



Plate 1 - Completed residential buildings at the West Drayton Site.

Completion Date:	1997
Development type:	Residential
Developer:	Acton Housing
Contractor	May Gurney
End Value:	3.5M

Site Overview

The proposed site was the former Ministry of Defence, BASF, Colham Mill Road site located on the outskirts of West Drayton, London, which was previously used for the manufacture of paints.

The facility was effectively split into two sections by the Frays River with the east side of the river employed as the main production area. Information obtained from both the London Fire Brigade and various other sources confirmed the storage and use of large volumes of a variety of solvents. These included acetone, toluene, benzene, ethyl benzene, xylenes, methyl isobutyl ketone (MIBK), white spirits etc. In addition there was also limited storage and use of chlorinated solvents at the site. Site investigation data revealed the presence of a range of organic contamination with some heavy metal contamination also identified.

The West Drayton site was developed for residential end-use by Alfred M^cAlpine Partnership Housing.

Objective

The remediation strategy for the Colham Mill Road site was designed to address the source contamination on-site and indirectly the pathway contamination issues, with the intention of protecting Human Health and the identified groundwater receptors.

Methodology

The remediation strategy adopted for the site incorporated three key elements:

1. Mass treatment of identified areas of Contamination using the Enviro-treat's in-situ stabilisation process
2. Construction of an in-situ physical barrier of low permeability. The physical (passive) barrier is designed to prevent migration of contaminated ground water from the treatment zone and also prevent ingress of ground water into the treatment area. The physical barrier forms part of the peripheral wall and is designed to work in conjunction with the active treatment wall.
3. Construction of an in situ active treatment barrier of relatively high permeability. The active barrier is designed to allow passage of ground water through the wall whilst at the same time removing the contaminants by a Combination of chemical sorption and reaction processes.

By combining the above, the Enviro-treat Process has been designed to treat the site as a whole. It is imperative that the identified contamination areas are mass treated prior to constructing the active and passive walls to ensure that ground water does not become re-contaminated or further contaminated by passing through untreated contamination zones.

The works were conducted over a 4 month period. Specialist technology, materials and supervision were supplied by Enviro-treat, whilst May Gurney supplied all the required plant, and labour for application of the Enviro-treat Process.

The mass treatment process utilised on site was an advanced chemical stabilisation (immobilisation) process, which immobilised both inorganic and organic pollutants and rendered them inert.

The process involved the use of specially modified E-Clays® developed by Envirotreat, which were used in conjunction with cementitious materials to produce a physically and chemically stabilised mass.

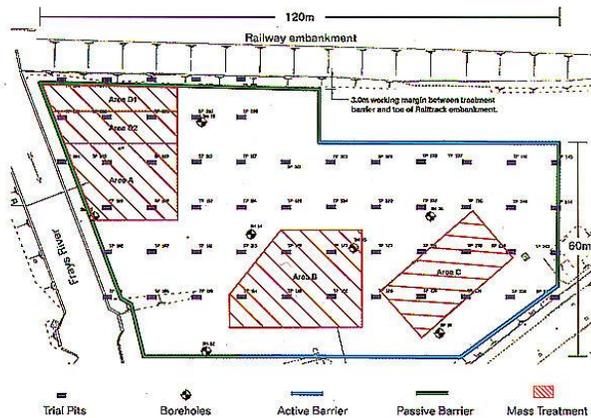


Figure 1 Site layout and treatment strategy.

The treated material was allowed to cure in-situ and was deemed to be effectively cured after a relatively short time period. This enabled the main contractor to carry out site works with a minimum of delay after carrying out the remediation process.

The active treatment walls were constructed using modified pillared E-Clays, which allow contaminated groundwater to pass through the clay structure whilst at the same time absorbing and removing the pollutants from the migrating groundwater. The low permeability passive barriers were constructed using a mixture of conventional bentonite clays and cementitious material. Both the installation of the barrier and mass treatment were carried out using a piling rig with a continuous flight auger system to inject and mix the E-clay® /OPC slurry into the contaminated ground. 4500 overlapping soil-cement columns were installed, each with a diameter of 900mm mm.

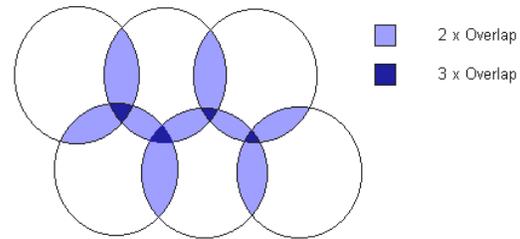


Figure 2 In-situ / Mass treatment column arrangement and overlap.

Validation

The remediation project was successfully completed. Validation of the in-situ mass treatment and active treatment barrier were carried out by ENSR International (main consultants). The results illustrated that the objective of protecting human health and the groundwater receptors has been achieved. The contaminants of concern have been fully addressed with leachate levels falling below the agreed Site Specific Target Levels.