

Fofanny Clear Water Tank

Major Storage Upgrade at Fofanny Clear Water Tank

£9m

/ Project value

March 2022 – December 2023

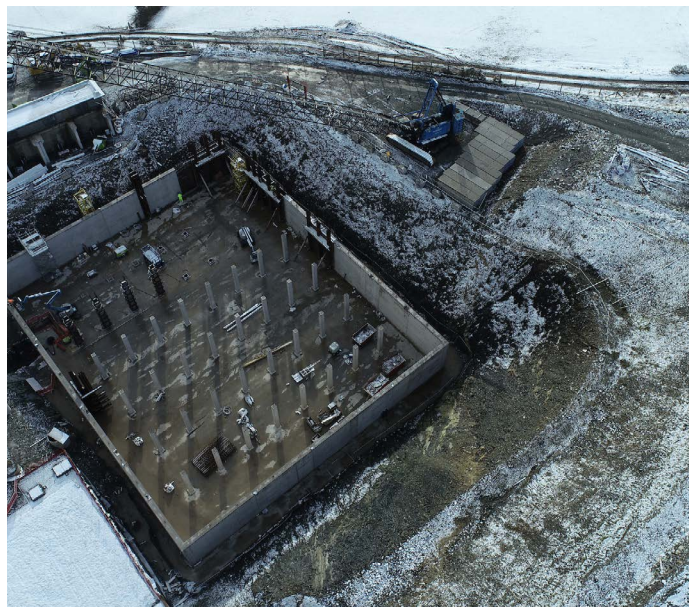
/ Project Duration

GRAHAM successfully delivered Fofanny Clear Water Tank for Northern Ireland Water, improving the security of the water supply for approx. 76,000 customers in large parts of county Down (Kilkeel, Rathfriland, Castlewellan, Dromore, Newry and Warrenpoint).

The brief

The upgrade has provided additional water storage to customers during periods of high demand and essential maintenance works.

The project involved construction, testing and commissioning of a new 10ML reinforced concrete Clear Water Tank (CWT) and associated pipework and instrumentation, including under pressure connections to existing structures and pipe lines and the installation of 1,000mm, 900mm and 600mm pipelines at depth of up to 7.0m



“I would like to thank the NI Water project team including contractor GRAHAM and RPS, who provided project management and technical support. The team successfully completed the new tank, while ensuring our customer’s water supply wasn’t interrupted during construction. This major project will provide improved local water supply for many years to come.”

Tzvetelina Bogoina
NI Water’s Director of Infrastructure Delivery



The challenges

During the ECI phase, site investigations were completed including service searches, surveys, and design development. Boreholes and trial pits were carried out to advise on expected ground conditions and to determine construction methodologies and site constraints. The CWT was built in an excavated rock basin, ranging from 7.0m to 21.0m deep, displacing up to 56,000m² of material.

Excavated rock from site (8,000m²) was crushed and reused for foundation drainage, backfill and road construction.

The construction works was adjacent to existing operational CWTs and an administration building, with narrow roadways and steep, sloping site conditions.

Agreements with local landowners allowed for temporary storage of excavated material to allow construction to progress on the site.

This was an exposed site situated in the Mourne Mountains and the weather did provide some challenges for the site team such as cranes, deliveries the planning of concrete pours.

The solution

To reduce the project's carbon footprint, up to 60% of cement content was replaced with Ground Granulated Blast-furnace Slag (GGBS).

Excavated material was recycled, and rock was crushed to produce 6N-1 material for reuse, minimizing transportation emissions.

The reinforced concrete tank walls were designed as pure cantilevers, eliminating the need for complex jointing and support formwork. The first base pour was 950m² in one continuous pour, using high-spec modern equipment to ensure quality and efficiency with four concrete batching plants supplying concrete. The project team focused on community engagement and traffic management, including one-way systems on the narrow country road, to successfully deliver the works. The construction involved 13 concrete wall pours, 48 columns, and the use of precast beams and roof slabs, including one-way systems, to successfully deliver the works.

Outputs & Benefits

- ✓ **New Clear Water Tank hydraulically linked to existing CWTs – No additional Operational cost to the client.**
- ✓ **Design, new pipe connections and valving allowed for the new CWT and the existing CWT to operate in series, or independently to facilitate NI Water operational and maintenance schedules without risking supply and storage to customers.**
- ✓ **Excavated Rock crushed and reused on site.**



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