

Environmental Protection Act 1990 - Section 78H(5)(c)

Remediation Statement

Prepared by London Borough of Barking and Dagenham

Name and Address of Contaminated Land:

Wantz Road Direct Services Operations Depot
Wantz Road
Dagenham
Essex

TQ 4960 8544

Current Land Use: New Council Depot – vehicle and general building material storage.

Former Land Use: Button Moulding Works and associated Plating shop.

Details of Remediation carried out: Installation of an internal Active Containment System comprising of a low permeability passive barrier with engineered gates on three sides and a permeable reactive barrier containing E-Clays on the downstream. The E-Clays will immobilise the prime organic pollutants of concern. The E-Clays will retain a degree of treatment capability for both cationic and anionic metallic species.

Estimated area (hectares): 150m by 50m.

Reason by which land is “Contaminated Land”

Solvent contamination has entered controlled waters (groundwater) and a significant pollutant linkage has been established.

Substance(s) by reason of which the land is “Contaminated Land.”

Contamination from former solvent use on the site, namely Dense Non-Aqueous Phase Liquids (DNAPL's) in the form of List I substances including Trichloroethylene, Cis 1-2 dichloroethene and Tetrachloroethylene. In addition heavy metal contamination including elevated levels of cadmium and chromium.

Current Owner of the Land

London Borough of Barking and Dagenham.

REMEDIATION STATEMENT

Summary of Remediation Action undertaken in respect to contamination issues at former Ornstein Button Factory, now the site of a Council Depot, Wantz Road, Dagenham.

1.0 Background

The site as outlined in Figure 1 (attached) is the former Ornstein Factory site in Wantz Road which was a button moulding works consisting of buildings and hardstandings in the eastern half of the site and open landscape to the west. The history of the site dates back to pre-war with construction of the existing factory building which, on the 1939 OS map is described as a Button Mould Works. Planning records and OS maps show that minor extensions, including storage sheds and a plating shop, were added in the late 1960's and early 1970's. The factory has been vacant for a considerable time and was used as a venue for indoor car boot sales in the 1990's. An outline planning application for residential development of the site was refused in 1997 on the grounds that the proposed development would result in loss of employment land contrary to policy E1 of the Unitary Development Plan. Records indicate that the land to the rear of the factory appears to have never been developed.

In 1998 the works were demolished by the previous owners of the land who initiated a site investigation by Environmental Consultants LBH Wembley Ltd in July 1998 (report No. LBH 1705) with a view of developing the site for housing.

The investigation revealed some visual and olfactory evidence of localised hydrocarbon/solvent contamination and indicated a need for further work in order to establish the extent of the contamination.

In 1999 the London Borough of Barking and Dagenham expressed interest in buying the land for the purposes of building a council Depot for vehicle and general building material storage. In view of the previous findings of the site investigations carried out in 1998 the Council commissioned LBH Wembley to undertake further works to determine the extent of the contamination prior to purchasing the site.

The findings of this subsequent investigation detailed in LBH Wembley's report of 1999 (report No LBH 2128) revealed that soil samples in three boreholes showed elevated concentration of chromium and one slightly elevated concentration of cadmium. Leaching tests showed that the contaminants are not readily soluble and therefore do not pose a risk to groundwater.

However a vapour survey conducted across the site showed high concentrations of Volatile Organic Compound's (VOC's) to the centre of the site and that the groundwater within this area has been impacted with the

VOC contamination. The site investigation showed that the primary migration of Dense Non Aqueous Phase Liquids (DNAPL's) is likely to be from source to the base of the aquifer, where it is retained in a localised depression within the non-aquifer. Significant concentrations of dissolved phase VOC's were also indicated. The results of VOC analyses showed significant concentrations of chlorinated solvents and qualitative analyses indicated the presence of Tetrachloroethylene, Trichloroethylene and Cis – 1,2 dichloroethene. The highest concentrations of these solvents were recorded in the central section of the site, with lower concentrations being recorded at the perimeter of the site. Based on this information the Council purchased the site for development as its Building Services Depot in early 2000.

Following the purchase of the site, Remediation proposals were drawn up which indicated a need for further work in order to delineate both the lateral and vertical extent of the groundwater contamination to demonstrate the feasibility of a risk management system based on a natural attenuation process. A further report prepared by LBH Wembley in July 2000 (report No. LBH 2128A) was commissioned by the London Borough of Barking and Dagenham.

This report showed that the groundwater gradient was running down from the north-west to south-east of the site in the order of 110mm over a distance of approximately 100m. This suggested that the groundwater is flowing in a direction at approximately 45° to the flow of the nearby Wantz Stream. The groundwater levels also suggest that there may be a dip to the south of the centre of the site. The site investigation also revealed that a plume of solvent contamination appears to be present towards the centre of the site and despite an apparent hydraulic gradient the plume does not appear to be moving with the presumed direction of the groundwater flow. The chlorinated solvent contaminants are likely to be denser than the groundwater and may have accumulated towards the base of the gravel aquifer or upon the less permeable layers within it.

Based on this information discussions were held with the Environment Agency to decide an appropriate Remediation Strategy for the site prior to the building of the depot. The Remediation Strategy is discussed in detail below in Section 5.0 Remediation.

2.0 Legislation

Section 78A(2) of Part IIA of the Environmental Protection Act 1990 defines Contaminated Land as:

“any land which appears to the Local Authority in whose area it is situated to be in such a condition, by reasons of substances in, on or under the land, that

- (a) Significant Harm is being caused or there is a Significant Possibility of such harm being caused; or
- (b) Pollution of Controlled Waters is being, or is likely to be caused.”

Before the Local Authority can make the judgement that any land appears to be Contaminated Land on the basis that the Pollution of Controlled Waters is being caused, the Authority must identify a Significant Pollutant Linkage (**Source – Pathway – Receptor**) where a body of Controlled Water forms the Receptor.

Therefore based on the above the Local Authority has determined the following:

- A **Source** of pollution exists – the solvent contamination which is not going to be removed from the site.
- A **Pathway** exists – the flow of solvent through the soil profile.
- A **Receptor** exists – the groundwater (a Controlled Water.)

Therefore it is the opinion of the London Borough of Barking and Dagenham that the solvent contamination present at the former Ornstein Button Factory has contaminated the underlying groundwater (a “controlled water”) and is therefore deemed to be Statutorily Contaminated Land.

3.0 Appropriate Persons

Part IIA defines two different categories of Appropriate Persons, and sets out the circumstances in which persons in these categories might be liable for the Remediation of Contaminated Land.

The first category is created by Section 78F(2), which states that:

“...any person, or any of the persons, who caused or knowingly permitted the substances, or any of the substances, by reason of which the Contaminated Land in question is such land to be in, on or under that land is an Appropriate Person.”

Such a person – a so called **Class A Person** – will be the Appropriate Person with respect to the Remediation of the land and liability has to be considered separately for each Pollutant Linkage identified on that land.

It is the opinion of the London Borough of Barking and Dagenham that the former owners/occupiers of the site previously known as the Ornstein Button Factory, Wantz Road, Dagenham are the “Appropriate Persons”; with respect to the determination of the land as “Contaminated land”; in so far as the solvent contamination presently affecting the groundwater below the site was highly likely to have originated from their site activities.

However a second category of Appropriate Person applies in cases where it is not possible to find a Class A Person, either for all of the Significant Pollutant Linkages identified on the land, or for a particular Significant Pollutant

Linkage. These circumstances are addressed in Section 78F(4) and (5) of Part IIA, which provide that:

“(4) if no person, has, after reasonable inquiry, been found who is by virtue an Appropriate Class A Person to bear responsibility for the Remediation of the land, the Owner or Occupier for the time being of the land in questions is an Appropriate Person.”

“(5) If in consequence there are things which are to be done by way of Remediation in relation to which no person has, after reasonable inquiry, been found who is an Appropriate Person, then the Owner or Occupier for the time being of the Contaminated Land in question is an Appropriate Person in relation to those things.”

A person who is an Appropriate Person under Section 78F(4) or (5) is referred to in the Statutory guidance as a **Class B Person**.

The London Borough of Barking and Dagenham has made suitable and sufficient inquiries as to the original owners/occupiers of the site. Information suggests that the company was dissolved and no liability can be attached to any present day company or organisation.

Accordingly, it is the opinion of the London Borough of Barking and Dagenham that no Class A Person has been found who is responsible for the Remediation of the Contaminated Land and therefore responsibility for Remediation passes to the Class B Person – the present Owner/Occupier of the Land.

The Class B Person in this instance is the London Borough of Barking and Dagenham as the current Owners/Occupiers of the site.

However by virtue of Section 78H(5)(c) of Part IIA of the Environmental Protection Act, if it appears to the enforcing Authority (the London Borough of Barking and Dagenham) that the person on whom a Remediation Notice would be served (due to designation of Statutorily Contaminated Land), is itself, it is precluded from serving a Notice. Rather by Section 78H(7), the Authority as the “responsible person” should prepare and publish a Remediation Statement, indicating what it will do and within what timescale.

A Remediation Notice cannot be served if it is the case that appropriate Remediation is taking place, or will take place. Again a Remediation Statement shall be prepared and published.

4.0 The Current Position

The London Borough of Barking and Dagenham are the current Owners/Occupiers of the site, and by virtue of the information contained in Section 3 are deemed the Appropriate Persons with respect to the Remediation of the Contaminated Land.

The Borough has always intended to Remedy the legacy of Contaminated Land left by the former occupiers/owners of the site prior to the construction of the Depot. Therefore it is the opinion of the London Borough of Barking and Dagenham that both the scenarios listed in Section 3 with respect to the publishing of a **Remediation Statement** apply.

5.0 Remediation

Where only a single Significant Pollutant Linkage has been identified on the Contaminated Land, the Enforcing Authority, in conjunction with those it is consulting, needs to consider what it needs, with respect to:

- (a) prevent, or reduce the likelihood of, the occurrence of any Significant Harm or Pollution of Controlled Waters; and
- (b) remedy, or mitigate, the effect of any such harm or water pollution which has been, or might be caused.

The Local Authority then needs to identify the Remediation Package which would represent the Best Practicable Techniques of Remediation for that Significant Pollutant Linkage. Such techniques will include appropriate measures to provide quality assurance and to verify what has been done. Where appropriate, such measure may take the form of Monitoring Actions.

Following detailed negotiations with the Environment Agency various Options for the Remediation of the site were considered. The following Option was chosen:

- The installation of a internal Active Containment System (ACS) comprising of a low permeability passive barrier on three sides with engineered gates and a permeable reactive barrier containing E-clays on the down-gradient side.
- The permeable reactive barrier will contain modified pillared E-clays designed to remove and chemically immobilise the prime organic pollutants of concern. The clays will retain a degree of treatment capability for both cationic and anionic metallic species. This is considered beneficial in view of the identified pollutants within the groundwater.
- The barrier is installed in-situ using a continuous flight auger system, whereby the treatment materials are made up as a slurry and injected into the ground as the auger is withdrawn, essentially producing columns of “treated” material.
- The chlorinated solvents are classified as DNAPL’s which tend to exist either at the base of the aquifer and/or as a perched layer(s) on the surface of the impermeable strata. The site investigation reports for Wantz Road confirm that the Trichloroethylene and Tetrachloroethylene concentrations are highest at deeper levels in the aquifer/sediments, although significant concentrations of dissolved solvents are also present.
- The barrier is designed to encompass the contamination within the barrier zone including contamination within the prime remedial area and

identified additional contamination within Boreholes BH1, BH2 and BH8 respectively.

The concept employed is one of **Risk Management and Containment**. It works on containing the contamination so it does not spread significantly off the site. The barrier will allow some cleanup of the groundwater as it flows through the E-clay's. The active barrier downstream captures the contaminants and the contamination is pushed through the barrier reducing the mass concentration of the contaminants. At the suggestion of the Environment Agency additional clean rainwater from the building roof has been introduced within the barrier box upstream of the initial point of contamination to encourage the movement of the contaminant plume towards the active barrier. This has been achieved by the use of a soakaway.

Groundwater monitoring will be done on a quarterly basis for 5 years to ensure that the contaminant levels do not increase outside the active barrier over time. 15 boreholes have been established both within and outside the containment system to monitor the groundwater levels and the performance of the barrier.

The performance of the barrier would normally be measured against Site Specific Target Levels (SSTL's) based on the Dutch Intervention Values for groundwater. Groundwater monitoring carried out over the past twelve months and immediately after the installation of the containment system has shown that the solvent contamination is still high in the majority of the monitoring wells and in particular those positioned along the down-stream site boundary. In this case it is considered that whilst the SSTL's may be adopted as a long-term goal, in the short and medium term, satisfactory performance of the containment system will be demonstrated by a stabilisation or any reduction in measurable solvent concentrations in the monitoring wells.

The following Site Specific Target Levels based on the Dutch Intervention Values for the groundwater would normally be set:

- Cis 1-2 dichloroethene	0.4 (mg/l)	400 (ug/l)
- Trichloroethylene	0.5	500
- Tetrachloroethylene	0.04	40

All monitoring data will be sent to the Environment Agency and will be reviewed bi-annually. If necessary the remediation specified for the site will be modified.

Section 78R of the Environmental Protection Act 1990 requires every enforcing authority to maintain a Register containing particulars relating to Contaminated Land. One of these particulars is the requirement that details of Remediation Statements are included on the Register. Therefore a copy of this Remediation Statement has been included on

**the Register of Contaminated Land. Reference number
LBB&D/EP/CLR/0001.**

Information on the contents of this Remediation Statement can be obtained from the following:

London Borough of Barking and Dagenham
Housing and Health Department
Environmental Protection Department
1st Floor Roycraft House
15 Linton Road
Barking
Essex, IG11 8HE

020 8227 5671/5670.