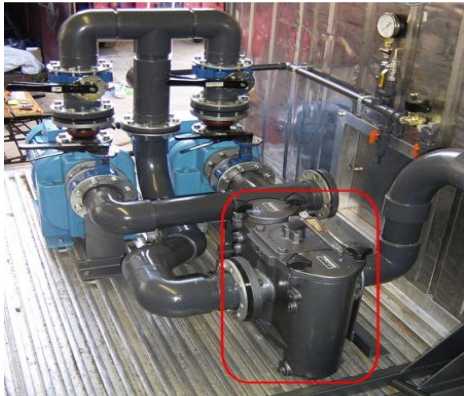


# case study



## Titanic Quarter Belfast

A major regeneration project at the heart of historic Belfast in the shadow of the famous Harland and Wolf shipyards. Significant remediation works are required to bring the overall development site up to suitable standards for construction and ensure compliance with NIEA (Northern Ireland Environment Agency) standards.

### Client

David Patton and Son, Design and Build contractor on behalf of Titanic Quarter limited.

### Site

Predominantly made ground over natural weathered clay (sleech), containing high volumes of contaminated groundwater in close proximity to the Belfast Lough.

### Problem

High levels of Arsenic, Lead and hydrocarbons present in the groundwater which had to be treated as part of the overall remediation program for this site. Stringent targets for the dissolved phase and residual levels were agreed due to the sensitive body of water, the Belfast Lough.

### Technologies utilised

Ex- Situ groundwater treatment system to isolate the Arsenic and Lead within the groundwater as the first stage using automatic chemical dosing and flocculation. The subsequent removal of the hydrocarbons was through 20micron Oil Water Separator, carbon filtration and final pH re adjustment and balance.

### Remediation criteria

The target leachate levels agreed for the Arsenic and the Lead were salt water EQS, due to the proximity of the Belfast Lough and speciated targets for the Hydrocarbons, derived from a Detailed Quantitative Risk Assessment based upon the receptor being just 60m away from the site.

### Validation

By independent consultant employed by the overall development company, Titanic Quarter Limited. All verification was approved Northern Ireland Water and the Harbour Authority