GEOSENSE

Case Study - Settlement

Pudzeoch Basin, Renfrewshire, UK

PROJECT SUMMARY

NAME: Pudzeoch Basin, Renfrew on the Upper Clyde

YEAR: 2010

CLIENT: Renfrewshire Council

MAIN CONTRACTOR: Land and Water Services Ltd

CONSULTANT: Donaldson Associates

INSTRUMENTATION SPECIALIST: Ian Farmer Associates

OVERVIEW

The Phase 2 Works include the excavation of recent contaminated sediments from the Pudzeoch Basin on the Upper Clyde in Renfrew and its disposal offsite.

The excavated void, approximately 9,500 cubic metres, was replaced with imported specified fills to a level of -2.5 m A.O.D.

An additional berm was formed above the basin invert level at the Southern end of the dock to 3.0m A.O.D. to facilitate the movement of plant required for the construction of the pumping station under the Phase 3 Contract.

MONITORING

The load from the fill material was expected to generate excess pore water pressures in the underlying natural cohesive alluvial deposits. To ensure that critical pore water pressures were not exceeded (i.e. failure is avoided) and also provide the opportunity to accelerate the infilling programme monitoring of the pore water pressures was required.

It was considered the most appropriate instrumentation was vibrating wire settlement cells and piezometers. The piezometers were installed within the middle of the cohesive alluvium layer, where pore pressures and much of the long term settlements were expected to be generated, and the settlements cells were installed within the natural underlying sand deposits below the recent sediments that will be removed, and above the cohesive stratum.

All sensors were connected to an automatic data acquisition system which could be accessed remotely via the internet using Monitoring Point data visualisation software.

PRODUCTS USED

VW-3000 piezometers
Used to monitor pore water pressures.

VWLSS-200
Liquid settlement system to measure ground settlement.

GeoLogger
Automated data acquisition system complete with GSM modem for remote accessing.

MonitoringPoint
Internet based software which allows 'real time' monitoring.