

# Ringsend Wastewater Treatment Works Ultrafiltration & Reverse Osmosis Plant



The Ringsend WwTW consumes large quantities of potable grade water (mains supply water) to operate its many industrial processes including Polymer Make-up, elements of the Thermal Drying process, Boiler Feed Water, Centrifuge Cooling, Odour Control Systems, Thermal Hydrolysis, Pump Seal Cooling and Wash-down all of which amount to in excess of 650m<sup>3</sup>/day. It also uses Final Effluent (wash-water) in some areas

of the plant, most commonly for wash-down operations. In 2011, CAW in partnership with Dublin City Council, carried out a feasibility study to assess the economic and technical merits of recycling final effluent to reduce the demand on mains supplied water. The Study concluded that final effluent which was subjected to Ultrafiltration and Reverse Osmosis treatment could indeed be used to replace much of the potable water usage.

## The Delivery of the Ultrafiltration & Reverse Osmosis Plant

As a result of the findings of the Feasibility Study, CAW undertook the contract to design and build the Ultrafiltration & Reverse Osmosis Plant for the treatment and re-use of final effluent at the Ringsend WwTW.

Under the contract, CAW was responsible for the design, supply, installation and commissioning of the Ultrafiltration & Reverse Osmosis Plant, including all civil engineering and building works.

The process involves extracting final effluent from the outfall channel using the wash water pumps to pass it through ultrafiltration membranes producing a permeate water with a maximum turbidity of 0.1NTU. Chlorine is added to the permeate water as it is pumped through a dedicated network of clean water site distribution pipework and storage buffer / break tanks.

The reverse osmosis plant is fed with chlorinated permeate water producing a RO permeate water with a maximum conductivity of 10µS. The residual chlorine

is removed from this RO permeate water via a pre-filtration stage prior to being fed into the on-site steam generating boilers reducing the demand for potable water.

The delivery of the Ultrafiltration & Reverse Osmosis Plant was completed by CAW over an eleven month period, January – November 2012 at a cost of c.€1m.

The Plant currently providing 550 m<sup>3</sup>/day reducing the requirement for mains supplied water by 90%.

## Sustainable Development

CAW is strongly committed, not just at the Ringsend WwTW but company-wide, to sustainable development and the delivery of best practice where it involves the prudent re-use of waste streams and waste resources, and the protection of the environment. Within this commitment lies the recognition that water is one, if not the, most valuable resource on the Earth and as such should be used prudently and conserved where and when the opportunities present themselves. In executing the delivery of the Ultrafiltration & Reverse Osmosis Plant at Ringsend WwTW, CAW has reduced

the Works demand for mains supplied water by over 90%, saving c.550m<sup>3</sup>/day, making a significant contribution to the conservation of water through the implementation of a sustainable development which recovers potable grade water from the effluent stream.

## Public Health and Health & Safety

CAW operates a Health & Safety Policy which is OHSAS 18001 accredited and is fully committed to providing a safe and healthy workplace for its staff, visitors and contractors. Prior to the delivery of the Ultrafiltration & Reverse Osmosis Plant at Ringsend WwTW, significant volumes of final effluent were being used for general wash-down operations throughout the site which could have presented risks to the health of operations staff on the site. Consequently, as a result of the installation of the Ultrafiltration & Reverse Osmosis Plant, potable grade, chlorinated ultra-filtered water is now used for wash-down purposes, thus mitigating any associated health risks for site staff.

