

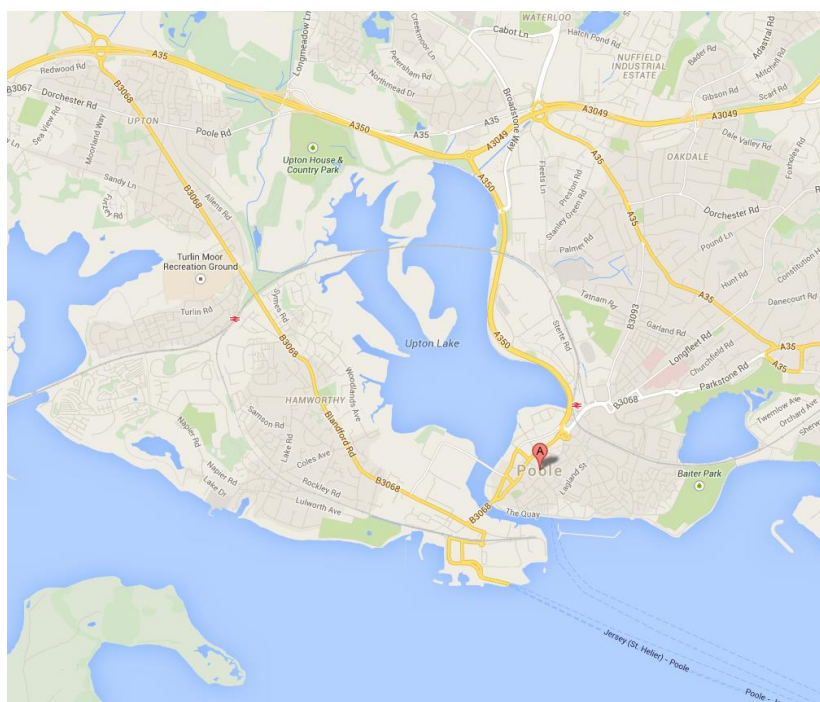
POOLE

United Kingdom
Quay extension

Key words:

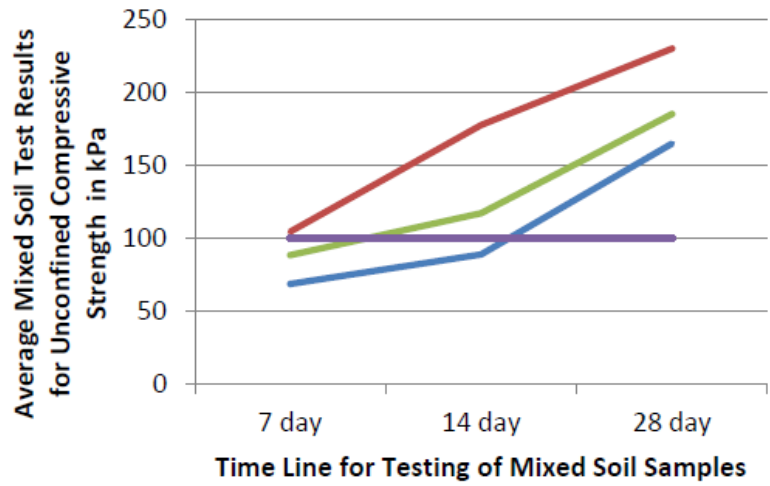
contaminated sediments,
port construction

General information	In the course of a quay extension in the UK's Port of Poole, a sheet pile wall was constructed. The area between the sheet pile wall and the old quay was covered with the layers of soft contaminated silt and peat which after filling would cause settlement and other problems over time. According to the original plan, the soft soil layers would be removed and replaced with non-cohesive soil. The challenges connected to this solution included the issues of the old pier's stability during construction time and the high costs of excavation of the contaminated masses. It was concluded that a technically and economically sound solution would include filling the area of concern with contaminated masses (silt and peat) dredged from the sea and their subsequent stabilization on site. At the same time, the contaminants were transformed into insoluble form.
Advantages of stabilization	The disposal of contaminated sediments would be exceedingly expensive. The process of mass stabilization was implemented in the period of 7 days, whereas carrying out the excavations according to the original plan would have required a working time of 4 weeks.
Project timetable	June 2013
Volumes and dimensions	≈ 1000...2000 m ³ (estimated on the basis of the original plan)
Geology and stabilized material	silt among which mixed peat
Target strength of the stabilized material	100 kPa (unconfined compression)
Binder(s)	not known; in order to avoid dusting problem, wet method of binder feeding was used
Laboratory and field tests	SPT-soundings and window samples 14 days after consolidation.
Other	Not known
Long-term follow-up and lessons learned	-
Sources	Poole Quay Extension – RNL Case Card. Deep Soil Mixing Ltd.
Stabilization contractor	Deep Soil Mixing Ltd



Results of stabilization tests

- Mix 1 @ 8% Binder
- Mix 2 @ 13% Binder
- Mix 3 @ 20% Binder
- Target Strength



Sediments dredged from the area in front of the quay were disposed into the area between the old quay and the sheet pile wall.



Stabilization of contaminated sediments in progress.

