Carrying 210 million litres of water a day to 900,000 people in Cheshire and Merseyside, the trunk main consists of three parallel pipelines that run from Lake Vyrnwy in Powys, through Oswestry Water Treatment Works to Prescot Water Treatment Works near Liverpool. Lines 1 and 2 were constructed as unlined cast iron mains in the 1890s, while Line 3 is a bitumen-lined steel main that was laid in the 1930s and 40s. Iron and manganese deposits in the water supplied from Oswestry WTW and the risk of internal corrosion in the unlined cast iron mains have prompted the refurbishment to avoid the possibility of discoloured water due to iron deposits.

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GPS PE Pipe Systems has supplied over 36km of PE piping for the refurbishment of a 130-year-old large diameter trunk main as part of United Utilities £3.6 billion investment programme for the North West of England.
The refurbishment scheme has already seen main contractor, Balfour Beatty, clean around 44km of Line 3 using specialist high pressure jets and line the section of Lines 1 and 2 that run between Oswestry WTW and New Crickett. For phase two of the programme, the contractor will draw down (reduce diameter) 1030mm diameter Excel New Blue in SDR51 supplied by GPS to line the Crickett to Malpas sections of Lines 1 and 2, creating a tight-fitting thin walled internal lining for the pipelines that will prevent iron from entering the supply during transit without excessively reducing capacity in the trunk mains.

To carry out the lining operation, the contractor will pull a pre-welded string of PE pipe through a reducing die which will temporarily reduce the diameter of the PE pipe allowing it to be inserted into the existing pipeline in a single operation. Once the insertion pulling force has been removed, the pipe will begin to revert back to its original size until it fits tightly against the wall of the host pipe. GPS has supplied the piping in 13.5m lengths to reduce the number of joints required to create the PE string for insertion.

Comments Nick Preston from United Utilities: “PE pipe provides an ideal solution for lining operations such as this as it offers such flexibility and can be used in a large diameter with a thin wall without compromising on pipe integrity or capacity. This major improvement to the main not only maximises the service life of the existing pipeline asset but also safeguards the quality of water supply with minimum environmental impact.”

Phase 2 of the refurbishment programme is expected to be completed in 2015 and will be followed by a third and final phase to clean and refurbish Lines 1 and 2 between Malpas and Prescot WTW along with Line 3 between Malpas and Norton Tower.