

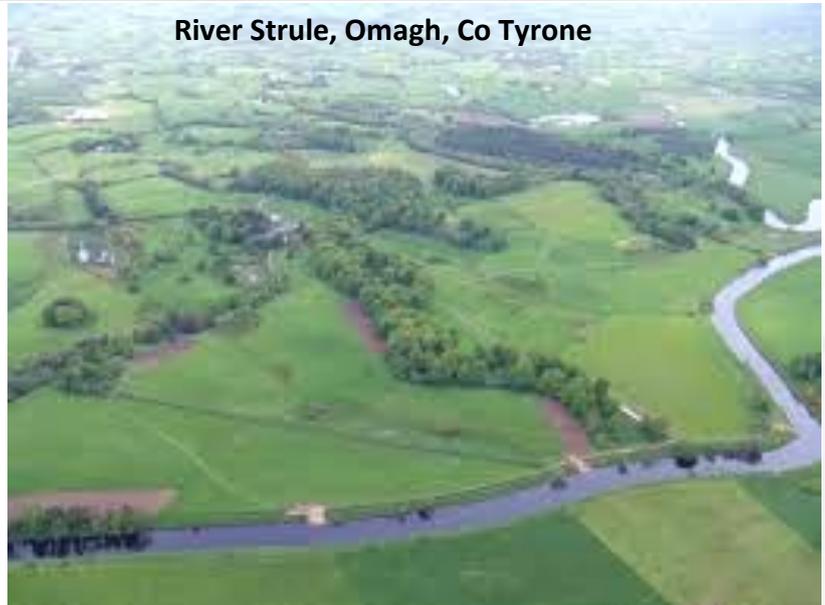
Derg WTW River Strule Abstraction

Background

In climatic terms the years 2010-12 were remarkable across most of the UK— characterised by exceptional departures from typical seasonal rainfall patterns. Drought conditions developed through the first half of 2010. In Northern Ireland the ongoing dry conditions raised concerns over water restrictions, in areas reliant upon raw water from surface water sources, such as reservoirs and rivers.

High pressure dominated much of June, producing plenty of dry and sunny weather. Mean temperatures were above the seasonal average in all areas, ranging

from about 1C above close to the east coast to about 3C above over Northern Ireland. June 2010 saw below-average rainfall across most of the UK, with less than 50% of seasonal average in many areas. It was the third sunniest June in a series since 1929.



River Strule, Omagh, Co Tyrone

Key Points

Derg Water Treatment Works (WTW) is located in the west of the province and supplies high quality drinking water to a wide area including Castlederg, Strabane and Omagh at a rate of 25 million litres per day (ML/D).

In the spring of 2010 Northern Ireland experienced a prolonged dry period. In accordance with NI Water's Drought Management Plan, during the early stages of this period NI Water reduced the rate of supply from the WTW in this Water Resource Zone (WRZ) that is fed by upland sources (Lough MacRory WTW and Lough Bradan WTW). This was in order to conserve their raw water held in the impounding reservoirs. The rate of supply from Derg WTW, for which raw water is abstracted from the Derg River was increased to maintain supplies. This necessitated the rate of abstraction to exceed the abstraction license, however due to the low rainfall by June 2010 the river levels had dropped to such an extent that NIEA required NI Water to reduce the rate of abstraction. This resulted in an increase in the output of the WTW fed by upland water sources.

Fortunately within days of this decision a very wet period began and the area experienced unseasonal rainfall. Had this not occurred the upland sources would have been very quickly depleted, threatening the continued full rate of supply of water into the Omagh. NI Water would have been forced to introduce mitigation measures, such as hose-pipe bans and to supplement supplies by other means, such as by mobile tankering.

Project Aim

NI Water completed a detailed Water Resource Management Plan (WRMP) for the whole of Northern Ireland in 2012. This confirmed that Derg WTW should have a new abstraction from the River Strule in order to augment the existing source from the River Derg.

This was to provide increased resilience in the event of future low river flows and to provide additional water supply to meet the projected demand in the Derg/Bradán/Macrory Water Resource Zone.

An integral part of this project involved obtaining the necessary Statutory Approvals required to abstract raw water and construct works in the river, which is designated as both an Area of Special Scientific Interest (ASSI) and a Special Area of Conservation (SAC).

The construction phase of the project commenced in Feb 2012, with the intention that it be operational before the summer of 2013.

The project once complete will have cost over £6m.



Project Objectives

The Strule Abstraction Project will increase the raw water supply to the existing Derg Water Treatment Works (WTW) by enabling the abstracting 26.6 Ml/d from the River Strule. It also includes the acquisition of a new abstraction license.

The consequences of the doing nothing would result in a deficit of water in the Derg/Bradán/MacRory Resource Zone in times of high demand and dry weather. This would affect the towns of Strabane, Omagh, Castlederg, Newtownstewart and surrounding rural areas.

Interruption to Supply: A shortfall in abstraction from the River Derg would lead to a Supply/Demand imbalance resulting in the potential risk that approx. 16,000 properties in the Derg/Bradán/MacRory Resource Zone would experience interruptions to supply.

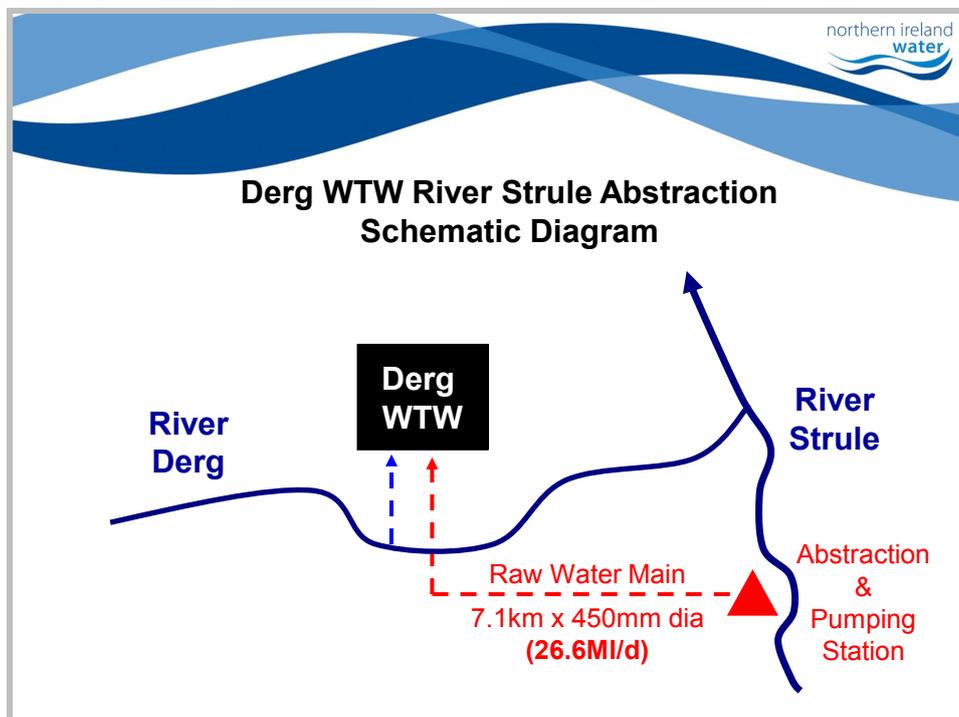
Performance Measures and Restrictions (DG4): During a shortfall in abstraction from the River Derg and Supply/Demand imbalance, tankering would be necessary, with a high likelihood of consumers in the Derg/Bradán/MacRory Resource Zone having restrictions imposed.

Breaching of Abstraction License: In order to preserve supply to consumers' continuation of abstraction from River Derg. It is likely that the license would be breached on an average of 55 days per year for an abstraction rate of 15Ml/d. Furthermore at an abstraction rate of 26.6 Ml/d the license would be breached on an average of 107 days per year.

Project Scope

The project includes the following:

- Construction of a new 26.6MI/d Raw Water Pumping Station located adjacent to the River Strule. Including the provision of an access road from the A5 and associated hard standings, fencing and landscaping works.
- Construction of a new raw water inlet structure on the bank of the River Strule and submerged static screen intake in the River Strule.
- The refurbishment of an existing natural weir in the River Strule.
- The construction of 7.1km of 450mm internal diameter ductile iron raw water pumping main from Strule RWPS to Derg WTW.
- Construction of three sections of pipeline by means of trenchless technology to cross the River Derg, A5 carriageway and Urbalreagh Road.
- Undertake works within the operational environment of the existing Derg WTW to include the connection of the new pumping main together with the provision of inlet controls, metering and sampling.
- Provide input into the development of an Abstraction Monitoring and Management Plan to meet the requirements of the Abstraction License issued by NIEA.



River Derg, near Omagh



Key Challenges and Results

As detailed design progressed, the original abstraction point was moved from the confluence of the Rivers Derg and Strule to ensure at times of possible pollution in the River Derg abstraction would not need to stop. This was also deemed necessary on environmental grounds by avoiding the need to construct an artificial weir on an environmentally sensitive river.

Planning negotiations and restrictions imposed by Rivers Agency as a result of the pumping station being located on a flood plain required the pumping station to be moved away from the river bank, involving greater depth of cut and fill at the new site.

Recommendations

Over 99% of the water that NI Water treats and puts into supply is drawn from surface water sources.

The project outlined in this case study provides increased resilience for one of NI Water's 24 Water Treatment Works against future periods of low flows, which are predicted to become more frequent due to climate change. Prolonged and more intense periods of low flow could have profound implications on the continuity of river ecosystems and water supplies, both public and private.

DARD Rivers Agency maintains a network of river flow monitoring stations which provide a baseline of data. This network should be maintained and enhanced, with analysis continued by Rivers Agency and NIEA to identify possible patterns of changes in flow so that threats can be assessed and adaptation actions planned.

NI Water should continue to monitor changes, develop and deliver adaptation plans to maintain the suitable supply / demand balance. Water demand management activity (to further reduce leakage and improve water efficiency) will have increasing importance to adapt to climate change.

Due to the importance of upland sources in Northern Ireland for water supply, catchment management plans should be developed for these catchment areas to set out how they should be managed using sustainable management practices in order to maintain, protect and enhance raw water quality, quantity, and biodiversity. These plans should consider both the current and the possible future climate.

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