

NEW MULTI MILLION POUND TREATMENT WORKS COMPLETED **IN WHALSAY**

Project Title:

Whalsay WTW – Nano Filtration Membrane Plant

Client: *Scottish Water*

Project Value: *£4.3M*

Award Date: *5th October 2015*

Project Commenced: *15th August 2016*

Project Completed: *9th May 2017*

Construction of the new multi-million pound Water Treatment Works in the Eastern Shetland Island of Whalsay was delivered ahead of time and within budget by Ross-shire Engineering's, Water Technology department.

The project uses Nano Filtration (NF) and Reverse Osmosis (RO) technology to ensure customers on the island can continue to enjoy fresh, clean drinking water long into the future with this new treatment process.

The works incorporate a new intake from Loch Huxter, a 452m³/d nano-filtration modular membrane plant with reverse osmosis process, welfare facilities and standby generator.

The Transportable Treatment Unit (TTU) was constructed in Ross-Shire's Muir of Ord workshop before being shipped to Symbister and delivered onto site on the banks of Loch Huxter, in October 2016.

In addition to the new treatment plant the project also included construction of a new pumping station next to the existing and a new 700m long raw water intake through rural land to the new plant.



Scottish Water is pleased to announce construction works have now been completed to the new water treatment works in Whalsay”.



The works have progressed as programmed and completion secured due to the off-site fabrication and commissioning of the modular membrane plant, reducing the site construction period significantly, compared to contemporary construction.

DAVID KITCHING, *Senior Project Manager with Scottish Water*





Reverse Osmosis (RO) Modules

Following permeation through the Nano-Filtration (NF) Membranes the NF Permeate passes into the Reverse Osmosis (RO) section of the treatment works.

The first RO stage is made up of two RO Modules (A&B) operating in parallel. The RO Stage 1 Permeate is passed forward to the RO Permeate Tank. The RO Reject from stage one is then passed to a second stage of RO filtration. The Permeate from this second stage is also passed forward to the RO Permeate Tank. The Reject from the second stage of RO filtration is passed out of the building into the burn.



The Nano-Filtration (NF) membrane stacks, of which there are two, each consist of 56no. size C10 membrane modules with CA202 filter tubes, which have their primary inlet and outlets piped in parallel.

“ Final commissioning of the plant is complete and the plant started supplying water in late May 2017”

“ Customers will benefit from fresher, cleaner water from the state of the art membrane treatment and reverse osmosis process, which provides advanced filtration and allows for a more efficient treatment process.”

DAVID KITCHING, Senior Project Manager with Scottish Water

Scope Summary

The works incorporate a new intake from Loch Huxter and associated raw water pump station (RWPS) and raw water main (circa 700m), 452m³/d nano-filtration modular membrane plant with reverse osmosis process, welfare facilities and standby generator.

The plant includes, but is not limited to:

- Membrane Plant building including welfare facilities
- Raw Water Tank
- Nano Filtration Membrane Filter Feed Pumps, Strainers, Membrane Filtration Modules, Membrane Clean In Place (CIP) and Neutralisation facility and a Permeate Tank.
- Reverse Osmosis Feed Pumps, Membrane Filtration Modules, Membrane Clean In Place (CIP) and Neutralisation facility, Permeate Tank and Permeate Pumps.
- Disinfection
- pH Correction
- Relift Pumps
- Final Water Flow Monitoring
- Water Quality Sampling for control and Regulatory purposes
- Motor Control Centres
- Local Control Panels
- Telemetry