

**Catherine McDonough - Process Optimisation Water and Wastewater**  
**The trouble-shooter and problem solver of Westmeath wastewater treatment plants**



Catherine McDonough could be considered a visionary in today's uncertain world. There are no doubts that her passion and drive for scientific solutions to address the wastewater and water issues of Ireland are deep-rooted, her vast experience encompasses science and engineering disciplines. Catherine has a degree in Science (Chemistry).

This combination has given Catherine a full 360 view of not only the delicate balance of scientific know how in the operations of Ireland's wastewater and water treatment plants, but also how they operate technically, from beginning to end.

Catherine is a Westmeath native and lives in Mullingar. She is married with two boys aged 15 and 17 and was inspired by her older brother Thomas to pursue her studies in Chemistry.

*"Science has fascinated me from a very young age. When my brother studied Chemistry, I was constantly asking him questions about the course, how scientific processes work, and could not wait to go to college to study my favourite subject at school!"*

Catherine gained widespread experience in a variety of sectors. After four years of working in Intel, Catherine joined Hewlett Packard where she worked as a Process Engineer for seven years before spending 12 years working with the Environment and Water Services section at Westmeath County Council.

But it was Irish Water where Catherine could mould her experiences of science and engineering into the one career. Having joined the Irish Water family during the birth

of the new public sector body, her first role centred around compliance analysis in both water and wastewater. Her knowledge as a scientist especially in the areas of Chemistry has fuelled a long and fulfilling career in many areas of the business.

*“After my initial stint in compliance, I gravitated towards process optimisation. It was a logical move for me as my science background lended itself to finding the best efficiencies and getting the best out of the treatment plants from a quality, energy, and cost perspective.*

*“If a treatment plant had problems, I would be called in to troubleshoot to check dose rates, the oxygen levels in the aeration systems and put my scientific knowledge to good use.”*

Catherine is a trouble-shooter and problem-solver, and she needs to be to ensure all our wastewater plants are in compliance with the EU Directive and that there is constant improvement in environmental water quality which benefits our communities for swimming, angling, and other amenities. In the complicated arena of process optimisation, expertise of the whole wastewater and water treatment processes from start to finish is essential. The combination of science and engineering, allows Catherine to approach her work holistically and 15 months ago she took up the role of Wastewater Engineer in the Asset Operations Function.

*“Knowing how oxygen gets into the system to breakdown the wastewater and understanding its vital role in the treatment process means that science comes into my work every day. Whether we are modifying oxygen levels to treat the wastewater or adding more chlorine to the drinking water, first-hand knowledge of the chemical process to ensure a perfect balance in optimising the treatment processes at the plants is vital.”*

One of the most prolific and satisfying projects that Catherine has led was at the Athlone Wastewater Treatment Plant in her native Westmeath which involved the installation and commissioning of the Sludge Dewatering Optimiser System.

In 2019 the plant was upgraded with new inlet works and centrifuge dewatering systems to improve the quality and productivity of the plant. Before the upgrade of the plant the sludge dewatering system was operated with a belt press which could work with varying sludge dry solids feed, but the newly installed centrifuge was unable to function automatically with this variability. This resulted in the centrifuge being operated manually where 100% of the tasks were carried out by operators, leading to inefficiencies and spiralling costs.

Thanks to the hard work and dedication of Catherine and her team, financial savings of €5000 per month were achieved in operation costs and the innovation provided freed up the operators to carry out other essential tasks. The innovation used in the project proved so successful that its roll out at other sites is now being considered.

*“This was a massive undertaking by Irish Water to automate the centrifuge. Previously operators worked tirelessly to keep the plant running. With the new automation in place, the plant can run like clockwork and human input has been*

*virtually eliminated. Best of all the operators can now function in other parts of the plant to ensure that all processes are streamlined."*

Catherine has also dedicated her time to encouraging young students to pursue careers in science and engineering. In 2020, Irish Water took part at the STEM Secondary School exhibition, aimed at students in secondary schools to promote STEM (Science, Technology, Engineering and Mathematics) subjects at Leaving Certificate. The conference exhibition was hosted by the Wish Foundation and took place in Cork and Dublin at the beginning of the year.

At the Dublin event, Catherine, and some of the team from Process Optimisation met with female students to empower them to consider a career in science but also the merits and need for conservation

*"One of the conservation messages that we tried to get across to the girls was the 4 Minute Shower challenge!! We asked the girls how long they normally would take in the shower and the answers varied from 15 minutes right up to 1 hour being the more popular response!! So, we gave the 4-minute timer to the girls and asked them to take up the challenge, we got a very positive response to this initiative!!"*

As Catherine's career goes from strength to strength, she reflects on her student days and how science has brought her to where she is now.

*"I love data, I love trying to find a solution to a problem, that's the way my brain works, my background as a Process Engineer, PO Specialist and Wastewater Engineer has benefitted me hugely in understanding how things work from both scientific and engineering sides of the coin and in my current Acting Asset Operations Lead Role which I took up in the last 6 months to enhance my management skills."*

Irish Water is responsible for the delivery of all public water and wastewater services in Ireland. We are committed to continuously upgrading and developing critical infrastructure to support the growth needed in housing and across our economy, while protecting the environment and safeguarding water supplies.

ENDS

**Note to Editor:**

A photo of Catherine is attached.

Further questions, or other media queries, can be emailed to [keith.begg@water.ie](mailto:keith.begg@water.ie)

For more details on Science Week, see <https://www.water.ie/about/sponsorships/science-week/>

