

KingspanWater Case Study

Queen's University Library, Belfast



Rainwater harvesting is central to sustainability of new Library at Queen's University.

It cost £50 million to build, provides 2,000 reader places and has space for over 1.5 million publications, but the new Library at Queen's is not only a world-class educational resource; it is also a beacon of sustainable construction.

The new Library is an awe-inspiring landmark building that blends the best features of a traditional library with the latest technology, to create a 21st century environment for Queen's students and staff.

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*Gary Jebb, Deputy Director of Estates,
Queen's University, Belfast.*

Client:	Queen's University
Project:	Library
Location:	Belfast, Northern Ireland
Product:	KingspanWater Envireau Fully Integrated Rainwater Harvesting System

From the inception of the project the designers and specifiers of the Library were very conscious of its green requirements.

"The building is a model of sustainable design," Gary Jebb said. "The latest technology is used to ensure the working atmosphere is carefully controlled. Natural light sensors and automatically operated windows will reduce electricity consumption and running costs.

"One of the most interesting pieces of environmental technology installed in the building is the Envireau system from KingspanWater, which recovers the rainwater which falls on the roof of the building," he added.

Sustainable, Reliable, Affordable



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Alan Wright from Kingspan Environmental explains how the system works. *"The library is a living, working building that uses millions of litres of water each year. Given the high level of rainfall it makes perfect sense to capture that water for free as a resource for the building."*

"Educational buildings have a very intensive use of water and our objective was to

design a water recovery system that would deliver the maximum volume of water possible for the daily running of the building." he adds.

"The benefits of the system are manifold. Firstly it substantially reduces the annual consumption of water by people using the building, and also ensures that there is much less water discharged into the surface water sewer."

The water savings generated by the simple technology are very impressive. The rainwater is collected from over 3,000 square metres of roof surface and is then filtered to remove any organic debris washed down from the roof, before it is collected in an underground rainwater harvesting tank. The filtered water is then automatically pumped back in to the building on demand using a low power consumption multistage pump system. The harvested rainwater is used to replace mains water for toilet flushing purposes within the building.

During periods of low or no rainfall, the system will automatically change over to mains water supply thus ensuring continuity of supply to the building and as soon as the inevitable rainfall occurs, the system switches back to rainwater supply.

The library is able to harvest an impressive 2.6 million litres of water each year, which is the equivalent of 82 twenty five metre swimming pools or almost half a million toilet flushes.

The system cost £13,000 to install and at the current rate of water charges will have paid off the investment, through lower water charges, in just four years.

"It is important to realise that a water recovery system like this completely transforms how water is consumed by the building. You use less water, and produce less waste, which reduces the carbon footprint of the building and puts much less pressure on the surface water infrastructure in the area. Such factors are viewed very favourably by planners when they are considering the impact of new buildings," says Wright.

"There has been a sea change in the attitude to large scale environmentally focused construction projects. Ten years ago very few people were engaged in them and then they were embraced by a small few early adopters, but now delivering low energy high performance building is the standard expected by clients," says Wright.

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Alan Wright, Kingspan Environmental.

One of the major benefits on this project was being able to deliver respected off the shelf environmental products in terms of heating and thermal performance and on rainwater harvesting. It is very impressive that large companies like Kingspan have made easy to use and install solutions that were very simple to install. Crucially the operation of the rainwater harvesting system is very easy and the maintenance cost is very low.

For more information, call the KingspanWater Technical Advisory Service on +44 (0) 28 3836 4400, or visit our website www.kingspanwater.com.

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