

ABI Equipment Limited

Piling Equipment Specialists

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ABI Equipment Limited was asked to supply specialist equipment consisting of a Delmag RH18/200 drilling rig c/w rotary head and Kelly bar, by piling sub-contractor McGrattan Piling. The piling work was part of the Morpeth Flood Alleviation Scheme.

The piling works were carried out in September and October 2016.

Morpeth Flood Alleviation Scheme

Main Contractor: JBA Bentley

Client: The Environment Agency

Piling Contractor: McGrattan Piling & Supplies Ltd

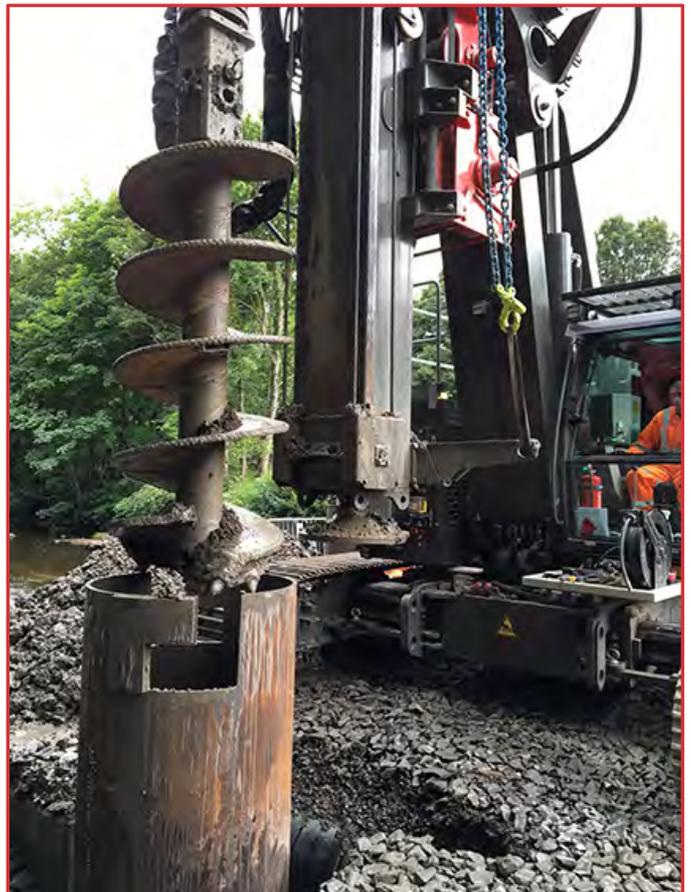
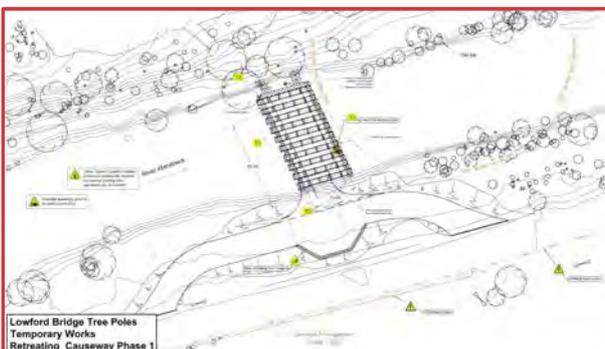
Piling Equipment supplier: ABI Equipment Limited

Background

The Cotting Burn, a tributary of the River Wansbeck which flows through the town of Morpeth, has caused flooding on numerous occasions in recent years due to blockages caused by debris and the flashy nature of the catchment. As part of the Morpeth Flood Alleviation Scheme, the Environment Agency gave their approval to improve protection on this watercourse to achieve a 1:100 year standard. Historically flood events have occurred during 1:25 year events

The proposals for the Morpeth FAS included the construction of a course debris screen on the River Wansbeck to catch large debris, such as trees, logs and branches during a flood event. This would also provide a filter system to protect down-stream structures (the ancient and historic bridges in the town centre) under which debris

had become trapped during previous floods. The construction work of the course debris screen included ancillary work to enable safe access from the road to clear debris.



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Piling

The Piling consisted of installing 7 tubular steel piles (referred to as "Tree Poles"), 711 mm diameter by 17 metres long. Rotary Bored piling techniques were employed using a Delmag RH18/200 drilling rig. This involved augering down to the required toe level and the use of sacrificial casings to support the excavations in the river bed. The Delmag RH18/200 used was a modified version of the RH18 rig, with an increased torque rotary head of 200kNm, and this additional torque capacity was very advantageous in screwing the casings into the ground and overcoming the resistance in drilling into the stiff ground.

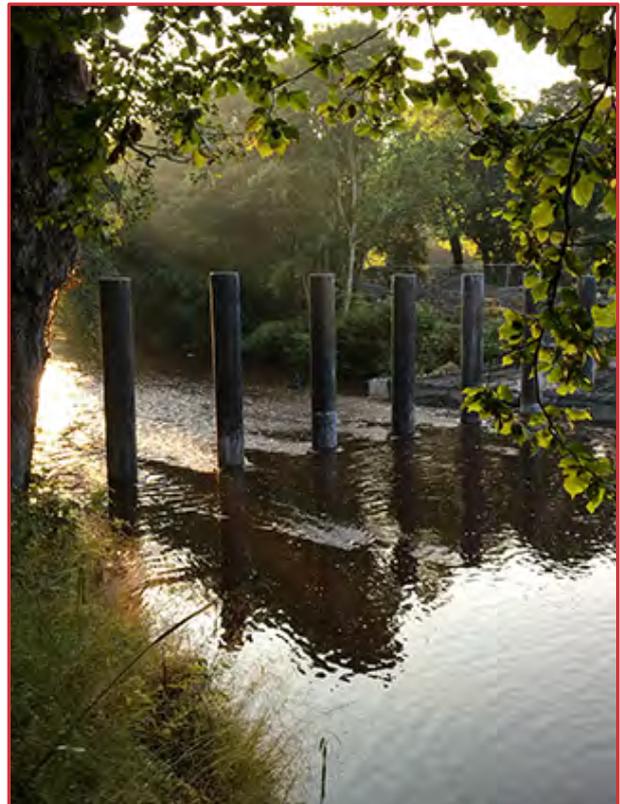
The sacrificial casings were bored down approximately 5 to 6 metres into the river bed. This comprised of silts and gravels plus boulder cobbles and a layer of stiff clay further down, which acted as a seal for the sacrificial casings, and finally into glacial deposits.

The 17 metre steel 'tree pole' piles were then inserted into the pre-augured casing and vibrated further down resulting in them being approximately 12 metres below river bed level and standing 5 metres proud above normal river conditions.

Welding was carried out around the sacrificial casings to connect the 'tree pole' piles, then finally the concrete was placed via a lorry mounting concrete pump sited on the river's edge. Initially filling the sacrificial casing and then pumping from the top of the 'tree pole' pile to fully fill the entire structure.

The SPT values for the river bed strata : stiff clay between 40 and 50, gravels down to 10.

Site access was challenging given the narrow local roads and limited capacity of approach bridges. The compact nature of this powerful drilling rig was therefore ideal.



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