



DORISLAND WATER TREATMENT WORKS

VALUE: £9 million

CLIENT: Water Service, DoE, Northern Ireland (Northern Ireland Water)

LOCATION: Dorisland, Carrickfergus, Northern Ireland

PROBLEM: Increased Works output required with refurbishment and more advanced treatment

CHALLENGES: To engineer additional treatment stages into the existing hydraulic profile without inter-stage pumping. To uprate and augment the plant whilst keeping the Works on line to consumers. To meet current and projected Treated

SOLUTION: Pilot testing by Consultant. Fully automated treatment plant employing Dissolved Air Flotation followed by two stages of filtration.

START DATE: MAR 1999

COMPLETION DATE: MAR 2001



DESCRIPTION & KEY FEATURES

The original Dorisland Treatment Works had a maximum output of 36 Ml/day (9.5 US MGD), which was upgraded to 50 Ml/day (13.2 US MGD). The original process route was rapid gravity sand filters followed by chlorine dosing. The new route of flocculation, dissolved air flotation, primary filtration and secondary filtration for manganese removal followed by chlorination and pH correction was developed by the Client's Consultant.

The crucial area of the plant was the refurbishment of 12 rapid gravity filters where Earth Tech was able to offer a shallow plenum design with dual media. This technology was developed for previous contracts. The filters were refurbished in three groups of four, such that the flow to the consumers was not interrupted. The replacement media require an 80% increase in wash flowrate, which entailed extensive modifications to the pipework in a very restricted area.

In the new design, a variable mix of water from seven impounding reservoirs gravitates to the inlet works where ferric aluminium sulphate (FAS) and sulphuric acid is flash mixed with automatic control to pH 6.2 prior to two-stage flocculation. The flocculated water is clarified by dissolved air flotation, which removes colour, turbidity, iron and aluminium. Carried over floc is removed in twelve dual media rapid gravity filters.

The primary filtered water is further treated by the addition of lime and sodium hypochlorite to oxidise manganese followed by high rate (secondary) rapid gravity filtration. The pre-secondary filter dosing is automatically controlled to give the final pH and chlorine residual for distribution.

The contract also included sludge handling and treatment in addition to all new chemical storage and metering systems. The new works entered supply in spring 2001 and has operated successfully since then.