

Højen Ådal, located south of Vejle in Denmark, is a beautifully situated and unusually undulating erosion valley. It branches out into many directions and is covered with dense forest vegetation. The Højen stream and surrounding forests represent a rather unusual biotope, and the area is part of a larger protected zone. The biotope is home to a richly varied population of insects, for example an extremely rare species of dragonfly, *Rhithrogena germanica*. The Højen stream is classified as a grade A waterway, which means, among other things, that the waterway must remain untouched or be subject only to minimal human activity.

“This is a great challenge, since the waterway is surrounded by urban habitation. We had to choose to either expand the old wastewater treatment plant in Højen or close it down, pumping the wastewater to the central wastewater treatment plant in Vejle instead,” explains project manager Finn Reese from the municipality of Vejle and continues:

“We chose the latter solution to protect the vulnerable Højen stream from the daily impact of cleaned wastewater, while at the same time advancing the municipality of Vejle’s long-term plan to minimize flooding

from drains that easily fill with rainwater. We closed down the two combined sewer overflow systems in the area covered by the municipal sewage network in the town of Ny Højen, and thus we needed to build a large buffer basin so that the pumping station could cope with heavy rainfall. Having reviewed several different solutions, we chose a basin made of pipes as the best solution for this location.”

RINSING NEEDED EVERY 1–2 YEARS

The new sewer overflow system consists of 6 lengths of DN/ID 2,400 mm Weholite pipe 36 metres long. Its total capacity is 976.8 m³, which in the context of Vejle means that it will only be completely filled up once every two to three years, thus preventing the wastewater from the higher ground from contaminating the protected Højen stream.

According to Finn Reese, the facility has functioned satisfactorily and as intended. The pipes keep relatively clean, which means an accumulation of about 20 mm of deposit in certain places, typically in the distribution chambers. It is therefore expected that the pipes will only need to be rinsed at intervals of one to two years.

How to protect a delicate stream

The vulnerable Højen stream had to be protected from the daily impact of cleaned wastewater, while at the same time advancing the long-term plan to minimize flooding from drains that easily fill with rainwater. This called for a construction of a new sewer overflow system.





The excavation was performed by an independent company, Østergaard A/S, but KWH Pipe was responsible for the construction of the sewer overflow system itself.

The 6 x 36 metre arrangement of pipes actually consists of 12 sections of pipe 18 metres long. Based on drawings made by the technical administration of the municipality of Vejle, KWH Pipe customized the individual pipes at the company's large facility in Svinninge. KWH Pipe has the capabilities of preparing the work drawings themselves, but in this particular case, the client – that is, the municipality of Vejle – had already prepared a highly detailed project plan.

TWELVE PIPES WELDED TOGETHER

Following initial preparations, the individual pipe sections were transported by road to the installation site, where Østergaard A/S had completed the substantial excavation to house the new sewer overflow system. One by one, the large pipes were laid and then welded together.

Yes, contrary to popular belief, plastic can also be welded, and the result is a 100% leakproof and pull-resistant joint. This case involved 12 pipes with a diameter of DN/ID 2,400 mm being welded together – inside and out – to form an assembly of 6 pipes. KWH Pipe employs qualified personnel for this type of welding work: KWH Pipe Denmark has a mobile welding team whose only job is to travel around the country to assist with welding at any site where welding is needed. The assignment at Højen stream was one such case. The external welding was done manually, but for the internal welding a 'welding robot' was used.

Once welding was completed, all six pipes were internally linked with OD 1,000 mm WehoPipe pressure pipes so that the water flow will be divided evenly between the pipes at all times. Six riser pipes of OD 450 mm diameter and two distribution chambers of DN/ID 1,250 mm diameter were also installed. ●

