

The Sigma Plan, Belgium



PROJECT SUMMARY

PROJECT NAME: Vlassenbroek

PROJECT DATE: December 2018 - 2020

CLIENT: De Vlaamse Waterweg NV

CONTRACTOR : Aertssen Aannemingsbedrijf nv

CONSULTANT: Geotechnics Division, Flemish Government



OVERVIEW

The Sigma Plan, designed by De Vlaamse Waterweg NV, protects Flanders from flooding, at the same time boosting the valuable nature surrounding the River Scheldt.

In extreme weather conditions, the river and its tributaries can reach dangerously high water levels and even overflow their banks. The Sigma Plan involves creating sturdier and higher levees and a chain of natural flood control areas to catch excess river water. This gives the rivers room to flow and to overflow.

In addition to water safety, the plan also focuses on the development of the river's nature, recreational facilities and local economies.

Vlassenbroek is one of the projects in this plan. It is a picturesque village popular for cycling and hiking. The Geotechnics Division, part of the Government of Flanders' Department of Mobility and Public Works, provides expert advice in geotechnical engineering.

MONITORING

Piezometers were installed on several cross sections along the new levee. The levee is built on peaty ground and the aim is to monitor the dissipation of the pore water pressure and to steer and control the rate of elevation.

Bearing in mind the specific ground conditions, fully saturated and with a significant percentage of decaying peat, special care was taken during installation to ensure the results from the 15 piezometers would truly represent ground conditions.

The piezometers were connected to five five-channel wireless dataloggers which transmit data to a central Gateway, which in turn sends the data to Aertssen's FTP. This allows monitoring data in real-time so decisions can be taken in order to build a stable dike.

Geosense provided on-site technical services to assist with the method to drive in the piezometers as well as to train Aertssen on setting up the Wi-SOS wireless system.

PRODUCTS USED

VW Drive-in Piezometers

Measurement of pore water pressure. 345 kPa in range, Low (resistance) to Air Entry filters. Pushed in the ground using a CPT rod adaptor.

Five channel VW Wi-SOS 480 Nodes

Long-range 800MHz wireless battery-powered data loggers for connecting the piezometers to the Gateway. Easily configured using Android phone or tablet via G-LOG APP.

Wi-SOS 480 Gateway

Central data acquisition logger fitted with SIM card to provide GPRS connection for remote access via the internet. It can be configured over air via an Android device and includes sampling intervals and sensor configuration.

Wi-SOS WebCentre

Website where the connectivity, health of the Gateways and Nodes can be monitored in real time. Data can be viewed, visualised and downloaded.