

Lough Fea Clear Water Basin South

# Ensuring security of water supply to NI Water customers

**£4.8m**

/ Project value

**September 2018**

/ The project commenced

**May 2020**

/ The project was completed

Lough Fea Water Treatment Works supplies water to approximately 24,000 Northern Ireland Water (NI Water) customers, with the Lough Fea Clear Water Basin (CWB) South supplying over 10,000 people in Cookstown and surrounding rural areas. A 2013 report commissioned by NI Water identified the need for increased potable water storage facilities within the Lough Fea Supply Zone to reduce the risk of water shortages under certain network situations.

## The brief

NI Water required a solution to address the low storage retention times within the Lough Fea Supply Zone by providing a suitable storage facility. We were tasked with increasing storage capacity and providing security of supply to the potable water distribution network, offering a cost-effective solution and using innovative construction methods.



"We're thrilled to have helped deliver this vital improvement scheme for our long-standing client NI Water and to have supported the security of essential water supplies to the residents of Cookstown and surrounding rural areas."

Mark Little  
Contracts Manager for  
GRAHAM

“The water and wastewater sectors are key service areas for us and we have enjoyed a great working relationship with NI Water for decades. This improvement project was another example of our growing civil engineering portfolio in this sector and another successful collaboration.”

Mark Little  
Contracts Manager for GRAHAM

### The challenges

Due to the rural nature of the site, there was the risk of concrete not being delivered and placed within the batch working window. DFI Roads were engaged to agree an extensive traffic management plan to mitigate this disruption. Minimising impact to NI Water customers was a key consideration requiring early consultation and collaboration with residents prior to commencement. Due to the demand on the networks during daytime hours, NI Water confirmed that filling the CWB would occur at night, during the commissioning and testing phase. Working at height was a further challenge identified, necessitating the implementation of innovative problem-solving techniques.

### The solution

All critical work activities were managed appropriately and communicated to residents prior to commencement of the works, ensuring minimal disruption to neighbouring properties. A one-way system was agreed with DFI Roads to manage the safe movement of construction traffic to and from site. This ensured the safety of site vehicles, road users and a sufficient and timely supply of concrete. Filing of the cells was completed at night during commissioning and testing. During this process, water was transferred directly from cell 1 to cell 2 thus avoiding unnecessary water usage and subsequent wastage. We also constructed the CWB using an in situ reinforced concrete base and walls, with a precast modular roof overlaid with an in situ concrete screed. The primary factor was to reduce the number of man hours that operatives were working at heights on the roof of the reservoir. Secondary factors included a reduction in the contract programme duration by 12 weeks and a reduction in the amount of temporary works required to construct the roof slab using modular construction techniques.

### Outputs & Benefits

**Monolithic roof joint:** The geometry of the CWB was such that a monolithic roof/wall was designed without compromising the integrity of the roof. This reduced the bending moments on the reservoir walls, resulting in a 33% reduction in wall thickness compared to having a traditional roof to wall slip joint.

**Reuse of spoil:** 8,700m<sup>3</sup> of material was taken off site and processed at a local concrete plant, before being returned to the CWB site at Lough Fea as concrete and graded aggregates, minimising the carbon footprint.



For more information on how we're delivering lasting impact:

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