



## **CASE STUDY** Midland Regional Hospital Tullamore

# Midland Regional Hospital Tullamore saves over €12,000 per year with RO water harvesting



### **Project Background**

Midland Regional Hospital Tullamore, an acute hospital with over 300 beds, provides a wide range of services. Opened in 2008, this new hospital uses ~70,000m<sup>3</sup> of water annually and has an excellent level of sub-metering on the water infrastructure through out the site.

There are a number of Reverse Osmosis RO units on site and, through assessment of the sub-meters, the hospital maintenance department determined that the RO units accounted for 25% of the annual water consumption.

RO produces ultra pure water for use in different areas within hospitals. Typically only 30-50% of the water that goes into an RO unit becomes ultra pure water with the rest (70-50%) usually unused and dumped to drain. This unused water, which is usually of potable quality, can offer significant options for use elsewhere and this can result in significant financial savings for hospitals.

### **Assessment**

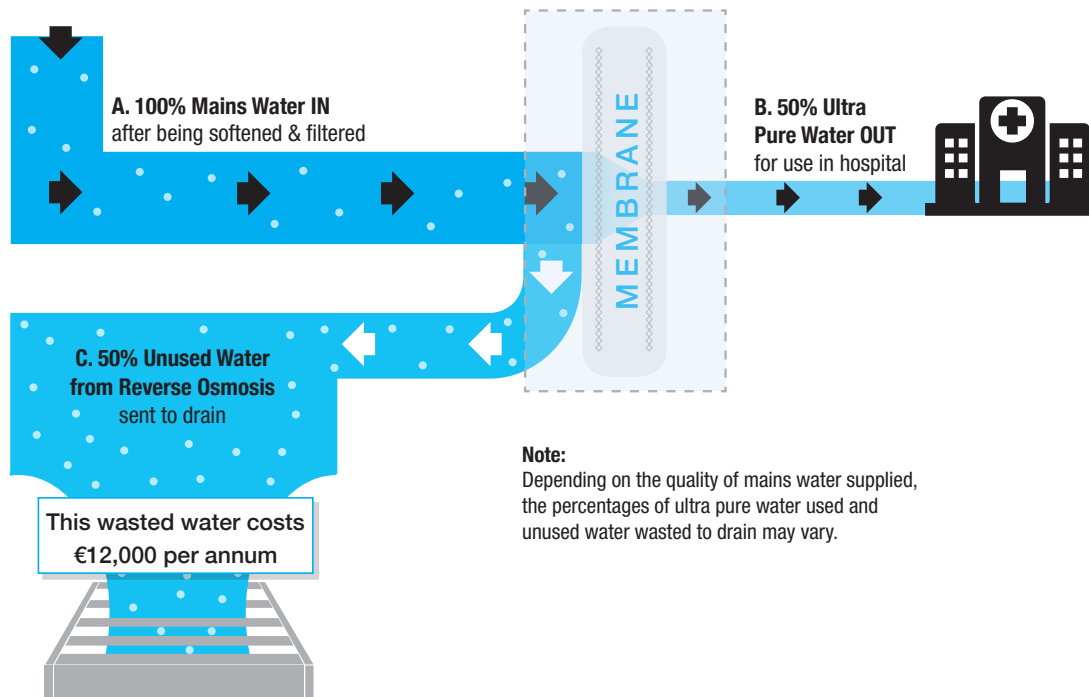
In Tullamore the first step undertaken by the hospital maintenance department was to assess how much unused water was being dumped to drain. Initial measurements indicated that of the 50m<sup>3</sup> feed water supplied daily to the largest RO plant (renal dialysis), ~25m<sup>3</sup> was being discharged to drain.

### **Action taken**

The next step was to identify whether this water could be accessed easily and safely. A potential issue with using this water is that, if it is mixed with other water (e.g. back wash water from the water softening system), it may not be possible to re-use it. In this case, due to the plumbing set up, the water could be isolated easily, while ensuring the required air gap was maintained (necessary to ensure no contamination due to backwash).



## Water lost by reverse osmosis



The next step was to design an appropriate system for the needs of the hospital, while ensuring that infection control and health and safety issues were addressed. As Tullamore Hospital has a separate sluice water system, this was the obvious place to use it. The new system was designed to maximise the quantity of water captured while including a series of appropriate safety and quality measures. For example, it was decided to exclude the small volume of water produced during the periodic thermal disinfection cycles from reuse.

Prior to installing the system, the sluice water use in the hospital was ~3m<sup>3</sup> a day. In order to fully avail of the harvested water, 100 toilets were re-plumbed to run off the sluice system. During this process the ward toilets were assessed to identify how many times they were flushed daily. It had been thought that this was about 15 times a day but it was actually closer to 30!

## Results

This water reuse project was finalised by hospital staff in 2013. About 80% of the unused RO water is captured and about 80% of this is now being used.



**€12,500**  
Cost savings  
per annum



**€12,000**  
(of which €5,000 was  
used for replumbing the  
toilets)



**1 Year**  
Payback



**5,240 m<sup>3</sup>/year**  
Volume of water  
saved in 2014



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