

Northern Ireland Water Mains Rehabilitation

£80m investment to upgrade over 800kms of varied water main

by
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On 1 April 2007, responsibility for the provision of water and wastewater services in Northern Ireland transferred from Water Service, an executive agency within the Department for Regional Development, to Northern Ireland Water (NI Water), a wholly Government Owned Company. The transition came as a result of the Government's Water Reform Agenda. Now the UK's newest water company has introduced a reform agenda of its own...the organisation has been investing at a rate of £1m a day. The company has embarked on a major capital works programme to improve both the water and wastewater treatment facilities and networks to increase its levels of compliance. Its aim is to deliver a 21st century infrastructure within the next 4 years.



Pipebursting continues in South Belfast

photo courtesy Northern Ireland Water

Current situation

The current water mains infrastructure in Northern Ireland comprises in excess of 26,500 kilometres of pipes supplying 625 million litres of water per day to 1.7 million consumers in households, farms and businesses. While consumers are served well by this infrastructure many parts of it are well over 40 years old. Significant parts of the system have become defective and this is leading to bursts, leaks and pressure problems. Large sections of the antiquated system are made up of unlined iron water mains, which are in urgent need of replacement.

The Water Mains Rehabilitation Programme

To meet its objectives with regard to the water mains infrastructure Northern Ireland Water has embarked on a £80 million project - The Water Mains Rehabilitation Programme - to upgrade over 800 kilometres of water main of various diameters. The programme represents the first stage of an estimated £300 million investment programme over a period of 15 years aimed at improving the water distribution system.

The project comprises a series of individual schemes which will collectively improve the performance of the water mains system across Northern Ireland. Ultimately, this will result in a more reliable and secure water supply system in Northern Ireland that meets the increasingly stringent standards set by the European Union.

The nature and severity of any problems with the water mains in a rehabilitation zone were identified during Detailed Zonal Studies (DZS). The DZS facilitate the assessment of the performance of the water network against a set of 'Key Performance Indicators' and comprise two main components, the Needs Report and the Options Report. The **Needs Report** summarises the results of the assessment of the existing network in terms of structural condition; hydraulic performance; water quality and operational performance. The **Options Report** identifies the construction work that should be undertaken to address the problems identified in the Needs Report.



Eoin Gilmore & Gary Curran celebrate 500km halfway milestone

photo courtesy Northern Ireland Water

The Construction Phase.

NI Water appointed specialist contractors to undertake the improvement works. “Enterprise Farrans JV” is undertaking the work in the South and East while “Lagan Holleran JV” is covering the North and West area. The contractors also work alongside a dedicated Project Management team comprising specialists from Atkins Consultants and Northern Ireland Water, who manage the roll-out of the project across Northern Ireland.

Dedicated NI Water Operations Liaison people have also been nominated in each zone where works are being undertaken to work closely with the Contractors’ teams and ensure the proposed construction methodologies are appropriate for the short and long term needs of the network.

The environmental impact of the rehabilitation works is being significantly reduced in accordance with the Northern Ireland Water Environmental Management System through the use of trenchless technologies including directional drilling, pipe bursting and slip lining.

From the outset of the programme, great emphasis has been placed on providing high levels of customer care, including the minimisation of supply interruptions and general disruption during the works. A Customer Care Specification has been developed especially for these works and each of the joint venture contractors has a dedicated Customer Care Manager. In addition, the project team consults regularly with local councils, business and community groups and statutory authorities such as Road Service, British Telecom, Northern Ireland Electricity and other utilities.

Case studies

To minimise disruption to service during the works, a phased approach is being adopted in specific regions. Within the Castlereagh area for example, Phase 1 and Phase 2 of the mains improvement work ran concurrently with 28km of water mains of varying diameter

being replaced. Funding for Phase 3 of the project which involves the laying of a further 14km of water main has just been released. In total the planned replacement of 42km of water main infrastructure represents an investment of £4 million.

The £2 million Bangor Water Mains project is also progressing in phases. The initial works involves the installation of 20kms of water mains, while Phase 2 of the works will see a further £1.2 million invested in the rehabilitation of 13km of water mains. Phase 2 works are scheduled for completion in November 2008.

As mentioned earlier, the emphasis is on the use of low-dig technology which has proved faster than conventional trenching technique and has tended to be more economical and less disruptive.

Progress to date

Approximately 780kms of pipelines have been rehabilitated up to the end of February 2008 using open cut, directional drilling, pipe bursting, slip-lining and semi-structural spray lining techniques. Low dig technologies have been utilised for approximately 70% of these mains. Some 12,500 customer service pipes have also been replaced. The current work packages are due to be complete in early 2009.

Conclusions

The programme will bring many benefits, including increased compliance with the Water Quality (Water Supply) Regulations Northern Ireland, increased operational reliability and flexibility, a reduction in the number of interruptions to customer supplies due to emergency repairs to burst water mains, reduced leakage levels and it will facilitate social and economic development across Northern Ireland.

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