

**Many of the EU-funded investment programs relating to water supply and wastewater treatment systems currently under way in Poland are huge, complex, ventures with multi-million Euro budgets. It is, therefore, vital that individual tasks be completed expertly, swiftly, and cost effectively. The use of Weholite pipes in this specific project allowed for the fulfilment of these objectives.**

**T**he piping of an open discharge channel carrying treated waste water from the “Dębogórze” Sewage Treatment Plant in Gdynia is just one of hundreds of pro-ecological projects completed in Poland during recent years. As with similar projects aimed at upgrading local water supply and sewage networks to EU standards, the quality of material, speed and cost-effectiveness were of great importance to this project. By using Weholite pipes, it was possible to meet these objectives.

The 2.2-kilometre open discharge channel, running in an old riverbed from the “Dębogórze” treatment plant to the inlet of a closed channel outside the village of Kazimierz, was put into operation in the 1960s. For years, its existence had caused problems both to local farmers, whose lands were repeatedly flooded during the seasonal rise in wa-

ter levels, and to the Water Supply and Sewage Management Company, PEWIK Gdynia. PEWIK, who owns and operates the channel, was forced to pay compensation for damages to the farmlands. It also incurred costs related to day-to-day and periodical maintenance of the channel, including mowing and elutriation. Moreover, the local community expressed concern over the biological safety of the free-flowing treated waste.

Following Poland’s entrance to the European Union in May 2004, public utilities companies gained access to structural funds, which enabled them to launch a number of investments aimed at modernizing local water supply and waste treatment systems. One such investment is the “Dolina Redy i Chylonki water supply and waste water treatment” programme, implemented by PEWIK. Worth an estimated 66 million Euro, the program is designed to improve

# Improving wastewater treatment with the help of Weholite



and extend the water supply and sewage network in several municipalities, including the city of Gdynia, and to protect the waters of the Puck Bay. One task of the programme called for the piping of the open discharge channel running from the "Dębogórze" treatment plant. A project study for the task was completed in April 2005. After a tender, Budimex Dromex was named the general contractor for the installation.

### The optimal solution

Taking into consideration the desired flow capacity of the channel, as well as local hydrogeological conditions, the authors of the study recommended the use of non-pressure plastic pipes. Some of the plastic pipes' foremost qualities include low roughness, light weight in comparison to steel and concrete pipes, the possibility to produce pipes and manholes from the same material as well as the possibility to install the pipeline through submersion. Installation in an operating channel was one of the basic premises of the project study as the alternative of de-watering the channel and constructing bypasses was deemed time-consuming and too costly.

According to Jan Szustowicz of Budimex Dromex, the site manager for the project, the contractor briefly considered the use of glassfibre reinforced plastic pipes installed on a concrete base fitted with poles, with the channel walls braced with sheet piles. The idea was abandoned, however, as it was too expensive. Ultimately, the contractor decided to use PE-HD pipes, which met all of the project's requirements.

The pipes were produced and delivered by KWH Pipe Poland, which was handpicked as a supplier by Budimex Dromex. Between August 2007 and April 2008, KWH Pipe delivered 2 257 metres of Weholite pipes DN/ID 1 400-1 500 mm SN8 and 22 Weho manholes DNS 1 200 mm to the installation site. The majority of the pipes were manufactured and delivered to the installation site in custom-length, 15-metre sections in order to minimize the time needed to assemble the pipeline.

### Two methods of installation

Adding to their many qualities, the PE-HD pipes are also less susceptible to damage resulting from differential soil settlement. This was especially important in this particular project as the geotechnical analysis revealed two soil types along the channel route. The weak soils, including peat, occurred along a 1.2 kilometre section starting outside the village



of Kazimierz, while bearing soils comprised the remaining 1 kilometre of the watercourse. Hence, each section required different preparation of the channel bed. The pipeline was founded in bearing soils on a layer of well-compacted gravel whereas the gravel fill layer was additionally wrapped up in geotextile at the weak soil section.

Installation works began in September 2007 near the village of Kazimierz. Once the channel bed had been prepared and both the inlet and the outlet had been installed, the KWH Pipe service staff joined the pipes into eight 300-metre sections on dry land by means of extrusion welding, which provides for 100 % tightness and homogeneity of the pipeline. Special fittings significantly shortened the installation process.

The welded sections of the pipeline were placed onto steel joists HB300 and lowered into the channel. They were then assembled, and treated wastewater pumped into the new discharge pipe. Subsequently, the pipeline was backfilled, and an additional layer of humus was applied where necessary. The installation was completed in April 2008. The new pipeline covered almost the entire length of the open channel, except for a 64-metre discharge area adjacent to the treatment plant, which was reinforced with stone coating in order to decelerate the flow of treated waste into the new pipeline.

According to the contractor, the installation went smoothly and according to plan despite unfavourable weather conditions. Occasional problems related to obstacles along the channel route were resolved on the spot. Mr. Szustowicz, who has worked with KWH Pipe in the past, praises excellent organization of deliveries as well as the flexibility of the logistics team who handled the transport of the 15-metre pipes to the installation site.

### New priorities

Many of the EU-funded investment programs relating to water supply and wastewater treatment systems currently under way in Poland are huge, complex, ventures with multi-million Euro budgets. It is, therefore, vital that individual tasks be completed expertly, swiftly, and cost effectively. The use of Weholite pipes in this specific project allowed for the fulfilment of these objectives.

Furthermore, the qualities of PE-HD pipelines, such as durability, joint tightness and resistance to chemicals and adverse environmental conditions, helped reach the underlying goals of the project, i.e. improve local sanitary conditions and protect the environment. Considering the exceptional qualities and potentially unlimited number of Weholite applications, one can be sure that this will continue to be the pipe of choice for those wishing to cater to the interests of both man and nature. ■