

# ERF Newhaven: Newhaven



Visualisation-model of ERF Newhaven next to the river Ouse in Newhaven, East Sussex, UK

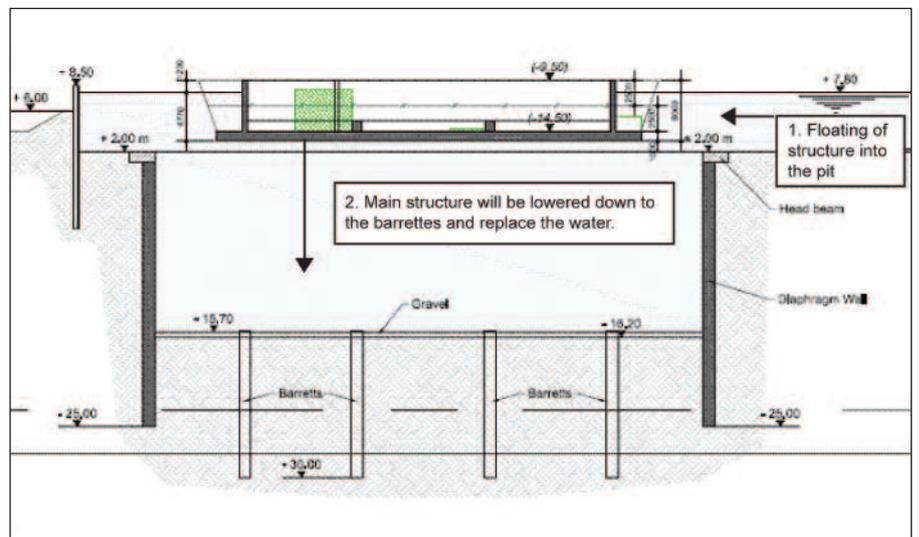
After many years of planning, East Sussex County Council recently gave the go-ahead for Veolia Environmental Services to develop an Energy Recovery Facility located at North Quay in Newhaven. The facility is designed to generate electricity from the 210,000 tonnes of residual household waste generated in East Sussex and Brighton & Hove, supplying power equivalent to the energy consumption of more than 16,500 homes. The electricity generated will be fed into the national grid reducing the equivalent amount of non-renewable fossil fuels.

BAUER was invited to tender for the execution of a circular shaped diaphragm wall and foundation barrettes for the facility, a process that took considerable time working in close contact with the main contractor, Hochtief. Different options and alternative technical solutions were proposed and offered

during the tendering phase before Hochtief, in joint venture with vonRoll (Switzerland), awarded the project to BAUER Technologies Ltd.

The main building of the facility is placed in an excavation pit formed by the circular diaphragm wall (thickness 800mm, depth 29m, diameter of pit 52m). Due to the circular shape, the

retaining wall is self-supporting and does not need any anchors or horizontal struts. The main structure is constructed parallel to BAUER's works next to the circular pit. The pit will be excavated under water and once the excavation is completed, the main structure will be floated into the pit as shown below (step 1).



Section of construction process: Diaphragm Wall, Barrettes (both constructed from level +4,0m AOD) and flooded pit for floating the main structure into the pit

The main structure will be built up and the heavier it becomes the more it will sink down to the bottom of the excavation pit (step 2). To transfer the structure's load into the ground, foundation barrettes are constructed within the perimeter of the circular pit. Once the structure is lowered down completely, it will sit on the top of the barrettes.

The diaphragm wall has a perimeter of 170 linm and is constructed with 24 panels, each between 6.9m and 7.1m in length. The circular shape of the diaphragm wall was generated by arranging these 24 panels in a polygonal layout. In the corners of the polygon 24 precast stop end elements were installed in order to create a precise angle and a watertight connection between the panels. In each panel, 3 reinforcement cages were installed. Both the reinforcement cages and the precast elements were installed by connecting an upper and lower part to reach the depth of 29m.

The diaphragm wall and barrettes were completed 3 weeks ahead of schedule to bring Hochtief's overall construction scheme back on track after a delay at commencement of the project.



*Excavation with BAUER grab and reinforcement installation with service crane*

<b>Client:</b>	Veolia Environmental Services
<b>General Contractor:</b>	Hochtief Construction AG
<b>Subcontractor:</b>	BAUER Technologies Ltd
<b>Construction Period:</b>	End of July to mid November 2008
<b>Turnover:</b>	£2.6 million
<b>Equipment:</b>	2000m <sup>3</sup> barrettes; 34m deep, 3200x1200mm 5000m <sup>3</sup> diaphragm wall; 29m deep, 3200x800mm