

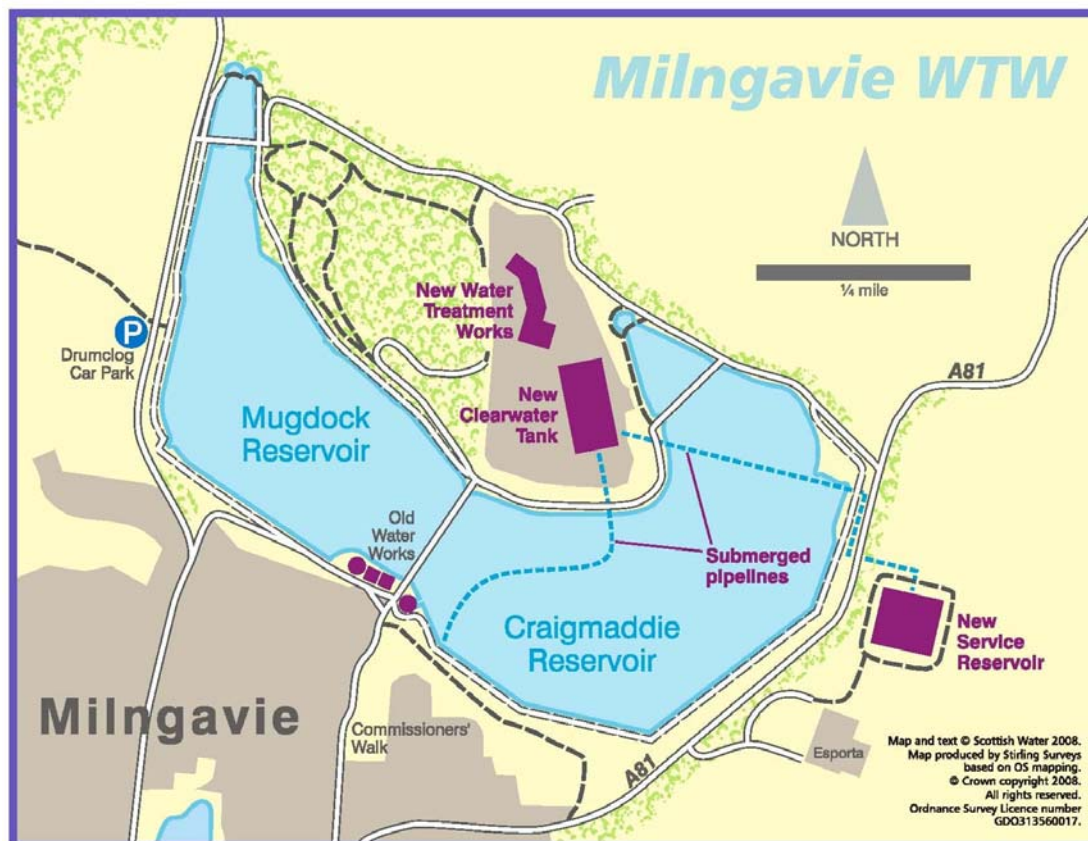
Scottish Water.

Mugdock and Craigmaddie Reservoirs, Glasgow.

The Katrine Water Project – Milngavie Water Treatment Works.

Friday 25th June 2010.

In the middle of the 19th century, the people of Glasgow, like those in other British cities, suffered from major outbreaks of cholera caused by polluted water supplies. In response, Glasgow Corporation engaged the eminent engineer John Frederic Bateman who selected Loch Katrine, situated in an unspoilt area 26 miles north of Glasgow, as Glasgow's new source of fresh water. He led a team of engineers who made his plan a reality by building a dam to raise the water level of Loch Katrine and constructing a 26 mile long aqueduct to Mugdock Reservoir. It was completed in 1859 and opened by Queen Victoria. Some years later, following the rapid growth of Glasgow, a second line of aqueducts and the Craigmaddie Reservoir, was completed in 1896.



Location map of works showing connections with other main elements of the project.

Mugdock reservoir was formed by the construction of two earth embankments. The main embankment reaches a maximum height of about 21m and the crest is approximately 382m long. The second embankment separates it from Craigmaddie Reservoir and is about 22m high and approximately 225m long. At top water level (97.07m OD) the reservoir has a capacity of 2.5Mm³ and a surface area of 25 hectares.

Craigmaddie reservoir was formed by the construction of an earth embankment to the east of Mugdock Reservoir. The embankment crest is approximately 1,450m long with a maximum height of about 23m. At top water level (97.296m OD) the reservoir has a capacity of 3.2Mm³ and a surface area of 35 hectares.

Both reservoirs have very small direct catchments and the majority of the inflow is routed into the reservoir via the Loch Katrine aqueducts. The aqueduct in to Mugdock is capable of conveying 190 Ml/day (42mgd), and the aqueduct in to Craigmaddie is capable of conveying 318Ml/day (70mgd); both via a gauge basin and a measuring pond.

There are no drawings or records of the original construction of Mugdock reservoir but it is thought that the embankment has a central puddle clay core flanked by selected fine-grained fill. Craigmaddie reservoir embankment has a central puddle clay core with a minimum width of approximately 5m and side slopes of 10 on 1 flanked by selected fine-grained fill. The core extends into a deep cut-off trench, up to 193 feet deep, through fractured sandstone and into impermeable shale beneath. The original outlet works for each reservoir comprised a draw-off tower, discharge tunnel and associated 42-inch mains and straining well. Aqueduct water may also be diverted around the reservoirs via a 60-inch reinforced concrete pipe.

The Katrine Water Project is the single largest water treatment investment project in Scotland with a value of £120m, comprising:

- Construction of an aesthetically pleasing main treatment works building in natural stone housing all the process elements. The new works is capable of delivering 240 million litres per day.
- Two covered reservoirs each with a capacity of 80 million litres providing security of final water storage.
- Construction of a raw water pumping station located within a 15 metre diameter, 30 metre deep shaft. This included two 2 metre diameter intake tunnels 300 metres long to the raw water reservoirs.

In 2007 the Katrine Water Project was named the UK's top utility project when it won the Capital Project Management Award at the Utility Industry Achievement Awards. In 2008 the Katrine Water Project won the prestigious Saltire Society Award for Civil Engineering for its "significant achievement in planning, designing and constructing a state-of-the-art water treatment facility."

In 2009 the Katrine Water Project won the Edmund Hambly medal from the Institution of Civil Engineers which is awarded for the creative design of an engineering project that makes a substantial contribution to sustainable development.