



Plate 1: Excavation of the gasholder base

Completion Date:	January 2007
Development:	Commercial Development
Client:	FC Property Management
Developer:	Blenheim House Construction
Remediation Contractor:	Envirotreast & Harringtons
Consultant:	Waterman Environmental & Blackdown Consultants
End Value:	£1.2M

Site Overview

The site was approximately 0.8 hectare and situated adjacent to the River Medway on the location of a former gasworks and brewery. It was extensively contaminated with hydrocarbons and to a lesser extent cyanide from the gas production process.

Objective

The remediation strategy for the Maidstone site was designed to address the on-site source contamination and indirectly the pathway contamination issues with the intention of protecting both human health and groundwater/surface water receptors; in particular the adjacent River Medway (Plate 4).

Methodology

The remediation work was conducted in two stages; the first phase was based on excavating and treating materials from the former gasholder bases and from hotspots in the vicinity of the former purifier boxes. During the second phase a reactive soil mixed barrier system was installed adjacent to the River Medway, the function of which was to protect the river from groundwater contamination.

Phase 1 involved the excavation and *ex-situ* treatment of a total of 4,690m³ of contaminated material from the gas holders and purifier boxes between July and November 2006. The material was contaminated with typical gasworks pollutants, including PAH, TPH, Ammonia, Cyanide, Heavy Metals and Phenol.

The contaminated soils were excavated, stockpiled and treated on-site using the Envirotreast E-clay technology. The Envirotreast treatment plant comprised of a slurry production unit and mixing zone.

The slurry production set-up comprised of 1 No. 1000L paddle mixer (where E-clay reagents were combined before being pumped across to the mixing zones) and 1 No. excavator employed to mix the materials (Plate 2).

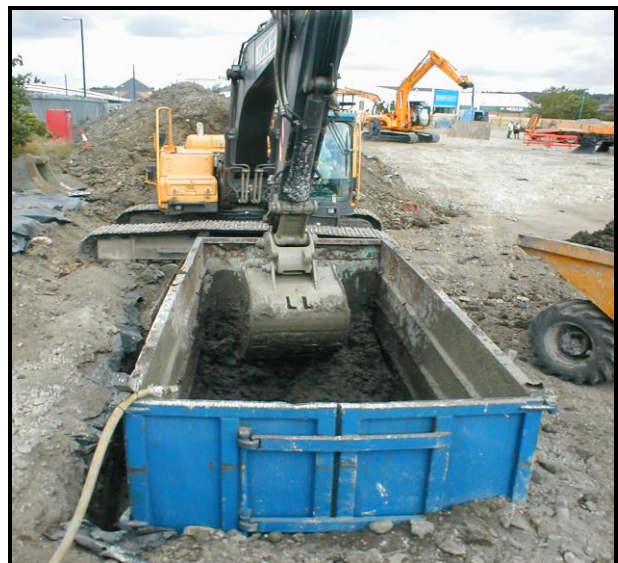


Plate 2: The processing bucket mixing contaminated soils with E-clay® slurry

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The material was tested for leachate against pre-agreed clean up criteria before being reused on site, here it was redeposited in the void spaces left by the former gasholder bases.

Phase 2 works consisted of installing a 120m long reactive barrier system during December 2006. This was installed using soil mixing techniques along the river retaining wall and across the site to intercept contaminated groundwater as it flowed towards the River Medway (Plate 3). Along the river wall and between the purifier boxes the wall was designed to be of low permeability. The second interlocking section, installed perpendicular to the river, was designed using Enviro-treat's E-clay Technology as a permeable barrier. This allowed groundwater to pass through while ensuring that contaminants were retained within the barrier by the E-clay.



Plate 3: Barrier installation using a continuous flight auger

Validation

Validation of the treated material was carried out on 47 No. batch samples, which were leached and analysed on behalf of Enviro-treat by a UKAS laboratory.



Plate 4: The main receptor the River Medway; floating spill booms were used as a precautionary measure.

Results

The results of the leachate analysis indicated that the main objective of chemically and physically stabilising the excavated 'contaminated' soils from St Peters Wharf, Maidstone has been achieved. The treatment operation was designed to reduce the leaching potential from the identified contamination by the immobilisation of leachable pollutants within the soils.

The Comité Européen de Normalisation (CEN) validation results showed that the contaminants of concern have been immobilised within the treated material to below Site Specific Target Levels in all of the samples taken during the course of the treatment and recovery operation, therefore the treatment objective has been achieved.

Enviro-treat successfully completed the remediation works at St Peters Wharf, treating a total of 4690m³ of soils contaminated with TPH, PAH, heavy metals and Total Cyanide.

The reactive barrier system will be monitored for a minimum two year period by Blackdown Consultants. The validation process is currently in its early stages so no final results are presently available; however, the initial results are extremely favourable.

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