

Longwood Treated Water Storage Tank

ensuring security of a safe, sustainable supply of water to the Longwood Water Supply Zone

by Uisce Éireann

The village of Longwood is located in south-west County Meath, Ireland, approximately 15km south of the town of Trim and 50km north-west of Dublin. In March 2023, construction started on a 500m³ above-ground treated water storage tank at the site of the existing Longwood Water Treatment Plant, which will ensure that Uisce Éireann can secure supplies to over 1,244 customers in the Longwood Water Supply Zone; providing a safe and sustainable source of drinking water.



Project background

The Longwood Water Supply Zone (WSZ) had been identified as having insufficient capacity and before the construction of the new treated water storage tank, there were no storage facilities for the Longwood Water Supply Zone. To ensure security of supply, it was necessary for Longwood WTP to be upgraded to provide 24-hours of storage, more flexibility and network management.

Ensuring the additional storage required constructing a new 500m³ treated water storage reservoir, replacing the two existing borehole pumps to improve efficiency and longevity of the units, and constructing a high-lift network pumping station designed to maximise the efficiency of the pumping system.

Project design

The detailed design works included the following for the structural works, drainage, mechanical and electrical installation, and the photovoltaic system:

- A 500m³ capacity drinking water storage reservoir at the Longwood WTP, including pipework connections, scour and overflow.
- Replacement of two number existing borehole pumps (both boreholes were in operational use on a duty/standby rota system; programmed to change duty every 12 hours).
- High-lift network pumping station kiosk for the Longwood WSZ, containing three booster pumps (duty/duty/standby).
- Integration into the existing Longwood WSZ Distribution Network.
- Modifications to the existing chlorine dosing and control system to ensure adequate disinfection contact time is provided within the new storage reservoir in compliance with Uisce Éireann's Primary Disinfection Specification (IW-TEC-900-05 & IW-TEC-900-05-01) and Uisce Éireann's Design Specification: Disinfection: Secondary Chlorination (Document No: IW-TEC-900-05-02).
- Provision of free chlorine residual monitoring system.
- Provision for emergency generator connection.
- All automation and control including modifications to the existing SCADA/HMI system.
- Design of a de-chlorination chamber.
- Design of a photovoltaic system.
- Associated site works including landscaping, site fencing and surface water drainage system.

Project construction

BSG Civil Engineering Ltd was employed as the main contractor and construction started on site in March 2023. The construction works included:

- Construction of in situ concrete 500m³ capacity dual cell water storage reservoir.
- Installation of the inlet and outlet pipework to each of the storage reservoir cells, overflow and scour pipework into each cell linking it to the existing outfall, and interconnecting pipework and pressure regulating valves linking the storage reservoir to the Longwood WSZ.
- Installation and construction of four openings to the new storage reservoir, two for each cell. One opening in each cell is provided with a davit socket and a permanent internal access ladder.
- Construction of a de-chlorination chamber.
- Installation of a secured external staircase for access to the roof of the storage reservoir.
- Installation of a high-lift network pumping station kiosk for the Longwood WSZ.
- Installation of three booster pumps (duty/duty/standby within a new pumping station kiosk).
- Site drainage pipework including seven manholes, an oil interceptor, a de-chlorination chamber and a new headwall to allow discharge to existing outfall.
- Replacement of two existing borehole pumps along with associated pipework, sensors and cabling.
- Installation of a photovoltaic system and associated electrical works.
- Installation and upgrade of external generator connection point.
- Construction of roadway, footpaths and landscaping around the site.

Sustainability measures - PV system and carbon reduction

The photovoltaic system was designed to provide around 10% of the Longwood Water Treatment Plant's annual power consumption. The system, supplied by Solmatix Renewables Ltd, is expected to generate approximately 5,168 kWh per annum; resulting in Uisce Éireann reducing the carbon emissions generated from the Longwood WTP by approximately 1,170 kg annually.

Through design of the landscaping and planting elements, a biodiversity net-gain was achieved at the site. This included the planting of approximately 65m of mixed native hedgerow to bolster an existing hedgerow and to protect an existing open drain at the rear of the site.

Final considerations

The project was successfully completed and handed back to Uisce Éireann in December 2024 and was a testament to the skill of all involved.

Nicholas O'Dwyer's initial design concept, which was carried forward by BSG Civil Engineering Ltd, met all of Uisce Éireann requirements and the upgrades at the water treatment plant provide a safe, secure and sustainable source of drinking water to the Longwood Water Supply Zone for years to come.

Utilising a photovoltaic system will ensure a continued reduction of Uisce Éireann's carbon footprint, and reusing all the excavated materials generated from the construction at a local sports facility for use in future development works has benefited the local community by enhancing the sports facility and the community as a whole, due to the fact the excavated material is not going to landfill.

The editor and publishers would like to thank Uisce Éireann for providing the above article for publication.

Longwood Treated Water Storage Tank Supply chain: key participants

Employer representative: Nicholas O'Dwyer Ltd
Civils designers: McAdam
Principal contractor: BSG Civil Engineering Ltd
Mechanical & electrical design/construction: EPS Water
PV system: Solmatix Renewables Ltd
Concrete testing: Mattest Ireland Ltd
CBR plate bearing tests: Construction Testing Services Ltd
Control system programming: ECN Technologies
Control panel: Motrol
Steel fixing, formwork and concrete: ONCCE Ltd
Davit sockets: Columbus McKinnon Corp Ltd
Booster pumps: DP Pumps
Borehole pumps: Xylem Water Solutions
Pump & control panel kiosk: Shanette Sheds Ltd
Ductile iron pipework: APP Fusion Group
Oil interceptor: Kingspan Klargester
Precast manholes: FP McCann Ltd
Drainage & manhole covers: J McAleer & Sons Ltd
Handrails & access system: MEGS Fabrication Ltd
Haulage & disposal: J Ryan Haulage Ltd
Access covers: Technocover Ltd
Rebar: Walter Watson
Concrete & stone: Kilsaran
Tarmacadam: Mitchell Macadam Ltd
General hardware: Murdocks Builders Merchants

