

Water efficiency case study: The Natural History Museum

7,658m³ a year identified savings, eight per cent of total water use. £15,000 per annum potential savings

Background

In July 2014, we carried out a water efficiency audit at London's Natural History Museum. The aim of this was to look at the museum's current water use and investigate whether there was a possibility of reducing consumption without impacting on the day-to-day business.

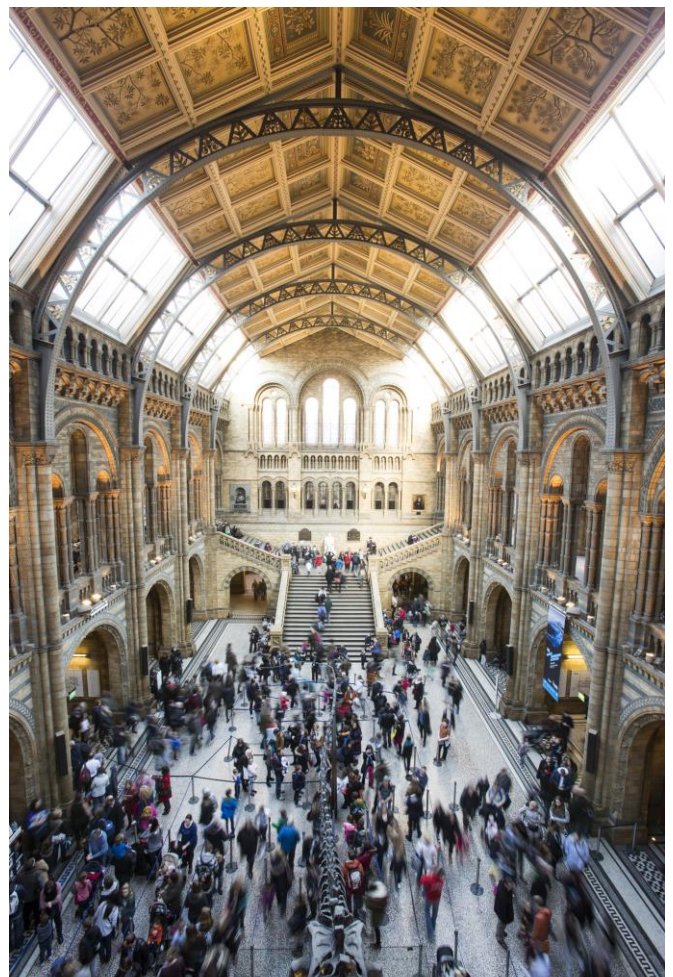
A major tourist attraction and world leading science research centre in central London, the museum has more than 800 staff and welcomes in excess of five million visitors per year.

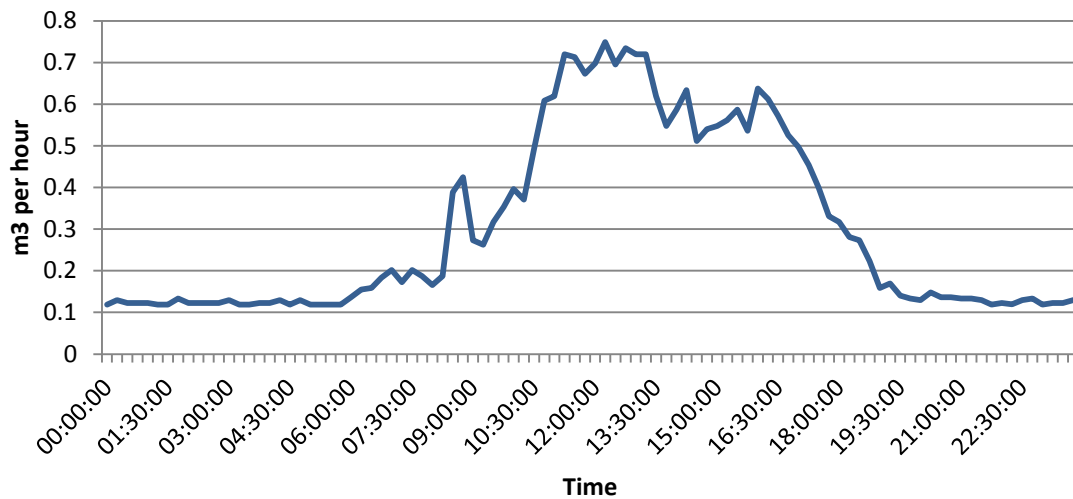
The Natural History Museum obtains around 40 per cent of its water from a borehole on site, with the other 60 per cent coming straight from the mains supply. It uses a total of 90,000m³ per year, costing approximately £130,000. The museum places environmental efficiency high on its agenda and welcomed the opportunity for a water audit to investigate how it may be able to reduce consumption.

What we did

Meter readings were taken as part of the audit, to better understand the water profile of the museum. These readings were used to identify any unusual changes in usage or to monitor constant demand, which would highlight uncontrolled usage or potential leaks.

Constant water use was found in two areas of the museum and attributed to uncontrolled urinal flushing. On average, this was the equivalent of 1.9 litres per minute, or 2.7m³ every day.





This graph shows an example of a meter reading with 15-minute time intervals. It was observed here that the water consumption line was never at zero, indicating constant water use.

Toilets

There were a variety of toilets installed at the museum; some were dual-flush, which average 4.5 litres of water per flush, while others were single flush toilets ranging from six litres to 7.5 litres per flush. Some of the toilets had dual-flush devices installed but these weren't being used and, consequently, only the full flush was in operation.

The museum could reduce the volume of water used for toilet flushing by correctly setting up the dual-flush devices that have already been installed, by converting single-flush toilets to dual-flush and by installing cistern displacement devices where dual-flush isn't favoured.

If the museum was to make all of these changes it would save 5,238m³ per year, resulting in savings of more than £10,000 on its annual water bill.

Taps

The taps examined were found to be a mixture of push taps, sensor, lever and mixer taps with flows of six to 12 litres per minute. A number of these would benefit from aerating inserts or in-line flow regulators, which would reduce the water flow through the tap.

Making these changes could result in annual water savings of 1,430m³ and a cost saving of £2,800 per year.

Urinals

As shown by the meter data analysis, there were uncontrolled urinals at the museum. This is when urinals flush regardless of the frequency of their use. This can include drip-feed flushing, timed flush control where the urinal flushes at a given interval throughout the day and night, or where controls were installed but they have either broken or been disconnected.

Existing controls were already installed on a number of the urinals examined and, although these are working, they required a service to help maintain the units. There were two areas found to have uncontrolled usage with an average of 1.9 litres per minute and therefore controls were recommended in these areas to eliminate waste water and continual flow.

If controls were installed on all uncontrolled urinals the museum could save nearly 1,000m³ of water per annum, which would save £1,857 on the annual water bill.

Overall savings

By engaging with us to investigate water use and receive advice on how to improve it, the Natural History Museum identified and quantified potential water savings of **7,658m³ a year**, saving around **£15,000**. While this is a relatively modest saving of **8.5 per cent**, if all recommended actions were taken **the payback period would be less than two months**.