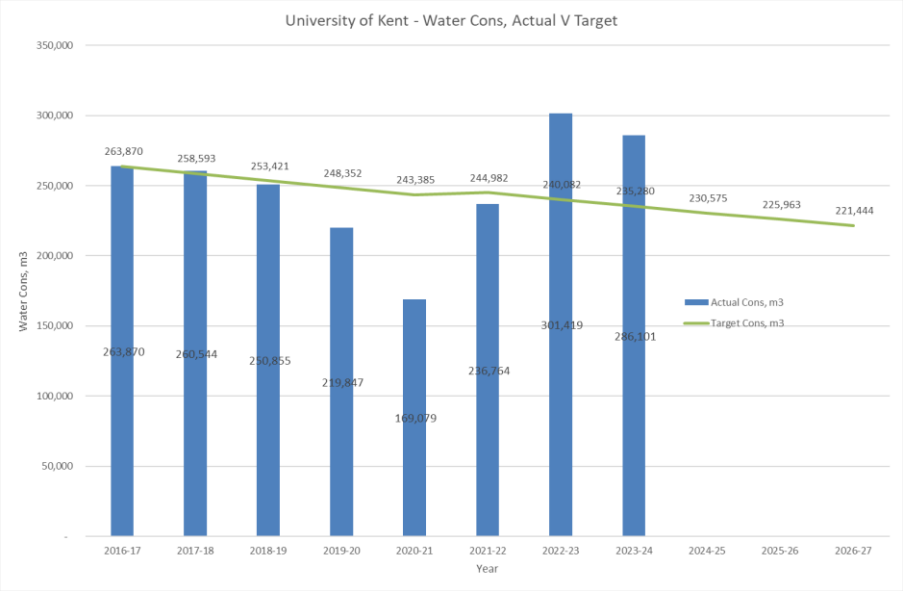
Water Action Plan 2024-2027

Water and sewerage make up a significant part of the University's utilities costs, and it is good practice not to waste water. With this in mind the University has set a target to reduce water consumption:

Where the University has a target to reduce water consumption the baseline year is 2016/17 (adjusted for changes in building stock).
The target is to reduce water consumption by 2% from the previous years consumption starting from the baseline year.
The current target is due to run until the end of 2026/27 when a new baseline and target for water consumption will be set.

The actual consumption is tracked against target consumption as shown on the graph below:



The graph shows the effect of the Covid pandemic where the number of staff and students on site were lower in 2019-20, and 2020-21 with a corresponding reduction in water use. The site has since returned to full occupancy and while water use was in line with the target in 2021-2022 there has been a significant increase in water consumption in 2022-23, and 2023-24.

This Water Action Plan details how the water is monitored, and how monitoring is being improved by using Automatic Meter Reading. Information on the water mains including, how they are aging and failing, together with proposals to upgrade them at some locations and increased checking of the mains to identify and fix leaks. Work done to identify and fix excess use. Over the next 3 years the aim is to get water use back to historic consumption levels and then back in line with the reduction target.

A summary of the Water Action Plan details measures and actions are listed in the Summary Tables below.

Water Management Plan – Summary of Water Measures

2024/25

Location	Water Action Plan Reference and description	Project Type	Program	Budget Cost, £	Saving £/year	Saving, m3/year	Saving Carbon, tonnes/year	Status/Notes
Marlow, Grounds, Oaks Nursery Building Jennison Building.	**1.2 Water Meter Replacements** Replacement of Water Meters: Marlow 1 (W40), Marlow 2 (W41), Grounds Washdown (W154), Oaks Nursery Building (W96), and Jennison Building (W28). (Meters are due t be connected to AMR)	Water Saving	Feb25 - Jul25	TBC	N/A	N/A	N/A	This will improve monitoring of water use, and help prevent water being wasted due to leaks.
Parkwood Houses	**1.5. Site Checks on the Water Mains for the Parkwood Houses supplies** Repair the 12 water leaks identified	Water Saving	Feb25 - May25	TBC	39,000	13,000	8	This will reduce water loss through leaks.
Parkwood Flats	**2.2 Parkwood - Continuously flushing toilets** Engineer to check Houses to identify any continuously flowing toilet cisterns, and fix these faults	Water Savings	Summer 24	4,200	40,800	8,000	3	This will help to prevent excess water use

2025/26

Location	Water Action Plan Reference and description	Project Type	Program	Budget Cost, £	Saving £/year	Saving, m3/year	Saving Carbon, tonnes/year	Status/Notes
Length of old failing water pipe work from library up to Giles Lane along Cornwallis and towards Darwin	**1.4 Replacement of Durapipe (Grey Pipe)** Replacement of old section of Durapipe. The pipework is brittle, and the joints are failing. Water leaks are becoming more frequent.	Water Saving	Feb25 - Jul25	TBC	18,000	6,000	2	This will help reduce water leakage
Parkwood Houses	**1.5. Site Checks on the Water Mains for the Parkwood Houses supplies** Yearly site survey to check for water leaks by: 1) Lifting the main drain covers to check for leaks 2) Listening to the stop cocks inside each house for leaks	Water Saving	Summer 25	2,600	9,000	3,000	1	Water consumption to be monitored for excess use. Savings are estimated
Parkwood Houses	**2.2 Parkwood - Continuously flushing toilets** Engineer to check Houses to identify any continuously flowing toilet cisterns, and fix these faults	Water Savings	Summer 25	4,200	40,800	8,000	3	This will help to prevent excess water use

2026/27

Location	Description	Project Type	Program	Budget Cost, £	Saving £/year	Saving, m3/year	Saving Carbon, tonnes/year	Status/Notes
Parkwood Houses	**1.5. Site Checks on the Water Mains for the Parkwood Houses supplies** Yearly site survey to check for water leaks by: 1) Lifting the main drain covers to check for leaks 2) Listening to the stop cocks inside each house for leaks	Water Saving	Summer 26	2,600	9,000	3,000	1	Water consumption to be monitored for excess use. Savings are estimated
Parkwood Houses	**2.2 Parkwood - Continuously flushing toilets** Engineer to check Flats to identify any continuously flowing toilet cisterns, and fix these faults	Water Savings	Summer 26	4,200	40,800	8,000	3	This will help to prevent excess water use
Sibson Building	2**.3 Sibson Building - Continuously flushing toilets** Monitor for excess water consumption. Undertake a trial replacing existing Air or Pneumatic Flush Valves in the Sibson Building with an alternative more reliable flushing arrangements	Water Savings	2026/27	840	25,500	5,000	2	The water use at Sibson is to be monitored as a first step

1.0. Water Supply

1.1. Water Metering Arrangements

The University uses approximately 70 water meters to measure the water consumption at the Canterbury and Medway Campuses. The process of fitting 44 of these meters on the largest water supplies with Automatic Meter Readers (AMR) is being done as part of the Energy Partnership works with Siemens during Dec24-Jan25.

Where water companies supply water to the University then the water company will use it's own meters to record consumption. The water companies collect data off their meters via the pulse output on the water meter. Siemens have contacted the water companies for approval, and are fitting splitters to the pulse output signal to allow Siemens to record the water using their AMR. The company water metered supplies provide metered water to individual buildings or groups of buildings.

Buildings with individual water supplies

Where a company supply water meter provides water to individual buildings the water consumption can be tracked straightforwardly with a meter fitted with Automatic Meter Reading (AMR). The water consumption can be recorded at half hourly intervals and a daily profile produced. The daily profile can be checked to see if water is being consumed continually when there is a period of no demand (typically overnight), and if it is this may indicate a leak.

Buildings with a group supply

Where a company supply water meter provides water to a group of buildings then generally the buildings fed off this supply will need to be fitted with individual water submeters. The exception to this are Darwin Houses and Parkwood Houses which are a number of small supplies grouped together.

Water Metering Zones

Where there are groups of buildings with submeters off a single company supply water meter then a virtual meter can be created. The virtual meter would record the overall supply meter for the zone with the submeters being subtracted from this. If the result of this calculation is a positive number, then this may indicate a water leak on the water mains in the zone.

Parkwood Houses and Parkwood Sports Facilities Zone

The supply to Parkwood Houses has had a new water submeter fitted in June 2024. This new water meter records the water consumption for the Parkwood Houses and the New Sports Pavilion, Old Sports Pavilion, new tennis courts and the sports field. The water use by the Houses is monitored, as the sports facilities water consumption are metered and can be discounted from the total.

In addition, the installation of this new meter makes it possible to assess for possible leaks of the supply main, and the supply branches where it splits to supply 1) Parkwood

Flats, Nursery, and 2) Parkwood Houses and the New Sports Pavilion, Old Sports Pavilion, new tennis courts and the sports field.

1.2 Water Meter Replacements

There are some water meters that need to be replaced to improve monitoring of water use either because the current water meters do not have pulsed outputs, ore because the meters are no longer properly recording consumption. These water meters include: Marlow 1 (W40), Marlow 2 (W41), Grounds Washdown (W1540, Oaks Nursery Building (W96), and Jennison Building (W28).

Action – Replace these 5 water meters, Budget Cost TBA

1.3. Aging and Failing Water Mains

There are sections of the water supply pipe work that are time expired and due for replacement. These sections of pipe work are subject to leaks with increasing regularity. The leaks on these sections is recorded with costs for the repairs and water loss being evaluated to support the business case for their replacement.

1.4 Replacement of Durapipe (Grey Pipe)

Currently there is a section of Durapipe that runs from behind the library up to Giles Lane along Cornwallis and towards Darwin. This is shown in Appendix 1 - Drawing - Service A1 Water Main Cornwallis. This length of water pipe has had 8 leaks in total, 4 of which were in summer 2024. The cost of repairing the leaks in 2024 was approximately £12,000, and the cost of the water lost was approximately 6,000 m3 or £18,000.

Action – Replace this section of the water main, Budget Cost TBA

1.5. Site Checks on the Water Mains for the Parkwood Houses supplies

An exercise has been done at Parkwood Dec24-Jan25 to check for leaks on the supplies to the Houses at Parkwood.

The checks included:
1) Lifting the main drain covers to check for leaks
2) Listening to the stop cocks inside each house for leaks

The result was that 12 potential points were identified where there are water leaks.

The works to fix these will be done in 2 Phases:
Phase 1 – – Installation of 4 new isolation valves minimise the number of Houses affected when fixing the leaks,
Phase 2 – The actual fixing of the leaks.

Action – Repair water leaks. Budget Cost TBA

Going forwards based on the large area, and the limited metering of water at Parkwood it would be beneficial to check for leaks annually in the summer. While some leaks rise to the surface and can be seen on a visual inspection some leaks escape underground, and there are 2 checks that could be done:

1) Lifting the main drain covers to check for leaks
2) Listening to the stop cocks inside each house for leaks
Action – Undertake an annual site survey for leaks at Parkwood Houses each summer. Budget Cost TBA

2.0 Excess Water Use in buildings

In addition to external leaks, excess water use inside buildings can result in significant volumes of water being wasted.

2.1 Continuously flushing toilets

The University has significant numbers of toilets with flushing cisterns. Where these are fitted with Air or Pneumatic Flush Valves there can frequently be an issue with these flushing continuously. This happens when the washer in a cistern is prevented from re-seating properly to give a good seal, by dirt and scale build up on the washer. To give an idea of the size of the problem:

2.2 Parkwood - Continuously flushing toilets

Parkwood Flats (Bossenden, Kemsdale, Nickle, Stock). An engineer went round the approximately 500 flats checking and fixing cisterns in summer 2024, and the resulting reduction in water cost was ~14,000 m3 water/year saving £42,000/year.
Action - Undertake an annual site survey for continuously flush toilets in Parkwood Houses (Summer 2025) and Parkwood Flats (Summer 2026). Budget Cost TBA

2.3 Sibson Building - Continuously flushing toilets

The Sibson Building is another location where there has been an issue with toilets flushing continuously wasting large volumes of water. The water consumption is to be monitored, and if it increases then undertake an annual site survey to check for continuously flush toilets in the Building.
It may be possible to reduce the issue of continuously flushing of toilet cisterns by replacing the existing flushing mechanisms with a more reliable type of flushing mechanism, and a trial could be done in the Sibson Building.
Action – Investigate the option of replacing the Air or Pneumatic Flush Valves in the Sibson Building with alternative more reliable flushing arrangements. Feasibility Study

2.4 Continuously flushing urinals

When operating correctly the amount of water used by urinals is regulated to prevent excess use. Large volumes of water can be wasted if the urinal flushing is faulty. e.g. a 9 litre since flushing once every 2 minutes, rather than operating correctly would waste 2,300m3/year or £7,000/year. Typically the urinals at the University are fitted with automatic flush controllers, and there is an annual maintenance contract in place for these to keep them operating correctly. This potential issue can be checked by monitoring water consumption in buildings.

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