



Cheshire West
and Chester

**CONTAMINATED LAND
PUBLIC REGISTER**

Information about the Public Register

This Register has been prepared in accordance with Section 78R (Registers) of the Environmental Protection Act (EPA) 1990 and the Contaminated Land (England) Regulations (2006).

Under Section 78R, enforcing authorities must maintain a register of prescribed particulars of specific regulatory action, intervention and other matters at sites determined as contaminated land under Part IIA of the EPA 1990.

Documents which must appear on the register include:

- Remediation notices;
- Appeals against remediation notices;
- Remediation statements or remediation declarations;
- Appeals against charging notices
- Notices designating land as a 'special site'
- Notification of remediation

And any other matters prescribed by the regulations.

The register is subject to exclusions relating to national security and commercial confidentiality.

Potentially contaminated land and sites under inspection are not entered on the register. Sites determined as contaminated land will not have entries on the register unless further action has been taken, such as remediation.

Cheshire West and Chester Council was formed in 2009 following local government reorganisation. Entries to the register which were written by the local authority prior to that date were prepared by one of the legacy authorities - Chester City Council, Ellesmere Port and Neston Borough Council or Vale Royal Borough Council.

Contact Us

If you have any questions about this register please contact the Environmental Protection Team: RegulatoryServices@cheshirewestandchester.gov.uk

Summary Table

	Site Name	Address / Location	Date of Contaminated Land Determination	Site Status
1	<u>SCHOLARS COURT</u>	Scholars Court, Neston	July 2002	Contaminated Land Special Site
2	<u>ELGIN CLOSE</u>	4, 6, 7, 9, 11 Elgin Close, Chester	December 2006	Contaminated Land
3	<u>HOOLE BANK ACID TAR LAGOON</u>	Hoole Bank, Chester	January 2007	Contaminated Land Special Site
4	<u>LEFTWICH GREEN</u>	Greenlaw Close and Muirfield Close, Northwich	July 2007	Contaminated Land
5	<u>SMITHY LANE</u>	Smithy Lane, Neston	May 2009	Contaminated Land Special Site

Site locations can be viewed on the [Cheshire West and Chester Public Viewer](#)

Scholars Court Fact Sheet

Site Name	Scholars Court
Address	Land at Scholars Court Cross Street Neston CH64 3UU
Area	1164 m ²
Coordinates	E 329086 N 377754
Date of Notice that land is to be designated as a Special Site	31 July 2002
Public Register Entries	Notice of decision that land is required to be designated as a special site. Prepared by Ellesmere Port and Neston Borough Council. Dated 31 July 2002.
	Groundwater Remediation Report. Prepared by Celtic. Dated June 2009.
	Verification Report. Prepared by Tier Consult. Dated March 2011.

ENVIRONMENTAL PROTECTION ACT 1990 – PART IIA
Section 78C(1)(b)

Ref No: cl1/sc/ss/ean

To: Environment Agency
Appleton House
430 Birchwood Boulevard
Warrington
WA3 7WD

**Notice of decision that land is required to be designated as a
special site.**

1. Under Section 78C(1)(a) of the Environmental Protection Act 1990, Part IIA, Ellesmere Port and Neston Borough Council has decided that the land described in the Schedule to this Notice being contaminated land situated in its area is land which is required to be designated a special site.
2. Notice of that decision is given to you pursuant to section 78C(1)(b) as a relevant person as defined in section 78C(2), namely as:
 - (A) the appropriate Agency;
 - (B) the owner of the land;
 - (C) a person who appears to the enforcing authority to be in occupation of the whole or part of the land;
 - (D) a person who appears to the enforcing authority to be an appropriate person.

[DELETE AS APPLICABLE]

3. Should you wish to make any representation in response to this Notice, or to seek further information, please contact the following officer as soon as possible:

Scientific Officer
Environmental Health Department
Ellesmere Port and Neston Borough Council
Council Offices
4 Civic Way
Ellesmere Port
Cheshire
CH65 0BE

Tel: 0151 – 356 – 6740
Fax: 0151 – 356 – 6432

SCHEDULE

The physical extent of the area of land determined as contaminated is highlighted in blue on the attached plan. The area of land determined is bounded by Cross Street to the south and the rear garden boundaries of Poplar Weint to the north.

Name: Scholars Court/ Cross Street
Address: Land at Scholars Court
Cross Street
Neston
Cheshire
LA ref: CL/01/02

Dated: 31 July 2002

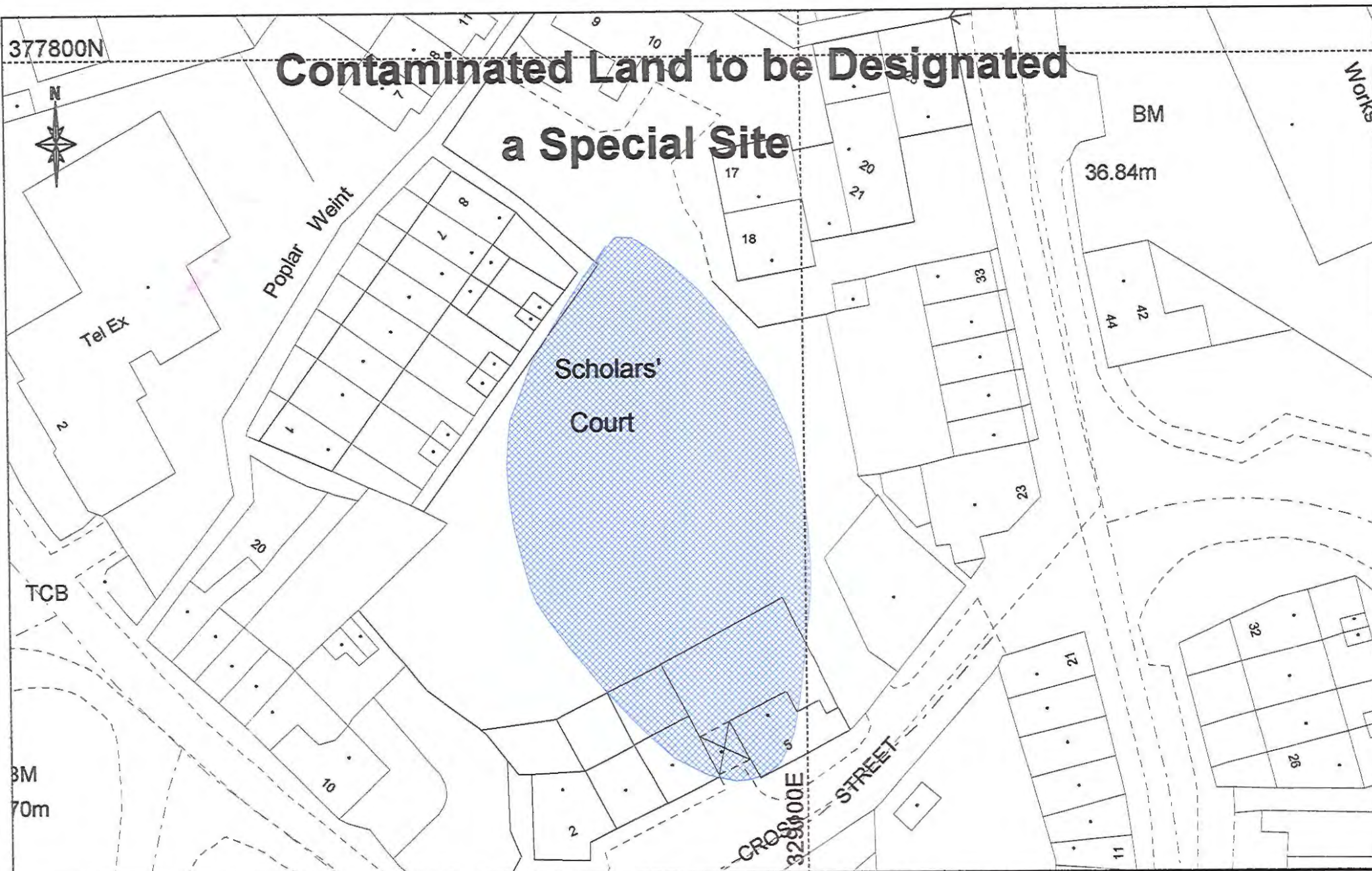
Signed:

Mr. Mike Whittaker
Head of Environmental Health
(The Officer appointed for this purpose)

Ellesmere Port and Neston Borough Council,
Council Offices,
4 Civic Way,
Ellesmere Port,
Cheshire.
CH65 0BF.

377800N

Contaminated Land to be Designated a Special Site



Map at 1:500 produced by E.P.N.B.C. on 31 July 2002 at 10:24.

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Environment Agency Wales

Scholars Court, Neston

Groundwater Remediation Report
(Final)

R1156/09/3623

June 2009



Client:	Environment Agency Wales
Report Number:	R1156/09/3623
Report Title:	Groundwater Remediation Report
Report Status:	Final
Author(s):	
(Signature & Date)	<u>15/06/09</u>
Project Manager:	
(Signature & Date)	<u>15/06/09</u>
QA Approved:	
(Signature & Date)	<u>15/06/09</u>

This report has been prepared by CELTIC with reasonable skill, care and diligence and taking account of the contract terms and conditions and manpower and resources devoted to it in agreement with the client. CELTIC disclaims any responsibility to the client and others in respect of any matters outside the scope of the above.

This report has been prepared based on the information received during the timescale available and all potential contamination, constraints or liabilities associated with the site may not necessarily have been revealed.

The report is only valid when it is used in its entirety.

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CELTIC is the trading name of CELTIC Technologies Limited.

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EXECUTIVE SUMMARY

Introduction: CELTIC Technologies Ltd (CELTIC) was commissioned by Environment Agency Wales (EAW) to undertake in-situ remediation works at Scholars Court, Neston. The site occupies a small area of derelict land and has been determined as contaminated land under Part 2A of the Environmental Protection Act and was subsequently designated a special site under Regulation 3(c) of the Contaminated Land (England) Regulations 2006.

The remediation project as a whole was divided into three phases. Phase 1 'Remedial Assessment Actions' enabled key data gaps to be addressed for the detailed design and determine the appropriate remediation scheme. Phase 2 'Remedial Treatment Actions' implemented the full scale treatment scheme and Phase 3 'Remedial Monitoring Actions' involved post-remediation verification monitoring to ensure that the groundwater quality remained stable following the remediation works.

Site Settings: The site is situated in Scholars Court, Neston, Cheshire at National Grid Reference (TF) 329080E, 377770N. The site occupies an area of approximately 0.3 ha and is currently disused but has an unconditional planning permission for residential development with gardens. The site geology includes heterogeneous Made Ground up to 2.4 m below ground level (bgl) across the site and 10.2 mbgl within the former quarry.

Historical Use and Contamination Identified: Historically, sandstone was quarried from part of the site towards the end of the 19th century. The quarry was either infilled after the quarrying works was ceased or during the later historical site used. An oil works (National Economy Fuels Ltd) is thought to have occupied the site from prior to 1954 to the mid 1970s.

Phase 1 Remedial Assessment Actions: The Phase 1 site works were carried out between 11th December 2006 and 10th January 2007. The site works comprised i) underground storage tank investigation works including geophysical survey, ii) drilling of eight water-flush rotary boreholes to depths of up to 10.4 m bgl (four vertical and four inclined) to enable sandstone samples to be collected for characterisation, iii) product (NAPL) recovery test at two previously installed boreholes, iv) LNAPL physical characterisation from samples collected from three boreholes, and v) groundwater sampling at twelve monitoring boreholes across the site.

Phase 2 Remedial Treatment Actions: The aim of the Phase 2 remedial treatment works was to reduce the hydrocarbon mass identified at the site. Given the impracticality of total source removal, it was agreed that the most cost effective standard of remediation that could be achieved at the site was asymptotic hydrocarbon mass recovery. A two stage remedial strategy was implemented to optimise the recovery of non aqueous phase liquid (NAPL) which comprised of: (Stage 1) direct non-aqueous phase liquid (NAPL) recovery enhanced by Soil Vapour Extraction (SVE) followed by (Stage 2) Multi-Phase Extraction (MPE) treatment.

The in-situ remediation systems were operated between 6th July 2007 to 28th March 2008. A total of 1,360.5 kg of hydrocarbon mass was recovered. The mass recovered in the vapour phase contributed 81.2% (1,105.4 kg) of the total hydrocarbon mass recovered, whilst free phase NAPL and dissolved phase hydrocarbons contributed 17.2 % (233.4 kg) and 1.6% (21.7 kg) of the total hydrocarbon mass recovered, respectively.

Groundwater Monitoring: Groundwater sampling was carried on ten occasions between January 2007 and March 2009. Based on the groundwater levels monitoring results, the groundwater generally flows in a west to south westerly direction, with hydraulic gradients ranging from 0.001 m/m to 0.037 m/m. The chemical analysis results show that the majority of the contaminant concentrations measured in groundwater have decreased significantly as a result of the remediation works and have remained relatively stable throughout the post works monitoring period.

Monitoring of Natural Attenuation (MNA) – MNA parameters were monitored between January 2007 and March 2009 to assess whether degradation of contaminants is occurring in the saturated sandstone. The majority of the monitoring parameters indicates that biodegradation of organic hydrocarbon is occurring at the site.

1 INTRODUCTION

CELTIC have been commissioned by Environment Agency Wales (EAW) to undertake the groundwater remediation works at Scholars Court, Neston, here after referred to as 'the site'. The remediation project as a whole was divided into three phases:

- Phase 1 - Remedial Assessment Actions,
- Phase 2 - Remedial Treatment Actions,
- Phase 3 - Remedial Monitoring Actions.

The remediation project was successfully completed in March 2009 and this report is intended to provide a summary of the Phase 1 to Phase 3 Remedial Actions undertaken by CELTIC between November 2006 and March 2009. The list of reports issued by CELTIC throughout the remediation project are summarised in Table 1 and presented in Annex 5 to Annex 7.

Table 1 – Summary of the Reports Issued by CELTIC Throughout the Remediation Project

Phase	Report Title	Report Number	Report Date	Annex
Phase 1	Detailed Design for Remedial Assessment Actions	R1114/06/3014	Nov 06	Annex 5
	Remedial Assessment Actions	R1114/07/3044	April 07	
	Detailed Design for Remedial Treatment Actions	R1114/07/3076	July 07	
Phase 2	Interim Validation report	R1156/07/3182	Dec 07	Annex 6
	MPE Treatment System Commissioning Report	R1156/07/3275	Dec 07	
	Monthly Progress Report (May 2007)	R1156/07/3161	June 07	
	Monthly Progress Report (June 2007)	R1156/07/3172	June 07	
	Monthly Progress Report (July 2007)	R1156/07/3189	Aug 07	
	Monthly Progress Report (August 2007)	R1156/07/3218	Oct 07	
	Monthly Progress Report (September 2007)	R1156/07/3250	Oct 07	
	Monthly Progress Report (October 2007)	R1156/07/3259	Nov 07	
	Monthly Progress Report (November 2007)	R1156/07/3274	Dec 07	
	Monthly Progress Report (December 2007)	R1156/08/3296	Jan 08	
	Monthly Progress Report (January 2008)	R1156/08/3309	March 08	
	Monthly Progress Report (February 2008)	R1156/08/3331	March 08	
	Remedial Validation Report	R1156/08/3304	April 08	
Phase 3	Post Remediation Groundwater Monitoring Report (June 2008)	R1156/08/3474	Sept 08	Annex 7
	Post Remediation Groundwater Monitoring Report (September 2008)	R1156/08/3511	Oct 08	
	Post Remediation Groundwater Monitoring Report (December 2008)	R1156/09/3598	Jan 09	
	Phase 3 Remedial Monitoring Actions	R1156/09/3617	March 09	

1.1 Project Background

The site is located at Scholars Court, Neston, Cheshire at National Grid Reference (TF) 329080E, 377770N as shown on Drawing R1156/3623/A1 (Annex 1).

The defined treatment area is approximately 0.3 ha, and comprises a disused area and an access road and car parking spaces for adjacent properties. The ground cover comprises approximately 85 % stone chipping, brick paving and tarmac with the remaining 15 % as vegetation. The site is bounded by residential properties to the north, west and south. The eastern boundary is marked by car parking spaces with residential properties beyond. The topography of the site is generally flat, with a slight slope to the north eastern corner of the site.

Site investigation works have identified contamination to be present from ground surface to groundwater as a result of former use of the site as an oil works and tank cleaners. Thirteen significant pollutant linkages (SPLs) have been identified relating to both pollution of controlled waters and human health of future occupants of the site and the site has been determined as contaminated land under s78B (3) of the PartIIa Environmental Protection Act. The site was subsequently designated a special site under Regulation 3(c) of the Contaminated Land (England) Regulations 2000.

The seven SPLs associated with pollution of controlled waters have been identified as 'orphan linkages' as no Class A person can be found. In line with the statutory guidance, EAW have considered 'what is required by way of remediation' under Part IIA and have concluded that the SPLs should be broken and remediated by utilizing the 'Best Practicable Technique' (BPT).

2 PROGRAMME AND SEQUENCE OF WORKS UNDERTAKEN

A summary of the programme and sequence of the remediation project undertaken between November 2006 and March 2009 is presented in Table 2.

Table 2 – Programme and Sequence of Works Undertaken

Activities	Date
Phase 1 Remedial Assessment Actions	
• Information Review	Nov 06
• Remedial Assessment Actions detailed design.	Nov 06
• Phase 1 site works	Dec 06 – Jan 07
• Phase 2 Remedial Treatment Actions detailed design	April – May 07
Phase 2 Remedial Treatment Actions	
• Site preliminary works including site welfare setup and construction of the treatment pad.	17/05/07 – 21/05/07
• 21 treatment wells and 3 groundwater monitoring boreholes installation works utilising a water flush drilling rotary rig.	21/05/07 – 20/06/07
• Direct Well Recovery with Enhanced Soil Vapour Extraction Treatment System ○ Mobilisation to site ○ Installation and commissioning works. ○ System operation, maintenance and monitoring works. ○ Decommissioning and demobilisation works.	04/06/07 05/06/07 – 22/06/07 25/06/07 – 28/08/07 28/08/07
• Multi Phase Extraction Treatment System ○ Mobilisation to site ○ Installation and commissioning works. ○ System operation, maintenance and monitoring works. ○ First rebound monitoring. ○ Second rebound monitoring. ○ Third rebound monitoring. ○ Decommissioning and demobilisation works	28/08/07 29/08/07 – 05/10/07 06/10/07 – 28/03/07 05/11/07 – 09/11/07 02/01/08 – 04/01/07 17/03/08 – 19/03/08 19/05/08 – 23/05/09
• Environmental monitoring including ambient noise, vapour and dust.	21/05/07 – 28/03/08
• Groundwater sampling from 13 monitoring boreholes using the 'low-flow' sampling technique.	(June, August, Nov 2007) and (Jan, March 08)
• Monthly progress meeting	05/06/07, 10/07/07, 15/08/07, 11/09/08, 16/10/07, 13/11/07, 17/12/07, 15/01/08, 13/02/08 and 12/03/08
• Health and safety audit on two occasions by CELTIC's health and safety manager and on one occasion by the EA health and safety officer during a site visit.	CELTIC audits on 19/06/07 and 11/09/07.
Phase 3 Remedial Monitoring Actions	
• First round of quarterly groundwater monitoring works.	19/06/08
• Second round of quarterly groundwater monitoring works.	24/09/08
• Third round of quarterly groundwater monitoring works.	10/12/08 – 11/12/08
• Final round of quarterly groundwater monitoring works	03/03/09 – 04/03/09

3 SITE DESCRIPTION

3.1 Site Location and Description

The site is situated in Scholars Court, Neston, Cheshire at National Grid Reference (TF) 329080E, 377770N as shown on Drawing D1156/3623/A1, Annex 1.

The site covers an area of approximately 0.3 ha, and is currently disused, with the exception of an access road and car parking spaces to the eastern part of the site. The ground cover comprises approximately 85 % stone chipping, brick paving and tarmac with the remaining 15 % as vegetation. The site is bounded by residential properties to the north, west and south. The eastern boundary is marked by car parking spaces with residential properties beyond.

3.2 Geology

The geology of the site is summarised in Table 3. The information presented is based on 1:50,000 British Geological Survey (BGS) geological mapping Sheet 96 - Liverpool together with an assessment of other available geological information.

Table 3 - Summary of Site Geology

<i>Geological Unit and Lithology</i>	<i>Thickness (available information)</i>
Made Ground Recent deposits comprise reworked gravely clay and dark brown clayey soil with brick and concrete fragments, purple roof slate, clinker ash, plant rootlets, wood and timber fragments. The former quarry comprises firm to stiff gravely reworked clay with medium to coarse sub-angular gravel beneath.	Variable thickness up to 2.4 m bgl across the site, and up to 10.2 m in the former quarry.
Sherwood Sandstone Pebble Beds Formation and Wilmslow Sandstone Formation sandstone Three main types of fracture Type 1: Twin fractures bounding a zone of fragmented sandstone typically 50mm to 100mm wide. Type 2: Single steeply dipping fractures in a variety of orientations, Type 3: Fractures approximately parallel to the land surface. These are often traditionally referred to as "erosional unloading joints".	Encountered depth ranging from 0.15 to 2.4 mbgl. The Sherwood sandstone is approximately 200 – 300 m in thickness.

3.3 Hydrology

Stanney Brook flows south-west some 500 metres south of the site and joins the Dee Estuary approximately 1km to the south-west. The Dee Estuary is a SSSI, and a wetland of international importance under the RAMSAR convention.

3.4 Hydrogeology

Perched waters were reported to be present within the Made Ground with shallow, contaminated seepages recorded from various trial pits during previous site investigation

works. However, no perched water was encountered in all of the treatment and monitoring installed by CELTIC between December 2006 and June 2007.

Groundwater lies some 4.5 to 8 metres below ground level in the Sherwood Sandstone which is recognised as a major aquifer and is listed in Schedule 1 of the Contaminated Land (England) Regulations 2000.

The regional groundwater flow is south west towards the River Dee whilst the local flow at the site appears to be to the west and south westerly direction.

The groundwater level at the site is approximately 20 m higher than the regional average of 15 m AOD and this may be due to the groundwater being perched, or more likely due to a recharge mound through the Glacial Till window.

Based on the monitoring data, the groundwater levels in the north of the site vary by up to 2 m annually whilst the groundwater levels fluctuated less than 0.2 m per year in the southern part of the site. These variations are likely to be caused by a groundwater mound running from east to west or by a combination of factors including the influence of the quarry and variations in conductivity as a result of differing fracture patterns across the site.

3.5 Historical Use and Contamination Identified

Historically, sandstone was quarried from part of the site towards the end of the 19th century. The quarry has been backfilled since the works ceased. An oil works (National Economy Fuels Ltd) is thought to have occupied the site from 1954 to the mid 1970s. Subsequent to this, Neston Tank Cleaners occupied the site up to 1973 after which time the works buildings were demolished. Oil tanks may have been located in the south of the site from 1968 to post 1975.

The presence of an underground storage tank is suspected due to a planning application submitted in 1954 for permission to install a 500 gallon bulk petrol storage tank with hand operated pump. Two anomalies were identified during the geophysical survey carried out in September 2003. However, the survey was unable to confirm the presence of the tank.

The site investigation works have identified oil and organic solvents in the unsaturated and saturated zones. Black staining with an oily sheen and a hydrocarbon odour was observed in the sandstone recovered during the boreholes installation works. Chemical analysis of the Light Non Aqueous Phase Liquid (LNAPL) recovered in December 2006 shows that the LNAPL was predominately in the medium to heavier fractions of the Total Petroleum Hydrocarbons (TPH). The heavier TPH groups make up the bulk of the LNAPL with up to 51.31% of the LNAPL being aliphatic C₁₀-C₃₅ and aromatic C₁₂-C₃₅, whilst 48.57% of the LNAPL contained greater than 35 carbons. A number of volatile organic compounds (VOCs) were also detected, which included various breakdown compounds of chlorinated solvent such as vinyl chloride and cis-1,2 dichloroethene.

4 PHASE 1 REMEDIAL ASSESSMENT ACTIONS

The EAW have concluded that the seven SPLs associated with pollution of controlled waters should be broken and remediated by utilizing the 'Best Practicable Technique' (BPT). This was to be achieved by the implementation of a remedial treatment scheme, however, it was acknowledged that certain gaps in information exist that may be important for the final treatment design. Therefore, the main objectives of the Phase 1 Remedial Assessment Actions were:

- To review existing information to identify any data gaps that are necessary for the remedial treatment scheme,
- To collect the missing data that will enable the appropriate remediation technology to be determined and allow design finalization,
- Provide information on any changes that may have occurred since the investigation works,
- Installation of any additional monitoring wells required for the remedial works.

Detailed design of the remedial assessment actions are presented in CELTIC's Detailed Design for Remedial Assessment Actions Report (Report No.: R1114/06/3014), Annex 5.

4.1 Information Review

The site has been subject to investigations by several companies since 1994 which have been commissioned by Watkin Jones Homes (WJH), Ellesmere Port and Neston Borough Council and the Environment Agency.

The site investigation reports between 1994 and 2004 are presented in Annex 4.

4.2 Data Gaps Identified

The information provided by the site investigation works was comprehensive and had enabled an outline remediation strategy to be devised. However, being previously limited to the objective of identifying SPLs rather than full site characterisation, certain gaps in the data were needed to be addressed in order to refine and optimise the remediation design. These key data gaps included:

- **NAPL Thickness in Former Quarry** – It was suspected that the quarry may act as a sump and the product may have migrated into the quarry. However, no intrusive investigative works have been carried out within the quarry since the excavation works carried out in July 1999.
- **Delineation of NAPL Plume** – The extent of the NAPL plume to the east of the former quarry is uncertain. Up to 4 m thickness of product was also recorded in monitoring borehole (BH16) to the north of the former quarry in June 1999 and the thickness was reduced to 1.6 m soon after the excavation works. However, this borehole is no longer present and therefore the product thickness within this vicinity can not be assessed.
- **Quantification of NAPL Mass** - Previous baildown tests carried out by URS in 2002 and Babbie in 2004 were not successful. This was due to the product recovery rate

within the trial boreholes being very high which meant that it was not possible to measure the rate of rebound. Subsequently, the true thickness of NAPL could not be estimated.

- **Physical Characteristics of NAPL** - Chemical analyses of the free product has been carried out during previous site investigation works. However, only limited physical characterisation of the product has been undertaken (viscosity). Additional characterisation was required, such as density, viscosity variation with temperature and pour point temperature, to determine the mobility and recoverability of the NAPL as well as the quantity of the residual NAPL present on site.
- **Distribution of NAPL in the Unsaturated Zone** – There was limited information on the extent and nature of the NAPL present in the unsaturated sandstone. Previous site investigation works have identified black staining with strong hydrocarbon odour trapped within the sandstone fractures. However, there was very little analytical data available on the mobility and extent of the NAPL trapped within the unsaturated sandstone.
- **Dissolved Phase Contaminant Conditions** - The conceptual groundwater pathway was assessed based on a single monitoring round carried out by URS in spring 2002. The information collected was limited to determine the plume stability and migration pathways. It is therefore necessary to implement a groundwater monitoring regime to assess the groundwater conditions.
- **Understanding of Fracture Network** - All of the drilling works carried out to date have been vertical bores, and as such vertical or sub vertical fractures may have not been identified. Therefore, in order to fully characterise the fractures within the sandstone, it was necessary to employ the inclined drilling method to recover core samples for characterisation.
- **Underground Storage Tank** - A planning application was submitted in 1954 for permission to install a 500 gallon bulk petrol storage tank but it was uncertain whether the application was granted. A geophysical survey was carried out in September 2003 and a number of well defined anomalies were identified. Two of these anomalies were considered to be the most significant in terms of a possible small scale UST. However, these anomalies could also be related to the sub-surface drainage structures associated with the access covers observed on site. Therefore, the survey to confirm the presence of the UST was inconclusive and it was recommended to investigate these anomalies further.

4.3 Phase 1 Site Works

The Phase 1 site works were carried out between 11th December 2006 and 10th January 2007 and are summarised in Table 4 with the exploratory locations presented on Drawing D1156/3623/A3, Annex 1.

Table 4 - Summary of Site Works

<i>Site Activity</i>	<i>Nº</i>	<i>Comments</i>
Service Location Survey	N/A	Prior to intrusive works, a specialist service location contractor was used to locate below ground services. The proposed borehole locations were also excavated up to 1 m bgl using vacuum excavation.
UST Anomalies	N/A	Ground penetration radar to pinpoint the exact location of the anomalies identified during previous geophysical survey. Three distinctive areas were identified and subsequently excavated via the vacuum excavation method. The holes were logged and photographed prior to backfilling with excavated materials. The backfilled materials were compacted and reinstated with tarmac or brick paving stones.
Rotary Boreholes	8	Eight rotary boreholes were advanced to depths of up to 10.4 m bgl (four inclined and four vertical). All of the boreholes were installed with groundwater monitoring wells. Well construction varied depending on ground conditions encountered during borehole advancement.
Liquid Sampling and Analysis	12	Groundwater samples were recovered from 12 monitoring boreholes using the 'low-flow' sampling technique between 8 th and 9 th January 2007. The water samples were analysed for the following: TPH risk based, VOCs, SVOCs, arsenic, cadmium, chromium, lead, mercury, selenium, copper, nickel, zinc, iron, boron, manganese, ferric, ferrous, ammoniacal nitrogen, nitrate, chloride, sulphate, sulphite, total organic carbon and total hardness as CaCO ₃ .
NAPL Analysis	4	Samples were recovered from three existing boreholes (BH2, BH3 and BH4) on 13 th December 2006. The samples were analysed for the following: oil identification, specific gravity, viscosity variation at a series of temperatures (nominally 25 °C, 40 °C and 60 °C), identification of Pour Point temperature (i.e. the temperature at which the hydrocarbons may be mobilised), and the percentage of the hydrocarbons passing to the vapour phase at a series of temperatures (nominally 25 °C, 40 °C and 60 °C). An additional sample was collected from BH201 on 8 th January 2007 for oil Working Group analysis.
Product Recovery Test	2	Product recovery tests were carried out on two existing boreholes (BH4 and BH201) on 8 th January 2007. The NAPL thickness was recorded prior to removal via an adjustable flow peristaltic pump. The peristaltic pump could not overcome the recharge rate of the LNAPL in borehole BH201, consequently a disposal bailer was used to remove the LNAPL. After the NAPL has diminished to a negligible thickness, the boreholes were dipped at regular intervals.
Topographic Survey	N/A	Position and level to Ordnance Datum was obtained for all the exploratory locations.

4.4 Results of the Phase 1 Site Works

The results of the Phase 1 Remedial Assessment Actions are detailed in CELTIC's Remedial Assessment Actions Report (Report No.: R1114/07/3044), Annex 5, and summarised below:

- i) **Underground Storage Tank** – Vacuum excavation at potential UST locations (identified as anomalies during geophysical investigation) did not locate any UST. This finding had significantly reduced the uncertainties associated with the suspected UST and demonstrated that it was unlikely to be present at the site.
- ii) **NAPL Thickness in Former Quarry** – No measurable thickness of NAPL was detected within the former quarry and therefore the quarry does not appear to be acting as a sump for LNAPL as previously thought

- iii) **Delineation of NAPL Plume** – The LNAPL distribution drawings from previous investigations assumed that the LNAPL across the site exists as a single hydraulically-continuous lens of product floating on the aquifer. However, in view of the core evidence that NAPL occurs at a variety of levels within the sandstone and poor lateral connectivity through the sandstones across the site, it seems unrealistic to imagine that NAPL across the site exists as a single hydraulically-continuous lens.

The current extent of the LNAPL is slightly different to the distribution of LNAPL recorded in April 2002. The former quarry was previously thought to act as a sump and measurable thickness of NAPL were expected. However, no NAPL was detected in borehole (CB7) installed within the quarry, which indicated that the quarry does not act as a sump. The observed LNAPL thicknesses in boreholes (BH2 and BH12) to the west of the quarry have increased significantly compared with monitoring data recorded in April 2002. The increase in LNAPL thickness could either due to seasonal groundwater level fluctuation or the possibility that LNAPL is migrating in the south westerly direction, similar to the groundwater flow direction.

- iv) **Quantification of NAPL Mass** - The NAPL area, contaminated rock thicknesses and NAPL content within the porosity are not well constrained and as such calculations of mass range from a high estimate of 264 m³ to low estimate of 5 m³.

A simple probabilistic estimate of NAPL volumes shows an 80 % probability that the NAPL volumes will exceed 47.5 m³, a 50 % probability that NAPL volumes will exceed 85.15 m³ and a 5 % probability that they will exceed 264 m³.

- v) **Physical Characteristics of NAPL** – The chromatograms of the LNAPL samples analysed indicates hydrocarbons to be predominately in the C₁₀ to C₃₅ range, with a viscosity ranging from 13.17 to 86.64 centistokes (Cst), The pour point for the NAPL samples varied from -36 °C to -42 °C and suggests that the NAPL is mobile under ambient temperature. The volatility of the NAPL is considered to be low with the volatile loss range from 0.9 % to 7.6 %.

The LNAPL in the eastern part of the site showed abundant evidence of industrial contaminants such as benzene, whereas the LNAPL collected from borehole BH2 located in the western part of the site showed only slight evidence of such contaminants.

Fugro have identified evidence of natural occurring seepage of crude oil at surface outcrops episodically at various sites around the Wirral, including nearby Burton Point (Photo 36, Annex 2). Therefore, it is possible that the NAPL found in deeper core samples could be as a result of natural migration of hydrocarbons from depth in this sandstone formation.

- vi) **Distribution of NAPL in the Unsaturated Zone** – The core samples shows that NAPL was present at several different levels within the sandstone, separated by water-bearing sandstone horizons. In general, it appears that the NAPL occurs preferentially in the higher permeability laminae and beds in the sandstone, though not all apparently high permeability laminae in NAPL-bearing cores show evidence

of NAPL. The NAPL bearing thickness observed in the core samples was ranged from 10% to 60% in the unsaturated zone. The calculated NAPL volume in the unsaturated zone was ranged from 2.3 m³ to 289 m³.

- vii) **Dissolved Phase Contaminant Conditions** – Data indicated the extent of the dissolved phase contaminant plume was relatively limited and showed that the dissolved concentrations attenuate rapidly away from free phase NAPL. A conservative estimate of dissolved phase mass, assuming a plume area of 2,200 m² and extrapolating maximum concentrations across the entire plume, would be 13 kg of total TPH, VOCs and SVOCs. This is a relatively low mass considering the higher estimates of NAPL which may be present at the site and indicates either the attenuation of the product in the primary pore spaces or that the NAPL mass may be nearer the lower estimate. Key monitoring parameters for natural attenuation has demonstrated that biodegradation was likely to be occurring at the site but could not be confirmed due to limited monitoring data.
- viii) **Understanding of Fracture Network** – Three main types of fracture were seen in outcrops approximately 1 km from the site. Type 1 is the twin fractures bounding a zone of fragmented sandstone typically 50mm to 100mm wide. Type 2: is a single steeply dipping fracture in a variety of orientations, mostly developed in response to geological compressive, strike-slip and extensional stresses. Type 3 is fractures that are approximately parallel to the land surface. These 3 types of fractures at outcrop are interpreted to be equivalent to the features seen in the deviated cores.

4.5 Remedial Options Appraisal

The applicable remedial options for the identified pollutant linkages were evaluated by the Environment Agency in February 2005. Three remedial options were short-listed as the most potentially feasible techniques which included soil vapour extraction, thermally enhanced multi phase extraction and non aqueous phase liquid extraction. These remedial options were re-evaluated based on information collected from previous site investigation works and the data collected during the Phase 1 site works.

Although thermally enhanced multiphase extraction would increase the mass recovery rate, the potential risk of uncontrolled vapours in a sensitive residential setting and the risk of uncontrolled increases NAPL mobility make it unsuitable for this site. It was concluded that NAPL extraction with multi phase extraction would be the most appropriate remedial option for this site.

The revised remedial options of appraisal are detailed in CELTC's Remedial Assessment Actions Report (Report No.: R1114/07/3044), Annex 5.

5 PHASE 2 REMEDIAL TREATMENT ACTIONS

5.1 Summary of the Remediation Objective and Strategy

Given the impracticality of total source removal, the most cost effective standard of remediation that can be achieved at the site was decided as asymptotic hydrocarbon mass recovery.

A two stage remediation strategy was implemented to optimise the recovery of non aqueous phase liquid (NAPL) which comprised:

Stage 1 – Direct Well Recovery with Enhanced Soil Vapour Extraction

Stage 2 – Multi Phase Extraction (MPE)

The design of the remediation strategy was such that it is sustainable, can be completed based on the currently available information and will be effective in reducing the mobile contaminant mass.

The design allowed contingencies to deal with uncertainties in that the layout and number extraction wells and capacity of the treatment system was relatively flexible and could be modified to accommodate variations in the anticipated contaminant distribution.

Details of the remedial strategy are presented in CELTIC's Detailed Design for Remedial Treatment Actions Report (Report No.: R1114/07/3076), Annex 5.

5.2 Treatment System Installation and Commissioning Works

The Direct Well and MPE treatment system installation works were completed on 15th June and 5th September 2007 respectively. A schematic diagram of the SVE and MPE treatment system is shown on Drawing D1156/3623/A4, Annex 1. A series of plates showing various components within the treatment system are presented in Annex 2.

5.3 Treatment System Optimisation Works

A key component of the remediation strategy is the monitoring and optimisation of the treatment process, which allows mass recovery to be maximised by targeting the most contaminated areas of the site in the most appropriate manner. System optimisation was carried out on a weekly basis to ensure maximum recovery of hydrocarbons throughout the duration of the remediation programme.

The main objectives of the optimisation phase were to determine:

- 1) **Zone of Influence (ZOI)** – Establish the ZOI of treatment wells, and verify that well spacing is adequate for the treatment system to have total coverage/influence over the remediation area (*MPE Treatment System Only*).
- 2) **Hydrocarbon Mass Removal Rates** – Hydrocarbon mass was recovered by the treatment system as vapour phase hydrocarbons, free phase Non Aqueous Phase Liquid (NAPL) and dissolved phase contaminants in groundwater.
- 3) **Optimal Operating** – Adjustments to the treatment system to maximise hydrocarbon mass removal.

The works undertaken to achieve these objectives are detailed in the following sections. In addition, the parameters summarised in Table 5 were also monitored during the commissioning and operational phases to assess the performance of the treatment system.

Table 5 – Summary of System Performance Monitoring Parameters

Component	Monitoring Parameter
Treatment Well	- Individual well vapour concentration - Vacuum at well head - LNAPL Thickness - Groundwater Level
LNAPL Recovery System	- LNAPL Recovery Rate - Groundwater Recovery Rate - Overall recovery rate
SVE Treatment System	- Extracted vapour concentration - Extracted air flow - Vacuum at pump
MPE Treatment System	- Extracted vapour concentration (continuously - 5 minute time weighted average concentration) - Vacuum at pump (continuously at 5 minute interval) for calculation of the extraction flow rate.
Waste Water Treatment System	- Recovered LNAPL volume - Volume of extracted water - Dissolved phase concentration in pre-treated effluent - Dissolved phase concentration of treated effluent
Air/ Vapour Treatment System	- Extracted vapour flow rate - Vapour concentration before granular activated carbon treatment - Vapour concentration after granular activated carbon treatment

The treatment systems' optimisation works are summarised below and detailed in CELTIC's Remedial Validation Report (Report No.: R1156/07/3304), Annex 6.

5.3.1 Zone of Influence (ZOI)

MPE Treatment System

The effective zone of influence of the extraction wells was established by measuring the vacuum propagated within the unsaturated zone. The vacuum was measured using a digital vacuum gauge at boreholes surrounding an operational treatment well. The vacuum influence exerted from treatment borehole CTW14 to the surrounding area is illustrated in Drawing D1156/3623/A5, Annex 1. The results indicated that a vacuum influence of up to 20 m was observed from the operational treatment well and support the conservatively designed spacing between extraction wells of 4.5 m (Phase 2 Detailed Design Report, Celtic Report No. R1114/07/3076).

5.3.2 Hydrocarbon Mass Recovery

Hydrocarbon mass was recovered by the treatment systems as free phase NAPL, hydrocarbons vapour and dissolved phase contaminants in groundwater. The hydrocarbon mass recovered was quantified as detailed below.

Free Phase NAPL Mass Recovery

The volume of the recovered LNAPL by the treatment systems was quantified on a regular basis and the recorded data for the direct well and MPE treatment systems. A

total of 251.5 litres or 233.4 kg of LNAPL was recovered by both the Direct Well Recovery and the MPE treatment systems. The recovered LNAPL mass was calculated based on a LNAPL density of 928 kg/m³ (Phase 1 Remedial Assessment Action Report, Celtic Report No. R1114/07/3044).

The LNAPL thickness in all of the treatment and monitoring boreholes were also monitored on a regular basis. The maximum LNAPL thickness detected in the treatment wells prior to the remediation works ranged from 0.005 m to 2.2 m and the thickness detected after the remediation works were generally less than measurable thickness. It should be noted that significant LNAPL thickness reduction was achieved in BH03 and BH12 where the LNAPL thickness was reduced from 1.64 m and 1.24 m to 0.01 m and 0.005 m respectively.

No dense non aqueous phase liquid (DNAPL) was detected in any of the monitoring and treatment boreholes.

Vapour Phase Hydrocarbon Mass Recovery Rate

The hydrocarbon vapour mass recovery rate was calculated based on the methane corrected time weighted average vapour concentration, the extraction flow rate and the conversion factor (calculated based on the composition of the extracted vapour). Therefore, to determine the vapour phase hydrocarbon mass recovery, it was necessary to measure and log the following parameters:

- 1) Extracted hydrocarbon vapour concentration.
- 2) Extracted vapour flow rate.
- 3) Extracted vapour composition.

1) Extracted Hydrocarbon Vapour Concentration

A FID was used to continuously measure the concentration of total hydrocarbons within the extracted vapours and the recorded concentrations were averaged and logged at 5 minute intervals.

2) Extracted Vapour Flow Rate

The flow rate of the extracted vapours was calculated based on the pressure reading recorded on the SVE and MPE vacuum pump, as the flow rate is proportional to the operating pressure of the vacuum pump. The pressure readings on the vacuum pump were logged via a pressure logger at 5 minute intervals throughout the treatment period. The calculated extraction flow rates ranged from 19 m³/ hour to 160 m³/ hour, with an average flow rate of 100 m³/ hour and 76 m³/ hour for the SVE and MPE treatment system respectively.

3) Extracted Vapour Composition

Samples of the extracted vapour were collected on a monthly basis during the treatment works to determine the composition of the extracted vapour. The laboratory results show that the extracted vapour predominately consist of trans-1,2-dichloroethene (30 - 68%), 1,2-dichloropropane (0 - 3%), benzene (1 - 3%), toluene (1 - 2%), and xylenes (1 - 3%).

Based on the chemical analysis results, the molecular weight of the extracted vapour was calculated and ranged from 95 g/mol to 109 g/mol. This was used to calculate the conversion factor to convert the vapour concentrations from ppm v/v to mg/m³.

Bulk gas analysis was also carried out during the treatment works and the methane concentration ranged from 110 ppm v/v and 25,000 ppm v/v, and the calculated percentage of methane in the extracted vapour stream ranged from 8% to 94%.

Hydrocarbon Vapour Mass Recovery Rates Per Day

The calculated hydrocarbon vapour mass recovery rates per day for the SVE and MPE treatment systems are illustrated in Figure 1 and Figure 2 respectively. The initial vapour mass recovery rate for the SVE and MPE treatment system ranged from 26.3 kg/day and 28.7 kg/day respectively, and was reduced to approximately 0.45 kg/day and 0.4 kg/day towards the end of the treatment period.

The total hydrocarbon vapour mass recovered via the SVE and MPE treatment systems was 237 kg and 868 kg respectively.

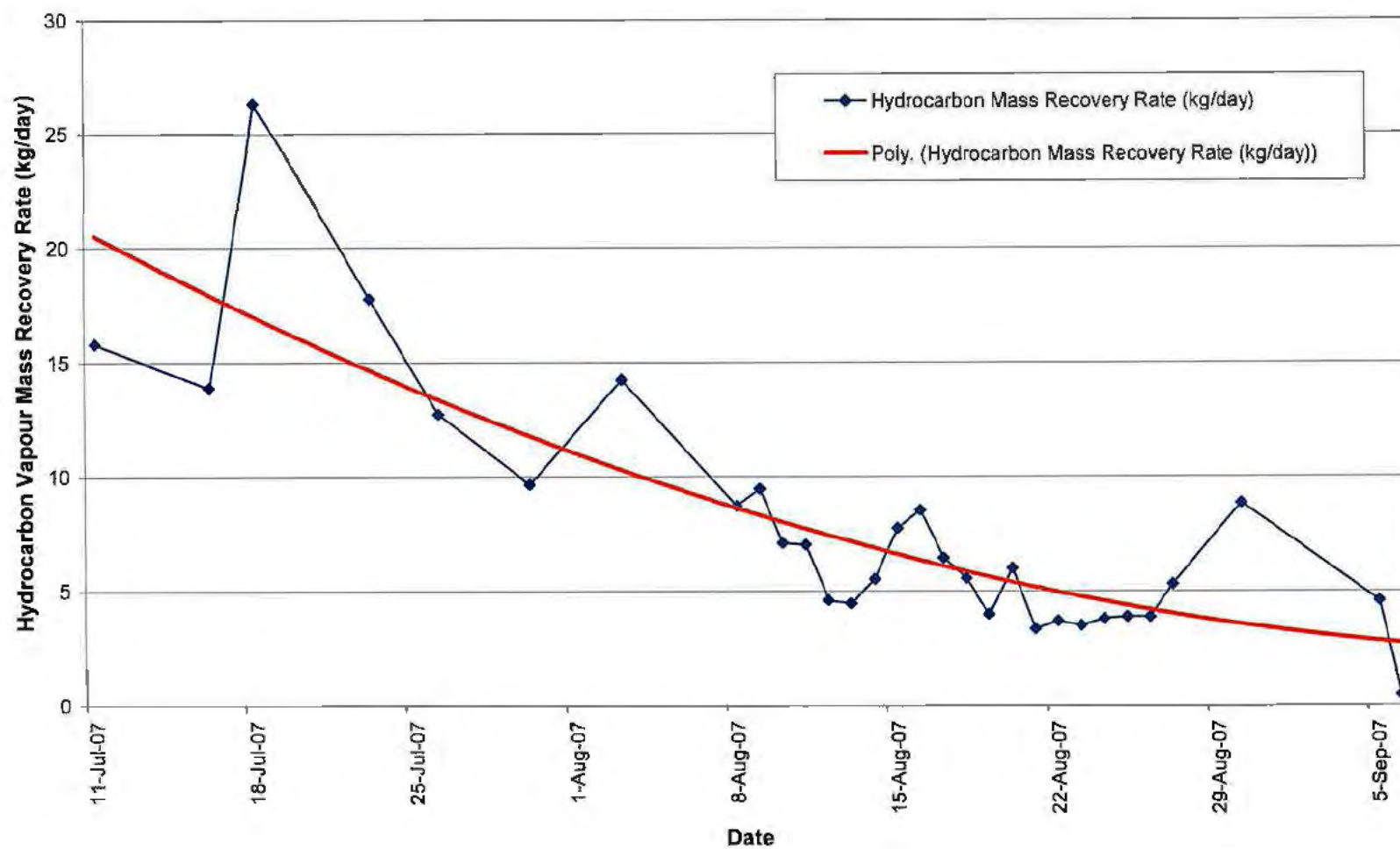
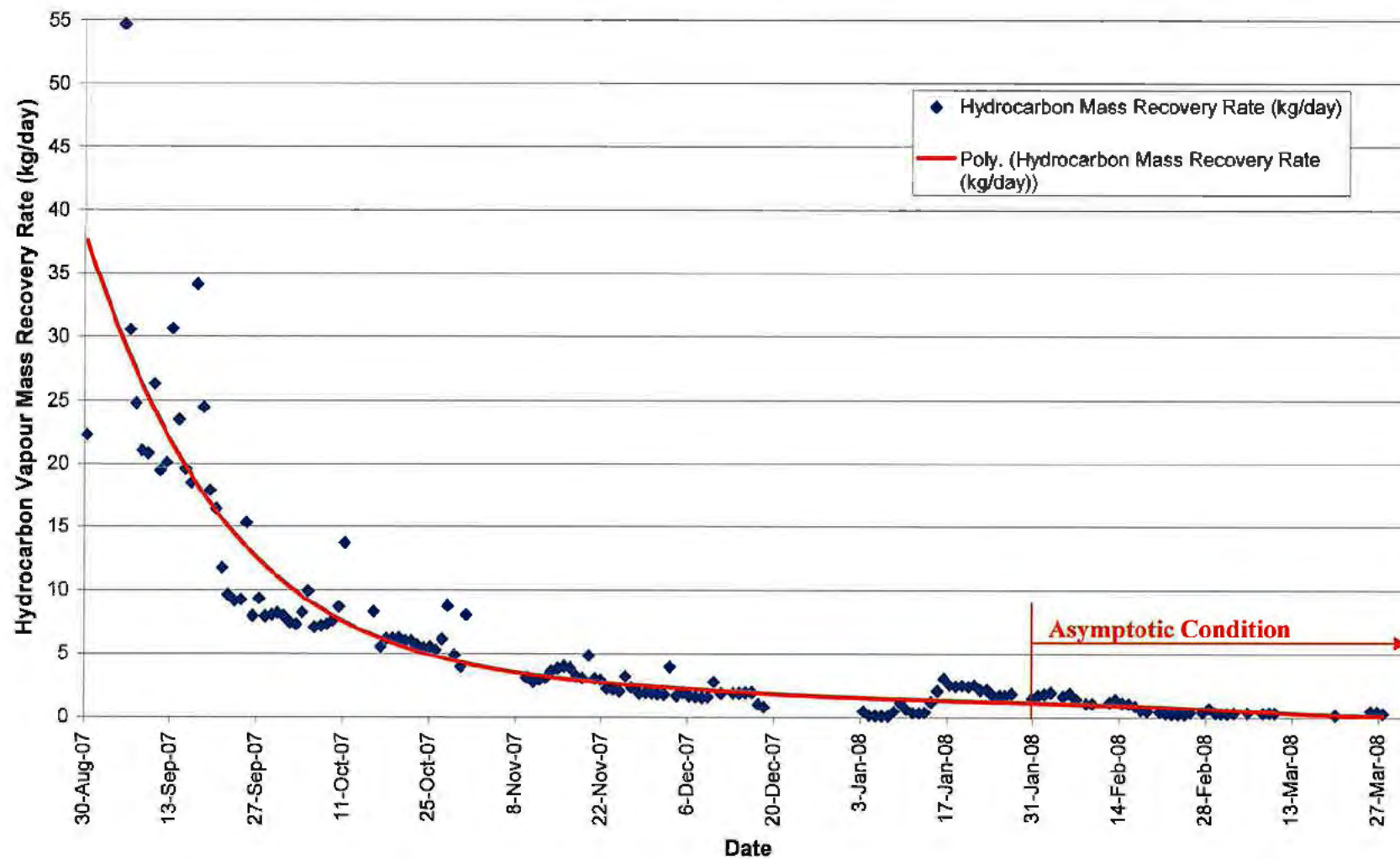
Figure 1 – Summary of Hydrocarbon Vapour Mass Recovery Rates Per Day using the SVE Treatment System (Stage 1)

Figure 2 – Summary of Hydrocarbon Vapour Mass Recovery Rates Per Day using the MPE Treatment System (Stage 2)

5.3.3 Dissolved Phase Hydrocarbon Mass Recovery

The dissolved phase hydrocarbon mass recovered was calculated based on the volume of groundwater extracted and the Total Petroleum Hydrocarbon (TPH) concentration of the groundwater.

The volume of groundwater extracted during the SVE and MPE treatment works was measured with the use of a totalising flow meter. A total of 11 m³ and 619 m³ of water was abstracted and an estimated of 0.3 kg and 21.4 kg of dissolved phase hydrocarbon was recovered via the SVE and MPE treatment system respectively.

Samples of the treated effluent (subsequent to carbon treatment) were also taken on a regular basis to demonstrate the efficiency of the water treatment system and compliance with discharge conditions. The analysis results show that the concentration of determinants within the treated effluent was well below the discharge consent set by the foul sewer undertaker.

5.4 Assessment of Rebound Potential/ Rebound Monitoring

The MPE treatment system was shut down on three occasions to assess the rebound potential for NAPL, vapour and dissolved phase hydrocarbon. The system was shut down during the following periods:

First Rebound: 31st October 2007 to 9th November 2007 (shut down for 9 days).

Second Rebound: 19th December 2007 to 3rd January 2008 (shut down for 15 days).

Third Rebound: 10th March 2008 to 19th March 2008 (shut down for 9 days).

Rebound monitoring was conducted after the shut down periods to investigate whether contamination levels had increased above levels recorded prior to the shut down periods. If contamination levels increase significantly during rebound monitoring then the treatment works should continue to reduce the source mass to acceptable levels.

The rebound monitoring results have demonstrated that the rebound potential for NAPL and hydrocarbon vapour was extremely low and stable across the site. Therefore, as further treatment via the MPE system would be unlikely to recover significant mass of hydrocarbon, it was decided to switch off the MPE system.

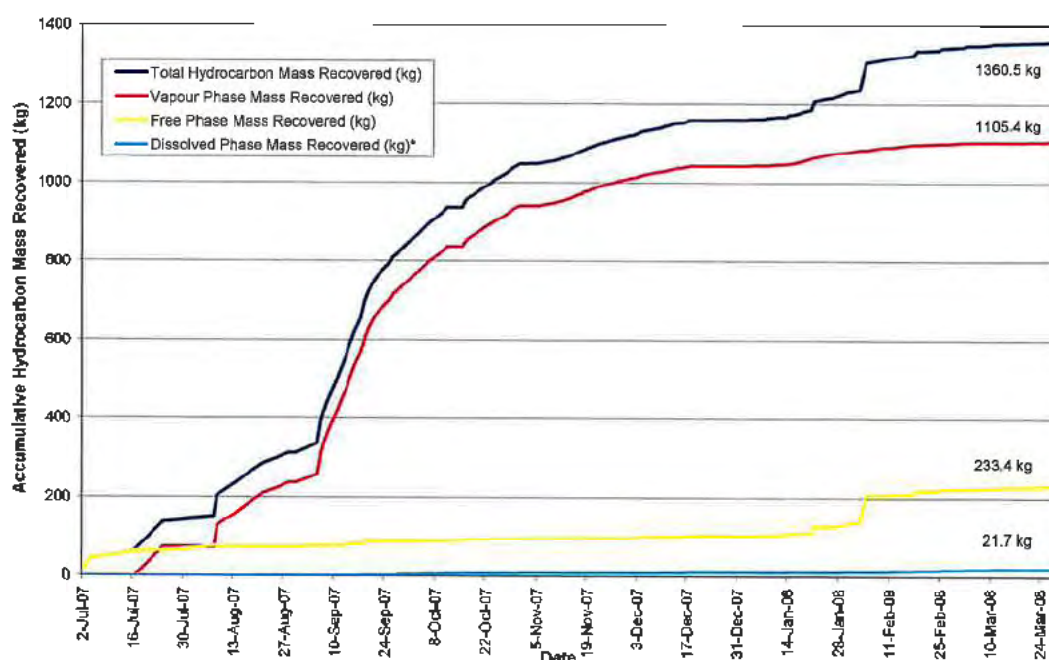
5.5 Overall hydrocarbon mass recovery

Up to the 28th March 2008, a total of 1,360.5 kg of hydrocarbon mass was recovered from site via the Direct Well Recovery and Multi-Phase Extraction treatment systems. The hydrocarbon mass recovered via both systems is summarised in Table 6 and shows that 23% of the hydrocarbon mass was recovered via the Direct Well Recovery with enhanced SVE system whilst the remaining 77% was recovered via the MPE system.

The cumulative hydrocarbon mass recovered via both systems is illustrated in Figure 3 and shows that over 81% of the total mass was recovered as vapour phase, 17.2% was mobile NAPL and the remaining 1.6% was dissolved phase hydrocarbon.

Table 6 – Summary of Overall Hydrocarbon Mass Recovered

Phase	Stage 1 - Direct Well Recovery Hydrocarbon Mass Removal (kg)	Stage 2 - Multi-Phase Extraction Hydrocarbon Mass Removal (kg)	Total Hydrocarbon Mass Removal (kg)	Hydrocarbon Mass Recovery (%)
Free Phase	76.1	157.3	233.4	17.2
Vapour Phase	236.6	868.8	1105.4	81.2
Dissolved Phase	0.3	21.4	21.7	1.6
Total	313	1047.5	1360.5	

Figure 3 – Summary of Total Hydrocarbon Mass Recovered via Direct Well Recovery and Multi-Phase Extraction Treatment Systems

6 GROUNDWATER MONITORING

6.1 Sampling Methodology

Groundwater samples were recovered from the thirteen monitoring boreholes on ten monitoring occasions between January 2007 and March 2009. The sampling events are summarised in Table 7 and the locations of the monitoring boreholes are shown on Drawing D1156/3623/A3, Annex 1.

Table 7 – Summary of Groundwater Sampling Event

Sampling Round	Sampled Date	Monitoring Phase
1	(08 – 09)/01/2007	Baseline
2	(28 – 29)/06/2007	
3	(29 – 31)/08/2007	
4	(07 – 08)/11/2007	During Remedial Works
5	(02 – 03)/01/2008	
6	17/03/2008	Post Remedial Works
7	19/06/2008	
8	24/09/2008	
9	(10 – 11)/12/2008	
10	(03 – 04)/03/2009	

Water samples were retrieved by 'low-flow' sampling technique using a flow adjustable peristaltic pump and associated dedicated rising main. The pump rate was regulated for a discharge of between 0.5 to 1 litre/minute to minimise drawdown and avoid any physical disturbance of the water column within the sampling well.

Water quality indicators were continuously monitored within the abstracted water during pumping. These indicators included temperature, pH, redox, conductivity and dissolved oxygen (DO). When equilibrium conditions were reached i.e. when three successive readings were within ± 0.1 pH, $\pm 3\%$ for conductivity, ± 10 mV for redox and within $\pm 10\%$ for DO, samples of the groundwater were collected in appropriate containers.

The recovered groundwater samples were analysed at a UKAS accredited laboratory for total petroleum hydrocarbon (TPH), Volatile Organic Carbons (VOCs), Semi-Volatile Organic Carbons (SVOCs), arsenic, cadmium, chromium, lead, mercury, selenium, copper, nickel, zinc, iron, boron, manganese, ferric, ferrous, ammoniacal nitrogen, nitrate, chloride, sulphate, sulphite and total organic carbon.

6.2 Groundwater Levels

The groundwater levels were monitoring on a regular basis and the monitoring results show that the groundwater was encountered within the Sherwood Sandstone between 30.51 to 35.56 mAOD. The groundwater level contours for selected monitoring rounds are illustrated on Drawings D1156/3623/A6 to A15, Annex 1. Monitoring data for boreholes containing LNAPL were excluded from the drawing as this LNAPL acts to depress the groundwater level within the borehole and distorting the true groundwater level.

As illustrated on Drawing D1156/3623/A6 to A10 (Annex 1), the Direct NAPL Recovery with enhanced SVE treatment system had little or no effect to the groundwater levels across the site. On the other hand, the more aggressive MPE treatment system has significant effect to the local hydrogeology, where up to 2.95 m drop in groundwater levels were observed in the treatment and monitoring boreholes. However, the MPE treatment had no effect to the wider hydrogeology, where the groundwater generally flows in a west to south westerly direction.

6.3 Chemical Analysis Results

Selected contaminant concentrations measured over time are summarised in Tables 3-1 to 3-6, Annex 3, and discussed below.

Total Volatile Organic Compounds (VOCs)

The total VOC concentrations measured between January 2007 and March 2009 are summarised in Table 3-4, Annex 3. The monitoring result collected prior to and during the remedial works show that elevated VOC concentrations were detected in monitoring boreholes within and around the treatment area. However, the post remediation monitoring results have demonstrated that the VOC concentrations were significantly lower and have remained stable throughout the post remediation monitoring period. The total VOCs concentrations have reduced from a peak of 10.85 mg/l to maximum concentration of 0.142 mg/l during the final round of post works monitoring. This represents a 99% reduction in concentration. During the final groundwater monitoring round, only 5 out of the 13 groundwater samples had concentrations measured above the laboratory limit of detection of 0.001 mg/l.

It is important to note that similar pattern was observed for vinyl chloride and cis 1,2 dichloroethene where over 99% reduction was observed in some of the monitoring boreholes. The chemical analysis results for cDCE and VC are summarised in Table 3-1 and Table 3-2 (Annex 3), respectively. VC and cDCE was identified as the main contaminants of concern during the initial site investigate works carried by URS in 2002.

Total Semi-Volatile Organic Compounds (SVOCs)

Various SVOC's were generally detected in the same boreholes as the VOC's and the concentrations measured over time are summarised in Table 3-5, Annex 3. The monitoring results show that the concentrations have generally decreased over time after completion of the remediation works and have remained stable throughout the post works monitoring period. In the final groundwater monitoring round, only 2 out of the 13 groundwater samples had concentrations measured above the laboratory limit of detection of 0.001 mg/l.

Total Petroleum Hydrocarbon (TPH)

The TPH concentrations measured between January 2007 and March 2009 are summarised in Table B6, Annex 3. The highest concentrations were detected in monitoring borehole CB2 and CB7 with TPH concentrations up to 16.4 mg/l being measured in June 2007. However, the TPH concentrations measured in the majority of the monitoring boreholes within the site boundary have generally decreased since the Multi-Phase Extraction (MPE) treatment began in September 2007 and have remained relatively stable throughout the post works monitoring period. It is important to note that the majority of lighter and more mobile fractions (C₅ – C₁₂) of the TPH spectrum have

been removed during the treatment period and the proportion of TPH fractions that remained in groundwater were predominately in the medium to heavy end of the TPH spectrum i.e. the heavier and less mobile contaminants remained in groundwater.

6.4 Monitored Natural Attenuation (MNA)

In addition to the determinants detailed above, water samples were also analysed for a range of determinants (dissolved oxygen, nitrate, chloride, ammoniacal nitrogen, sulphate, sulphide, iron II and III, manganese) to assess whether degradation of contaminants is occurring in the saturated sandstone.

Dissolved Oxygen (DO)

During the early stage of biodegradation of organic carbon, dissolved oxygen is the most favoured electron acceptor used by microbes and will be the first parameter to be used for the degradation processes (except for highly chlorinated species). Therefore, low concentrations of DO within and on the fringes of the plume and relatively high concentrations of DO around the plume would be expected. As illustrated in Drawing D1156/3623/A16, Annex 1, the DO concentrations measured in monitoring boreholes within the site boundary are generally lower than the concentrations measured away from the site throughout the monitoring period between January 2007 and March 2009. This has some similarity to the expected pattern indicating that natural attenuation is occurring.

Nitrate

After DO concentrations have fallen to a sufficient level, nitrate can be used as an electron acceptor for anaerobic biodegradation of organic carbon via denitrification. Therefore, low nitrate concentrations would be expected within the source zone and immediately down gradient of this zone. As illustrated in Drawing D1156/3623/A17, Annex 1, the nitrate concentrations distribution throughout the monitoring period has some similarity to the expected pattern therefore indicating that natural attenuation is occurring. It is important to note that the nitrate concentrations at the fringes of the plume have gradually increased since June 2008 which may suggest that the size of the dissolved phase plume is contracting.

Manganese

Insoluble manganese (IV) naturally present within the sandstone may be used as an electron acceptor for the biodegradation process. This process would convert the insoluble manganese IV to soluble manganese II, and therefore an increase of manganese II within the source zone and possibly immediately down gradient of the plume would be expected. Throughout the monitoring period between January 2007 and March 2009, elevated levels of manganese II were measured within and immediately down gradient of the plume area in all monitoring occasions, as illustrated in Drawing D1156/3623/A18, Annex 1. This followed an expected pattern for natural attenuation.

Iron II and III

Insoluble iron III within the sandstone may be used as an electron acceptor, similar to the above process. Iron III will be converted into soluble iron II, resulting in an increase in iron II within the source zone and possibly immediately down gradient of the plume. As illustrated in Drawing D1156/3623/A19, Annex 1, the distribution of iron II measured in groundwater across the site generally follows the natural attenuation pattern where elevated levels of iron II were detected in the vicinity of the plume area.

It should be noted that the concentrations of iron II measured in the groundwater samples recovered in June and December 2008 monitoring rounds were all below the laboratory limit of detection. This was likely due to analytical error. However, it is highly likely that the distribution of iron II for June and December 2008 follow the expected natural attenuation pattern.

Sulphate

After dissolved oxygen and nitrate have been depleted in the source zone, sulphate may be used as an electron acceptor for the anaerobic biodegradation process. This process will convert sulphate into sulphide, and therefore a low sulphate concentration within the source zone would be expected. The distribution of sulphate measured in groundwater on six occasions is shown on Drawing D1156/3623/A20, Annex 1. During the first five monitoring occasions, the sulphate concentrations measured within the vicinity of the plume area were generally lower than the concentrations detected in monitoring boreholes down gradient of the plume, and therefore shows some similarity to the expected natural attenuation pattern. However, the monitoring results from March 2008 to March 2009 do not follow the above pattern, where elevated concentrations of sulphate were detected in the plume area. This is probably because the concentration of nitrate (a more efficient electron acceptor than sulphate) gradually increased between January 2007 and March 2008 allowing sulphate concentrations to recover in the source zone. This illustrated on Drawing D1156/3623/A17, Annex 1, where the concentrations of nitrate measured in the remedial treatment area have generally increased between the monitoring period between March 2008 and March 2009.

Total Organic Carbon (TOC)

TOC concentrations within the groundwater in the source zone should be higher than the surrounding groundwater due to the presence of hydrocarbon mass and the liberation of this mass by microbial activities. The distribution of TOC concentrations measured in groundwater were similar in all monitoring occasions and fit the expected pattern for natural attenuation (Drawing D1234/3623/A21, Annex 1).

Chlorinated Solvents

Chlorinated solvents were the main contaminants identified during the site investigation works. The most highly chlorinated solvents (Tetrachloroethene 'PCE') will biodegrade under the dechlorination process. The PCE will break down to successively form trichloroethene (TCE), isomers of 1,2 dichloroethene (DCE), vinyl chloride (VC), and eventually ethane. Therefore, concentrations of TCE, DCE and VC measured in groundwater can also be used as indicative parameters for natural biodegradation processes. PCE was not detected in any of the groundwater samples collected and very low concentration of TCE (up to 0.003 mg/l) were measured in some of the monitoring boreholes. However, elevated levels of cis 1,2 DEC and VCs were detected within the contaminated zone prior to and during the remediation works. This indicates that biodegradation of the chlorinated solvent is taking place. It should be noted that the groundwater monitoring data shows that cis 1,2 DCE and VC attenuate very rapidly as they migrate from the source area where the concentrations measured in monitoring boreholes down gradient of the source area were predominately below the laboratory limit of detection of 0.001 mg/l. In addition, the concentrations of cis 1,2 DCE and VC in the source area have been reduced significantly as a result of the remediation works. The cis

1,2 DCE and VC concentrations have reduced from a peak of 8.9 mg/l and 1.5 mg/l to 0.012 mg/l and 0.024 mg/l respectively.

In summary, most of the MNA parameters measured between January 2007 and March 2009 showing strong evidence of degradation of organic hydrocarbons are occurring at the site.

7 CONCLUSIONS

7.1 Phase 1 Remedial Assessment Actions

The Phase 1 Remedial Assessment Actions were successfully completed in April 2007. The site works carried out during the Phase 1 works has enabled a more detailed site characterisation and the findings in relation to the identified data gaps are summarised below.

- **Underground Storage Tank** – Additional works have significantly reduced the uncertainties associated with the suspected UST and demonstrated that it is unlikely to be present at the site.
- **NAPL Thickness in Former Quarry** – Contradictory to expectations the quarry does not appear to be acting as a sump for LNAPL and the gravel fill appears to be free from a significant volume of LNAPL.
- **Delineation of NAPL Plume** – The LNAPL distribution drawings from previous investigations assumed that the LNAPL across the site exists as a single hydraulically-continuous lens of product floating on the aquifer. However, in view of the core evidence that NAPL occurs at a variety of levels within the sandstone and poor lateral connectivity through the sandstones across the site, it seems unrealistic to imagine that NAPL across the site exists as a single hydraulically-continuous lens.
- **Quantification of NAPL Mass** - The NAPL area, contaminated rock thicknesses and NAPL content within the porosity are not well constrained and as such calculations of mass range from a high estimate of 642 m³ to low estimate of 5 m³.

A simple probabilistic estimate of NAPL volumes shows an 80 % probability that the NAPL volumes will exceed 47.5 m³, a 50 % probability that NAPL volumes will exceed 85.15 m³ and a 5 % probability that they will exceed 264 m³.

- **Physical Characteristics of NAPL** – The chromatograms of the LNAPL samples analysed indicates hydrocarbons to be predominately in the C₁₀ to C₃₅ range, with a viscosity ranging from 13.17 to 86.64 Cst, The pour point for the NAPL samples varied from -36 °C to -42 °C and suggests that the NAPL is mobile under ambient temperature. The volatility of the NAPL is considered to be low with the volatile loss range from 0.9 % to 7.6 %.
- **Distribution of NAPL in the Unsaturated Zone** – The core samples shows that NAPL was present at several different levels within the sandstone, separated by water-bearing sandstone horizons. In general, it appears that the NAPL occurs preferentially in the higher permeability laminae and beds in the sandstone, though not all apparently high permeability laminae in NAPL-bearing cores show evidence of NAPL. The NAPL bearing thickness observed in the core samples ranged from 10% to 60% in the unsaturated zone. The calculated NAPL volume in the unsaturated zone ranged from 2.3 m³ to 289 m³.
- **Dissolved Phase Contaminant Conditions** – Data indicated the extent of the dissolved phase contaminant plume was relatively limited and showed that the

dissolved concentrations attenuate rapidly away from free phase NAPL. Key monitoring parameters for natural attenuation has demonstrated that biodegradation was likely to be occurring at the site but could not be confirmed due to limited monitoring data.

- **Understanding of Fracture Network** – Three main types of fracture were seen in outcrops approximately 1 km from the site. Type 1 is the twin fractures bounding a zone of fragmented sandstone typically 50mm to 100mm wide. Type 2: is a single steeply dipping fracture in a variety of orientations, mostly developed in response to geological compressive, strike-slip and extensional stresses. Type 3 is fractures that are approximately parallel to the land surface. These 3 types of fractures at outcrop are interpreted to be equivalent to the features seen in the deviated cores.

7.2 Phase 2 Remedial Treatment Actions

The in-situ remediation works carried out at the site were successful in achieving the remedial objectives and performance criteria, as set out in the strategy and outlined below:

- Asymptotic state was achieved for removal of hydrocarbons in the vapour phase after MPE treatment system was operated for 2,750 hours (26th January 2008). Up to 28th March 2008, a total mass of 1,145 kg of hydrocarbons have been removed in the vapour phase via the Direct Well Recovery and MPE treatment systems.
- Asymptotic state was achieved for removal of hydrocarbons in the free phase in early March 2008. Up to 28th March 2008, a mass of 233 kg of hydrocarbons has been removed in the free phase via the Direct Well Recovery and MPE treatment systems.
- The removal of hydrocarbons in the dissolved phase has remained stable. A mass of 21.7 kg of dissolved phase hydrocarbons has been removed via the Direct Well Recovery and MPE treatment systems.
- During the course of the remediation works, a total of 1,360.5 kg of hydrocarbon mass was recovered from site via the Direct Well Recovery and Multi-Phase Extraction treatment systems. Over 81% of the total mass was recovered as vapour phase, 17.2% was mobile NAPL and the remaining 1.6% was dissolved phase hydrocarbon.
- Over the duration of the remediation works, LNAPL thicknesses have decreased from a peak of 2.2 m to a peak of 0.025 m.
- The hydrocarbon vapour concentrations recorded in all of the treatment wells have reduced significantly throughout the remediation works. The initial and final hydrocarbon vapour recovery rates for each individual treatment well were ranged from 0.11 kg/hr to 18.68 kg/hr and 0.001 kg/hr to 0.037 kg/hr, respectively. This represents an 88.6 to 99.89% reduction in vapour mass recovery rate.

- The average vapour mass recovery rate by the MPE treatment was reduced from 28.2 kg/day to 0.4 kg/day, which represents a 98.6% reduction in the vapour mass recovery rate.
- Rebound monitoring was carried out on three occasions to assess the rebound potential for NAPL and hydrocarbon vapour after the treatment system was shut down for a prolonged period of time. The final rebound monitoring results showed that the accumulation of LNAPL in all of the treatment wells was minimal, and the vapour concentrations in all of the treatment wells were stable and extremely low in comparison with the baseline concentrations recorded.
- Based on the mass recovery data recorded during the final operational week of the MPE treatment system, the estimated total mass recovery rate was approximately 0.66 kg/ day. Assuming this recovery rate is constant, it would take approximately 412 days to recover 20% of the total hydrocarbon mass recovered to date (272 kg). Therefore, continual operation of the treatment system will recover minimal mass in comparison with the hydrocarbon mass recovered to date and the treatment system was consequently switched off.
- Groundwater samples were collected from twelve to thirteen monitoring boreholes on six occasions between January 2007 and March 2008. Elevated concentrations of contaminant were predominately measured within and around the treatment area. However, the majority of the contaminant concentrations were reduced significantly as a result of the remediation works.
- Natural attenuation parameters were also monitored between January 2007 and March 2008. Most of the measured parameters indicate biodegradation of organic hydrocarbons is occurring at the site.

7.3 Phase 3 Remedial Monitoring Actions

The Phase 3 Remedial Monitoring Actions were successfully completed in March 2009 and are summarised below:

- Groundwater samples were collected on a quarterly basis from thirteen monitoring boreholes between March 2008 and March 2009 (five occasions). The recovered groundwater samples were analysed at a UKAS accredited laboratory for a range of determinants.
- The in-situ monitoring results show that groundwater was within the Sherwood Sandstone standing at 30.58 to 35.54 mAOD. The groundwater elevation contour plots show that the groundwater generally flows in a westerly direction.
- The chemical analysis results show that the contaminant concentrations have decreased significantly as a result of the remediation works and have remained relatively stable throughout post works monitoring period.
- Natural attenuation parameters were also monitored between January 2007 and March 2009. Most of the measured parameters indicate biodegradation of organic hydrocarbons is occurring at the site.

8 REFERENCE

Detailed Design for Remediation Assessment Actions. CELTIC Technologies Ltd, Report No. R1114/06/3014, November 2006.

Remedial Assessment Action. CELTIC Technologies Ltd, Report No. R1114/07/3044, April 2007.

Detailed Design for Remedial Treatment Actions. CELTIC Technologies Ltd, Report No. R1114/07/3076, July 2007.

Interim Validation Report. CELTIC Technologies Ltd, Report No. R1156/07/3182, December 2007.

MPE Treatment System Commissioning Report. CELTIC Technologies Ltd, Report No. R1156/07/3275, December 2007.

Remedial Validation Report. CELTIC Technologies Ltd, Report No. R1156/08/3304, May 2008.

Phase 3 Remedial Monitoring Actions Report. CELTIC Technologies Ltd, Report No. R1156/09/3617, March 2009

APPENDICES

ANNEX 1

DRAWINGS



Legend

- Site Location
- Former Quarry
- Site Boundary

Site Address:
Scholars Court,
Cross Street,
Neston,
Cheshire,
CH64 3UU

Drawing Status

FINAL

REV



CELTIC
Environmental Remediation
Consultants

Company Name: Celtic Environmental Remediation Consultants Ltd
Company Address: Celtic Lane, Neston, Cheshire, CH64 3UU
Company Telephone: 0151 251 2511
Company Fax: 0151 251 2512
Company Email: info@celticremediation.co.uk

Client: Environment Agency Wales

Project: Scholars Court, Neston

Title: Site Location Plan

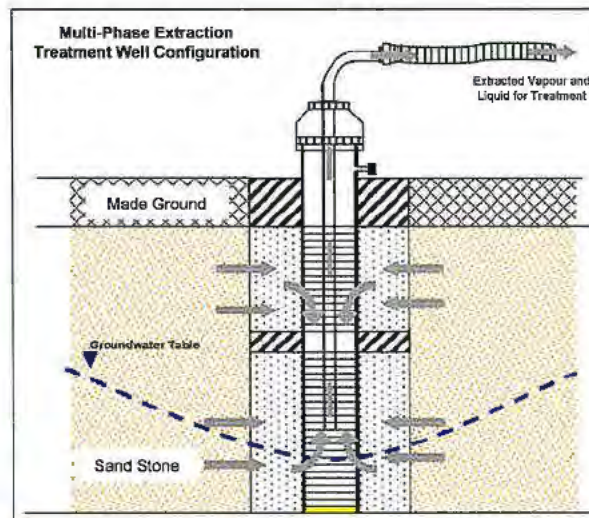
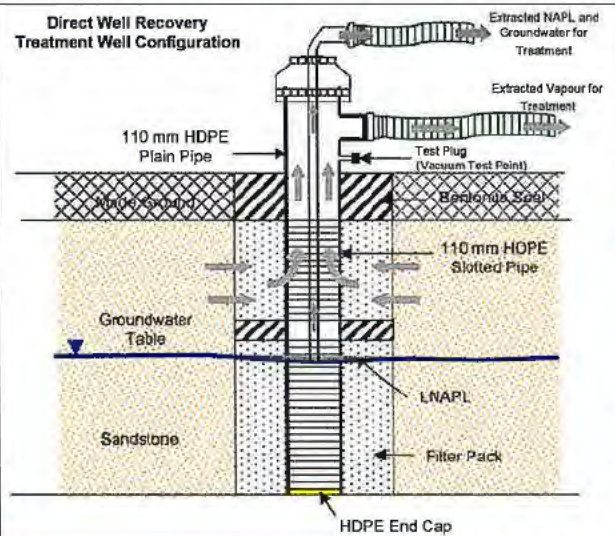
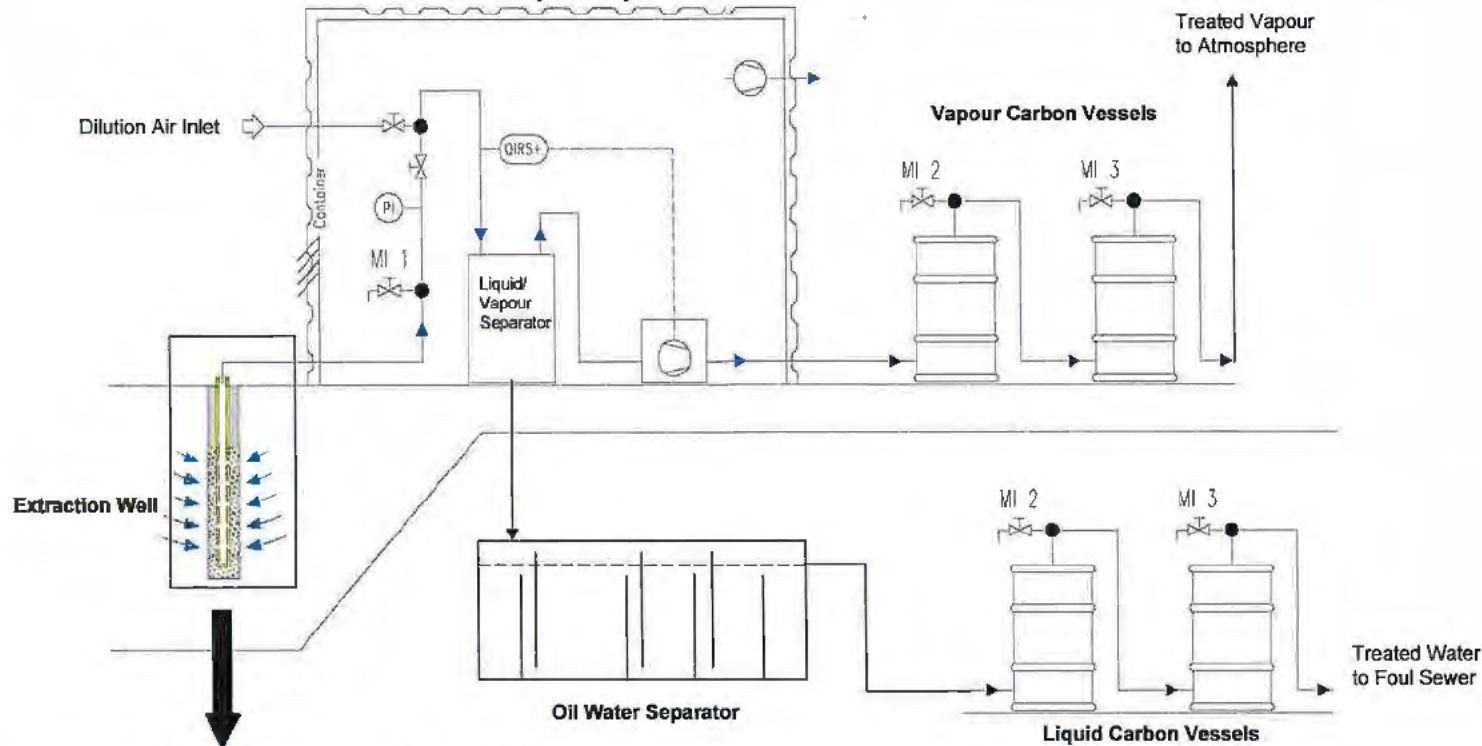
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Original Scale: 1:1000 Date: 14/02/2009 Rev: 01 Page: 01

Drawing Number: D1156/3623/A1



Soil Vapour Extraction and Multi-Phase Extraction System Layout



Legend

Drawing Status

FINAL



Environment Agency

Project

Scholars Court, Neston

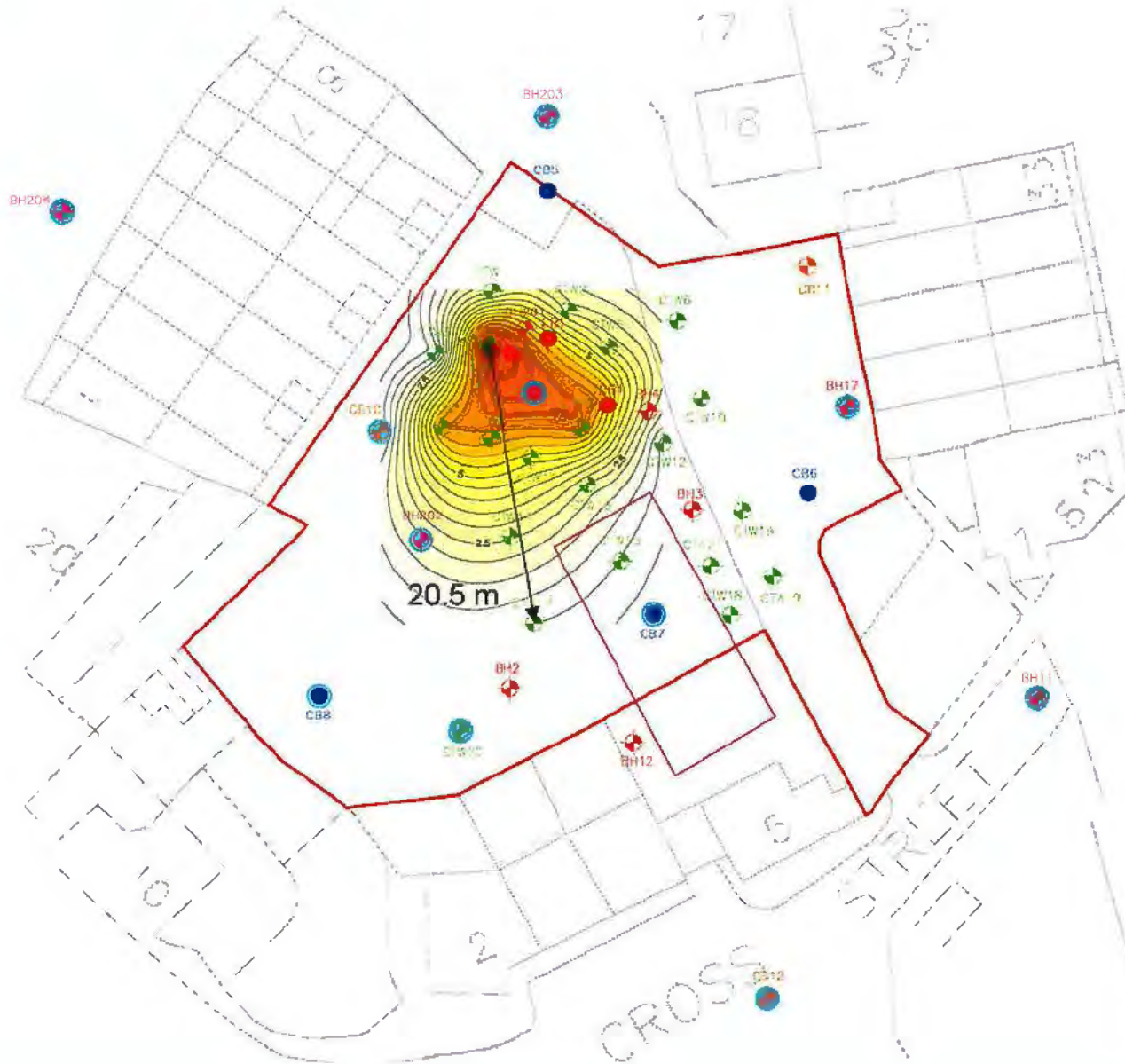
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Schematic Layout of
SVE/MPE Treatment
System

Drawn by	LP	Checked by	DA	Authorised by	DA
Output Scale	NTS	Date	April 08	Rev	Page A3

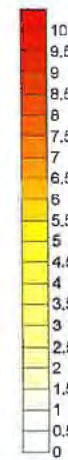
Drawing Number

D1156/3623/A4



06/09/07
Treatment Well CTW4

Zone of Influence
(mbar)



Final Status
FINAL

CELTIC
Environmental Engineering
Limited
Village Way
Castell
CP13 7NR
01929 816 816
01929 219777

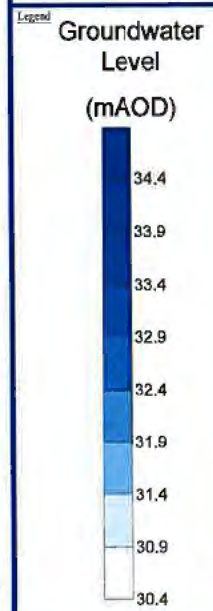
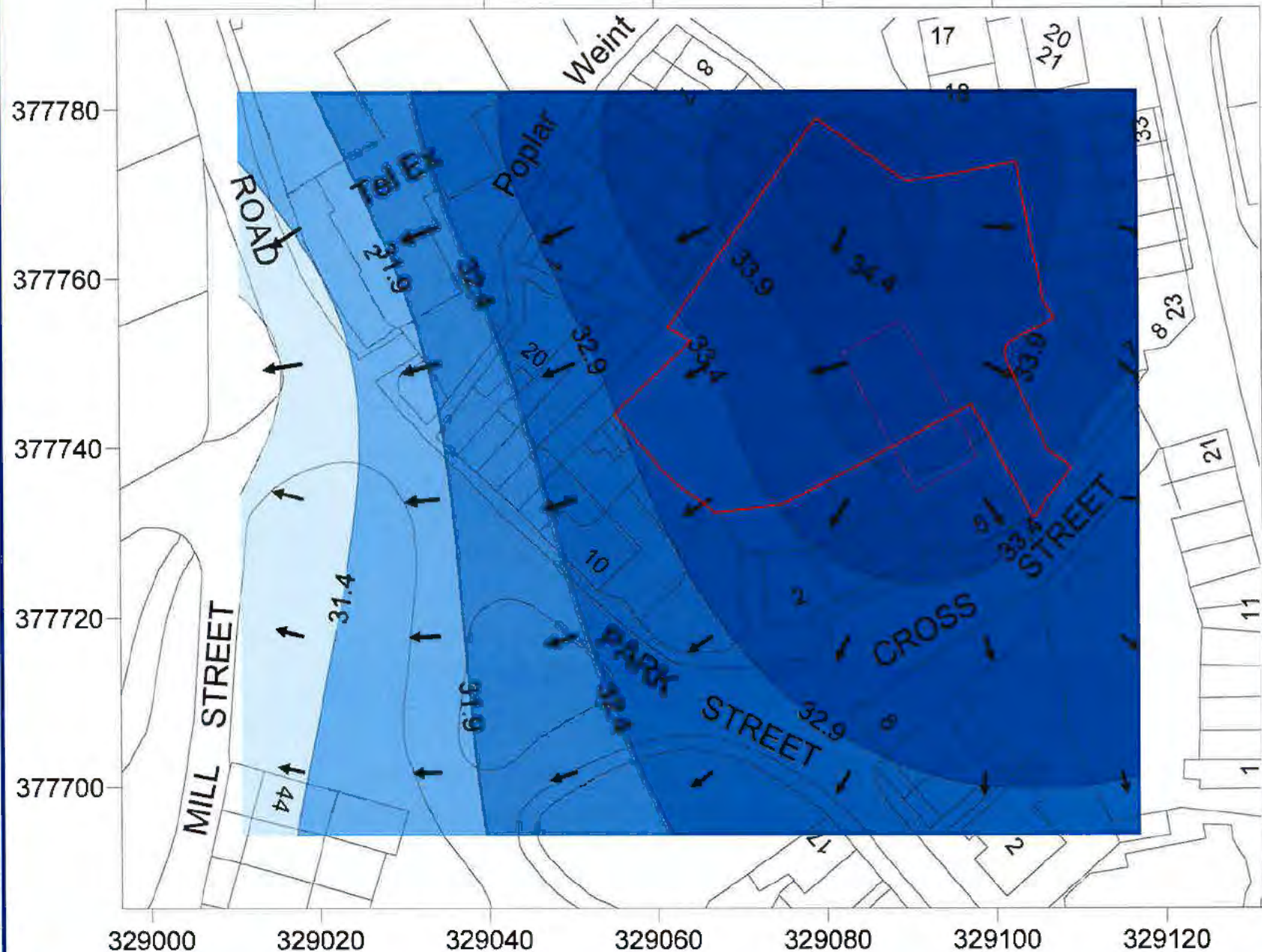
Company Name: Celtic Environmental Engineering Limited
Company Address: Village Way, Castell, CP13 7NR
Company Phone: 01929 816 816
Company Fax: 01929 219777
Company Website: www.celtic-engineering.co.uk

Client:
Environment Agency

Project:
Scholars Court, Neston

Title:
**Treatment Well CTW4
Zone of Influence Test**

Drawn by	LP	Checked	RLS	Approved	RLS
Original Issue	NTS	Date	Sept 07	Rev	Page A4
Drawing Number	D1156/3623/A5				



Drawing Status: **FINAL**

--	--

CELTIC
Environmental Consultants Ltd

Celtic House
 Village Way
 Cardiff
 CF10 2NR
 01495 701515

Celtic House
 One Lane Road
 Newton Le Willows
 WA12 9JY
 01924 211711

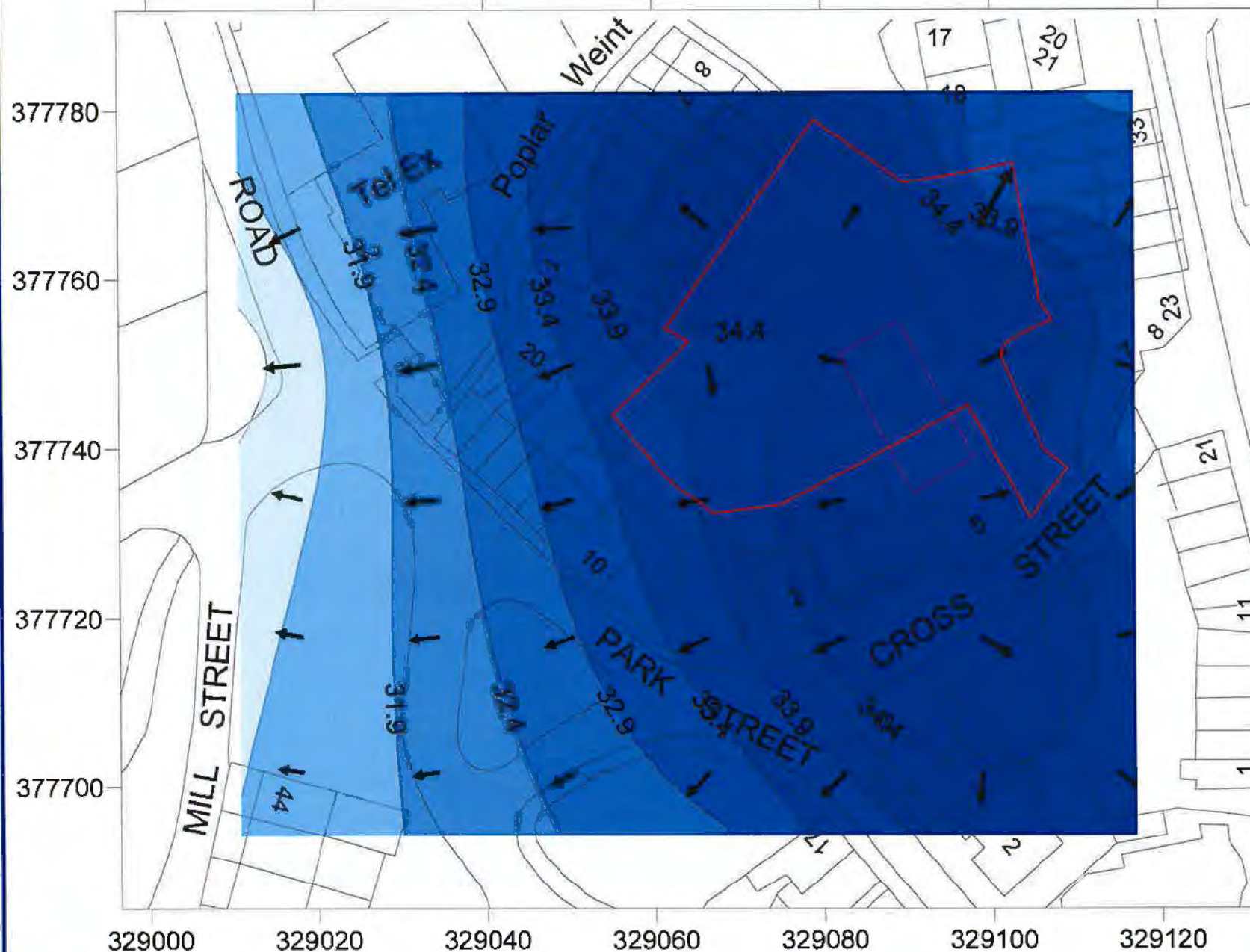
www.celtic2hd.com
 Celtic Ltd
 01924 211711

Client: **Environment Agency**

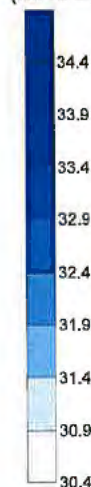
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Drawn By: LP	Checked: Dier	Authorised: Dier
Original Scale: NTS	Date: April 08	Rev: 00
Drawing Number: D1156/3623/A6		



Legend
Groundwater
Level
(mAOD)



Drawing Status
FINAL

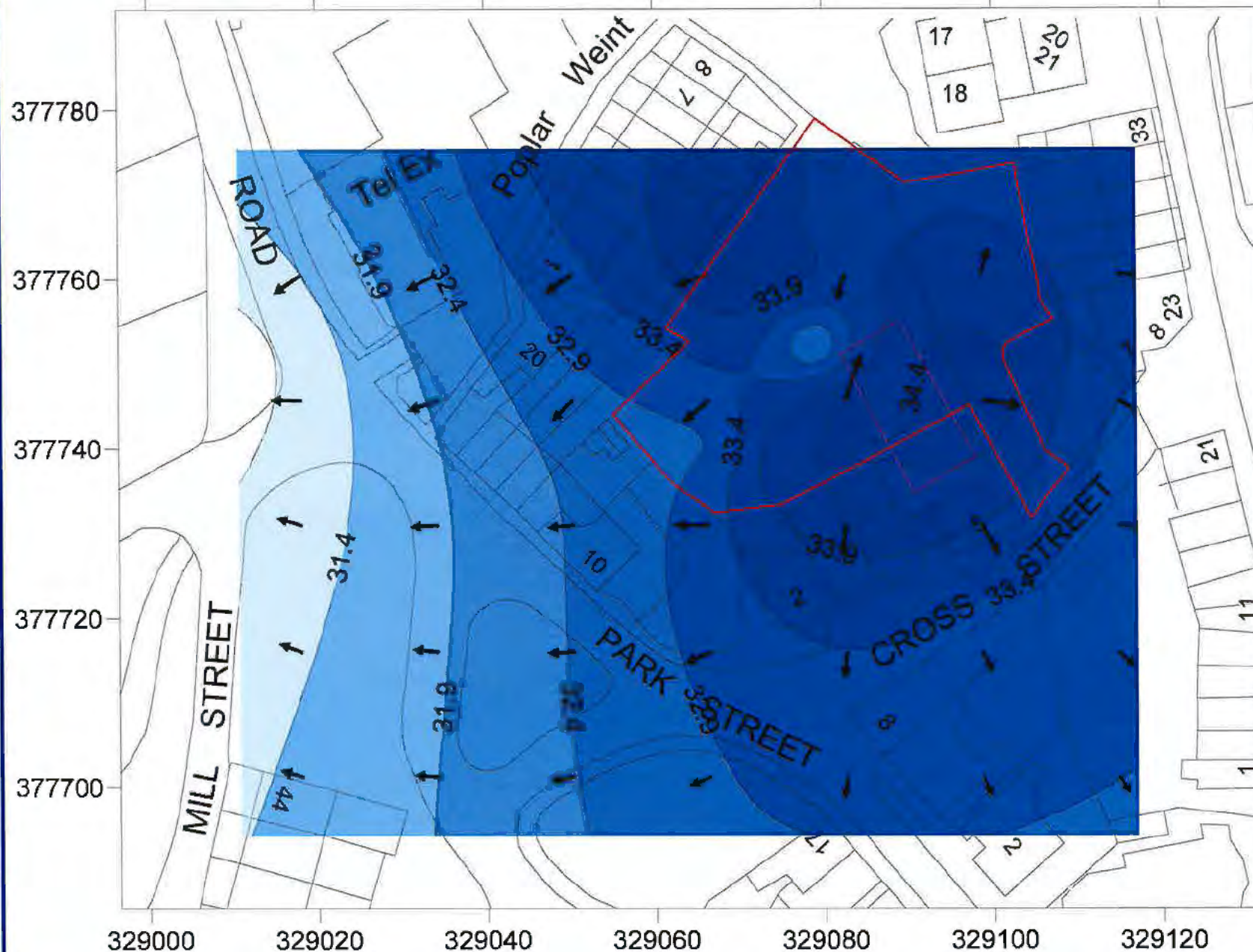


Client:
Environment Agency

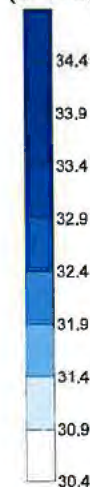
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Scholars Court, Neston

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(26/06/07)**

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Drawing Number	D1156/3623/A7				



Legend
Groundwater Level
(mAOD)



Drawing Status
FINAL

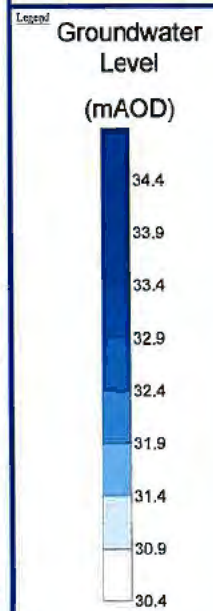
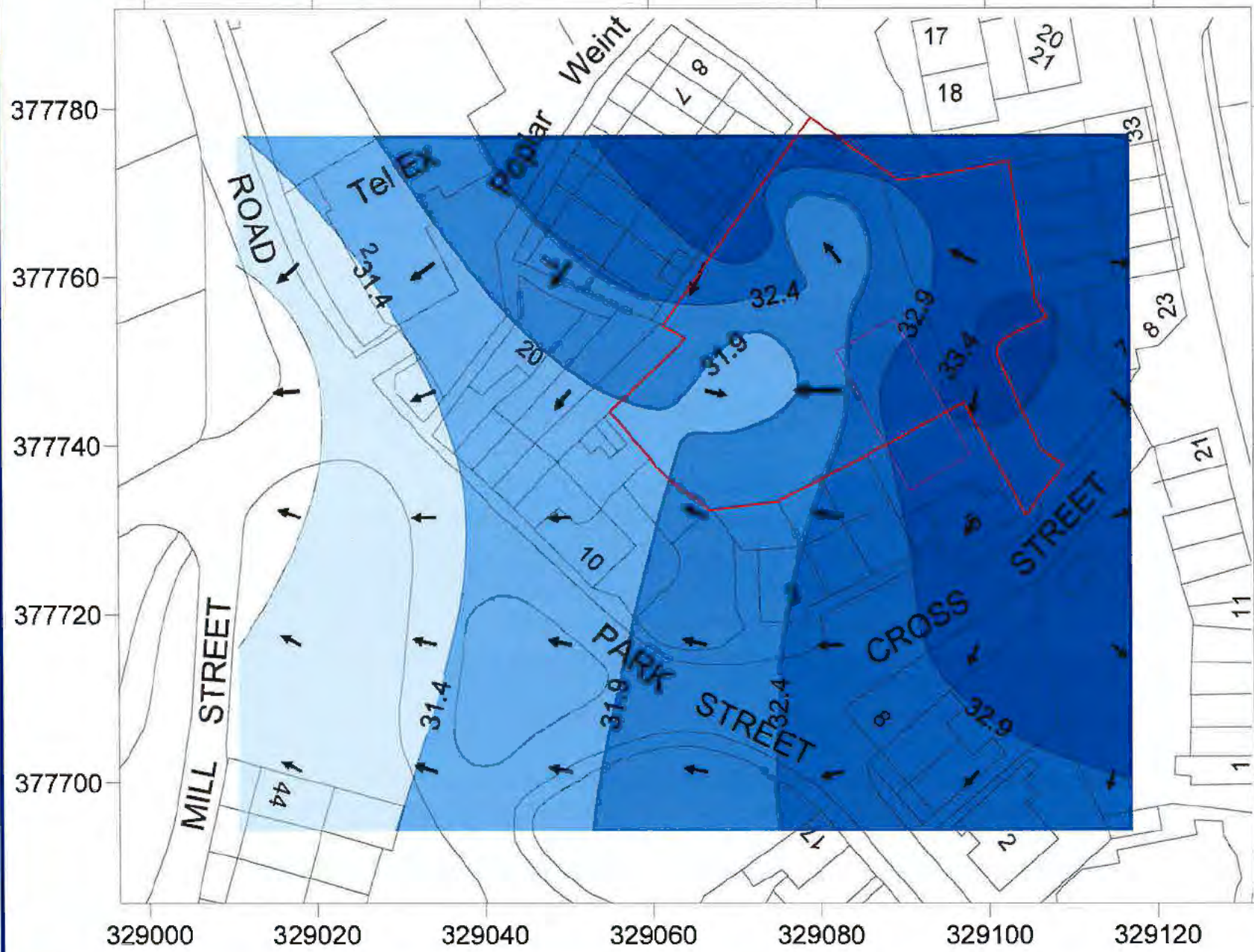


Client
Environment Agency

Project
Scholars Court, Neston

Title
**Groundwater Level
(31/08/2007)**

Drawn by	LP	Checked	DA	Authorised	DA
Contract	NTS	Day	April 08	Rev	Page A4
Drawing Number	D1156/3623/A8				



Drawing Status

FINAL

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CELTIC
Correspondence Development

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Village Way
Crest
CE11 2NF
01594 510100

CELTIC Ltd
Crest Lane
Widley
Widley
01594 510100

www.celtic.co.uk

Client

Environment Agency

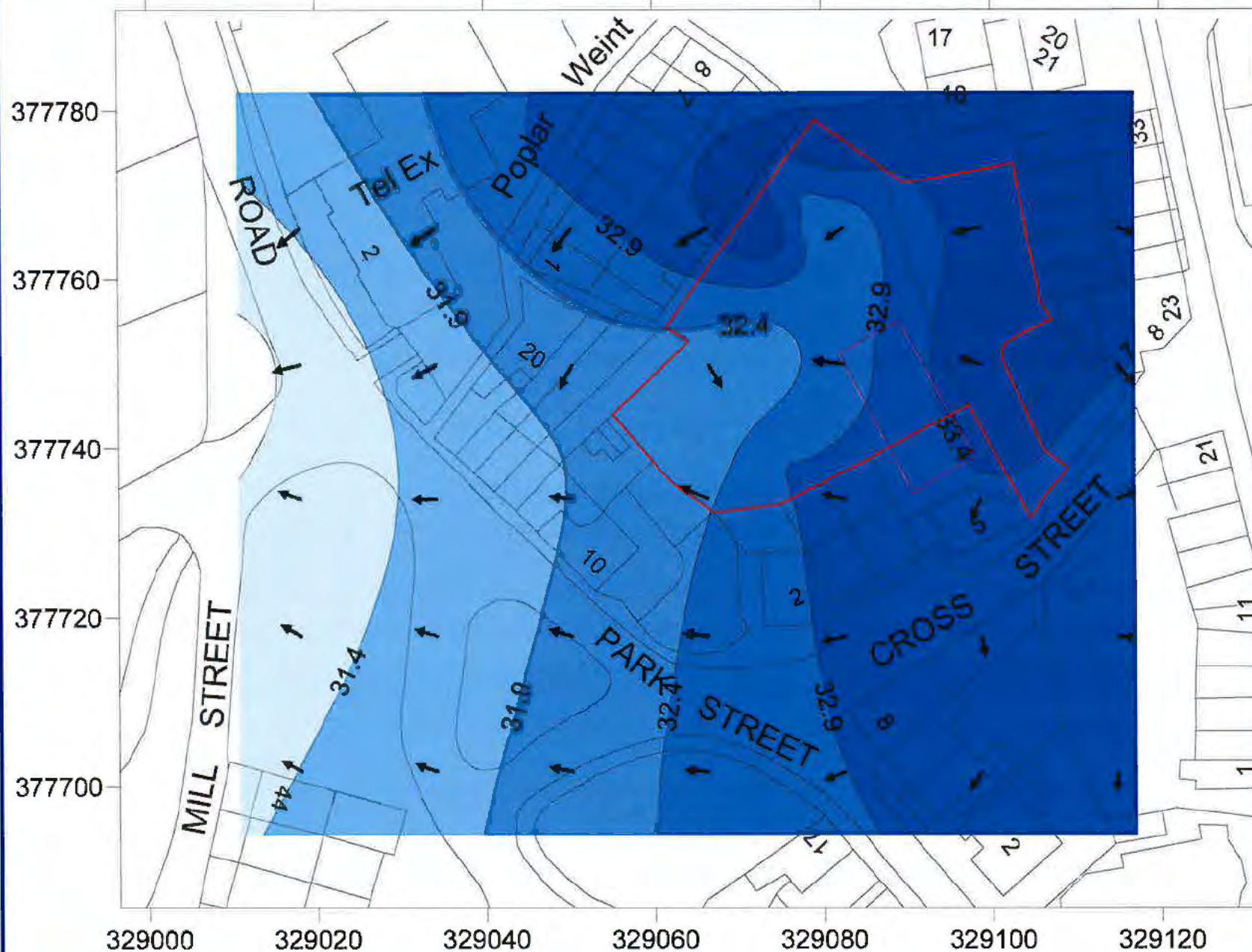
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Scholars Court, Neston

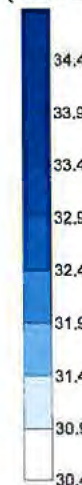
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Original Date	11/11/07	Date	April 08	Rev	Page A4
Drawing Number	D1156/3623/A9				



Legend
Groundwater
Level
(m(AOD))



Drawing Status

FINAL



Client

Environment Agency

Project

Scholars Court, Neston

Title

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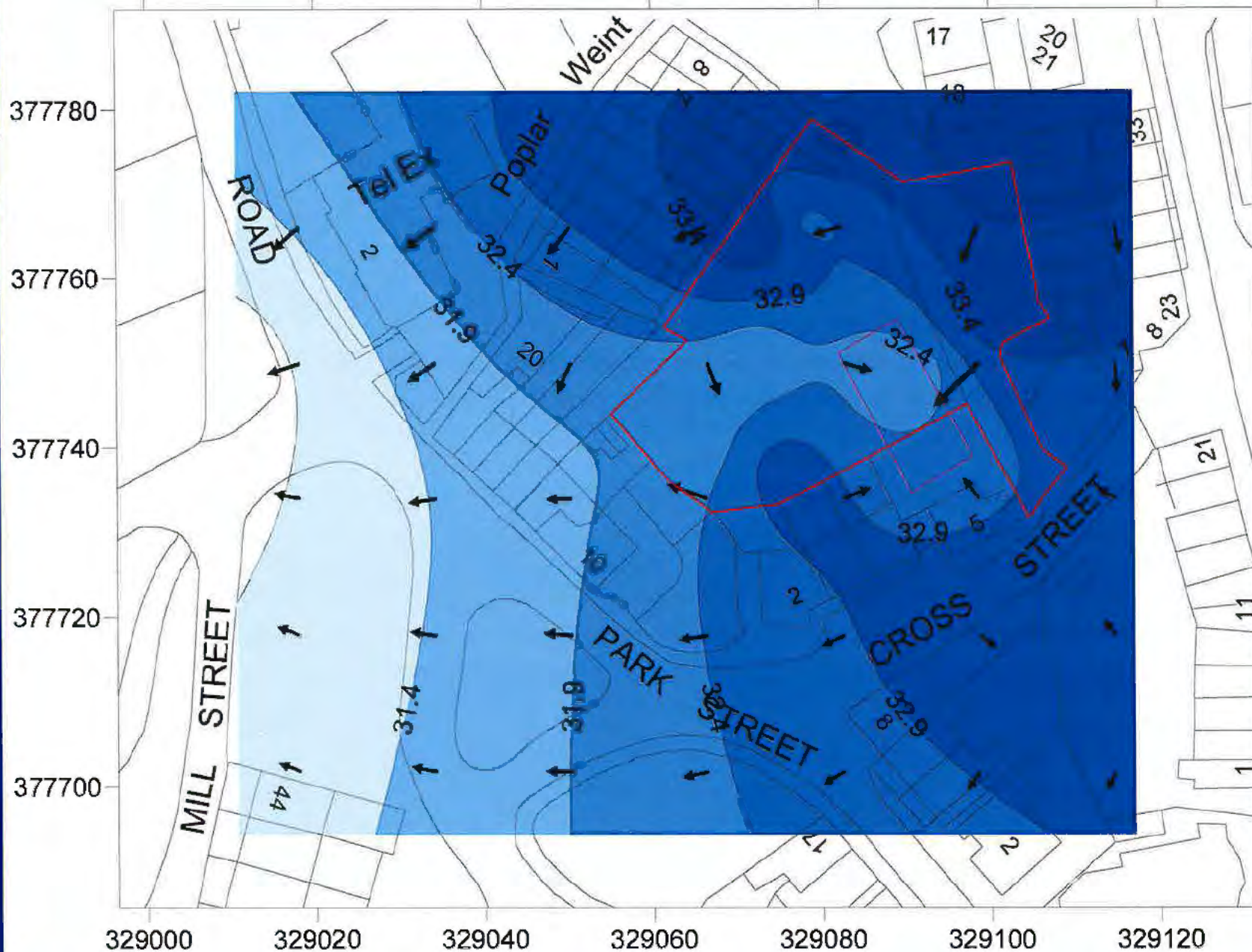
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Date: April 08

Sheet: A4

Drawing Number

D1156/3623/A10



Legend
Groundwater
Level
(mAOD)



Drawing Status

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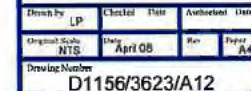
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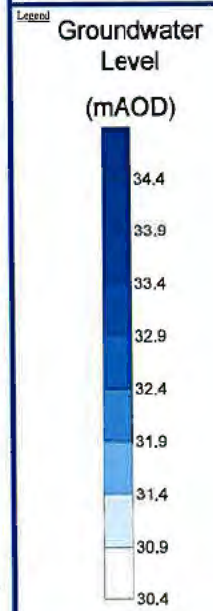
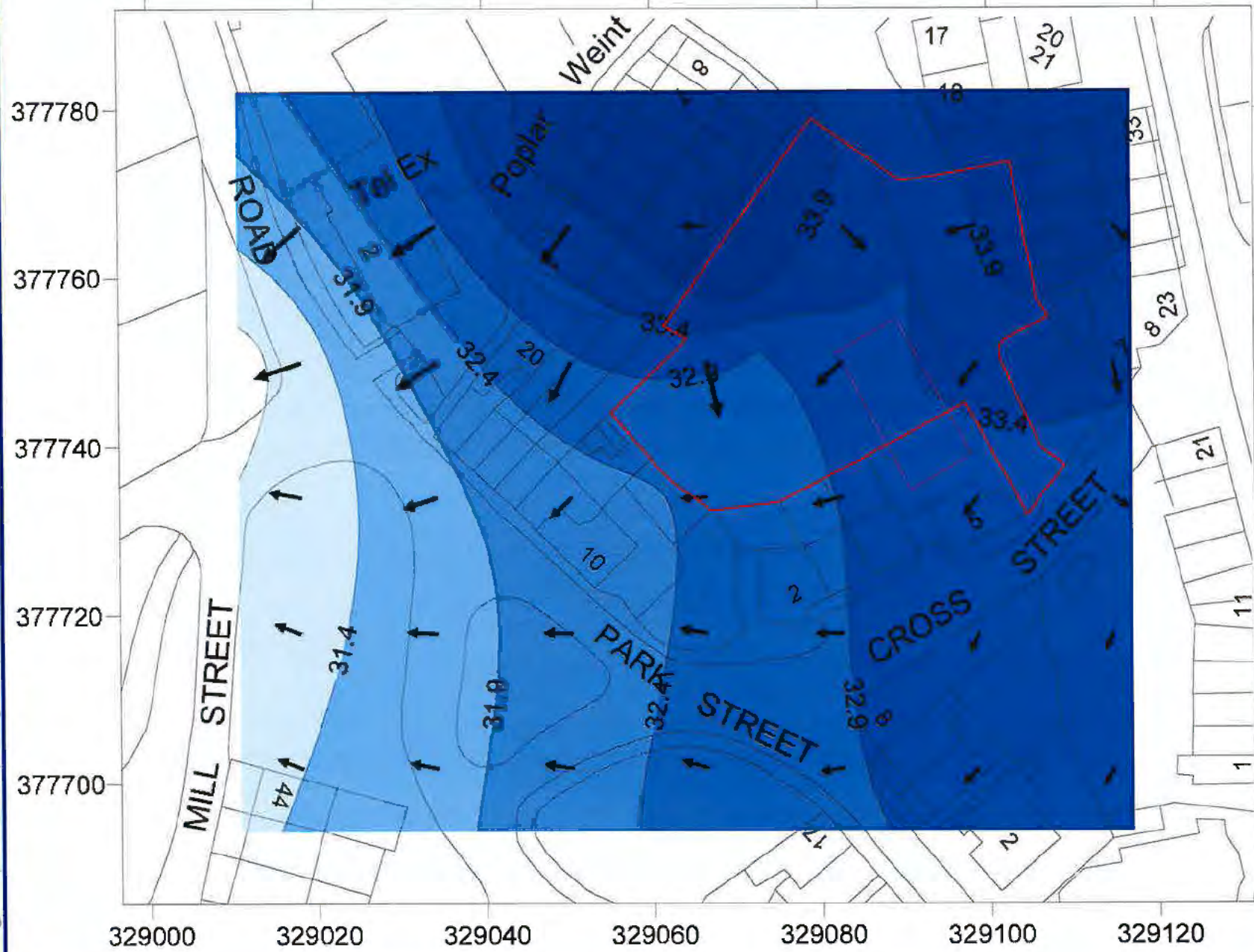
Project
Scholars Court, Neston

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Original Scale	NTS	Date	Apr 08	Rev	First A4

Drawing Number
D1156/3623/A11





Drawing Status

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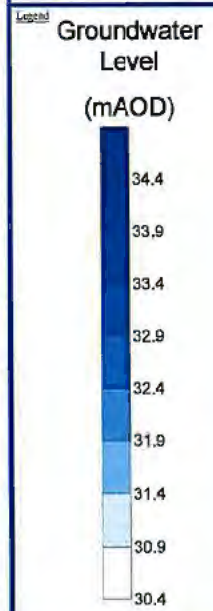
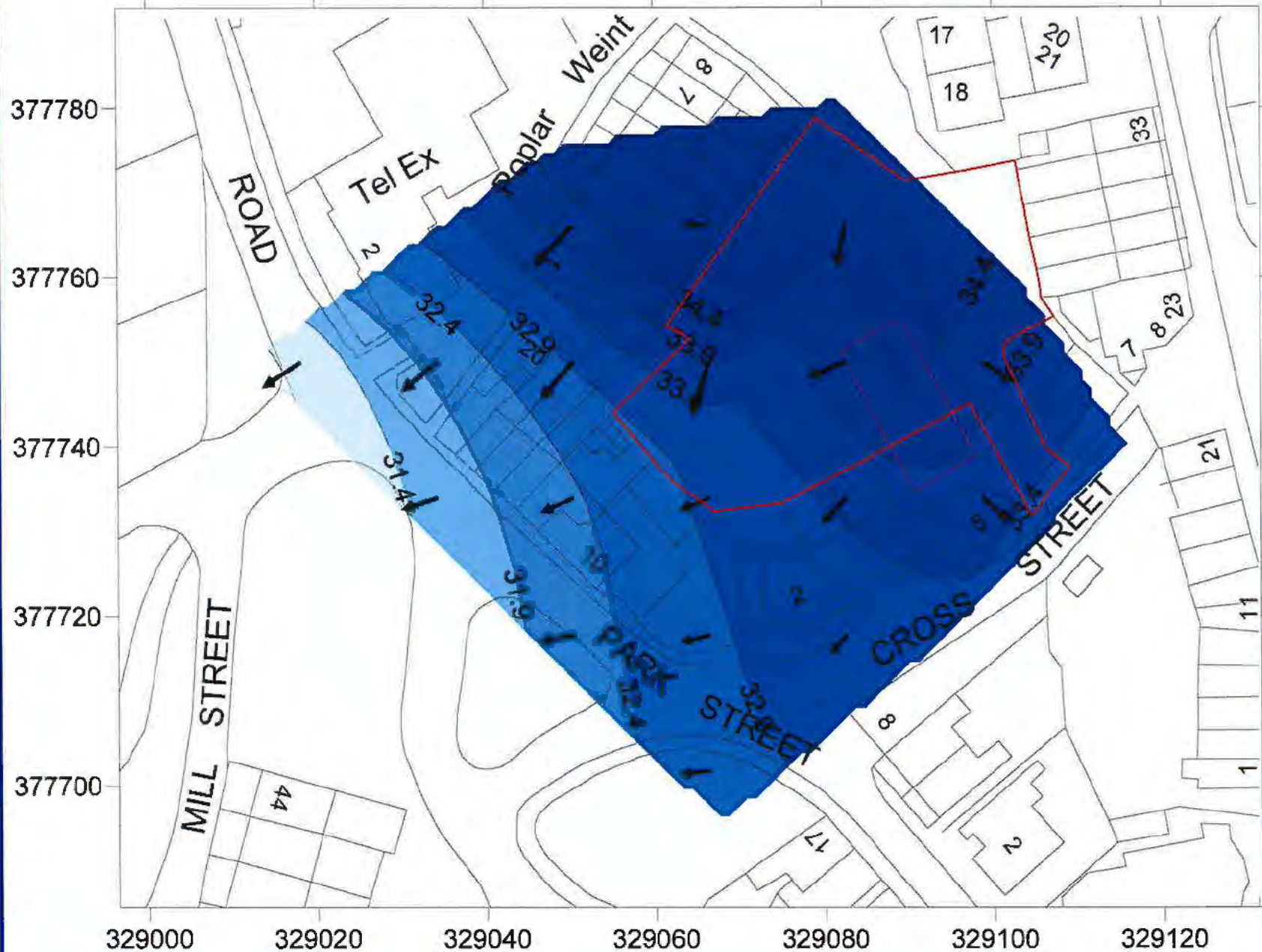
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CELTIC
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 CP3 7NR
 0206 844 8440
 0800 770744

Celtic East
 Chris Lewis
 01509 511111
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Client			
Environment Agency			
Project			
Scholars Court, Neston			
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LP			
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D1156/3623/A13			



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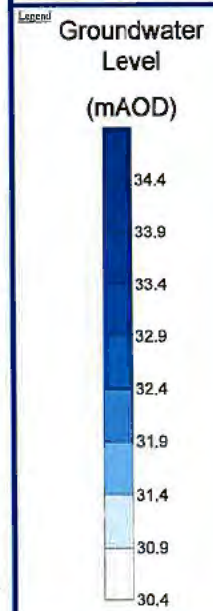
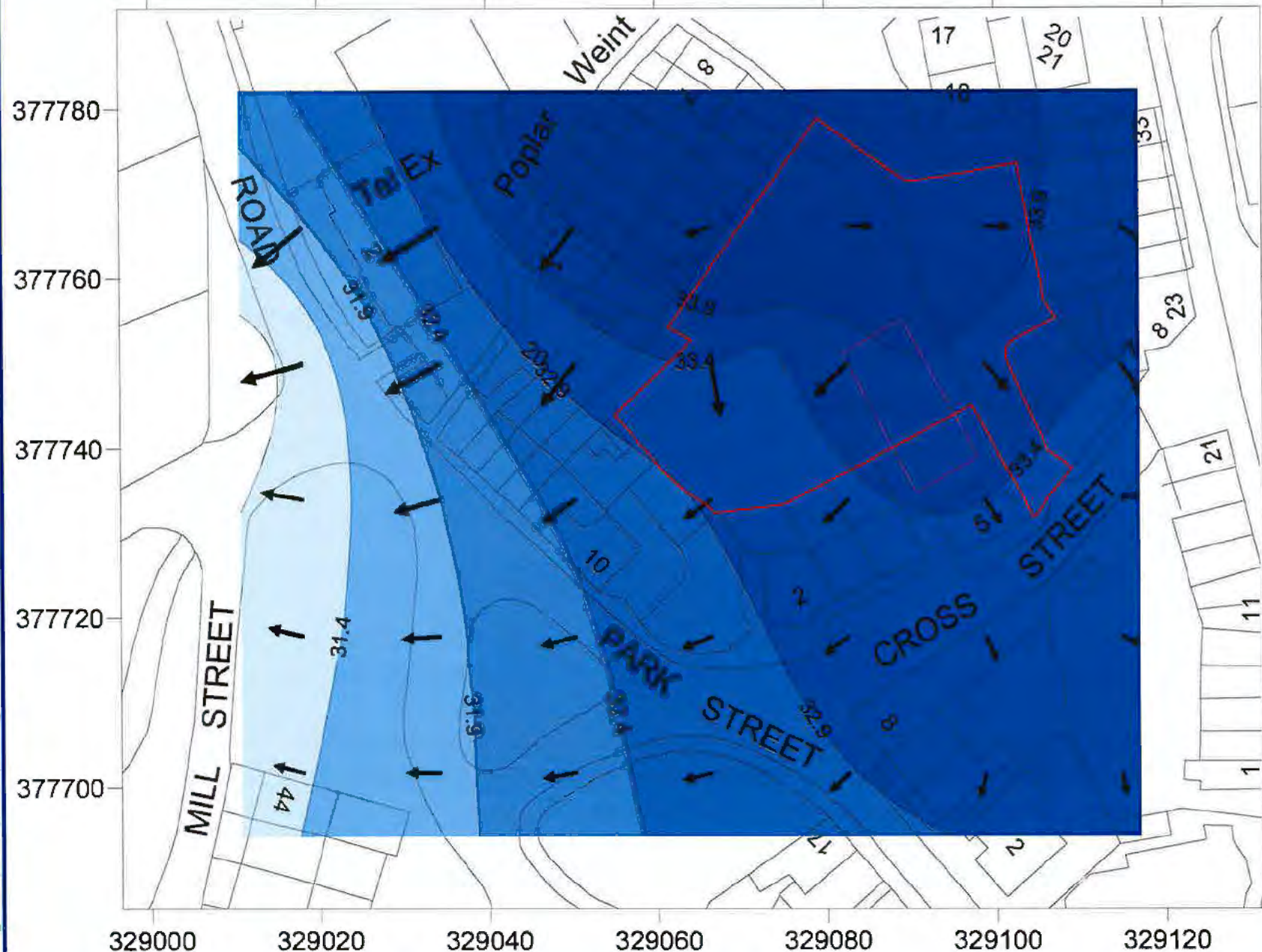
CELTIC
Engineering & Construction

Colchester Office
Valley Way
Chelmsford
CP1 2NR
01206 884444

Colchester Office
Cross Lane East
Newport 10, Wiltshire
WAL2 8JY
01294 123456

www.celtic.co.uk

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Project	Scholars Court, Neston			
Title	Groundwater Level (10/12/2008)			
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Original Scale	NTS	Proj	April 08	Rev
Drawing Number	D1156/3623/A14			



Drawing Status

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CELTIC
Environmental Services Ltd

Company Name: Celtic Environmental Services Ltd
Company Address: Celtic Environmental Services Ltd, 100, The Old Mill, Mill Lane, Neston, Merseyside, L35 9TF
Company Phone: 0151 251 1111
Company Email: info@celticenv.co.uk
Company Website: www.celticenv.co.uk

Client: **Environment Agency**

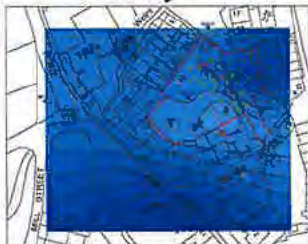
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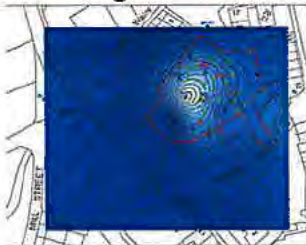
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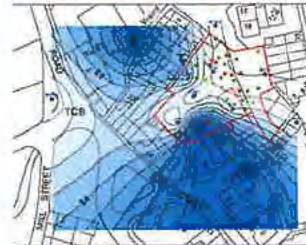
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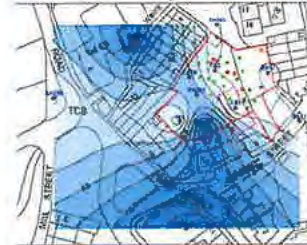
August 2007



November 2007



January 2008



March 2008



June 2008



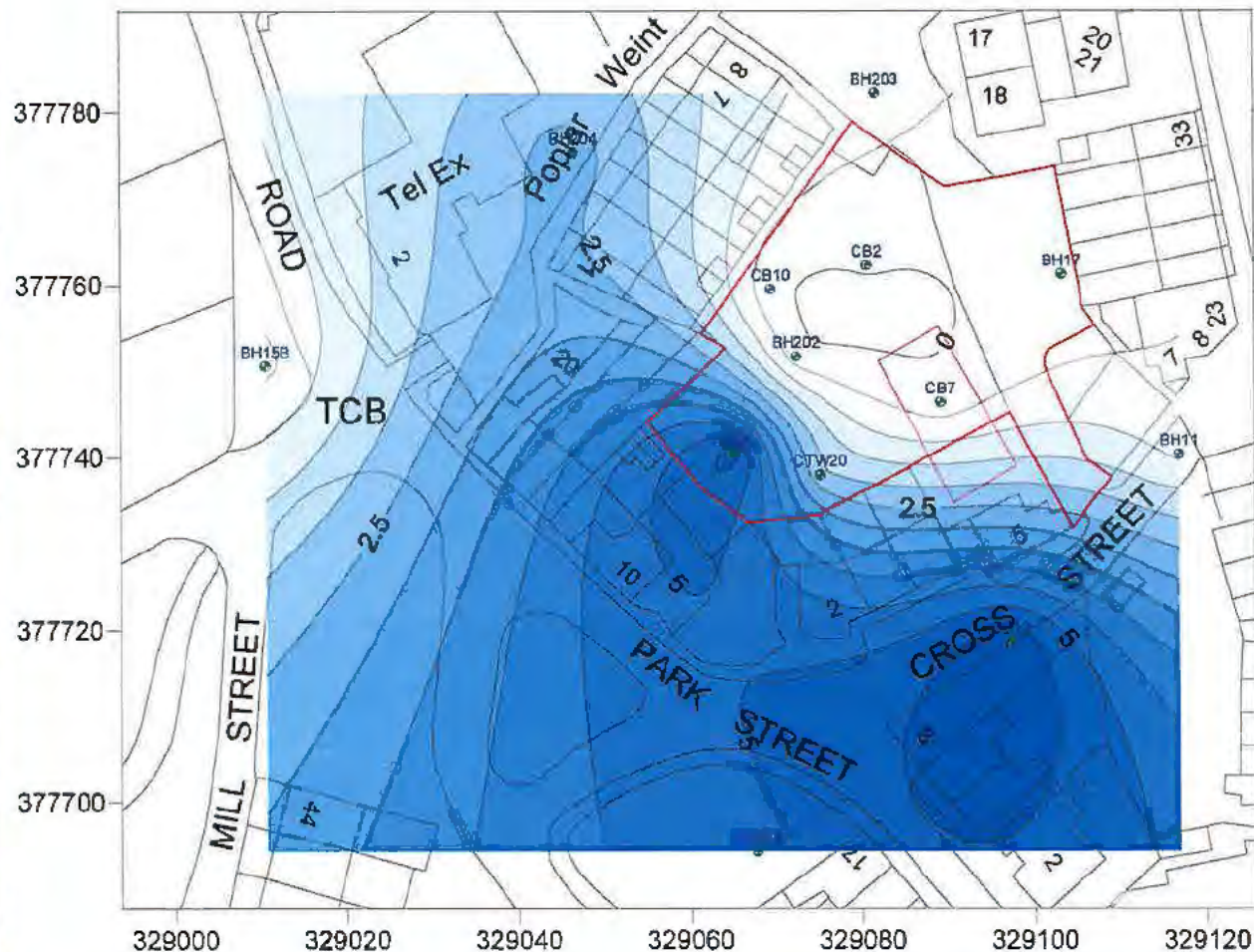
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December 2008

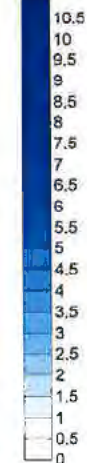


March 2009



Legend
Dissolved Oxygen
Concentration

(mg/l)



(Noting 5110)

FINAL



Environment Agency

Scholars Court, Neston

Title
Distribution of Dissolved
Oxygen in Groundwater

Drawn by: J.P. Checked: MJC Authored: MJC
Original Scale: WGS Date: April 09 Rev: Page: A3
Drawing Number: D1156/3623/A16

January 2007



June 2007



August 2007



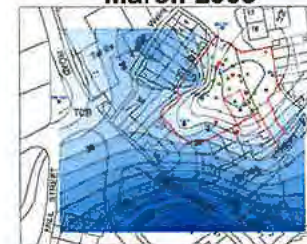
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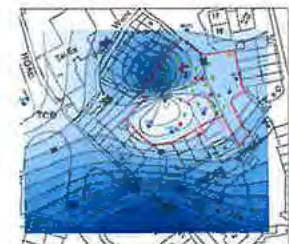
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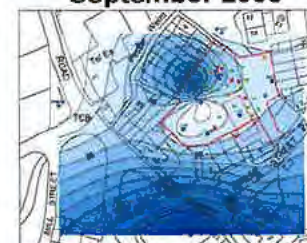
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June 2008



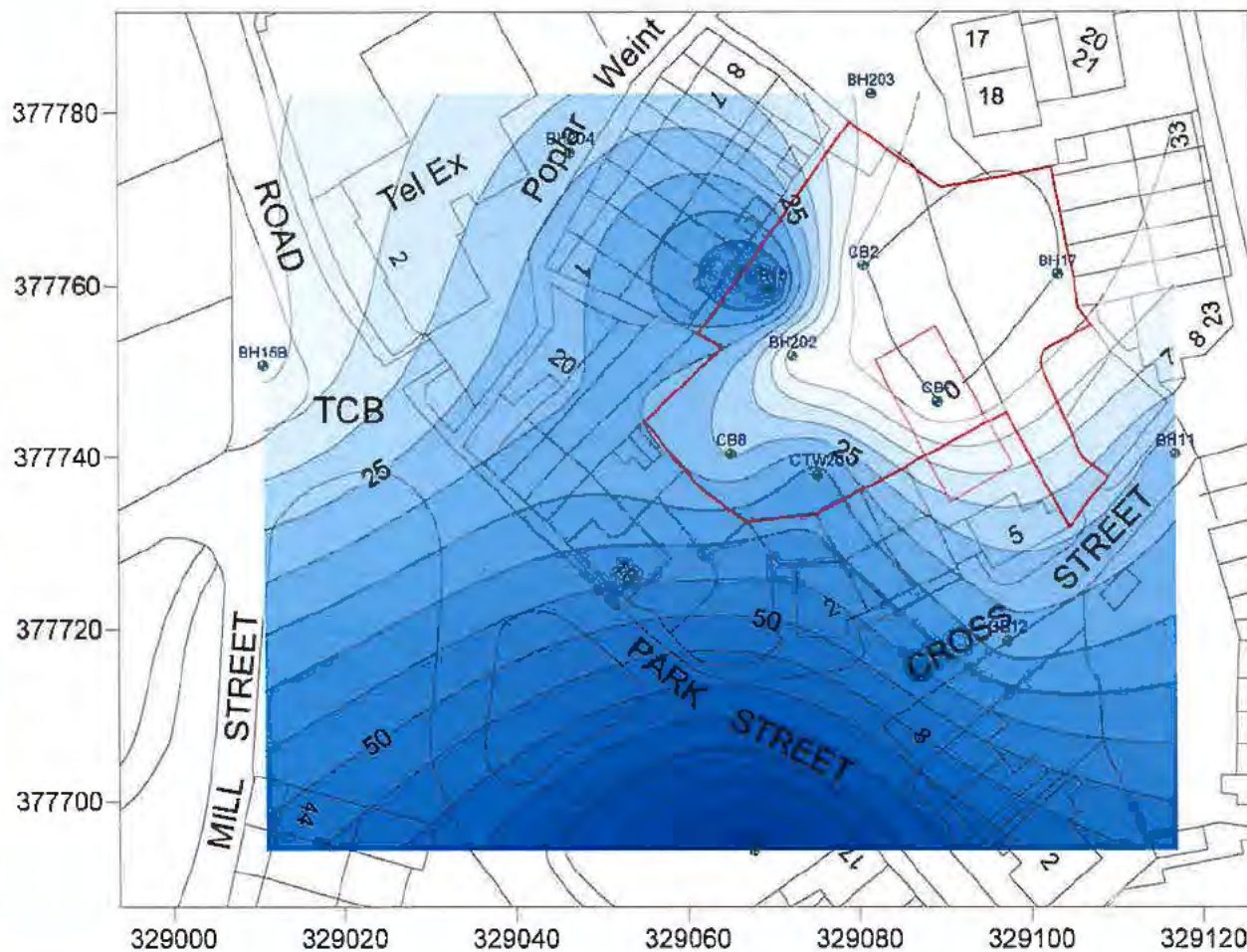
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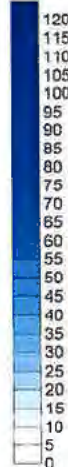
March 2009



Legend

Nitrate
Concentration

(mg/l)



Drawing State

FINAL



CELTIC

Company Name: Celtic Environmental Services Ltd
Village Way, Cross Lane East, Newton le Willows, W.A.12 9PP
Tel: 01925 611111
Fax: 01925 611112
Email: info@celtic.co.uk
Website: www.celtic.co.uk

C Client

Environment Agency

Project

Scholars Court, Neston

Title

Distribution of Nitrate in
Groundwater

Drawn by

LP

Checked

Date

Assembled

Date

Original Scale

NTS

Date

April 09

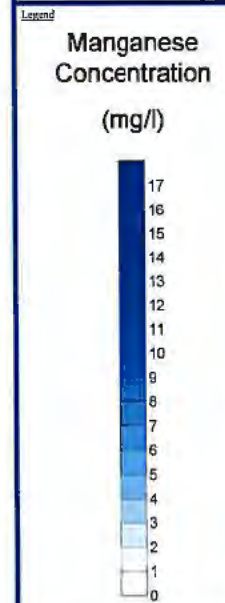
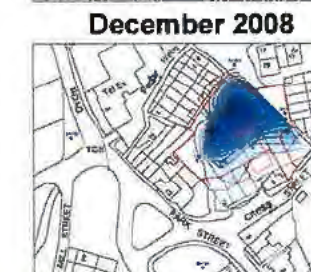
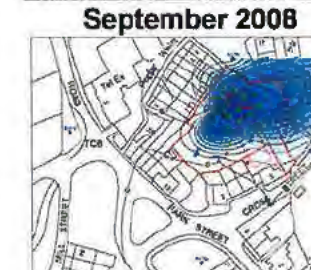
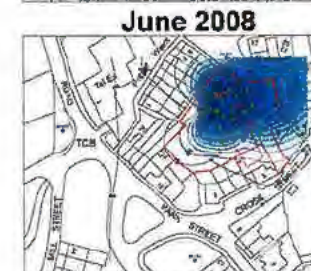
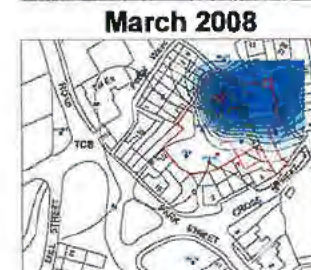
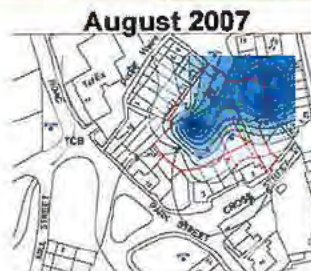
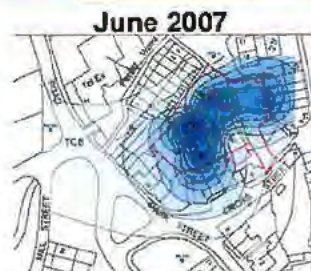
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Page

A1

Drawing Number

D1156/3623/A17

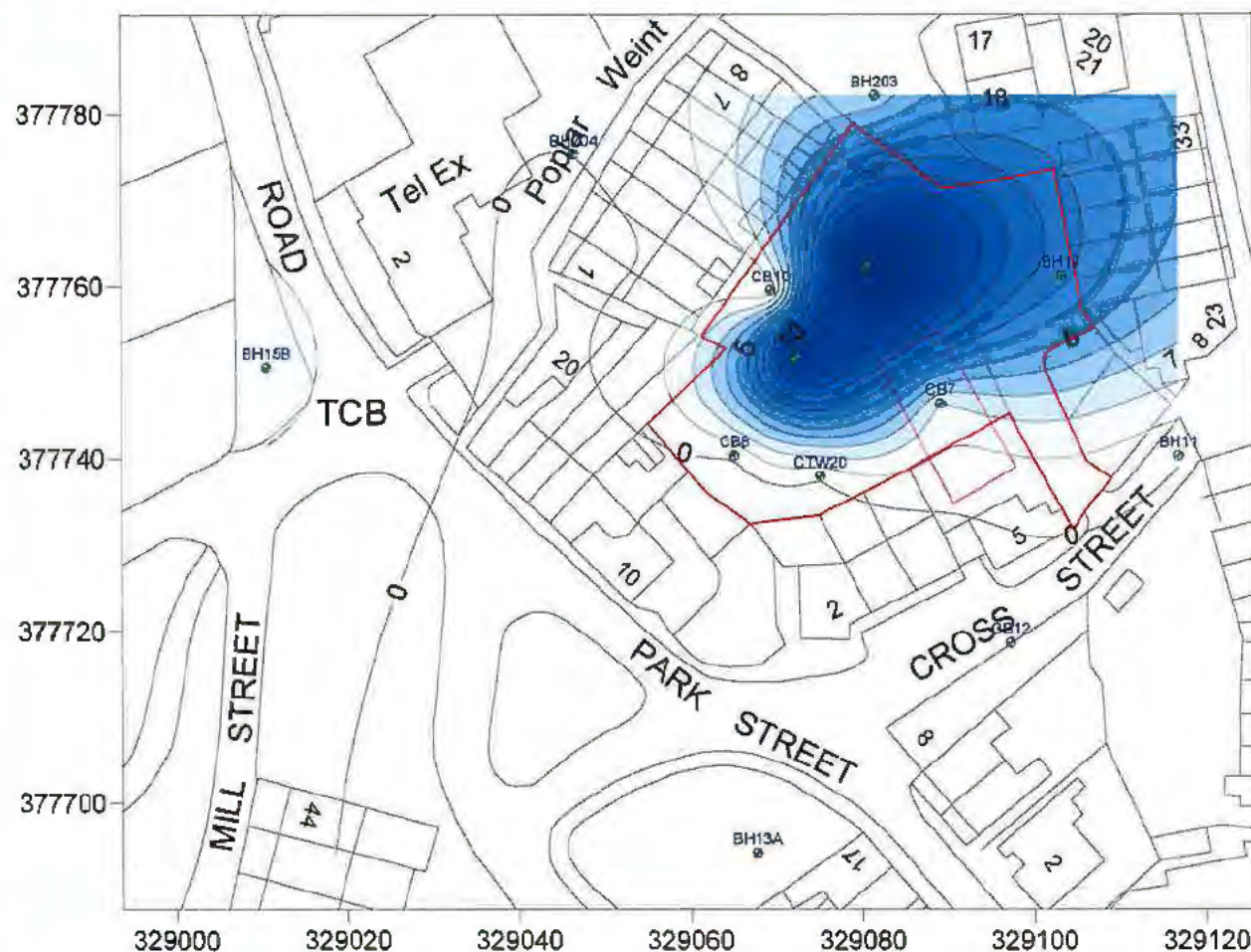


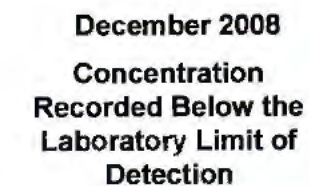
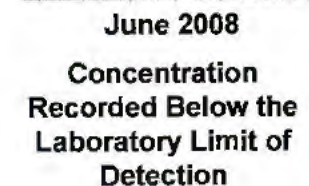
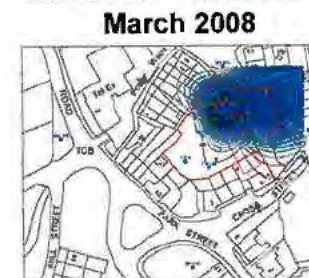
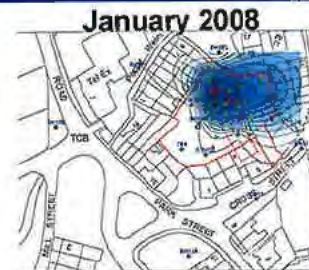
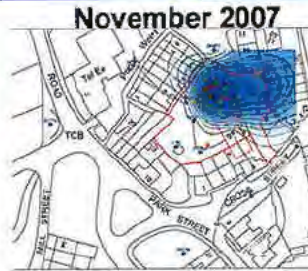
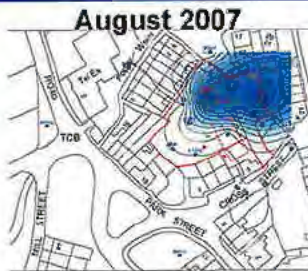
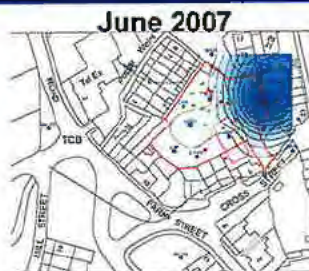
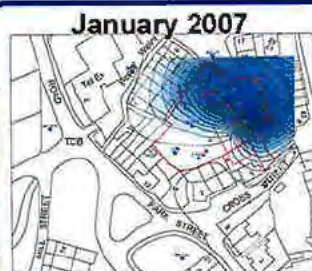
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Project:	Scholars Court, Neston
Title:	Distribution of Manganese in Groundwater
Drawn by:	LP
Checked:	LP
Issue:	1
Approved:	LP
Original Scale:	1:100
Date:	April 09
Rev:	
Page:	A3
Drawing Number:	D1156/3623/A18

March 2009





Legend

Iron II
Concentration
(mg/l)



Growing Station

FINAL



Columbia Route Village Way Crest CH57742 (651) 261-8334	Cerrita House Cine Lane East Newby La Wiltona WA12104 81829 273272	expansion@ch57742.us www.columbia.com
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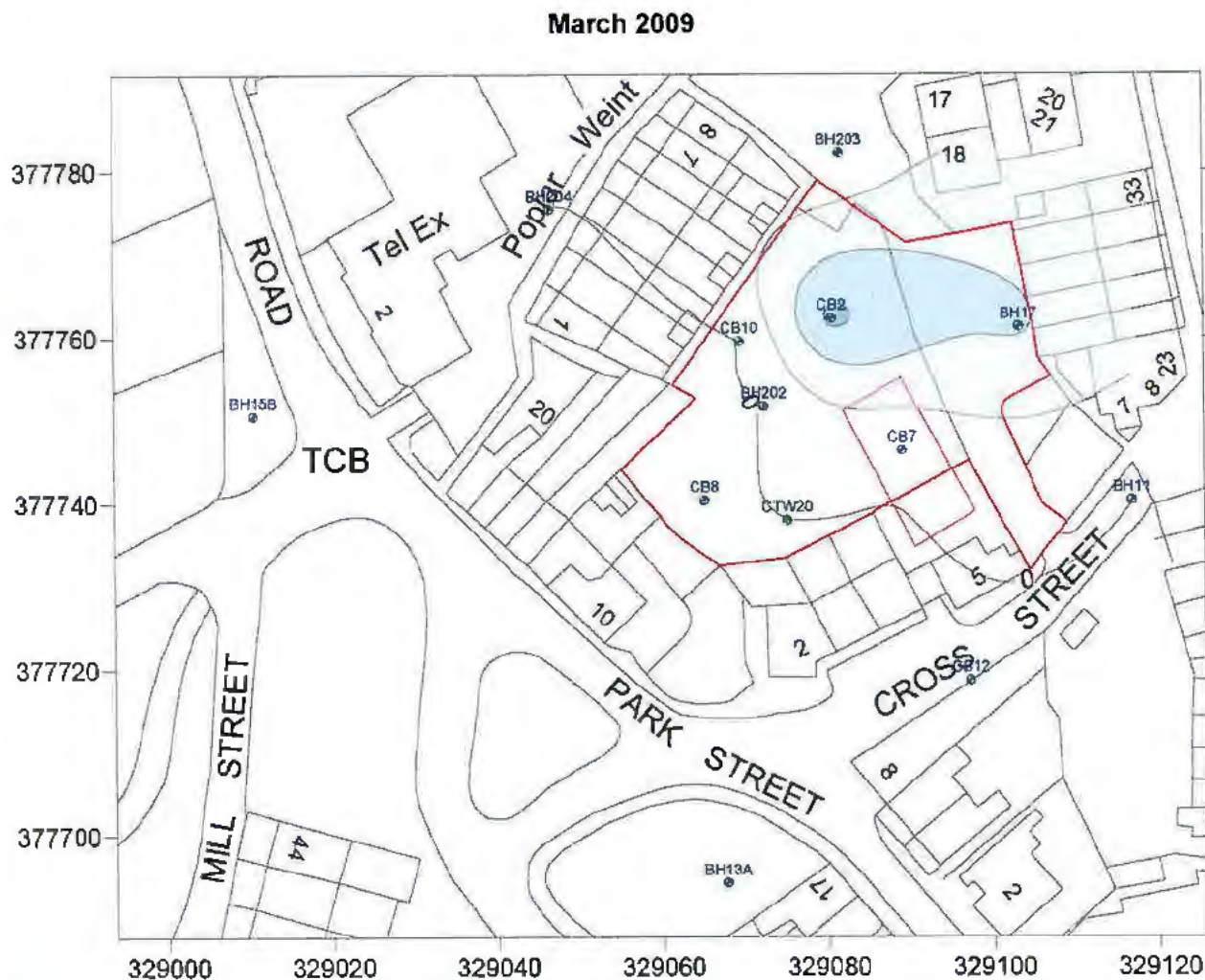
Client
Environment Agency

Scholars Court, Neston

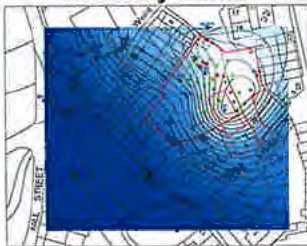
Distribution of Ferrous in Groundwater

Drawn by LP	Checked HR	Authorized HR
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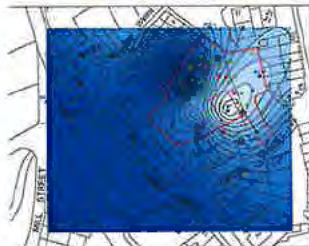
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Drawing Number D1156/3623/A19		



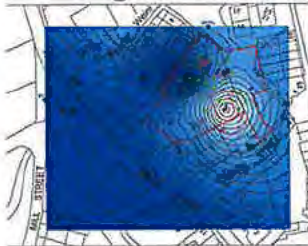
January 2007



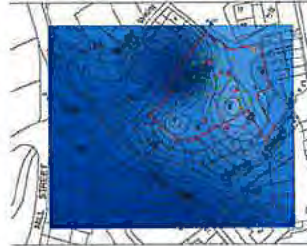
June 2007



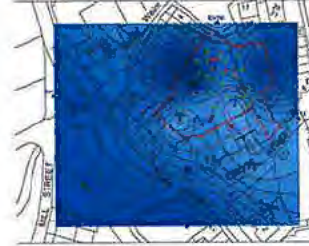
August 2007



November 2007



January 2008



March 2008



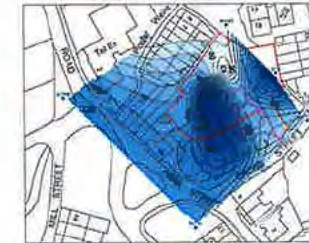
June 2008



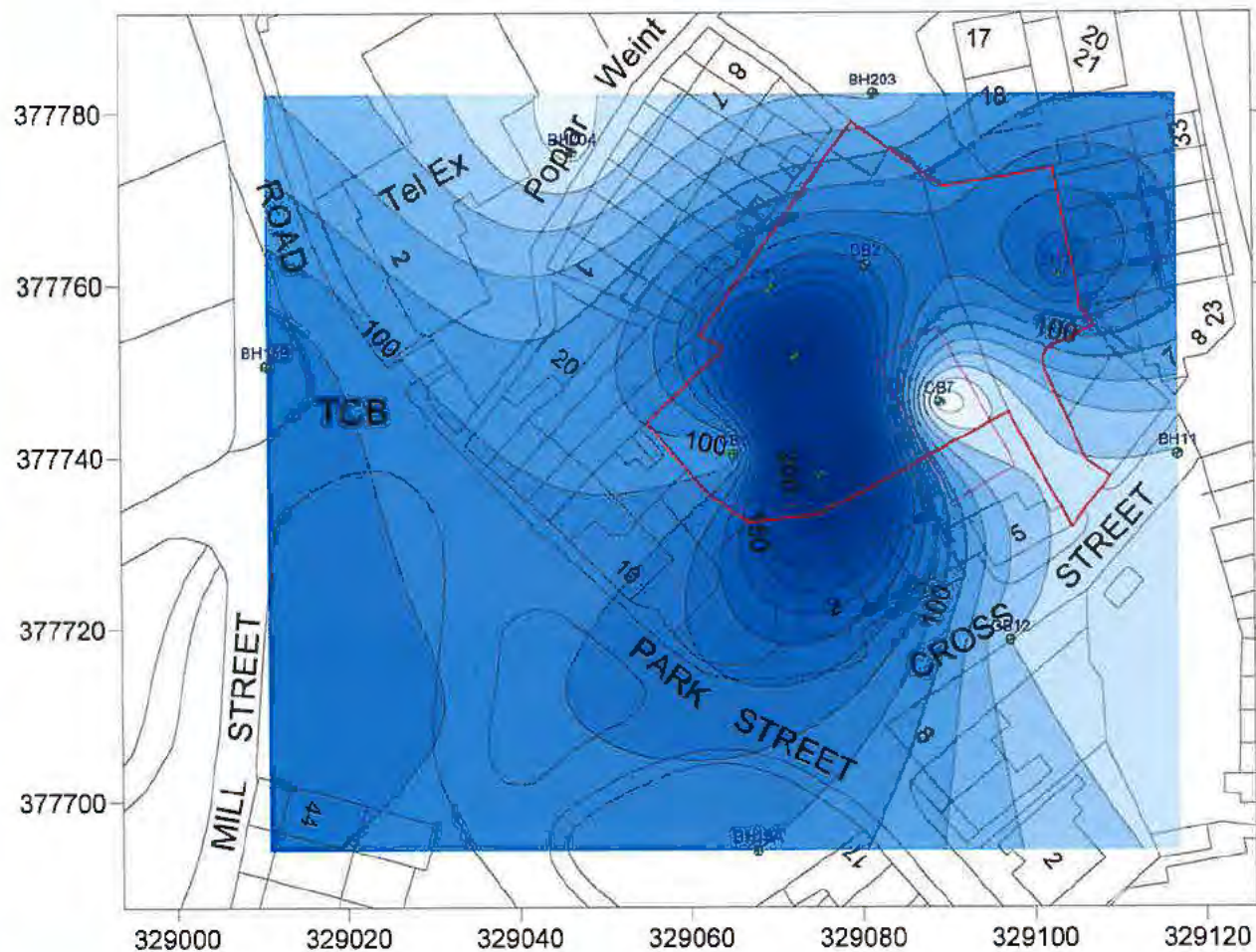
September 2008



December 2008



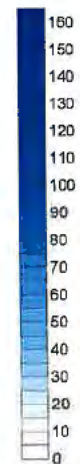
March 2009



Legend

Sulphate
Concentration

(mg/l)



Drawing Status

FINAL



CELTIC
Environmental Services Ltd
Unit 10, The Old Mill, Mill Lane, Neston, Merseyside, L35 9TF
Tel: 0151 254 1111 Fax: 0151 254 1112

Client
Environment Agency

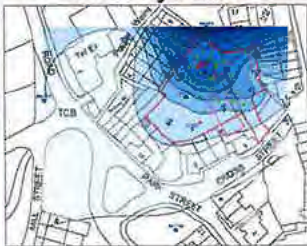
Project
Scholars Court, Neston

Title
Distribution of Sulphate
in Groundwater

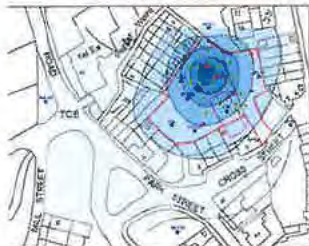
Drawn by LP	Checked DB	Authorised DB
Original Scale NTS	Printed April 09	Rev A3

Drawing Number
D1156/3623/A20

January 2007



June 2007



August 2007



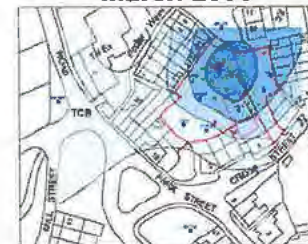
November 2007



January 2008



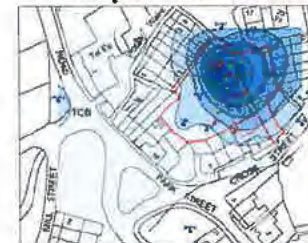
March 2008



June 2008



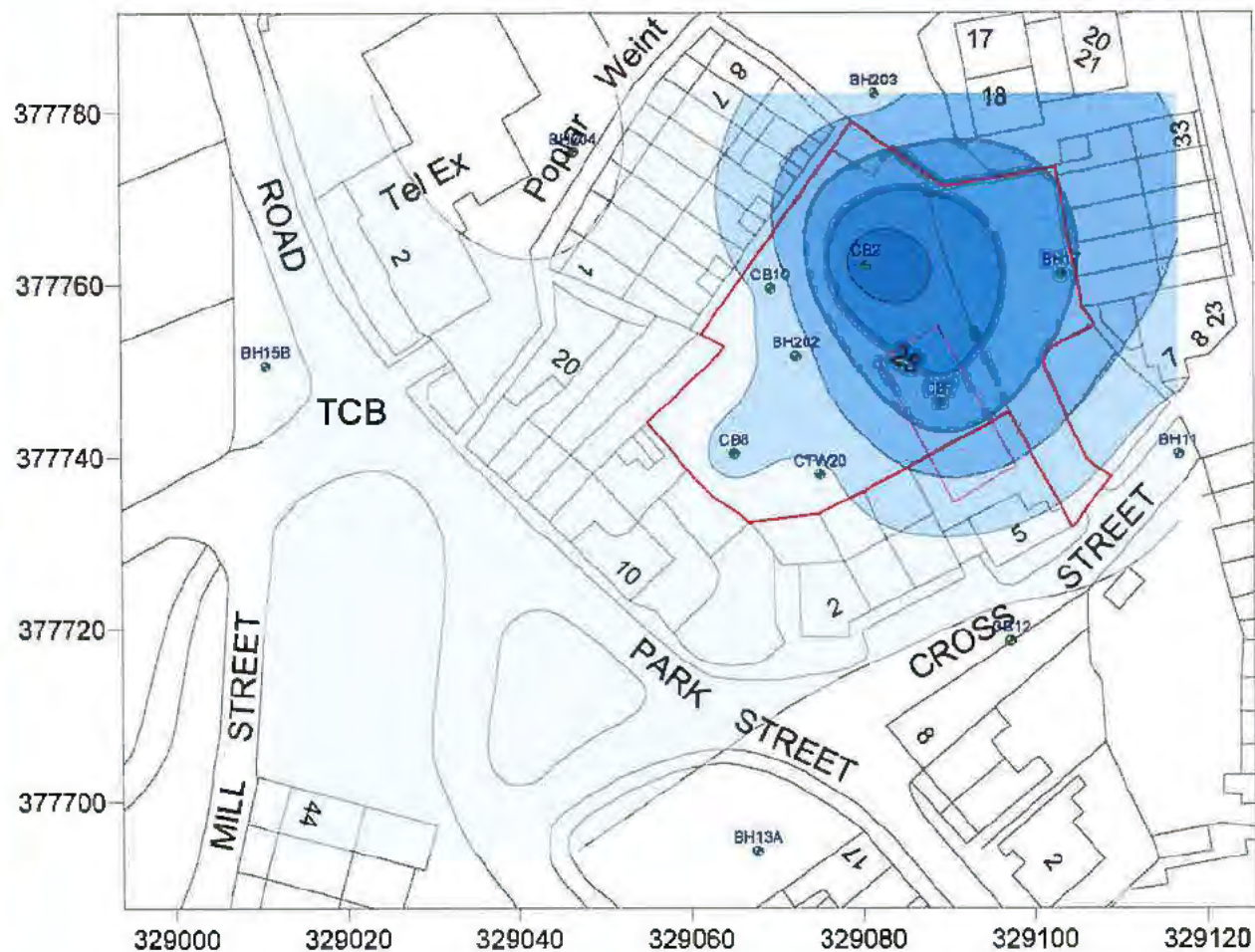
September 2008



December 2008

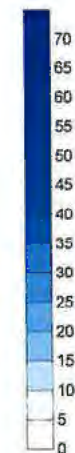


March 2009



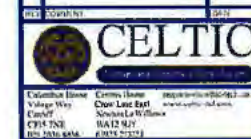
Legend

TOC
Concentration
(mg/l)



Working Sheet

FINAL



Client
Environment Agency

Project
Scholars Court, Neston

Title
Distribution of TOC in
Groundwater

Drawn by LP Checked Date Authorised Date

Original Date NTS Date April 09 Rev Page A21

Drawing Number
D1156/3623/A21



—
—

IN

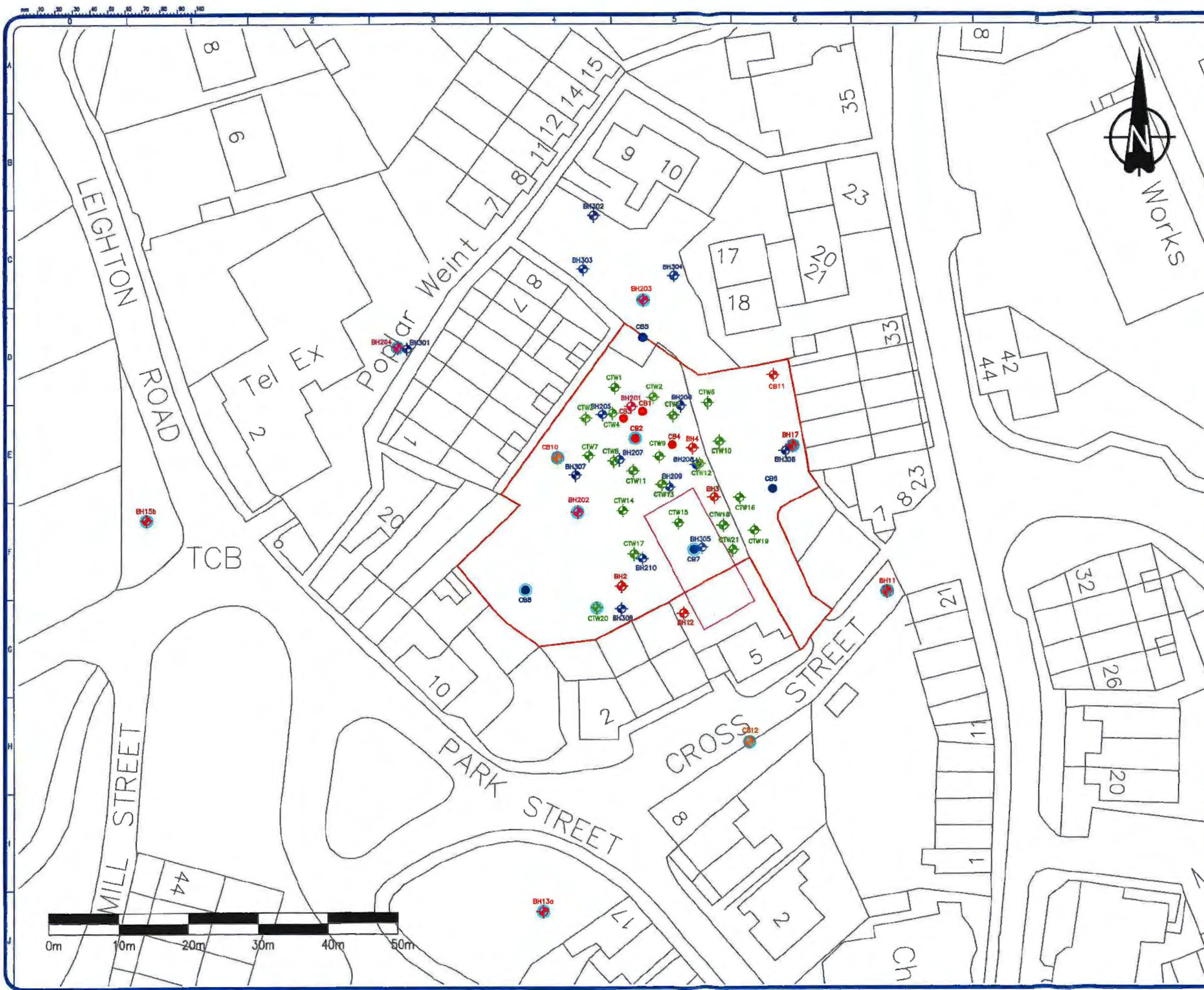
C

Design and Construct Remediation

Centrix House enquiries@celtic-tech.co.uk
www.celtic-td.com

Original Scale: 1 Date: /03/09 0 A3

D /3 /



- Legend**
- Determined Area
 - Estimated Extent of Former Quarry
 - CELTIC Inclined Boreholes (December 2006)
 - CELTIC Vertical Boreholes (December 2006)
 - CELTIC Groundwater Monitoring Points
 - ⊕ Existing Groundwater Monitoring Wells from Previous Site Investigations (April 1998 – March 1999)
 - ⊕ URS Groundwater Monitoring Well (February 2002)
 - ⊕ URS Shallow Ground gas Monitoring Borehole (February 2002)
 - ⊕ Celtic Exploratory Borehole (May 2007)
 - ⊕ Celtic Treatment Well (May 2007)

Drawing Status

FINAL

A ISSUED FOR COMMENT		DATE
REV	COMMENT	DATE

CELTIC

Design and Construction

Columbus House
 Village Way
 Cardiff
 CF11 7NE
 029 2036 8636

Central House
 Crow Lane East
 Newton Le Willows
 WA12 9UY
 01925 273222

email: info@celtic-tdc.co.uk
 www.celtic-tdc.com

Client

ENVIRONMENT AGENCY WALES

Project

SCHOLARS COURT NESTON

Title

BOREHOLE LOCATION PLAN

Drawn by	LP	Checked	Date	Authorised	Date
Original Scale	1:500	Date	09/04/08	Rev	0
Drawing Number	D1156/3623/A3				

ANNEX 2

PLATES

Phase 1

Remedial Assessment Actions



Plate No.: 1

Title: General Site View (Facing North)



Plate No.: 2

Title: General Site View (Facing South towards No. 5 Cross Street)



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Project Name: Scholars Court, Neston

Project No.: C1114

Date: November 2006



Plate No.: 3

Title: Ground Penetration Radar Survey at Identified Anomalies VE2



Plate No.: 4

Title: Vacuum Excavation at Identified Anomaly VE3



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Client: Environment Agency

Project Name: Scholars Court, Neston

Project No.: C1114

Date: December 2006



Plate No.: 5

Title: Identified Sub Surface Metal Drain Cover at Anomaly VE2



Plate No.: 6

Title: Vacuum Excavation at Anomaly VE1 by Visitor Car Parking Space



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Project No.: C1114

Date: December 2006



Plate No.: 7

Title: Rotary Rig Setup at Incline Borehole Location CB1



Plate No.: 8

Title: Rotary Rig Setup at Vertical Borehole Location CB6



Client: Environment Agency

Project Name: Scholars Court, Neston

Project No.: C1114

Date: December 2006

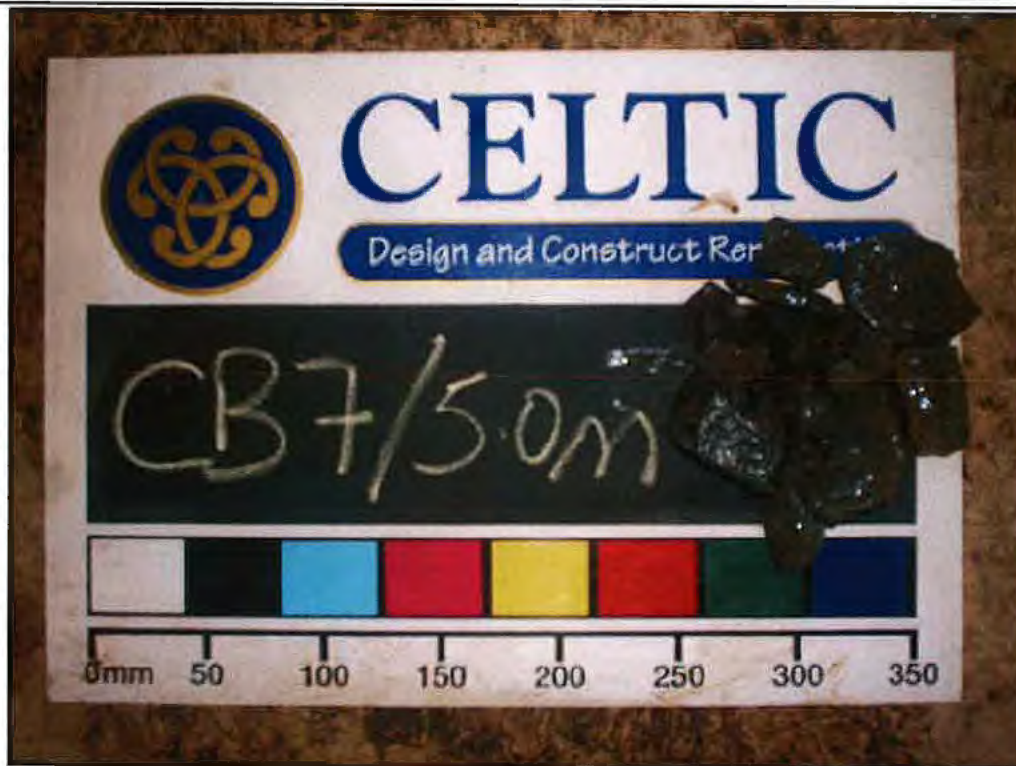


Plate No.: 9

Title: Medium to Large Subangular Gravel Recovered from Former Quarry.
Moderate Hydrocarbon Odour with Sheen Coated the Gravel



Plate No.: 10

Title: Medium to Large Subangular Gravel Recovered from Former Quarry.



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Project Name: Scholars Court, Neston

Project No.: C1114

Date: December 2006



Plate No.: 11

Title: CB1 Core Piece Showing Some Black Staining with Slight Hydrocarbon Odour



Plate No.: 12

Title: CB1 Core Sample Showing Heavy Black Staining with Faint Hydrocarbon Odour



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Client: Environment Agency

Project Name: Scholars Court, Neston

Project No.: C1114

Date: December 2006



Plate No.: 13

Title: CB2 Core Sample Showing Some Black Staining with Slight Hydrocarbon Odour



Plate No.: 14

Title: Title: CB2 Core Sample Showing Some Black Staining with Slight Hydrocarbon Odour



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Client: Environment Agency

Project Name: Scholars Court, Neston

Project No.: C1114

Date: December 2006

base

CB1 180 to 270 cm

top



Bedrock
top

Blue plastic
impermeable
membrane

Made
ground

Plate No.: 15

Title: Blue 'Geotextile' Plastic Membrane Beneath Reworks Clay Cap at Borehole CB1



Bedrock
top
(Type 3 Fracture)

↑
Blue plastic
impermeable
membrane

Made
ground

Plate No.: 16

Title: Blue 'Geotextile' Plastic Membrane Beneath Reworks Clay Cap at Borehole CB2



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Client: Environment Agency

Project Name: Scholars Court, Neston

Project No.: C1114

Date: December 2006



Plate No.: 17

Title: Former Quarry Infill Medium to Coarse Subangular Gravel

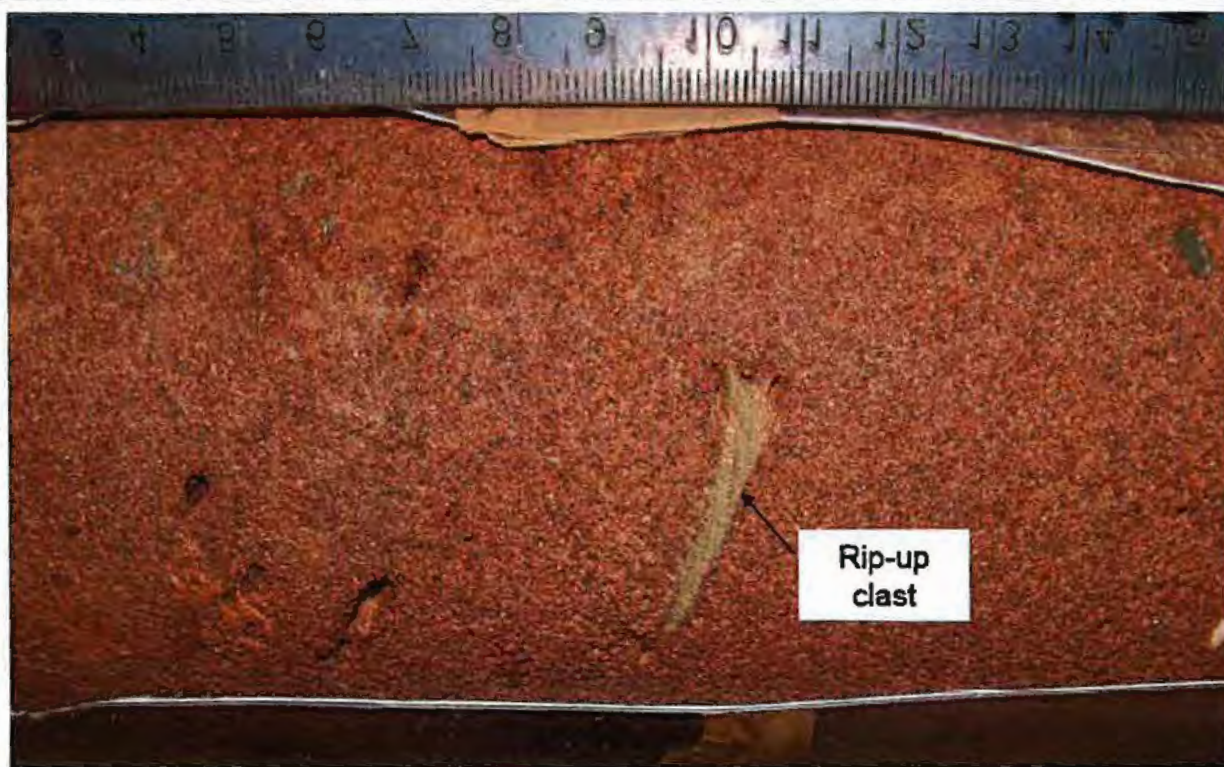


Plate No.: 18

Title: CB2 Core Piece Showing Rip-Up Clast in Fluvial Sandstone



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Client: Environment Agency

Project Name: Scholars Court, Neston

Project No.: C1114

Date: December 2006



top

CB2 940 to 952

base

Plate No.: 19

Title: CB2 Core Piece Showing Pale Reduced Sandstone Zone



3 m

Plate No.: 20

Title: Cross Bedding in the Sherwood Sandstone, Bushell Road Cycle Way



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Client: Environment Agency

Project Name: Scholars Court, Neston

Project No.: C1114

Date: December 2006



3 m

Plate No.: 21

Title: Cross Bedding, Naily Planar Tabular Styles, Bushey Road Cycle Way



Plate No.: 22

Title: Type 1 Fracture – Crush Zone with no Clear Vertical Offset



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Project Name: Scholars Court, Neston

Project No.: C1114

Date: December 2006



Plate No.: 23

Title: Normal Fault with about 1.5 m of Displacement



Plate No.: 24

Title: Type 1 Fracture Observed at Junction of Park Street and Ruby Road



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Client: Environment Agency

Project Name: Scholars Court, Neston

Project No.: C1114

Date: December 2006



Plate No.: 25

Title: Pale (Reduced) Laminae in Cross Bed Laminae Observed at Junction of Park Street and Ruby Street



Plate No.: 26

Title: Pale (Reduced) Sandstone Blocks in Old Boundary Wall, North Side of Poplar Weint



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Project Name: Scholars Court, Neston

Project No.: C1114

Date: December 2006



base

CB3 335 to 379 cm

Dark NAPL stain

top

UV fluorescence
and strong
hydrocarbon odours
suggest that NAPL
is also present in
much of the
unstained sandstone



Plate No.: 27

Title: CB3 Core Piece Showing Dark NAPL Stain Along Sedimentary Lamination



Core Piece
at 4 m bgl
Top View of
Lamination

Plate No.: 28

Title: CB3 Core Piece Showing Dark NAPL Stain Along Sedimentary Lamination



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Client: Environment Agency

Project Name: Scholars Court, Neston

Project No.: C1114

Date: January 2006



base

CB8 420 to 440 cm

top

Plate No.: 29

Title: CB8 Core Piece Showing Relatively Dry NAPL Stain on Sedimentary Lamination



base

CB3 540 to 560 cm

top

Plate No.: 30

Title: CB3 Core Piece Showing Pervasive Dark Stain



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Client: Environment Agency

Project Name: Scholars Court, Neston

Project No.: C1114

Date: January 2006

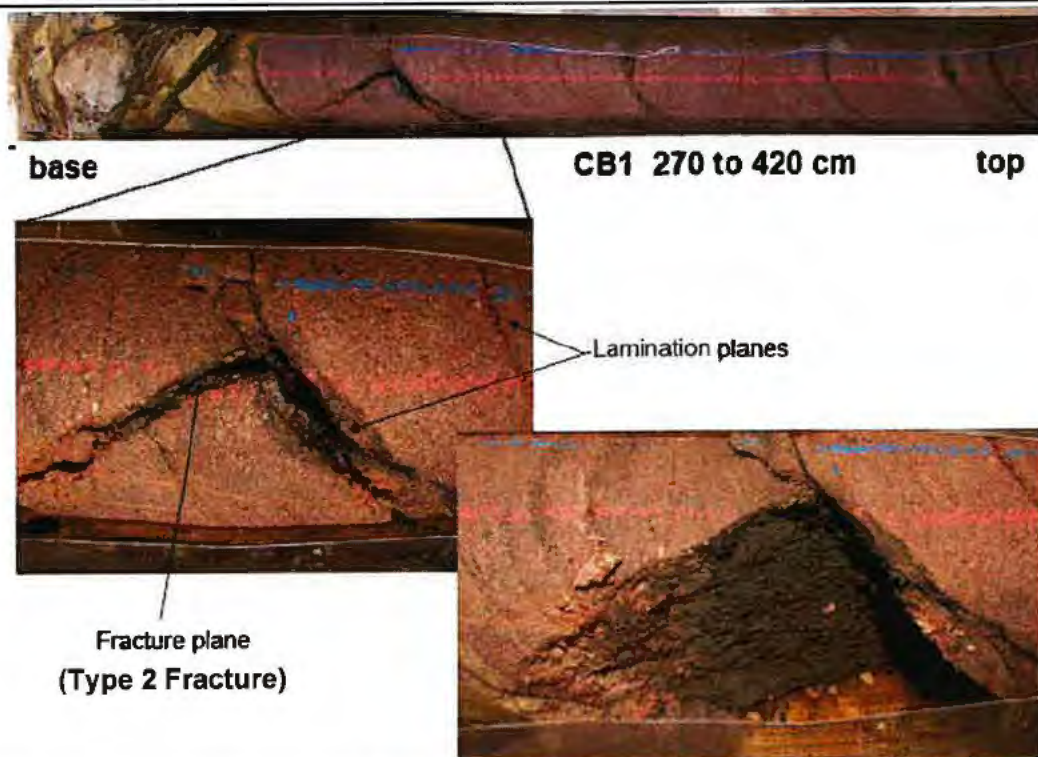


Plate No.: 31

Title: CB1 Core Piece Showing NAPL Stain Along Laminae and Impersistent Fracture

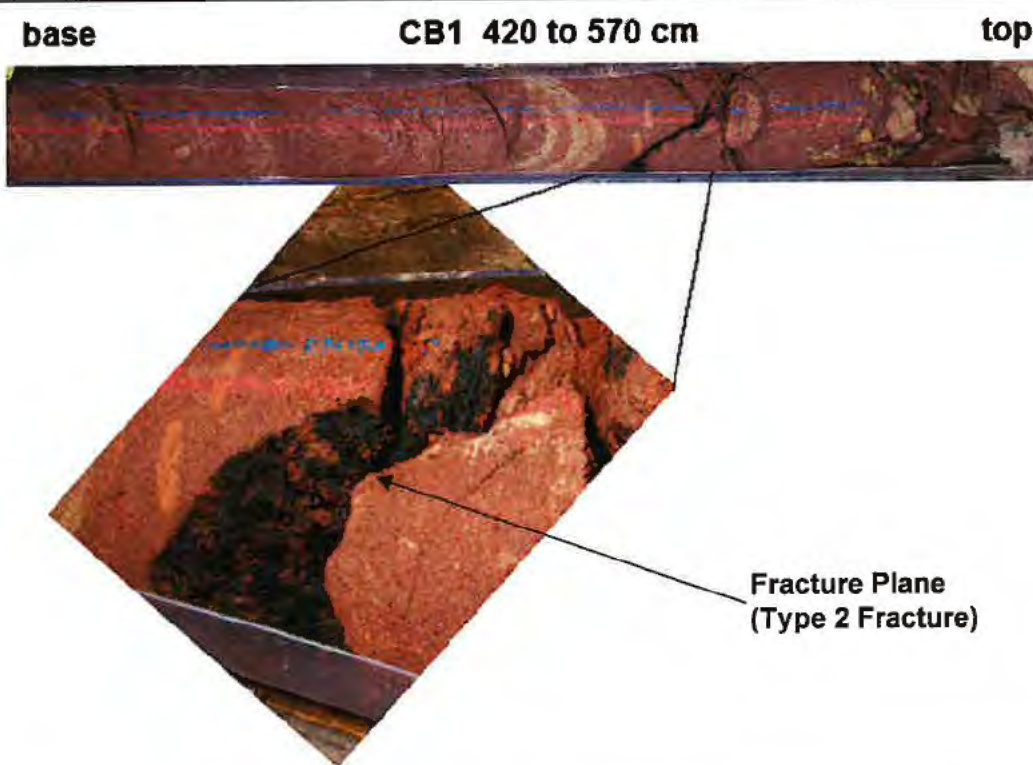


Plate No.: 32

Title: CB1 Core Piece Showing a NAPL-Coated Fracture



Client: Environment Agency

Project Name: Scholars Court, Neston

Project No.: C1114

Date: January 2006



base

CB4 680 cm

top



Plate No.: 33

Title: CB4 Core Piece Showing NAPL on a Combined Fracture and Bedding Plane Surface

Emergence of dark NAPL stain over 1 month:

Right: initial condition

Below: later condition



base

CB1 300 to 350cm

top

Plate No.: 34

Title: CB1 Core Piece Showing Emergence of NAPL Stain Over Time



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Design and Construct Remediation

Client: Environment Agency

Project Name: Scholars Court, Neston

Project No.: C1114

Date: January 2006

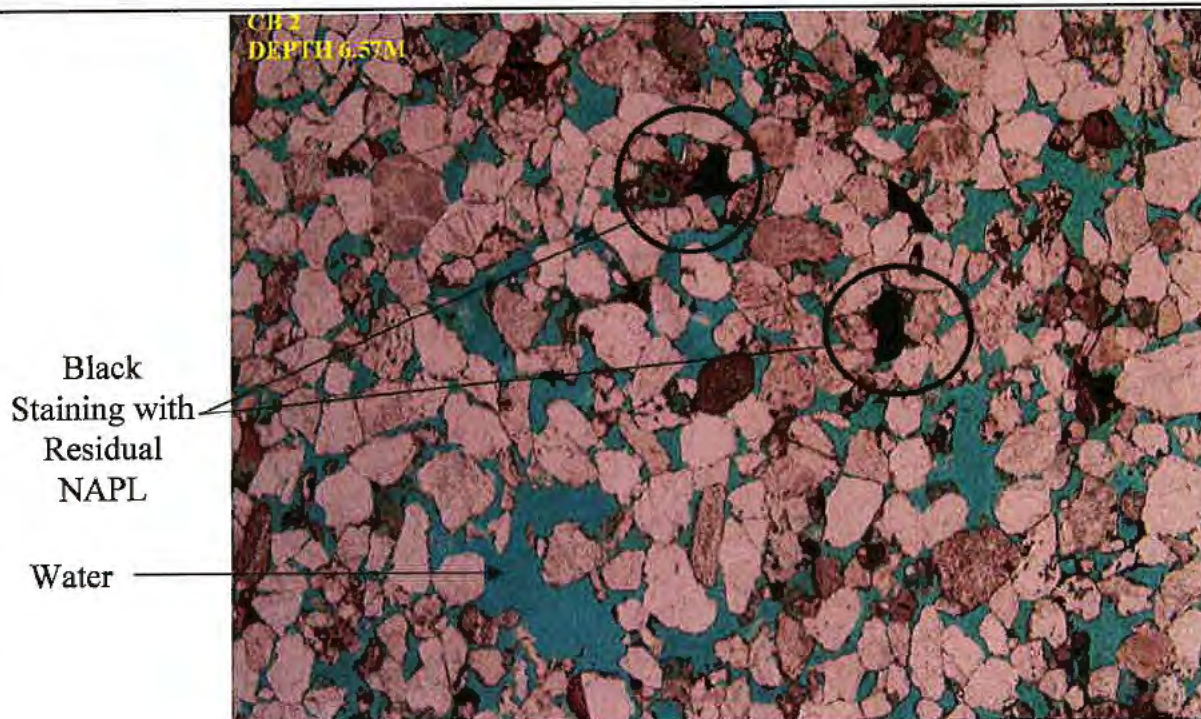


Plate No.: 35 Title: CB2 Core Piece at 6.57 m bgl



Plate No.: 36 Title: A Live Oil Seep from the Sherwood Sandstone at Burton Point, a Few Kilometers from Neston



Client: Environment Agency

Project Name: Scholars Court, Neston

Project No.: C1114

Date: January 2006

Phase 2

Remedial Treatment Actions



Plate No.: 37 Title: Removed top 200 mm of topsoil for access road to treatment pad.



Plate No.: 38 Title: Access road to treatment pad with 200 mm thick of clean lime stone



Client: Environment Agency

Project Name: Scholars Court, Neston

Project No.: C1156

Date: May 2007



Plate No.: 39

Title: Partially completed treatment pad and access road



Plate No.: 40

Title: Identified Japanese knotweeds to the western side of the quarry



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Design and Construct Remediation

Client: Environment Agency

Project Name: Scholars Court, Neston

Project No.: C1156

Date: May 2007



Plate No.: 41

Title: Rotary rig setup at borehole location CTW3



Plate No.: 42

Title: Rotary rig setup at borehole location CB12



CELTIC
Design and Construct Remediation

Client: Environment Agency

Project Name: Scholars Court, Neston

Project No.: C1156

Date: July 2007



Plate No.: 43

Title: Relocated treatment system layout



Plate No.: 44

Title: Water treatment system in bunded area



CELTIC
Design and Construct Remediation

Client: Environment Agency

Project Name: Scholars Court, Neston

Project No.: C1156

Date: June 2007



Plate No.: 45

Title: General site view facing north west



Plate No.: 46

Title: General site view facing west



Client: Environment Agency

Project Name: Scholars Court, Neston

Project No.: C1156

Date: July 2007



Plate No.: 47

Title: Made Ground Material (Firm to Stiff Clay with some gravel and purple slate)
Recovered from Treatment Well CTW9



Plate No.: 48

Title: Core Sample Recovered from Treatment Well CTW9 Showing Heavy Black
Staining with Free NAPL



CELTIC
Design and Construct Remediation

Client: Environment Agency

Project Name: Scholars Court, Neston

Project No.: C1156

Date: May 2007



Plate No.: 49 Title: Core Sample Recovered from Treatment Well CTW17 Shows Heavy NAPL Staining



Plate No.: 50 Title: Core Samples Recovered from Treatment Well CTW17



Client: Environment Agency

Project Name: Scholars Court, Neston

Project No.: C1156

Date: June 2007



Plate No.: 51

Title: Decommissioning and Demobilisation of Direct Well Recovery Treatment System



Plate No.: 52

Title: Multi-Phase Extraction Treatment System Installed



CELTIC
Design and Construct Remediation

Client: Environment Agency

Project Name: Scholars Court, Neston

Project No.: C1156

Date: August 2007

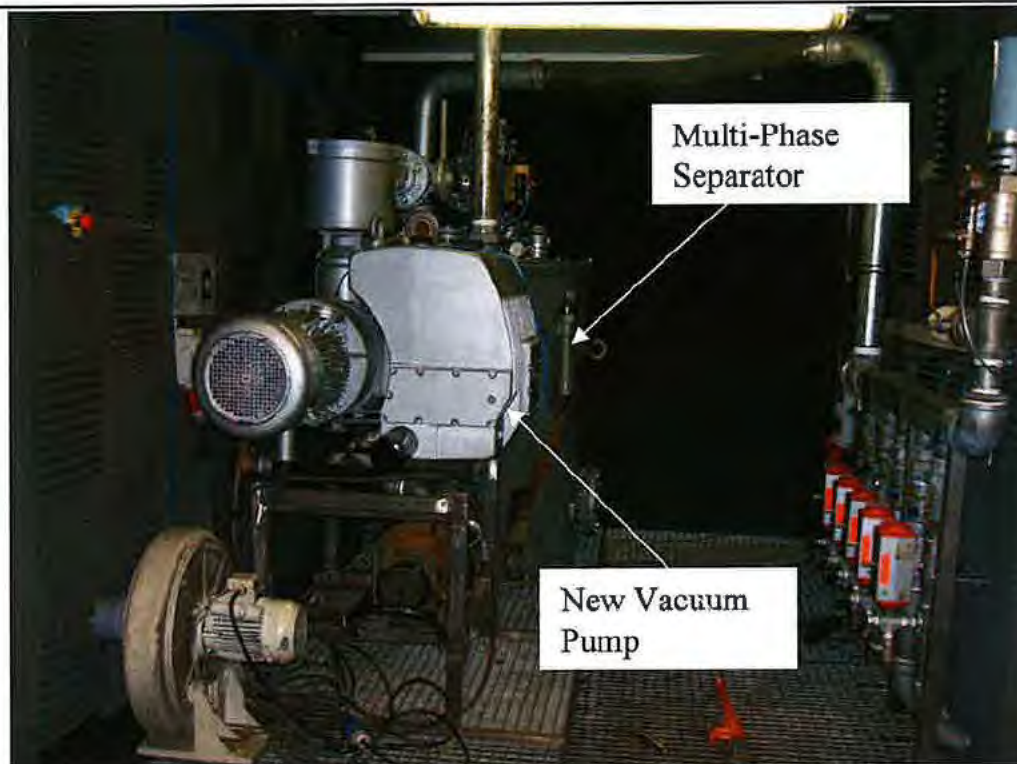


Plate No.: 53

Title: Multi-Phase Extraction Treatment System



Plate No.: 54

Title: Multi-Phase Extraction Treatment System Connected to Treatment Wells



Client: Environment Agency

Project Name: Scholars Court, Neston

Project No.: C1156

Date: August 2007



Plate No.: 55

Title: No. 5 and 5A Cross Street Back Garden Prior to Tarmac Reinstatement Works (Facing West)



Plate No.: 56

Title: No. 5 and 5A Cross Street Back Garden After Tarmac Reinstatement Works (Facing East)



CELTIC
Design and Construct Remediation

Client: Environment Agency

Project Name: Scholars Court, Neston

Project No.: C1156

Date: November 2007



Plate No.: 57 Title: No. 5 and 5A Cross Street Back Garden After Tarmac Reinstatement Works (Facing West)



Plate No.: 58 Title: Reinstated Wooden Fence with Mesh Fencing to Prevent Trespasses to Site



Client: Environment Agency

Project Name: Scholars Court, Neston

Project No.: C1156

Date: November 2007

ANNEX 3

CONTAMINANT CONCENTRATIONS OVER TIME SUMMARY TABLES

Table 3-1 – Summary of Vinyl Chloride Concentrations Detected in Groundwater Over Time

Sample Date	08/01/2007	28/06/2007	30/08/2007	08/11/2007	02/01/2008	17/03/2008	19/06/2008	24/09/2008 *	10/12/2008	03/03/2009
BH ID	Vinyl Chloride Concentration (mg/l)									
BH11	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	0.001
BH13A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.004	<0.001	<0.001
BH15B	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.005	<0.001	<0.001
BH17	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BH202	0.006	<0.001	0.006	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BH203	<0.001	<0.001	0.012	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BH204	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001
CB2	1.32	1.3	1.5	0.12	0.073	0.15	0.052	0.016	0.004	0.024
CB7	<0.001	<0.001	<0.001	0.006	0.004	0.045	0.054	0.028	0.008	<0.001
CB8	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CB10	NS	0.03	0.045	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
CB12	NS	NS	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001
CTW20	NS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001

NS – Not Sampled. Borehole not installed at the time of monitoring.

* - Abnormal concentration detected and was likely due to analytical errors or sample cross contamination

Table 3-2 – Summary of Cis 1,2 Dichloroethene Concentrations Detected in Groundwater Over Time

Sample Date	08/01/2007	28/06/2007	30/08/2007	08/11/2007	02/01/2008	17/03/2008	19/06/2008	24/09/2008 *	10/12/2008	03/03/2009
BH ID	Cis 1,2 Dichloroethene Concentration (mg/l)									
BH11	<0.001	<0.001	<0.001	<0.001	<0.001	0.007	<0.001	0.04	<0.002	0.009
BH13A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.14	<0.002	<0.002
BH15B	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.21	<0.002	<0.002
BH17	<0.001	<0.001	0.007	<0.001	<0.001	<0.001	<0.001	0.033	<0.002	<0.002
BH202	0.0218	0.013	0.038	<0.001	<0.001	0.007	0.006	0.035	0.01	0.010
BH203	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.017	<0.002	<0.002
BH204	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.11	<0.002	<0.002
CB2	5.37	8.9	2.8	0.19	0.023	0.018	0.058	0.008	<0.002	0.009
CB7	<0.001	<0.001	<0.001	0.013	0.014	0.11	0.073	0.046	<0.002	<0.002
CB8	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.048	<0.002	<0.002
CB10	NS	0.095	0.07	0.051	<0.001	0.007	<0.001	0.013	<0.002	0.012
CB12	NS	NS	<0.001	<0.001	<0.001	<0.001	<0.001	0.065	<0.002	<0.002
CTW20	NS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.032	<0.002	<0.002

NS – Not Sampled. Borehole not installed at the time of monitoring.

* - Abnormal concentration detected and was likely due to analytical errors or sample cross contamination

Table 3-3 – Summary of Benzene Concentrations Detected in Groundwater Over Time

Sample Date	08/01/2007	28/06/2007	30/08/2007	08/11/2007	02/01/2008	17/03/2008	19/06/2008	24/09/2008 *	10/12/2008	03/03/2009
BH ID	Benzene Concentration (mg/l)									
BH11	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
BH13A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.014	<0.001	<0.001
BH15B	<0.001	0.012	<0.001	<0.001	<0.001	<0.001	<0.001	0.019	<0.001	<0.001
BH17	0.0113	<0.001	0.009	0.007	0.003	0.005	0.005	0.005	<0.001	0.004
BH202	0.0035	0.001	0.002	<0.001	<0.001	<0.001	<0.001	0.005	<0.001	<0.001
BH203	<0.001	<0.001	0.002	0.003	<0.001	<0.001	<0.001	0.002	<0.001	<0.001
BH204	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.009	<0.001	<0.001
CB2	0.0431	0.19	0.018	0.015	0.007	0.012	0.004	0.025	0.042	0.043
CB7	0.0911	0.035	0.07	0.034	0.027	0.036	0.028	0.021	0.002	0.035
CB8	<0.001	<0.001	<0.001	<0.001	<0.001	0.005	<0.001	0.006	<0.001	<0.001
CB10	NS	0	0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.001	<0.001
CB12	NS	NS	<0.001	<0.001	<0.001	<0.001	<0.001	0.006	<0.001	<0.001
CTW20	NS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.004	<0.001	<0.001

NS – Not Sampled. Borehole not installed at the time of monitoring.

* - Abnormal concentration detected and was likely due to analytical errors or sample cross contamination

Table 3-4 – Summary of Total Volatile Organic Compounds Concentrations Detected in Groundwater Over Time

Sample Date	08/01/2007	28/06/2007	30/08/2007	08/11/2007	02/01/2008	17/03/2008	19/06/2008	24/09/2008 *	10/12/2008	03/03/2009
BH ID	Total Volatile Organic Compounds Concentration (mg/l)									
BH11	0.0013	<0.001	<0.001	<0.001	<0.001	0.012	<0.001	0.072	<0.001	0.010
BH13A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.301	<0.001	<0.001
BH15B	<0.001	0.035	<0.001	<0.001	<0.001	<0.001	<0.001	0.401	<0.001	<0.001
BH17	0.0716	<0.001	0.047	0.032	0.015	0.032	0.036	0.086	<0.001	0.013
BH202	0.0325	0.014	0.046	<0.001	<0.001	0.007	0.006	0.093	0.01	0.010
BH203	<0.001	<0.001	0.014	0.003	<0.001	<0.001	<0.001	0.052	0.017	0.007
BH204	0.0014	0.003	0.007	<0.001	0.003	0.006	0.006	0.207	0.01	0.011
CB2	6.906	10.85	4.414	0.345	0.107	0.215	0.132	0.074	0.115	0.142
CB7	0.438	0.095	0.261	0.259	0.119	0.356	0.279	0.133	0.016	0.092
CB8	<0.001	<0.001	<0.001	<0.001	<0.001	0.01	<0.001	0.113	<0.001	<0.001
CB10	NS	0.125	0.116	0.051	<0.001	0.009	<0.001	0.037	<0.001	0.012
CB12	NS	NS	<0.001	<0.001	<0.001	0.005	<0.001	0.13	<0.001	<0.001
CTW20	NS	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.085	<0.001	<0.001

NS – Not Sampled. Borehole not installed at the time of monitoring.

* - Abnormal concentration detected and was likely due to analytical errors or sample cross contamination

Table 3-5 – Summary of Total Semi Volatile Organic Compounds Concentrations Detected in Groundwater Over Time

Sample Date	08/01/2007	28/06/2007	30/08/2007	08/11/2007	02/01/2008	17/03/2008	19/06/2008	24/09/2008	10/12/2008	03/03/2009
BH ID	Total Semi Volatile Organic Compounds Concentration (mg/l)									
BH11	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.02	<0.001
BH13A	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.003	<0.02	<0.001
BH15B	<0.001	0.199	<0.001	<0.001	<0.001	<0.001	<0.001	0.004	<0.02	<0.001
BH17	0.29	<0.001	0.141	0.242	1.097	0.115	0.238	0.157	<0.02	0.002
BH202	0.0047	<0.001	0.012	<0.001	<0.001	<0.001	0.001	<0.001	<0.02	<0.001
BH203	<0.001	<0.001	0.003	0.004	<0.001	<0.001	0.002	<0.001	<0.02	<0.001
BH204	0.002	<0.001	0.001	<0.001	<0.001	<0.001	0.001	0.002	<0.02	<0.001
CB2	1.0673	0.323	0.104	0.025	<0.001	0.019	0.017	0.006	<0.02	<0.001
CB7	0.0134	0.039	0.04	0.07	0.02	0.016	0.017	0.005	<0.02	0.002
CB8	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.02	<0.001
CB10	NS	0.001	<0.001	<0.001	<0.001	<0.001	0.001	<0.001	<0.02	<0.001
CB12	NS	NS	<0.001	<0.001	<0.001	<0.001	<0.001	0.002	<0.02	<0.001
CTW20	NS	<0.001	0.006	<0.001	<0.001	<0.001	0.001	<0.001	<0.02	<0.001

NS – Not Sampled. Borehole not installed at the time of monitoring.

Table 3-6 – Summary of Total Petroleum Hydrocarbon Concentrations Detected in Groundwater Over Time

Sample Date	08/01/2007	28/06/2007	30/08/2007	08/11/2007	02/01/2008	17/03/2008	19/06/2008	24/09/2008	10/12/2008	03/03/2009
BH ID	Total Petroleum Hydrocarbon Concentration (mg/l)									
BH11	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.027
BH13A	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.11	<0.01	<0.01
BH15B	<0.01	1.451	<0.01	<0.01	<0.01	<0.01	<0.01	0.18	<0.01	<0.01
BH17	0.78	<0.01	1.548	1.47	1.7	1.177	1.9	1.72	1.6	0.82
BH202	0.048	0.748	0.631	0.31	0.37	0.363	0.19	0.35	0.22	0.34
BH203	0.493	0.568	0.656	0.59	0.64	0.403	0.24	0.21	0.58	0.617
BH204	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	<0.01	<0.01
CB2	0.687	16.44	3.326	2.93	0.92	1.239	1.3	7.92	4.07	1.7
CB7	0.132	2.614	10.408	2.28	1.87	2.351	2.46	1.82	2.03	2.232
CB8	<0.01	0.269	0.321	0.09	0.1	<0.01	0.05	0.13	0.52	0.22
CB10	NS	0.873	0.399	0.35	1.32	0.374	0.12	0.14	0.73	0.363
CB12	NS	NS	0.331	0.14	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
CTW20	NS	2.162	<0.01	0.26	0.52	0.179	0.12	0.13	0.32	0.26

NS – Not Sampled. Borehole not installed at the time of monitoring.

ANNEX 4 TO ANNEX 7

CD ROM

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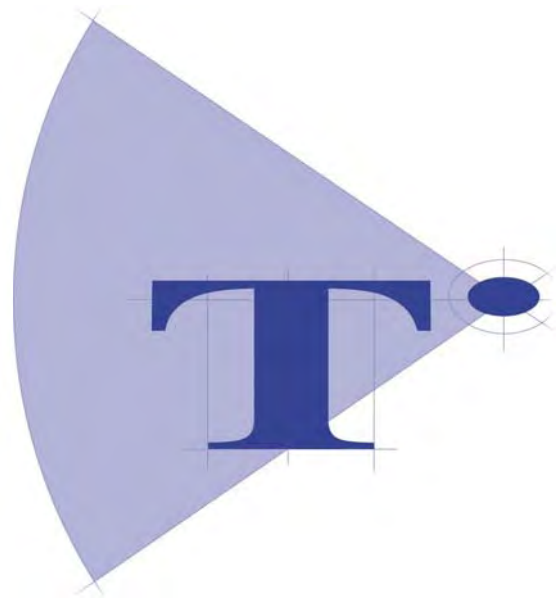
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VERIFICATION REPORT FOR SCHOLARS COURT, NESTON

ISSUE 1.2

WATKIN JONES GROUP

T/10/886/VR

29TH MARCH 2011

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1.0 INTRODUCTION

1.1. Background

Tier Environmental (Tier) was commissioned by Watkin Jones Group to compile a verification report for a housing development at Scholars Court, Neston, Wirral. Previous site investigations have resulted in the site being determined a "Special Site" under Part IIa of the Environmental Protection Act 1990. In addition, hazardous soils gases and vapours were found at the site and, as such, hazardous gas protection measures were recommended at the new development. The site has also been found to have Japanese Knotweed present, which has been removed prior to development. The remediation strategy for the site was produced by Betts Associates Geoenvironmental (Betts). This report used the results from a large number of site investigations and a groundwater remediation report to determine the measures required to remove the residual pollutant linkages at the site. This report has been produced with reference to Environment Agency report SC030114R1 in order to confirm, through the provision of objective evidence, that the remediation requirements have been fulfilled.

1.2. Objectives

Remediation works have been undertaken at the site, as specified in the Betts remediation strategy and, as such, the objectives of the verification report are as follows:

- To highlight the salient points with regard to the Betts remediation strategy, including the objectives and criteria;
- To provide lines of evidence that the remediation at the site was undertaken in accordance with the aforementioned report;
- To provide documented assessment of data and permanent records of onsite verification works;
- To determine whether there is any residual risk to receptors, post remediation and whether contaminated land planning conditions should be discharged.

This report, which was designed to meet the requirements of all relevant current guidance, presents the records and data produced during the remediation of the site, an interpretation of the data obtained and recommendations relevant to the defined objectives.



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Any diagram or opinion on the possible configuration of the findings is conjectural and given for guidance only. Confirmation of intermediate ground conditions should be undertaken if deemed necessary.

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2.0 PREVIOUS SITE INVESTIGATIONS

2.1. Introduction

The remediation statement, produced by Betts, was based upon the Celtic Groundwater Remediation Report, Scholars Court (on behalf of the Environment Agency Wales - June 2009).

The Celtic report combines all previous ground investigation data collated for the site since 1994 listed below:

- Ground Investigation. Strata Surveys Report 6785, June 1994
- Contaminated Site Investigation. Smith and Partners, February 1998
- Report of groundwater sampling undertaken on 23rd April 1998. Kennedy and Donkin, June 1998
- Sampling Letter. Kennedy and Donkin, June 1998
- Desk study and preliminary risk assessment. Kennedy and Donkin, September 1998
- Report on sampling of quarry infill undertaken on 11th August 1998. Kennedy and Donkin, September 1998
- Assessment of Risk to Water Environment. Kennedy and Donkin, January 2000
- Site Investigation and Risk Assessment. Volume 1. URS, September 2002
- Site Investigation and Risk Assessment Volume 2. URS, September 2002
- Site Investigation and Monitoring Report. Babbie, May 2004
- Ellesmere Port and Neston BC: Record of Determination That The Land is Contaminated Land dated 2005



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2.2. Site Description

The site is located off Scholars Court, Neston, Cheshire CH64 3RR (Ordnance Survey Grid Reference 329080, 377770). The site covers an area of approximately 0.3 ha and, prior to redevelopment, was disused, with the exception of an access road and car parking spaces to the eastern part of the site. The ground cover comprised vegetation and stone chippings, brick paving and tarmac. The site is bounded by residential properties to the north, west and south. The eastern boundary is marked by car parking spaces with residential properties beyond.

2.3. Summary of Ground Conditions

The findings of the Phase II Ground Investigations carried out at the site are presented in reports referenced in Section 2.1 of this report and summarised in Table 2.1 below.

Table 2.1. Geological Summary.

Maps and publications referenced	BGS 1:50,000 Geology (Drift Solid) Sheet 96 - Liverpool
Made Ground	Encountered at the surface to depths ranging at around 2.40m bgl for the general site to around 10.20m within the former quarry. Recent deposits comprise reworked gravely clay and dark brown clayey soil with brick and concrete fragments, purple roof slate, clinker, ash, plant rootlets, wood and timber fragments. The former quarry comprises firm to stiff gravely reworked clay with medium to coarse sub-angular gravel beneath.
Solid geology	Upper Mottled Sandstone Sherwood Sandstone (the Pebble Beds Formation and Wilmslow Sandstone Formation). Generally encountered at depths ranging from 0.15 to 2.40 m bgl with the exception of the area of the infilled former quarry to the south where it was evident at 10.20m bgl.



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3.0 DEVELOPMENT SUMMARY

The development at the site has comprised 6 No. traditionally built 2 storey private residential properties with associated hardstanding and domestic gardens. Due to two of the plots being positioned over the highwall of a former quarry, the southern corner of the development is founded on driven piles, whereas the remaining plots are founded on shallow footings at rockhead. In addition site levels have remained as previous, due to existing surrounding infrastructure.

A copy of the development layout is presented in Watkin Jones Drawing No. 5414~100 in Appendix F of this report.

**VERIFICATION REPORT FOR
SCHOLARS COURT, NESTON****4.0 REMEDIATION STRATEGY****4.1. Introduction**

All details of the remediation strategy can be found in Betts Associates report No. 09WJH016/RS. It is not the intention of this report to repeat all the information contained in the remediation strategy; however, for ease of reference, the salient points are summarised in this section.

4.2. Residual Pollutant Linkages

Base upon the results of the site investigations and groundwater remediation, the Betts remediation strategy report concludes that there the pollutant linkages in Table 4.1 were present at the site.

Table 4.1: Residual pollutant linkages highlighted by Betts

Target (Receptor)	Potential Source-Pathway Linkage	Remedial Action Required (where appropriate)
Site end users	Inhalation of soil gases, odours or dust.	CS3 NHBC Amber 2 gas protection to be installed with precautionary volatile / hydrocarbon resistant gas membrane. Validated clean cover system to garden/soft landscaping to be installed. Groundwater / free product / volatile remediation undertaken prior to site works by EAW
Site end users	Ingestion of and skin contact with contaminated soil.	Hardstanding Cover, Validated clean cover system to garden/soft landscaping to be installed
Site end users	Ingestion of contaminants in vegetables etc. or in soils adhering to vegetables, etc	Validated clean cover system to garden/soft landscaping to be installed.
Construction/ maintenance workers.	Inhalation of soil gases, odours or dust.	PPE - additional risk assessment regarding confined spaces CO2 / Volatiles monitoring (tool box talks)
Construction/ maintenance workers.	Ingestion of, and skin contact with, contaminated soil	PPE - additional risk assessment (tool box talks)



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Plants	Adverse effects on growth caused by presence of contaminants in soil	Validated clean cover system to garden/soft landscaping to be installed.
Buildings and Structures	Flow of ground gas into buildings. Asphyxiation, toxicity, explosion and fire hazards	CS2 Amber 1 gas levels identified. Conservative CS3 Amber 2 gas protection to be installed with volatile / hydrocarbon resistant gas membrane
Foundations	Sulphate attack of foundations	Foundations to be designed to resist
Water Supplies	Hydrocarbons penetrating plastic water supply pipes.	Liaison with water supplier required. Protectaline anticipated
Groundwater	Migration of soluble contaminants into groundwater on or off site	Traditional foundations mitigate risk of drawdown of contaminants. Groundwater / free product / volatile remediation undertaken prior to site works by EAW
Surface water	Migration of soluble contaminants and/or direct run-off of contaminants	Decreased permeability / infiltration due to hardstanding infrastructure and surface water drainage. No soakaway provision allowed. Groundwater / free product / volatile remediation undertaken prior to site works by EAW

4.3. Remediation Scope

The following scope of remedial works was proposed in the Betts Remediation Strategy report:

- General site clearance of surface materials and vegetation.
- Excavation of soil / brick rubble and removal of below ground obstructions.
- Break-up of slabs and hardstand.
- Treatment of contaminant impacted soil hotspots by excavation and disposal.
- Backfill of all resultant excavations, with demonstrably clean materials.
- Re-grade of site to specified levels.



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- Provision of a minimum 600mm thick cover layer of 'clean' soils in garden areas and soft landscaping. This cover layer should comprise 450mm sub-soil and 150mm topsoil.
- Protection to piped drinking water supplies installation of protectaline pipelines.
- No Crushing of all suitable uncontaminated artificial hard material (i.e. concrete/brick etc) for reuse on site is anticipated.
- Hazardous gas / vapour protection measures.

4.4. Gas Protection Measures

Given the level of volatiles previously evident pre remediation by the EA and residual hydrocarbons it was proposed that a conservative approach of a foil reinforced hydrocarbon / volatile resistant gas membrane was installed on all properties. As specialist installation is advisable for this product a level of protection more akin to CS3 Amber 2 will actually be installed with independent validation undertaken.

4.5. Potable Water Services

The Betts report recommended that PE/AL/PE barrier type water pipes should be installed at the site; the as built construction (including photographic and documentary evidence of which) should be submitted as part of this Verification report.

4.6. Use of Clean Cover in Garden Areas

The Remediation Strategy for the site required 600mm of clean cover to be placed in garden and landscaped areas to minimise the risks associated with heavy metal / PAH contamination. Site levels in some areas would not allow importation of the 600mm without firstly removing 600mm of existing Made Ground in proposed garden areas. 600mm of validated clean cover will be placed in proposed garden areas (but not beneath hardstanding). This is to comprise 450mm of 'clean' subsoil plus 150mm of topsoil. Burnt shale, and ash and clinker or other unsuitable Made Ground types will not be placed within

600mm of the ground surface in garden / landscaped areas. Any material imported for use as cover shall be validated as described below:



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Chemical and Physical Suitability and Sampling Frequencies

1. Prior to importation of topsoil, a study of the history of materials sourced will be undertaken for the source site to establish its origin and suitability.
2. The material will then be chemically tested prior to importation. The proposed testing frequency is 1 sample per 20t wagon load tested prior to delivery / deposition. The volume of required material will be calculated for the garden areas and stockpiled separately at the source / or transfer site.
3. Appropriate sampling numbers (one per 20t) will be collected using an excavator and suitability assessed for residential garden end use prior to haulage of the soil to the remediation site for placement.
4. The physical suitability will be assessed visually at the same time as sampling
5. The EAW will be notified 3 days in advance of importation to allow inspection if required.
6. Topsoil will be independently validated with results submitted to the Local Authority and EAW for approval prior to deposition within residential / landscaped areas
7. Following placement of the chemically suitable soil, validation of thickness is proposed. It is proposed that this will be undertaken on the basis of hand dug pits (on the basis that the soil has already been validated chemically at source). Photographic validation of cover system thickness will be recorded and submitted to the Local Authority for approval.



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Chemical testing and suitability for use

A suite covering the following determinates is proposed for all soil samples to prove fitness for end use.

- Heavy Metals suite: Arsenic, Cadmium, Chromium (hexavalent), Copper, Lead, Mercury, Nickel, Selenium, Zinc
- TPH by CWG (includes Benzene)
- Speciated PAH
- pH and 2:1 water soluble sulphate
- Organic matter
- Volatiles (including vinyl chloride) and Semi Volatiles (including Speciated PAHs),

Testing will be to MCERT accreditation / methodology wherever possible. Guidance values for the end use are proposed to be assessed against ATRISK 2009 and EA CLEA 2009 SGVs where published. Determinants are to be assessed accordingly against residential with home grown produce. Determinants may also be reviewed against the LQM GACs.

4.7. Departures from Original Remediation Strategy

Clean Cover System

In those areas of private gardens where rockhead was less than 600mm depth, Made Ground soils were removed to rockhead, which was checked for any visual or olfactory evidence of hydrocarbon staining and then clean cover was placed to proposed levels.

At the request of the Environment Agency, a geomembrane and clean topsoil cover were placed at the front of each of the plots. Due to the presence of services in these areas (as shown in T/10/886/VR/2, within Appendix A of this report), between 200mm and 300mm depth of soil was achieved, underlain by a Teram 1000 geotextile. This was agreed with the Environment Agency in Appendix G of this report.



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4.8. Previously Unidentified Areas of Hydrocarbon Impacted Soils

During the excavations for the foundations of Plots 5B and 6B on the 19th October 2010, hydrocarbon impacted soils were recorded. Watkin Jones promptly contacted the Environment Agency, Local Authority and Tier Environmental. Photographs of the hydrocarbon impacted soils are included in Appendix A of this report. The foundation excavations took place prior to a heavy downpour of rain and, consequently, the excavations were filled with water. A Geoenvironmental Engineer from Tier Environmental made a visit to the site on the same day to take samples of the hydrocarbon impacted soils (samples V201, V203, V205, V207 and V209) and the water (sample W1) which had collected in the excavations.

Following this, a site meeting was held, with representatives from the Environment Agency, Environment Agency Wales, Watkin Jones, Tier Environmental and Celtic Ltd. It was determined during this meeting that the remaining hydrocarbons in the soils were residual, following the groundwater remediation works which were undertaken by Celtic Ltd. These had been highlighted in the Groundwater Remediation report as likely to be present and did not pose a significant risk to controlled waters. It was also agreed that all soils from the hydrocarbon impacted area would not pose a risk to human health, following the installation of the hydrocarbon resistant gas membrane and the clean covers system at the site. Consequently, the hydrocarbon impacted soils were left *in situ* and covered over with the clean cover system and hydrocarbon resistant membrane to break the remaining potential pollutant linkages.

The soil samples were tested for the Tier Environmental standard soil suite, speciated TPH and speciated SVOCs / VOCs. The water sample was tested for speciated TPH and speciated SVOCs / VOCs. These results were passed on to Watkin Jones for waste soils disposal purposes. These soils were disposed at a suitably licensed hazardous landfill site on the 27th October 2010. The waste transfer note of this is presented in Appendix C of this report, ticket number 16,138,994.



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5.0 VERIFICATION

5.1. Gas Protection Measures

In order for the recommended gas protection measures to be effective, they have to be installed correctly, with no punctures or tears and all joints and services sealed. The membrane which was used in the development was the PAG Standard membrane (the specification of which was agreed with the Local Authority, Environment Agency and Building Control, prior to installation and is presented in Appendix E of this report).

The installation was carried out by Watkin Jones Group, under the training and supervision of a representative from PA Geotechnical Ltd. Following installation, the membranes underwent integrity testing by Prestige Air Technology Ltd, who is one of the country's leading authorities in the application of gas integrity testing to installed gas membranes. The test was carried out on the membrane immediately after its installation and prior to it being covered up by the ensuing construction processes. The area below the membrane was temporarily pressurised with a mixture of clean air and a specialist tracer gas which seeks out and identifies any leaks within the membrane. The tracer gas used is both non toxic and inert and has been selected for its extreme sensitivity to detection. Specialist equipment sensitive to the tracer gas is used to trace all leaks within the installation with particular attention being paid to the critical points and junctions formed between the membrane material and other structural elements prior to conducting a detailed sweep of the complete area. The process is an ongoing one with the leaks being traced, sealed and re-tested before the membrane is passed and the Certificate issued.

All membranes passed the integrity tests and are considered to be fit for purpose. Certificates are presented in Appendix E of this report.



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5.2. Waste Management

Excavated soils associated with the redevelopment of the site were taken to the following licensed waste disposal facility.

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester
CH2 6JP

Copies of the relevant waste transfer notes are presented in Appendix C of this report.

5.3. Imported Soils

The soils that were brought to site underwent a study to determine that the source site was suitable. In this case, the site address is as follows:

Rhosymedre Community Primary School,
Maes Y Parc,
Chirk,
Wrexham,
Clwyd
LL14 3EG

Initial testing was undertaken by Celtest Ltd on the 9th of September 2010, which gave an indication that the soils were suitable for use. The material was then chemically tested prior to importation. The proposed testing frequency was 1 sample per 20t wagon load tested prior to delivery. Due to the presence of shallow sandstone at the site, the volume of required material for the garden areas was a total of 120m³ subsoil and 80m³ topsoil. Consequently, 10 samples of topsoil and 15 samples of subsoil were analysed for the agreed set of determinands, which proved that the soils were suitable for use (after screening against EA CLEA 2009 SGV's where published and the LQM GACs). The results were submitted to



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the Environment Agency, who were also notified prior to importation and the topsoil and subsoil were then stockpiled separately at the site.

Following placement of the chemically suitable soil, validation of thickness was undertaken on the basis of hand dug pits on a plot by plot basis, as agreed. Photographic validation of cover system thickness was recorded in the Verification Proformas presented in Appendix G of this report. Hand dug pits V1 to V6 were excavated in each of the private gardens to the rear of the site and V7 to V12 were excavated in a small patch of soil at the front of each plot. The locations of the pits are presented in Appendix F of this report.

5.4. Japanese Knotweed Removal

Japanese Knotweed was removed by Watkin Jones Group, for disposal to an appropriately licensed landfill. The licensing of such movements is regulated by the Environment Agency and in accordance with their guidelines, Knotweed Eradication Ltd have prepared a standalone management plan, which is presented in Appendix B of this report. In addition, the methods used by Watkin Jones to remove the Japanese Knotweed contaminated soils is also presented in a letter, within Appendix B of this report.

5.5. Potable Water Supply Protection

PE/Al/PE barrier pipes were installed at the site. Polyguard™ barrier pipe comprises five concentric layers (an inner layer of blue PE80, an adhesive layer, a middle barrier layer of aluminium, an adhesive layer and an outer layer of blue PE80) and the outer layer of the pipe is identified by 4 co-extruded brown stripes. The technical data for this pipe is included in Appendix I of this report.



Project No : T/10/886/VR

Page No : 15 of 15

Engineer: James Blyth

Date : 10/03/11

VERIFICATION REPORT FOR SCHOLARS COURT, NESTON

6.0 SITE CERTIFICATION

It has been demonstrated in this report that remediation works have been undertaken at the site in accordance with the Betts Associates remediation strategy. The site is therefore considered to be safe and suitable for a residential development with private gardens and landscaped areas.

APPENDIX A: PHOTOGRAPHS

Photograph 1: Subsoil at the source site.



Photograph 2:



Photograph 3: Subsoil installation at the site.



Photograph 4: Hydrocarbon impacted soils and water within foundation excavation.



Photograph 5: Hydrocarbon impacted soils and water within foundation excavation.



APPENDIX B: JAPANESE KNOTWEED MANAGEMENT PLAN



KNOTWEED ERADICATION

—— Specialist Weed Control & Consultants ——

Japanese Knotweed Management Plan

Watkin Jones Homes

Scholars Court

Cross St

Neston

CH64 3UU

Amended 04/04/2011

Knotweed Eradication

New Inn Farm

Dawson Lane

Leyland

Preston

PR25 5DB

01772 621 013 Tel

01772 623 658 Fax

info@knotweederadication.co.uk

www.knotweederadication.co.uk

Report: DN

Checked : PN

OBJECTIVES

The Environment Agency produced updated guidelines for the control, management and destruction of Japanese Knotweed on development sites in February 2006.

The purpose of the following Japanese Knotweed Management Plan is to aid the successful management and eradication of knotweed from this site and to ensure that the methods employed adhere to the current UK legislation and guidance as described in the Environment Agencies Code of Practice (2006).

JAPANESE KNOTWEED REPORT

Knotweed Eradication was commissioned by Watkin Jones Homes to verify the original location of Japanese Knotweed within the site known as Scholars Court, Cross St, Neston, CH64 3UU. This report provides background information relating to the invasive plant species and sets out some options for control and eradication.

In order to prepare this report an initial walk over inspection of the site was carried out by Knotweed Eradication on 2nd March 2011 to identify what was the original location of Japanese Knotweed. This management plan has been amended on 4th April 2011 based on the findings of that inspection and information, photographs and documentation submitted by Watkin Jones Homes.

This management plan takes into account occurrences on the site to date and any amendments or variations to the original plan and timescale which may be required to ensure the effective implication of required actions.

It should be noted that at the time of this inspection the original area of knotweed had already been excavated and removed from site to licensed landfill facility (see attached waste transfer notes and validation letter from Watkin Jones Homes dated 1st April 2011)

JAPANESE KNOTWEED

Japanese knotweed is a non-native perennial plant, which originated in Japan and was brought into the United Kingdom in Victorian times as a decorative garden plant. It has subsequently 'escaped' into the wild and has spread extensively across the country. It is tolerant of a wide range of conditions and so is a very successful coloniser particularly of brownfield with made ground, unused dormant sites and unmaintained areas of open space. Railway and river corridors are particularly vulnerable as the plant is often left untreated with inaccessible areas and allowed to flourish.

The plant is an aggressive, persistent plant that is particularly invasive and can cause severe environmental damage. It is harmful to the natural habitats as it shades out the diversity of native plants and is a very poor environment for wildlife. Its reproduction in the UK is vegetative from a sterile female clone. Its method of reproduction is generally via underground stems (rhizome) although it regenerates readily from both rhizome and stem material and the smallest of viable stem or rhizome material (less than 1 gram) can regenerate successfully in both terrestrial and aquatic media.

The plant begins to grow in April from the base of the old 'crown' and any new underground rhizomes resulting from the previous season's growth, producing dark pink spiked shoots. By mid summer, in its mature growth state, Japanese knotweed forms dense leafy stands up to 3.5 metres tall. These persist into late September when the plant begins to lose its leaves. In the winter, during its dormant period, the leafless dry brown stems remain upright throughout the season. The cycle of growth begins again in following spring. The plant is very vigorous and is very difficult to eradicate as its roots (rhizomes) are extensive and can grow as much as 2.0 – 4.0 metres deep particularly in loose fill material. From the edges of existing stands rhizomes can rapidly grow outwards for as much as 7.0 metres in a single season given the right conditions and therefore it is capable of spreading extensively in a comparatively short timescale. The rhizomes can also spread beneath building structures and roads to colonise new areas that might be deemed cut off from existing stands.

Of particular concern in many situations is the damage, which could occur to constructed surfaces as the plant is capable of easily growing through hard surfaces, particularly tarmacadam and block paving and under building foundations if not treated effectively. It can also penetrate joints and cracks in brick and concrete walls and open up these areas to cause structural instability over time. There is also the potential for growth and infestation in soft areas where its future control may be limited if not impossible due to difficulties in access and for the plant to spread unchecked onto adjacent land to further colonise areas.

There are very few 10km squares found in a recent botanical survey of the UK (by the Botanical Society of the British Isles) in which Japanese knotweed is not now present. Its spread and consequential cost of removal is currently expediential. Regions such as the South West of England and Wales, where the plant thrives due to the wetter climate, are now suffering economically due to its spread. The Environment Agency believes it is a major environmental problem currently within the UK. There are no indigenous biological controls and although research in this area is ongoing it is likely to take several years before it is established that the controls are not detrimental to other British wildlife.

LEGAL STATUS

Material and soils containing Japanese knotweed is deemed contaminated and its treatment is controlled by legislation. As it is also difficult to eradicate and treat and it has status under legislation for its control. In legal terms it is an offence under *Schedule 9, Part 11 of the Wildlife and Countryside Act (1981)* to plant or otherwise cause the plant to grow in the wild. An offence under this Act can result in criminal prosecution. In addition, under *Section 34 of the Environmental Protection Act (1990)*, Japanese knotweed (stem and root and soil containing roots) is classed as ‘controlled waste’ and as such must be disposed of safely at a licensed landfill site according to the *Environmental Protection Act (Duty of Care) Regulations 1991*. Infringement can result in the Environment Agency taking enforcement action, which may result in an unlimited fine.

The Rio Summit 1992, Convention on Biological Diversity, Article 8(h) calls on participating nations to ‘prevent the introduction of, (to) control, or (to) eradicate those alien species which threaten ecosystems, habitats or species’.

Effective removal or control can be carried out by a competent contractor following good procedures and guidelines to contain the plant and prevent careless spreading during removal and disposal. On site burial of knotweed material whether stem parts or soil containing rhizomes may require a *Waste Management Licence* under the *Waste Management Licensing Regulations 1994* and the *Landfill Regulations 2002* depending on the engineering operations of on site work. Exemptions may be available as set out in Schedule 3 of the Regulations and will require registration with the Environment Agency. Disposal off site to landfill will require a Waste Transfer Certificate. Burial on site must be performed to a depth of at least 5.0m. Advice should be sought from the Environment Agency who have provided a *Code of Practice for the Management, Destruction and Disposal of Japanese knotweed (May 2001)* and who also issue appropriate licences/certificates for waste control. Treatment of knotweed by herbicide within 10 metres of a watercourse will require approval from the Environment Agency for the use of herbicide applied in or near a watercourse. An approved herbicide for such use must be specified and used.

Third parties can also be held liable for costs incurred from the spread of Japanese knotweed across adjacent landowner’s property or by re-using infested soil.

Other legislation relevant to the control of non-native invasive weeds includes the following.

- *Town and Country Planning Act 1990.*
 - *Highways Act 1980.*
 - *Water Resources Act 1991.*
 - *The Waste Management and Licensing Regulations 1994.*
 - *The Landfill (England and Wales) Regulations 2002.*
 - *The Control of Pesticides Regulations 1986 (under the Food and Environment Protection Act 1985).*
 - *The Control of Substances Hazardous to Health Regulations 2001 (COSHH)*
-

POSSIBLE CONTROL OPTIONS

Control of Japanese knotweed is usually carried out by manual or chemical methods or a combination of both. Herbicide treatment is labour intensive and there is no 'quick fix' effective herbicide as they may have to be continued for a number of years before effective total control is achieved. The 'dig and dump' approach is generally very effective but is not a sustainable approach and can incur high costs when disposing of plant or soil contaminated with Japanese knotweed rhizomes if taken to a licensed landfill site in accordance with current guidelines. In some instances it is impractical to use machinery for excavation such as where knotweed is located within the root zone of trees. Similarly access and feasible use of machines may be impossible due to ground conditions or severe slopes. Control of the knotweed and the prevention of its spread by herbicide treatment on 'dormant' sites are essential where future excavation and disposal to landfill in the longer term is considered a possibility. Whatever control method is used, the effective eradication of the plant's rhizome system is essential if lasting control of Japanese knotweed is to be achieved.

Options

Chemical and Manual Control

Chemical treatment of the plant is the most commonly used method followed by a pulling and/or cutting and mowing regime. However, it may take several years, depending on the herbicide used and frequency of the seasonal treatments, to fully eradicate the plant even with treatment carried out every year to the re-growth of the plant. However, certain herbicide treatment, which is carried out persistently over the season to any new emerging shoots using translocated total and residual herbicides, have given good results in a 2 year period. Contractors capable of monitoring sites on a monthly basis and treating new emerging growth should be considered a priority if this approach is undertaken.

Where development footprints of buildings, car parks, paths and drives do not conflict with areas of knotweed it should be possible to leave the plant in situ in order that it can be treated over time by herbicide application. Care must be taken that access to the stands for spraying will be possible and that it will not limit the planting of new landscapes which could be affected by the herbicide spraying.

Excavation

Where situations require a much more rapid treatment of control in order for the site to be developed in the short term it is recommended that a programme of cutting and burning of the top growth and deep and extensive digging to remove the rhizomes is carried out. Removal of excavated material is often to landfill sites but the material can be stocked piled in controlled areas elsewhere if space is available on site for future herbicide treatment. Alternatively, it can be spread in areas of proposed public soft landscaping, again for in situ herbicide treatment. A rigorous management regime needs to be put in place if this approach is to be successful.

Combined Treatment

Where sufficient space exists on site a combined treatment can be used which in many instances has proved to be very effective. The method involves the spraying of the plant with a non-selective herbicide followed by removal and stockpiling of the top 300mm of soil containing the knotweed 'crowns' and majority of rhizomes. The exposed ground is then cultivated to a depth of 500mm and the excavated material re-spread over the cultivated area. This process stimulates the rhizomes to produce a higher ratio of stem ratio to below ground rhizomes, which renders the plant more vulnerable to herbicide treatment. Subsequent herbicide treatment has, in some instances, been observed to eradicate the knotweed after two herbicide applications, which may be performed within the same growing season. If work commences late in the season when the plant is dying back for its dormant period, digging can be carried out during the winter months without an initial pre-treatment with herbicide, and re-growth treated during the spring and summer. However, this is dependant on the timing of operations and offers no outright guarantees of total eradication in a single year.

Root Barriers

Where treatment of any kind is not feasible, particularly where Japanese knotweed is located off site in the ownership of others but adjacent to development areas, the use of polyethylene root barriers can be effective. These can be purchased as proprietary products and inserted into narrow trenches along boundaries or foundation lines to prevent knotweed rhizomes growing in a specific direction.

SURVEY FINDINGS

General description of site area

Prior to development the site comprised of a plot of land becoming overgrown with brush and scrub. The site is bordered on all sides by residential dwellings with access to the site off Cross St, Neston.

At the time of the inspection on the 2nd March 2011 the site was near completion with the development of six residential dwellings.

Area 1 The area of knotweed was originally located on the southern boundary of the site to the rear of properties on Cross St. The infestation originally covered a visible area of approx 2m X 2m though it didn't appear to be particularly well established. Ground conditions on the site show bedrock close to the surface which may explain the lack of growth. At the time of this inspection the knotweed had already been excavated and removed to licensed landfill facility by the client (see attached waste transfer tickets and validation letter from Watkin Jones Homes dated 1st April 2011)



Fig 1: Fenced off area of knotweed

HEALTH AND SAFETY

Relevant health and safety legislation must be observed in the UK. The relevant regulations are outlined in *The UK Pesticide Guide* produced annually.

The legislation relevant to the use of herbicides is: -

- The *Control of Substances Hazardous to Health Regulations* (COSHH) 2001. All operatives must comply with the regulations and wear protective clothing and observe a strict code of hygiene of washing hands before drinking and eating.
- The *Control of Pesticides Regulations 1986* under the *Food and Environment Protection Act* (FEPA) 1995.
- *Pesticides: Code of Practice* 1990 (Published by MAFF/HSE).

Health and Safety Guidelines

- All operatives must hold a Certificate of Competence for herbicide application (NPTC) or be under the direct supervision of qualified operative prior to commencing a spraying programme.
 - All operatives must act responsibly in the storage and handling of the herbicide. The disposal of the herbicide and empty containers must be carried out by operatives in a responsible way. Any spillage must be guarded against and if occurring shall be dealt with and cleaned up. All operatives must carry a basic first aid kit.
 - The area of work should be protected from the general public during the treatment and use of the herbicide.
 - The use of herbicides should be carried out in compliance with the product label instructions.
 - Advice on herbicide application should be sought for a BASIS qualified advisor
-

HERBICIDES

Picloram

Persistent translocated herbicide.

Stays in the soil so may kill new shrub planting and trees.

Existing trees can take up lethal dose.

Not suitable for use near water bodies.

Glyphosate

Non-selective, non-residual, translocated herbicide.

Not suitable to use where other vegetation is to be retained.

Use with a proprietary wetting agent.

New planting can be placed into ground following its application as it is not persistent in the ground.

Use in sensitive habitats, under trees and adjacent/near water bodies.

Other herbicides

- 2,4-D Amine
- Triclopyr
- Imazapyr

All contractors must be able to supply the following in relation to herbicide treatment or excavation of knotweed.

- Specific method statement for treatment including risk assessments.
 - Supervision of Japanese knotweed removal.
 - Certification of disposal facilities
 - COSHH for herbicides used.
 - Certificates for operatives using and handling herbicides.
 - Personal protective equipment for operatives of herbicides.
 - Third party insurance for all works.
-

REFERENCES

Renals, T. and Rene, P. (May 2001) *Code of Practice for the Management, Destruction and Disposal of Japanese knotweed, Version 1.*
The Environment Agency.

Available to download: www.environment-agency.gov.uk

Child, L. and Wade, M. (2000) *The Japanese knotweed Manual*
Packard Publishing Limited, Chichester.

Web Sites

Nature Conservation
www.nationaltrust.org.uk/environronment/htm/nat_con/_fspapers/fs_plant01

Japanese Knotweed Control Forum
www.ex.ac.uk/knotweed

METHODOLOGY

Warning signs and fencing should be erected to identify infestations to other site personnel. Additionally, contractors working on site should be briefed to familiarise them with the appearance of the plant. Professional advice should be sought if other possible infestations are noted on site.

Treatment of knotweed infestations is to be carried out over the growing season (April - October) to prevent the spread of live material. Treatment to be carried out by means of herbicide application

During demolition and remediation of the site any works carried out in knotweed areas is to be supervised to ensure no cross contamination of other areas.

Where materials are required to be removed to facilitate development of the site they will be removed from site to licensed landfill facility.

Root barriers are to be installed where possible cross contamination may occur with development area.

Adjoining properties where knotweed is in conflict along fence line to be informed so that appropriate actions can be taken.

Continued monitoring and treatment of site to be carried out for a minimum of three years.

PLEASE NOTE: Task and site specific method/risk and COSHH assessments should be carried out for each specific task being undertaken. When filed in conjunction with this management plan they will form a record of actions taken and locations of treated knotweed for future users.

PROPOSED SCHEDULE OF WORKS**By Watkin Jones Homes**

Demolition / remediation of site	Winter period 2010/11
Removal of knotweed material from initial works area and removal from site to licensed landfill facility. Removal to be carried out down to bedrock (see attached waste transfer notes and validation letter from Watkin Jones Homes dated 1 st April 2011)	September 2010
Installation of geotextile to knotweed area and all soft landscape areas	Prior to sub and top soiling

By Knotweed Eradication

Ongoing watching brief of former knotweed areas with herbicide treatment being carried out in the event of growth being found – Client to be informed	April – October 2011
Ongoing watching brief of former knotweed areas with herbicide treatment being carried out in the event of growth being found – Client to be informed	April – October 2012
Ongoing watching brief of former knotweed areas with herbicide treatment being carried out in the event of growth being found – Client to be informed	April – October 2013
24 month warranty period	to October 2015



Site plan indicating areas of original JK infestation to include buffer zone



Site plan indicating original location of JK in relation to new build plots

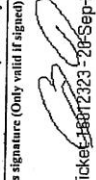


PRE-START MEETING

1.	Project Title: SCHOLARS' COURT, NESTON	Date: 26 August 2010	
2.	Sub-Contractor: N.A.		
3.	Present: Development Dir WJH Contracts Manager WJH Environmental Manager WJG Technical Office Environment Agency Wales Environment Officer Outer Mersey – EA Apologies: Lead Environmental Officer – CwaC Betts Assoc		
4.	Scope of Works Construction of 6 No. dwellings and associated remediation of garden areas		
5.	Programme Site setup Site clearance inc trees Remediation (as discussed and agreed by all parties): 1. Japanese knotweed excavation and disposal. Note ref DW 2126466 Gowy Landfill require 24hr notification prior to disposal. Site to advise JD 2. Excavation of trial pit SS1. Note ref DW 2125209. Gowy Landfill require 24 hr notification prior to disposal. Site to advise JD 3. Reduced level dig Note ref DW 2125211. 4. Lay Geotextile membrane to ALL garden areas including shrub planting areas at the frontage of the properties. 5. Importation of subsoil and topsoil. 6. Undertake foundation / service / drainage excavations for disposal off site 7. Commence build 8. Installation of block and beam and gas proof membrane.		MJ MJ
6.	Supervision Contracts Manager – Site Manager – TBC		

7. Site Rules Available on site	
8. Drawings & Information Provided /Required. Betts Assoc Letter Report 3 June 2010 Betts Assoc Remediation Statement March 2010 WJH Proposed Site Plan / Plot Drainage Drg:100 Rev:C	
9. Release of Information/Information Required. Foundation details.	JGB
10. Health and Safety MJ to update Watkin Jones' Site Manager will carry out a site induction to all operatives.	MJ
11. Attendances by Watkin Jones Homes MJ JD JGB Site Manager - TBC	
12. Provisions of Samples Sub soil analysis and source Topsoil analysis and source	JD JD
13. Any Other Business EA requested a copy of the following documents: • Site Waste Management Plan • Local Impact • Hazardous waste registration EA / EHO to be notified of the intended completion of : excavations (3 days), laying of geo-textile membrane (3 dyas) and	JD JD JD MJ

Minutes of pre-start meeting regarding JK and agreement to management plan

WEIGHBRIDGE TICKET		Waste Recycling Limited, 6 Siddings Court, White Rose Way, Doncaster, DN4 5NU Tel: 01302 303030 Fax: 01302 303092			
Site Address and Licence Number Gowy Landfill Gowy Landfill Site Ince Lane Wimbolds Trafford Cheshire		Ticket Number 16012323		Round Number	
Customer Name & Address WATKIN JONES & SON LTD Lindale Industrial Estate Banger Gwynedd LL57 4YH		Enquiry Number 2126466		Vehicle Registration No: CX57CAA	
Customer Account No. DWATK2		Landfill Tax Code S		Waste Description soil contaminated with Japanese knotweed (less than 5% of soil content) ex Scholars Court, Neston, Cheshire as per information recd 18.08.10	
Purchase Order Number NOW/268853		Site Prefix 1,190		Transfer Note Number : 014986	
Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the Operator's signature (Only valid if signed)		Weight (kg) 1st Weight 30,700 2nd Weight 12,540 Net Weight 18,160			
Operator's signature (Only valid if signed)  Ticket 16012323 - 20-Sep-2010 11:34		Date and Time 20 Sep 2010 11:52:28 20 Sep 2010 11:33:47			
Driver's Signature (Only valid if signed)  Ticket 16012323 - 20-Sep-2010 11:33		Source Code: Trade			
		Comments			

Waste transfer notification for JK removal and disposal

WEIGHBRIDGE TICKET		Waste Recycling Limited, 6 Siddings Court, White Rose Way, Doncaster, DN4 5NU Tel: 01302 303090 Fax: 01302 303092		waste recycling group	
Site Address and Licence Number		Ticket Number		Round Number	
Gwy Landfill		16012909			
Gwy Landfill Site		Enquiry Number			
Ince Lane		2120466			
Wimbolds Trafford		Site Prefix			
Chesser		1,190			
Customer Name & Address		Landfill Tax Code		Vehicle Registration No;	
WATKIN JONES & SON LTD		S		CX57CAA	
Lundegat Industrial Estate		Waste Description		soil contaminated with Japanese knotweed (less than 5% of soil content) ex Scholars Court, Neston, Cheshire as per information recd 18.08.10	
Bangor					
Gwynedd					
LL57 4YH					
Customer Account No.		Purchase Order Number			
DWATK2					
Waste Carrier Registration Number		Transfer Note Number :		014986	
NOW/268853					
Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the Operator's signature (Only valid if signed)		Tally / Bridge		Date and Time	
Ticket 16012909 - 20-Sep-2010 14:02		230629		20 Sep 2010 14:02:39	
		Held Tare		20 Sep 2010 14:02:40	
				Weight (kg)	
				1st Weight 31,880	
				2nd Weight 12,540	
				Net Weight 19,340	
Driver's Signature (Only valid if signed)		Source Code:		Trade	
Ticket 16012909 - 20-Sep-2010 14:02					
		Comments			

Waste transfer notification for JK removal and disposal



MATTHEW HOUSE, Llys Edmund Prys, St Asaph Business Park, St Asaph, Denbighshire LL17 0JA
TELEPHONE : 01745 538200 • FAX : 01745 538202
www.watkinjones.com

New Office Address: 55 Ffordd William Morgan, St Asaph Business Park, St Asaph. LL17 0JG

Our ref JGB/14609/ccc

4 April 2010

KNOTWEED ERADICATION
New Inn Farm
Dawson Lane
LEYLAND
PR25 5DB

For the attention of

Dear

Japanese Knotweed at Scholars' Court, Neston

Further to your recent report and comments received from the EA, CWAC & NHBC I wish to clarify the extent of works undertaken by Watkin Jones.

The excavation of Japanese Knotweed was undertaken on 20TH September 2010 under the supervision of our Contracts Manager, under the instruction of our Environmental Manager,

The decision was taken from Watkin Jones to undertake these works due to the shallow depth of sandstone that had been established in close proximity to this area through the extensive investigations that had been undertaken.

The area of contamination was fully excavated to bedrock and any friable material scraped off and disposed with the contaminated materials.

The area was then overlaid with geotextile membrane (as specified for all garden areas) in readiness for subsoil.

The company has subsequently appointed yourselves to implement a Japanese Knotweed Management Plan to ensure monitoring continues and treatment if necessary. However, it should be noted that we were 100% successful in our approach to fully excavate the contaminated area. I would be grateful if you could include this in your report for clarification purposes.

Yours sincerely
for Watkin Jones Homes

Development Director

Make the smart move



APPENDIX C: WASTE TRANSFER NOTES

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Customer Account Number

DWATK2

Purchase Order Number

Waste Carrier Registration Number

now268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket: 16024851 - 23-Sep-2010 10:16

Driver's Signature (Only valid if signed)

Ticket: 16024851 - 23-Sep-2010 10:16

Cross Ref. Ticket Number

16,024,851

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Waste Recycling Group plc

Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977



Vehicle Registration Number

CX03AOK

Round Number

Waste Description

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No

Date and Time

Weight

1	23/09/2010 09:55:57	1st Weight	30,780
1	23/09/2010 10:16:19	2nd Weight	11,960
		Net Weight	18.820

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2666323, Pennine Waste Management Limited No.3057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Sidings Court, White Rose Way, Doncaster, DN4 6NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowry Landfill
Gowry Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Customer Account Number

DWATK2

Purchase Order Number

Waste Carrier Registration Number

NOW/268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)



Ticket: 16024967 - 23-Sep-2010 10:15

Driver's Signature (Only valid if signed)



Ticket: 16024967 - 23-Sep-2010 10:15

Cross Ref. Ticket Number

16,024,967

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Vehicle Registration Number

S33DWJ

Round Number

Waste Recycling Group plc
Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977



Waste Description

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No

1

Date and Time

23/09/2010 10:14:59

Weight

1st Weight 31,540

Manually Entered

23/09/2010 10:15:00

2nd Weight 12,280

Net Weight 19,260

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2866323, Pennine Waste Management Limited No.3057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Sidings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Customer Account Number

DWATK2

Purchase Order Number

Waste Carrier Registration Number

now268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket: 16025515 - 23-Sep-2010 12:15

Driver's Signature (Only valid if signed)

Ticket: 16025515 - 23-Sep-2010 12:14

Cross Ref. Ticket Number

16,025,515

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Waste Recycling Group plc

Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977



Vehicle Registration Number

CX03AOK

Round Number

Waste Description

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No

1

Date and Time

23/09/2010 12:14:21

Weight

1st Weight 28,580

Manually Entered

23/09/2010 12:14:22

2nd Weight 11,960

Net Weight 16.620

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2802416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2666323, Pennine Waste Management Limited No.3057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Sidings Court, White Rose Way, Doncaster, DN4 8NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

**Customer Account
Number**

DWATK2

Purchase Order Number**Waste Carrier Registration Number**

NOW/268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)


Ticket: 16025550 - 23-Sep-2010 12:24

Driver's Signature (Only valid if signed)


Ticket: 16025550 - 23-Sep-2010 12:23

Cross Ref. Ticket Number

16,025,550

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Vehicle Registration Number

S33DWJ

Round Number

Waste Recycling Group plc
Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977

**Waste Description**

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No

1

Date and Time

23/09/2010 12:23:51

Weight

1st Weight 31,320

Manually Entered

23/09/2010 12:23:52

2nd Weight 12,280

Net Weight 19.040

Source Code: Trade

Comments

Waste Recycling Group plc: Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BCR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2866323, Pennine Waste Management Limited No.3057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Sidings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Customer Account Number

DWATK2

Purchase Order Number**Waste Carrier Registration Number**

now268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket: 16026013-23-Sep-2010 14:21

Driver's Signature (Only valid if signed)

Ticket: 16026013-23-Sep-2010 14:21

Cross Ref. Ticket Number

16,026,013

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Waste Recycling Group plc

Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977

**Vehicle Registration Number**

CX03AOK

Round Number**Waste Description**

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No

1

Date and Time

23/09/2010 14:21:13

Weight

1st Weight

31,100

Manually Entered

23/09/2010 14:21:14

2nd Weight

11,960

Net Weight

19.140

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2668323, Perrine Waste Management Limited No.3057012, WasteNotes Limited No.2674166 and WasteNotes (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Skilings Court, White Rose Way, Doncaster, DN4 6NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Cross Ref. Ticket Number

16,026,122

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Waste Recycling Group plc

Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977



Vehicle Registration Number

S33DWJ

Round Number

Waste Description

soil ex Scholars Court Neston as per analysis received 02/07/10

Customer Account

Number

DWATK2

Purchase Order Number

Waste Carrier Registration Number

NOW/268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket: 16026122 - 23-Sep-2010 14:53

Driver's Signature (Only valid if signed)

Ticket: 16026122 - 23-Sep-2010 14:52

Transfer Note Number : 014990

Weigh Bridge No

Date and Time

Weight

1

23/09/2010 14:52:50

1st Weight

31,440

Manually Entered

23/09/2010 14:52:51

2nd Weight

12,280

Net Weight

19.160

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2666323, Pennine Waste Management Limited No.03057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Siddings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Customer Account Number

DWATK2

Purchase Order Number

32309

Waste Carrier Registration Number

NOW268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket: 16029052 - 24-Sep-2010 10:28

Driver's Signature (Only valid if signed)

Ticket: 16029052 - 24-Sep-2010 10:27

Cross Ref. Ticket Number

16,029,052

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Waste Recycling Group plc

Darrington Quarries,
Darrington Leys,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977

**Vehicle Registration Number**

H987MJC

Round Number**Waste Description**

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No**Date and Time****Weight**

1

24/09/2010 10:16:40

1st Weight

20,140

1

24/09/2010 10:27:44

2nd Weight

11,560

Net Weight

8,580

Source Code: Trade

Comments

Waste Recycling Group plc Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692695, Derbyshire Waste Limited No.2666323, Pennine Waste Management Limited No.057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Siddings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Customer Account Number

DWATK2

Purchase Order Number

32309

Waste Carrier Registration Number

NOW268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket: 16029962 - 24-Sep-2010 12:57

Driver's Signature (Only valid if signed)

Ticket: 16029962 - 24-Sep-2010 12:56

Cross Ref. Ticket Number

16,029,962

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Waste Recycling Group plc

Darrington Quarries,
Darrington Leys,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977

**Vehicle Registration Number**

H987MJC

Round Number**Waste Description**

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No**Date and Time****Weight**

1

24/09/2010 12:56:35

1st Weight

20,620

Manually Entered

24/09/2010 12:56:36

2nd Weight

11,560

Net Weight

9.060

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2666323, Pennine Waste Management Limited No.3057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Siddings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

**Customer Account
Number**

DWATK2

Purchase Order Number

32309

Waste Carrier Registration Number

NOW268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket: 16030395 - 24-Sep-2010 14:47

Driver's Signature (Only valid if signed)

Ticket: 16030395 - 24-Sep-2010 14:47

Cross Ref. Ticket Number

16,030,395

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Waste Recycling Group plc

Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977

**Vehicle Registration Number**

H987MJC

Round Number**Waste Description**

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No

1

Date and Time

24/09/2010 14:47:46

1st Weight

22,140

Manually Entered

24/09/2010 14:47:47

2nd Weight

11,560

Net Weight

10.580

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2686323, Pennine Waste Management Limited No.3067012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Stings Court, White Rose Way, Doncaster, DN4 6NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Customer Account Number

DWATK2

Purchase Order Number

Waste Carrier Registration Number

now268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket: 16034869 - 27-Sep-2010 09:23

Driver's Signature (Only valid if signed)

Ticket: 16034869 - 27-Sep-2010 09:23

Cross Ref. Ticket Number
16,034,869

Enquiry Number
2125211

Site Prefix
1,190

Landfill Tax Code
L

Waste Recycling Group plc
Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977



Vehicle Registration Number
CX03AOK

Round Number

Waste Description

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No	Date and Time		Weight
1	27/09/2010 09:23:35	1st Weight	28,300
Manually Entered	27/09/2010 09:23:36	2nd Weight	11,960
		Net Weight	16,340

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2802416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2666323, Permian Waste Management Limited No.0057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Siddings Court, White Rose Way, Doncaster, DN4 6NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Customer Account Number

DWATK2

Purchase Order Number

Waste Carrier Registration Number

now268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket: 16035401 - 27-Sep-2010 11:25

Driver's Signature (Only valid if signed)

Ticket: 16035401 - 27-Sep-2010 11:25

Cross Ref. Ticket Number

16,035,401

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Vehicle Registration Number

CX03AOK

Round Number

Waste Recycling Group plc
Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977



Waste Description

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No

1

Date and Time

27/09/2010 11:25:01

1st Weight

30,100

Manually Entered

27/09/2010 11:25:02

2nd Weight

11,960

Net Weight

18,140

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2802416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2666323, Fennie Waste Management Limited No.3057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Siddings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Customer Account Number

DWATK2

Purchase Order Number

Waste Carrier Registration Number

now268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket: 16035914 - 27-Sep-2010 13:42

Driver's Signature (Only valid if signed)

Ticket: 16035914 - 27-Sep-2010 13:42

Cross Ref. Ticket Number

16,035,914

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Waste Recycling Group plc

Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977



Vehicle Registration Number

CX03AOK

Round Number

Waste Description

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No

1

Date and Time

27/09/2010 13:42:12

Weight

1st Weight 29,080

Manually Entered

27/09/2010 13:42:13

2nd Weight 11,960

Net Weight 17.120

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2666323, Pennine Waste Management Limited No.057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Siddings Court, White Rose Way, Doncaster, DN4 6NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Cross Ref. Ticket Number

16,039,231

Enquiry Number

2125211

Site Prefix

1,190

Waste Recycling Group plc

Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977

**Landfill Tax Code**

L

Vehicle Registration Number

CX03AOK

Round Number**Waste Description**

soil ex Scholars Court Neston as per analysis received 02/07/10

Customer Account Number

DWATK2

Purchase Order Number**Waste Carrier Registration Number**

now268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket: 16039231 - 24-Sep-2010 10:00

Driver's Signature (Only valid if signed)

Ticket: 16039231 - 28-Sep-2010 09:59

Transfer Note Number : 014990**Weigh Bridge No**

1

Date and Time

28/09/2010 09:59:08

Weight

1st Weight

29,160

Manually Entered

28/09/2010 09:59:09

2nd Weight

11,960

Net Weight

17,200

Source Code: Trade**Comments**

Waste Recycling Group plc. Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2656323, Pemine Waste Management Limited No.057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Sidings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Customer Account Number

DWATK2

Purchase Order Number

Waste Carrier Registration Number

NOW/268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket 16039294 - 28-Sep-2010 10:12

Driver's Signature (Only valid if signed)

Ticket 16039294 - 28-Sep-2010 10:12

Cross Ref. Ticket Number

16,039,294

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Waste Recycling Group plc

Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977



Vehicle Registration Number

S33DWJ

Round Number

Waste Description

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No

1

Date and Time

28/09/2010 10:12:36

Manually Entered

28/09/2010 10:12:37

Weight

1st Weight 31,400

2nd Weight 12,280

Net Weight 19,120

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2666323, Pennine Waste Management Limited No.3057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Sidings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

**Customer Account
Number**

DWATK2

Purchase Order Number**Waste Carrier Registration Number**

now268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket: 16039919 - 28-Sep-2010 12:14

Driver's Signature (Only valid if signed)

Ticket: 16039919 - 28-Sep-2010 12:13

Cross Ref. Ticket Number

16,039,919

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Vehicle Registration Number

CX03AOK

Round Number

Waste Recycling Group plc
Darrington Quarries,
Darrington Leys,
Cridling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977

**Waste Description**

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No**Date and Time****Weight**

1

28/09/2010 12:13:48

1st Weight

30,680

Manually Entered

28/09/2010 12:13:49

2nd Weight

11,960

Net Weight

18.720

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2602416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2666323, Permian Waste Management Limited No.3057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Sidings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Customer Account Number

DWATK2

Purchase Order Number

Waste Carrier Registration Number

NOW/268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket: 16039952 - 28-Sep-2010 12:22

Driver's Signature (Only valid if signed)

Ticket: 16039952 - 28-Sep-2010 12:21

Cross Ref. Ticket Number

16,039,952

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Waste Recycling Group plc

Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977



Vehicle Registration Number

S33DWJ

Round Number

Waste Description

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No

1

Date and Time

28/09/2010 12:21:46

Weight

1st Weight 31,600

Manually Entered

28/09/2010 12:21:47

2nd Weight 12,280

Net Weight 19,320

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2802416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692496, Derbyshire Waste Limited No.2666323, Pennine Waste Management Limited No.057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674166 and Welbeck Waste Management Limited all registered at 3 Siddings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

**Customer Account
Number**

DWATK2

Purchase Order Number**Waste Carrier Registration Number**

now268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket: 16040522 - 28-Sep-2010 14:24

Driver's Signature (Only valid if signed)

Ticket: 16040522 - 28-Sep-2010 14:24

Cross Ref. Ticket Number

16,040,522

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Waste Recycling Group plc

Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977

**Vehicle Registration Number**

CX03AOK

Round Number**Waste Description**

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No

1

Date and Time

28/09/2010 14:23:59

Weight

1st Weight

30,780

Manually Entered

28/09/2010 14:24:00

2nd Weight

11,960

Net Weight

18.820

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2686323, Pennine Waste Management Limited No.03057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Sidings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Customer Account Number

DWATK2

Purchase Order Number

Waste Carrier Registration Number

NOW/268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket: 16044048 - 29-Sep-2010 10:10

Driver's Signature (Only valid if signed)

Ticket: 16044048 - 29-Sep-2010 10:10

Cross Ref. Ticket Number

16,044,048

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Waste Recycling Group plc

Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977



Vehicle Registration Number

S33DWJ

Round Number

Waste Description

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No

1

Date and Time

29/09/2010 10:10:19

Weight

1st Weight 31,440

Manually Entered

29/09/2010 10:10:20

2nd Weight 12,280

Net Weight 19.160

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2666323, Pennine Waste Management Limited No.3057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Sidings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number
Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name
WATKIN JONES & SON LTD

Cross Ref. Ticket Number
16,044,212

Enquiry Number
2125211

Site Prefix
1,190

Waste Recycling Group plc
Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977



Landfill Tax Code
L

Vehicle Registration Number
CX03AOK

Round Number

Waste Description

soil ex Scholars Court Neston as per analysis received 02/07/10

Customer Account
Number
DWATK2

Purchase Order Number

Waste Carrier Registration Number
now268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket: 16044212 - 29-Sep-2010 10:38

Driver's Signature (Only valid if signed)

Ticket: 16044212 - 29-Sep-2010 10:38

Transfer Note Number : 014990

Weigh Bridge No	Date and Time		Weight
1	29/09/2010 10:38:32	1st Weight	31,020
Manually Entered	29/09/2010 10:38:33	2nd Weight	11,960
		Net Weight	19,060

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2666323, Permian Waste Management Limited No.3057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Skings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Customer Account Number

DWATK2

Purchase Order Number**Waste Carrier Registration Number**

NOW/268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket 16045024 - 29-Sep-2010 12:19

Driver's Signature (Only valid if signed)

Ticket 16045024 - 29-Sep-2010 12:19

Cross Ref. Ticket Number

16,045,024

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Vehicle Registration Number

S33DWJ

Round Number

Waste Recycling Group plc
Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977

**Waste Description**

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No**Date and Time****Weight**

1	29/09/2010 12:19:45	1st Weight	31,500
Manually Entered	29/09/2010 12:19:46	2nd Weight	12,280
		Net Weight	19,220

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692496, Derbyshire Waste Limited No.2666323, Pennine Waste Management Limited No.3057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Siddings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

**Customer Account
Number**

DWATK2

Purchase Order Number**Waste Carrier Registration Number**

now268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket: 16045135 - 29-Sep-2010 12:42

Driver's Signature (Only valid if signed)

Ticket: 16045135 - 29-Sep-2010 12:42

Cross Ref. Ticket Number

16,045,135

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Waste Recycling Group plc

Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977

**Vehicle Registration Number**

CX03AOK

Round Number**Waste Description**

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No

1

Date and Time

29/09/2010 12:42:10

Weight

1st Weight 30,700

Manually Entered

29/09/2010 12:42:11

2nd Weight 11,960

Net Weight 18,740

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BCR Waste Disposal Limited No.2692496, Derbyshire Waste Limited No.2866323, Pennine Waste Management Limited No.3057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Sidings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Customer Account Number

DWATK2

Purchase Order Number

Waste Carrier Registration Number

NOW/268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket: 16045714 - 29-Sep-2010 14:44

Driver's Signature (Only valid if signed)

Ticket: 16045714 - 29-Sep-2010 14:44

Cross Ref. Ticket Number

16,045,714

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Waste Recycling Group plc

Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977



Vehicle Registration Number

S33DWJ

Round Number

Waste Description

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No

1

Date and Time

29/09/2010 14:44:32

Weight

1st Weight 31,580

Manually Entered

29/09/2010 14:44:34

2nd Weight 12,280

Net Weight 19,300

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2666323, Permian Waste Management Limited No.3057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Siddings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Customer Account Number

DWATK2

Purchase Order Number

Waste Carrier Registration Number

now268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)



Ticket: 16045782 - 29-Sep-2010 15:04

Driver's Signature (Only valid if signed)



Ticket: 16045782 - 29-Sep-2010 15:04

Cross Ref. Ticket Number

16,045,782

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Vehicle Registration Number

CX03AOK

Round Number

Waste Recycling Group plc
Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977



Waste Description

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No

1

Date and Time

29/09/2010 15:04:00

1st Weight

31,500

Manually Entered

29/09/2010 15:04:01

2nd Weight

11,960

Net Weight

19,540

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BCR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2666323, Pennine Waste Management Limited No.3057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Solings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Cross Ref. Ticket Number

16,053,117

Enquiry Number

2125211

Site Prefix

1,190

Waste Recycling Group plc

Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977

**Landfill Tax Code**

L

Vehicle Registration Number

CX03AOK

Round Number**Waste Description**

soil ex Scholars Court Neston as per analysis received 02/07/10

Customer Account Number

DWATK2

Purchase Order Number**Waste Carrier Registration Number**

now268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket: 16053117 - 01-Oct-2010 09:52

Driver's Signature (Only valid if signed)

Ticket: 16053117 - 01-Oct-2010 09:52

Transfer Note Number : 014990**Weigh Bridge No**

1

Date and Time

01/10/2010 09:52:33

Weight

1st Weight 30,360

Manually Entered

01/10/2010 09:52:34

2nd Weight 11,960

Net Weight 18.400

Source Code: Trade**Comments**

Waste Recycling Group plc. Registered in England and Wales No.2802416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2666323, Permian Waste Management Limited No.3057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Skings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Customer Account Number

DWATK2

Purchase Order Number

Waste Carrier Registration Number

NOW/268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket 16053205 - 01-Oct-2010 10:21

Driver's Signature (Only valid if signed)

Ticket 16053205 - 01-Oct-2010 10:21

Cross Ref. Ticket Number

16,053,205

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Waste Recycling Group plc

Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977



Vehicle Registration Number

S33DWJ

Round Number

Waste Description

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No

Date and Time

Weight

1

01/10/2010 10:11:12

1st Weight

31,520

1

01/10/2010 10:21:24

2nd Weight

12,300

Net Weight

19,220

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2802416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2665323, Permian Waste Management Limited No.3057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Stings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Customer Account Number

DWATK2

Purchase Order Number

Waste Carrier Registration Number

now268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)


Ticket: 16053863 - 01-Oct-2010 13:05

Driver's Signature (Only valid if signed)


Ticket: 16053863 - 01-Oct-2010 13:05

Cross Ref. Ticket Number

16,053,863

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Waste Recycling Group plc

Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977



Vehicle Registration Number

CX03AOK

Round Number

Waste Description

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No

1

Date and Time

01/10/2010 13:04:59

Weight

1st Weight 30,460

Manually Entered

01/10/2010 13:05:00

2nd Weight 11,960

Net Weight 18,500

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2802416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2666323, Fennie Waste Management Limited No.3057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Siddings Court, White Rose Way, Doncaster, DN4 6NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Cross Ref. Ticket Number

16,054,109

Enquiry Number

2125211

Site Prefix

1,190

Waste Recycling Group plc

Darrington Quarries,

Darrington Leys,

Criddling Stubbs,

Knottingley,

West Yorkshire. WF11 0AH

Tel: 01977 672368 Fax: 01977

**Landfill Tax Code**

L

Vehicle Registration Number

S33DWJ

Round Number**Waste Description**

soil ex Scholars Court Neston as per analysis received 02/07/10

Customer Account Number

DWATK2

Purchase Order Number**Waste Carrier Registration Number**

NOW/268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket 16054109 - 01-Oct-2010 14:36

Driver's Signature (Only valid if signed)

Ticket 16054109 - 01-Oct-2010 14:36

Transfer Note Number : 014990**Weigh Bridge No**

1

Date and Time

01/10/2010 14:36:08

Weight

1st Weight 31,220

Manually Entered

01/10/2010 14:36:10

2nd Weight 12,300

Net Weight 18,920

Source Code: Trade**Comments**

Waste Recycling Group plc. Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692496, Derbyshire Waste Limited No.2066323, Pennine Waste Management Limited No.3057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Siddings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Cross Ref. Ticket Number

16,057,886

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Vehicle Registration Number

CX03AOK

Round Number**Waste Recycling Group plc**

Darrington Quarries,

Darrington Leys,

Criddling Stubbs,

Knottingley,

West Yorkshire. WF11 0AH

Tel: 01977 672368 Fax: 01977

Customer Account Number

DWATK2

Purchase Order Number**Waste Carrier Registration Number**

now268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)


Ticket 16057886 - 04-Oct-2010 10:34

Driver's Signature (Only valid if signed)


Ticket 16057886 - 04-Oct-2010 10:34

Waste Description

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990**Weigh Bridge No****Date and Time****Weight**

1

04/10/2010 10:21:45

1st Weight

30,960

1

04/10/2010 10:34:04

2nd Weight

12,600

Net Weight

18,360

Source Code: Trade**Comments**

Waste Recycling Group plc. Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2666323, Pennine Waste Management Limited No.9057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Siddings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Customer Account Number

DWATK2

Purchase Order Number**Waste Carrier Registration Number**

now268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)


Ticket: 16058862 - 04-Oct-2010 14:32

Driver's Signature (Only valid if signed)


Ticket: 16058862 - 04-Oct-2010 14:32

Cross Ref. Ticket Number

16,058,862

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Waste Recycling Group plc

Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977

**Vehicle Registration Number**

CX03AOK

Round Number**Waste Description**

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No

1

Date and Time

04/10/2010 14:32:33

Weight

1st Weight

31,360

Manually Entered

04/10/2010 14:32:34

2nd Weight

12,600

Net Weight

18.760

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BCR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2066323, Pennine Waste Management Limited No.9057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Sidings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Customer Account Number

DWATK2

Purchase Order Number**Waste Carrier Registration Number**

now268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket 16062667 - 05-Oct-2010 10:10

Driver's Signature (Only valid if signed)

Ticket 16062667 - 05-Oct-2010 10:10

Cross Ref. Ticket Number
16,062,667

Enquiry Number
2125211

Site Prefix
1,190

Landfill Tax Code
L

Waste Recycling Group plc
Darrington Quarries,
Darrington Leys,
Cridling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977



Vehicle Registration Number
CX03 AOK

Round Number

Waste Description

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No	Date and Time		Weight
1	05/10/2010 10:10:28	1st Weight	31,980
Manually Entered	05/10/2010 10:10:29	2nd Weight	12,600
		Net Weight	19,380

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2666323, Pennine Waste Management Limited No.3057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Siddings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Customer Account Number

DWATK2

Purchase Order Number

Waste Carrier Registration Number

now268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket: 16063599 - 05-Oct-2010 13:39

Driver's Signature (Only valid if signed)

Ticket: 16063599 - 05-Oct-2010 13:38

Cross Ref. Ticket Number

16,063,599

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Waste Recycling Group plc

Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977



Vehicle Registration Number

CX03AOK

Round Number

Waste Description

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No

1

Date and Time

05/10/2010 13:38:51

Weight

1st Weight 31,140

Manually Entered

05/10/2010 13:38:52

2nd Weight 12,600

Net Weight 18,540

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2802416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2668323, Fernine Waste Management Limited No.3057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Siddings Court, White Rose Way, Doncaster, DN4 8NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Customer Account Number

DWATK2

Purchase Order Number**Waste Carrier Registration Number**

NOW/268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket: 16110791 - 19-Oct-2010 15:09

Driver's Signature (Only valid if signed)

Ticket: 16110791 - 19-Oct-2010 15:09

Cross Ref. Ticket Number

16,110,791

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Waste Recycling Group plc

Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977

**Vehicle Registration Number**

S33DWJ

Round Number**Waste Description**

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No

1

Date and Time

19/10/2010 15:09:11

Weight

1st Weight

31,460

Manually Entered

19/10/2010 15:09:12

2nd Weight

12,300

Net Weight

19.160

Source Code:

Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692455, Derbyshire Waste Limited No.2666323, Pennine Waste Management Limited No.3057012, WasteNotes Limited No.2674166 and WasteNotes (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Siddings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Customer Account Number

DWATK2

Purchase Order Number

Waste Carrier Registration Number

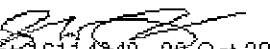
NOW/268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)


Ticket: 16114349 - 20-Oct-2010 11:05

Driver's Signature (Only valid if signed)


Ticket: 16114349 - 20-Oct-2010 11:05

Cross Ref. Ticket Number

16,114,349

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Waste Recycling Group plc

Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977



Vehicle Registration Number

S33DWJ

Round Number

Waste Description

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No

1

Date and Time

20/10/2010 11:05:29

Weight

1st Weight 31,560

Manually Entered

20/10/2010 11:05:30

2nd Weight 12,300

Net Weight 19,260

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2666323, Pennine Waste Management Limited No.3057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Siddings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Customer Account Number

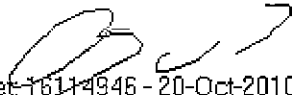
DWATK2

Purchase Order Number**Waste Carrier Registration Number**

NOW/268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)


Ticket: 16114946 - 20-Oct-2010 13:28

Driver's Signature (Only valid if signed)


Ticket: 16114946 - 20-Oct-2010 13:28

Cross Ref. Ticket Number

16,114,946

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Waste Recycling Group plc

Darrington Quarries,
Darrington Leys,
Criddling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977

**Vehicle Registration Number**

S33DWJ

Round Number**Waste Description**

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No

1

Date and Time

20/10/2010 13:28:18

Manually Entered

20/10/2010 13:28:19

Weight

1st Weight

31,700

2nd Weight

12,300

Net Weight

19,400

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2666323, Permian Waste Management Limited No.3057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Skilings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Customer Account Number

DWATK2

Purchase Order Number**Waste Carrier Registration Number**

now268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket: 16137171 - 27-Oct-2010 10:26

Driver's Signature (Only valid if signed)

Ticket: 16137171 - 27-Oct-2010 10:26

Cross Ref. Ticker Number

16,137,171

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Waste Recycling Group plc

Darrington Quarries,
Darrington Leys,
Cridling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977

**Vehicle Registration Number**

CX03AOK

Round Number**Waste Description**

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No

1

Date and Time

27/10/2010 10:26:29

Weight

1st Weight 29,980

Manually Entered

27/10/2010 10:26:30

2nd Weight 11,980

Net Weight 18.000

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2666323, Pennine Waste Management Limited No.3057012, WasteNotes Limited No.2674166 and WasteNotes (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Sidings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Customer Account Number

DWATK2

Purchase Order Number**Waste Carrier Registration Number**

now268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket: 16138994-27-Oct-2010 13:20

Driver's Signature (Only valid if signed)

Ticket: 16138994-27-Oct-2010 13:20

Cross Ref. Ticket Number

16,138,994

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Vehicle Registration Number

CX03AOK

Round Number**Waste Recycling Group plc**

Darrington Quarries,
Darrington Leys,
Cridling Stubbs,
Knottingley,
West Yorkshire. WF11 0AH
Tel: 01977 672368 Fax: 01977

**Waste Description**

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No

1

Manually Entered

Date and Time

27/10/2010 13:20:03

27/10/2010 13:20:04

Weight

1st Weight 29,000

2nd Weight 11,980

Net Weight 17,020

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2682496, Derbyshire Waste Limited No.2665323, Pennine Waste Management Limited No.3057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Sidings Court, White Rose Way, Doncaster, DN4 5NU.

WEIGHBRIDGE TICKET

Site Address and Licence Number

Gowy Landfill
Gowy Landfill Site
Ince Lane
Wimbolds Trafford
Chester

Customer Name

WATKIN JONES & SON LTD

Customer Account Number

DWATK2

Purchase Order Number

Waste Carrier Registration Number

NOW/268853

Tipping is subject to the Company's standard terms and conditions which are available on site or from the above address. It is the driver's responsibility to ensure that the

Operator's signature (Only valid if signed)

Ticket: 16145944-28-Oct-2010 09:26

Driver's Signature (Only valid if signed)

Ticket: 16145944-28-Oct-2010 09:25

Cross Ref. Ticket Number

16,145,944

Enquiry Number

2125211

Site Prefix

1,190

Landfill Tax Code

L

Vehicle Registration Number

S33DWJ

Round Number

Waste Description

soil ex Scholars Court Neston as per analysis received 02/07/10

Transfer Note Number : 014990

Weigh Bridge No

1

Date and Time

28/10/2010 09:25:50

Weight

1st Weight

29,440

Manually Entered

28/10/2010 09:25:51

2nd Weight

12,440

Net Weight

17,000

Source Code: Trade

Comments

Waste Recycling Group plc. Registered in England and Wales No.2902416 and acts as agent for and contracts on behalf of BDR Waste Disposal Limited No.2692495, Derbyshire Waste Limited No.2666323, Pennine Waste Management Limited No.3057012, WasteNotts Limited No.2674166 and WasteNotts (Reclamation) Limited No.2674169 and Welbeck Waste Management Limited all registered at 3 Sidings Court, White Rose Way, Doncaster, DN4 5NU.





Tel/Fax: 01928 722222

HELPING TO PROTECT THE ENVIRONMENT

Watkin Jones
Llandegall Ind Est
Bangor
LL57 4YH.

RECEIVED
04 JAN 2011

15-12-10

1169 ✓

15-01-11

18421

15-12-10 TKN^o 10560
2. tonne at £90-00 per tonne
= 2,000 Ltrs.
Admin and Consignment

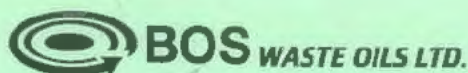
Sub Total (200.00

VAT (35-00

TOTAL (235-00

VAT No: 764 8434 96

The Hazardous Waste Regulations 2005:
Consignment Note



28034

PART A Notification Details

1. Consignment note code *NW1N405* / *28034*
2. The waste described below is to be removed from
(Name, address, postcode, telephone, e-mail, facsimile)
WATKIN JAMES
BP SHOLAND COURT
NASTON
CH643
3. Premises code (where applicable) *NW1N405*
4. The waste will be taken to:
(Name, address and postcode)
OSL LTD
275/280
BRISTOL
BS20 1AS
5. The waste producer was (if different from 2)
(Name, address, postcode, telephone, e-mail, facsimile):

PART B Description of the Waste

SIC for the process giving rise to all waste *5020* /

Description waste	EW Code	UN Code	Container type	Component	Phys. form	Haz Code	Quantity
Waste oil	13.02.05	U/C		Oil	Liquid	H7	
Antifreeze	16.01.14	U/C		Glycol Water	Liquid	H5	
Cont. fuels	13.07.03	1993		Diesel Petrol mix	Liquid	H7 H3	
Thinner	08.01.07	1263		Thinners	Liquid	H14	
Empty drums	15.01.04	U/C		Metal	Solid	H3	
Brake fluid	16.01.13	U/C		B/F	Liquid	H5	
Oil/Water	13.05.07	U/C	<i>TANK</i>	Oil Water	Liquid	H7	<i>2000L</i>
Cutting oils	12.01.09	U/C		Oil Water	Liquid	H7	

PART C Carrier's Certificate

(If more than one carrier is used, please attach schedule for subsequent carriers. If a schedule of carriers is attached tick here ☐).

I certify that today I collected the consignment and that the details in A2, A4 and B3 are correct and I have been advised of any specific handling requirements.

1. Carrier Name: BOS Waste Oils WA6 9BA
On behalf of (see address in section A2):

2. Carrier Registration No. / reason for exemption:
CB/WN5413FY

3. Vehicle Registration No. / (or mode of transport, if not road):
1312 HCN

Signature: *[Signature]*

Date *15* / *12* / *10* Time *P* / *M*

PART D Consignor's Certificate

I certify that the information in A, B and C above is correct, that the carrier is registered exempt and was advised to the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.

1. Consignor's Name: *XCL*

On behalf of: (Name, address, postcode, telephone, e-mail, facsimile):
AS SHOLAND
PART A2

Signature: *XCL*

Date *15* / *12* / *10* Time *P* / *M*

PART E Consignee's Certificate

1. I received all the consignments as described in Part B

3. Waste Management Operation *109*

2. Where waste is rejected please provide details:

4. Vehicle Registration No.: *F322 MCA*

I certify that the waste permit number *1073505C* Part C at the address given in Part A. authorises the management of the consignments as described in

Consignee's Name *[Redacted]* Signature: *[Redacted]*
On behalf of (see address in section A4)

Date *16* / *12* / *10* Time *09* / *30*



BOS WASTE OILS LTD.

11 Swireford Road,
Helsby,
Frodsham,
WA6 9BA.

Tel/Fax: 01928 722222

HELPING TO PROTECT THE ENVIRONMENT

INVOICE TO:

Watkin Jones
Bangor
LL57 4YH

RECEIVED
08 DEC 2010
01 NOV 2010

Invoice Date:

21-10-10

Invoice No:

1156 ✓

Payment Due:

21-11-10

Order No/Ref:

17811

DESCRIPTION

£

p

Contact Les Griffiths.

Removal and Disposal of
Waste Oil and Water

21-10-10 TK N° 10443.

2. tonne at £90.00 Per tonne

= 2000 Ltr's.

Consignment

180.00

20.00

COST ALLOCATION	5414 ✓
COST HEAD	41STIP
DEL. NOTE	R ✓
DEL. PRICE	✓
PRICE ON	✓
AUTHORISATION	✓

Sub Total

200.00

VAT

35.00

TOTAL

235.00

Registered Office:
Fairfield House,
104 Whitby Road,
Ellesmere Port,
South Wirral, CH65 0AB

TERMS: STRICTLY 30 DAYS

Director: T. A. Burns

VAT No: 764 8434 96

GE

PART A Notification Details

1. Consignment note code NW1465 / 077917
2. The waste described below is to be removed from
(Name, address, postcode, telephone, e-mail, facsimile)
WATKIN JAMES
SHEDLARS COURT
NASTON
CH64 3UU
3. Premises code (where applicable) NW1465

4. The waste will be taken to:
(Name, address and postcode)
OSL 1701A9
5. The waste producer was (if different from 2)
(Name, address, postcode, telephone, e-mail, facsimile):

PART B Description of the Waste

SIC for the process giving rise to all waste 5020 /

Description waste	EWG Code	UN Code	Container type	Component	Phys. form	Haz Code	Quantity
Waste oil	13.02.05	U/C		Oil	Liquid	H7	
Antifreeze	16.01.14	U/C		Glycol Water	Liquid	H5	
Cont. fuels	13.07.03	1993		Diesel Petrol mix	Liquid	H7 H3	
Thinner	08.01.17	1263		Thinners	Liquid	H14	
Empty drums	15.01.04	U/C		Metal	Solid	H3	
Brake fluid	16.01.13	U/C		B/F	Liquid	H5	
Oil/Water	13.05.07	U/C	<u>Tank</u>	Oil Water	Liquid	H7	<u>200</u>
Cutting oils	12.01.09	U/C		Oil Water	Liquid	H7	

PART C Carrier's Certificate

(If more than one carrier is used, please attach schedule for subsequent carriers. If a schedule of carriers is attached tick here ☐.)

I certify that today I collected the consignment and that the details in A2, A4 and B3 are correct and I have been advised of any specific handling requirements.

1. Carrier Name: BOS Waste Oils WA6 9BA
On behalf of (see address in section A2):
2. Carrier Registration No. / reason for exemption:
NS0543572CB
3. Vehicle Registration No. / (or mode of transport, if not road):
A312HCA

Signature: [Signature]

Date 21/10/10 Time A.M.

PART D Consignor's Certificate

I certify that the information in A, B and C above is correct, that the carrier is registered exempt and was advised to the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.

1. Consignor's Name: MARIC GRIFITHS
On behalf of: (Name, address, postcode, telephone, e-mail, facsimile):

Signature: [Signature]

Date 21/10/10 Time A.M.

PART E Consignee's Certificate

1. I received all the consignments as described in Part B
2. Where waste is rejected please provide details:
3. Waste Management Operation R09
4. Vehicle Registration No.: F322 MCA

I certify that the waste permit number MP373400 authorises the management of the consignments as described in Part C at the address given in Part A.

Consignee's Name [Redacted] Signature: [Redacted]
On behalf of (see address in section A4)

Date 22/10/10 Time 14.25

APPENDIX D: LABORATORY CHEMICAL TESTING CERTIFICATION



2139

Certificate of Analysis

Date: 26/10/2010

Certificate Number: 10-42952

Client: Tier Consult
Elm Farm House
Saighton
Chester
CH3 6EN

Our Reference: 10-42952

Client Reference: T/10/886

Contract Title: Cross Street Neston

Description: 5 soil samples, 1 water sample

Date Received: 21/10/2010

Date Started: 21/10/2010

Date Completed: 26/10/2010

Test Procedures: Identified by prefix DETSn, details available upon request.

Notes: Observations and interpretations are outside the scope of UKAS accreditation
* denotes test not included in laboratory scope of accreditation
denotes test that holds MCERT accreditation, however, MCERTS accreditation is only implied if the report carries the MCERTS logo
\$ denotes tests completed by an approved subcontractor
I/S denotes insufficient sample to carry out test
U/S denotes that the sample is not suitable for testing
DETSM denotes tests carried out by DETS Midlands laboratory
Solid samples will be disposed 1 month and liquids 2 weeks after the date of issue of this test certificate
Asbestos subsamples will be kept for 6 months

Approved By:

Authorised Signatories:

Business Manager

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-42952
 Client Ref: T/10/886
 Contract Title: Cross Street Neston

Test	Units	Lab No.	289499	289500	289501	289502	289503
		Sample ID	V201	V203	V205	V207	V209
		Depth					
		Sample Ref					
		Sample Type					
		DETSxx					
Arsenic	mg/kg	DETS 042#	6.5	2.5	11	7.6	10
Cadmium	mg/kg	DETS 042#	0.5	0.3	0.9	0.8	0.7
Chromium	mg/kg	DETS 042#	17	8	32	19	27
Copper	mg/kg	DETS 042#	20	5	23	44	19
Lead	mg/kg	DETS 042#	49	7	21	150	57
Mercury	mg/kg	DETS 081#	0.15	< 0.05	0.1	0.29	0.09
Nickel	mg/kg	DETS 042#	13	6	30	17	24
Selenium	mg/kg	DETS 042#	< 0.5	< 0.5	< 0.5	< 0.5	0.6
Zinc	mg/kg	DETS 042#	67	12	60	100	52
Total Sulphate as SO4	%	DETS 075#	0.02	< 0.01	0.02	0.04	0.03
Total Organic Carbon	%	DETS 002	1.5	0.1	0.3	2.5	0.4
pH		DETS 008#	8.4	8.6	8.5	8.3	8.7
Aliphatic C5-C6	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	0.01	< 0.01
Aliphatic C10-C12	mg/kg	DETS 072#	< 1.5	5.9	< 1.5	5.2	< 1.5
Aliphatic C12-C16	mg/kg	DETS 072#	20	39	3.6	71	16
Aliphatic C16-C21	mg/kg	DETS 072#	44	55	6.5	140	27
Aliphatic C21-C35	mg/kg	DETS 072#	160	110	32	560	75
Aromatic C5-C7	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	0.12
Aromatic C10-C12	mg/kg	DETS 072#	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	mg/kg	DETS 072#	3.2	7.6	< 0.5	14	5.1
Aromatic C16-C21	mg/kg	DETS 072#	28	31	< 0.6	76	17
Aromatic C21-C35	mg/kg	DETS 072#	210	91	22	390	52
Aliphatic C5-C35	mg/kg	DETS 072*	230	210	42	770	120
Aromatic C5-C35	mg/kg	DETS 072*	240	130	22	480	75
TPH Ali/Aro	mg/kg	DETS 072*	460	340	64	1200	190

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-42952
 Client Ref: T/10/886
 Contract Title: Cross Street Neston

Test	Units	Lab No.	289499	289500	289501	289502	289503
		Sample ID	V201	V203	V205	V207	V209
		Depth					
		Sample Ref					
		Sample Type					
		DETSxx					
Acenaphthene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	DETS 050	0.1	< 0.1	< 0.1	0.1	< 0.1
Benzo(a)anthracene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	0.1	< 0.1
Benzo(a)pyrene	mg/kg	DETS 050	0.4	< 0.1	< 0.1	1.5	0.1
Benzo(b)fluoranthene	mg/kg	DETS 050	0.3	< 0.1	< 0.1	1.4	< 0.1
Benzo(k)fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	2.7	< 0.1
Benzo(g,h,i)perylene	mg/kg	DETS 050	0.1	< 0.1	< 0.1	1.2	< 0.1
Chrysene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	0.6	< 0.1
Dibenzo(a,h)anthracene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	DETS 050	0.9	< 0.1	< 0.1	2.2	0.5
Fluorene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	0.2	< 0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	0.8	< 0.1
Naphthalene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	0.6	< 0.1
Phenanthrene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	0.2
Pyrene	mg/kg	DETS 050	1.2	< 0.1	0.2	2.6	0.6
PAH	mg/kg	DETS 050	3.3	< 1.6	< 1.6	14	1.9
Phenol - Monohydric	mg/kg	DETS 067#	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-42952
 Client Ref: T/10/886
 Contract Title: Cross Street Neston

		Lab No.	289499	289500	289501	289502	289503
		Sample ID	V201	V203	V205	V207	V209
		Depth					
		Sample Ref					
		Sample Type					
Test	Units	DETSxx					
Total VOC's	mg/kg	DETS 068*	0.05	0.01	< 0.01	< 0.01	< 0.01
1,1 Dichloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1 Dichloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Methylene Chloride	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Methylene Chloride	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trans-1,2-dichloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,2-dichloropropane+1,2-dichloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromochloromethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chloroform	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1-trichloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloropropene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Carbon tetrachloride	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trichloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	0.01	< 0.01
1,2-dichloropropane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibromomethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromodichloromethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
cis-1,3-dichloropropene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
trans-1,3-dichloropropene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,2-trichloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tetrachloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichloropropane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibromochloromethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromoethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
m+p-Xylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
o-Xylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Styrene	mg/kg	DETS 068*	0.05	0.01	< 0.01	< 0.01	< 0.01
Bromoform	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Isopropylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichloropropane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-propylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2-chlorotoluene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3,5-trimethylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
4-chlorotoluene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tert-butylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trimethylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
sec-butylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-42952

Client Ref: T/10/886

Contract Title: Cross Street Neston

Test	Units	Lab No.	289499	289500	289501	289502	289503
		Sample ID	V201	V203	V205	V207	V209
		Depth					
		Sample Ref					
		Sample Type					
		DETSxx					
1,3-dichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
p-isopropyltoluene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,4-dichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-butylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobutadiene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Naphthalene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-42952

Client Ref: T/10/886

Contract Title: Cross Street Neston

Test	Units	Lab No.	289499	289500	289501	289502
		Sample Ref	V201	V203	V205	V207
		Depth				
		Other Ref				
		Sample Type	Soil	Soil	Soil	Soil
Test	Units	DETSxx				
Aniline	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Bis(2-chloroethyl)ether	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Phenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2-Chlorophenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Benzyl Alcohol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2-Methylphenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
3& 4-Methylphenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2,4-dimethylphenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Bis-(dichloroethoxy)methane	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2,4-Dichlorophenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
1,2,4-Trichlorobenzene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Naphthalene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
4-Chloro-3-methylphenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2-Methylnaphthalene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Hexachlorocyclopentadiene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2,4,6 Trichlorophenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2,4,5 Trichlorophenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2-Chloronaphthalene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2-Nitroaniline	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
1,4-dinitrobenzene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Dimethyl phthalate	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
1,3-dinitrobenzene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Acenaphthylene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2,6-Dinitrotoluene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
1,2-Dinitrobenzene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
3-Nitroaniline	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Acenaphthene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Dibenzofuran	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2,4-Dinitrotoluene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
4-Nitrophenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2,3,4,6-Tetrachlorophenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2,3,5,6-Tetrachlorophenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Diethylphthalate	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Fluorene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
4-Chlorophenyl phenyl ether	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
4-Nitroaniline	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Diphenylamine/4,6-Dinitro-2-methylphenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Azobenzene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
4-Bromophenyl phenyl ether	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Hexachlorobenzene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Pentachlorophenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Phenanthrene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	0.22
Anthracene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Carbazole	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Di-n-butylphthalate	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Benzyl butyl phthalate	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Bis(2-ethylhexyl)ester	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Fluoranthene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	0.72
Pyrene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	0.78
Benzo(a)anthracene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	0.35
Chrysene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	0.53

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-42952

Client Ref: T/10/886

Contract Title: Cross Street Neston

		Lab No.	289499	289500	289501	289502
		Sample Ref	V201	V203	V205	V207
		Depth				
		Other Ref				
		Sample Type	Soil	Soil	Soil	Soil
Test	Units	DETSxx				
Di-n-octyl phthalate	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Benzo(b)fluoranthene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	0.81
Benzo(k)fluoranthene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	0.58
Benzo(a)pyrene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	0.94
Indeno(1,2,3-cd)pyrene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	0.62
Dibenz(a,h)anthracene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	0.14
Benzo(ghi)pyrene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	0.87

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-42952
 Client Ref: T/10/886
 Contract Title: Cross Street Neston

		Lab No.	289503
		Sample Ref	V209
		Depth	
		Other Ref	
		Sample Type	Soil
Test	Units	DETSxx	
Aniline	mg/kg	DETSM-134*	<0.10
Bis(2-chloroethyl)ether	mg/kg	DETSM-134*	<0.10
Phenol	mg/kg	DETSM-134*	<0.10
2-Chlorophenol	mg/kg	DETSM-134*	<0.10
Benzyl Alcohol	mg/kg	DETSM-134*	<0.10
2-Methylphenol	mg/kg	DETSM-134*	<0.10
3& 4-Methylphenol	mg/kg	DETSM-134*	<0.10
2,4-dimethylphenol	mg/kg	DETSM-134*	<0.10
Bis-(dichloroethoxy)methane	mg/kg	DETSM-134*	<0.10
2,4-Dichlorophenol	mg/kg	DETSM-134*	<0.10
1,2,4-Trichlorobenzene	mg/kg	DETSM-134*	<0.10
Naphthalene	mg/kg	DETSM-134*	<0.10
4-Chloro-3-methylphenol	mg/kg	DETSM-134*	<0.10
2-Methylnaphthalene	mg/kg	DETSM-134*	<0.10
Hexachlorocyclopentadiene	mg/kg	DETSM-134*	<0.10
2,4,6 Trichlorophenol	mg/kg	DETSM-134*	<0.10
2,4,5 Trichlorophenol	mg/kg	DETSM-134*	<0.10
2-Chloronaphthalene	mg/kg	DETSM-134*	<0.10
2-Nitroaniline	mg/kg	DETSM-134*	<0.10
1,4-dinitrobenzene	mg/kg	DETSM-134*	<0.10
Dimethyl phthalate	mg/kg	DETSM-134*	<0.10
1,3-dinitrobenzene	mg/kg	DETSM-134*	<0.10
Acenaphthylene	mg/kg	DETSM-134*	<0.10
2,6-Dinitrotoluene	mg/kg	DETSM-134*	<0.10
1,2-Dinitrobenzene	mg/kg	DETSM-134*	<0.10
3-Nitroaniline	mg/kg	DETSM-134*	<0.10
Acenaphthene	mg/kg	DETSM-134*	<0.10
Dibenzofuran	mg/kg	DETSM-134*	<0.10
2,4-Dinitrotoluene	mg/kg	DETSM-134*	<0.10
4-Nitrophenol	mg/kg	DETSM-134*	<0.10
2,3,4,6-Tetrachlorophenol	mg/kg	DETSM-134*	<0.10
2,3,5,6-Tetrachlorophenol	mg/kg	DETSM-134*	<0.10
Diethylphthalate	mg/kg	DETSM-134*	<0.10
Fluorene	mg/kg	DETSM-134*	<0.10
4-Chlorophenyl phenyl ether	mg/kg	DETSM-134*	<0.10
4-Nitroaniline	mg/kg	DETSM-134*	<0.10
Diphenylamine/4,6-Dinitro-2-methylphenol	mg/kg	DETSM-134*	<0.10
Azobenzene	mg/kg	DETSM-134*	<0.10
4-Bromophenyl phenyl ether	mg/kg	DETSM-134*	<0.10
Hexachlorobenzene	mg/kg	DETSM-134*	<0.10
Pentachlorophenol	mg/kg	DETSM-134*	<0.10
Phenanthrene	mg/kg	DETSM-134*	0.23
Anthracene	mg/kg	DETSM-134*	<0.10
Carbazole	mg/kg	DETSM-134*	<0.10
Di-n-butylphthalate	mg/kg	DETSM-134*	<0.10
Benzyl butyl phthalate	mg/kg	DETSM-134*	<0.10
Bis(2-ethylhexyl)ester	mg/kg	DETSM-134*	<0.10
Fluoranthene	mg/kg	DETSM-134*	0.25
Pyrene	mg/kg	DETSM-134*	0.20
Benzo(a)anthracene	mg/kg	DETSM-134*	<0.10
Chrysene	mg/kg	DETSM-134*	<0.10

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-42952

Client Ref: T/10/886

Contract Title: Cross Street Neston

		Lab No.	289503
		Sample Ref	V209
		Depth	
		Other Ref	
		Sample Type	Soil
Test	Units	DETSxx	
Di-n-octyl phthalate	mg/kg	DETSM-134*	<0.10
Benzo(b)fluoranthene	mg/kg	DETSM-134*	<0.10
Benzo(k)fluoranthene	mg/kg	DETSM-134*	<0.10
Benzo(a)pyrene	mg/kg	DETSM-134*	<0.10
Indeno(1,2,3-cd)pyrene	mg/kg	DETSM-134*	<0.10
Dibenz(a,h)anthracene	mg/kg	DETSM-134*	<0.10
Benzo(ghi)pyrene	mg/kg	DETSM-134*	<0.10

Summary of Chemical Analysis

Water Samples

Our Ref: 10-42952

Client Ref: T/10/886

Contract Title: Cross Street Neston

		Lab No.	289504
		Sample ID	W1
		Depth	
		Sample Ref	
		Sample Type	
Test	Units	DETSxx	
Aliphatic C5-C6	ug/l	DETS 072*	< 0.1
Aliphatic C6-C8	ug/l	DETS 072*	< 0.1
Aliphatic C8-C10	ug/l	DETS 072*	0.4
Aliphatic C10-C12	ug/l	DETS 072*	< 1
Aliphatic C12-C16	ug/l	DETS 072*	< 1
Aliphatic C16-C21	ug/l	DETS 072*	< 1
Aliphatic C21-C35	ug/l	DETS 072*	< 1
Aromatic C5-C7	ug/l	DETS 072*	< 0.1
Aromatic C7-C8	ug/l	DETS 072*	< 0.1
Aromatic C8-C10	ug/l	DETS 072*	1
Aromatic C10-C12	ug/l	DETS 072*	< 1
Aromatic C12-C16	ug/l	DETS 072*	11
Aromatic C16-C21	ug/l	DETS 072*	11
Aromatic C21-C35	ug/l	DETS 072*	< 1
Aliphatic C5-C35	ug/l	DETS 072*	< 10
Aromatic C5-C35	ug/l	DETS 072*	23
TPH Ali/Aro	ug/l	DETS 072*	24

Summary of Chemical Analysis

Water Samples

Our Ref: 10-42952
 Client Ref: T/10/886
 Contract Title: Cross Street Neston

				Lab No.	289504
				Sample ID	W1
				Depth	
				Sample Ref	
				Sample Type	
Test	Units	DETSxx			
Total VOC's	ug/l	DETS 068*	< 1		
1,1 Dichloroethylene	ug/l	DETS 068*	< 1		
Methylene Chloride	ug/l	DETS 068*	< 1		
Trans-1,2-dichloroethylene	ug/l	DETS 068*	< 1		
1,1-dichloroethane	ug/l	DETS 068*	< 1		
2,2-dichloropropane+1,2-dichloroethylene	ug/l	DETS 068*	< 1		
Bromochloromethane	ug/l	DETS 068*	< 1		
Chloroform	ug/l	DETS 068*	< 1		
1,1,1-trichloroethane	ug/l	DETS 068*	< 1		
Carbon tetrachloride	ug/l	DETS 068*	< 1		
1,1-dichloropropene	ug/l	DETS 068*	< 1		
Benzene	ug/l	DETS 068*	< 1		
1,2-dichloroethane	ug/l	DETS 068*	< 1		
Trichloroethylene	ug/l	DETS 068*	< 1		
1,2-dichloropropane	ug/l	DETS 068*	< 1		
Dibromomethane	ug/l	DETS 068*	< 1		
Bromodichloromethane	ug/l	DETS 068*	< 1		
cis-1,3-dichloropropene	ug/l	DETS 068*	< 1		
Toluene	ug/l	DETS 068*	< 1		
trans-1,3-dichloropropene	ug/l	DETS 068*	< 1		
1,1,2-trichloroethane	ug/l	DETS 068*	< 1		
Tetrachloroethylene	ug/l	DETS 068*	< 1		
1,3-dichloropropane	ug/l	DETS 068*	< 1		
Dibromochloromethane	ug/l	DETS 068*	< 1		
1,2-dibromoethane	ug/l	DETS 068*	< 1		
Chlorobenzene	ug/l	DETS 068*	< 1		
Ethylbenzene	ug/l	DETS 068*	< 1		
1,1,1,2-tetrachloroethane	ug/l	DETS 068*	< 1		
m+p-Xylene	ug/l	DETS 068*	< 1		
o-Xylene	ug/l	DETS 068*	< 1		
Styrene	ug/l	DETS 068*	< 1		
Bromoform	ug/l	DETS 068*	< 1		
Isopropylbenzene	ug/l	DETS 068*	< 1		
Bromobenzene	ug/l	DETS 068*	< 1		
1,2,3-trichloropropane	ug/l	DETS 068*	< 1		
n-propylbenzene	ug/l	DETS 068*	< 1		
2-chlorotoluene	ug/l	DETS 068*	< 1		
1,3,5-trimethylbenzene	ug/l	DETS 068*	< 1		
4-chlorotoluene	ug/l	DETS 068*	< 1		
Tert-butylbenzene	ug/l	DETS 068*	< 1		
1,2,4-trimethylbenzene	ug/l	DETS 068*	< 1		
sec-butylbenzene	ug/l	DETS 068*	< 1		
1,3-dichlorobenzene	ug/l	DETS 068*	< 1		
p-isopropyltoluene	ug/l	DETS 068*	< 1		

Summary of Chemical Analysis

Water Samples

Our Ref: 10-42952

Client Ref: T/10/886

Contract Title: Cross Street Neston

Lab No. 289504
Sample ID W1
Depth
Sample Ref
Sample Type

Test	Units	DETSxx	
1,4-dichlorobenzene	ug/l	DETS 068*	< 1
n-butylbenzene	ug/l	DETS 068*	< 1
1,2-dichlorobenzene	ug/l	DETS 068*	< 1
1,2-dibromo-3-chloropropane	ug/l	DETS 068*	< 1
1,2,4-trichlorobenzene	ug/l	DETS 068*	< 1
Hexachlorobutadiene	ug/l	DETS 068*	< 1
Naphthalene	ug/l	DETS 068*	< 1
1,2,3-trichlorobenzene	ug/l	DETS 068*	< 1

Summary of Chemical Analysis

Water Samples

Our Ref: 10-42952
 Client Ref: T/10/886
 Contract Title: Cross Street Neston

		Lab No.	289504
		Sample Ref	W1
		Depth	
		Other Ref	
		Sample Type	Water
Test	Units	DETSxx	
Aniline	µg/l	DETSM-334*	<1.0
Bis(2-chloroethyl)ether	µg/l	DETSM-334*	<1.0
Phenol	µg/l	DETSM-334*	<1.0
2-Chlorophenol	µg/l	DETSM-334*	<1.0
Benzyl Alcohol	µg/l	DETSM-334*	<1.0
2-Methylphenol	µg/l	DETSM-334*	<1.0
3& 4-Methylphenol	µg/l	DETSM-334*	<1.0
2,4-dimethylphenol	µg/l	DETSM-334*	<1.0
Bis-(dichloroethoxy)methane	µg/l	DETSM-334*	<1.0
2,4-Dichlorophenol	µg/l	DETSM-334*	<1.0
1,2,4-Trichlorobenzene	µg/l	DETSM-334*	<1.0
Naphthalene	µg/l	DETSM-334*	<1.0
4-Chloro-3-methylphenol	µg/l	DETSM-334*	<1.0
2-Methylnaphthalene	µg/l	DETSM-334*	<1.0
Hexachlorocyclopentadiene	µg/l	DETSM-334*	<1.0
2,4,6 Trichlorophenol	µg/l	DETSM-334*	<1.0
2,4,5 Trichlorophenol	µg/l	DETSM-334*	<1.0
2-Chloronaphthalene	µg/l	DETSM-334*	<1.0
2-Nitroaniline	µg/l	DETSM-334*	<1.0
1,4-dinitrobenzene	µg/l	DETSM-334*	<1.0
Dimethyl phthalate	µg/l	DETSM-334*	<1.0
1,3-dinitrobenzene	µg/l	DETSM-334*	<1.0
Acenaphthylene	µg/l	DETSM-334*	<1.0
2,6-Dinitrotoluene	µg/l	DETSM-334*	<1.0
1,2-Dinitrobenzene	µg/l	DETSM-334*	<1.0
3-Nitroaniline	µg/l	DETSM-334*	<1.0
Acenaphthene	µg/l	DETSM-334*	<1.0
Dibenzofuran	µg/l	DETSM-334*	<1.0
2,4-Dinitrotoluene	µg/l	DETSM-334*	<1.0
4-Nitrophenol	µg/l	DETSM-334*	<1.0
2,3,4,6-Tetrachlorophenol	µg/l	DETSM-334*	<1.0
2,3,5,6-Tetrachlorophenol	µg/l	DETSM-334*	<1.0
Diethylphthalate	µg/l	DETSM-334*	<1.0
Fluorene	µg/l	DETSM-334*	<1.0
4-Chlorophenyl phenyl ether	µg/l	DETSM-334*	<1.0
4-Nitroaniline	µg/l	DETSM-334*	<1.0
Diphenylamine/4,6-Dinitro-2-methylphenol	µg/l	DETSM-334*	<1.0
Azobenzene	µg/l	DETSM-334*	<1.0
4-Bromophenyl phenyl ether	µg/l	DETSM-334*	<1.0
Hexachlorobenzene	µg/l	DETSM-334*	<1.0
Pentachlorophenol	µg/l	DETSM-334*	<1.0
Phenanthrene	µg/l	DETSM-334*	<1.0
Anthracene	µg/l	DETSM-334*	<1.0
Carbazole	µg/l	DETSM-334*	<1.0
Di-n-butylphthalate	µg/l	DETSM-334*	<1.0
Benzyl butyl phthalate	µg/l	DETSM-334*	<1.0
Bis(2-ethylhexyl)ester	µg/l	DETSM-334*	<1.0
Fluoranthene	µg/l	DETSM-334*	<1.0
Pyrene	µg/l	DETSM-334*	<1.0
Benzo(a)anthracene	µg/l	DETSM-334*	<1.0
Chrysene	µg/l	DETSM-334*	<1.0

Summary of Chemical Analysis

Water Samples

Our Ref: 10-42952

Client Ref: T/10/886

Contract Title: Cross Street Neston

		Lab No.	289504
		Sample Ref	W1
		Depth	
		Other Ref	
		Sample Type	Water
Test	Units	DETSxx	
Di-n-octyl phthalate	µg/l	DETSM-334*	<1.0
Benzo(b)fluoranthene	µg/l	DETSM-334*	<1.0
Benzo(k)fluoranthene	µg/l	DETSM-334*	<1.0
Benzo(a)pyrene	µg/l	DETSM-334*	<1.0
Indeno(1,2,3-cd)pyrene	µg/l	DETSM-334*	<1.0
Dibenz(a,h)anthracene	µg/l	DETSM-334*	<1.0
Benzo(ghi)pyrene	µg/l	DETSM-334*	<1.0



2139

Certificate of Analysis

Date: 14/10/2010

Certificate Number: 10-42272

Client:

Tier Consult
Elm Farm House
Saughton
Chester
CH3 6EN

Our Reference:

10-42272

Client Reference:

T/10/886

Contract Title:

Cross Street Neston

Description:

10 soil samples

Date Received:

06/10/2010

Date Started:

06/10/2010

Date Completed:

14/10/2010

Test Procedures:

Identified by prefix DETSn, details available upon request.

Notes:

Observations and interpretations are outside the scope of UKAS accreditation
* denotes test not included in laboratory scope of accreditation
denotes test that holds MCERT accreditation, however, MCERTS accreditation is only implied if the report carries the MCERTS logo
\$ denotes tests completed by an approved subcontractor
I/S denotes insufficient sample to carry out test
U/S denotes that the sample is not suitable for testing
DETSM denotes tests carried out by DETS Midlands laboratory
Solid samples will be disposed 1 month and liquids 2 weeks after the date of issue of this test certificate
Asbestos subsamples will be kept for 6 months

Approved By:

Authorised Signatories:

Business Manager

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-42272
 Client Ref: T/10/886
 Contract Title: Cross Street Neston

			Lab No.	285665	285666	285667	285668	285669
			Sample ID	SS16	SS17	SS18	SS19	SS20
			Depth					
			Sample Ref					
			Sample Type					
Test	Units	DETSxx						
Arsenic	mg/kg	DETS 042#	15	11	12	13	15	
Cadmium	mg/kg	DETS 042#	1.5	1.2	1.3	1.5	1.4	
Chromium	mg/kg	DETS 042#	35	27	36	37	36	
Copper	mg/kg	DETS 042#	45	25	24	33	28	
Lead	mg/kg	DETS 042#	97	55	66	91	79	
Mercury	mg/kg	DETS 081#	0.16	0.1	0.14	0.11	0.13	
Nickel	mg/kg	DETS 042#	30	21	26	30	26	
Selenium	mg/kg	DETS 042#	1	< 0.5	0.6	< 0.5	< 0.5	
Zinc	mg/kg	DETS 042#	140	100	130	130	130	
Total Sulphate as SO4	%	DETS 075#	0.08	0.06	0.07	0.07	0.08	
Total Organic Carbon	%	DETS 002	4.0	3.2	3.8	4.0	3.8	
pH		DETS 008#	8.2	8.1	7.9	7.9	7.8	
Aliphatic C5-C6	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Aliphatic C6-C8	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Aliphatic C8-C10	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Aliphatic C10-C12	mg/kg	DETS 072#	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	
Aliphatic C12-C16	mg/kg	DETS 072#	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	
Aliphatic C16-C21	mg/kg	DETS 072#	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	
Aliphatic C21-C35	mg/kg	DETS 072#	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	
Aromatic C5-C7	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Aromatic C7-C8	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Aromatic C8-C10	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Aromatic C10-C12	mg/kg	DETS 072#	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	
Aromatic C12-C16	mg/kg	DETS 072#	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Aromatic C16-C21	mg/kg	DETS 072#	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	
Aromatic C21-C35	mg/kg	DETS 072#	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	
Aliphatic C5-C35	mg/kg	DETS 072*	< 10	< 10	< 10	< 10	< 10	
Aromatic C5-C35	mg/kg	DETS 072*	< 10	< 10	< 10	< 10	< 10	
TPH Ali/Aro	mg/kg	DETS 072*	< 10	< 10	< 10	< 10	< 10	
Acenaphthene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Anthracene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Benzo(a)anthracene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Benzo(a)pyrene	mg/kg	DETS 050	0.2	< 0.1	< 0.1	0.5	< 0.1	
Benzo(b)fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	0.3	< 0.1	
Benzo(k)fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1	0.4	0.6	0.1	
Benzo(g,h,i)perylene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	0.9	< 0.1	
Chrysene	mg/kg	DETS 050	2.5	3.2	2.5	1.9	2.8	
Dibenzo(a,h)anthracene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1	0.1	0.3	< 0.1	
Fluorene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050	< 0.1	< 0.1	0.7	0.3	0.1	
Naphthalene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Phenanthrene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Pyrene	mg/kg	DETS 050	< 0.1	< 0.1	0.1	0.4	< 0.1	

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-42272
 Client Ref: T/10/886
 Contract Title: Cross Street Neston

		Lab No.	285665	285666	285667	285668	285669
		Sample ID	SS16	SS17	SS18	SS19	SS20
		Depth					
		Sample Ref					
		Sample Type					
Test	Units	DETSxx					
PAH	mg/kg	DETS 050	2.8	3.2	3.9	5.4	3.2
Phenol - Monohydric	mg/kg	DETS 067#	< 0.3	< 0.3	< 0.3	0.8	0.4

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-42272

Client Ref: T/10/886

Contract Title: Cross Street Neston

			Lab No.	285670	285671	285672	285673	285674
			Sample ID	SS21	SS22	SS23	SS24	SS25
			Depth					
			Sample Ref					
			Sample Type					
Test	Units	DETSxx						
Arsenic	mg/kg	DETS 042#	12	14	13	20	13	
Cadmium	mg/kg	DETS 042#	1.2	1.3	1.4	1.5	1.5	
Chromium	mg/kg	DETS 042#	28	35	32	34	33	
Copper	mg/kg	DETS 042#	22	26	26	41	33	
Lead	mg/kg	DETS 042#	58	68	67	72	75	
Mercury	mg/kg	DETS 081#	0.09	0.11	0.1	0.09	0.12	
Nickel	mg/kg	DETS 042#	24	24	24	32	29	
Selenium	mg/kg	DETS 042#	< 0.5	< 0.5	< 0.5	0.5	< 0.5	
Zinc	mg/kg	DETS 042#	110	120	120	130	130	
Total Sulphate as SO4	%	DETS 075#	0.06	0.08	0.08	0.07	0.07	
Total Organic Carbon	%	DETS 002	3.0	3.9	4.0	4.4	4.1	
pH		DETS 008#	8.2	7.9	7.9	7.9	7.9	
Aliphatic C5-C6	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Aliphatic C6-C8	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Aliphatic C8-C10	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Aliphatic C10-C12	mg/kg	DETS 072#	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	
Aliphatic C12-C16	mg/kg	DETS 072#	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	
Aliphatic C16-C21	mg/kg	DETS 072#	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	
Aliphatic C21-C35	mg/kg	DETS 072#	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	
Aromatic C5-C7	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Aromatic C7-C8	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Aromatic C8-C10	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	
Aromatic C10-C12	mg/kg	DETS 072#	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	
Aromatic C12-C16	mg/kg	DETS 072#	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Aromatic C16-C21	mg/kg	DETS 072#	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	
Aromatic C21-C35	mg/kg	DETS 072#	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	
Aliphatic C5-C35	mg/kg	DETS 072*	< 10	< 10	< 10	< 10	< 10	
Aromatic C5-C35	mg/kg	DETS 072*	< 10	< 10	< 10	< 10	< 10	
TPH Ali/Aro	mg/kg	DETS 072*	< 10	< 10	< 10	< 10	< 10	
Acenaphthene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Anthracene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Benzo(a)anthracene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Benzo(a)pyrene	mg/kg	DETS 050	< 0.1	0.2	< 0.1	0.2	0.3	
Benzo(b)fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	0.1	0.2	
Benzo(k)fluoranthene	mg/kg	DETS 050	0.2	0.3	0.3	0.3	0.3	
Benzo(g,h,i)perylene	mg/kg	DETS 050	< 0.1	0.6	< 0.1	0.7	0.9	
Chrysene	mg/kg	DETS 050	1.1	2.3	2.6	2.4	2	
Dibenzo(a,h)anthracene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	0.1	0.2	
Fluorene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050	< 0.1	0.3	0.1	0.1	0.2	
Naphthalene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Phenanthrene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Pyrene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	0.2	0.2	

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-42272
 Client Ref: T/10/886
 Contract Title: Cross Street Neston

		Lab No.	285670	285671	285672	285673	285674
		Sample ID	SS21	SS22	SS23	SS24	SS25
		Depth					
		Sample Ref					
		Sample Type					
Test	Units	DETSxx					
PAH	mg/kg	DETS 050	< 1.6	3.8	3.1	4.2	4.3
Phenol - Monohydric	mg/kg	DETS 067#	1.1	0.4	0.6	0.6	0.8

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-42272
 Client Ref: T/10/886
 Contract Title: Cross Street Neston

			Lab No.	285665	285666	285667	285668	285669
			Sample ID	SS16	SS17	SS18	SS19	SS20
			Depth					
			Sample Ref					
			Sample Type					
Test	Units	DETSxx						
Total VOC's	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1 Dichloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1 Dichloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Methylene Chloride	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Methylene Chloride	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trans-1,2-dichloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,2-dichloropropane+1,2-dichloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromochloromethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chloroform	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1-trichloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloropropene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Carbon tetrachloride	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trichloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloropropane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibromomethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromodichloromethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
cis-1,3-dichloropropene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
trans-1,3-dichloropropene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,2-trichloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tetrachloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichloropropane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibromochloromethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromoethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
m+p-Xylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
o-Xylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Styrene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromoform	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Isopropylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichloropropane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-propylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2-chlorotoluene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3,5-trimethylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
4-chlorotoluene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tert-butylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trimethylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
sec-butylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-42272
 Client Ref: T/10/886
 Contract Title: Cross Street Neston

		Lab No.	285665	285666	285667	285668	285669
		Sample ID	SS16	SS17	SS18	SS19	SS20
		Depth					
		Sample Ref					
		Sample Type					
Test	Units	DETSxx					
p-isopropyltoluene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,4-dichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-butylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobutadiene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Naphthalene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Vinyl Chloride	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-42272
 Client Ref: T/10/886
 Contract Title: Cross Street Neston

			Lab No.	285670	285671	285672	285673	285674
			Sample ID	SS21	SS22	SS23	SS24	SS25
			Depth					
			Sample Ref					
			Sample Type					
Test	Units	DETSxx						
Total VOC's	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1 Dichloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1 Dichloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Methylene Chloride	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Methylene Chloride	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trans-1,2-dichloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,2-dichloropropane+1,2-dichloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromochloromethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chloroform	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1-trichloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloropropene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Carbon tetrachloride	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trichloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloropropane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibromomethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromodichloromethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
cis-1,3-dichloropropene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
trans-1,3-dichloropropene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,2-trichloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tetrachloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichloropropane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibromochloromethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromoethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
m+p-Xylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
o-Xylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Styrene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromoform	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Isopropylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichloropropane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-propylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2-chlorotoluene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3,5-trimethylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
4-chlorotoluene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tert-butylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trimethylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
sec-butylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-42272
 Client Ref: T/10/886
 Contract Title: Cross Street Neston

		Lab No.	285670	285671	285672	285673	285674
		Sample ID	SS21	SS22	SS23	SS24	SS25
		Depth					
		Sample Ref					
		Sample Type					
Test	Units	DETSxx					
p-isopropyltoluene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,4-dichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-butylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobutadiene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Naphthalene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Vinyl Chloride	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-84462
 Client Ref: 10-42272
 Contract Title: Cross Street, Neston

Test	Units	Lab No.	1	2	3	4
		Sample Ref	285665	285666	285667	285668
		Depth				
		Other Ref	SS16	SS17	SS18	SS19
		Sample Type	Soil	Soil	Soil	Soil
DETSxx						
Aniline	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Bis(2-chloroethyl)ether	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Phenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2-Chlorophenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Benzyl Alcohol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2-Methylphenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
3& 4-Methylphenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2,4-dimethylphenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Bis-(dichloroethoxy)methane	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2,4-Dichlorophenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
1,2,4-Trichlorobenzene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Naphthalene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
4-Chloro-3-methylphenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2-Methylnaphthalene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Hexachlorocyclopentadiene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2,4,6 Trichlorophenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2,4,5 Trichlorophenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2-Chloronaphthalene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2-Nitroaniline	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
1,4-dinitrobenzene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Dimethyl phthalate	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
1,3-dinitrobenzene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Acenaphthylene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2,6-Dinitrotoluene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
1,2-Dinitrobenzene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
3-Nitroaniline	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Acenaphthene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Dibenzofuran	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2,4-Dinitrotoluene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
4-Nitrophenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2,3,4,6-Tetrachlorophenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2,3,5,6-Tetrachlorophenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Diethylphthalate	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Fluorene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
4-Chlorophenyl phenyl ether	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
4-Nitroaniline	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Diphenylamine/4,6-Dinitro-2-methylphenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Azobenzene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
4-Bromophenyl phenyl ether	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Hexachlorobenzene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Pentachlorophenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Phenanthrene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Anthracene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Carbazole	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Di-n-butylphthalate	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Benzyl butyl phthalate	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Bis(2-ethylhexyl)ester	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Fluoranthene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	0.21
Pyrene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	0.18
Benzo(a)anthracene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	0.11
Chrysene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	0.14
Di-n-octyl phthalate	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-84462
 Client Ref: 10-42272
 Contract Title: Cross Street, Neston

Test	Units	Lab No.	1	2	3	4
		Sample Ref	285665	285666	285667	285668
		Depth				
		Other Ref	SS16	SS17	SS18	SS19
		Sample Type	Soil	Soil	Soil	Soil
		DETSxx				
Benzo(b)fluoranthene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	0.14
Benzo(k)fluoranthene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	0.11
Benzo(a)pyrene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	0.14
Indeno(1,2,3-cd)pyrene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Dibenz(a,h)anthracene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Benzo(ghi)pyrene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-84462
 Client Ref: 10-42272
 Contract Title: Cross Street, Neston

Test	Units	Lab No.	5	6	7	8
		Sample Ref	285669	285670	285671	285672
		Depth				
		Other Ref	SS20	SS21	SS22	SS23
		Sample Type	Soil	Soil	Soil	Soil
DETSxx						
Aniline	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Bis(2-chloroethyl)ether	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Phenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2-Chlorophenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Benzyl Alcohol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2-Methylphenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
3& 4-Methylphenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2,4-dimethylphenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Bis-(dichloroethoxy)methane	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2,4-Dichlorophenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
1,2,4-Trichlorobenzene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Naphthalene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
4-Chloro-3-methylphenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2-Methylnaphthalene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Hexachlorocyclopentadiene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2,4,6 Trichlorophenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2,4,5 Trichlorophenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2-Chloronaphthalene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2-Nitroaniline	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
1,4-dinitrobenzene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Dimethyl phthalate	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
1,3-dinitrobenzene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Acenaphthylene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2,6-Dinitrotoluene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
1,2-Dinitrobenzene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
3-Nitroaniline	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Acenaphthene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Dibenzofuran	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2,4-Dinitrotoluene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
4-Nitrophenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2,3,4,6-Tetrachlorophenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
2,3,5,6-Tetrachlorophenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Diethylphthalate	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Fluorene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
4-Chlorophenyl phenyl ether	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
4-Nitroaniline	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Diphenylamine/4,6-Dinitro-2-methylphenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Azobenzene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
4-Bromophenyl phenyl ether	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Hexachlorobenzene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Pentachlorophenol	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Phenanthrene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Anthracene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Carbazole	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Di-n-butylphthalate	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Benzyl butyl phthalate	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Bis(2-ethylhexyl)ester	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Fluoranthene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Pyrene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Benzo(a)anthracene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Chrysene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Di-n-octyl phthalate	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-84462
 Client Ref: 10-42272
 Contract Title: Cross Street, Neston

		Lab No.	5	6	7	8
		Sample Ref	285669	285670	285671	285672
		Depth				
		Other Ref	SS20	SS21	SS22	SS23
		Sample Type	Soil	Soil	Soil	Soil
Test	Units	DETSxx				
Benzo(b)fluoranthene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Benzo(k)fluoranthene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Benzo(a)pyrene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Indeno(1,2,3-cd)pyrene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Dibenz(a,h)anthracene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10
Benzo(ghi)pyrene	mg/kg	DETSM-134*	<0.10	<0.10	<0.10	<0.10

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-84462
 Client Ref: 10-42272
 Contract Title: Cross Street, Neston

Test	Units	Lab No.	9	10
		Sample Ref	285673	285674
		Depth		
		Other Ref	SS24	SS25
		Sample Type	Soil	Soil
		DETSxx		
Aniline	mg/kg	DETSM-134*	<0.10	<0.10
Bis(2-chloroethyl)ether	mg/kg	DETSM-134*	<0.10	<0.10
Phenol	mg/kg	DETSM-134*	<0.10	<0.10
2-Chlorophenol	mg/kg	DETSM-134*	<0.10	<0.10
Benzyl Alcohol	mg/kg	DETSM-134*	<0.10	<0.10
2-Methylphenol	mg/kg	DETSM-134*	<0.10	<0.10
3& 4-Methylphenol	mg/kg	DETSM-134*	<0.10	<0.10
2,4-dimethylphenol	mg/kg	DETSM-134*	<0.10	<0.10
Bis-(dichloroethoxy)methane	mg/kg	DETSM-134*	<0.10	<0.10
2,4-Dichlorophenol	mg/kg	DETSM-134*	<0.10	<0.10
1,2,4-Trichlorobenzene	mg/kg	DETSM-134*	<0.10	<0.10
Naphthalene	mg/kg	DETSM-134*	<0.10	<0.10
4-Chloro-3-methylphenol	mg/kg	DETSM-134*	<0.10	<0.10
2-Methylnaphthalene	mg/kg	DETSM-134*	<0.10	<0.10
Hexachlorocyclopentadiene	mg/kg	DETSM-134*	<0.10	<0.10
2,4,6 Trichlorophenol	mg/kg	DETSM-134*	<0.10	<0.10
2,4,5 Trichlorophenol	mg/kg	DETSM-134*	<0.10	<0.10
2-Chloronaphthalene	mg/kg	DETSM-134*	<0.10	<0.10
2-Nitroaniline	mg/kg	DETSM-134*	<0.10	<0.10
1,4-dinitrobenzene	mg/kg	DETSM-134*	<0.10	<0.10
Dimethyl phthalate	mg/kg	DETSM-134*	<0.10	<0.10
1,3-dinitrobenzene	mg/kg	DETSM-134*	<0.10	<0.10
Acenaphthylene	mg/kg	DETSM-134*	<0.10	<0.10
2,6-Dinitrotoluene	mg/kg	DETSM-134*	<0.10	<0.10
1,2-Dinitrobenzene	mg/kg	DETSM-134*	<0.10	<0.10
3-Nitroaniline	mg/kg	DETSM-134*	<0.10	<0.10
Acenaphthene	mg/kg	DETSM-134*	<0.10	<0.10
Dibenzofuran	mg/kg	DETSM-134*	<0.10	<0.10
2,4-Dinitrotoluene	mg/kg	DETSM-134*	<0.10	<0.10
4-Nitrophenol	mg/kg	DETSM-134*	<0.10	<0.10
2,3,4,6-Tetrachlorophenol	mg/kg	DETSM-134*	<0.10	<0.10
2,3,5,6-Tetrachlorophenol	mg/kg	DETSM-134*	<0.10	<0.10
Diethylphthalate	mg/kg	DETSM-134*	<0.10	<0.10
Fluorene	mg/kg	DETSM-134*	<0.10	<0.10
4-Chlorophenyl phenyl ether	mg/kg	DETSM-134*	<0.10	<0.10
4-Nitroaniline	mg/kg	DETSM-134*	<0.10	<0.10
Diphenylamine/4,6-Dinitro-2-methylphenol	mg/kg	DETSM-134*	<0.10	<0.10
Azobenzene	mg/kg	DETSM-134*	<0.10	<0.10
4-Bromophenyl phenyl ether	mg/kg	DETSM-134*	<0.10	<0.10
Hexachlorobenzene	mg/kg	DETSM-134*	<0.10	<0.10
Pentachlorophenol	mg/kg	DETSM-134*	<0.10	<0.10
Phenanthrene	mg/kg	DETSM-134*	<0.10	<0.10
Anthracene	mg/kg	DETSM-134*	<0.10	<0.10
Carbazole	mg/kg	DETSM-134*	<0.10	<0.10
Di-n-butylphthalate	mg/kg	DETSM-134*	<0.10	<0.10
Benzyl butyl phthalate	mg/kg	DETSM-134*	<0.10	<0.10
Bis(2-ethylhexyl)ester	mg/kg	DETSM-134*	<0.10	<0.10
Fluoranthene	mg/kg	DETSM-134*	0.17	0.12
Pyrene	mg/kg	DETSM-134*	0.14	<0.10
Benzo(a)anthracene	mg/kg	DETSM-134*	<0.10	<0.10
Chrysene	mg/kg	DETSM-134*	0.13	<0.10
Di-n-octyl phthalate	mg/kg	DETSM-134*	<0.10	<0.10

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-84462
 Client Ref: 10-42272
 Contract Title: Cross Street, Neston

		Lab No.	9	10
		Sample Ref	285673	285674
		Depth		
		Other Ref	SS24	SS25
		Sample Type	Soil	Soil
Test	Units	DETSxx		
Benzo(b)fluoranthene	mg/kg	DETSM-134*	<0.10	<0.10
Benzo(k)fluoranthene	mg/kg	DETSM-134*	0.11	<0.10
Benzo(a)pyrene	mg/kg	DETSM-134*	0.11	<0.10
Indeno(1,2,3-cd)pyrene	mg/kg	DETSM-134*	<0.10	<0.10
Dibenz(a,h)anthracene	mg/kg	DETSM-134*	<0.10	<0.10
Benzo(ghi)pyrene	mg/kg	DETSM-134*	<0.10	<0.10



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Certificate of Analysis

Date: 01/10/2010

Certificate Number: 10-41777

Client: Tier Consult
Elm Farm House
Saughton
Chester
CH3 6EN

Our Reference: 10-41777

Client Reference: T/10/886

Contract Title: Cross Street Neston

Description: 15 soil samples

Date Received: 24/09/2010

Date Started: 24/09/2010

Date Completed: 01/10/2010

Test Procedures: Identified by prefix DETSn, details available upon request.

Notes: Observations and interpretations are outside the scope of UKAS accreditation
* denotes test not included in laboratory scope of accreditation
denotes test that holds MCERT accreditation, however, MCERTS accreditation is only implied if the report carries the MCERTS logo
\$ denotes tests completed by an approved subcontractor
I/S denotes insufficient sample to carry out test
U/S denotes that the sample is not suitable for testing
DETSM denotes tests carried out by DETS Midlands laboratory
Solid samples will be disposed 1 month and liquids 2 weeks after the date of issue of this test certificate
Asbestos subsamples will be kept for 6 months

Approved By:

Authorised Signatories:

Business Manager

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-41777
 Client Ref: T/10/886
 Contract Title: Cross Street Neston

			Lab No.	283285	283286	283287	283288	283289
			Sample ID	SS1	SS2	SS3	SS4	SS5
			Depth					
			Sample Ref	10:00	10:10	10:15	10:17	10:23
			Sample Type					
Test	Units	DETSxx						
Arsenic	mg/kg	DETS 042#	13	10	11	11	11	11
Cadmium	mg/kg	DETS 042#	1.1	0.9	0.9	1.0	1.0	1.0
Chromium	mg/kg	DETS 042#	25	24	24	23	24	24
Copper	mg/kg	DETS 042#	29	23	23	21	24	24
Lead	mg/kg	DETS 042#	63	55	60	59	51	51
Mercury	mg/kg	DETS 081#	0.11	0.09	0.11	0.09	0.08	0.08
Nickel	mg/kg	DETS 042#	27	23	22	21	27	27
Selenium	mg/kg	DETS 042#	< 0.5	< 0.5	0.7	< 0.5	< 0.5	< 0.5
Zinc	mg/kg	DETS 042#	110	88	90	88	92	92
Total Sulphate as SO4	%	DETS 075#	0.05	0.05	0.05	0.05	0.05	0.05
Total Organic Carbon	%	DETS 002	2.8	2.8	2.7	2.3	2.5	2.5
pH		DETS 008#	8.1	8.1	8.0	8.1	8.1	8.1
Aliphatic C5-C6	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	mg/kg	DETS 072#	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	mg/kg	DETS 072#	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	mg/kg	DETS 072#	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	mg/kg	DETS 072#	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aromatic C5-C7	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	mg/kg	DETS 072#	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	mg/kg	DETS 072#	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	mg/kg	DETS 072#	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	mg/kg	DETS 072#	< 1.4	1.5	< 1.4	< 1.4	< 1.4	< 1.4
Aliphatic C5-C35	mg/kg	DETS 072*	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C35	mg/kg	DETS 072*	< 10	< 10	< 10	< 10	< 10	< 10
TPH Ali/Aro	mg/kg	DETS 072*	< 10	< 10	< 10	< 10	< 10	< 10
Acenaphthene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Naphthalene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Pyrene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
PAH	mg/kg	DETS 050	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
Phenol - Monohydric	mg/kg	DETS 067#	< 0.3	0.3	< 0.3	< 0.3	< 0.3	< 0.3

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-41777
 Client Ref: T/10/886
 Contract Title: Cross Street Neston

		Lab No.	283290	283291	283292	283293	283294
		Sample ID	SS6	SS7	SS8	SS9	SS10
		Depth					
		Sample Ref	10:27	10:30	10:35	10:40	10:43
		Sample Type					
Test	Units	DETSxx					
Arsenic	mg/kg	DETS 042#	9.9	12	11	9.7	15
Cadmium	mg/kg	DETS 042#	0.9	1.1	1.0	0.9	1.1
Chromium	mg/kg	DETS 042#	19	26	24	25	27
Copper	mg/kg	DETS 042#	22	25	23	26	30
Lead	mg/kg	DETS 042#	53	60	60	54	71
Mercury	mg/kg	DETS 081#	0.08	0.1	0.11	0.09	0.14
Nickel	mg/kg	DETS 042#	21	26	22	25	28
Selenium	mg/kg	DETS 042#	0.5	0.6	0.8	< 0.5	0.6
Zinc	mg/kg	DETS 042#	79	100	90	86	120
Total Sulphate as SO4	%	DETS 075#	0.05	0.05	0.05	0.04	0.07
Total Organic Carbon	%	DETS 002	2.7	2.6	2.7	2.5	3.6
pH		DETS 008#	8.2	8.0	8.0	8.0	7.9
Aliphatic C5-C6	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	mg/kg	DETS 072#	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	mg/kg	DETS 072#	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	mg/kg	DETS 072#	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	mg/kg	DETS 072#	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aromatic C5-C7	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	mg/kg	DETS 072#	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	mg/kg	DETS 072#	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	mg/kg	DETS 072#	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	mg/kg	DETS 072#	< 1.4	< 1.4	< 1.4	< 1.4	1.7
Aliphatic C5-C35	mg/kg	DETS 072*	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C35	mg/kg	DETS 072*	< 10	< 10	< 10	< 10	< 10
TPH Ali/Aro	mg/kg	DETS 072*	< 10	< 10	< 10	< 10	< 10
Acenaphthene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Naphthalene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Pyrene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
PAH	mg/kg	DETS 050	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
Phenol - Monohydric	mg/kg	DETS 067#	< 0.3	< 0.3	< 0.3	0.7	0.5

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-41777
 Client Ref: T/10/886
 Contract Title: Cross Street Neston

		Lab No.	283295	283296	283297	283298	283299
		Sample ID	SS11	SS12	SS13	SS14	SS15
		Depth					
		Sample Ref	10:47	10:50	10:53	10:55	11:00
		Sample Type					
Test	Units	DETSxx					
Arsenic	mg/kg	DETS 042#	12	12	12	12	12
Cadmium	mg/kg	DETS 042#	1.0	1.1	1.1	1.0	1.1
Chromium	mg/kg	DETS 042#	24	25	31	32	32
Copper	mg/kg	DETS 042#	26	35	23	26	27
Lead	mg/kg	DETS 042#	58	65	56	59	57
Mercury	mg/kg	DETS 081#	0.1	0.12	0.09	0.1	0.1
Nickel	mg/kg	DETS 042#	25	24	25	25	29
Selenium	mg/kg	DETS 042#	< 0.5	< 0.5	0.8	1.3	0.7
Zinc	mg/kg	DETS 042#	88	110	93	99	110
Total Sulphate as SO4	%	DETS 075#	0.05	0.06	0.06	0.05	0.05
Total Organic Carbon	%	DETS 002	2.7	3.3	2.4	2.9	2.9
pH		DETS 008#	7.9	7.9	7.9	8.0	8.0
Aliphatic C5-C6	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	mg/kg	DETS 072#	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	mg/kg	DETS 072#	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	mg/kg	DETS 072#	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	mg/kg	DETS 072#	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aromatic C5-C7	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	mg/kg	DETS 072*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	mg/kg	DETS 072#	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	mg/kg	DETS 072#	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	mg/kg	DETS 072#	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	mg/kg	DETS 072#	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4
Aliphatic C5-C35	mg/kg	DETS 072*	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C35	mg/kg	DETS 072*	< 10	< 10	< 10	< 10	< 10
TPH Ali/Aro	mg/kg	DETS 072*	< 10	< 10	< 10	< 10	< 10
Acenaphthene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Anthracene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Chrysene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Dibenzo(a,h)anthracene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluoranthene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Naphthalene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Pyrene	mg/kg	DETS 050	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
PAH	mg/kg	DETS 050	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6
Phenol - Monohydric	mg/kg	DETS 067#	0.8	0.7	0.5	0.4	< 0.3

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-41777
 Client Ref: T/10/886
 Contract Title: Cross Street Neston

Test	Units	Lab No.	283285	283286	283287	283288	283289
		Sample ID	SS1	SS2	SS3	SS4	SS5
		Depth					
		Sample Ref	10:00	10:10	10:15	10:17	10:23
		Sample Type					
		DETSxx					
Total VOC's	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1 Dichloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1 Dichloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Methylene Chloride	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Methylene Chloride	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trans-1,2-dichloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,2-dichloropropane+1,2-dichloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromochloromethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chloroform	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1-trichloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloropropene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Carbon tetrachloride	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trichloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloropropane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibromomethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromodichloromethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
cis-1,3-dichloropropene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
trans-1,3-dichloropropene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,2-trichloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tetrachloroethylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichloropropane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibromochloromethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromoethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
m+p-Xylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
o-Xylene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Styrene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromoform	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Isopropylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichloropropane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-propylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2-chlorotoluene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3,5-trimethylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
4-chlorotoluene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tert-butylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trimethylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
sec-butylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-41777

Client Ref: T/10/886

Contract Title: Cross Street Neston

			Lab No.	283285	283286	283287	283288	283289
			Sample ID	SS1	SS2	SS3	SS4	SS5
			Depth					
			Sample Ref	10:00	10:10	10:15	10:17	10:23
			Sample Type					
Test	Units	DETSxx						
p-isopropyltoluene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,4-dichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-butylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobutadiene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Naphthalene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-41777
 Client Ref: T/10/886
 Contract Title: Cross Street Neston

			Lab No.	283290	283291	283292	283293	283294
			Sample ID	SS6	SS7	SS8	SS9	SS10
			Depth					
			Sample Ref	10:27	10:30	10:35	10:40	10:43
Test	Units	DETSxx	Sample Type					
Total VOC's	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1 Dichloroethylene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1 Dichloroethylene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Methylene Chloride	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Methylene Chloride	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trans-1,2-dichloroethylene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloroethane	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,2-dichlororopropane+1,2-dichloroethylene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromochloromethane	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chloroform	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1-trichloroethane	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloropropene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Carbon tetrachloride	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloroethane	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trichloroethylene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloropropane	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibromomethane	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromodichloromethane	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
cis-1,3-dichloropropene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
trans-1,3-dichloropropene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,2-trichloroethane	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tetrachloroethylene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichloropropane	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibromochloromethane	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromoethane	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chlorobenzene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
m+p-Xylene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
o-Xylene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Styrene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromoform	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Isopropylbenzene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromobenzene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichloropropane	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-propylbenzene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2-chlorotoluene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3,5-trimethylbenzene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
4-chlorotoluene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tert-butylbenzene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trimethylbenzene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
sec-butylbenzene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichlorobenzene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-41777

Client Ref: T/10/886

Contract Title: Cross Street Neston

			Lab No.	283290	283291	283292	283293	283294
			Sample ID	SS6	SS7	SS8	SS9	SS10
			Depth					
			Sample Ref	10:27	10:30	10:35	10:40	10:43
Test	Units	Sample Type	DETSxx					
p-isopropyltoluene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,4-dichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-butylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobutadiene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Naphthalene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-41777
 Client Ref: T/10/886
 Contract Title: Cross Street Neston

			Lab No.	283295	283296	283297	283298	283299
			Sample ID	SS11	SS12	SS13	SS14	SS15
			Depth					
			Sample Ref	10:47	10:50	10:53	10:55	11:00
Test	Units	DETSxx	Sample Type					
Total VOC's	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1 Dichloroethylene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1 Dichloroethylene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Methylene Chloride	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Methylene Chloride	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trans-1,2-dichloroethylene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloroethane	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2,2-dichloropropane+1,2-dichloroethylene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromochloromethane	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chloroform	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1-trichloroethane	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1-dichloropropene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Carbon tetrachloride	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloroethane	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Trichloroethylene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichloropropane	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibromomethane	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromodichloromethane	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
cis-1,3-dichloropropene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
trans-1,3-dichloropropene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,2-trichloroethane	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tetrachloroethylene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichloropropane	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibromochloromethane	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromoethane	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chlorobenzene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,1,1,2-tetrachloroethane	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
m+p-Xylene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
o-Xylene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Styrene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromoform	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Isopropylbenzene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Bromobenzene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichloropropane	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-propylbenzene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2-chlorotoluene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3,5-trimethylbenzene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
4-chlorotoluene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Tert-butylbenzene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trimethylbenzene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
sec-butylbenzene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,3-dichlorobenzene	mg/kg	DETS 068*		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Summary of Chemical Analysis

Soil Samples

Our Ref: 10-41777

Client Ref: T/10/886

Contract Title: Cross Street Neston

			Lab No.	283295	283296	283297	283298	283299
			Sample ID	SS11	SS12	SS13	SS14	SS15
			Depth					
			Sample Ref	10:47	10:50	10:53	10:55	11:00
			Sample Type					
Test	Units	DETSxx						
p-isopropyltoluene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,4-dichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
n-butylbenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2-dibromo-3-chloropropane	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,4-trichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Hexachlorobutadiene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Naphthalene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
1,2,3-trichlorobenzene	mg/kg	DETS 068*	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

Summary of Chemical Analysis

Soil Samples

Our Ref:

Client Ref:

Contract Title:

	Lab No.		283285	283286	283287	283288	283289	283290
	Sample Ref		SS1	SS2	SS3	SS4	SS5	SS6
	Depth							
	Other Ref		10:00	10:10	10:15	10:17	10:23	10:27
	Sample Type							
Test	Units	DETSxx						
Aniline	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Bis(2-chloroethyl)ether	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Phenol	mg/kg	DETSM-134 ³	<0.10	<0.10	0.17	<0.10	<0.10	<0.10
2-Chlorophenol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzyl Alcohol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
2-Methylphenol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
3& 4-Methylphenol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
2,4-dimethylphenol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Bis-(dichloroethoxy)methane	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
2,4-Dichlorophenol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,2,4-Trichlorobenzene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Naphthalene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
4-Chloro-3-methylphenol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
2-Methylnaphthalene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Hexachlorocyclopentadiene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
2,4,6 Trichlorophenol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
2,4,5 Trichlorophenol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
2-Chloronaphthalene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
2-Nitroaniline	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,4-dinitrobenzene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dimethyl phthalate	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,3-dinitrobenzene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthylene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
2,6-Dinitrotoluene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,2-Dinitrobenzene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
3-Nitroaniline	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dibenzofuran	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
2,4-Dinitrotoluene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
4-Nitrophenol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
2,3,4,6-Tetrachlorophenol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
2,3,5,6-Tetrachlorophenol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Diethylphthalate	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Fluorene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
4-Chlorophenyl phenyl ether	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
4-Nitroaniline	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Diphenylamine/4,6-Dinitro-2-	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Azobenzene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
4-Bromophenyl phenyl ether	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Hexachlorobenzene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Pentachlorophenol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Phenanthrene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Anthracene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Carbazole	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Di-n-butylphthalate	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzyl butyl phthalate	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Bis(2-ethylhexyl)ester	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Fluoranthene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Pyrene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(a)anthracene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chrysene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Di-n-octyl phthalate	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10

Summary of Chemical Analysis

Soil Samples

Our Ref:

Client Ref:

Contract Title:

	Lab No.	283285	283286	283287	283288	283289	283290
	Sample Ref	SS1	SS2	SS3	SS4	SS5	SS6
	Depth						
	Other Ref	10:00	10:10	10:15	10:17	10:23	10:27
	Sample Type						
Test	Units	DETSxx					
Benzo(b)fluoranthene	mg/kg	DETSM-134 [‡]	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(k)fluoranthene	mg/kg	DETSM-134 [‡]	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(a)pyrene	mg/kg	DETSM-134 [‡]	<0.10	<0.10	<0.10	<0.10	<0.10
Indeno(1,2,3-cd)pyrene	mg/kg	DETSM-134 [‡]	<0.10	<0.10	<0.10	<0.10	<0.10
Dibenz(a,h)anthracene	mg/kg	DETSM-134 [‡]	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(ghi)pyrene	mg/kg	DETSM-134 [‡]	<0.10	<0.10	<0.10	<0.10	<0.10

Summary of Chemical Analysis

Soil Samples

Our Ref:

Client Ref:

Contract Title:

	Lab No.	283291	283292	283293	283294	283295	283296
	Sample Ref	SS7	SS8	SS9	SS10	SS11	SS12
	Depth						
	Other Ref	10:30	10:35	10:40	10:43	10:47	10:50
	Sample Type						
Test	Units	DETSxx					
Aniline	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Bis(2-chloroethyl)ether	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Phenol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
2-Chlorophenol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Benzyl Alcohol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
2-Methylphenol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
3& 4-Methylphenol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
2,4-dimethylphenol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Bis-(dichloroethoxy)methane	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
2,4-Dichlorophenol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
1,2,4-Trichlorobenzene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Naphthalene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
4-Chloro-3-methylphenol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
2-Methylnaphthalene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Hexachlorocyclopentadiene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
2,4,6 Trichlorophenol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
2,4,5 Trichlorophenol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
2-Chloronaphthalene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
2-Nitroaniline	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
1,4-dinitrobenzene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Dimethyl phthalate	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
1,3-dinitrobenzene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthylene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
2,6-Dinitrotoluene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
1,2-Dinitrobenzene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
3-Nitroaniline	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Acenaphthene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Dibenzofuran	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
2,4-Dinitrotoluene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
4-Nitrophenol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
2,3,4,6-Tetrachlorophenol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
2,3,5,6-Tetrachlorophenol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Diethylphthalate	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Fluorene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
4-Chlorophenyl phenyl ether	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
4-Nitroaniline	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Diphenylamine/4,6-Dinitro-2-	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Azobenzene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
4-Bromophenyl phenyl ether	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Hexachlorobenzene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Pentachlorophenol	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Phenanthrene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Anthracene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Carbazole	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Di-n-butylphthalate	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Benzyl butyl phthalate	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Bis(2-ethylhexyl)ester	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Fluoranthene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Pyrene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(a)anthracene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Chrysene	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10
Di-n-octyl phthalate	mg/kg	DETSM-134 ³	<0.10	<0.10	<0.10	<0.10	<0.10

Summary of Chemical Analysis

Soil Samples

Our Ref:

Client Ref:

Contract Title:

	Lab No.	283291	283292	283293	283294	283295	283296
	Sample Ref	SS7	SS8	SS9	SS10	SS11	SS12
	Depth						
	Other Ref	10:30	10:35	10:40	10:43	10:47	10:50
	Sample Type						
Test	Units	DETSxx					
Benzo(b)fluoranthene	mg/kg	DETSM-134 [‡]	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(k)fluoranthene	mg/kg	DETSM-134 [‡]	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(a)pyrene	mg/kg	DETSM-134 [‡]	<0.10	<0.10	<0.10	<0.10	<0.10
Indeno(1,2,3-cd)pyrene	mg/kg	DETSM-134 [‡]	<0.10	<0.10	<0.10	<0.10	<0.10
Dibenz(a,h)anthracene	mg/kg	DETSM-134 [‡]	<0.10	<0.10	<0.10	<0.10	<0.10
Benzo(ghi)pyrene	mg/kg	DETSM-134 [‡]	<0.10	<0.10	<0.10	<0.10	<0.10

Summary of Chemical Analysis

Soil Samples

Our Ref:

Client Ref:

Contract Title:

	Lab No.	283297	283298	283299
	Sample Ref	SS13	SS14	SS15
	Depth			
	Other Ref	10:53	10:55	11:00
	Sample Type			
Test	Units	DETSxx		
Aniline	mg/kg	DETSM-134 ³	<0.10	<0.10
Bis(2-chloroethyl)ether	mg/kg	DETSM-134 ³	<0.10	<0.10
Phenol	mg/kg	DETSM-134 ³	<0.10	<0.10
2-Chlorophenol	mg/kg	DETSM-134 ³	<0.10	<0.10
Benzyl Alcohol	mg/kg	DETSM-134 ³	<0.10	<0.10
2-Methylphenol	mg/kg	DETSM-134 ³	<0.10	<0.10
3& 4-Methylphenol	mg/kg	DETSM-134 ³	<0.10	<0.10
2,4-dimethylphenol	mg/kg	DETSM-134 ³	<0.10	<0.10
Bis-(dichloroethoxy)methane	mg/kg	DETSM-134 ³	<0.10	<0.10
2,4-Dichlorophenol	mg/kg	DETSM-134 ³	<0.10	<0.10
1,2,4-Trichlorobenzene	mg/kg	DETSM-134 ³	<0.10	<0.10
Naphthalene	mg/kg	DETSM-134 ³	<0.10	<0.10
4-Chloro-3-methylphenol	mg/kg	DETSM-134 ³	<0.10	<0.10
2-Methylnaphthalene	mg/kg	DETSM-134 ³	<0.10	<0.10
Hexachlorocyclopentadiene	mg/kg	DETSM-134 ³	<0.10	<0.10
2,4,6 Trichlorophenol	mg/kg	DETSM-134 ³	<0.10	<0.10
2,4,5 Trichlorophenol	mg/kg	DETSM-134 ³	<0.10	<0.10
2-Chloronaphthalene	mg/kg	DETSM-134 ³	<0.10	<0.10
2-Nitroaniline	mg/kg	DETSM-134 ³	<0.10	<0.10
1,4-dinitrobenzene	mg/kg	DETSM-134 ³	<0.10	<0.10
Dimethyl phthalate	mg/kg	DETSM-134 ³	<0.10	<0.10
1,3-dinitrobenzene	mg/kg	DETSM-134 ³	<0.10	<0.10
Acenaphthylene	mg/kg	DETSM-134 ³	<0.10	<0.10
2,6-Dinitrotoluene	mg/kg	DETSM-134 ³	<0.10	<0.10
1,2-Dinitrobenzene	mg/kg	DETSM-134 ³	<0.10	<0.10
3-Nitroaniline	mg/kg	DETSM-134 ³	<0.10	<0.10
Acenaphthene	mg/kg	DETSM-134 ³	<0.10	<0.10
Dibenzofuran	mg/kg	DETSM-134 ³	<0.10	<0.10
2,4-Dinitrotoluene	mg/kg	DETSM-134 ³	<0.10	<0.10
4-Nitrophenol	mg/kg	DETSM-134 ³	<0.10	<0.10
2,3,4,6-Tetrachlorophenol	mg/kg	DETSM-134 ³	<0.10	<0.10
2,3,5,6-Tetrachlorophenol	mg/kg	DETSM-134 ³	<0.10	<0.10
Diethylphthalate	mg/kg	DETSM-134 ³	<0.10	<0.10
Fluorene	mg/kg	DETSM-134 ³	<0.10	<0.10
4-Chlorophenyl phenyl ether	mg/kg	DETSM-134 ³	<0.10	<0.10
4-Nitroaniline	mg/kg	DETSM-134 ³	<0.10	<0.10
Diphenylamine/4,6-Dinitro-2-	mg/kg	DETSM-134 ³	<0.10	<0.10
Azobenzene	mg/kg	DETSM-134 ³	<0.10	<0.10
4-Bromophenyl phenyl ether	mg/kg	DETSM-134 ³	<0.10	<0.10
Hexachlorobenzene	mg/kg	DETSM-134 ³	<0.10	<0.10
Pentachlorophenol	mg/kg	DETSM-134 ³	<0.10	<0.10
Phenanthrene	mg/kg	DETSM-134 ³	<0.10	<0.10
Anthracene	mg/kg	DETSM-134 ³	<0.10	<0.10
Carbazole	mg/kg	DETSM-134 ³	<0.10	<0.10
Di-n-butylphthalate	mg/kg	DETSM-134 ³	<0.10	<0.10
Benzyl butyl phthalate	mg/kg	DETSM-134 ³	<0.10	<0.10
Bis(2-ethylhexyl)ester	mg/kg	DETSM-134 ³	<0.10	<0.10
Fluoranthene	mg/kg	DETSM-134 ³	<0.10	<0.10
Pyrene	mg/kg	DETSM-134 ³	<0.10	<0.10
Benzo(a)anthracene	mg/kg	DETSM-134 ³	<0.10	<0.10
Chrysene	mg/kg	DETSM-134 ³	<0.10	<0.10
Di-n-octyl phthalate	mg/kg	DETSM-134 ³	<0.10	<0.10

Summary of Chemical Analysis

Soil Samples

Our Ref:

Client Ref:

Contract Title:

	Lab No.	283297	283298	283299
	Sample Ref	SS13	SS14	SS15
	Depth			
	Other Ref	10:53	10:55	11:00
	Sample Type			
Test	Units	DETSxx		
Benzo(b)fluoranthene	mg/kg	DETSM-134 [§]	<0.10	<0.10
Benzo(k)fluoranthene	mg/kg	DETSM-134 [§]	<0.10	<0.10
Benzo(a)pyrene	mg/kg	DETSM-134 [§]	<0.10	<0.10
Indeno(1,2,3-cd)pyrene	mg/kg	DETSM-134 [§]	<0.10	<0.10
Dibenz(a,h)anthracene	mg/kg	DETSM-134 [§]	<0.10	<0.10
Benzo(ghi)pyrene	mg/kg	DETSM-134 [§]	<0.10	<0.10



Jones Environmental Laboratory

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

Tel: +44 (0) 1244 833780

Fax: +44 (0) 1244 833781

Tier Consult
Elm House Farm
Saughton
Chester
CH3 6EN



No.4225

Attention :

Date : 22nd October 2010
Your reference : T/10/886
Our reference : Test Report 10/4896
Location : Scholars Court, Neston
Date samples received : 20th October 2010
Status : Final Report
Issue : 1

Fifteen samples were received for analysis on 20th October 2010 which was completed on 22nd October 2010. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced.

All interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Chartered Chemist

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

Client Name: Tier Consult
Reference: T/10/886
Location: Scholars Court, Neston
Contact:
JE Job No.: 10/4896

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Please see attached notes for all abbreviations and acronyms

Jones Environmental Laboratory

Client Name: Tier Consult
Reference: T/10/886
Location: Scholars Court, Neston
Contact:
JE Job No.: 10/4896

Report : Solids

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	1-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	Please see attached notes for all abbreviations and acronyms		
Sample ID	SS26	SS27	SS28	SS29	SS30	SS31	SS32	SS33	SS34	SS35			
Depth	-	-	-	-	-	-	-	-	-	-			
COC No / misc													
Containers	T G	T G	T G	T G	T G	T G	T G	T G	T G	T G			
Sample Date	19/10/10	19/10/10	19/10/10	19/10/10	19/10/10	19/10/10	19/10/10	19/10/10	19/10/10	19/10/10			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1	LOD	Units	Method No.
Date of Receipt	20/10/10	20/10/10	20/10/10	20/10/10	20/10/10	20/10/10	20/10/10	20/10/10	20/10/10	20/10/10			
Dichlorodifluoromethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	µg/ kg	TM15/PM10
Methyl Tertiary Butyl Ether	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	µg/ kg	TM15/PM10
Chloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
Vinyl Chloride	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	µg/ kg	TM15/PM10
Bromomethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	µg/ kg	TM15/PM10
Chloroethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	µg/ kg	TM15/PM10
Trichlorofluoromethane #	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	µg/ kg	TM15/PM10
1,1-Dichloroethene #	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	µg/ kg	TM15/PM10
Carbon Disulphide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<3	µg/ kg	TM15/PM10
Dichloromethane #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	µg/ kg	TM15/PM10
trans-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
1,1-Dichloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
cis-1-2-Dichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
2,2-Dichloropropane	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	µg/ kg	TM15/PM10
Bromochloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
Chloroform #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
1,1,1-Trichloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
1,1-Dichloropropene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
Carbon tetrachloride #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	µg/ kg	TM15/PM10
1,2-Dichloroethane #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	µg/ kg	TM15/PM10
Benzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
Trichloroethene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
1,2-Dichloropropane #	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	µg/ kg	TM15/PM10
Dibromomethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
Bromodichloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
cis-1-3-Dichloropropene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	µg/ kg	TM15/PM10
Toluene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
trans-1-3-Dichloropropene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
1,1,2-Trichloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
Tetrachloroethene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
1,3-Dichloropropane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
Dibromochloromethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
1,2-Dibromoethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
Chlorobenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
1,1,1,2-Tetrachloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
Ethylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
p/m-Xylene #	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	µg/ kg	TM15/PM10
o-Xylene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
Styrene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
Bromoform #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
Isopropylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
1,1,2,2-Tetrachloroethane #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
Bromobenzene	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	µg/ kg	TM15/PM10
1,2,3-Trichloropropane #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	µg/ kg	TM15/PM10
Propylbenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	µg/ kg	TM15/PM10
2-Chlorotoluene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
4-Chlorotoluene	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	µg/ kg	TM15/PM10
tert-Butylbenzene #	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	µg/ kg	TM15/PM10
1,2,4-Trimethylbenzene #	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	<6	µg/ kg	TM15/PM10
sec-Butylbenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	µg/ kg	TM15/PM10
4-Isopropyltoluene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	µg/ kg	TM15/PM10
1,3-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	µg/ kg	TM15/PM10
1,4-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	µg/ kg	TM15/PM10
n-Butylbenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	µg/ kg	TM15/PM10
1,2-Dichlorobenzene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	µg/ kg	TM15/PM10
1,2-Dibromo-3-chloropropane #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	µg/ kg	TM15/PM10
1,2,4-Trichlorobenzene #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	µg/ kg	TM15/PM10
Hexachlorobutadiene #	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	µg/ kg	TM15/PM10
Naphthalene #	<27	<27	<27	<27	<27	<27	<27	<27	<27	<27	<27	µg/ kg	TM15/PM10
1,2,3-Trichlorobenzene #	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	<7	µg/ kg	TM15/PM10

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

SOILS

Please note we are only MCERTS accredited for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. Your final report will reflect this, with non-MCERTS results on separate pages.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. If we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Asbestos screens where requested will be undertaken by a UKAS accredited laboratory.

WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory. It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples. All samples are treated as groundwaters and analysis performed on settled samples unless we are instructed otherwise.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any analysis that may be compromised highlighted on your schedule/ report by the use of a symbol.

The use of any of the following symbols indicates that the sample was deviating and the test result may be unreliable:

- \$ sample temperature on receipt considered inappropriate for analysis requested
- ^ samples exceeding recommended holding times
- & samples received in inappropriate containers (e.g. volatile samples not submitted in VOC jars/vials)
- ~ no sampling date given, unable to confirm if samples are with acceptable holding times

ABBREVIATIONS and ACRONYMS USED

- UKAS accredited

M - MCERTS accredited

NAD - No Asbestos Detected

ND - None Detected (usually refers to VOC and/SVOC TICs)

SS - Calibrated against a single substance

* - analysis subcontracted to a Jones Environmental approved laboratory.

W - Results expressed on as received basis

+ Failed AQC results should be considered as indicative only and are not accredited.

++ Result outside calibration range, may be possible to re-run with higher detection limits

APPENDIX E: GAS MEMBRANE SPECIFICATION AND CERTIFICATES

MEMBRANE INTEGRITY

TESTING

Prestige Air Technology is the Country's leading authority in the application of gas integrity testing to installed gas membranes. Originally developed by the company to verify the integrity of its own systems the technique has now been made more widely available as an independent integrity test to the construction industry. The conditions under which gas membranes are installed are often difficult and can adversely compromise the integrity designed into the product by the manufacturer. It is the purpose of the test to maintain this integrity by allowing the installation to be certified as representing the required gas resistant barrier after it has been installed.

The test is carried out on the membrane immediately after its installation and prior to it being covered up by the ensuing construction processes. The area below the membrane is temporarily pressurised with a mixture of clean air and a specialist tracer gas which seeks out and identifies any leaks within the membrane. The tracer gas used is both non toxic and inert and has been selected for its extreme sensitivity to detection. Specialist equipment sensitive to the tracer gas is used to trace all leaks within the installation with particular attention being paid to the critical points and junctions formed between the membrane material and other structural elements prior to conducting a detailed sweep of the complete area. The process is an on going one with the leaks being traced, sealed and re-tested before the membrane is passed and the Certificate issued.

**PRESTIGE AIR-TECHNOLOGY
LIMITED**

CERTIFICATE

**FOR
GAS RESISTANT MEMBRANE
INTEGRITY TEST**

This is to certify that the membrane installed at

Plot 4 Scholar's Court, Cross Street, Neston Wirral, CH64 3UU.

has been tested for its integrity and has been demonstrated
to represent a complete gas resistant barrier within the limits
of the test conditions.

Issuing Authority Prestige Air -Technology Limited

Signed on behalf of .

.....Date 15th February 2011

Certificate No:1.....

Prestige Air-Technology Limited, Prestige House, Landews Meadow, Green Lane
Challock, Ashford, Kent. TN25 4BL

Tel: 01-233-740844 Fax: 01-233-740834

**PRESTIGE AIR-TECHNOLOGY
LIMITED**

CERTIFICATE

**FOR
GAS RESISTANT MEMBRANE
INTEGRITY TEST**

This is to certify that the membrane installed at

Plot 6 Scholar's Court, Cross Street, Neston Wirral, CH64 3UU.

has been tested for its integrity and has been demonstrated
to represent a complete gas resistant barrier within the limits
of the test conditions.

Issuing Authority Prestige Air -Technology Limited

Signed on behalf ofDate 15th February 2011

Certificate No:3.....

Prestige Air-Technology Limited, Prestige House, Landews Meadow, Green Lane
Challock, Ashford, Kent. TN25 4BL

Tel: 01-233-740844 Fax: 01-233-740834

**PRESTIGE AIR-TECHNOLOGY
LIMITED**

CERTIFICATE

**FOR
GAS RESISTANT MEMBRANE
INTEGRITY TEST**

This is to certify that the membrane installed at

Plot 5 Scholar's Court, Cross Street, Neston Wirral, CH64 3UU.

has been tested for its integrity and has been demonstrated
to represent a complete gas resistant barrier within the limits
of the test conditions.

Issuing Authority Prestige Air -Technology Limited

Signed on behalf ofDate 15th February 2011

Certificate No:2.....

Prestige Air-Technology Limited, Prestige House, Landews Meadow, Green Lane
Challock, Ashford, Kent. TN25 4BL

Tel: 01-233-740844 Fax: 01-233-740834

**PRESTIGE AIR-TECHNOLOGY
LIMITED**

CERTIFICATE

**FOR
GAS RESISTANT MEMBRANE
INTEGRITY TEST**

This is to certify that the membrane installed at

Plot 3 Scholar's Court, Cross Street, Neston Wirral, CH64 3UU.

has been tested for its integrity and has been demonstrated
to represent a complete gas resistant barrier within the limits
of the test conditions.

Issuing Authority Prestige Air -Technology Limited

Signed on behalf of Date 2nd March 2011

Certificate No:6.....

Prestige Air-Technology Limited, Prestige House, Landews Meadow, Green Lane
Challock, Ashford, Kent. TN25 4BL

Tel: 01-233-740844 Fax: 01-233-740834

**PRESTIGE AIR-TECHNOLOGY
LIMITED**

CERTIFICATE

**FOR
GAS RESISTANT MEMBRANE
INTEGRITY TEST**

This is to certify that the membrane installed at

Plot 2 Scholar's Court, Cross Street, Neston Wirral, CH64 3UU.

has been tested for its integrity and has been demonstrated
to represent a complete gas resistant barrier within the limits
of the test conditions.

Issuing Authority Prestige Air -Technology Limited

Signed on behalf ofDate 2nd March 2011

Certificate No:5.....

Prestige Air-Technology Limited, Prestige House, Landews Meadow, Green Lane
Challock, Ashford, Kent. TN25 4BL

Tel: 01-233-740844 Fax: 01-233-740834

**PRESTIGE AIR-TECHNOLOGY
LIMITED**

CERTIFICATE

**FOR
GAS RESISTANT MEMBRANE
INTEGRITY TEST**

This is to certify that the membrane installed at

Plot 1 Scholar's Court, Cross Street, Neston Wirral, CH64 3UU.

has been tested for its integrity and has been demonstrated
to represent a complete gas resistant barrier within the limits
of the test conditions.

Issuing Authority Prestige Air -Technology Limited

Signed on behalf ofDate 2nd March 2011

Certificate No:4.....

Prestige Air-Technology Limited, Prestige House, Landews Meadow, Green Lane
Challock, Ashford, Kent. TN25 4BL

Tel: 01-233-740844 Fax: 01-233-740834

BRE CERTIFICATION

CERTIFICATE NUMBER

145/09

DATE OF FIRST ISSUE

July 2009

PRODUCT

PAG Gas Barrier
Gas Resistant Membrane

SUPPLIED BY

A Proctor Group UK Limited
The Haugh,
Blairgowrie,
Perthshire,
UK,
PH10 7ER
Tel: 01250 87 22 61
Fax: 01250 87 27 27
Web: www.proctorgroup.com
E-mail: insulatione@proctorgroup.com

SUMMARY

PAG Gas Barrier has been assessed to confirm its suitability for use as part of a gas and moisture resistant system for incorporation into the floor of a building in situations where there is a risk of contamination to the internal environment of the building arising from gas evolution from contaminated land.

The PAG Gas Barrier and its method of application in conjunction with its designated ancillary system components (not covered by this certificate), has been reviewed with respect to the Building Regulations current in the United Kingdom. The assessment has referred to British Standards and other publications current in December 2006.

The assessment is described in the following pages which form integral parts of this certificate.

CONDITIONS OF USE

- 0.1 The PAG Gas Barrier has been assessed as suitable for use as part of a gas and moisture resistant system where any of the following conditions are present on the site under consideration within the ground, under, or adjacent to, the building:-
- (a) the concentrations of gaseous contaminants are unlikely to exceed 5% by volume of carbon dioxide and 1% by volume of methane
 - (b) where the concentrations of methane and carbon dioxide exceed the levels in (a), the membrane may still be used in a system with the incorporation of supplementary measures, but subject to expert advice
 - (c) where a risk of radon contamination of the site exists.
- 0.2 Current information on the areas in the United Kingdom delineated by Communities and Local Government (CLG) with respect to the risk of radon infiltration levels for the purposes of the Building Regulations can be obtained from CLG (www.communities.gov.uk), building control officers or approved inspectors, the Health Protection Agency Centre for Radiation, Chemical and Environmental Hazards (www.hpa.org.uk/radiation) or the British Geological Survey (www.bgs.ac.uk).
- 0.3 The PAG Gas Barrier and the ancillary system components must be installed in accordance with the manufacturer's instructions, the recommendations of the Building Research Establishment Reports BR 211 *Radon: guidance on protective measures for new dwellings*, BR 376 *Radon: Guidance on protective measures for new dwellings in Scotland*, BR 413 *Radon: Guidance on protective*

measures for new dwellings in Northern Ireland, BR 414 Protective measures for housing on gas contaminated land, and the requirements of this certificate.

- 0.4 The PAG Gas Barrier is not intended for use in conditions where it may become subjected to hydrostatic pressure from the ground. Sub-soil drainage should be provided where there is a risk of the ground becoming waterlogged.
- 0.5 The performance of the PAG Gas Barrier depends on correct installation. The membrane and specific ancilliary components (see Clause 1.1.2) required to complete the installation must be installed in accordance with the supplier's instructions and the requirements of this certificate. The quality of installation achieved on site is not covered by this certificate and therefore it is recommended that the quality of installation and workmanship is subject to appropriate checks by a competent person.

STATEMENT

It is the opinion of BRE Certification that PAG Gas Barrier is satisfactory for use within the stated limitations provided that it is used in accordance with the supplier's instructions and the requirements of this certificate.

CONFIRMATION

For and on behalf of BRE Certification



Date: 31 July 2009

1 TECHNICAL SPECIFICATION

1.1 Description of Product

1.1.1 The PAG Gas Barrier is a laminate of two outer polyethylene films with interlayers of aluminium foil and a 'mesh' of polyester scrim reinforcement. The membrane has a terracotta coloured top sheet on one face and a clear film finish with the reinforcement mesh visible on the other. The membrane has a nominal weight of 0.37 kg/m² and a nominal thickness of 0.4 mm. It is supplied in rolls 50m long x 2m wide.

1.1.2 The PAG Gas Barrier is used in conjunction with designated ancillary components allowing complete sealing around the perimeter of the building and at any penetrations by service pipes or ducts through the membrane into the building. The ancillary components and materials of the system are listed and identified in Table 1 but have not been assessed and are therefore not covered by this certificate.

TABLE 1: PAG Gas Barrier Ancillary Components

Component	Description	Use
PAG Gas Barrier 'top-hat' sealing collar	Standard circular of 110,130 or 160 mm diameter or any size or shape to order	To seal services penetrations.
Cross linked butyl tape	Rolls 30 m long and of 30 mm nominal width covered with white release paper. Supplied in boxes.	To seal overlaps between adjacent runs of PAG Gas Barrier membrane and make joints with DPC and sealing collars.
PAG Gas Barrier Gaseal DPC roll	Polyester reinforced bitumen in various sizes incorporating a 50 micron aluminium core coated with rubber modified bitumen. Sand surface finish	Across-cavity DPC.
DPC jointing tape	SBS Polymer modified bitumen tape, 10 m long x 100 mm wide supplied in boxes (x 6) individually wrapped	To seal overlaps between adjacent sections of PAG Gas Barrier Gaseal DPC.
PAG Gas Barrier Gaseal Adhesive Gas Membrane (AGM)	Doubly reinforced with a 100 micron polyethylene core and a 50 micron aluminium gas barrier, both coated with a self-adhesive modified bitumen compound. The upper surface is finished with a thin polyethylene film and the underside with a silicone-coated release film for easy installation. Supplied in rolls 15m long x 1 m wide	Self-adhesive membrane for sealing structural penetrations, e.g. steel columns.
Self-adhesive primer	Black modified bitumen solution supplied in drums of 5 litre capacity	To be used to prime steel and concrete surfaces prior to applying PAG Self Adhesive Gas Resistant Membrane (PAGSAGR)

1.2 Product Performance

- 1.2.1 PAG Gas Barrier can prevent ingress of dangerous or harmful gases into a building provided that it is installed in accordance with the manufacturer's instructions and the recommendations of this certificate. Further guidance on the applications for this product in areas susceptible to methane or radon permeation can be obtained from CIRIA Report C665 *Assessing risks posed by hazardous ground gases to buildings*.
- 1.2.2 The PAG Gas Barrier additionally provides a means of damp proofing ground floor constructions.
- 1.2.3 The PAG Gas Barrier is considered to be resistant to mechanical damage during the normal installation and construction processes but the use of a super-imposed geotextile membrane should be considered if there is to be any trafficking. The integrity of the membrane must be checked prior to permanent covering and any necessary repairs carried out as detailed in Clause 3.3.13.
- 1.2.4 If the PAG Gas Barrier is to be laid above the structural floor member then it must be protected by the use of a screed of minimum thickness in accordance with the requirements of section 6.4.3 of BS 8204 *Screeds, bases and in-situ floorings Part 1: Concrete bases and cement sand levelling screeds to receive flooring. Code of Practice*.

2. BUILDING REGULATIONS

The relevant Building Regulation requirements for these products are:

2.1 The Building Regulations (England & Wales) 2000 (as amended)

Requirement

- A1 Loading - the PAG Gas Barrier will safely and without undue deformation sustain and transmit the dead and imposed service loads to the floor slab.
- C1 Preparation of site and resistance to contaminants - the installation of PAG Gas Barrier within the system is considered to be an acceptable precaution to limit the danger to health and safety caused by the permeation of radon, landfill gas and methane from the ground.
- C2 Resistance to moisture - when installed in floors in accordance with Section 3.3 of this certificate, the PAG Gas Barrier within the system will resist the passage of moisture to the inside of the building.

Regulation

- 7 Materials and workmanship – The PAG Gas Barrier is manufactured from appropriate materials for its intended use and can be installed satisfactorily with a normal degree of workmanship.

2.2 The Building (Scotland) Regulations 2004

Regulation 8 (1) Fitness and durability of materials and workmanship

The PAG Gas Barrier is manufactured from materials considered to be adequately safe and acceptable for the intended application and resistant to deterioration and wear under normal service conditions, provided that it is installed and maintained in accordance with the requirements of this certificate.

Regulation 9 Building Standards Construction

Section 1 - Structure

1.1 Structure

The PAG Gas Barrier will safely and without undue deformation sustain and transmit the dead and imposed service loads to the floor slab.

Section 3 - Environment

3.1 Site preparation – harmful and dangerous substances

3.2 Protection from radon gas

3.3 Flooding and ground water

3.4 Moisture from the ground

Over site ground floors, formed using this gas resistant membrane in accordance with the requirements of this certificate, can be designed and constructed to comply with above standards.

2.3 The Building Regulations (Northern Ireland) 2000

Regulation

B2 Fitness of materials and workmanship - the PAG Gas Barrier is manufactured from materials suitable for its intended purpose and can be installed so as to limit the danger to the health or safety of persons in or about the building.

C2 Preparation of site and resistance to dangerous and harmful substances - when installed in accordance with Section 3.3 of this certificate the PAG Gas Barrier within the system will contribute to the safety of the building by limiting the effects caused by the dangerous or harmful substances of methane, radon and landfill gas.

C4 Resistance to ground moisture and weather - when installed in a floor in accordance with Section 3.3 of this certificate, the PAG Gas Barrier within the system will prevent the passage of moisture to any part of the building from the ground.

D1 Stability - the PAG Gas Barrier will safely and without undue deformation sustain and transmit the dead and imposed service loads to the floor slab.

3. INSTALLATION/PRACTICAL APPLICATION

3.1 Identification

3.1.1 PAG Gas Barrier is supplied in rolls of 50 m length and widths of 2000 mm. Each roll is secured by circumferential tapes displaying the product name, roll size and the manufacturer's details. The roll weight is nominally 36 kg. The rolls are wound so that the aluminium coloured surface with the reinforcement grid is visible on the outside.

The ancillary components for use with the membrane are described in Table 1; they are not covered by this certificate.

3.2 Storage and Handling

3.2.1 Rolls of PAG Gas Barrier should be securely stacked on site preferably under cover but protected from accidental damage. The rolls must be stored on their sides.

3.2.2 The PAG Gas Barrier should be stored and protected from mechanical damage and environmental degradation (eg rain, frost and exposure to strong sunlight) until immediately prior to use. The storage temperature shall not fall below 5°C nor exceed 30°C at any time.

- 3.2.3 Care should be taken when handling the membrane on site to avoid accidental perforation; in particular of the aluminium interlayer which provides the main contribution to the gas retardant properties of the membrane. If repairs are required they must be carried out as stated in Clause 3.3.13 below. Once installed the membrane should be covered and protected with concrete as soon as reasonably practicable but with an absolute limit of no later than one month.
- 3.3 Installation
- 3.3.1 These instructions are informative and based on current guidance. Installation will be specific to each site and in accordance with the supplier's instructions and requirements of this certificate. The performance of this product depends on correct installation. The quality of installation achieved on site is not covered by this certificate and therefore it is recommended that the quality of installation and workmanship is subject to appropriate checks by a competent person.
- 3.3.2 The handling and application instructions provided by the suppliers have been inspected during the assessment and provide satisfactory guidance for installers. As part of this assessment, a site installation of the PAG Gas Barrier including the Gaseal DPC and Cross linked butyl tape ancillary components was witnessed by BRE Certification to ensure that installation can be carried out in accordance with the supplier's instructions.
- 3.3.3 The PAG Gas Barrier must be installed in accordance with the manufacturer's written instructions and the recommendations of Section 3, Clause 11 of CP102 *Code of practice for protection of buildings against water from the ground*. In all cases the workmanship must meet the minimum requirements laid down in BS 8000:Part 4 *Workmanship on building sites. Code of practice for waterproofing*.
- 3.3.4 For sites where the presence of gaseous contaminants is suspected, a site investigation must be carried out and the guidance of the BS 10175 *Investigation of potentially contaminated sites – code of practice* should be followed. Further general information on site investigations is given in BS 5930 *Code of practice for site investigations*.
- 3.3.5 Where the gaseous contaminant is radon, the PAG Gas Barrier can be used as the primary protection measure in combination with either a suspended concrete floor with a ventilated subfloor void or a ground supported concrete floor. Further guidance on additional secondary protection measures such as subfloor depressurisation are given in the BRE Report No 212 *Construction of new buildings on gas contaminated land*, and in the BRE Report No 211 *Radon: Guidance on protective measures for new dwellings*.
- 3.3.6 The PAG Gas Barrier Gaseal DPC, which is outside the scope of this certificate, must first be laid on a wet mortar bed in accordance with the requirements of BS 8215 and BS 5628: Part 3. The DPC must be stepped down towards the outer leaf and joints in the DPC must be bonded, using DPC jointing tape in accordance with the supplier's instructions, with a minimum 150 mm lap and be supported across the cavity by consolidated concrete in the cavity. Laps of PAG Gas Barrier Gaseal DPC to PAG Gas Barrier must be formed by extending the PAG Gas Barrier Gaseal DPC on to the concrete slab by a minimum of 150 mm and overlaying the membrane, Figure 1, jointing the two components with the Cross linked butyl tape in accordance with the manufacturer's instructions and subject to the precautions detailed in clause 3.3.9, below.
- 3.3.7 Surfaces which are to receive PAG Gas Barrier should be prepared as follows. If the surface is a concrete slab or masonry this should be a smooth, clean and dry finish free of projections or indentations. If it is intended to lay PAG Gas Barrier on to sand blinding, that blinding must be of sufficient thickness to cover all sharp projections and be tamped flat.
- 3.3.8 Installation of the PAG Gas Barrier is commenced as follows. The membrane is unrolled over the prepared ground or sub-floor with its terracotta surface uppermost. When the membrane is to be installed below the concrete slab it should be loosely laid to accommodate any small movements that may occur. Prior to the application of the bonding tape to join adjacent pieces or components of the system all surfaces must be dried thoroughly to ensure adequate adhesion. A strip of Cross linked butyl tape is unrolled over the membrane, the protective paper removed from one of its surfaces which is then stuck with its nearest edge approximately 50 mm from the edge of the membrane. Immediately

prior to laying the next adjacent 'run' of membrane the protective paper is removed from the upper surface of the Cross linked butyl tape and the adjacent 'run' of membrane is carefully unrolled over it, ensuring a 100 mm overlap, Figure 2. The joint is then consolidated, preferably by rolling.

- 3.3.9 Jointing of components with tape must not be carried out when the temperature is below 5°C. Some warming with a hot air gun may be required when temperatures are between 5 and 10°C to ensure a satisfactory seal. The self-adhesive primer must not be applied to surfaces at or below 5°C.
- 3.3.10 Arrises at internal or external corners should be rounded where possible. Where sharp corners are unavoidable, internal and external angles must be strengthened with a 300 mm wide strip of membrane fixed as appropriate and interleaved with the adjacent layers of membrane.
- 3.3.11 In order to ensure the continuity of the gas and moisture retardant membrane, it will be necessary to construct an airtight seal around all service entry points and features such as structural columns. Preformed PAG Gas Barrier 'top hat' sealing collar sections are available from the manufacturer for sealing around pipe entries, Figure 3. The base of the top-hat section must be jointed to the membrane using Cross linked butyl tape. It should be noted that any gap between the inside of any service duct and an encased service pipe or cable should also be sealed preferably with a minimum of 150 mm depth of cold applied sealant. Service entry points should not be coincident with lapped joints in the membrane. Sealing to steel or concrete structural columns must be accomplished using the PAG Self Adhesive Gas Resistant membrane, Figure 4, which is outside the scope of this certificate. All concrete surfaces to receive the self-adhesive tape must be primed with Proseal self-adhesive primer in accordance with the supplier's instructions.
- 3.3.12 Where the membrane is to be laid over, for example, a slab movement joint it should be loosely folded back on itself prior to screeding and retained with short strips (100 mm) of Cross linked butyl tape placed at approximately 600 mm centres as illustrated in Figure 5.
- 3.3.13 The PAG Gas Barrier must be protected from site damage at all times. Before the permanent protection is placed, the membrane area must be inspected for defects which should be repaired with an overlay of membrane extending beyond the point of damage by a minimum of 150 mm in all directions and securely taped in position using the Cross linked butyl tape in accordance with the supplier's instructions.

4. TECHNICAL APPRAISAL

4.1 Performance Tests

- 4.1.1 Tests and investigations have been carried out by BRE Certification to determine the properties of the PAG Gas Barrier as follows:-

- Thickness
- Weight per square metre
- Tensile strength
- Dimensional stability
- Tear strength
- Watertightness before and after heat ageing
- Water permeability
- Methane and Radon permeability
- Resistance to cracking at low temperature

4.1.2 Technical data for the membrane is presented in Table 2.

TABLE 2: PAG Gas Barrier Membrane Performance

Characteristic	Test method	Unit	Results*
Watertightness	BS EN1928	-	PASS
Resistance to static loading	BS EN12730	kg	20
Tensile Properties (Machine Direction) - Tensile force -Elongation	BS EN12311-2	N/50mm %	375 minimum 23 minimum
Tensile Properties (Cross Direction) - Tensile force -Elongation	BS EN12311-2	N/50mm %	327 minimum 10 minimum
Durability of watertightness against ageing	BS EN13967/ BS EN1928	-	PASS
Durability of watertightness against chemicals	BS EN13967/ BS EN1928	-	PASS
Resistance to nail tear	BS EN12310-2	N	Machine Direction 244 minimum Cross Direction 313 minimum
Bitumen compatibility	BS EN1548/ BS EN1928	-	PASS
Water vapour transmission	BS EN1931	m ² s Pa/kg	0.3
Methane Permeability	Gaseous diffusion	ml/m ² /24h	<0.26
Length	BS EN1848-2	m	50
Width	BS EN1848-2	m	2
Thickness	BS EN1848-2	mm	0.44
Mass	BS EN1849-2	kg/m ²	378.34

*Where the results are given as minimum values, these values are manufacturer's declared values for these characteristics.

4.2 Quality Control

4.2.1 The PAG Gas Barrier is manufactured under a quality system independently certificated to BS EN ISO 9001. The manufacturer carries out quality control tests and inspections to ensure that the finished products conform to PAGeotechnical specification. Tests or inspections are carried out on the carrier materials, aluminium foil, and polyester reinforcement strip. In addition, BRE Certification undertakes regular monitoring of the product by auditing at regular intervals against a Quality Plan prepared and maintained specifically for that product.

4.2.2 Traceable quality records are maintained by the manufacturer. In the opinion of BRE Certification the materials and procedures of the manufacturer are suitable for the product.

4.3 British Standards

The following British Standards have been referred to for this assessment:-

BS 3177:1959	Method for determining permeability to water vapour of flexible sheet materials used for packaging.
BS 5628:Part 3:2005	Code of practice for use of masonry. Materials and components, design and workmanship.
BS 5930:1999	Code of practice for site investigations.
BS 6398:1983	Specification for bitumen damp proof-courses for masonry.
BS 6399:Part 1:1996	Loading for buildings. Code of practice for dead and imposed loads.
BS 8000:Part 4:1989	Workmanship on building sites. Code of practice for waterproofing.
BS 8102:1990	Code of practice for protection of structures against water from the ground.
BS 8204:Part 1: 2002	Screeds, bases and in-situ floorings, Part 1: Concrete bases and cement sand levelling screeds to receive flooring. Code of Practice.
BS 8215:1991	Code of practice for design and installation of damp proof courses in masonry construction.
CP102:1973	Code of practice for protection of buildings against water from the ground.
DD86:Part 1:1983	Damp-proof courses. Methods of test for flexural bond strength and short term shear strength.
BS 10175:2001	Investigation of potentially contaminated sites. Code of practice.
BS EN 13967:2004	Flexible sheets for waterproofing – plastic and rubber damp proof sheets including plastic and rubber basement tanking sheet – definitions and characteristics.

5. CONDITIONS OF CERTIFICATE ISSUE

5.1 Validity

This certificate will be valid until February 2010. It will remain valid in so far as:

- a) The materials and method of manufacture are unchanged or BRE Certification has assessed any changes and found them to be satisfactory.
- b) The design and specification are unaltered from those examined by BRE Certification.
- c) The certificate holder continues to have the product regularly checked by BRE Certification.

5.2 Health and Safety

This certificate and the recommendations herein do not purport in any way to restate the requirements of the Health and Safety at Work Act 1974 or any statutory or common law duty of care which exists now or in the future; nor is compliance with these recommendations to be assumed as satisfying the requirements of the said Act or any existing or future statutory or common law duty of care.

5.3 Reference to Other Documentation

Where reference is made in this certificate to any Act of Parliament, Regulation, Code of Practice, British or other Standard or other publication, it shall be construed as reference to such publication in the form in which it is in force at the date of the certificate.

5.4 Patents

BRE Certification makes no representational warranty that any patent or similar industrial property right is valid or that the manufacture, use, sale, lease or any other dealing or disposition of the product in whole or in part is not an infringement of any patent or industrial property right not owned by the certificate holder.

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Figures

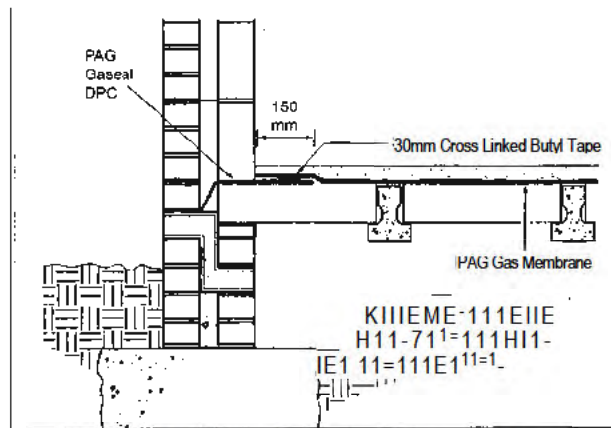


FIG 1: Edge Detail, Membrane above Suspended Floor

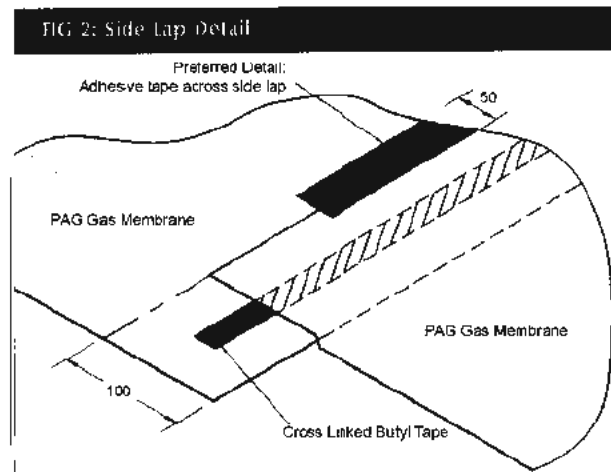


FIG 3: Pre-formed sealing unit (Top Hat)

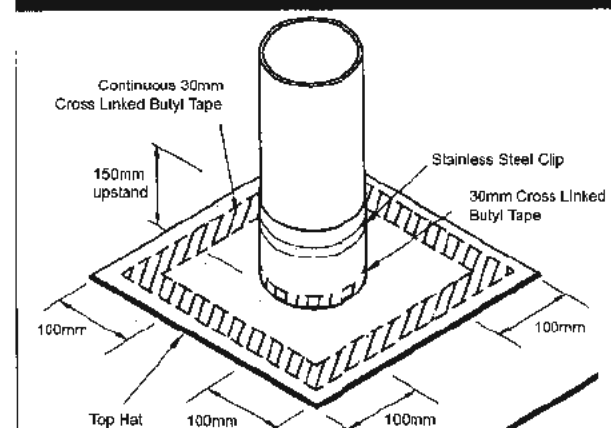


FIG 4: Typical detail for concrete column penetration

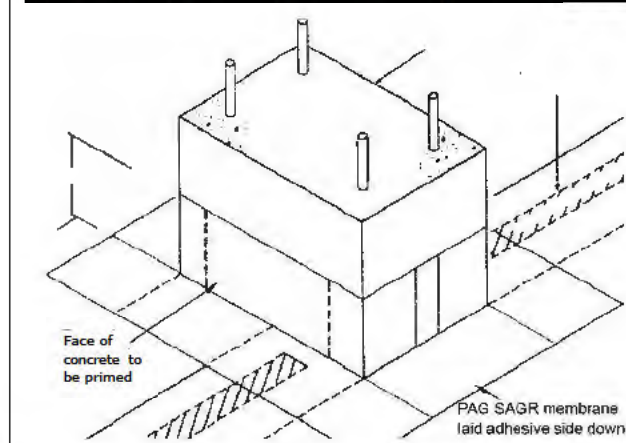
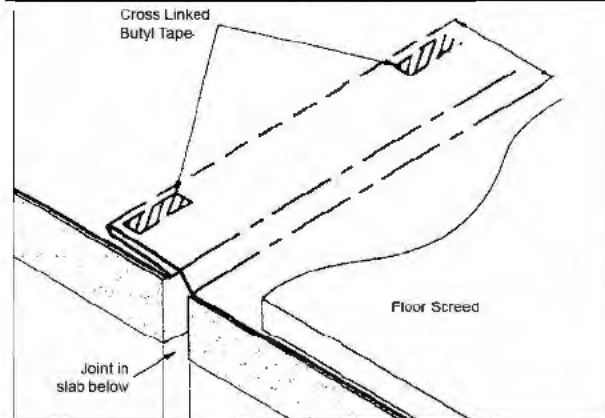


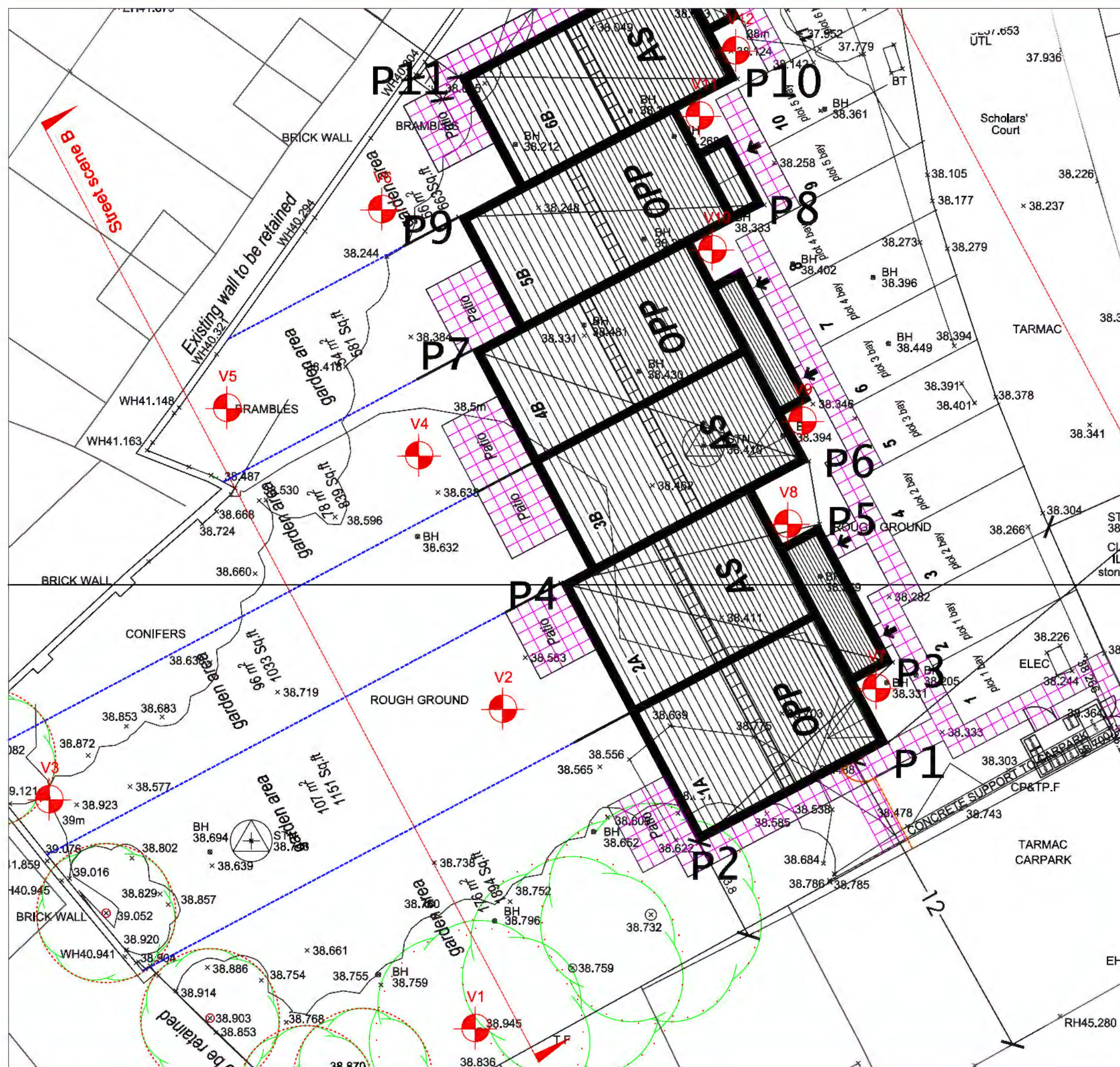
FIG 5: Preferred detail over a movement joint



APPENDIX F: DRAWINGS

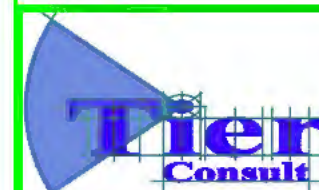


1. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECTS, ENGINEERS AND SPECIALIST'S DRAWINGS TOGETHER WITH THE APPROPRIATE SPECIFICATION.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CHECK ALL DIMENSIONS ON SITE. DIMENSIONS MUST NOT BE SCALED FROM THIS DRAWING AND DISCREPANCIES TO BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE ARCHITECT IN WRITING.
3. ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS NOTED OTHERWISE.
4. ALL LEVELS ARE IN METRES, UNLESS NOTED OTHERWISE.



REV	DATE	BY	DESCRIPTION	CHK	AP
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DIVING TIME:



The Consult Ltd.
Elm House Farm
Sulgrave
Cheney
OX3 9EN

Telephone:
01244 333080
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Mobile:
07986 887088
Email:
info@tcland.com

CLIENT: Watkin Jones

ARCHITECT: N/A

PROJECT:

Scholars Court, Cross Street, Neston

TITLE:
Validation Exploratory Hole Location Plan

SCALE & SIZE: 1:10 at A3	OWNER: JB	APPROVED: PJB
CAD FILE:	DRAWING/REVISE: HS	DATE: April 2011
PROJECT No: T/10/866	DRAWING No: T/10/866/RS/2	REV: D

Legend:

- 900mm high two bar ranch fence
- 1.8m high close boarded fencing/gate.
- 1.8m high privacy screen

Drainage:

- Storm water drainage route
- Foul water drainage route



Drainage amended to Planning Layout Rev E	AM	04/06/10	C
Legend amended	JGB	26/06/10	B
ACO and Tanking Notes added	AM	03/06/10	A
Revision	By	Date	No

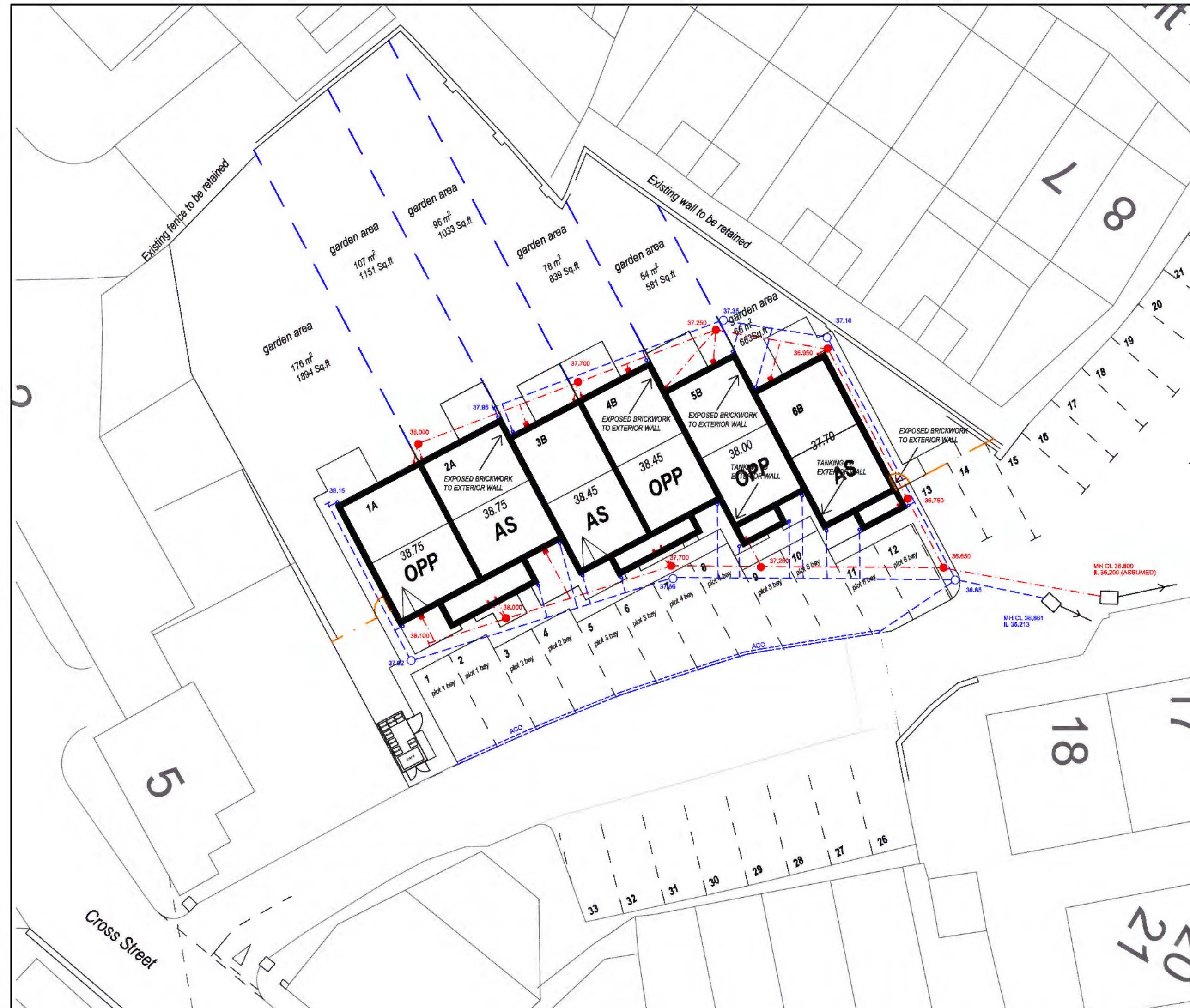
Contract
Proposed 6 semi-detached dwellings
Scholars' Court
Neston

Title
Proposed site plan/ plot drainage

WATKIN JONES

HOMES
Llandegall Industrial Estate
Bangor Gwynedd
LL57 4YH
Tel. (01248) 342516
Fax. (01248) 352860

Scale	Date	Drawn	Checked	Drawing No.	Rev.
1:200 @ A3	June 2010	AM		5414~100	c



APPENDIX G: CLEAN COVER VERIFICATION PROFORMAS

Ground Remediation Verification Proforma

Site Name/ Location	Scholars Court, Cross Street, Neston	
Borehole ID	V7	
Developer	Watkin Jones	
Development Use	Residential Housing	
Plot number/ Adj Landscaping Area	See Drawing	

Remediation undertaken to the specified Plot (and as per agreed Remediation Strategy.)

(ie detail removal of any contaminated, detailed specification for soil capping system etc...)

Contaminated made ground soils in respect of a residential land use have been removed and hotspots of contamination have already been remediated and validated. A 600mm clean cover system underlain by a geomembrane has been emplaced in order to remediate the site. Soil samples have been previously tested by an accredited laboratory.

Supervising Environmental Consultant

Engineers Name

Inspection Visit Date

29/03/2011

Photograph Reference No.

5

Verification photograph details/ additional remarks



Top cover

Geomembrane

- Geomembrane visible
- Top cover deep enough

This plot has PASSED verification

(Any proposed remedial works will be noted in the 'Remarks' column on this form)

An additional inspection IS/ IS NOT required for this plot

Ground Remediation Verification Proforma

Site Name/ Location	Scholars Court, Cross Street, Neston	
Borehole ID	V8	
Developer	Watkin Jones	
Development Use	Residential Housing	
Plot number/ Adj Landscaping Area	See Drawing	

Remediation undertaken to the specified Plot (and as per agreed Remediation Strategy.)

(ie detail removal of any contaminated, detailed specification for soil capping system etc...)

Contaminated made ground soils in respect of a residential land use have been removed and hotspots of contamination have already been remediated and validated. A 600mm clean cover system underlain by a geomembrane has been emplaced in order to remediate the site. Soil samples have been previously tested by an MCERT and UKAS accredited laboratory.

Supervising Environmental Consultant

Engineers Name

Inspection Visit Date

29/03/2011

Photograph Reference No.

9

Verification remarks



Top cover

Geomembrane

- Geomembrane visible
- Top cover deep enough

This plot has PASSED verification

(Any proposed remedial works will be noted in the 'Remarks' column on this form)

An additional inspection IS NOT required for this plot

Ground Remediation Verification Proforma

Site Name/ Location	Scholars Court, Cross Street, Neston	
Borehole ID	V9	
Developer	Watkin Jones	
Development Use	Residential Housing	
Plot number/ Adj Landscaping Area	See Drawing	

Remediation undertaken to the specified Plot (and as per agreed Remediation Strategy.)

(ie detail removal of any contaminated, detailed specification for soil capping system etc...)

Contaminated made ground soils in respect of a residential land use have been removed and hotspots of contamination have already been remediated and validated. A 600mm clean cover system underlain by a geomembrane has been emplaced in order to remediate the site. Soil samples have been previously tested by an MCERT and UKAS accredited laboratory.

Supervising Environmental Consultant

Engineers Name

Inspection Visit Date

29/03/2011

Photograph Reference No.	15	Verification photograph details/ additional remarks
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- Geomembrane visible
- Top cover deep enough

This plot has PASSED verification

(Any proposed remedial works will be noted in the 'Remarks' column on this form)

An additional inspection IS/ IS NOT required for this plot

Ground Remediation Verification Proforma

Site Name/ Location	Scholars Court, Cross Street, Neston	
Borehole ID	V10	
Developer	Watkin Jones	
Development Use	Residential Housing	
Plot number/ Adj Landscaping Area	See Drawing	

Remediation undertaken to the specified Plot (and as per agreed Remediation Strategy.)

(ie detail removal of any contaminated, detailed specification for soil capping system etc...)

Contaminated made ground soils in respect of a residential land use have been removed and hotspots of contamination have already been remediated and validated. A 600mm clean cover system underlain by a geomembrane has been emplaced in order to remediate the site. Soil samples have been previously tested by an MCERT and UKAS accredited laboratory.

Supervising Environmental Consultant

Engineers Name

Inspection Visit Date

29/03/2011

Photograph Reference No.	19	Verification photograph details/ additional remarks
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- Geomembrane visible
- Top cover deep enough

This plot has PASSED verification

(Any proposed remedial works will be noted in the 'Remarks' column on this form)

An additional inspection IS NOT required for this plot

Ground Remediation Verification Proforma

Site Name/ Location	Scholars Court, Cross Street, Neston	
Borehole ID	V11	
Developer	Watkin Jones	
Development Use	Residential Housing	
Plot number/ Adj Landscaping Area	See Drawing	

Remediation undertaken to the specified Plot (and as per agreed Remediation Strategy.)

(ie detail removal of any contaminated, detailed specification for soil capping system etc...)

Contaminated made ground soils in respect of a residential land use have been removed and hotspots of contamination have already been remediated and validated. A 600mm clean cover system underlain by a geomembrane has been emplaced in order to remediate the site. Soil samples have been previously tested by an MCERT and UKAS accredited laboratory.

Supervising Environmental Consultant

Engineers Name

Inspection Visit Date

29/03/2011

Photograph Reference No.	23	Verification photograph details/ additional remarks
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Top cover

Geomembrane

- Geomembrane visible
- Top cover deep enough

This plot has PASSED verification

(Any proposed remedial works will be noted in the 'Remarks' column on this form)

An additional inspection IS NOT required for this plot

Ground Remediation Verification Proforma

Site Name/ Location	Scholars Court, Cross Street, Neston	
Borehole ID	V12	
Developer	Watkin Jones	
Development Use	Residential Housing	
Plot number/ Adj Landscaping Area	See Drawing	

Remediation undertaken to the specified Plot (and as per agreed Remediation Strategy.)

(ie detail removal of any contaminated, detailed specification for soil capping system etc...)

Contaminated made ground soils in respect of a residential land use have been removed and hotspots of contamination have already been remediated and validated. A 600mm clean cover system underlain by a geomembrane has been emplaced in order to remediate the site. Soil samples have been previously tested by an MCERT and UKAS accredited laboratory.

Supervising Environmental Consultant Tier Consult

Engineers Name	Inspection Visit Date	29/03/2011
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Photograph Reference No.	30	Verification photograph details/ additional remarks
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Top cover

Geomembrane

- Geomembrane visible
- Top cover deep enough

This plot has PASSED verification

(Any proposed remedial works will be noted in the 'Remarks' column on this form)

An additional inspection IS/ IS NOT required for this plot

Ground Remediation Verification Proforma

Site Name/ Location	Scholars Court, Cross Street, Neston	
Borehole ID	V1	
Developer	Watkin Jones	
Development Use	Residential Housing	
Plot number/ Adj Landscaping Area	See Drawing	

Remediation undertaken to the specified Plot (and as per agreed Remediation Strategy.)

(ie detail removal of any contaminated, detailed specification for soil capping system etc...)

Contaminated made ground soils in respect of a residential land use have been removed and hotspots of contamination have already been remediated and validated. A 600mm clean cover system underlain by a geomembrane has been emplaced in order to remediate the site. Soil samples have been previously tested by an accredited laboratory.

Supervising Environmental Consultant

Engineers Name

Inspection Visit Date

03/03/2011

Photograph Reference No.

CIMG2870

Verification photograph details/ additional remarks



Top cover

Geomembrane

- Geomembrane visible
- Top cover deep enough

This plot has PASSED verification

(Any proposed remedial works will be noted in the 'Remarks' column on this form)

An additional inspection IS/ IS NOT required for this plot

Ground Remediation Verification Proforma

Site Name/ Location	Scholars Court, Cross Street, Neston	
Borehole ID	V2	
Developer	Watkin Jones	
Development Use	Residential Housing	
Plot number/ Adj Landscaping Area	See Drawing	

Remediation undertaken to the specified Plot (and as per agreed Remediation Strategy.)
(ie detail removal of any contaminated, detailed specification for soil capping system etc...)

Contaminated made ground soils in respect of a residential land use have been removed and hotspots of contamination have already been remediated and validated. A 600mm clean cover system underlain by a geomembrane has been emplaced in order to remediate the site. Soil samples have been previously tested by an MCERT and UKAS accredited laboratory.

Supervising Environmental Consultant

Engineers Name

Inspection Visit Date

03/03/2011

Photograph Reference No.

CIMG2874

Verification remarks



Top cover

Geomembrane

- Geomembrane visible
- Top cover deep enough

This plot has PASSED verification

(Any proposed remedial works will be noted in the 'Remarks' column on this form)

An additional inspection IS NOT required for this plot

Ground Remediation Verification Proforma		
Site Name/ Location	Scholars Court, Cross Street, Neston	
Borehole ID	V3	
Developer	Watkin Jones	
Development Use	Residential Housing	
Plot number/ Adj Landscaping Area	See Drawing	
		
Remediation undertaken to the specified Plot (and as per agreed Remediation Strategy.) (ie detail removal of any contaminated, detailed specification for soil capping system etc...)		
Contaminated made ground soils in respect of a residential land use have been removed and hotspots of contamination have already been remediated and validated. A 600mm clean cover system underlain by a geomembrane has been emplaced in order to remediate the site. Soil samples have been previously tested by an MCERT and UKAS accredited laboratory.		
Supervising Environmental Consultant		
Engineers Name	Inspection Visit Date	03/03/2011
Photograph Reference No.	CIMG2881	Verification photograph details/ additional remarks
		• Geomembrane visible • Top cover deep enough
This plot has PASSED verification (Any proposed remedial works will be noted in the 'Remarks' column on this form) An additional inspection IS/ IS NOT required for this plot		

Ground Remediation Verification Proforma

Site Name/ Location	Scholars Court, Cross Street, Neston	
Borehole ID	V4	
Developer	Watkin Jones	
Development Use	Residential Housing	
Plot number/ Adj Landscaping Area		

Remediation undertaken to the specified Plot (and as per agreed Remediation Strategy.)
(ie detail removal of any contaminated, detailed specification for soil capping system etc...)

Contaminated made ground soils in respect of a residential land use have been removed and hotspots of contamination have already been remediated and validated. A 600mm clean cover system underlain by a geomembrane has been emplaced in order to remediate the site. Soil samples have been previously tested by an MCERT and UKAS accredited laboratory.

Supervising Environmental Consultant		
Engineers Name	Inspection Visit Date	03/03/2011

Photograph Reference No.	CIMG2892	Verification photograph details/ additional remarks
---------------------------------	----------	--



- Geomembrane visible
- Top cover deep enough

This plot has PASSED verification
(Any proposed remedial works will be noted in the 'Remarks' column on this form)
An additional inspection IS NOT required for this plot

--	--

Ground Remediation Verification Proforma

Site Name/ Location	Scholars Court, Cross Street, Neston	
Borehole ID	V5	
Developer	Watkin Jones	
Development Use	Residential Housing	
Plot number/ Adj Landscaping Area	See Drawing	

**Remediation undertaken to the specified Plot (and as per agreed Remediation Strategy.)
(ie detail removal of any contaminated, detailed specification for soil capping system etc...)**

Contaminated made ground soils in respect of a residential land use have been removed and hotspots of contamination have already been remediated and validated. A 600mm clean cover system underlain by a geomembrane has been emplaced in order to remediate the site. Soil samples have been previously tested by an MCERT and UKAS accredited laboratory.

Supervising Environmental Consultant

Engineers Name

Inspection Visit Date

03/03/2011

Photograph Reference No.	CIMG2912	Verification photograph details/ additional remarks
---------------------------------	----------	--



- Geomembrane visible
- Top cover deep enough

This plot has PASSED verification

(Any proposed remedial works will be noted in the 'Remarks' column on this form)

An additional inspection IS NOT required for this plot

Ground Remediation Verification Proforma

Site Name/ Location	Scholars Court, Cross Street, Neston	
Borehole ID	V6	
Developer	Watkin Jones	
Development Use	Residential Housing	
Plot number/ Adj Landscaping Area	See Drawing	

Remediation undertaken to the specified Plot (and as per agreed Remediation Strategy.)

(ie detail removal of any contaminated, detailed specification for soil capping system etc...)

Contaminated made ground soils in respect of a residential land use have been removed and hotspots of contamination have already been remediated and validated. A 600mm clean cover system underlain by a geomembrane has been emplaced in order to remediate the site. Soil samples have been previously tested by an MCERT and UKAS accredited laboratory.

Supervising Environmental Consultant	Tier Consult		
Engineers Name		Inspection Visit Date	03/03/2011

Photograph Reference No.	CIMG2901	Verification photograph details/ additional remarks
--------------------------	----------	---



Top cover

Geomembrane

- Geomembrane visible
- Top cover deep enough

This plot has PASSED verification

(Any proposed remedial works will be noted in the 'Remarks' column on this form)

An additional inspection IS/ IS NOT required for this plot

APPENDIX H: CORRESPONDANCE WITH REGULATORY BODIES

From:
Sent: 13 October 2010 10:33
To:
Subject: RE: Gas membrane
Attachments: image001.jpg; image002.jpg

Thanks that's perfect. Regards

Lead Environmental Protection Officer
Cheshire West and Chester Borough Council

Tel: 01606 288693
Fax: 01606 867885
Email:

Visit: www.cheshirewestandchester.gov.uk

Please note my phone number has changed.

-----Original Message-----

From:
Sent: 13 October 2010 09:48
To:
Subject: RE: Gas membrane

I have spoken to the supplier and apparently it is difficult to get an absolute value for the serviceability life of the membrane as it is so durable. I have attached the BRE Certificate for the product which shows that it is suitable for use in buildings as will last as long as the building is standing. I hope this is OK.

Kind Regards,

Geoenvironmental Consultant

Tier Consult
Elm House Farm, Saighton, Chester CH3 6EN

Tel: (01244) 333080
Fax: (01244) 333081

From:
Sent: 12 October 2010 16:31
To:
Subject: RE: Gas membrane

Hi , further to our discussion earlier, I write to confirm that I am happy for you to use the PAG standard gas membrane subject to confirmation of the life expectancy of the product as I couldn't see it in the spec, its probably in there somewhere? I look forward to seeing the method statement for its installation and as discussed please provide at least 48 hours notice prior to installation to enable an officer visit. Many Thanks

Lead Environmental Protection Officer
Cheshire West and Chester Borough Council

Tel: 01606 288693

Fax: 01606 867885

Email:

Location: 1st Floor East Wing, Wyvern House, The Drummer, Winsford, Cheshire, CW7 1AH

Visit: www.cheshirewestandchester.gov.uk

Please note my phone number has changed.

-----Original Message-----

From:

Sent: 07 October 2010 14:55

To:

Cc:

Subject: RE: Gas membrane

Our client has asked us to specify which hazardous gas membrane should be used in the proposed development at Scholars Court, Neston. The agreed Remediation Statement for the site states the following:

"It is proposed that a conservative approach of a foil reinforced hydrocarbon / volatile resistant gas membrane is to be installed on all properties."

We would normally suggest one of two membranes where they are required to be vapour resistant, these being the Visqueen GX membrane and the PAG standard membrane. Visqueen recommend their Visqueen GX geomembrane; however, this is 1.5mm thick and we would only recommend it if groundwaters were close to the ground surface. PA Geotechnical have their PAG Standard which may be more suitable. As groundwater is at around 3.00m bgl, we are unlikely to need the 1.5mm membrane as we will only need to prevent vapour passing through as opposed to protecting the membrane from liquid attack.

I have attached the spec sheets for both these membranes and will advise Watkin Jones accordingly, following your comments.

Please note that I am also aware that we are to notify 14 days in advance of the installation of the membrane and provide a method statement. Watkin Jones are also aware that we will be coming to independently validate the installation.

Kind regards,



Geoenvironmental Consultant

Tier Consult

Elm House Farm, Saughton, Chester CH3 6EN

Tel: (01244) 333080

Fax: (01244) 333081

From:
Sent: 07 October 2010 14:37
To:
Cc:
Subject: Gas membrane

Could you please forward the details of the 2 potential membranes to both (local authority) and me.

I don't work on Fridays so I'm happy for you to give your comments direct to . Could you please copy them to me though.

Regards

Technical Officer, Contaminated Land
Groundwater & Contaminated Land
Direct dial: 01244 894533 Fax: 01244 550144

Gall yr wybodaeth yn y neges hon fod yn gyfrinachol, ac yn gyfreithiol freiniol. Os ydych wedi derbyn y neges hon trwy gamgymeriad, rhoddwch wybod ar unwaith i'r sawl a'i gyrrodd, os gwelwch yn dda. Yna dilêwch hi, a pheidiwch â gyrru copi at neb arall.
Bu inni fwrw golwg ar yr e-bost hwn a'i atodiadau, rhag bod feirysau ynddo. Serch hynny, dylech chwilio unrhyw atodiad cyn ei agor.
Efallai bydd rhaid inni ryddhau'r neges hon, ac unrhyw ateb iddi, i sylw'r cyhoedd pe gofynnid inni tan y Ddeddf Rhyddid Gwybodaeth, y Ddeddf Gwarchod Data neu at ddibenion ymgyfreithio. Y mae'n bosib hefyd y darllenir negesau ac atodiadau e-bost a yrrir at unrhyw gyfeiriad Asiantaeth yr Amgylchedd, neu a dderbynnir oddi yno, gan rywun arall na'r gyrrwr a'r derbynnydd. Hynny at ddibenion busnes.
Os ydym wedi gyrru gwybodaeth atoch, a chithau'n dymuno'i defnyddio, yna ddarllenwch ein telerau a'n hamodau, os gwelwch yn dda. Gellir eu cael trwy ein galw ar 08708 506 506. Am ragor o wybodaeth ynghylch Asiantaeth yr Amgylchedd Cymru, ewch at www.asiantaeth-amgylchedd.cymru.gov.uk.

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From:
Sent: 15 October 2010 09:49
To:
Cc:
Subject: FW: Results - T/10/886, Scholars Court Neston
Attachments: image001.jpg; 10-42272.XLS; 10-42272.pdf

Attached are the Top Soil results for use at our Neston site, as you can see the soils are within the parameters of the remediation strategy so we will be importing the soil to site as from the 18th of October.

From:
Sent: 15 October 2010 09:31
To:
Subject: Results - T/10/886, Scholars Court Neston

Gentlemen,

I have had the results of the recent topsoil testing back from the labs (attached). I have also screened the results against the LQM 2009 GACs, as specified in the Remediation Strategy and have found no exceedences.

Kind regards,



Geoenvironmental Consultant

Tier Consult

Elm House Farm, Saughton, Chester CH3 6EN

Tel: (01244) 333080
Fax: (01244) 333081

From:
Sent: 23 September 2010 12:32
To:
Subject: RE: Sub Soil for Neston Site

Thank you for the information.

Could you confirm if the site has a Paragraph 19 exemption (now a U1 exemption) in place for the acceptance and use of waste soils on site?

Even if analysis is achieved for the soils coming in, it will still be considered waste and an exemption will be required.

Many thanks

Technical Officer, Contaminated Land
Groundwater & Contaminated Land
Direct dial: 01244 894533 Fax: 01244 550144

From:
Sent: 23 September 2010 10:31
To:
Cc:
Subject: Sub Soil for Neston Site

Click [here](#) to report this email as spam.

I have sourced clean and inert sub soil for the Neston site from a green field site at Rhosymedre near Wrexham; the soils are from the playing fields which are being lowered to achieve the building levels required for the build of a new school. We have carried out two initial standard CLEA soil tests which show the soil to be within the residential with plant uptake criteria. We have also appointed a consultant of Tier Consult to collect soil samples from this stock pile today which will be tested to the parameters specified in the remediation statement.

Environmental Manager
Watkin Jones and Son Ltd,
Bangor,
Gwynedd,
LL57 4YH
Dir. Tel : (01248) 365744
Dir. Fax : (01248) 365746

Gall yr wybodaeth yn y neges hon fod yn gyfrinachol, ac yn gyfreithiol freiniol. Os ydych wedi derbyn y neges hon trwy gamgymeriad, rhoddwch wybod ar unwaith i'r sawl a'i gyrodd, os gwelwch yn dda. Yna dilëwch hi, a pheidiwch â gyrru copi at neb arall.

Bu inni fwrw golwg ar yr e-bost hwn a'i atodiadau, rhag bod feirysau ynddo. Serch hynny, dylech chwilio unrhyw atodiad cyn ei agor.

Efallai bydd rhaid inni ryddhau'r neges hon, ac unrhyw ateb iddi, i sylw'r cyhoedd pe gofynnid inni tan y Ddeddf Rhyddid Gwybodaeth, y Ddeddf Gwarchod Data neu at ddibenion ymglyfreithio. Y mae'n bosib hefyd y darllenir negesau ac atodiadau e-bost a yrrir at unrhyw gyfeiriad Asiantaeth yr Amgylchedd, neu a dderbynnir oddi yno, gan rywun arall na'r gyrrwr a'r derbynnydd. Hynny at ddibenion busnes.

Os ydym wedi gyrru gwybodaeth atoch, a chithau'n dymuno'i defnyddio, yna ddarllenwch ein telerau a'n hamodau, os gwelwch yn dda. Gellir eu cael trwy ein galw ar 08708 506 506. Am ragor o wybodaeth ynghylch Asiantaeth yr Amgylchedd Cymru, ewch at www.asiantaeth-amgylchedd.cymru.gov.uk.

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From:
Sent: 06 October 2010 12:27
To:
Cc:
Subject: RE: Cross Street Subsoil Validation Results
Attachments: image001.jpg

I have spoken to and she is happy with the LQM values, I will include them in due course.

Kind regards,



Tier Consult
Elm House Farm, Saighton, Chester CH3 6EN

Tel: (01244) 333080
Fax: (01244) 333081

From:
Sent: 06 October 2010 11:13
To:
Cc:
Subject: FW: Cross Street Subsoil Validation Results

Could you please answer the question below?, I think the DEFRA Clea soil guide values for residential with plant uptake is what there looking for but im not sure.
Thank You

From:
Sent: 06 October 2010 11:02
To:
Subject: RE: Cross Street Subsoil Validation Results

Could you please ask your consultant to include the ATRISK threshold values that they are using.

Many thanks

-----Original Message-----

From:
Sent: 04 October 2010 16:41
To:

Cc:
Subject: FW: Cross Street Subsoil Validation Results

Please see the attached soil results for the sub soil which has been imported to the Neston Site, I shall forward the top soil results as soon as I receive them. Regards

-----Original Message-----

From:
Sent: 04 October 2010 16:27
To:
Cc:
Subject: Cross Street Subsoil Validation Results

Gentlemen,

Please find attached the results of the validation of subsoils from Rhosymedre which are to form part of the clean cover system at the Scholars Court site.

In accordance with the Remediation Strategy for the site, I have screened the results against the relevant SGVs and LQM (2009) GACs for the proposed land use and it is evident that the soils are fit for purpose.

Kind regards,

Gall yr wybodaeth yn y neges hon fod yn gyfrinachol, ac yn gyfreithiol freiniol. Os ydych wedi derbyn y neges hon trwy gamgymeriad, rhoddwch wybod ar unwaith i'r sawl a'i gyrodd, os gwelwch yn dda. Yna dilëwch hi, a pheidiwch â gyrru copi at neb arall.
Bu inni fwrw golwg ar yr e-bost hwn a'i atodiadau, rhag bod feirysau ynddo. Serch hynny, dylech chwilio unrhyw atodiad cyn ei agor.
Efallai bydd rhaid inni ryddhau'r neges hon, ac unrhyw ateb iddi, i sylw'r cyhoedd pe gofynnid inni tan y Ddeddf Rhyddid Gwybodaeth, y Ddeddf Gwarchod Data neu at ddibenion ymgyfreithio. Y mae'n bosib hefyd y darllenir negesau ac atodiadau e-bost a yrrir at unrhyw gyfeiriad Asiantaeth yr Amgylchedd, neu a dderbynnir oddi yno, gan rywun arall na'r gyrrwr a'r derbynnydd. Hynny at ddibenion busnes.
Os ydym wedi gyrru gwybodaeth atoch, a chithau'n dymuno'i defnyddio, yna ddarllenwch ein telerau a'n hamodau, os gwelwch yn dda. Gellir eu cael trwy ein galw ar 08708 506 506. Am ragor o wybodaeth ynghylch Asiantaeth yr Amgylchedd Cymru, ewch at www.asiantaeth-amgylchedd.cymru.gov.uk.

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From:

27 October 2010 09:45

To:

Subject: (T/10/886, Scholars Court, Neston,)

Attachments: 10-4896 Report.xls; 10-4896 Report.pdf; image001.jpg

Please find attached the vinyl chloride testing results for the top soil at neston.

Kind regards,



Geoenvironmental Consultant

Tier Consult

Elm House Farm, Saughton, Chester CH3 6EN

Tel: (01244) 333080

Fax: (01244) 333081

APPENDIX I: POTABLE WATER SUPPLY PIPE TECHNICAL DATA

Polypipe Building Products

Issue No: 01

INTERNAL SPECIFICATION

Issue Date: 28/01/07

PS 04C

Amendment

No:

Page: 1 of 3

POLYPIPE SPECIFICATION POLYETHYLENE/ALUMINIUM/POLYETHYLENE BARRIER PIPES

1) GENERAL

PE/Al/PE barrier pipes are produced in nominal diameters 25mm, 32mm and 63mm and are produced as 5 layer coextruded pipes to WIS 4-32-19 Type A. The 5 concentric layers are an inner layer of blue PE80, an adhesive layer, a middle barrier layer of Aluminium, an adhesive layer and an outer layer of blue PE80. (Note: The nominal diameter is the outside diameter of the inner PE 80 pipe which fulfills the requirements of

BS EN 12201). The outer layer of the pipe is identified by 4 co-extruded brown stripes

2) MATERIALS

2.1) Polyethylene (Blue PE 80): PC-002-50 R968
ME3444

2.2) Polyethylene (Brown PE 80): B4922/90N3000

2.3) Aluminium: soft tempered AA 1200

40/150/40 (Coil length: 2,150m)

2.4) Adhesive: PE Copolymer
(Supplied coated on each side of the Aluminium)

2.5) Rework Material: Clean reprocessible polyethylene material of the same grade, generated by PPBP may be used in the manufacture of Polyguard pipes. No other reprocessed material shall be used and, in particular, no PE contaminated with

Aluminum will be used.

3) DIMENSIONS

3.1) PIPE DIMENSIONS

Nominal diameter (mm)	Mean O.D. of outer pipe (mm)
25	26.6 – 26.9
32	33.4 – 33.7
63	66.5 – 67.5

The squareness of the cut end tolerance for all three sizes is 2mm

Page 1 of 4

3.2) IDENTIFICATION BAND DIMENSIONS

Nominal size (mm)	Number of bands	Width of bands (mm)	Thickness of bands (mm)	Colour
25	4	3	0.5	Brown
32	4	3	0.5	Brown
63	4	5	0.5	Brown

3.3) COIL DIMENSIONS

Nominal size (mm)	Coil length (m)	Coil outer dia(mm)	Coil inner dia(mm)	Coil width (mm)
25	50	900 nominal	760 nominal (600mm minimum)	200 nominal
32	50	990 nominal	875 nominal (700mm minimum)	215 nominal
63	25	1560 nominal	1,300 minimum	240 nominal
63	50	1670 nominal	1,300 minimum	300 nominal

63 mm pipe is also supplied in 6m straight lengths.

The ends of all coils and straight lengths will be plugged with black PE end plugs.

After uncoiling the ovality of the pipes shall be less than 6%

4)VISUAL / MARKING

Pipes shall be free from visual imperfections such as scoring or blisters which would impair the performance of the pipes in-service.

Pipes shall be marked at 1m intervals, in black, as follows:

Polypipe logo or name
Nominal diameter (e.g. 25mm)
PE/Al/PE
POLYGUARD
BARRIER PIPE
12.5 BAR
PE80
Date Code (e.g. 28/01/07 and hour/minute)
LINE No.
WIS 4-32-19 TYPE A

MADE IN ENGLAND
WATER
WATER
WATER

Page 2 of 4

6.5) Pipe subjected to squeeze-off (Clause 7.5 WIS 4-32-19)

Squeeze-off is not specified for Polyguard pipes.

6.6) Fusion welding of Coiled Pipe

Polyguard pipes are Type A and are not produced in diameters above 63mm, hence they are not suitable for fusion jointing.

6.7) Resistance to the permeation of chemicals

When tested in accordance with Appendix B of WIS 4-32-19, the pipe, joint and fitting combinations shall be deemed satisfactory if:

- a) Two or more panelists detect no discernable odour in the diluted leachate samples when compared to the set taken from the blank/reference sample.
- b) Two or more panelists detect no discernable flavour in the first 1:1 dilution of the diluted Leachate samples when compared to the blank/reference sample, providing the third panelist does not detect a flavour in the second dilution.

- c) The concentration of dissolved hydrocarbons in the undiluted Leachate sample is not greater than 100ug/l.

Elgin Close Fact Sheet

Site Name	Elgin Close
Address	Elgin Close, Vicars Cross, Chester - Numbers 4,6,7,9,11
Area	928 m ²
Coordinates	E 342446 N 367062
Date of Notice that land is to be designated as a Special Site	N/A
Public Register Entries	Remediation Statement. Prepared by Chester City Council. Dated 12 December 2006.
	Remediation Statement. Prepared by Owners of 9 Elgin Close. Dated 20 September 2007.

ENVIRONMENTAL PROTECTION ACT 1990, SECTION 78H(7)

THE CONTAMINATED LAND (ENGLAND) REGULATIONS 2000

REMEDICATION STATEMENT PREPARED BY CHESTER CITY COUNCIL

This Remediation Statement is prepared by Chester City Council ("the Council") in relation to contaminated land identified under section 78B of the Environmental Protection Act 1990 ("the 1990 Act").

The location and extent of the contaminated land to which this Remediation Statement relates ("the Land") are set out in Schedule 1 to this Remediation Statement ("Schedule 1").

Chester City Council as enforcing authority in relation to the Land is precluded from serving a Remediation Notice by section 78H(5)(b) of the 1990 Act in the case of the rear garden of 9 Elgin Close and by section 78H(5)(d) of the 1990 Act in the case of the rest of the land identified in Schedule 1. The Council has therefore prepared this Remediation Statement in accordance with section 78H(7) of the 1990 Act.

The works undertaken by the local authority by way of remediation and the date of completion are set out in Schedule 2 to this Remediation Statement ("Schedule 2"). The remediation of the rear garden at 9 Elgin Close is being undertaken by the owner of the property.

Particulars of the substances and the significant possibility of significant harm by reason of which the Land is contaminated land are set out in Schedule 3 to this Remediation Statement ("Schedule 3").

The current use of the Land is residential.

The name and address of the person who has done each of the things set out in Schedule 2 are:

Chester City Council
The Forum
Chester
CH1 2HS

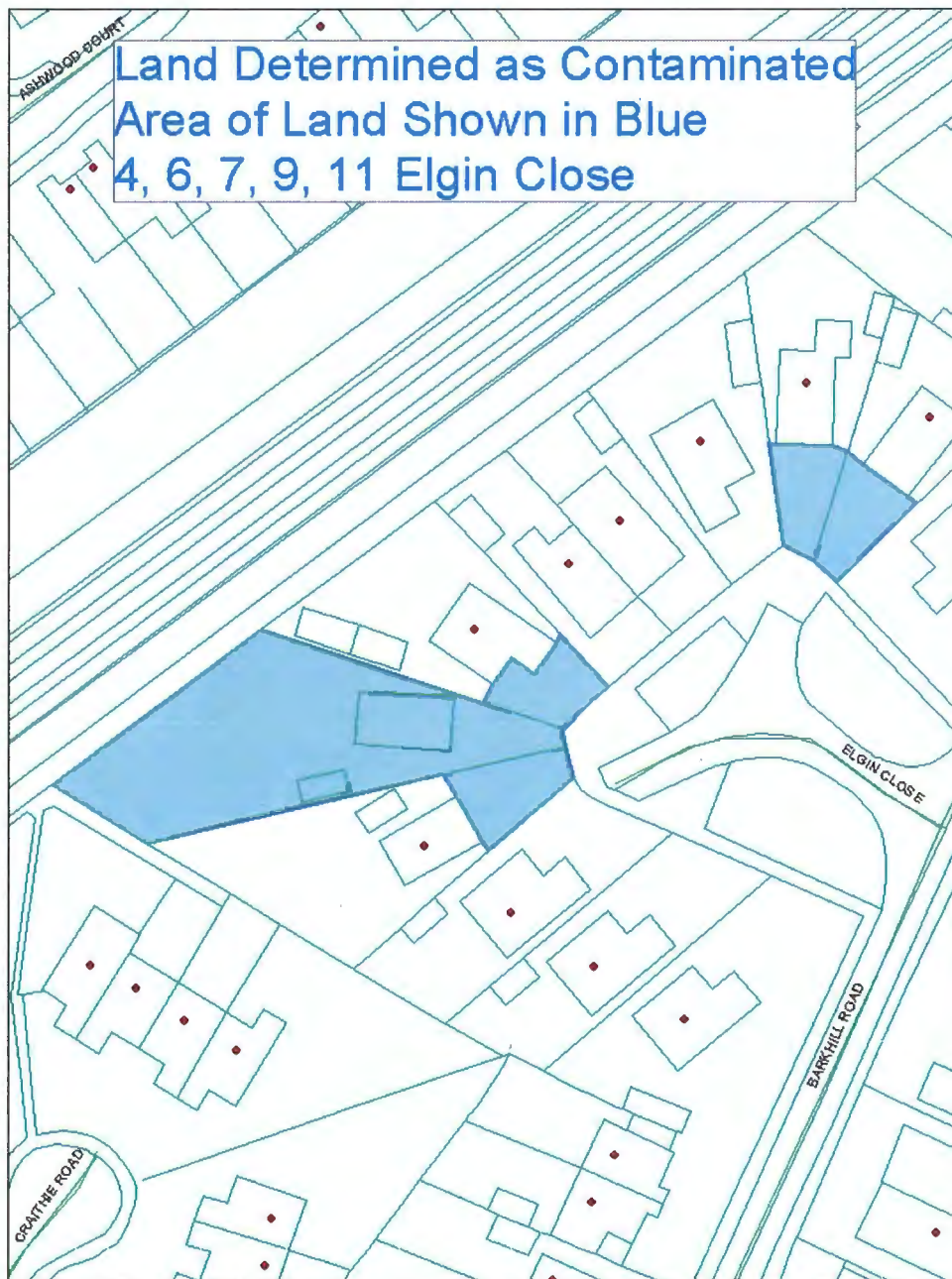
Signed:

Date: 12/12/06

Schedule 1

LOCATION AND EXTENT OF CONTAMINATED LAND TO WHICH THIS REMEDATION STATEMENT RELATES

The front gardens of 4, 6, 7, 9 & 11 Elgin Close, Vicars Cross, Chester



0 10 20 40 Meters

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Schedule 2

REMEDIATION REQUIREMENTS AND PERIODS (SECTION 78H(7)(a) AND (c))

The Standard of Remediation

The standard of remediation is to ensure that the identified pollutant linkages are no longer significant pollutant linkages through a combination of removing the pollutant and breaking the pathways, as set out in paragraph C.18 of the Statutory Guidance.

The following Remedial Treatment Actions are shared actions that apply to all identified Significant Pollutant Linkages (see Schedule 3).

Shared Remedial Treatment Actions	
Action Identifier	Remedial Treatment Action
1	Setting up of a site compound for the transfer of material in and out of the land, site office and storage for the duration of the remedial actions.
2	Site clearance. The removal of all vegetation, garden features prior to excavation.
3	Excavation of 600mm depth of soil from the identified areas, see Schedule 1 Disposal of all excavated materials at a suitably licensed facility.
4	Laying of a geo-textile to ensure separation between the drainage and soil horizons.
5	Importation and emplacement of 600mm of topsoil.
6	Laying of turf or pea-shingle to re-form gardens

All the identified Remedial Treatment Actions were satisfactorily completed by the local authority by August 2006.

The following Monitoring Action is a shared action that applies to all identified Significant Pollutant Linkages.

Shared Remedial Monitoring Actions	
Action Identifier	Remedial Monitoring Action
1	Validation sampling to verify the thickness of imported soils and pollutant concentrations to ensure that there is no longer a significant possibility of significant harm.

The identified Monitoring Action was satisfactorily completed by the Local Authority by August 2006.

Schedule 3

PARTICULARS OF SIGNIFICANT POSSIBILITY OF SIGNIFICANT HARM AND PARTICULARS OF SUBSTANCES

Pollutant	Source Location	Pathway	Receptor	Receptor Location	Description of Harm
Lead	Located within garden topsoil	Intake of the substance by ingestion.	Human Beings: residents	Residents using the garden area	Significant Possibility of Significant Harm, (Table B, Chapter A, Statutory Guidance)

ENVIRONMENTAL PROTECTION ACT 1990, SECTION 78H(7)

THE CONTAMINATED LAND (ENGLAND) REGULATIONS 2000



REMEDIATION STATEMENT
PREPARED BY
OWNERS OF 9 ELGIN CLOSE

This Remediation Statement is prepared by _____ owners of 9 Elgin Close in relation to contaminated land identified under section 78B of the Environmental Protection Act 1990 ("the 1990 Act").

The location and extent of the contaminated land to which this Remediation Statement relates ("the Land") is shown in Schedule 1 (delineated in brown) to this Remediation Statement ("Schedule 1").

Chester City Council as enforcing authority in relation to the Land is precluded from serving a Remediation Notice by section 78H(5)(b) of the 1990 Act in respect of the rear garden of 9 Elgin Close.

The works undertaken by way of remediation and the date of completion are set out in Schedule 2 to this Remediation Statement ("Schedule 2").

Particulars of the substances and the significant possibility of significant harm by reason of which the Land is contaminated land are set out in Schedule 3 to this Remediation Statement ("Schedule 3").

The current use of the Land is residential.

The name and address of the person who has done each of the things set out in Schedule 2 are:

9 ELGIN CLOSE
VICARS CROSS
CHESTER
CH3 5TS

Signed: .

Date:.....20.9.07.....

Schedule 2

CORPORATE ADMINISTRATION
RECEIVED

25 SEP 2007

REMEDIATION REQUIREMENTS AND PERIODS (SECTION 78H(7)(a) AND (c))

The Standard of Remediation

The standard of remediation is to ensure that the identified pollutant linkages are no longer significant pollutant linkages by breaking the pathways as set out in paragraph C.18 of the Statutory Guidance.

The following Remedial Treatment Actions are shared actions that apply to all identified Significant Pollutant Linkages (see Schedule 3).

Shared Remedial Treatment Actions	
Action Identifier	Remedial Treatment Action
1	Site clearance. The removal of all vegetation, garden features prior to excavation.
2	Building of a containment wall around the periphery of the garden.
3	Laying of a geo-textile membrane to ensure separation between the drainage and soil horizons.
4	Importation and emplacement of 400mm of topsoil.
5	Planting of turf to re-form garden.

All the identified Remedial Treatment Actions were satisfactorily completed by April 2007.

The following Monitoring Action is a shared action that applies to all identified Significant Pollutant Linkages.

Shared Remedial Monitoring Actions	
Action Identifier	Remedial Monitoring Action
1	Validation sampling to verify the thickness of imported soils and pollutant concentrations to ensure that there is no longer a significant possibility of significant harm.

The identified Monitoring Action was satisfactorily completed by the Local Authority on behalf of the owners by April 2007.

Schedule 3

PARTICULARS OF SIGNIFICANT POSSIBILITY OF SIGNIFICANT HARM AND PARTICULARS OF SUBSTANCES

Pollutant	Source Location	Pathway	Receptor	Receptor Location	Description of Harm
Lead	Located within garden topsoil	Intake of the substance by ingestion.	Human Beings: residents	Residents using the garden area	Significant Possibility of Significant Harm, (Table B, Chapter A, Statutory Guidance)

Hoole Bank Acid Tar Lagoon Fact Sheet

Site Name	Hoole Bank Acid Tar Lagoon
Address	The Street Hoole Bank Chester CH2 4ES
Area	33,216 m ²
Coordinates	E 343444 N 369254
Date of Notice that land is to be designated as a Special Site	19 January 2007
Public Register Entries	Notice of decision that land is required to be designated as a special site. Prepared by Chester City Council. Dated 19 January 2007.

ENVIRONMENTAL PROTECTION ACT 1990 – PART IIA
Section 78C(1)(b)

To: The Environment Agency
Appleton House
430 Birchwood Boulevard
Birchwood
WA3 7WD

**Notice of decision that land is required to be designated as a
special site.**

1. Under Section 78C(1)(a) of the Environmental Protection Act 1990, Part IIA, Chester City Council has decided that the land described in the Schedule to this Notice being contaminated land situated in its area is land which is required to be designated a special site.
2. Notice of that decision is given to you pursuant to section 78C(1)(b) as a relevant person as defined in section 78C(2), namely as:
 - (A) the appropriate Agency;
 - ~~(B) the owner of the land;~~
 - ~~(C) a person who appears to the enforcing authority to be in occupation of the whole or part of the land;~~
 - ~~(D) a person who appears to the enforcing authority to be an appropriate person.~~
3. Should you wish to make any representation in response to this Notice please contact the officer below. This decision will take effect in accordance with s78C(6).

Technical Officer
Environmental Protection Team
Chester City Council
The Forum
Chester
CH1 2HS

Tel: 01244 402310
Fax: 01244 343241
Email:

SCHEDULE

The physical extent of the area of land determined as contaminated and a special site is edged in red on the attached plan.

Name: Hoole Bank Acid Tar Lagoon
Address: Land at Hoole Bank
The Street
Hoole Bank
Cheshire

NGR: SJ 434, 692

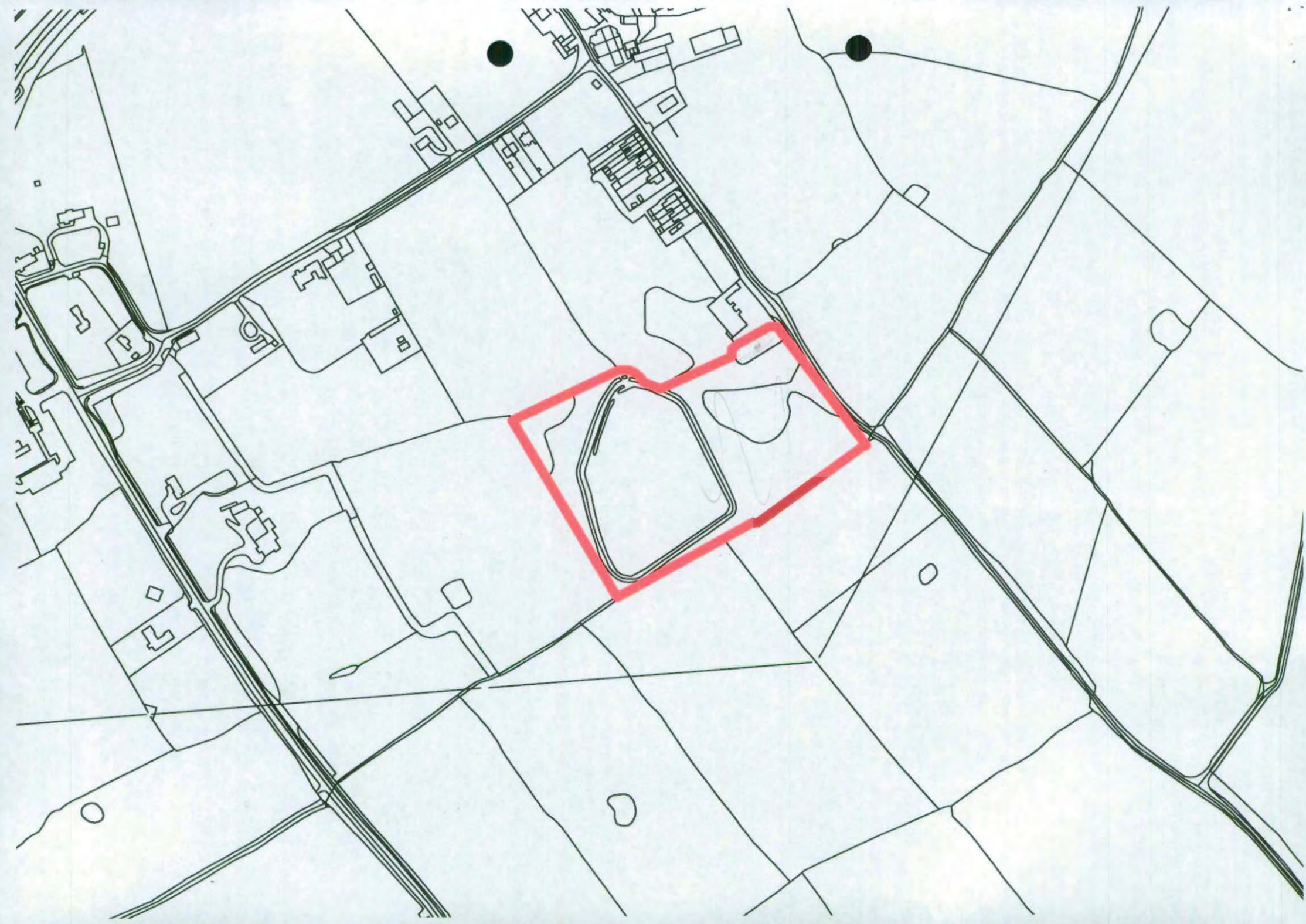
Dated:19/1/07.....

Signed:
.....

Jan Rowley
Strategic Director
(Community Services)

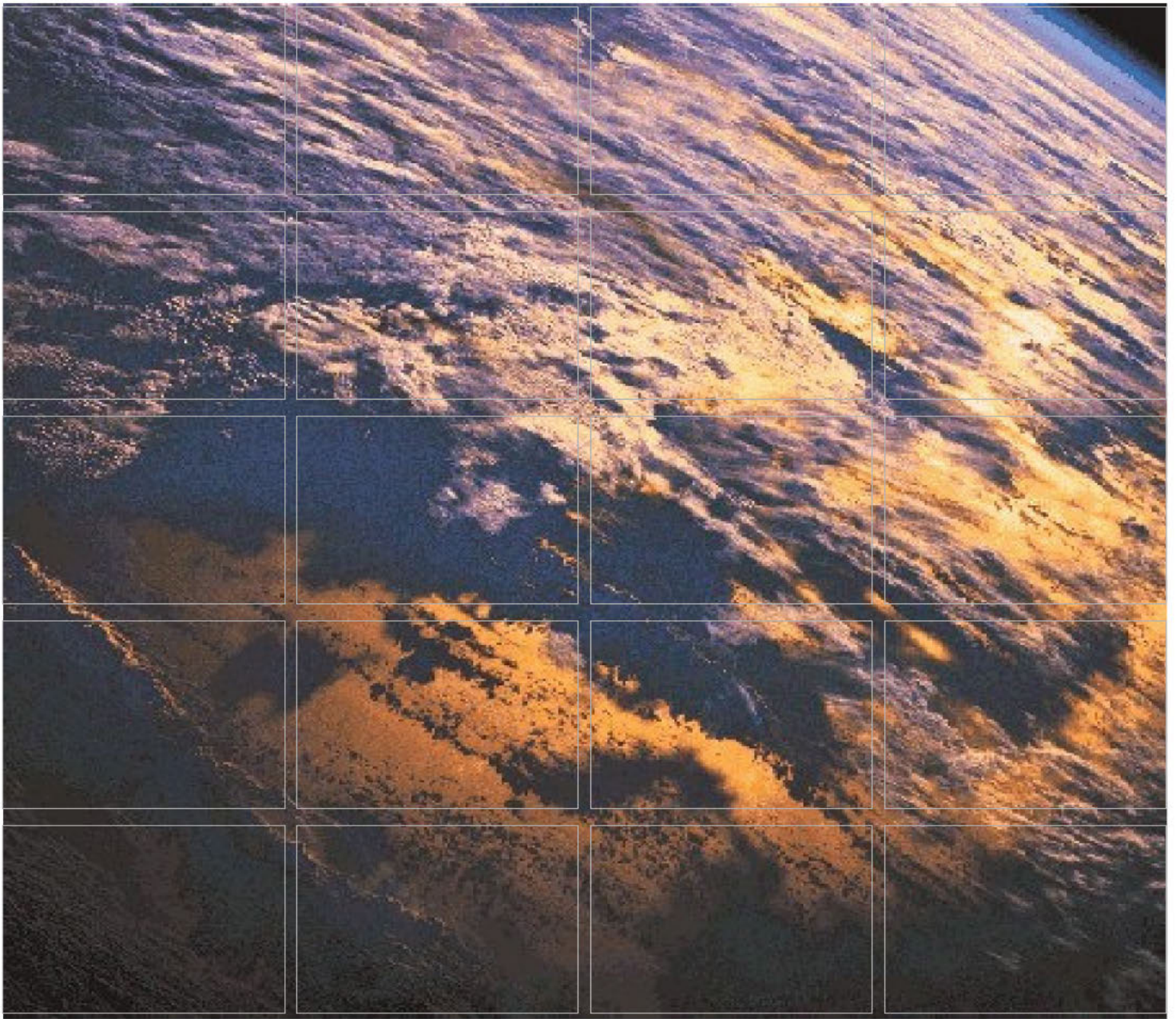
(The Officer appointed for this purpose)

Chester City Council,
The Forum,
Chester,
Cheshire
CH1 2HS



Leftwich Green Fact Sheet

Site Name	Leftwich Green
Address	Greenlaw Close and Muirfield Close, Leftwich, Northwich CW9 8DN
Area	3,755 m²
Coordinates	E 366325 N 372358
Date of Notice that land is to be designated as a Special Site	N/A
Public Register Entries	Remediation Statement. Prepared by ERM on behalf of Muir Housing Group. Dated May 2007.
	Remediation Completion Statement. Prepared by ERM on behalf of Muir Housing Group. Dated 3 March 2008



Remediation Statement at the Leftwich Estate, Leftwich

May 2007

www.erm.com

ERM has over 100 offices
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Ireland	USA
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Japan	Vietnam
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Malaysia	
Mexico	

ERM's Manchester Office

Suite 8.01
8 Exchange Quay
Manchester
M5 3EJ
Tel 0161 958 8800
Fax 0161 958 8888

Remediation Statement

May 2007

Reference 0044489

Prepared by:

For and on behalf of	
Environmental Resources Management	
Approved by:	_____
Signed:	
Position: Partner	_____
Date: 2nd May 2007	_____

This report has been prepared by Environmental Resources Management the trading name of Environmental Resources Management Limited, with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.

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Where land is identified as “contaminated land” under Part IIA of the Environmental Protection Act (1990), and voluntary action is proposed to deal with the identified pollutant linkages, a Remediation Statement must be produced in accordance with Section 78H(7) which sets out:

- a) The things which are being, have been, or are expected to be done by way of remediation in the particular case;
- b) The name and address of the person who is doing, has done, or is expected to do, each of those things; and
- c) The periods within which each of those things is being, or is expected to be done.

This document provides this information in relation to the Muir Group Housing Association Estate at Leftwich, hereinafter referred to as the Leftwich Estate. The properties of specific concern comprise numbers 1 to 12, Muirfield Close, numbers 1 to 9, Greenlaw Close and 97 and 99, Kingsley Drive. Specifically, this document describes:

- Background information relevant to the Leftwich Estate;
- The basis on which a Determination as Contaminated land is expected to be made by Vale Royal Borough Council;
- Information about the parties involved in dealing with the site and their relevant roles.
- Remediation Objectives;
- Overview of the remediation scheme;
- Assessment Actions;
- Remedial Treatment Actions;
- Monitoring Actions;
- Records and reporting.

1.1

BACKGROUND

The Estate comprises 23 houses, which are owned by Muir Group Housing Association (Muir), who are Social Housing Landlords, and let the properties to tenants. Each house has a private rear garden which may be used for normal garden purposes i.e. recreation and growing plants including vegetables. There are no front gardens, and the remainder of land around the properties is either hardstanding or landscaped areas maintained by Muir.

1.2

SITE INVESTIGATION AND RISK ASSESSMENT

RSK-ENSR were commissioned by Vale Royal Borough Council, on behalf of the residents of the Leftwich Estate to undertake site investigation works at the Estate in May 2005. The investigation focussed on potential contaminants in the soil and ground gases, and culminated in a report being produced by RSK-ENSR in August 2006 entitled Interpretative Ground Gas Report, Muir

Housing Estates, Report reference number 10810-R01 (02). This report addresses ground gases only, and a further report is expected in relation to possible chemical contamination in the soil.

The report identified the presence of ground gases in the ground at the site, with concentrations of methane and carbon dioxide ranging from below detection limits in boreholes to as high as 69.3% (methane) and 18.5% (carbon dioxide). The details of all investigation and monitoring data are provided in the RSK-ENSR Report. In summary, the ground conditions comprise about 1 to 4 metres of made ground overlying silty sandy clays. The made ground consists mainly of sandy clays with inclusions of bricks, concrete rubble, corrugated iron sheeting, a small number of other artefacts such as paint tins and oil filters, and zones of rotting vegetation and pieces of wood which are breaking down slowly in the ground. It is believed that the rotting vegetation and wood are the source of the measured ground gases.

In assessing the risks to human health and to property from the presence of gases found in the ground, ground gas risk assessment was completed following the Boyle & Witherington NHBC guidance ¹. This guidance provides a system known as Traffic Lights, which allows a reasoned assessment of risk associated with ground gases for built residential development. The colours relate to different levels of methane and/or carbon dioxide in the ground, measured as a combined function of concentration and flow rate. Green is at the low risk end of the scale, and red at the high end.

The gas protection requirements for each NHBC Traffic Light are as follows:

- **Green:** gas protection measures are not required;
- **Amber 1:** Low level gas protection measures are required using a membrane and ventilated sub-floor void, which creates a permeability contrast to limit the ingress of gas into buildings, Gas protection measures are to be installed as prescribed in BRE Report 212 ². Ventilation of the sub-floor void should be designed to provide a minimum of one complete volume change per 24 hours;
- **Amber 2:** High-level gas protection measures are required creating a permeability contrast to prevent ingress of gas into buildings. Gas protection measures are to be installed as prescribed in BRE Report 212². Membranes used should always be fitted by a specialist contractor and should be fully certified. As with Amber 1, ventilation of the sub-floor void should be designed to provide a minimum of one complete volume change per 24 hours; and

(1) Boyle and Witherington (expected 2006) "NHBC: Guidance on the Evaluation of Development Proposals on Sites where Methane and Carbon Dioxide are Present, Incorporating 'Traffic Lights'".

(2) Building Research Establishment Report 212 (1991), Construction of New Buildings on Gas-contaminated Land,

- **Red:** Standard residential housing is not normally acceptable without further Gas Risk Assessment and / or possible remedial mitigation measures to reduce / remove the source of gas. In certain circumstances, active protection methods could be applied, but only when there is a legal agreement assuring the management and maintenance of the system for the life of the property.

The outcome of the risk assessment indicated that conditions at the site ranged from Green through Amber 1 and 2 in most areas, to Red in the rear gardens of two blocks of housing, specifically 1-3 Muirfield Close and 7-9 Greenlaw Close. These different levels of assessment indicate different levels of protection which would normally be afforded to new residential properties built on ground such as is found at the Leftwich Estate.

In their report, RSK-ENSR conclude that:

“it is the view of RSK ENSR that the ground gas regime at the Muir Housing Estate presents, as a worst-case, a potentially unacceptable risk to human health and property”.

1.3

STATUS OF SITE UNDER PART IIA

Vale Royal Borough Council, in their role as Enforcing Authority under Part IIA of the Environmental Protection Act (2000), have considered the conclusions of the RSK-ENSR report, and have indicated to Muir Group Housing Association that they will be determining the Leftwich Estate as “contaminated land” on the basis of four pollutant linkages, specifically:

Significant Pollutant Linkage 1

Methane in the ground	Movement into and through building structure into confined and or occupied spaces within the buildings	Occupiers of the properties
-----------------------	--	-----------------------------

Human health effect particularly by way of fire or explosion should confined flammable methane ignite.

Significant Pollutant Linkage 2

Carbon dioxide in the ground	Movement into and through building structure into occupied spaces within the buildings	Occupiers of the properties
------------------------------	--	-----------------------------

Human health effect by way of intake of asphyxiant carbon dioxide gas.

Significant Pollutant Linkage 3

Methane in the ground	Movement into and through building structure into confined and or occupied spaces within the buildings	Property in the form of the building
-----------------------	--	--------------------------------------

Building effect particularly by way of fire or explosion should confined flammable methane ignite leading to structural failure, substantial damage or substantial interference with right of occupation.

Significant Pollutant Linkage 4

Carbon dioxide in the ground	Movement into and through building structure into occupied spaces within the buildings	Occupiers of the properties
------------------------------	--	-----------------------------

Building effect particularly by presence of asphyxiant carbon dioxide gas within occupied or confined areas within the building leading to substantial interference with right of occupation.

The works described in this Remediation Statement have been designed to address the pollutant linkages described above in a manner that delivers the requirements of the Part IIA legislation.

1.4 ORGANISATIONS INVOLVED IN THIS SITE

The following parties are involved in the site:

Table 1.1 Parties Involved

Organisation/person	Role
Vale Royal Borough Council (VRBC)	Enforcing Authority under Part IIA
Muir Group Housing Association	Landowner and Landlord, and progressing remediation as Agents for VRBC
RSK-ENSR	Consultants commissioned by VRBC to undertake investigation and risk assessment
Environmental Resources Management Ltd (ERM)	Consultants commissioned by Muir to design and supervise remediation
The residents of the affected properties	Affected by remediation works

2.1 *STANDARDS OF REMEDIATION*

The standard of remediation required is based on the Statutory Guidance given in DEFRA Circular 01/2006 under Part IIA of the Environmental Protection Act (1990). Part IIA guidance states:

“The government’s intention is that any remediation required under this regime should result in land being suitable for use. The aim of any remediation should be to ensure that the circumstances of the land are such that, in its current use it is no longer Contaminated Land, and that the effects of any significant harm or pollution of controlled waters which has occurred are remedied”.

The DEFRA circular further identifies that the standard to which the relevant land or waters as a whole should be remediated should be established by considering separately each significant pollutant linkage identified on the land in question. For each such linkage, the standard of remediation should be that which would be achieved by the use of a remediation package, which forms the best practicable technique of remediation for the following:

- Ensuring that the linkage is no longer a significant pollutant linkage.
- Remedying the effect of any significant harm or pollution of controlled waters, which is resulting, or has already resulted from, the significant pollutant linkage.

The circular also identifies that when considering appropriate remedial solutions for identified significant pollutant linkages, the choice of best practicable technique should be informed by consideration of the reasonableness, practicability, effectiveness and durability of remediation.

2.2 *POLLUTANT LINKAGES*

The land use is for an on-going, residential housing estate, and the Determination Notice from VRBC had identified four pollutant linkages to be present on site and require mitigation measures to protect human health and property.

Elevated levels of methane and carbon dioxide have been detected in boreholes across the site. The highest concentrations are located in the rear garden of No. 2 Muirfield Close and No.7 Greenlaw Close, but other affected properties are scattered across the estate. A summary of the pollutant linkages for methane and carbon dioxide are provided below.

Table 2.1 **Pollutant Linkages**

Media	Contaminant	Hazard	Pathways	Receptor	Impacted Area		
					Amber 1	Amber 2	Red
Soils	Methane	Explosion	Migration through soils and defects in floors of houses	Humans Property	BH107	BH211	BH103
					BH101	BH210	BH202
					BH201	BH102	BH203
						BH205	
Soils	Carbon Dioxide	Asphyxiation	Migration through soils and defects in floors of houses	Humans	BH211	BH102	-
					BH101	BH103	
					BH212		
					BH204		
					BH203		
					BH202		
					BH205		

In terms of defining how much of the Leftwich Estate is affected by ground gas, it is important to remember that the source material for the gas was deposited without regard for the existing layout of house boundaries, and therefore the presence of ground gas is likely to prevail across the whole area of made ground at typically Amber levels. However, Red levels were only encountered in one area, in the gardens to the rear of 1-3 Muirfield Close and 7-9 Greenlaw Close, which suggests a higher aggregation of vegetation in this area.

In accordance with the 'traffic light' system the following remedial strategy has been identified.

- Green: No action is required;
- Amber 1: Passive mitigation is required to remove the pathway to the receptor;
- Amber 2: Passive mitigation is required to remove the pathway to the receptor; and
- Red: Passive mitigation is unlikely to be sufficient therefore remedial works will need to reduce or remove the source concentration and prevent migration to the receptor.

The primary objectives of remediation at the site can therefore be summarised as:

- Ensuring short term safety pending remedial action;
- Assessment of the degree to which the existing house structures provide passive mitigation in removing pathways of migration into properties;
- Introducing effective means to cut off pathways across the whole site if existing structures are inadequate;
- Introducing additional mitigation in the rear gardens of 1-3 Muirfield Close and 7-9 Greenlaw Close to either reduce or remove the source of contamination; and

- Providing sufficient verification of the works undertaken to demonstrate their effectiveness in achieving the objectives of the Part IIA legislation.

3.1 *SHORT TERM MEASURES*

In order to protect the residents from the possibility of accumulation of methane in the houses which might build up to a flammable concentration, the most effective solution is to provide flammable gas alarms in each property. These have been installed rapidly, and the residents can have been advised of the appropriate course of action in the event that an alarm sounds.

3.2 *LONG TERM REMEDIATION OPTIONS APPRAISAL*

With respect to the long-term risks to human health, the selection of the most appropriate treatment process should consider appropriate stakeholder (including the residents, Muir Housing Association, VRBC and the Health Protection Agency) concerns with respect to timescales and objectives and the most cost effective technique for remediation. Initially consideration has been given to the relative effectiveness of applicable treatment processes with respect to:

- The nature of the pollutant linkage;
- The type and concentration of the contaminants of concern; and
- The level of remediation to be achieved.

Table 3.1 below considers which generic remediation techniques are applicable to deal with the ground gas in soils with respect to controlling risks to human health and property.

Table 3.1 Remediation Techniques

Element of PL	Technique	Effective?	Comments
Source	Off site Disposal of gassing soils	✓	Removes source breaking pathway
	Soil Washing	x	Not effective due to high clay content of ground
	Bioremediation	✓	But unlikely to be efficient in reasonable time frame
	Thermal Desorption	✓	Probably effective but high cost
	Natural Attenuation	✓	Not efficient in reasonable time frame
	Chemical Oxidation	x	Not likely to be effective in preventing future gas generation
	Soil Vapour Extraction	✓	Difficult to implement, does not deal with on-going generation of gas
	Lime dosing to increase pH and kill off methanogenesis	x	Uncertain due to problems of mixing lime and ensuring long-term pH stability
	Aeration to avoid anaerobic conditions	x	Requires longterm operation to retain anaerobic conditions, will produce carbon dioxide instead
	Stabilisation	x	Unlikely to be effective due to low permeability of soils
Pathway	Gas Resistant Barrier	✓	Will provide sufficient barrier
	Cover Systems	x	Cannot be easily placed below existing structures
	Passive venting below floors	✓	Should be effective in combination with barriers, minimum maintenance required
	Active venting	✓	Should be effective, but requires maintenance of fans and on-going energy supply
Receptor	Abandonment of houses	x	Waste of housing asset and will not remove risk to structure unless houses demolished

3.3 REMEDIATION SCHEME SUMMARY

Taking into account both probability and severity of the consequences of ignition of methane in confined spaces and the potential for asphyxiation from carbon dioxide, action to deal with the pollutant linkages have been taken progressively since April 2006, and this has occurred in parallel with completion of the gas investigation by RSK-ENSR. This summary therefore describes the works part way through the process of implementation.

In order to achieve the protection conditions for Amber across the whole site, an effective passive barrier system needs to be in place for all affected houses. When the Leftwich Estate was first constructed, the house design included the provision of a passively ventilated subfloor void, and a gas-resistant membrane in the floor construction. Therefore, the first element of work before deciding if new barriers or venting systems are to be installed has been to undertake a tracer gas survey on all installed membranes at the Estate to determine whether they already provide a robust barrier to gas migration. This survey has been completed and is considered to be an Assessment Action.

The tracer gas survey results are provided in the following report:
Muirfield Close, Greenlaw Close and Kingsley Drive (No. 97 and 99),
Leftwich, Draft Report, June 2006.

The report shows that existing membranes are not fully sealed, and that new membranes are therefore necessary for all properties on the Leftwich Estate. In parallel with ensuring that effective sealed membranes exist, the ventilation of the subfloor void has also be assessed and will be improved across all properties. In addition, the where the subfloor void is found to be less than a full 300mm deep, clearance work will be undertaken to achieve this depth across the whole area of the floor.

For the area where red conditions pertain (the rear gardens of 1-3 Muirfield Close and 7-9, Greenlaw Close), additional Remedial Action is required to address the source of methane generation. This action will comprise the removal of as much soil containing gas-generating material as is practical, given the constraints of working in the rear gardens of residential properties. Backfilling of the excavation will also be undertaken in a manner which ensures that any gas emissions which emanate from soil left in the ground do not arrive at the ground surface in an uncontrolled or concentrated manner.

In order to determine whether existing gas-resistant membranes have been laid and sealed effectively, a tracer gas survey was undertaken on all properties on the Estate. In practice, three properties (1, 2 and 3, Muirfield Close) had already been tested by RSK-ENSR (using a subcontractor, Prestige Air), and the Assessment Action which has now been completed under the overall supervision of ERM has tested the remaining 21 properties.

The survey comprises the sealing off of all airbricks below each property and the injection of sulphur hexafluoride gas into the air void below the floor in which the gas-resistant membrane lies. The floor area above the membrane is then checked using a gas-specific detector for evidence of passage of the particular gas through the floor construction.

The results of this survey are reported in ERM Report Reference: Muirfield Close, Greenlaw Close and Kingsley Drive (No. 97 and 99), Leftwich, Draft Report, June 2006. They show that membranes installed in the floors of properties are not fully effective in preventing the movement of the tracer gas upwards from the subfloor void. The same result was found by RSK-ENSR for the three properties surveyed under their supervision.

This assessment action demonstrated that there is a need to install new membranes in the house floors to achieve the minimum requirements of Amber conditions.

5.1 *SHORT TERM REMEDIAL ACTIONS*

In order to safeguard the residents whilst longterm remediation works are progressing, temporary flammable gas alarms have been installed in each property. Two alarms have been placed in each house, one on the kitchen wall, and one in the understairs cupboard. The alarms are set to sound if the flammable gas concentration by the alarm exceeds 10% LEL. Each householder has been provided with written directions as to what to do if the alarm sounds. Recognising that an alarm might be related to a leak from the gas cooker in a property as well as to do with ground conditions, instructions include contacting the Gas Provider as well as Vale Royal Borough Council.

5.2 *LONG TERM REMEDIAL ACTIONS*

5.2.1 *Gas Resistant Membrane Installation and increased ventilation*

It is proposed that the following works are undertaken in each of the properties at 1 to 12 Muirfield Close, 1 to 9 Greenlaw Close, and 97 and 99 Kingsley Drive:

- Installation of a low permeability fully sealed gas-resistant membrane within each of the properties;
- Upgrading of the vented sub-floor void, with a minimum depth of 300mm void space below the concrete floor and the installation of air bricks through to the void around all sides of the buildings;
- Installation of air bricks to vent the cavity of the gable end cavity wall on each block of houses;
- Ensure each property has a well constructed ground slab; and
- Service entry points sealed against gas ingress.

After completion of installation of the membrane in each property, tracer gas testing will be undertaken to demonstrate that the membrane is effective. The test comprises the injection of sulphur hexafluoride gas into the space below the membrane and above the precast floor slab, and screening of the top surface of the membrane for the gas. This test is applied before the membrane is covered over with insulation board, and after the insulation board and chipboard flooring has been laid. Any evidence of leaks at either stage is a trigger for further sealing work on the membrane. All tests are recorded, and certificates of gas-tightness provided by the specialist contractor.

At the date of this report, these works have been completed in Nos 1, 2, 3, 4 and 5 Muirfield Close and 7, 8 and 9 Greenlaw Close. The Verification Reports for each property have been produced as separate reports, specifically:

- Verification report: House – Related Works. 1 Muirfield Close, Leftwich, Cheshire. January 2007.
- Verification report: House – Related Works. 2 Muirfield Close, Leftwich, Cheshire. January 2007.

- Verification report: House – Related Works. 3 Muirfield Close, Leftwich, Cheshire. September 2006
- Verification report: House – Related Works. 4 Muirfield Close, Leftwich, Cheshire. January 2007
- Verification report: House – Related Works. 5 Muirfield Close, Leftwich, Cheshire. January 2007.
- Verification report: House – Related Works. 7 Greenlaw Close, Leftwich, Cheshire. January 2007.
- Verification report: House – Related Works. 8 Greenlaw Close, Leftwich, Cheshire. January 2007.
- Verification report: House – Related Works. 9 Greenlaw Close, Leftwich, Cheshire. January 2007.

5.2.2 *Removal of the Source of Methane Gas*

According to the RSK ENSR draft report, five boreholes within 2 Muirfield Close and 7 Greenlaw Close are coded red or amber 2, which according to the guidance, requires remedial mitigation measures to reduce / remove the source of gas. It is considered that removal of the source is the most appropriate method of remediation. The source has been identified as vegetation and wood within the made ground. The works comprise:

- Delineation of the extent of significant buried vegetation in the rear gardens of 1 to 3 Muirfield Close and 7 to 9, Greenlaw Close, in order to determine the depth of excavation and the volume of material to be removed for off site disposal;
- Excavation of all made ground in the defined area down to the surface of natural ground, ensuring that the excavation remains stable and does not affect the stability of adjoining houses;
- Progressive characterisation of excavated ground to allow correct off-site disposal and a fuller understanding of overall ground conditions;
- Validation of the works by sampling and further analysis on the base and sides of the excavation.
- On completion of excavation, the exposed faces adjoining the houses to be sealed with a layer of compacted clay, and the excavation will be backfilled with naturally sourced 6F2 and capped with quality assured topsoil. A granular venting layer will be placed against the base of the house ground beams and below the clay layer to ensure that any gases arising under the clay layer will vent into the subfloor void where adequate dilution can occur.

As at the date of this report, the above works have been completed for the gardens of 1, 2 and 3 Muirfield Close and 7, 8 and 9, Greenlaw Close, and the Verification Report for this work is provided as a separate report: Draft Verification Report: External Works, 1-3 Muirfield Close, 7-9 Greenlaw Close, Leftwich, Cheshire. November 2006.

A single monitoring action has been undertaken on the basis that the works are primarily passive and do not rely upon on-going active control systems.

On completion of the excavation and refilling works in the rear gardens of 1 to 3 Muirfield Close, and 7 to 9, Greenlaw Close, and the installation of new membranes and void clearance in the same properties, a gas monitoring protocol has been carried out. This comprises sealing the air bricks on all four sides of the two blocks, and monitoring the resulting unvented atmosphere over a period of two weeks. Effectively, this monitoring will demonstrate whether, in the absence of any ventilation below the floors, a significant build-up of methane or carbon dioxide occurs. It is accepted that the results of the monitoring will only reflect the conditions at the time of monitoring, but it is expected to include some period of falling or low atmospheric pressure. A continuous record of atmospheric pressure will be obtained for the duration of the monitoring period.

This direct measurement of gas emissions is preferable to measurements in boreholes as it avoids assumptions about the area which the borehole represents. It is effectively a large scale fluxbox test, and will provide valuable data on which to demonstrate the efficacy of the as-built remediation measures.

This monitoring was completed in September/October 2006, and the results are reported in the Verification Report for the remedial works to the gardens of 1-3 Muirfield Close and 7-9 Greenlaw Close:

Draft Verification Report: External Works, 1-3 Muirfield Close, 7-9 Greenlaw Close, Leftwich, Cheshire. November 2006.

7.1 REPORTING

The results of gas investigation and risk assessment on which the remediation scheme is based has been reported by RSK-ENSR as Interpretative Ground Gas Report, Muir Housing Estates, Report reference number 10810-R01 (02).

The following further reports have been produced by ERM:

The results of tracer gas tests (the Monitoring Action):

- Muirfield Close, Greenlaw Close and Kingsley Drive (No. 97 and 99), Leftwich, Draft Report, June 2006;

Verification Report on completion of membrane and void venting works for each individual house (Remedial Actions)

- Verification report: House – Related Works. 1 Muirfield Close, Leftwich, Cheshire. January 2007.
- Verification report: House – Related Works. 2 Muirfield Close, Leftwich, Cheshire. January 2007.
- Verification report: House – Related Works. 3 Muirfield Close, Leftwich, Cheshire. September 2006
- Verification report: House – Related Works. 4 Muirfield Close, Leftwich, Cheshire. January 2007
- Verification report: House – Related Works. 5 Muirfield Close, Leftwich, Cheshire. January 2007.
- Verification report: House – Related Works. 7 Greenlaw Close, Leftwich, Cheshire. January 2007.
- Verification report: House – Related Works. 8 Greenlaw Close, Leftwich, Cheshire. January 2007.
- Verification report: House – Related Works. 9 Greenlaw Close, Leftwich, Cheshire. January 2007.

Verification Report of excavation works for the area to the rear of 1 to 3, Muirfield Close and 7 to 9, Greenlaw Close (Remedial Action), together with the results of monitoring protocol in subfloor voids (Monitoring Action)

- Verification Report for the remedial works to the gardens of 1-3 Muirfield Close and 7-9 Greenlaw Close, November 2006;

In February 2007, further Verification Reports will be produced for the remaining houses where the membrane works have yet to be completed. A programme of membrane works has been produced which indicates that the last property will be complete by November 2007.

To ensure the remedial works are maintained for the duration of the life of the property within the control of Muir group Housing Association, this section sets out intended protocols and actions which provide confidence in the long-term integrity of the works.

8.1 *GAS ALARMS*

As a short term measure, in order to protect the residents from the possibility of accumulation of methane in the houses which might build up to a flammable concentration, gas alarms were installed in each property (see Section 3.1). Once the remedial works (installation of membranes, air bricks etc) has been completed, the function of the alarms is no longer for remedial purposes. The alarms will be maintained within the properties and will be used as domestic gas alarms for natural gas fuelled cookers and heating systems. In the event of an alarm being triggered, the residents will be advised to contact the emergency gas number provided by their gas supplier.

8.2 *PROPERTY MANAGEMENT*

Tenants

Each property has an individual tenancy agreement, these will be redrawn to ensure existing and future residents are aware of the remedial works, and avoid tampering / changing of conditions. This would include a list of do's and don'ts, with examples such as do not block the air bricks, no drilling through skirting boards or flooring etc.

Contractors

To avoid the risk of contractors altering the remedial works, Muir will have an automated system of notification of the works within their computer system and notification within the paper system, including a list of do's and don'ts, for general and emergency contractors.

Muir Housing Association Staff

To ensure that all staff working in association with the Leftwich estate are aware of the works that have been completed, a site history will be prepared and logged on the computer system, and whenever a member of staff accesses the files, a notification within the computer and paper systems will alert them to the special circumstances related to the estate, and the constraints on activities of maintenance workers etc.

Inspections

Muir Housing Association and contracted staff will carry out regular inspections of the estate and properties to ensure the upkeep of the remedial works.

3rd March 2008

Principal Environmental Health
Officer
Vale Royal Borough Council
Wyvern House
The Drumbar
Winsford
Cheshire
CW7 1AH



Our ref: 0044489

ERM would like to confirm on behalf of Muir Group Housing Association that the soil gas remedial works at land occupied by properties owned and managed by Muir Group Housing Association which includes properties at Muirfield and Greenlaw Close and Kingsley Drive (97 & 99) have been completed. The site was determined as "Contaminated Land", as defined by Environment Protection Act 1990, in September 2006 by Vale Royal Borough Council. The remedial works have removed the identified pollutant linkages, and it is therefore our conclusion that the site no longer meets the definition of contaminated land.

Determination as "Contaminated Land"

The determination identified the significant pollutant sources as methane and carbon dioxide in the ground. The pathway was identified to be movement of gas out of the ground and through building structures into confined and or occupied spaces within the buildings. The identified receptors were the occupiers of the properties, and the properties themselves.

Initial investigations were carried out by RSK-ENSR in 2005 and 2006 which identified the presence of ground gases at the site. Based on the findings of these investigations a Remediation Statement was prepared by ERM¹ setting out what was proposed to be done by way of remediation.

Remedial Works

In order to safeguard the residents whilst long term remediation works were progressing, temporary flammable gas alarms were installed in each property. The alarms were set to sound if the flammable concentration by the alarm exceeded 10% LEL. Each house holder was provided with written instructions of what to do if the alarm was triggered.

Registered office
Environmental Resources
Management Limited
8 Cavendish Square
London W1G 0ER

Registered office
1014622 England

VAT Registration number
404 6180 80

A member of the
Environmental Resources
Management Group

(1) Environmental Resources Management: Remediation Statement at Leftwich Estate, Leftwich August 2006.

Ground Gas Membrane Installation and Increased Ventilation

The following works were undertaken in each of the relevant properties:

- Installation of a low permeability fully sealed gas-resistant membrane;
- Upgrading of the vented sub-floor void, with a minimum depth of 300mm void space below the concrete floor and the installation/upgrade of air bricks around all sides of the buildings;
- Installation of air bricks to vent the cavity of the gable end cavity wall on each block of houses;
- Ensure each property has a well constructed ground slab; and
- Service entry points sealed against gas ingress.

After the completion of the installation of the membrane in each property, tracer gas testing was undertaken to demonstrate that the membrane is effective. The test was applied before the membrane was covered over with insulation board, and also after the insulation board and chipboard flooring had been laid. All tests were recorded and certificates of gas-tightness provided by the specialist contractor. The works have been documented for each individual property by ERM in Verification Reports, also documented was the clearance of the subfloor void and existing membrane conditions for each property.

Removal of the Source of Methane and Carbon Dioxide Gases

According to the RSK ENSR report, properties 1 -3 Muirfield Close and 7 – 9 Greenlaw Close required remedial mitigation measures to reduce / remove the source of gas. Source removal was considered as the most appropriate method of remediation, with the source identified as vegetation and wood within the made ground.

The objective of the remedial works in the residential gardens of 1 -3 Muirfield Close and 7 – 9 Greenlaw Close was to remove the majority of the material which forms the source of elevated concentrations of methane and carbon dioxide gases. Remedial works to remove the source of methane and carbon dioxide gases were completed between 3rd July and 22nd September 2006.

During the excavation of the soil from the garden area, a total of 1,189 tonnes of soil was removed for offsite landfill disposal. The landfill material predominantly comprised silty sandy clay with the following objects observed within the clay: trapped vegetation, wood, concrete blocks, water weed vegetation, bricks, paint tins, metal sheeting, wire, strips, tyres, oil filters and asbestos bound within bitumen coating on metal sheeting.

A gas barrier was constructed along the two sides of the excavation, along the rear of each property. This ensured that there is a continuous pathway for venting from the top of the remaining ground into the sub floor void. The clay barrier was run up the battered face and over the top of the gravel fill with clay

placed up to the ground beam. This minimises the potential for concentrated venting at house wall / ground interface.

The excavation was subsequently filled with compacted natural crushed stone and covered with topsoil prior to the reinstatement of gardens and fencing.

The works were verified by sealing the subfloor voids and monitoring potential build up of gases. No build up of gases were observed.

The methodology and results of these works were reported by ERM, *Verification Report: External Works 1-3 Muirfield Close, 7 – 9 Greenlaw Close, Leftwich , Cheshire November 2006.*

Conclusion

In conclusion, the works carried out, as described above, have broken the pollutant linkages which form the basis of determination of the site as contaminated land, and the site therefore no longer meets the definition of contaminated land. On behalf of Muir Group Housing Association, we would be grateful for the Councils formal confirmation that:

- They are satisfied that the remediation works have been completed as set out in the Remediation Statement;
- They are satisfied that the Verification Reports provide a correct record of the works; and
- That a record of the completion of the work can be placed on the Council Part 2A register, along with confirmation that the site is no longer considered to be contaminated land.

Yours sincerely

Consultant

Partner

Smithy Lane Fact Sheet

Site Name	Smithy Lane
Address	Land at Homeleigh & Woodbank Farm Smithy Lane, Willaston CH64 2UD
Area	21,152 m ²
Coordinates	E 333380 N 377397
Date of Notice that land is to be designated as a Special Site	20 May 2009
Public Register Entries	Notice of decision that land is required to be designated as a special site. Prepared by Cheshire West and Chester Council. Dated 20 May 2009.

ENVIRONMENTAL PROTECTION ACT 1990 – PART IIA
Section 78C(1)(b)

Ref No: sl/ss/ea

To: Environment Agency
Appleton House
430 Birchwood Boulevard
Warrington
WA3 7WD

**Notice of decision that land is required to be designated as a
special site.**

1. Under Section 78C(1)(a) of the Environmental Protection Act 1990, Part IIA, Cheshire West and Chester Borough Council has decided that the land described in the Schedule to this Notice being contaminated land situated in its area is land which is required to be designated a special site.
2. Notice of that decision is given to you pursuant to section 78C(1)(b) as a relevant person as defined in section 78C(2), namely as:

(A) the appropriate Agency;

~~(B) the owner of the land;~~

~~(C) a person who appears to the enforcing authority to be in occupation of the whole or part of the land;~~

~~(D) a person who appears to the enforcing authority to be an appropriate person.~~

[DELETE AS APPLICABLE]

3. Should you wish to make any representation in response to this Notice, or to seek further information, please contact the following officer as soon as possible:

Regulatory Services Officer
Environmental Protection Unit
Regulatory Services
Cheshire West and Chester Council
Council Offices
4 Civic Way
Ellesmere Port
Cheshire
CH65 0BE

Tel: 0151 356 6659
Fax: 0151 356 6432

SCHEDULE

The physical extent of the area of land determined as contaminated and a special site is highlighted on the attached plan as areas A and B. The area of the special site comprises area A the former pit areas of Woodbank Farm and area B the former pit area at Homeleigh. The public footpath which runs north to south bisecting the two areas is not included. The north is bounded by Smithy Lane and the south by the Wirral Way. The eastern boundary of area A adjoins but does not include the Newlands property or the fence / wall line. The western boundary of area B adjoins but does not include the Homeleigh property or the fence / wall line. The western boundary of area B also adjoins but does not include properties along Wallcroft or the fence / wall line.

Name: Smithy Lane
Address: Land at Smithy Lane
Smithy Lane
Willaston
Cheshire
LA ref: sl/ss/ea/schedule

Dated: 20th May, 2009

Signed:

Regulatory Services Manager – Market Surveillance and Support to Business

Cheshire West and Chester Borough Council,
Council Offices,
4 Civic Way,
Ellesmere Port,
Cheshire.
CH65 0BE.

