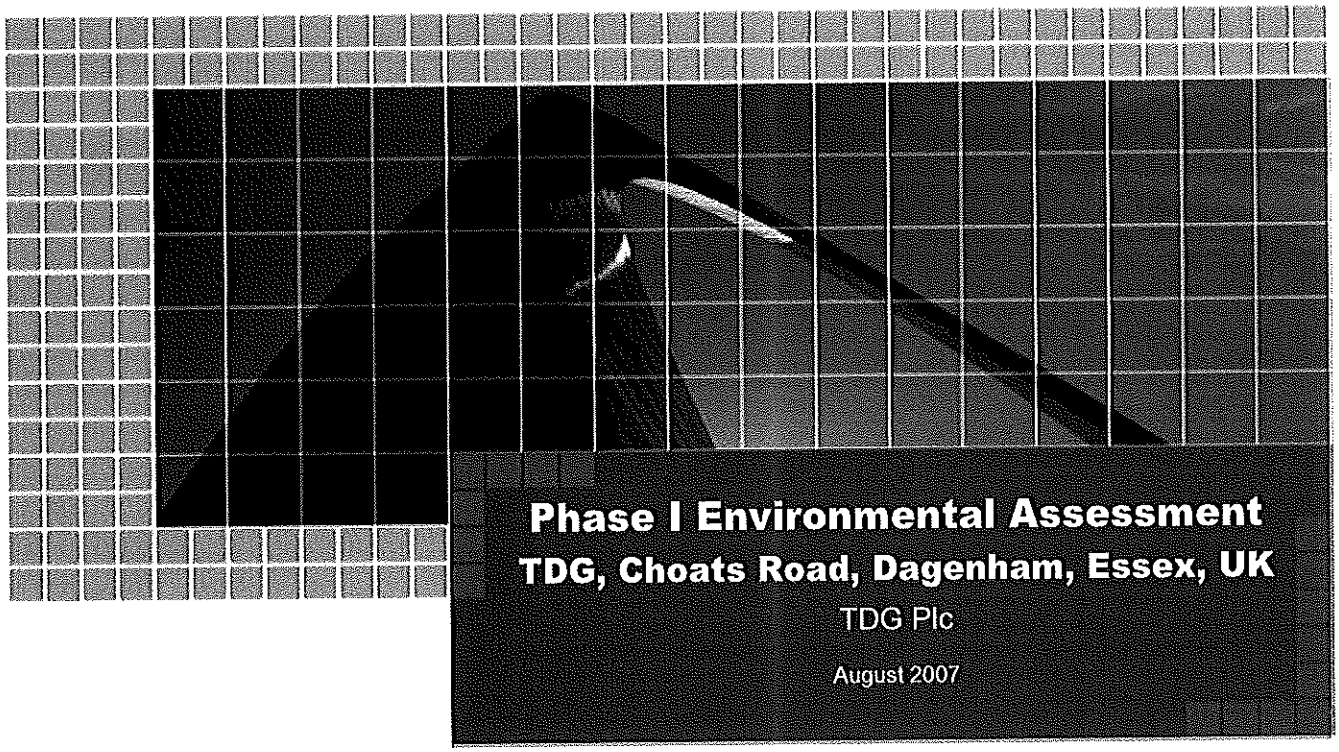

Phase I Environmental Assessment

TDG, Choats Road, Dagenham, Essex, UK

TDG Plc

August 2007

WSP

QM

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Contents

Executive Summary

WSP Environmental Ltd. (WSPE) was instructed by Transport Development Group Plc. (TDG) to undertake a Phase I Environmental Assessment of the TDG facility at Choats Road, Dagenham, Essex, RM9 6PU, UK. The report highlights environmental considerations, predominantly with respect to ground conditions, and is required as part of the proposed revaluation of the freehold interest in the site. Please refer to Appendix D for WSPE's Methodology and Limitations.

Key Findings

The subject site comprises a bulk liquids storage and distribution depot. The site is accessed by road from Hindmans Way and is split into six main bulk storage areas (accommodating a total of approximately 250 large above ground storage tanks (ASTs)) that are accessed via site roadways, except Area 6, which is located on a separate plot approximately 60 metres (m) northwest of the main site. A jetty at the southern boundary of the site, extending over the River Thames, is used to transfer liquids to and from barges.

The site is an Upper Tier Control of Major Accident Hazards (COMAH) site and has a Planning Hazardous Substances consent for the storage of alkyl dimethlyamines, gas oils and kerosenes and is therefore closely monitored by the Environment Agency (EA) and the Health and Safety Executive (HSE). There are reportedly no outstanding improvement notices for the site; it is understood, however, that there is on-going dialogue with these agencies and that there is an informal agreement that TDG will continue to upgrade their facilities to bring the site in line with best practice.

Historical maps indicate that the site comprised open undeveloped land from pre-1870; the north-western plot (now occupied by Area 6) was located on marsh land marked as "liable to flood". By 1916, the jetty had been constructed and railway lines constructed, extending across the northern part of the main site. By 1940, two warehouse buildings had been constructed in the north-eastern part of the main site and 11 ASTs were present in the south-eastern part of the site; the site continued to expand over the following years and by 1972, approximately the current site layout was present. By 1963, Area 6 has been developed by a third party for oil storage; this development was demolished pre-1991 and the site cleared apart from two small buildings; Area 6 remained vacant until pre-2006, when the current site layout (ASTs, loading/unloading areas and vehicle parking areas) were present.

The surrounding areas has had an extensive industrial history, including bulk liquid storage (pre-1940 to present adjacent to the north), a works with gasometer (pre-1897 to pre-1915 adjacent to the southeast), an oil depot (pre-1963 to pre-1991 adjacent to northwest), a works (pre-1938 to pre-1996) then bus depot (post-2006 to present 30m to the north), a cable works (pre-1921 to pre-2006 250m to the north) and a power station (pre-1996 to present 250m to the northeast).

An intrusive investigation report was reportedly prepared in order to discharge a condition associated with a planning permission granted in February 2005 for the erection of a new warehouse for chemical storage purposes (see Section 2.1); a copy of the intrusive investigation is reportedly held by TDG, but has not been made available to WSPE within the timeframe of this assessment.

Other groundwater monitoring wells were observed (for example in Area 3); however, site representatives reported that no other intrusive investigation reports were available.

The site setting is considered to be of moderate sensitivity, primarily due to the underlying Minor Aquifers over a Major Aquifer (Upper Chalk); the adjacent River Thames and the industrial nature of the surrounding area.

Environmental Liability

There is likely to be widespread contamination at a site of this nature, which has been operating for approximately 100 years. At present there is very limited information regarding the actual potential impacts to ground and, in the absence of such information, it is not possible to discount the possibility that there is significant impact to the underlying soils and groundwater at the site.

Until such a time that further information regarding ground conditions is available, based on the information contained within this report and with due regard to the continued industrial land use, it is the opinion of WSP Environmental Ltd that the site represents a **High** risk with respect to environmental considerations.

Recommendations

It is recommended that all available intrusive soil and groundwater investigation reports are collated and reviewed. Once this information has been reviewed, consideration would be given as to whether further intrusive investigation is required to develop an accurate picture of ground conditions and allow an accurate assessment of the potential contaminated land liability to be developed.

On-going improvements at the site are planned, specifically to the bunded parts of Areas 1, 2 and 3 (old). Other areas that will require upgrading at the site include:

- Hardstanding the roadways and across the site (including Areas 4 and 5);
- Drainage across the entire site; and
- Waste water treatment facilities (to ensure compliance with the site's trade effluent discharge consent.

An inspection program should also be implemented to ensure that existing pollution control measures are in satisfactory condition and that repairs are made as required.

In addition, the following environmental management improvements should be considered:

- While there is no obligation for a independent party to undertake an asbestos survey at the site under the Control of Asbestos Regulations 2006, there is an obligation to ensure that ACMs are suitably managed in order to protect employee health; given the amount of asbestos that is reportedly present at the site, it is recommended that an up-to-date survey be completed by a suitably accredited contractor.

WSP Environmental Ltd.

Please Note: This summary forms part of WSP Environmental Ltd. Phase I Environmental Assessment (ref.: 12024227-003). Under no circumstances is it to be used as an independent document.

1 Site Information

1.1 SITE DETAILS

Site Address	**TDG, Choats Road, Dagenham, Essex, RM9 6PU, UK**
National Grid Reference	TQ 485 820
Size	9.38 hectares
Tenure	Freehold
Site Location	The site is located on the northern bank of the River Thames, approximately 2-kilometres (km) to the south of Dagenham town centre, in a predominantly industrial area. The wider area is currently undergoing extensive regeneration. A site location plan is included as Appendix A.
Current Site Use	The subject site is utilised as a bulk liquids storage and distribution depot.

1.2 SITE RECONNAISSANCE

A walk over survey of the site was carried out on 1st August 2007, including an inspection of the exterior and interior of the site and building. At the time of the site visit, the weather was dry and clear. Access was made available to all areas of the site. The following key observations were made during the site reconnaissance:

Site Description

The subject site comprises a bulk liquids storage and distribution depot. The site is accessed by road from Hindmans Way and is split into six main bulk storage areas that are accessed via site roadways, except Area 6, which is located on a separate plot approximately 60 metres (m) northwest of the main site. A jetty at the southern boundary of the site, extending over the River Thames, is used to transfer liquids to and from barges. There are a number of buildings on-site housing security, offices, equipment (boilers, pumps, electrical switchgear etc.) and storage areas, as well as a weighbridge, external storage areas and parking.

Specific on-site activities

- The site is used for the storage of bulk liquids in above ground storage tanks (ASTs), drums and 1,000-litre intermediate bulk containers (IBCs).
- The site is split into six main storage areas as follows:

  Area 1: located immediately to the north of the jetty is the oldest part of the site. It is primarily occupied by large storage ASTs with poor quality brick bunding, noted to be damaged or non-existent in a number of areas. Much of the storage area is surfaced only with loose gravel and widespread staining of the ground around the tanks and the tank loading/unloading areas was noted.

  Area 2: located in the south-western part of the site adjacent to main site entrance. It is primarily occupied by large storage ASTs with poor quality brick bunding,

noted to be damaged or non-existent in a number of areas. In addition, the bund walls located immediately adjacent to the tanks were noted to be approximately 0.5m in height and are considered unlikely to be able to contain tank contents in the event of a catastrophic failure. Much of the storage area is surfaced only with loose gravel and widespread staining of the ground around the tanks and the tank loading/unloading areas was noted. Contaminated standing water was also noted within the bunded areas.

Area 3: located in the north-western part of the site, Area 3 is split into two sections, both of which are primarily occupied by large storage ASTs. The north-western part of Area 3 has recently been upgraded; an impermeable concrete bund with a sealed concrete floor has been constructed to contain any liquid loses. Loading/unloading areas have also been significantly improved and, in the event of a spill during transfer to/from road tankers, any release would be contained. Minor staining was noted in the loading/unloading area, but this is not considered to be a significant environmental concern. The south-eastern part of Area 3 is, however, in poor condition, with inadequate brick bunding, noted to be damaged in a number of areas. The storage area is surfaced only with loose gravel and widespread staining of the ground around the tanks and the tank loading/unloading areas was noted.

Area 4: located in the north-eastern part of the site, Area 4 is primarily used for storage of drums and IBCs in warehouse buildings; however, in addition, the waste water treatment area, the boiler house and the maintenance workshops are located in this area. The buildings in the north-eastern part of Area 4 dated from at least the 1930s and are in poor condition; significant subsidence of the concrete floor slab has occurred in one of the buildings. Use of the most significantly affected area has been suspended until upgrade works have been undertaken. In other parts of these buildings, the floor slab is in better condition and these areas are used for drum storage, extensive oil staining was noted on the concrete floor slab was noted in these areas, although efforts had been made to contain recent spills (by the use of absorbent granules). A new warehouse has been recently built in the south-western part of Area 4; this is used for drum filling and storage. The warehouse floor is of sealed concrete construction and is in good condition with no significant staining. There is extensive staining in external areas in Area 4.

The boiler house contains three oil-fired boilers that provide heat to the pipes and tanks (to ensure that viscous liquids (such as heavy fuel oil) do not solidify). There are two bunded oil storage tanks associated with the boilers; heavy oil staining was noted in the bund.

The maintenance shops are used for storing equipment used to service equipment used on-site and for small-scale metal working and carpentry. No significant environmental issues were identified in this area.

The waste treatment system is discussed in the Drainage Issues section below.

Area 5: located in the south-eastern part of the site, is primarily occupied by large storage ASTs with poor quality brick bunding, noted to be damaged or non-existent in a number of areas. Much of the storage area is surfaced only with loose gravel and widespread staining of the ground around the tanks and the tank loading/unloading areas was noted. There are also concrete surface storage areas for empty drums and a small area for short-term lorry parking; limited oil staining was present in this area.

Area 6: located on a separate plot approximately 60m northwest of the main site, on the far side of Hindmans Way, was only developed for its current use in 1999. The ASTs are contained within an impermeable concrete bund with a sealed concrete floor to contain any liquid loses; a crack was noted in a bund wall, but no liquid staining was noted around the crack. Loading/unloading areas have also been significantly improved and are bunded to contain any spills during transfer to/from road tankers. Minor staining was noted in the loading/unloading area, but this is not considered to be a significant concern. There is also a concrete surfaced trailer parking area. The hardstanding in Area 6 was noted to be in good condition with no significant staining.

Further information regarding the above ASTs is included in the Bulk Hazardous Materials Storage section below.

- Site representatives stated that a phased program of upgrades to the storage areas is planned, to bring the entire site in line with Area 6 and the new part of Area 3; at present it is intended that Area 1 will be upgraded in 2008, Area 2 in 2011 and the older part of Area 3 in 2014. It was also reported by site representatives that, as part of these upgrades, TDG plans to remove approximately 1m of shallow soils (likely to be the most contaminated soils) to help reduce contaminant loading in the soils at the site. This was reportedly already done during the Area 3 upgrade, but no validation reports or any other documentation was available to confirm this.
- Liquids are delivered to site by barge or by road tanker. Each of the above storage areas has road tanker loading/unloading areas (as described above). The jetty has fixed pipes that deliver the liquids to/from the jetty. Flexible hoses are fitted to the end of each pipe, as required, in order to connect the pipe to the appropriate barge. The jetty is predominantly surfaced with tarmac hardstanding and has a small lip around the edge to contain any spills. Extensive staining and pools of liquids including oils were noted on the hardstanding; these small spills that reportedly occur during normal operations appear to have been contained on the jetty.
- The areas of the site outside the main storage areas are predominantly surfaced with concrete or tarmac hardstanding (roadways) or gravel (other areas). The hardstanding was noted to be in poor condition except in Area 6 and the new part of Area 3. Localised staining was noted on the hardstanding, particularly near the tanker loading/unloading areas, and on the gravel, particularly beneath pipe runs.

Bulk Hazardous Materials Storage

- The site representative stated that there are no underground storage tanks (USTs) and no evidence of such tanks was noted during the site reconnaissance.
- There are understood to be approximately 250 ASTs at the subject site, most of which are used to store clients' liquids. Information regarding the tanks themselves (age, size etc.) is provided in Appendix D. Information on the wider storage areas is provided in the Specific On-site Activities section above.
- IBCs and drums are stored in Area 4. Information on this storage area is provided in the Specific On-site Activities section above.
- Pipelines at the site are reported to all run above ground or in open culverts (for example under Hindmans Way). Staining beneath pipelines was noted in a number of locations, including on unsurfaced gravelled areas. In addition, reportedly as a result of recent heavy rain, the culvert beneath Hindmans Way was full of water and the pipes were submerged; this may cause corrosion and/or strain the pipes if they are buoyant. In addition, not all sections of the culverts are concrete lined and there is the potential for leaks to impact the underlying soils.

- Currently pipelines are maintained by Albright Engineering (a contractor with a permanent presence on-site), tanks are inspected by Royal Sun Alliance (TDG's insurers) at least once every 10 years and flexible hoses (used on the jetty) are inspected by HITS every six months. The new tank testing program has only recently been implemented (2006) and the rolling process of inspection has only been completed on approximately 14 tanks to date.
- The site is an Upper Tier Control of Major Accident Hazards (COMAH) site and has a Planning Hazardous Substances consent for the storage of alkyl dimethlyamines, gas oils and kerosenes and is therefore closely monitored by the Environment Agency (EA) and the Health and Safety Executive (HSE). There are reportedly no outstanding improvement notices for the site; it is understood, however, that there is on-going dialogue with these agencies and that there is an informal agreement that TDG will continue to upgrade their facilities to bring the site in line with best practice.

Wastes Management

-Non Hazardous

- Waste produced on-site comprises cardboard, packaging, office waste and general wastes, which are stored in a number of skips and reportedly removed regularly by Biffa. No significant staining was noted in the area of general waste skips.
- Waste metal is reportedly collected and recycled by Hunts Holdings Ltd. as required. No waste metal was identified on-site at the time of the site inspection.
- All drums and IBCs are reportedly owned by TDG's client. TDG requests that the relevant client arranges disposal of any old drums that are not considered suitable for continued use. Where necessary TDG arranges for disposal of old drums and IBCs on behalf of clients on an ad hoc basis.

Drainage Issues

- A drainage survey was undertaken September 2005 by MTS Cleansing Services Ltd.; the associated drainage plans were available for review on-site Drainage covers were not lifted as part of this assessment.

-Surface Water

- Drainage plans indicate that surface water drainage from most of the site discharges to mains foul sewer after passing through the site waste water treatment area. There are numerous local oil interceptors on-site with inclined plate oil interceptors in Areas 3, 4 and 6 and three-stage interceptors in Areas 2, 3 and 4. There is then a final-stage pit separator in the northern-western part of Area 4; after passing through this, the effluent is aerated to reduce biological oxygen demand (BOD) and chemical oxygen demand (COD) before being discharged to mains foul sewer. A consent for this discharge has been issued by Thames Water; this includes restrictions on the concentrations of contaminants including suspended solids (SS), oils and grease, sulphide and sulphate and BOD. The results of the analysis of the effluent were not available for review; site representatives reported that the site does exceed the consented concentrations on occasions, but that Thames Water has not expressed any concerns regarding the effluent quality to date. The site representatives also indicated that consideration is being given to adding a second aeration tank to improve BOD and COD levels.
- The drainage survey showed numerous drainage collapsed and blockages. This is considered by WSPE to be typical of sites constructed on filled ground (the subsidence in Area 4 is evidence of extensive ground movement) and there is

considered to be significant opportunity for contaminated water from the drainage system to leak out through the damaged drains and to impact the shallow soils.

- Surface water from the staff car parking area along the southern boundary of the site reportedly discharges directly to the River Thames; these drains are painted blue and no potentially contaminative activities are undertaken in this area.

-Foul Water

- Foul water on site is limited to sewage and domestic waste water. The site representative did not report any issues associated with on site foul water, and none were observed.

Polychlorinated Biphenyls (PCBs)

- An electricity substation operated by London Power Network (LPN) (owned by EDF Energy) is located within the north-eastern boundary of the site (Area 4). It was not possible to access the compound in which the substation is located and therefore the condition could not be determined. As the substation is owned by LPN, responsibility for maintenance and/or any resultant contamination is unlikely, in the first instance, to lie with the freehold owner of the site.

Ozone Depleting Substances (ODS)

- Air conditioning units reportedly service the office server room only; it was not possible to inspect the units.
- It should be noted that the use of virgin HCFCs in air conditioning systems is banned from 1/01/2010 and the use of all HCFCs is banned from 1/01/2015 in line with the Environmental Protection (Controls on Ozone-Depleting Substances) Regulations 2002.

Asbestos Containing Materials (ACMs)

- A Type 2 asbestos survey was completed by TDG (in-house) in August 2003; the report is held on-site and the findings of the survey are reportedly reviewed on an annual basis. The report identified asbestos in numerous locations, including:
  - Roofing materials and down pipes;
  - The internal cladding of workshops (suspected);
  - Coating to the external panels of switch room 1;
  - Lagging, gaskets, seals and flues in various locations (assumed); and
  - Fire doors and textured coatings (assumed).
- The insulating materials were classified as medium risk; all the other ACMs were classified as low risk. No remedial works were recommended.
- While there is no obligation for an independent party to undertake an asbestos survey at the site under the Control of Asbestos Regulations 2006, given the amount of asbestos that is reportedly present On-site, it is recommended that an up-to-date survey be completed by a suitably accredited contractor.

1.3 SURROUNDING LAND USE

The site is located on the northern bank of the River Thames, approximately 2-km to the south of Dagenham town centre, in a predominantly industrial area. The wider area is currently undergoing extensive regeneration. Land uses in the immediate vicinity of the site include a molasses storage depot, a recycling depot and a bus depot to the north, an aggregates company to the north, the River Thames to the south and an aggregates depot and jetty to the west.

2 Historical Land Use

2.1 SITE HISTORY

Map Information

A study of historical Ordnance Survey maps has been undertaken to identify any potentially contaminative former land uses. Historical maps indicate that the site comprised open undeveloped land from pre-1870; the north-western plot (now occupied by Area 6) was located on marsh land marked as "liable to flood". Chequers Lane, at the eastern boundary of the site, had been constructed by 1875 but the site itself remained vacant.

By 1916, the jetty had been constructed and railway lines constructed, extending across the northern part of the main site, with a branch line running onto the jetty; a number of buildings had also been constructed adjacent to the jetty. By 1940, two warehouse buildings had been constructed in the north-eastern part of the main site and 11 ASTs were present in the south-eastern part of the site; the Area 6 plot remained undeveloped.

By 1963, the majority of the subject site had been developed; large numbers of ASTs had been installed in what are now known as Areas 1, 3 and 5 and the warehousing in Area 4 had been extended. Area 2 remained unoccupied. Railway lines had been laid on Area 6 and two ASTs associated with an off-site development extended onto this plot.

By 1972, the site had been further developed and ASTs were present in Area 2, forming approximately the current site layout. The railway lines had been removed from Area 6 and additional ASTs installed; these ASTs were part of a larger, off-site oil storage depot.

By 1991 the ASTs had all been removed from Area 6 and the site cleared apart from two small buildings; Area 6 remained vacant until pre-2006, when the current site layout (ASTs, loading/unloading areas and vehicle parking areas) were present.

A selection of historical map extracts is included as Appendix C.

Planning

An inspection of the available planning record held on-line by the London Borough of Barking and Dagenham was carried out on 31st July 2007. The following pertinent information was viewed:

- 02/00852/HAZ: Permission granted on 22nd June 2004 for the storage of alkyl dimethlyamines, gas oils and kerosenes at the TDG site. The only condition related to this consent was that there be no variation to the agreed storage methods/locations.
- 04/01132/FUL: Permission granted on 2nd February 2005 for the erection of a new warehouse for chemical storage purposes at the TDG site. Key environmental conditions relating to this consent were as follows:
  - Condition 4: "Before the development is commenced a detailed site investigation shall be carried out to establish if the site is contaminated, to assess the degree and nature of the contamination present and to determine its potential for pollution of the water environment." An intrusive investigation report was reportedly prepared in order to discharge this planning condition; a copy of the intrusive investigation is reported held by TDG, but has not been made available to WSPE within the timeframe of this assessment. It has not been possible to establish whether this planning condition has been discharged.

- Conditions 5 and 6: A full structural survey of the existing flood defences adjacent to the site was required and any remedial works had to be complete within 12-months of the commencement of the development. Also, within six months of the commencement of the development, an assessment of how the site's flood defences can be raised 600mm above the statutory defence level should have been completed.

  Extended correspondence between TDG and the Environment Agency (EA) was reviewed in the planning file and it remains unclear whether the site or the EA is responsible for maintaining the flood defences.

  A Flood Risk Assessment report by TDG was also in the planning file. This notes that, while the site is within a flood plain, according to anecdotal reports, the site has not flooded in the last 40 years.

Anecdotal Information

Anecdotal information provided by site representatives indicated that the site was acquired by TDG in 1982, with the exception of Area 4, which was acquired in 1988. Site representatives understood that the main site area has been a bulk liquids storage facility for a number of years, dating back to the early-1900s. Area 4 was reportedly being used as a lubricating oil blending operation prior to its acquisition by TDG.

Area 6 was acquired by TDG in 1982 with the main site area, but was not developed until 1999. Site representatives indicted that this area was previous part of a much larger fuel oil storage and distribution depot; this corresponds with the historical mapping information.

2.2 SURROUNDING AREA

A study of historical Ordnance Survey maps has been undertaken to identify any potentially contaminative former land uses within a 250m radius of the site. A selection of relevant historical map extracts is included as Appendix C. The following represents a summary of the available map information:

Surrounding Features	Dates	Distance	Direction
Bulk liquid storage (three ASTs – a fourth AST was added pre1966)	Pre 1940 – present	Adjacent	North
Works with gasometer and associated railway sidings	Pre 1897 – pre 1915	Adjacent	Southeast
Then works with railway sidings *Then* hotel and associated buildings *Then* aggregates depot	Pre 1915 – pre 1991 Pre 1991 – pre 2006 Pre 2006 – present		
Oil storage depot (extending onto Area 6) *Then* vacant	Pre 1963 – pre 1991 Pre 1991 – present	Adjacent	Northwest
Works with a number of ASTs (expanding in size over the years) *Then* industrial estate	Pre 1938 – pre 1996 Pre 1996 – pre 2006	30m	North

Then vacant land *Then* bus depot	Pre 2006 – post 2006 Post 2006 – present		
Engineering works *Then* depot	Pre 1921 – pre 1969 Pre 1969 – present	50m	East
Fish manure farm *Then* Dagenham Docks	Pre 1864 – pre 1897 Pre 1897 – present	200m from 60m	Southeast
Iron foundry *Then* depot with railway sidings *Then* depot (sidings removed)	Pre 1921 – pre 1950 Pre 1950 – pre 1984 Pre 1984 – present	120m	Northeast
Cable works *Then* light industrial park	Pre 1921 – pre 2006 Pre 2006 – present	From 250m	North
Various works *Then* power station	Pre 1946 – pre 1996 Pre 1996 – present	From 250m	Northeast

3 Regulatory Information & Consultations

3.1 REGULATORY DATABASE

The following environmental data has been obtained from a summary of information databases.

	0-250m	250-500m	Details
Contaminated Land Register Entries and Notices	0	0	N/A
Registered landfills	0	0	N/A
Closed landfill facilities	0	2	The information databases make a number of different references to the closed landfill at Renwick Road, located from 260m west of the site and extending over 1,000m further west (although the exact boundary of the landfill is not known); it is thought to have accepted domestic, commercial and industrial wastes. The British Geological Survey identifies it as a site that has the potential to impact groundwater. It was most recently authorised to accept construction and demolition wastes, contaminated soils and mine and quarry waste (licence issued 1977; licence has since been surrendered) and locally re-excavated waste material (licence issued 1992; this licence has also been surrendered). The other landfill is located 280m east of the subject site and accepted contaminated soil from Arc Ltd. stockpiles.
Registered transfer stations/ treatment facilities	5	1	The nearest active waste transfer/treatment facility is located 50m east of the subject site and accepts non-biodegradable waste.
Closed transfer stations/ treatment facilities	2	0	The nearest closed waste transfer/treatment facility is located 120m east of the subject site and accepted inert wastes.
Authorised industrial processes (IPC/IPPC).	0	1	The Barking Power Station, located 250m northeast of the subject site, holds an IPPC licence for the combustion of fuel (greater than or equal to 50MW).
Local Authority Integrated Pollution Prevention and Controls (LAIPPC/LAPPC)	9	4	There are numerous LAPPC permits within the area of the subject site, predominantly associated with the handling of aggregates and associated products. The closet is held by Neptune Contract Services Ltd., located adjacent to the north of the subject site, for a mobile screening and crushing process.
Fuel Stations Entries	0	0	N/A
Licensed radioactive substances	0	0	N/a
Enforcements, prohibitions or prosecutions	1	1	The nearest prosecution occurred in 1992, when a roadstone coating plant, located 50m east of the subject site, was prosecuted by the EA for failing to use best practicable measures to reduce environmental impact.

Discharge Consents	1	3	The nearest current licensed discharge consent is held by Van Dalen (UK) Ltd. for the discharge of site drainage to the River Thames 130m southeast of the subject site.
Pollution Incidents	20	14	Two pollution incidents are recorded to have occurred at the subject site; one related to an "unknown impact" to the River Thames (classified as a minor incident); the other related to an "unknown impact" to land. The site representatives could not provide any further information on these incidents.
Control of Major Accident Hazards (COMAH)	1	1	The subject site is registered as a COMAH Upper Tier site. Barking Power Station is a COMAH Lower Tier site.
Consents issued under the Planning (Hazardous Substances) Act 1990	1	1	The subject site holds a consent or the storage of alkyl dimethlyamines, gas oils and kerosenes. Barking Power Station holds a consent for the storage of extremely flammable gas and natural gas.

3.2 CONSULTEES

Local Authority Building Control Officer

The Building Control Officer at the London Borough of Barking and Dagenham was contacted with regard to ground conditions beneath the subject site. The Officer was unable to respond within the timeframe of this assessment.

Local Authority Contaminated Land Officer

The Contaminated Land Officer at the London Borough of Barking and Dagenham was contacted for environmentally pertinent information relating to the site. The Officer was unable to respond within the timeframe of this assessment.

Petroleum Officer

No issues have been identified that warrant further consultation with the Petroleum Officer.

Environment Agency (EA) Flooding Data

The site is located within an EA indicated floodplain benefiting from flood defences, where the chance of flooding is less than 1 in 200 years (0.5% per annum). This has been classified by the Association of British Insurers as a low flooding risk. As noted previously, anecdotal reports indicate that the site has not flooded in the last 40 years.

Environment Agency

The EA was contacted for environmentally pertinent information relating to the site. The Officer was unable to respond within the timeframe of this assessment.

Health Protection Agency

The site is located within an area where less then 1% of homes are above the action level for radon gas. Therefore, no radon protection measures are considered necessary.

British Geological Survey

The site is located within an area where there is a moderate risk of compressible ground stability hazards, a very low risk of landslide ground stability hazards, a moderate risk of running sand ground stability hazards and a low risk of shrinking or swelling clay ground stability hazards.

Coal Authority Report

The site is not located within an area affected by coal mining activities.

4 Other Relevant Information

4.1 PREVIOUS REPORTS

The following reports were provided to WSPE for review by TDG:

- Land Condition Questionnaire – SYMS Consulting Ltd., January 2004.
- Annual External Environmental Audit Programme report – Clifton Environmental Services Ltd., September 2005.

Reviews of the above reports are provided below. The information in the report has been taken as true and representative of the site conditions; it should be noted, however, that WSPE cannot warrant the work of others.

An intrusive investigation report was reportedly prepared in order to discharge a condition associated with a planning permission granted in February 2005 for the erection of a new warehouse for chemical storage purposes (see Section 2.1); a copy of the intrusive investigation is reported held by TDG, but has not been made available to WSPE within the timeframe of this assessment.

Other groundwater monitoring wells were observed (for example in Area 3); however, site representatives reported that no other intrusive investigation reports were available.

Land Condition Questionnaire – SYMS Consulting Ltd., January 2004

This report was limited to a series of questions answered by site representatives. No interpretation of the responses, follow-up questions, conclusions or recommendations were provided in the report.

Any pertinent information present within the Land Condition Questionnaire has been incorporated into the body of this report.

Annual External Environmental Audit Programme report – Clifton Environmental Services Ltd., September 2005

This report was primarily a compliance assessment rather than a contaminated land assessment and was therefore of limited value in obtaining further information on ground conditions.

With regard to hazardous materials storage, the following recommendations were made:

- The provision of bunding in Area 1 should be a priority. Where products are stored in a non-bunded are, even temporarily, a risk assessment should be undertaken to justify that storage.
- The incident reporting system should be used to investigate the causes of long standing oil spills in Area 4. This area requires remedial housekeeping action. Please remember that spills of this nature are considered to be hazardous waste.
- Bunding in Area 6 is defective (a crack was noted in a bund wall). This is a major issue regarding the initial construction of the bunding. It is understood that the contractor is no longer in business. This matter must be determined without significant delay and remedial works undertaken to ensure the integrity of the bunding in an emergency.
- The supply pipe that exists between the main tank farms and Area 6 passes through a culvert. A system of regular inspection of this pipe must be in place to immediately identify and product loss.

5 Environmental Setting

5.1 GEOLOGY AND HYDROGEOLOGY

Geological Map Sheet 257, Romford, scale 1:63,360, Drift edition, shows the following geological sequence (refer to Appendix E for EA aquifer classification system):

Geological Unit	Aquifer Status
Alluvium	Minor Aquifer
Thanet Sand Formation	Minor Aquifer
Upper Chalk	Major Aquifer

No EA licensed groundwater abstractions have been identified within a 1km radius of the subject site.

The site is not located within an EA designated Groundwater Source Protection Zone.

5.2 HYDROLOGY

Surface water features in the vicinity of the subject site are as follows:

Surface Water Feature	Quality*	Distance	Direction
River Thames (tidal)	Unclassified	Adjacent	South
Land drain	Unclassified	70m	West

*Chemical water quality as classified under the EA's General Quality Assessment (GQA) Scheme.

The following current EA licensed surface water abstractions have been identified within a 250m radius of the site:

Source	Use	Distance	Direction
River Thames	Barking Power Station: spray irrigation	120m	South
River Thames	Hanson: mineral washing	230m	Southeast

5.3 SURROUNDING FEATURES

No sensitive surrounding land uses have been identified in the vicinity of the site.

5.4 ENVIRONMENTAL SENSITIVITY

Overall, the site setting is considered to be of moderate sensitivity, due to the following reasons:

- The underlying Minor Aquifers over a Major Aquifer (Upper Chalk);
- The adjacent River Thames;
- The nearby surface water abstractions from the River Thames (for industrial use); and
- The industrial nature of the surrounding area.

6 Risk Assessment

6.1 OUTLINE CONCEPTUAL MODEL

The methods used within this risk assessment follow a risk-based approach, with the potential environmental risk assessed qualitatively using the 'source-pathway-target pollutant linkage' concept introduced in the Environmental Protection Act 1990. For a site to be designated as Contaminated Land a plausible linkage between the identified Sources, Pathways and Receptors must be demonstrated. The technical basis for this assessment is further discussed within Appendix D.

Potential Contaminant Sources

On-Site Contaminant Sources	▪ The current bulk storage of liquids on-site; particular areas of concern include: - Areas 1, 2, 3 (old), 4 and 5; - pipework (including in culverts); and - the site drainage system. ▪ The site has operated as a bulk liquids storage depot for nearly 100 years; even areas that have been improved (such as Areas 3 (new) and 6) may have been historically contaminated (although it is understood that some soil removal was undertaken at the time of the improvement works in these areas).
Off-Site Contaminant Sources	▪ Surrounding sites (within 250m) have had an extensive industrial history and include: - Bulk liquid storage (pre-1940 to present) adjacent to the north; - Works with gasometer (pre-1897 to pre-1915) adjacent to the southeast; - Oil depot (pre-1963 to pre-1991) adjacent to northwest; - Works (pre-1938 to pre-1996) then bus depot (post-2006 to present) 30m to the north; - Cable works (pre-1921 to pre-2006) 250m to the north; and - Power station (pre-1996 to present) 250m to the northeast. ▪ There are two closed landfill areas in the vicinity of the subject site. While there are a potential source of groundwater contamination, both are more than 250m from the subject site and there is undeveloped land between the landfill and the subject site (that would allow ground gas to vent to atmosphere); therefore the landfill are not considered to present a significant risk of ground gas that could impact the subject site.

Potential Receptors

Controlled Waters	▪ Underlying Minor and Major Aquifers. ▪ The River Thames adjacent to the south.
Human Health Risks	▪ Site occupiers. ▪ Third party neighbours. ▪ Site workers in the event of redevelopment.
Other	▪ None identified.

Potential Contaminant Pathways & Pollutant Linkages

On-site Contaminant Sources

- There is the potential for current and historic contamination to have impacted both the shallow groundwater and the River Thames.
- The site is not entirely surfaced with hardstanding and there are a number of areas of gravel surfacing including beneath pipelines and around the ASTs. There is, therefore, the potential for site workers to be exposed to contaminated soil and groundwater both during normal operations and in the event of redevelopment or improvement of the site.

Off-site Contaminant Sources

- The subject site is located in an area where there have been significant industrial processes over the past 100 years; there is the potential for contamination associated with these processes to have impacted the underlying aquifer; this could then have migrated through the aquifer (by the movement of groundwater towards the River Thames) to impact the subject site.

6.2 ENVIRONMENTAL RISK ASSESSMENT MATRIX

Having evaluated the information gathered during this study and described in the previous sections, WSP Environmental Ltd has produced the following assessment of risk primarily focused on contaminated land issues:

	ISSUE	RISK CATEGORY	REASON
Contamination Potential:	Potential for significant on-site contamination	High	The subject site has had a potential contaminative use (bulk liquid, including hazardous liquids, storage) for approximately 100 years.
	Potential for contaminants migrating off the site	Medium	There is the potential for on-site contamination to have impacted underlying groundwater and migrated off-site.
	Potential for contaminants migrating onto the site	Medium	There is the potential for off-site contamination to have impacted underlying groundwater and have migrated to the subject site.
Other Liability Issues:	Potential for 'other' environmental issues to give rise to liabilities	Medium	The site is COMAH Upper Tier and is regulated by both the HSE and the EA; on-going improvements are required at the site and it is understood that the site has informally committed to implementing on-going upgrades to the facilities. The site is located within an EA indicative floodplain benefiting from flood defences, where the chance of flooding is less than 1 in 200 years (0.5% per annum). Notwithstanding this, anecdotal reports indicate that the site has not flooded in the last 40 years. Any ACMs present on-site should be managed in line with current guidance.
Environmental Consequences	Risk of Pollution of Controlled Waters	High	On-site sources of contamination have been identified and there is a significant risk of impact to the underlying Minor and Major Aquifers and the River Thames.
	Risk of Damage to Property	Medium	As detailed above the site is located within an EA designated flood plain.

ISSUE	RISK CATEGORY	REASON
Risk of Harm to Human Health	Medium	The site is not entirely surfaced with hardstanding and there are a number of areas of gravel surfacing including beneath pipelines and around the ASTs. There is, therefore, the potential for site workers to be exposed to contaminated soil and groundwater both during normal operations and in the event of redevelopment or improvement of the site.

Business Consequences:

Likelihood of designation as Contaminated Land under EPA 1990	Medium	A potential pollutant linkage has been identified. However, given low quality of the surrounding land, it is likely that the site will be further assessed under the Council's Contaminated Land Regime unless redevelopment occurs.
Risk of Site Value and/or Saleability being affected.	High	The site value is likely to be reduced by the perceived risk of potential contamination at the site. In addition, the site is located within an EA flood plain, whilst this is considered to be infrequent risk, certain investors are currently seeking to undertake further flood risk assessment on such sites and this could potentially arise as an issue in the future saleability of the properties.
Likelihood of a Future Purchaser requesting further investigations.	High	It is likely that any future purchaser would require an intrusive investigation of the site in order to better quantify the contamination present at the site.
Risk of Liability for Owner	High	There is likely to be widespread contamination at a site of this nature, which has been operating for approximately 100 years. At present there is very limited information regarding the actual impacts to ground and, in the absence of such information, it is not possible to discount the possibility that there is significant impact to the underlying soils and groundwater at the site.
OVERALL RISK		**HIGH**

7 Summary, Conclusions & Recommendations

Site Address	TDG, Choats Road, Dagenham, Essex, RM9 6PU, UK
Tenure	Freehold
Current Land Use	The subject site comprises a bulk liquids storage and distribution depot. The site is accessed by road from Hindmans Way and is split into six main bulk storage areas (accommodating a total of approximately 250 large ASTs) that are accessed via site roadways, except Area 6, which is located on a separate plot approximately 60m northwest of the main site. A jetty at the southern boundary of the site, extending over the River Thames, is used to transfer liquids to and from barges. The site is an Upper Tier COMAH site and has a Planning Hazardous Substances consent for the storage of alkyl dimethlyamines, gas oils and kerosenes and is therefore closely monitored by the EA and the HSE. There are reportedly no outstanding improvement notices for the site; it is understood, however, that there is on-going dialogue with these agencies and that there is an informal agreement that TDG will continue to upgrade their facilities to bring the site in line with best practice. The site is located on the northern bank of the River Thames, approximately 2-km to the south of Dagenham town centre, in a predominantly industrial area. The wider area is currently undergoing extensive regeneration.
Historical Land Use	Historical maps indicate that the site comprised open undeveloped land from pre-1870; the north-western plot (now occupied by Area 6) was located on marsh land marked as "liable to flood". By 1916, the jetty had been constructed and railway lines laid extending across the northern part of the main site. By 1940, two warehouse buildings had been constructed in the north-eastern part of the main site and 11 ASTs were present in the south-eastern part of the site; the site continued to expand over the following years and by 1972, approximately the current site layout was present. By 1963, Area 6 has been developed by a third party for oil storage; this development was demolished pre-1991 and the site cleared apart from two small buildings; Area 6 remained vacant until pre-2006, when the current site layout (ASTs, loading/unloading areas and vehicle parking areas) were present. The surrounding areas has had an extensive industrial history, including bulk liquid storage (pre-1940 to present adjacent to the north), a works with gasometer (pre-1897 to pre-1915 adjacent to the southeast), an oil depot (pre-1963 to pre-1991 adjacent to northwest), a works (pre-1938 to pre-1996) then bus depot (post-2006 to present 30m to the north), a cable works (pre-1921 to pre-2006 250m to the north) and a power station (pre-1996 to present 250m to the northeast).
Regulatory Enquiries	Regulatory responses are awaited from the London Borough of Barking and Dagenham and the EA.
Other Information	No significant issues were identified in the SYMS Consulting Ltd. Land Condition Questionnaire. An intrusive investigation report was reportedly prepared in order to discharge a condition associated with a planning permission granted in February 2005 for the erection of a new warehouse for chemical storage purposes (see Section 2.1); a copy of the intrusive investigation is reported held by TDG, but has not been made available to WSPE within the timeframe of this assessment. Other groundwater monitoring wells were observed (for example in Area 3); however, site representatives reported that no other intrusive investigation reports were available.
Environmental Setting	The site setting is considered to be of moderate sensitivity. This is primarily due to the underlying Minor Aquifers over a Major Aquifer (Upper Chalk); the adjacent River

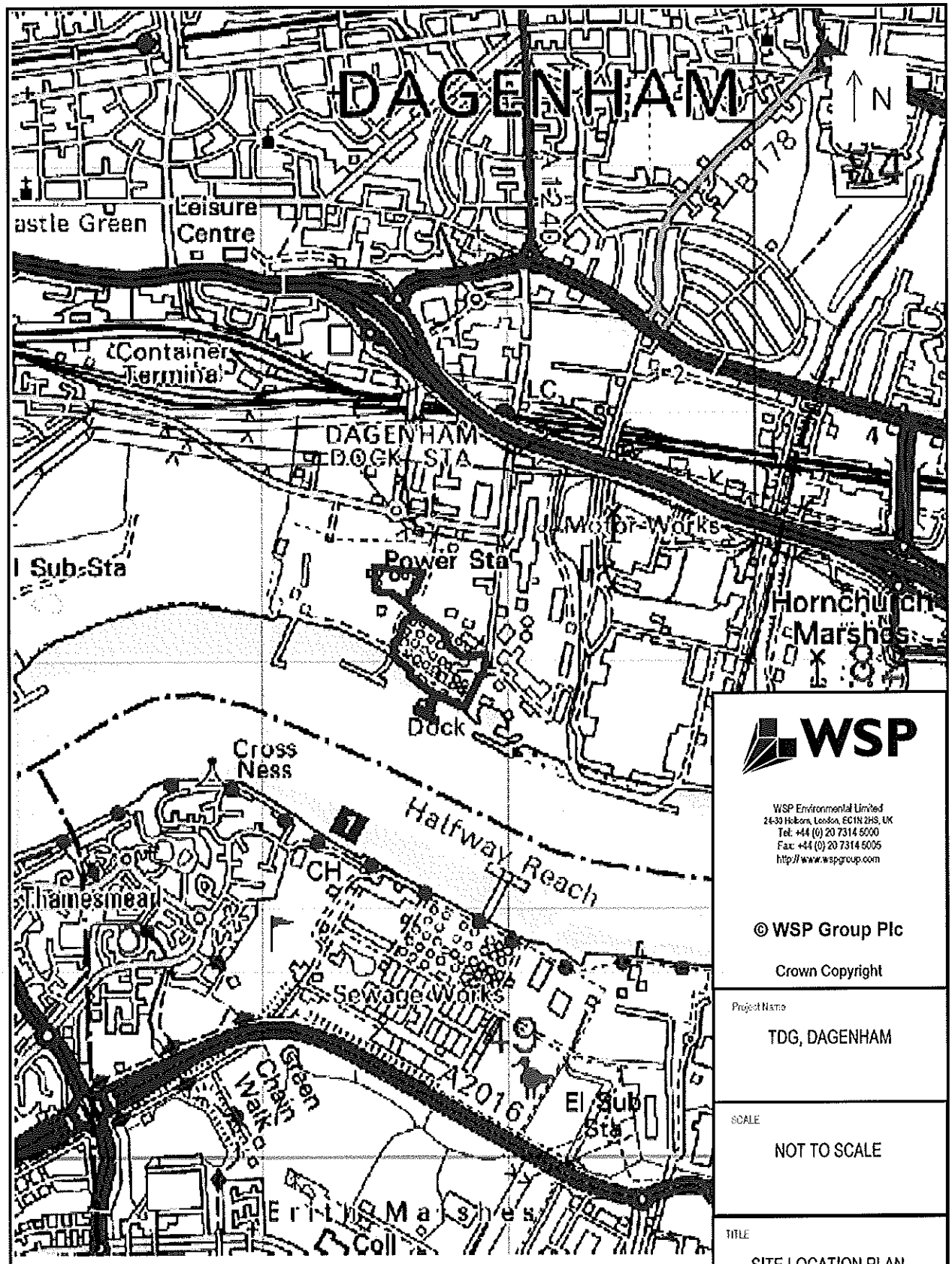
	Thames; the nearby surface water abstractions from the River Thames (for industrial use); and the industrial nature of the surrounding area.
Conclusions	There is likely to be widespread contamination at a site of this nature, which has been operating for approximately 100 years. At present there is very limited information regarding the actual impacts to ground and, in the absence of such information, it is not possible to discount the possibility that there is significant impact to the underlying soils and groundwater at the site. Until such a time that further information regarding ground conditions is available, based on the information contained within this report and with due regard to the continued industrial land use, it is the opinion of WSP Environmental Ltd that the site represents a **high** risk with respect to environmental considerations.
Recommendation(s)	It is recommended that all available intrusive soil and groundwater investigation reports are collated and reviewed. Once this information has been reviewed, consideration would be given as to whether further intrusive investigation is required to develop an accurate picture of ground conditions and allow an accurate assessment of the potential contaminated land liability to be developed. On-going improvements at the site are planned, specifically to the bunded parts of Areas 1, 2 and 3 (old). Other areas that will require upgrading at the site include: ▪ Hardstanding the roadways and across the site (including Areas 4 and 5); ▪ Drainage across the entire site; and ▪ Waste water treatment facilities (to ensure compliance with the site's trade effluent discharge consent. An inspection program should also be implemented to ensure that existing pollution control measures are in satisfactory condition and that repairs are made as required. In addition, the following environmental management improvements should be considered: ▪ While there is no obligation for a independent party to undertake an asbestos survey at the site under the Control of Asbestos Regulations 2006, there is an obligation to ensure that ACMs are suitably managed in order to protect employee health; given the amount of asbestos that is reportedly present at the site, it is recommended that an up-to-date survey be completed by a suitably accredited contractor.

WSP Environmental Ltd.

Please Note: This summary forms part of WSP Environmental Ltd Phase I Environmental Assessment (ref.: 12024227-003). Under no circumstances is it to be used as an independent document.

Figure 1 Site Location & Site Boundary Plan

SITE LOCATION PLAN



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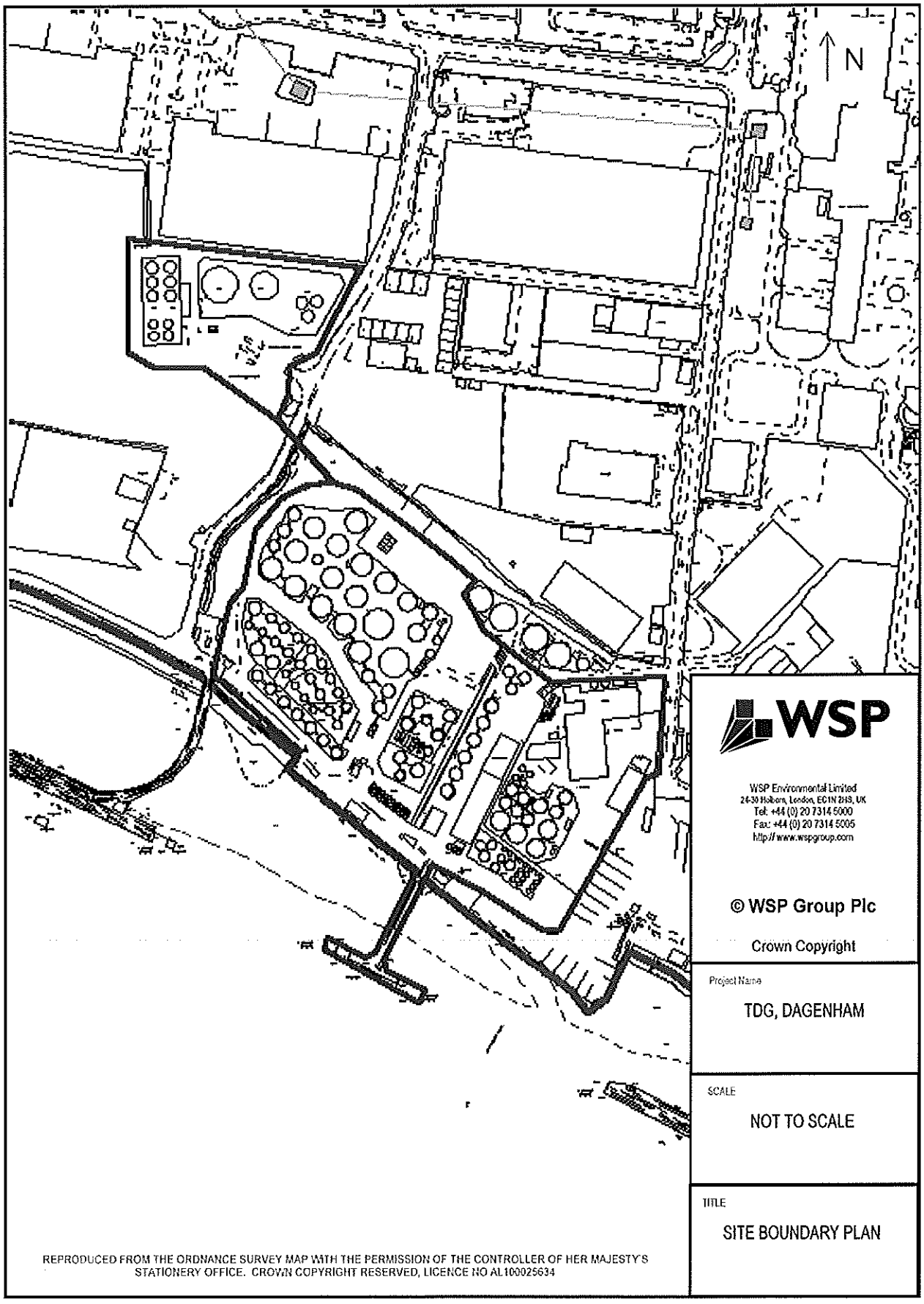
SCALE

NOT TO SCALE

TITLE

SITE LOCATION PLAN

SITE BOUNDARY PLAN



Appendix A Photographic Record

PLATE 1: Pipelines crossing onto the jetty

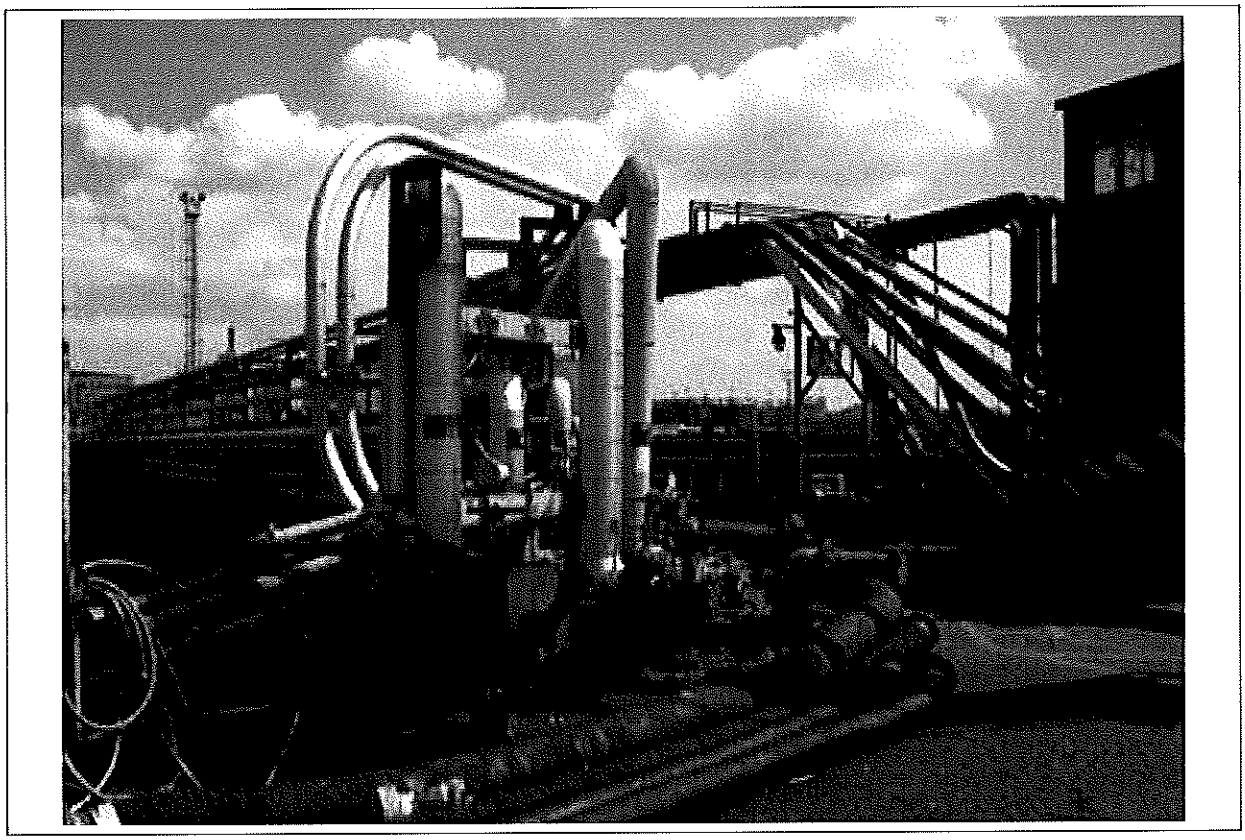


PLATE 2: Area 3 pipelines; extensive staining on gravel surfaced is evident on the ground beneath the pipes

PLATE 3: ASTs in Area 3 (old)

PLATE 4: Bunded ASTs in Area 3 (new)

PLATE 5: ASTs and pipelines in Area 6

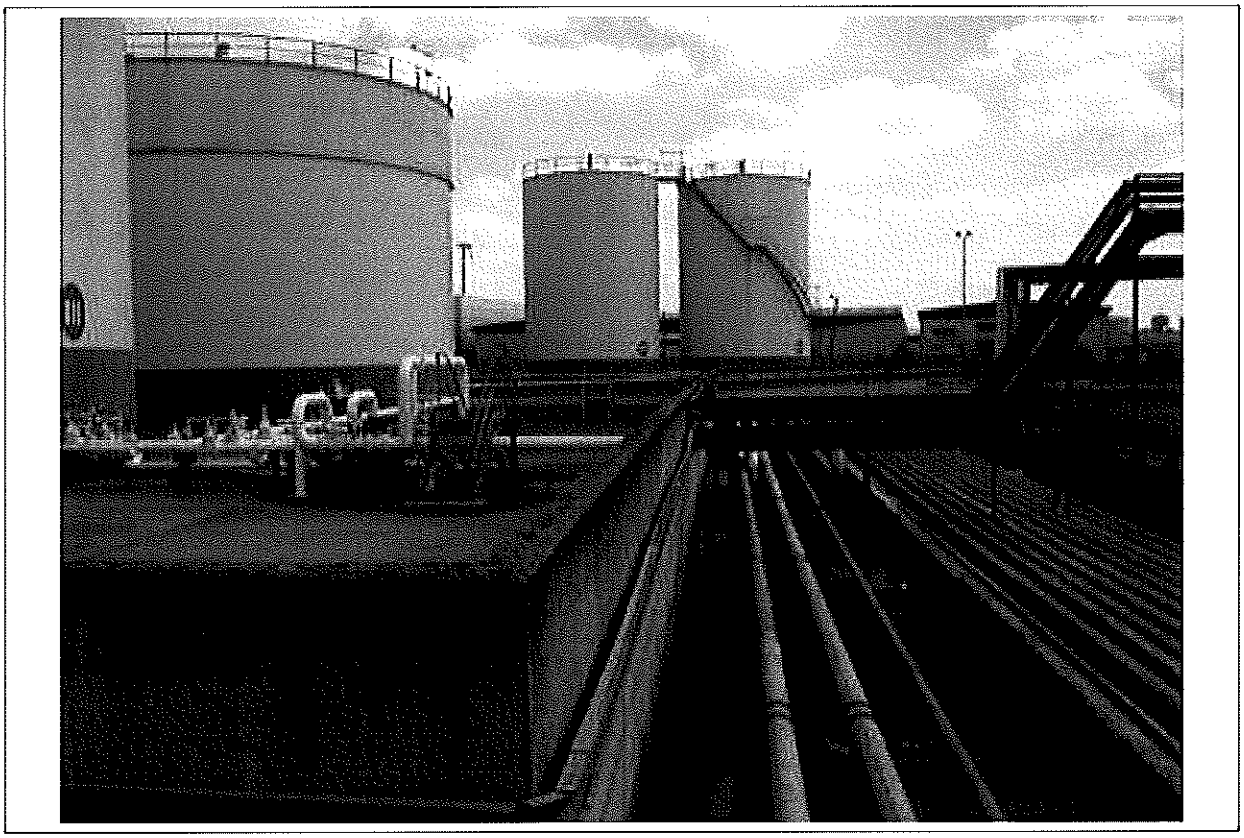


PLATE 6: Interior of one of the warehouses in Area 4

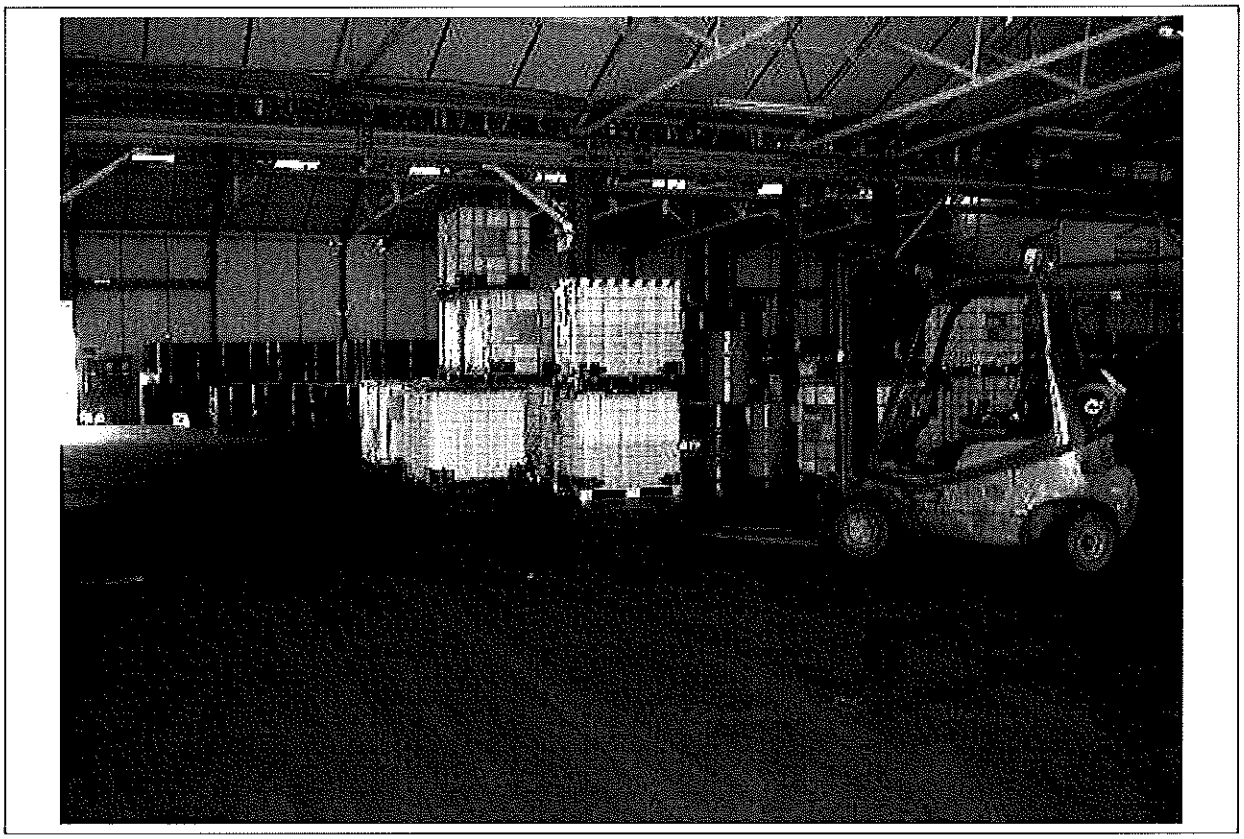
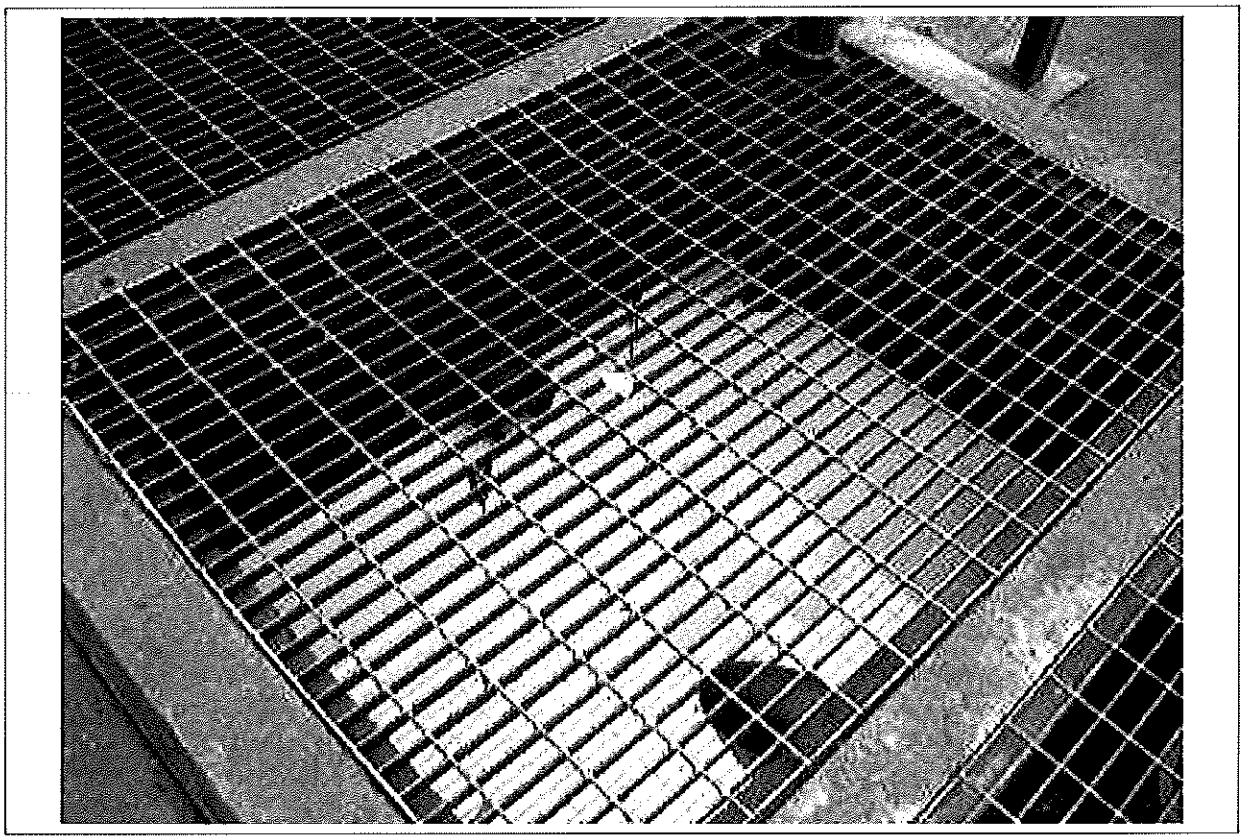
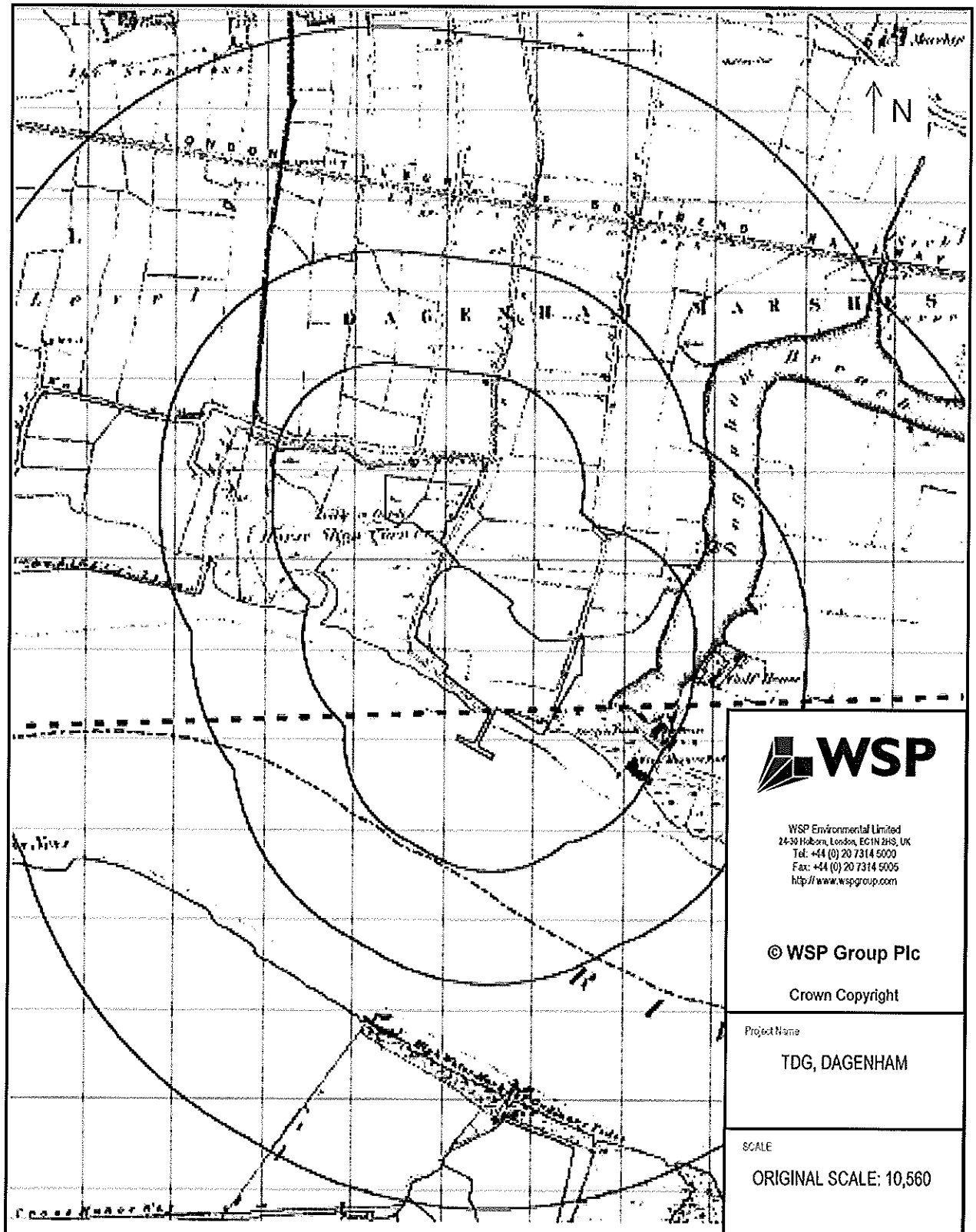


PLATE 7: Flooded pipeline culvert beneath Hindmans Way

PLATE 8: One of the chambers of the main site interceptor in Area 4



Appendix B Selection of Historical Map Extracts



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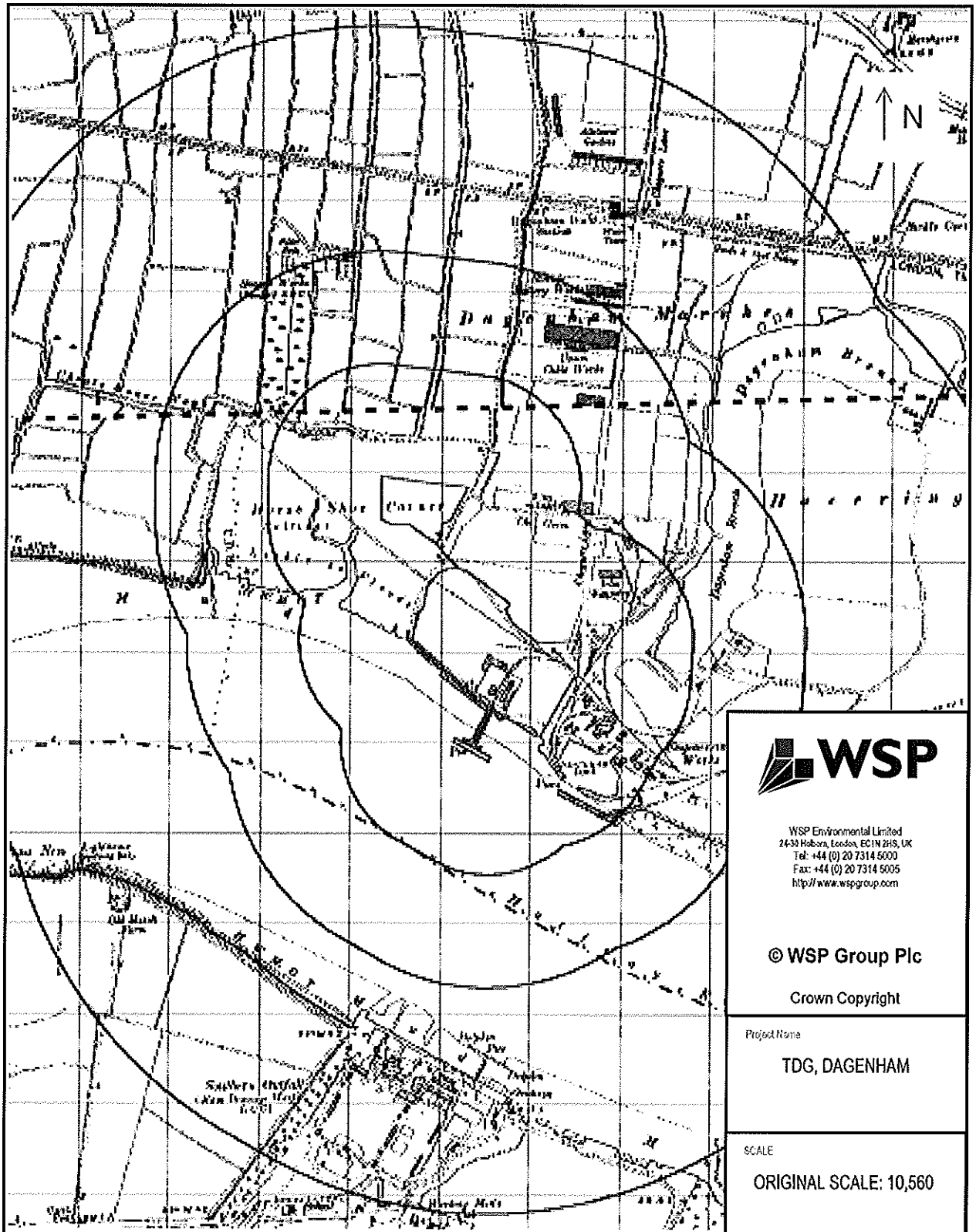
SCALE

ORIGINAL SCALE: 10,560

TITLE

HISTORIC MAPPING, 1875



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Project Name

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SCALE

ORIGINAL SCALE: 10,560

TITLE

HISTORIC MAPPING, 1921

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SCALE

ORIGINAL SCALE: 10,560

TITLE

HISTORIC MAPPING, 1950

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Project Name

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SCALE

ORIGINAL SCALE: 10,000

TITLE

HISTORIC MAPPING, 1975

REPRODUCED FROM THE ORDNANCE SURVEY MAP WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONERY OFFICE. CROWN COPYRIGHT RESERVED, LICENCE NO AL100025634

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TDG, DAGENHAM

SCALE

ORIGINAL SCALE: 10,000

TITLE

HISTORIC MAPPING, 1999

Appendix C Site Supplied Information

The site supplied the following information regarding the tanks present on-site:

DAGENHAM TANK LIST

Tank No.	CAP. m3	DIA M	HEIGHT M	STEA COIL	INS.	AGE	REMARKS	Tank Max	Low S'tion	SURFACE AREAS M2 Roof	Shell	Floor	Customer 8-Jul-03
1	814	10.67	9.14	C-I	YES	1956		801	45	98.4	306.4	89.4	
2	112	3.86	9.60	C	NO	1960		110	1	12.9	116.4	11.7	
3	112	3.86	9.69	SC-I	YES	1968	AMERCOAT 386 1st SHELL	110	1	12.9	117.5	11.7	
4	1,599	15.24	8.89	NO	NO	1949		1,574	116	200.7	425.7	182.4	
6	1,656	15.24	9.14	NO	NO	1930	RE-ERECTED RIVETTED - LINED UTIMAX AC(Pitch)	1,634	111	200.7	437.7	182.4	
7	4,532	25.15	9.14	C	NO	1950	BARKING POWER ONLY	4,422	319	546.5	722.3	496.8	
8	4,464	25.15	9.14	C	NO	1950	BARKING POWER ONLY	4,460	208	546.5	722.3	496.8	
9	50	2.28 X 5.21 X 4.24		C	NO	1930	RIVETTED BARGE TANK	48	1	0.0	0.0	0.0	
10	2,381	18.29	9.14	NO	NO	1951		2,342	188	289.0	525.3	262.8	
11	2,396	18.29	9.14	NO	NO	1951		2,364	175	289.0	525.3	262.8	
12	2,377	18.29	9.14	C-I	YES	1951		2,346	89	289.0	525.3	262.8	
14	2,386	18.29	9.14	C-1980	YES	1951		2,349	173	289.0	525.3	262.8	
15	2,382	18.29	9.14	C-1994	YES	1951	Epoxy "Novalac" lining	2,359	148	289.0	525.3	262.8	
16	2,388	18.29	9.14	C-I	YES	1952		2,348	167	289.0	525.3	262.8	
17	3,197	18.29	12.19	C-1986	YES	1956		3,158	157	289.0	700.5	262.8	
18	2,380	18.29	9.14	C-I	YES	1952	Epoxy "Novalac" lining. Coil stress relieved 1995	2,341	159	289.0	525.3	262.8	
19	2,382	18.29	9.14	1/2C	NO	1952	1/2 COIL 1987	2,343	161	289.0	525.3	262.8	
20	3,198	18.29	12.19	C-1986	NO	1956	REWELD 1993	3,158	157	289.0	700.5	262.8	
21	46	2.44 X 5.00 X 3.66		C	NO	1930	RIVETTED BARGE TANK	43	1	0.0	0.0	0.0	
22	45	2.44 X 5.00 X 3.66		C	NO	1930	RIVETTED BARGE TANK	43	1	0.0	0.0	0.0	
23	3,196	18.29	12.19	C	NO	1956		3,175	143	289.0	700.5	262.8	
24	3,196	18.29	12.19	C-1979	NO	1956		3,156	156	289.0	700.5	262.8	
25	3,185	18.29	12.19	NO	NO	1956	BARKING POWER ONLY	3,146	120	289.0	700.5	262.8	
26	814	10.67	9.14	C-1994	YES	1956	COIL HAS ROOF ENTRY	801	40	98.4	306.4	89.4	
29	812	10.67	12.19	C-I	YES	1961	LP STEAM TOP ENTRY	799	45	98.4	408.7	89.4	
30	485	7.62	10.67	NO	NO	1961		478	27	50.2	255.5	45.6	
31	1,088	10.67	12.19	NO	NO	1962		1,075	40	98.4	408.7	89.4	
32	1,089	10.67	12.19	NO	NO			1,099	37	98.4	408.7	89.4	
33	802	9.14	12.19	C-1986	NO	1962		792	30	72.2	350.1	65.6	
34	44			NO	NO	1930	RIVETTED BARGE TANK	47	1	0.0	0.0	0.0	
35	52						EFFLUENT TANK	53	50	0.0	0.0	0.0	
36	82						EFFLUENT TANK	53	50	0.0	0.0	0.0	

DAGENHAM TANK LIST

Tank No.	CAP. m3	DIA M	HEIGHT M	STEA COIL	INS.	AGE	REMARKS	Tank Max	Low S'tion	SURFACE AREAS M2 Roof	Shell	Floor	Customers 8-Jul-03
37	22			C	NO		RIVETTED BARGE TANK	22	21	0.0	0.0	0.0	
38	22			C	NO		RIVETTED BARGE TANK	22	21	0.0	0.0	0.0	
39	22			C	NO		RIVETTED BARGE TANK	22	21	0.0	0.0	0.0	
40	22			C	NO		RIVETTED BARGE TANK	22	21	0.0	0.0	0.0	
41	22			C	NO		RIVETTED BARGE TANK	22	21	0.0	0.0	0.0	
42	22			C	NO		RIVETTED BARGE TANK	22	21	0.0	0.0	0.0	
LF43	55	2.74	9.14	NO	NO					6.5	78.7	5.9	
LF44	18			NO	NO		S/S ISO BLENDS - NO.1 AREA			0.0	0.0	0.0	
45	6	2.50 x 1.50 x 1.25		NO	NO		LAB SLOPS (6m3 Approx)			0.0	0.0	0.0	
46	3	2.50 x 1.50 x 1.25		NO	NO		WHITE OIL SLOPS (3 m3)			0.0	0.0	0.0	
47	11	3.00 X 2.00 X 2.00		NO	NO		DEMIN WATER S/S (11 m3)			0.0	0.0	0.0	
LF55	1,081	10.67	12.19	NO	NO	1963		1,068	42	98.4	408.7	89.4	
LF56	348	7.62	7.62	NO	NO	1952		340	14	50.2	182.4	45.6	
LF57	796	9.14	12.19	NO	NO	1963		787	32	72.2	350.1	65.6	
58	1,077	10.67	12.19	NO	NO	1966		1,069	41	98.4	408.7	89.4	
LF59	1,078	10.67	12.19	C-1992	NO	1966		1,065	44	98.4	408.7	89.4	
LF60	414	7.62	9.14	NO	NO	1953		407	16	50.2	218.8	45.6	
LF61	66	3.05	9.14	NO	NO	1948		65	2	8.0	87.6	7.3	
LF62	66	3.05	9.14	NO	NO	1948		65	2	8.0	87.6	7.3	
LF63	66	3.05	9.14	NO	NO	1948		65	2	8.0	87.6	7.3	
LF64	96	3.66	9.14	NO	NO	1964		94	5	11.6	105.1	10.5	
LF65	96	3.66	9.14	NO	NO	1964		94	5	11.6	105.1	10.5	
67	45	2.44 X 5.00 X 3.66		C-1985	NO	1930		43	1	0.0	0.0	0.0	
68	45	2.44 X 5.00 X 3.66		C-1985	NO	1930		43	1	0.0	0.0	0.0	
LF69	826	11.99	7.42	NO	NO	1943	RE-ERECTED TANK	810	56	124.2	279.5	112.9	
LF70	810	10.67	9.14	FSCL	NO	1961	BERGER EPILUX 218	800	25	98.4	306.4	89.4	
71	483	7.62	10.67	FSCL	NO	1961	VALSPAR ARMORSEAL EB(Z)	477	23	50.2	255.5	45.6	
72	1,089	10.67	12.27	C-1986	YES	1962	FLOOR 1999	1,076	40	98.4	411.4	89.4	
73	1,089	10.67	12.27	C-1986	YES	1962		1,076	37	98.4	411.4	89.4	
74	1,089	10.67	12.27	C-1986	YES	1962	FLOOR 1995	1,079	38	98.4	411.4	89.4	
75	1,093	10.67	12.27	C-1992	YES	1962		1,078	38	98.4	411.4	89.4	
76	1,091	10.67	12.27	C-1985	YES	1962		1,089	33	98.4	411.4	89.4	
77	1,094	10.67	12.27	C-1994	YES	1962	FLOOR 1995	1,083	42	98.4	411.4	89.4	
78	597	9.14	9.14	C-1985	YES	1963		591	32	72.2	262.5	65.6	
[illegible]	[illegible]	9.14	9.14	C-1985	YES	1963		584	26	72.2	262.5	65.6	

[redacted]

DAGENHAM TANK LIST

Tank No:	CAP. m3	DIA M	HEIGHT M	STEA COIL	INS.	AGE	REMARKS	Tank Max	Low S'tion	SURFACE AREAS M2 Roof	Shell	Floor	Customer 8-Jul-03
80	597	9.14	9.14	C-1985	YES	1963		587	28	72.2	262.5	65.6	
LF81	480	7.62	10.67	NO	NO	1965	TREETOL PHENOLINE 373	476	22	50.2	255.5	45.6	
LF82	478	7.62	10.67	NO	NO	1965		471	21	50.2	255.5	45.6	
LF83	479	7.62	10.67	NO	NO	1965		473	20	50.2	255.5	45.6	
LF84	480	7.62	10.67	NO	NO	1965		473	21	50.2	255.5	45.6	
LF85	485	7.62	10.67	NO	NO	1966		479	20	50.2	255.5	45.6	
LF86	487	7.62	10.67	NO	NO	1966		480	19	50.2	255.5	45.6	
LF87	486	7.62	10.67	NO	NO	1966		480	19	50.2	255.5	45.6	
LF88	486	7.62	10.67	NO	NO	1966		480	19	50.2	255.5	45.6	
LF89	486	7.62	10.67	NO	NO	1966		480	19	50.2	255.5	45.6	
LF90	480	7.62	10.67	NO	NO	1966		473	20	50.2	255.5	45.6	
LF91	310	6.10	10.74	NO	NO	1966		306	13	32.2	205.8	29.2	
LF92	310	6.10	10.74	NO	NO	1966		306	13	32.2	205.8	29.2	
LF93	310	6.10	10.74	NO	NO	1966		306	13	32.2	205.8	29.2	
LF94	310	6.10	10.74	NO	NO	1966		306	13	32.2	205.8	29.2	
LF95	486	7.62	10.74	NO	NO	1967	ENSECOTE AV	479	21	50.2	257.1	45.6	
LF96	487	7.62	10.74	NO	NO	1967	ALCOHOL P&G - ATG	480	20	50.2	257.1	45.6	
LF97	486	7.62	10.74	NO	NO	1967	ALCOHOL P&G - ATG	479	19	50.2	257.1	45.6	
LF98	1,096	10.67	12.27	NO	NO	1967	ALCOHOL P&G - ATG	1,083	41	98.4	411.4	89.4	
LF99	486	7.62	10.74	SC	NO	1967	ENSECOTE AV LOOP COIL	479	21	50.2	257.1	45.6	
LF100	488	7.62	10.74	NO	NO	1967		481	21	50.2	257.1	45.6	
LF101	53	3.20	6.1	NO	NO	1954	RELOCATED NO.1 AREA	52		8.8	61.3	8.0	
102	53	3.20	6.1	NO	NO	1954		52	5	8.8	61.3	8.0	
103	292	7.01	7.62	SC-1993	YES	1955	NEW INSULATION 1995	286	13	42.5	167.8	38.6	
104	350	7.01	9.14	SC-1993	YES	1955	NEW INSULATION 1995	345	13	42.5	201.3	38.6	
LF105	312	6.10	10.74	NO	NO	1967		308	13	32.2	205.8	29.2	
LF106	312	6.10	10.74	NO	NO	1967		308	12	32.2	205.8	29.2	
107	1,088	10.67	12.27	NO	NO	1967	INTERCARE 631(EPOXPHEN)	1,057	42	98.4	411.4	89.4	
LF108	1,087	10.67	12.27	NO	NO	1967		1,074	37	98.4	411.4	89.4	
109	112	3.86	9.60	C	NO	1960		110	2	12.9	116.4	11.7	
110	112	3.86	9.60	SC	NO	1960	COIL 1989	110	2	12.9	116.4	11.7	
111	112	3.86	9.60	C	NO	1960		110	2	12.9	116.4	11.7	
112	32	3.46	3.66	NO	NO	1925	RIVETTED - NO.4 AREA	30	0	10.3	39.8	9.4	
113	32	3.46	3.66	NO	NO	1925	RIVETTED - NO.4 AREA	30	0	10.3	39.8	9.4	

DAGENHAM TANK LIST

Tank No.	CAP... m3	DIA M	HEIGHT M	STEA COIL	INS.	AGE	REMARKS	Tank Max	Low S'tion	SURFACE AREAS M2 Roof	Shell	Floor	Customer 8-Jul-03
114	32	3.46	3.66	C	NO	1925	RIVETTED	30	0	10.3	39.8	9.4	
115	32	3.46	3.66	NO	NO	1925	RIVETTED	30	0	10.3	39.8	9.4	
116	32	3.46	3.66	C	NO	1925	RIVETTED	30	0	10.3	39.8	9.4	
117	32	3.46	3.66	C	NO	1925	RIVETTED	30	0	10.3	39.8	9.4	
118	32	3.46	3.66	C	NO	1925	RIVETTED	30	0	10.3	39.8	9.4	
119	32	3.46	3.66	NO	NO	1925	RIVETTED	30	0	10.3	39.8	9.4	
120	32	3.46	3.66	C	NO	1925	RIVETTED	30	0	10.3	39.8	9.4	
121	32	3.46	3.66	C	NO	1925	RIVETTED	30	0	10.3	39.8	9.4	
122	32	3.46	3.66	NO	NO	1925	RIVETTED	30	0	10.3	39.8	9.4	
123	32	3.46	3.66	C	NO	1925	RIVETTED	30	0	10.3	39.8	9.4	
124	32	3.46	3.66	C	NO	1925	RIVETTED	30	0	10.3	39.8	9.4	
125	32	3.46	3.66	C	NO	1925	RIVETTED	30	0	10.3	39.8	9.4	
126	32	3.46	3.66	C	NO	1925	RIVETTED	30	0	10.3	39.8	9.4	
127	32	3.46	3.66	C	NO	1925	RIVETTED	30	0	10.3	39.8	9.4	
128	32	3.46	3.66	C	NO	1925	RIVETTED	30	0	10.3	39.8	9.4	
129	32	3.46	3.66	C	NO	1925	RIVETTED	30	0	10.3	39.8	9.4	
130	32	3.46	3.66	C	NO	1925	RIVETTED	30	0	10.3	39.8	9.4	
131	32	3.46	3.66	NO	NO	1925	RIVETTED	30	0	10.3	39.8	9.4	
132	32	3.46	3.66	C	NO	1925	RIVETTED	30	0	10.3	39.8	9.4	
133	32	3.46	3.66	C	NO	1925	RIVETTED	30	0	10.3	39.8	9.4	
134	702	9.14	10.67	NO	NO	1972	INTERCARE 976	692	28	72.2	306.4	65.6	
135	702	9.14	10.67	C	YES	1972		692	25	72.2	306.4	65.6	
136	702	9.14	10.67	C-1994	YES	1972	FLOOR 1988	687	25	72.2	306.4	65.6	
137	702	9.14	10.67	C-1994	YES	1972	FLOOR 1989	686	29	72.2	306.4	65.6	
138	696	9.14	10.67	C-1994	YES	1972	ROOF ENTRY COIL	686	22	72.2	306.4	65.6	
139	705	9.14	10.67	C-1994	YES	1972	ROOF ENTRY COIL	695	33	72.2	306.4	65.6	
140	701	9.14	10.67	C-1992	YES	1972	NEW COIL ENTRY PLATE	683	23	72.2	306.4	65.6	

DAGENHAM TANK LIST

Tank No.	CAP. m3	DIA M	HEIGHT M	STEA COIL	INS.	AGE	REMARKS	Tank Max	Low S'tion	SURFACE AREAS M2 Roof	Shell	Floor	Customer: 8-Jul-03
237	62	3.50	6.10	SC-I	YES		S/S TANK - CONE BOTTOM	60	0	10.6	67.1	9.6	
238	62	3.50	6.10	SC-I	YES		S/S TANK - CONE BOTTOM	60	0	10.6	67.1	9.6	
239	62	3.50	6.10	SC-I	YES		S/S TANK - CONE BOTTOM	60	0	10.6	67.1	9.6	
240	296	5.94	10.82	SC-I	YES			292	16	30.5	201.9	27.7	
241	323	6.17	10.82	SC-I	YES			314	13	32.9	209.8	29.9	
242	220	7.62	4.57	SC-I	YES		S/S TANK	202	12	50.2	109.4	45.6	
243	221	7.62	4.57	SC-I	YES		S/S TANK	202	12	50.2	109.4	45.6	
244	210	7.62	4.57	SC-I	YES		S/S TANK	203	13	50.2	109.4	45.6	
245	564	8.15	10.82	SC-1993	YES			561	12	57.4	277.1	52.2	
246	127	3.71	12.27	C-I	YES			125	2	11.9	143.0	10.8	
247	127	3.71	12.27	C-I	YES			125	4	11.9	143.0	10.8	
248	46	2.44	9.91	C-I	YES			45	2	5.1	76.0	4.7	
249	46	2.44	9.91	C-I	YES			45	2	5.1	76.0	4.7	
250	51	3.66	4.88	C-I	YES		DISHED BOTTOM	48	2	11.6	56.1	10.5	
251	51	3.66	4.88	C-I	YES		DISHED BOTTOM	49	2	11.6	56.1	10.5	
252	24	2.29	5.64	C-I	YES			23	2	4.5	40.6	4.1	
253	23	2.29	5.64	C-I	YES			23	2	4.5	40.6	4.1	
254	59	3.66	5.79	C-I	YES			57	3	11.6	66.6	10.5	
255	59	3.66	5.79	C-I	YES			57	3	11.6	66.6	10.5	
256	59	3.66	5.79	C-1994	YES			57	3	11.6	66.6	10.5	
257	59	3.66	5.79	C-I	YES			57	3	11.6	66.6	10.5	
258	59	3.66	5.79	C-I	YES			57	4	11.6	66.6	10.5	
259	59	3.66	5.79	C-I	YES			57	4	11.6	66.6	10.5	
260	59	3.66	5.79	C-I	YES			57	4	11.6	66.6	10.5	
261	59	3.66	5.79	C-I	YES			57	4	11.6	66.6	10.5	
262	59	3.66	5.79	C-I	YES			57	4	11.6	66.6	10.5	

DAGENHAM TANK LIST

Tank No.	CAP. m3	DIA M	HEIGHT M	STEA COIL	INS.	AGE	REMARKS	Tank Max	Low S'tion	SURFACE AREAS M2 Roof	Shell	Floor	Customer: 8-Jul-03
301	20	0.00	0.00	NO	YES	1999	LEASED PRESSURE TANKS - LOGEMICS	57	4	0.0	0.0	0.0	
302	10	0.00	0.00	NO	YES	1999	LEASED PRESSURE TANKS - LOGEMICS	57	4	0.0	0.0	0.0	
303	10	0.00	0.00	NO	YES	1999	LEASED PRESSURE TANKS - LOGEMICS	57	4	0.0	0.0	0.0	
304	20	0.00	0.00	NO	YES	1999	LEASED PRESSURE TANKS - LOGEMICS	57	4	0.0	0.0	0.0	
305	10	0.00	0.00	NO	YES	1999	LEASED PRESSURE TANKS - LOGEMICS	57	4	0.0	0.0	0.0	
306	10	0.00	0.00	NO	YES	1999	LEASED PRESSURE TANKS - LOGEMICS	57	4	0.0	0.0	0.0	
307	20	0.00	0.00	NO	YES	1999	LEASED PRESSURE TANKS - LOGEMICS	57	4	0.0	0.0	0.0	
308	10	0.00	0.00	NO	YES	1999	LEASED PRESSURE TANKS - LOGEMICS	57	4	0.0	0.0	0.0	
309	10	0.00	0.00	NO	YES	1999	LEASED PRESSURE TANKS - LOGEMICS	57	4	0.0	0.0	0.0	
310	27	0.00	0.00	NO	YES	1999	LEASED PRESSURE TANKS - LOGEMICS	57	4	0.0	0.0	0.0	
311	10	0.00	0.00	NO	YES	1999	LEASED PRESSURE TANKS - LOGEMICS	57	4	0.0	0.0	0.0	
312	10	0.00	0.00	NO	YES	1999	LEASED PRESSURE TANKS - LOGEMICS	57	4	0.0	0.0	0.0	
401	2,140	16.00	10.97	NO	NO		RIVETTED	2,110	106	221.2	551.5	201.1	
402	2,140	16.00	10.97	NO	NO		RIVETTED	2,108	106	221.2	551.5	201.1	
403	989	10.19	12.50	NO	NO		RIVETTED	976		89.7	400.2	81.6	
404	988	10.19	12.50	NO	NO		RIVETTED	976		89.7	400.2	81.6	
405	989	10.19	12.50	NO	NO		RIVETTED	976	50	89.7	400.2	81.6	
406	989	10.19	12.50	NO	NO		RIVETTED	976		89.7	400.2	81.6	
407	988	10.19	12.50	NO	NO		RIVETTED	976	50	89.7	400.2	81.6	
408	176	6.10	6.10	NO	NO		EFFLUENT AERATION TANK	172		32.2	116.9	29.2	
409	176	6.10	6.10	C-1996	NO		DEHYDRATOR PROCESS TANK	172		32.2	116.9	29.2	
410	243	6.10	9.45	C	NO		INTERCARE 310	239	12	32.2	161.1	29.2	
411	243	6.10	9.45	C	NO		INTERCARE 310	239	12	32.2	161.1	29.2	
413	792	12.19	6.10	C	NO		STEAM SUPPLIED	781	40	128.4	233.6	116.7	
414	613	10.67	7.16	C	NO		STEAM SUPPLIED-DRUM K513	598	34	98.4	240.0	89.4	
415	615	10.67	7.16	C-1993	YES		STEAM SUPPLIED-DRUM 723	976	50	98.4	240.0	89.4	
416	1,256	15.24	6.93	NO	NO			1,229	74	200.7	331.8	182.4	
417	1,256	15.24	6.93	NO	NO			1,228	74	200.7	331.8	182.4	
LF431	36	2.74 X 6.10		NO	NO		HORIZ CYLINDER No.1 AREA	35	1	0.0	0.0	0.0	
LF432	35	2.74 X 6.10		NO	NO		HORIZ CYLINDER No.1 AREA	34	1	0.0	0.0	0.0	
LF433	27	2.74 X 4.57		NO	NO		HORIZ CYLINDER No.1 AREA	26	1	0.0	0.0	0.0	
LF434	22	2.74 X 3.66		NO	NO		HORIZ CYLINDER No.1 AREA	22	1	0.0	0.0	0.0	
LF435	27	2.74 X 4.57		NO	NO		HORIZ CYLINDER No.1 AREA	26	1	0.0	0.0	0.0	
LF436	31	2.74 X 5.49		NO	NO		HORIZ CYLINDER No.1 AREA	30	1	0.0	0.0	0.0	

DAGENHAM TANK LIST

Tank No.	CAP. m3	DIA M	HEIGHT M	STEA COIL	INS.	AGE	REMARKS	Tank Max	Low S'tion	SURFACE AREAS M2 Roof	Shell	Floor	Customer 8-Jul-03
437	7	1.83	2.74	NO	NO			7	0	2.9	15.8	2.6	
438	7	1.83	2.74	NO	NO			7	0	2.9	15.8	2.6	
439	7	1.83	2.74	NO	NO			7	0	2.9	15.8	2.6	
440	7	1.83	2.74	NO	NO			7	0	2.9	15.8	2.6	
441	55	2.74	9.14	NO	NO		BOILER FUEL	54		6.5	78.7	5.9	
442	55	2.74	9.14	NO	NO		BOILER FUEL	54		6.5	78.7	5.9	
443	54	2.74	9.14	C-I	YES			53	1	6.5	78.7	5.9	
444	54	2.74	9.14	C-I	YES			53	1	6.5	78.7	5.9	
445	54	2.74	9.14	C-I	YES			53	1	6.5	78.7	5.9	
446	54	2.74	9.14	C-I	YES			53	1	6.5	78.7	5.9	
447	54	2.74	9.14	C-I	YES			53	1	6.5	78.7	5.9	
448	54	2.74	9.14	C-I	YES			53	1	6.5	78.7	5.9	
LF451	55	2.74 X 9.14		NO	NO		HORIZ CYLINDER No.1 AREA	54	1	0.0	0.0	0.0	
LF454	31	2.74 X 5.49		NO	NO		HORIZ CYLINDER No.1 AREA	30	1	0.0	0.0	0.0	
455	74	4.57	4.57	C-L	NO		NEW COMPLEX BUILDING	71	0	18.0	65.6	16.4	
456	74	4.57	4.57	C-L	NO		NEW COMPLEX BUILDING	72	0	18.0	65.6	16.4	
457	74	4.57	4.57	C-L	NO		NEW COMPLEX BUILDING	72	0	18.0	65.6	16.4	
458	73	4.57	4.57	C-L	NO		NEW COMPLEX BUILDING	71	0	18.0	65.6	16.4	
459	73	4.57	4.57	C-L	NO		NEW COMPLEX BUILDING	71	0	18.0	65.6	16.4	
460	73	4.57	4.57	C-L	NO		NEW COMPLEX BUILDING	72	0	18.0	65.6	16.4	
484	226	6.05	8.36	C	NO		ANTIFREEZE TANK	976		31.6	158.9	28.8	
485	226	6.05	8.36	C	NO		ANTIFREEZE TANK	222	0	31.6	158.9	28.8	
501	43	2.74 X 7.92		NO	NO	1961	HORIZ CYLINDER No.3 AREA	42	0	0.0	0.0	0.0	
502	54	2.74 X 9.14		NO	NO	1961	HORIZ CYLINDER No.3 AREA	18	0	0.0	0.0	0.0	
503	54	2.74 X 9.14		NO	NO	1961	HORIZ CYLINDER No.3 AREA	54	0	0.0	0.0	0.0	
504	10	2.74 X 1.83		NO	NO	1961	HORIZ CYLINDER COMPARTMENT TANK	10	0	0.0	0.0	0.0	
505	10	2.74 X 1.83		NO	NO	1961	HORIZ CYLINDER COMPARTMENT TANK	10	0	0.0	0.0	0.0	
506	10	2.74 X 1.83		NO	NO	1961	HORIZ CYLINDER COMPARTMENT TANK	10	0	0.0	0.0	0.0	
507	10	2.74 X 1.83		NO	NO	1961	HORIZ CYLINDER COMPARTMENT TANK	10	0	0.0	0.0	0.0	
508	10	2.74 X 1.83		NO	NO	1961	HORIZ CYLINDER COMPARTMENT TANK	10	0	0.0	0.0	0.0	
509	0	PINNACLE	LINE FLUSH			0	LINE FLUSHINGS			0.0	0.0	0.0	

DAGENHAM TANK LIST

Tank No.	CAP. m3	DIA M	HEIGHT M	STEA COIL	INS.	AGE	REMARKS	Tank Max	Low S'tion	SURFACE AREAS M2 Roof	Shell	Floor	Customer 8-Jul-03
[redacted]													
618	13	2.74	2.20	NO	NO		No.4 TANK FARM	20	0	6.5	18.9	5.9	
619	25	2.74	4.27	C	NO		PROCESSED LINSEED	24	0	6.5	36.8	5.9	
620	25	2.74	4.27	C	NO		PROCESSED LINSEED	24	0	6.5	36.8	5.9	
621	25	2.74	4.27	C	NO		PROCESSED LINSEED	24	0	6.5	36.8	5.9	
622	16	2.51 X 3.02 X 2.13		NO	NO		No.4 TANK FARM	15	0	0.0	0.0	0.0	
623	16	2.51 X 3.02 X 2.13		NO	NO		No.4 TANK FARM	15	0	0.0	0.0	0.0	
624	16	2.51 X 3.02 X 2.13		NO	NO		No.4 TANK FARM	15	0	0.0	0.0	0.0	

DAGENHAM TANK LIST

Tank No.	CAP. m3	DIA M	HEIGHT M	STEA COIL	INS.	AGE	REMARKS	Tank Max	Low S'tion	SURFACE AREAS M2 Roof	Shell	Floor	Customer 8-Jul-03
625	8	1.68 X 3.04 X 1.52		NO	NO		No.4 TANK FARM	7	0	0.0	0.0	0.0	
626	8	1.68 X 3.04 X 1.52		NO	NO		No.4 TANK FARM	7	0	0.0	0.0	0.0	
627	8	1.68 X 3.04 X 1.52		NO	NO		No.4 TANK FARM	7	0	0.0	0.0	0.0	
628	8	1.68 X 3.04 X 1.52		NO	NO		No.4 TANK FARM	7	0	0.0	0.0	0.0	
629	8	1.68 X 3.04 X 1.52		NO	NO		No.4 TANK FARM	7	0	0.0	0.0	0.0	
										0.0	0.0	0.0	
717	20	2.74	3.35	NO	NO		PROCESS FLOOR	19		6.5	28.8	5.9	
718	20	2.74	3.35	C	NO		PROCESS FLOOR	19		6.5	28.8	5.9	
719	20	2.74	3.35	C	NO		PROCESS FLOOR	19		6.5	28.8	5.9	
723	20	2.74	3.35	C-1996	NO		PROCESS FLOOR-DRUM T415	19		6.5	28.8	5.9	
724	20	2.74	3.35	NO	NO		PROCESS FLOOR	19		6.5	28.8	5.9	
725	13	2.74	2.20	NO	NO		No.4 TANK FARM	12		6.5	18.9	5.9	
726	13	2.74	2.20	NO	NO		No.4 TANK FARM	12		6.5	18.9	5.9	
727	13	2.74	2.20	NO	NO		No.4 TANK FARM	12		6.5	18.9	5.9	
728	13	2.74	2.20	NO	NO		No.4 TANK FARM	12		6.5	18.9	5.9	
729	13	2.74	2.20	NO	NO		No.4 TANK FARM	12		6.5	18.9	5.9	
730	13	2.74	2.20	NO	NO		No.4 TANK FARM	12		6.5	18.9	5.9	
										0.0	0.0	0.0	
M001	56	3.04	9.14	NO	NO		METHYLATION TANK			8.0	87.3	7.3	

DAGENHAM TANK LIST

Tank No.	CAP. m3	DIA M	HEIGHT M	STEA COIL	INS.	AGE	REMARKS	Tank Max	Low S'tion	SURFACE AREAS M2 Roof	Shell	Floor	Customer 8-Jul-03
801	621	7.63	13.73	NO	NO	1999	AREA 6 - A.T.G.			50.2	328.8	45.7	
802	621	7.63	13.73	NO	NO	1999	AREA 6 - A.T.G.			50.2	328.8	45.7	
803	621	7.63	13.73	NO	NO	1999	AREA 6 - A.T.G.			50.2	328.8	45.7	
804	621	7.63	13.73	NO	NO	1999	AREA 6 - A.T.G.			50.2	328.8	45.7	
805	894	9.15	13.73	NO	NO	1999	AREA 6 - A.T.G.			72.3	394.6	65.8	
806	894	9.15	13.73	NO	NO	1999	AREA 6 - A.T.G.			72.3	394.6	65.8	
807	894	9.15	13.73	NO	NO	1999	AREA 6 - A.T.G.			72.3	394.6	65.8	
808	894	9.15	13.73	NO	NO	1999	AREA 6 - A.T.G.			72.3	394.6	65.8	
809	1,160	10.00	15.00	NO	NO	1999	AREA 6 - A.T.G.			86.4	471.3	78.6	
810	1,160	10.00	15.00	NO	NO	1999	AREA 6 - A.T.G.			86.4	471.3	78.6	
811*	10,987	29.26	16.47	NO	NO	1999	AREA 6 - A.T.G. - *MAX. CAPACITY 9,778m.t.			739.8	1,514.2	672.5	
812	5,793	22.55	14.50	NO	NO	1999	AREA 6 - A.T.G.			439.4	1,027.4	399.4	
813	1,160	10.00	15.00	NO	NO	1999	AREA 6 - A.T.G.			86.4	471.3	78.6	
814	1,160	10.00	15.00	NO	NO	1999	AREA 6 - A.T.G.			86.4	471.3	78.6	
815	1,160	10.00	15.00	NO	NO	1999	AREA 6 - A.T.G.			86.4	471.3	78.6	

137,696 TOTAL CUBIC CAPACITY

Appendix D Methodology & Limitations

Methodology

This Environmental Assessment has been designed to provide information relating to:

- the current and former land uses on and surrounding the site;
- the environmental sensitivity of the site location as determined by factors including geology, hydrogeology, surface watercourses and neighbouring land uses; and,
- relevant records held by the environmental regulators.

Any relevant information provided by the client has been reviewed, with appropriate action taken to ensure this information is taken into account and/or verified where necessary. All information is then assessed to define the potential for the site to give rise to environmental liabilities for the freehold/leasehold owner (as appropriate). Recommendations are made for additional work where this is necessary to fully define the site's environmental liabilities, and cost estimates of the financial implications of the findings can be provided under separate cover, where appropriate.

Risk Classification

This assessment has been undertaken with due regard to Contaminated Land Guidance documents issued by the Department for Environment, Food and Rural Affairs (and its Predecessors), the British Standards Institute (the BSi), the Royal Institution of Chartered Surveyors (RICS) and the American Society for Testing and Materials (ASTM) Standard E 1527-05. The methods used follow a risk-based approach, with the potential environmental risk assessed qualitatively using the 'source-pathway-target pollutant linkage' concept introduced in the Environmental Protection Act 1990.

Specific comment is made regarding the site's status under the Contaminated Land Regime implemented on the 1st April 2000 as Part IIA of the Environmental Protection Act 1990, and the actual or potential designation of the site as 'Contaminated Land' as defined in Section 78A(2). Unless specifically stated as relating to this definition, references to 'contamination' and 'contaminants' relate in general terms to the Presence of potentially hazardous substances in, on or under the site.

In addition, consideration has been given to a wide range of related topics including (where appropriate): environmental processes; current and foreseeable environmental legislation; the practices and duties of environmental regulators; the health and safety of occupiers and neighbours as affected by contamination; effects on the structure of buildings; and financial implications. References to risk classifications are made according to the following definitions:

Low Risk

It is unlikely that the issue will arise as a liability/cost for the freehold/leasehold owner (as appropriate) of the site.

Medium Risk

It is possible that the issue could arise as a liability/cost for the freehold/leasehold owner (as appropriate) of the site. Further work is usually required to clarify the risk.

High Risk

It is likely that the issue will arise as a liability/cost for the site freehold/leasehold (as appropriate) owner of the site.

Environmental Risk Assessment

The presence of contaminated materials on a site is generally only of concern if an actual or potentially unacceptable risk exists. Within the context of current UK Legislation (i.e. Section 57 of the Environment Act 1995), the interpretation of a "significant risk" is termed to be one where:

- Significant harm is being caused or there is a significant possibility of such harm being caused, (where harm is defined as harm to health of living organisms or other interference with the ecological systems of which they form a part and, in the case of man, includes harm to his property); and / or, pollution of Controlled Waters is being caused.

The potential for harm to occur requires three conditions to be satisfied:

- Presence of substances (potential contaminants/pollutants) that may cause harm (Source of Pollution).
- The presence of a receptor which may be harmed, e.g. the water environment or humans, buildings, fauna and flora (The Receptor).
- The existence of a linkage between the source and the receptor (The Migration Pathway).

Therefore, the presence of measurable concentrations of contaminants within the ground and subsurface environment does not automatically imply that a contamination problem exists, since contamination must be defined in terms of pollutant linkages and unacceptable risk of harm.

The nature and importance of both pathways and receptors, which are relevant to a particular site, will vary according to the intended use of the site, its characteristics and its surroundings.

In order to assess the contamination risk at the subject site the above rational has been applied and is discussed within section 6 in the context of Contamination Sources and Potential Pollutant Linkages.

Limitations

WSP Environmental Limited has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from WSP Environmental Limited; a charge may be levied against such approval.

WSP Environmental Limited accepts no responsibility or liability for:

a) the consequences of this document being used for any purpose or project other than for which it was commissioned, and

b) this document to any third party with whom an agreement has not been executed.

The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources (including the Client) and discussions with relevant authorities and other interested parties. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only to the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, WSP Environmental Limited reserves the right to review such information and, if warranted, to modify the opinions accordingly.

Where no site inspection is undertaken (for example a Desk Study Assessment or due to restricted site access), WSPE cannot comment on the potential for environmental concerns associated with the current use or structure including the Presence of asbestos.

It should be noted that any risks identified in this report are perceived risks based on the information reviewed; actual risks can only be assessed following a physical investigation of the site.

Appendix E Report References

Environment Agency Aquifer Classifications

The Environment Agency (EA) Groundwater Vulnerability Map and Regional Appendices, which make up part of the published Policy and Practice for the Protection of Groundwater, divide the underlying strata in England and Wales into major, minor and non aquifers dependent upon their potential for potable water supply. The following table is derived from the main policy document. The division of the rock formations into major, minor and non aquifer reflects the Regional importance and vulnerability of the formation.

Major Aquifer

Highly permeable formations usually with the known or probable Presence of significant fracturing. Highly productive strata of Regional importance. Often used for large potable abstractions. E.g. Upper Chalk, Permo-Triassic Sandstones

Minor Aquifer

Fractured or potentially fractured but without high intergranular permeability. Generally only support locally important abstractions E.g. Coal Measures

Variable porosity and permeability but without significant fracturing. Generally only support locally important abstractions. E.g. River Terrace Gravels

Non Aquifer

Formations with negligible permeability. Only support very minor abstractions if any. E.g. Mercia Mudstones, igneous rocks

Regulatory Information Sources

Reference has been made to the Landmark Information Group data provision service. This includes information and data collated from several organisations, including the Environment Agency (EA), Department for Environment, Food & Rural Affairs (DEFRA), Health & Safety Executive (HSE), the Health Protection Agency (HPA), and the Coal Authority