

CASE STUDY

BUOYANCY CONTROL



OVERVIEW >>>>

Minimising or eliminating discharge of untreated or contaminated water into the environment is a major objective for Severn Trent. To reduce flood risks at Oldcotes Pumping Station, a storm drainage tank was to be constructed and connected to the existing sewer network. The system would use two separate legs of 2.3m-diameter High-Density Polyethylene (HDPE) pipe, one 32m long and the other 20m long.

Located near Oldcotes Dyke, the site consisted of variable ground conditions consisting of dense sands and gravelly alluvium with dolomitic limestone bedrock at shallow depth. **Groundwater was recorded as shallow as 1.7 - 2.0m below ground level**, with groundwater pressure along the faulted and voided zones within the limestone. The conditions

Oldcotes Bylth Road Pumping Station,
Worksop, Nottinghamshire - UK

Lokset, All Thread Bar, R32 Hollow Bar,
Geoflex & Platipus Pipe Tensioning Kit

presented a **significant buoyancy risk**, and required measures to counteract uplift, while challenging strata conditions ruled out conventional grouting methods due to flowing groundwater causing washout.

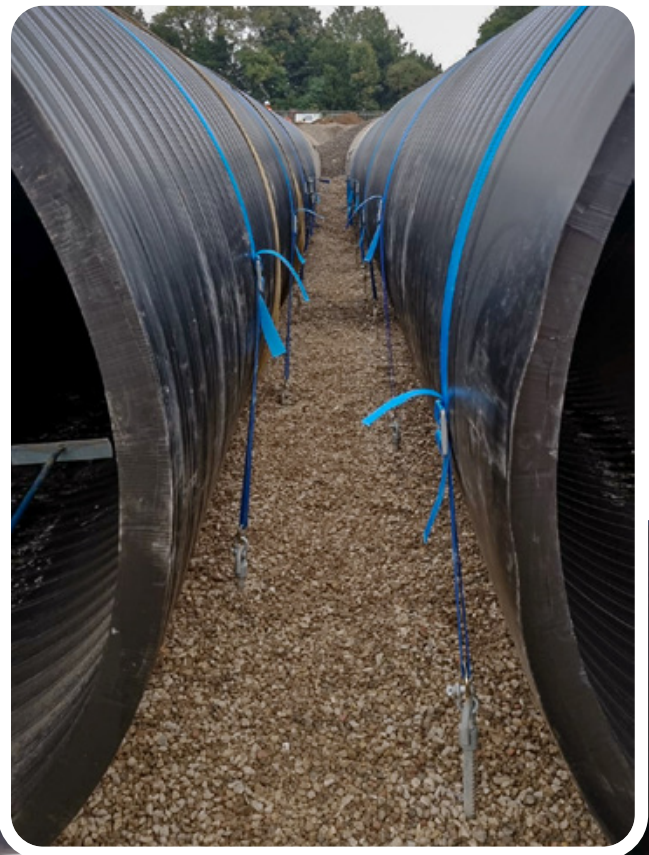


SOLUTION >>>>

Once excavations were complete, Platipus Approved Installer Vertical Access could begin installation of anchors. In competent rock locations, **Minova Lokset resin was used alongside All Thread Bar (ATB).** However, in faulted and water-bearing sections a solution was devised using **R32 galvanised Minova hollow bars, 55mm drill bits, and Minova Geoflex, a two-component silicate injection resin capable of curing underwater.** This specialist resin prevented washout in fault zones, and allowed anchors

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to be tested immediately after curing, even where flowing groundwater was present. With the pipes in place, **The Platipus Pipe Tensioning Kit was positioned over the pipe crown** and through the anchor system to secure the pipe and prevent uplift. This system successfully overcame the challenging ground conditions on site, and secured the attenuation system against uplift.



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