

SYLWRAP Case Study



Reinforcement of Weakened 22 Degree Elbows

After a blowout in a valve chamber, numerous 22 degree cast iron elbows were discovered to be below specification, requiring urgent reinforcement.



Pipework in the valve chamber



Completed repair showing SylWrap HD wrapped around a 22 degree elbow joint on a 450mm main

Defect

The initial blowout occurred in a 50-year-old 450mm elbow. The water main pump from the reservoir to the treatment works stopped, and the non-return valve closed, causing a pressure surge.

Analysis of the pieces showed no corrosion. The incident was caused by the weakness of the original casting with a hardness of only 107.

To prevent similar future incidents, the water company operating the valve chamber needed to urgently reinforce all remaining elbows.

Solution

The length of the repair area was 350mm between flanges. The application needed to withstand 8 bar operating pressure with fluctuations up to 10 bar.

Each pipe was cleaned and coated with **Liquid Metal Epoxy Coating** to protect against corrosion and provide a PCC-2 compliant load-transfer layer with **SylWrap HD Pipe Repair Bandage**.

10 layers of SylWrap were wrapped over the epoxy, setting rock hard to strengthen the pipework.

Result

Reinforcing each elbow took 2-3 hours at a much lower cost compared to replacement.

The strategic water ops manager in charge of the repair said: "The wrapping materials secured the structural condition of the bends found to be weak, whilst the pipes could remain operational."

"Other sites have now adopted this reinforcement method, based on the success of the project."

