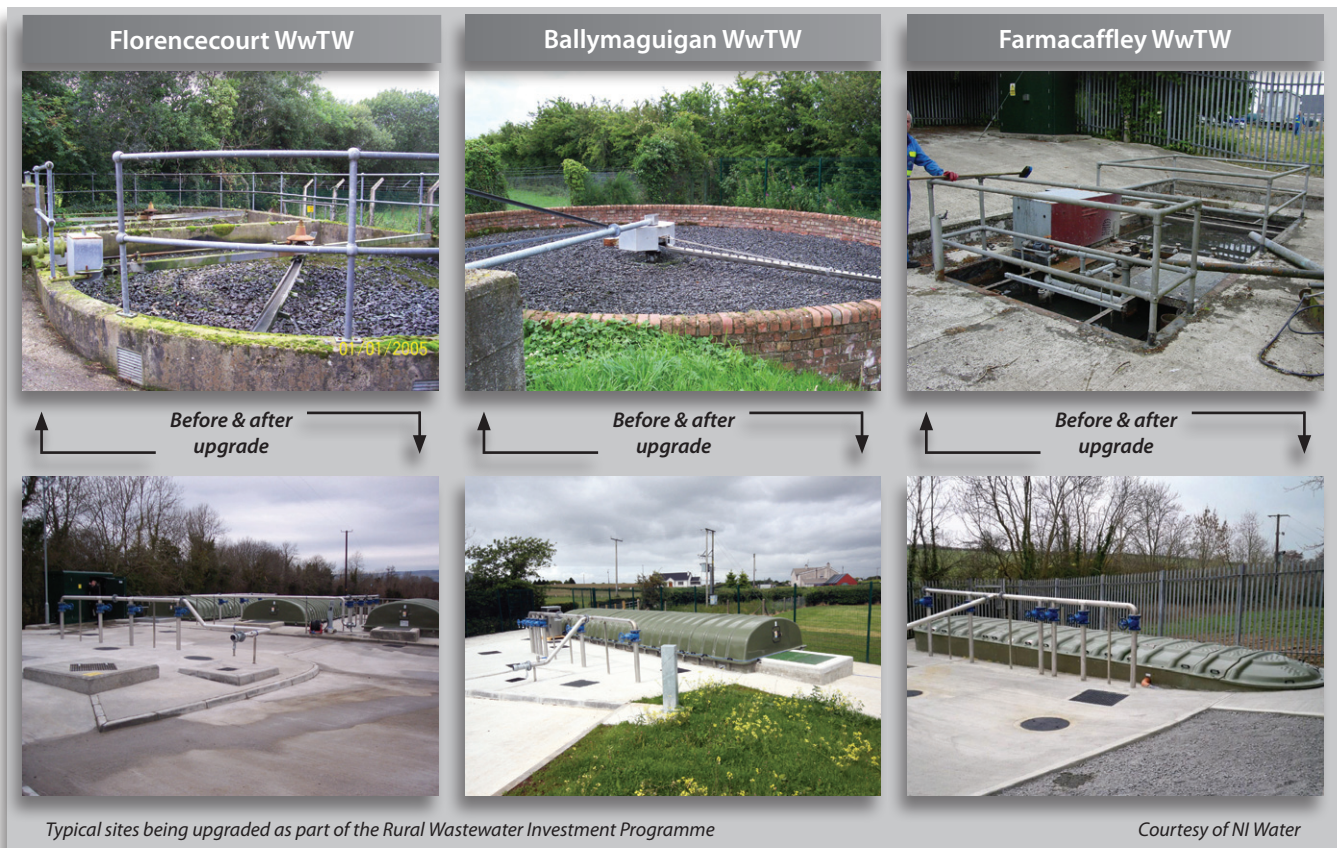


Rural Wastewater Investment Programme

efficient procurement to deliver widespread environmental benefits for Northern Ireland Water's rural communities

by Martin Gillen

Set up in 2008, NI Water's Rural Wastewater Investment Programme (RWwIP) continues to go from strength to strength, upgrading small wastewater treatment works, and improving water quality throughout Northern Ireland. The innovative approach to procurement, design and project management has seen NI Water and their contract team complete 65 (No.) schemes in the first three years of funding, and has won them accolades and recognition in UK-wide competitions. Now in their fourth year with the RWwIP, NI Water is looking forward to building further on the tangible benefits being delivered to rural communities through this innovative project.



Background and project overview

Many of the wastewater treatment facilities servicing rural parts of Northern Ireland consist of open concrete tanks dating back to the 1960s, which over the years have become increasingly ineffective; struggling to cope with the demands of rural population growth and more stringent discharge standards.

In 2007, Northern Ireland Water's Asset Management Directorate, in association with the Northern Ireland Environment Agency (NIEA), carried out an in-depth review into the performance of its 900 (No.) 'minor' wastewater treatment works i.e. assets serving populations of 250 PE and under. This extensive analysis resulted in a priority list being established of WwTWs spanning the length and breadth of Northern Ireland, which required urgent refurbishment.

To address the situation NI Water developed the 'Rural Wastewater Investment Programme' (RWwIP), an initial two-year project aimed at upgrading a series of small wastewater treatment works and septic tanks across rural Northern Ireland. With a start-up budget of £10m, the main objective of the programme was to improve

the quality of discharge to minor watercourses, in line with NIEA's standards; to bring about significant environmental benefits for local communities and leave scope for localised development in rural areas for at least 10 years.

Although a complex and logistically-challenging contract (the project spans an area of over 13,500km²), within the first two years, NI Water and its locally-based contract team - BSG Civil Engineering, Williams Industrial Services and McAdam Design - employed a series of forward-thinking project management techniques and construction innovations to complete a target of 40 (No.) sites three months ahead of schedule. With the cost savings made, the team went on to successfully commission a total of 44 (No.) sites by the end of March 2010, and with additional funding awarded thereafter, this dynamic team completed a further 21 (No.) sites bringing the total number of wastewater treatment works refurbished to 65 (No.) in the period from 2008-2011.

Innovative approach

Re-tendered in April 2011, this NEC Option B project continues to be

undertaken by the BSG/WIS/McAdam Design consortium - a group of Northern Ireland-based companies who have the extensive design, civil engineering, M&E and process expertise, along with invaluable local supply links and geographical knowledge required to successfully execute the scheme.

From the outset of the project in 2008 – and to get the project moving as quickly as possible and maintain momentum - NI Water stipulated a standardised design for all the wastewater treatment solutions. This came in the form of a 'Rotating Biological Contactor' (RBC) solution, with units differing only in terms of size to suit the varying populations, and allowing for a minimum of 10% growth in each area. All civil design is carried out in-house by the civil contractor, eradicating the need for separate and expensive design services. The standardised design established has delivered huge cost savings for NI Water through the ability to purchase in bulk; standardise all training for NI Water operations staff and significantly reduce the quantity of spares required.

To determine realistic standards required for such a variety of small works (5–250 PE), the NI Water project team meet regularly with the NIEA to discuss the programme of work and examine the watercourses affected by each scheme. This proactive approach ensures that the design solution for each new works is optimised to obtain the consent standards stipulated by the Regulator.

A dedicated Lands Liaison Officer works as part of the team to manage any necessary land purchases and carry out effective communications with the hundreds of householders/landowners potentially affected by the scheme.

In terms of getting projects to site quickly, and fulfilling budget spend, the RWwIP team devised a special 'traffic-light' system to identify which of the WwTWs posed the least complications. This involves gathering information on NIEA consent standards, land ownership details, population figures, existing power supplies, access issues etc and determining the most appropriate treatment solution for each site. Once the relevant data is analysed, any 'good-to-go' sites are labelled green, allowing the JV to commence work; sites with only minor issues are coloured amber and those with more serious problems are marked red.

The team meets every two weeks to discuss progress, address any problems and re-evaluate issues so that amber sites are constantly turning green - ensuring fluidity of work for contractor and guaranteeing contract spend for NI Water.

Project management is enhanced by the use of a dedicated project 'Sharepoint' site – a centrally-located information network to which each member of the team has remote access. This acts as an integral information and communications tool onto which every team member uploads relevant data. Tasks are recorded after each bi-weekly meeting and are completed/reviewed in the two weeks following.



The RWwIP team takes delivery of specially designed RBC units
Courtesy of NI Water

Environmental improvements & efficiencies

Each minor wastewater treatment works, if not working effectively, has the potential to cause some degree of pollution to small and perhaps subsequent larger watercourses. The RWwIP acts as a highly efficient, and importantly flexible contract which tackles head on the difficult task of upgrading ageing assets to deliver significant environmental benefits in rural areas.

The robust and successful teamworking arrangement means that the RWwIP team can quickly address any additional scheme that is highlighted by NI Water Asset Management or NIEA as needing refurbished. This means that any supplementary monies are spent in a timely and effective manner and even further environmental benefits are delivered in line with the Regulator's standards.

Over a period of three years (2008-2011), more WwTWs were completed for the funding allocated; more environmental improvements were delivered and NI Water has benefitted through providing more for the Environmental Regulator (NIEA) than tasked to deliver. The RWwIP has assisted NI Water to run its business in an efficient and sustainable manner, by delivering the highest possible service for customers in terms of quality, compliance and value.

Benchmark for the future

The success of the RWwIP contract means that it is now being used by NI Water as a 'best practice' example of procuring future work. The scheme has received recognition from Constructing Excellence in NI, appearing as one of its Case Studies for innovation and best practice; it won a prestigious 'Achieving Excellence Award' in the 2010 CEF Construction Excellence Awards and was a finalist in the latest UK Industry Achievement Awards .

Summary

Encompassing such a wide geographical area, and with so many factors and unknowns about each particular site to be considered, the Rural Wastewater Investment Programme had the potential to encounter problems from the outset. However by embracing innovation, instilling effective communications and pursuing cost savings at every opportunity, NI Water, working in partnership with the BSG/WIS JV and McAdam Design, has been able to execute this project in a robust and resourceful manner to increase compliance and bring about significant environmental improvements for customers. This forward-thinking approach has given an excellent foundation to embark on a fourth year of this strategic upgrade project. The success of this project can be attributed to a highly motivated team working with the same aims and objectives and drawing on the excellent skill base of local contractors. NI Water will continue to drive innovation through procurement, technology and construction and will remain focused on delivering high quality, value for money projects.

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The RWwIP team celebrate completion of 40 (No.) projects
3 months ahead of schedule - Courtesy of NI Water