

## **PROJECT: Water Distribution, Belfast** **Use of Dorot 30-8-PR (HyMod) solution**

### **Project objective**

To reintroduce appropriate pressure management to this large water supply zone (WSA). Historical pressure management regimes had demonstrated considerable volumetric savings.

### **The challenge**

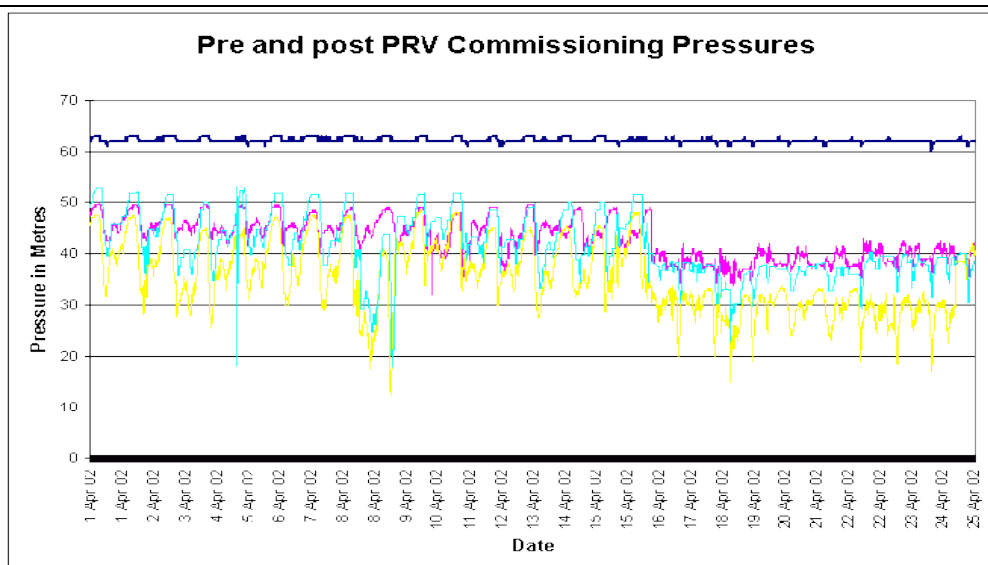
The existing flow meter and old PRV were surveyed for possible service and re-use. Electromagnetic flow meter was found to be non-operable and beyond repair and the old 10 PRV was seized, again putting it beyond economic repair. Flow prediction software was utilized to calculate expected flow regimes into this WSA, which contains 9772 properties, predominantly domestic in nature. Flows were estimated at: Peak flow - 287m<sup>3</sup>/hr (79.8l/s) and Min flow - 63.4m<sup>3</sup>/hr (17.6l/s). Both estimates have used a background leakage figure of 45m<sup>3</sup>/hr.

### **The solution**

1. Replace seized old PRV with new 200mm (8") diaphragm type PRV - note PRV has been down sized and a different type recommended.
2. Pressure logging has identified a possible 10-12m reduction in pressure with some form of modulation at night. Inlet pressure could be managed from 62m to an outlet pressure of 50m.
3. A 200mm Dorot PRV was purchased mated to a Fluid Controls hydraulic modulator.

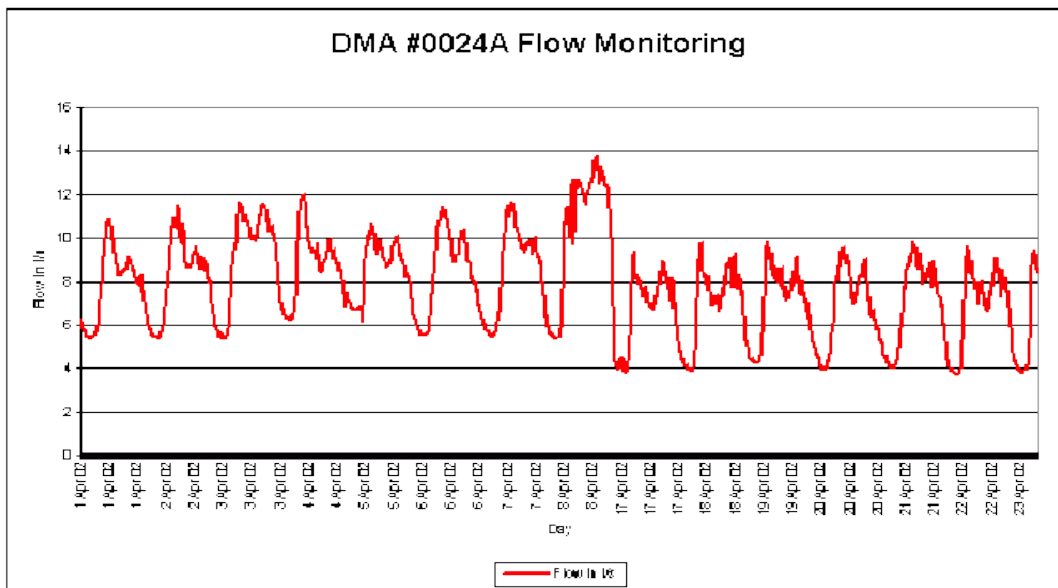
### **Post Commissioning Results**

Graph 1 below demonstrates the impact of the pressure management upon the strategically located pressure loggers. The Critical Points (Target Point) for this WSA are Haddington Gardens, On slow Gardens and the top of Castlereagh Road. The infrastructure at Haddington Gardens is characterised by 5" CI mains (circa 1920-1930) with poor internal condition, which at times of peak demand causes excessive low pressures. The Castlereagh Road monitoring point is the highest and farthest point from the PRV at My Lady's Road.



Graph 2 depicts flow data from Ravenhill 2 waste zone which has been permanently “zoned in” for the previous four weeks so data could be collated showing pre and post commissioning flow regimes. The nightlines indicate a reduction in nightline of approximately 1.5l/s.k

**Graph 2 - Flow results from a waste zone**



**Extrapolated Volumetric Savings**

Logged flow data from the Ravenhill Road waste zone provided a daily volumetric total in m3/day which are summarised in table 1 below.

**Table 1 - Summary of volumetric flow data in m3/day**

Day	Flow (m3/day)	Day	Flow (m3/day)
01/04/02	678.38	17/04/02*	583.06
02/04/02	705.81	18/04/02	598.73
03/04/02	790.73	19/04/02	610.21
04/04/02	752.45	20/04/03	590.33
05/04/02	742.24	21/04/02	602.27
06/04/02	730.09		
07/04/02	737.92		
08/04/02	895.94		

\* 1st day of new data

Ravenhill Road 2 waste zone contains some 1236 properties and the volumetric reduction is calculated at 0.13mld (million litres per day).

If this volumetric saving is extrapolated over the whole 9770 properties then the calculated volumetric savings overall is approximately 1.08mld.