

Caerphilly Town Centre

water mains rehabilitation DCWW Wales & Hereford Region

Operator integration

Case Study

The scheme to refurbish the water mains in and around the town of Caerphilly, South Wales, forms part of DCWW's £125 million investment programme to improve the quality of drinking water to its customers. One of the key drivers in the water quality programme is the removal of iron from the supply, caused by the ageing network of cast and ductile iron mains. The iron removal is achieved by relining or replacing the existing mains depending on their structural integrity and remaining life.



Caerphilly: Minimising impact to customers achieved through full consultation

The work is being carried out in partnership by contractors *Laing Utilities*, cost consultants *ChandlerKBS* and network operator *United Utilities*. The team works out of co-located offices in Rhuddlan in North Wales, Carmarthen in West Wales, Nelson, just north of Cardiff in South Wales and Hereford in the East.

The need for the Caerphilly scheme was identified by DCWW through the ongoing Pre and Post Renovation Assessment programme. This involved the analysis of samples from customers' taps to highlight Water Quality Zones containing high levels of iron.

To ensure success of the Caerphilly Scheme and highlight the need for the operator, *United Utilities* and contractor *Laing Utilities* to act as a seamless organisation, all relevant personnel attended facilitated partnering workshops to promote joint working through the two key processes of Design and Construction.

The in-house design team determine best value mains refurbishment solutions in line with Welsh Waters Strategy and Design Protocol. To ensure design optimisation, the analysis of technical data cannot be done in isolation of, and indeed is largely

dependant on, the knowledge and input of the network operators' staff throughout the design process.

The historical technical data used in design originated from the DCWW Asset Information System (AIS) which provides mains locations and structural integrity through analysis of data obtained from mains bursts. The degree of accuracy and reliability of this data was determined through a co-ordinated approach to upfront investigation in which, trial holes and pipe samples were taken whilst the existing network was proved through valve testing and flushing.

A full and detailed consultation process was undertaken in parallel with the upfront investigation through a series of structural design review meetings with *United Utilities* to assess the following:

- * hydraulic assessments of the network;
- * levels of leakage;
- * lead water quality;
- * network improvements that may be required such as the abandonment or upsizing of existing mains;
- * agreed levels of service;
- * known customer issues.

Special Feature

In addition full consultation with affected third parties was undertaken including:

- * evening presentations to the general public and councils advising of the proposed works, their impact, duration and benefits;
- * local environmental groups;
- * local archaeological groups;
- * council highways department;
- * local fire service regarding the use of hydrants;
- * local chamber of commerce;
- * full interaction with the construction team to ensure a practical design solution.

The final design of the Caerphilly Scheme comprised both epoxy relining where the mains were in good condition and renewals where the mains were structurally poor or, indeed, were of good condition but had high levels of leakage on the customer services.

Once the programme and target cost for each phase of the works was determined and approved a scheme launch meeting was held to confirm the design solution and identify key actions for *United Utilities* and the *Laing Utilities* teams during the construction phase.

The refurbishment of 60km water mains in Caerphilly took 18 months and was carried out in four distinct phases. At peak, two lining teams and two renewals teams were present in and around the town centre with a joint output of up to 1700m per week.

The challenge of working in a highly congested urban environment was successfully managed through minuted weekly liaison meetings and monthly management meetings with *United Utilities* and *Laing* staff in which programme, progress, environment, quality, safety and customer issues were discussed recorded and actioned.

Close liaison with the local highways inspectors ensured the inevitable traffic disruption was kept to a minimum whilst work adjacent to the historic Caerphilly Castle passed smoothly through the employment of an archaeological consultant.

Minimising the impact to customers was a key concern in such a heavily populated area. This was managed successfully through public meetings, adequate notification to customers of programmed interruptions to supply and close liaison with the DCWW Call Centre, operated by Thames Water. Indeed, works on the major roads through Caerphilly town were done at night or on weekends to minimise disruption to the general public and local trades.

The high level of customer service achieved by the integrated approach can be demonstrated by the fact that, in a scheme affecting 6,500 properties there was only one DG3 (unplanned interruption to supply) and 25 customer letters (DG7's).

Strategic Partners: *Laing Utilities; United Utilities; Chandler KBS; Dwr Cymru Welsh Water (DCWW).* **Programme of work:** *Mains Rehabilitation.*

Region: *Wales & Hereford*
