



## CASE STUDY Midland Regional Hospital Portlaoise

# Harvesting of RO unused water

Reverse Osmosis (RO) is used to produce ultra-pure water which has many uses in hospitals.

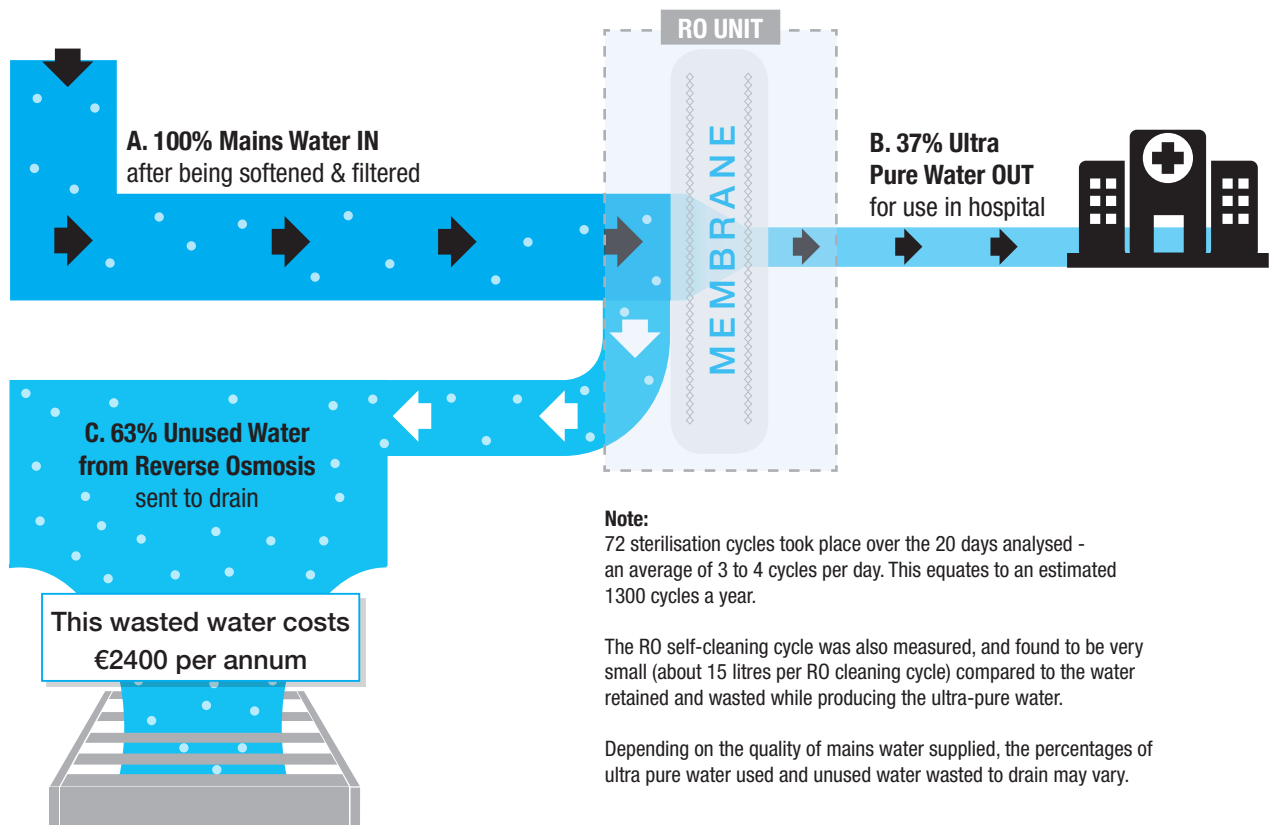
An RO unit forces incoming water through a membrane to produce ultra pure water. Much of the water does not go through the membrane and, along with salts, etc., is wasted to drain. This case study demonstrates how RO unused water can be captured for use elsewhere, and can meet drinking water standards.

The RO unit in the endoscopy department at Portlaoise Hospital supplies the steriliser with ultra-pure water. The team at Midlands Regional Hospitals and Green Healthcare wanted to find out **how much** water from the RO is unused and sent to drain, and **the quality** of that water (compared to drinking water).

### HOW MUCH WATER IS BEING LOST

To find out how much water is sent to drain, water meters and data loggers were placed on the RO unit for 20 days to quantify:

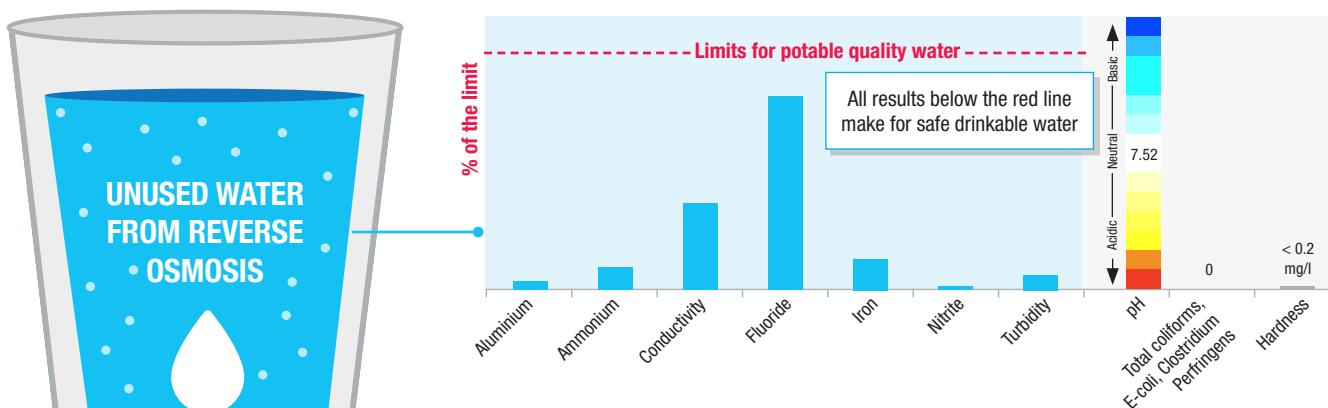
- A. The amount of water that is fed to the RO unit
- B. The amount of ultra-pure water produced
- C. The amount of water retained by the RO membrane and discharged to drain





## THE QUALITY OF THE WATER LOST

Midlands Regional Hospital tested the unused water against drinking water standards. The results were as follows:



Laboratory analysis of the unused water shows it meets drinking water standards, i.e. **is potable**. This is perfectly good water that if used instead of sent to drain, could reduce water bills. The quality of the unused water will vary with location, depending on the incoming mains water. It should be noted that before mains water is even fed to an RO, it is usually softened and filtered, so it is even purer than mains water prior to entering the RO.

### What these results mean

Currently the Midlands Regional hospital is looking at how best to use this water, but initial estimates suggest the following:



**€2,400**

Potential savings per year if unused water can be collected and used



**€1,500-€2,500**

Expected investment cost to use the water break tank and pump



**8 -13 months**  
Payback



**1300 m<sup>3</sup>/year**

Volume of water that can be saved for the campus (7% of annual site water use)

### What you can do

Every acute hospital will likely have scope for recovering and using retained water from RO units. Before considering reusing this water, check if your RO unit can have its performance improved with a high efficiency recovery unit. This will greatly reduce the volume wasted in the RO process.

If this is not an option, then the key steps involved should be:

- measure flows
- test the water quality (if needed)
- evaluate potential uses
- redesign infrastructure
- calculate payback



Acknowledgements: Joe Duffy, Building Maintenance, Midland Regional Hospital Tullamore.