

**Client / Developer**



**Environmental Consultants**



**Remediation Contractor**



Figure 1 – Typical on-site contamination.



**Methodology**

Enviro-treat employed an ex-situ soil mixing remediation strategy for the treatment of over 1,200 m<sup>3</sup> of contaminated soils.

The works were conducted over a 7 week period under the Envirotreat Mobile Process Licence (MPL).

The identified contamination was excavated stockpiled and treated on-site using the Envirotreat E-clay technology.

The treated soils were then temporarily stockpiled (pending validation) before being reused on-site as a substitute for imported clean fill, thus preventing the need for offsite disposal

As with all Envirotreat projects, the Chineham remediation scheme required both foresight and attention to detail. The housing developers were keen on the imminent construction the show homes which, along with the limited site space gave rise to a number of potential issues.

Enviro-treat approached this situation in a logical and professional which allowed the construction phase to run concurrently with the remediation works. This flexible approach employed by Envirotreat proved to be successful as the housing development and the remediation ran in harmony.

**Site Overview**

Historically, the 1.5 acre site in Chineham, Basingstoke was utilised as an engineering processing plant. In association with this plant were oil storage tanks and underground sumps.

These previous uses of the site resulted in widespread soil contamination. Elevated levels of hydrocarbons and heavy metals were identified up to a maximum depth of 1.5m bgl.

Ultimately, the site was to be developed into a housing estate. Seven detached houses were constructed.

**Objective**

The remediation strategy for the Chineham site was designed to address the on-site source contamination and indirectly, the pathway contamination issues with the intention of protecting the surrounding environment and site end user.

**Sole Provider of E-CLAY® Technology**

### Validation

Validation of the treated material was carried out on 23 no. batch samples, which were leached and analysed on behalf of Envirotreat by a UKAS accredited laboratory.

### Results

Table 1 illustrates the Maximum Contaminant Levels (MCL) of the identified pollutants prior to remediation and the results of leachate analysis post-treatment. The Site Specific Target Levels (SSTL) has been derived from the Dutch Intervention Values as agreed with the Environment Agency

Table 1 - Summary of treated soils leachate results compared to SSTL

Contaminant of concern	MCL in soils prior to clean up (mg/kg)	Leachate (mg/l)	
		SSTL	Mean treated soils
Arsenic	148	0.06	< 0.005
Cadmium	46	0.006	< 0.0009
Lead	9,570	0.075	< 0.016
Copper	177.100	0.075	< 0.053
Nickel	576	0.075	< 0.013
Zinc	117,600	0.8	< 0.022
TPH	83,000	600	< 395

MCL = maximum concentration recorded in soils prior to remediation

SSTL derived from the Dutch Intervention Values as agreed with the Environment Agency.

The remediation project was successfully completed, with the results illustrating that the objective of protecting the surrounding environment and site end user had been achieved. The contaminants of concern have been fully addressed with leachate levels falling below the agreed SSTL's, thus allowing the material to be re-deposited on-site.