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## ENVIRONMENTAL

EAST STAFFORDSHIRE BOROUGH  
COUNCIL  
THE DOVE WAY (AREAS A & B)  
UTTOXETER

PHASE 2 GEO-ENVIRONMENTAL  
ASSESSMENT REPORT



Integrated Engineering and Environmental Consultants

environmental | water | transportation | civil | structural | highways | infrastructure

**BWB**  
CONSULTING

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COUNCIL  
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UTTOXETER

PHASE 2 –GEO-ENVIRONMENTAL  
ASSESSMENT REPORT

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## Document Revision Status

Issue	Date	Comments
Version 1	August 2010	Final



## EXECUTIVE SUMMARY

<b>Site Setting</b>	<p>The site comprises two separate parcels of land situated close to The Dove Way on the north western edge of Uttoxeter. The northern area, which has been designated 'Area A' comprises open land with long grass and other vegetation. A large sewage treatment works is located immediately east of Area A.</p> <p>The southern area, designated as 'Area B' comprises a small industrial estate including a sign printing firm, a vehicle repair and service workshop and a household waste recycling facility. The Wharf Brook also flows west to east through the centre of Area B.</p>
<b>Site History</b>	<p>The eastern area of Area A is indicated to have been a refuse tip between approximately 1964 and 1978 but is otherwise indicated to have remained undeveloped.</p> <p>Area B has been used for industrial purposes since prior to 1882 with the first use comprising a gas works in the western area of the site. A railway is also indicated to have run north-south through the eastern area of the site since prior to 1882 and up until around 1983. Post 1964 the majority of the site uses is indicated to slowly change with later uses including a depot/ small industrial estate and a public refuse tip. Significant earthworks are indicated to have taken place in the second half of the 20th Century with a plateau created in the northern area of the site and the railway cutting infilled. Significant thicknesses of made ground can be expected in these areas.</p>
<b>Site Investigation</b>	<p>The intrusive site investigation works at the subject site and across the wider site area comprised the excavation of 37no trial pits (TP101 to TP137) to a maximum depth of 4.0m bgl, the advancement of 7no window sample boreholes (WS1 to WS7) to a maximum of 3.0m bgl and the advancement of 9no. boreholes (BH1 to BH9 inclusive) by to a maximum depth of 11.0m below ground level (bgl) utilising a cable percussive sampling technique. Installations comprising standpipes, gas taps and lockable covers were installed in all 9no. cable percussive borehole locations with standard penetration tests (SPTs) at frequent intervals in all cable percussive boreholes</p> <p>Post investigation monitoring comprised four return visits (with an additional 2no visits scheduled) to record depth to groundwater, gas flow and ground gas concentrations (carbon dioxide, oxygen, methane, hydrogen sulphide and carbon monoxide).</p>
<b>Ground Conditions</b>	<p>The ground conditions recorded typically confirmed the published geology discussed in the Phase I report. The ground conditions in Area A typically comprised made ground landfill material overlying a thin layer of alluvial clay in turn overlying Fluvioglacial Sand and Gravel. The solid geology beneath the Fluvioglacial Deposits was Mercia Mudstone. In Area B the geology typically comprised made ground directly overlying the Mercia Mudstone solid geology though Fluvioglacial deposits were noted in certain area of Area B.</p>
<b>Geotechnical Setting</b>	<p>Based on the proposed development in Area A and the expected loads (which are not currently known) steel portal frames transferring their loads to pad foundations founding between 2.0m and 3.0m bgl within the medium dense Fluvioglacial sand and gravel deposits is expected to yield the required strength. A list of the maximum column loads and foundation specifications is indicated in <b>Table 9</b>.</p> <p>Due to the variable nature and inconsistent thickness of the made ground and alluvial deposits across Area B these are not considered suitable founding strata for the proposed residential development. Transferring the footing loads to the Fluvioglacial sand and gravel or Mercia Mudstone is expected to yield strength in excess of 120kN/m and within tolerable settlement which is likely to be sufficient for the proposed development. However, due to the depth foundations would have to be excavated to, ground improvement or mini piles transferring loads to the Mercia Mudstone may be considered a more suitable and cost effective foundation solution.</p> <p>The permeability of the Fluvioglacial deposits at the site is likely to be high with good drainage characteristics. Soakaways may be a suitable drainage system at the site and soakaway tests should be undertaken to confirm their suitability on the basis further environmental risk assessment (i.e. DQRA) indicates this to be a viable consideration.</p> <p>The sulphate concentrations indicate that generally Design Sulphate Class DS2 conditions are present within the soil deposits at the site, and Design Sulphate Class</p>



	<p>DS1 conditions are present within the groundwater at the site in both Area A and Area B.</p>
<p><b>Contamination Sources</b></p>	<p>Based on the Phase II Environmental Assessment there are a number of sources of contamination that have been identified, including:</p> <p>Area A: PAH contamination in the shallow soils and groundwater in the north western section of Area A; slightly elevated sulphate concentration in the soils; and elevated carbon dioxide concentrations across Area A.</p> <p>Area B: Arsenic, chromium and cyanide contamination in the shallow made ground soils in the south eastern section of Area B; elevated TPH and PAH contaminant concentration in the made ground across all of Area B; elevated cyanide, TPH and PAH contaminant concentration in the groundwater across the southern section of Area B and to a lesser extent, PAH contamination also in the northern section of Area B; and slightly elevated sulphate concentration in the soils.</p>
<p><b>Pollutant Linkages</b></p>	<p>In Area A, PAH contamination has been identified in both the shallow soils comprising made ground landfill material and in the groundwater of the Secondary A Aquifer in the north western section of the site. This indicates that the shallow soil contamination is impacting the groundwater quality of the Secondary A Aquifer and has the potential to migrate off site and impact on off site controlled water receptors which include the River Tean which is located approximately 100m north of the site.</p> <p>The ground gas assessment, based on the monitoring results recorded to date, indicates that elevated carbon dioxide flow concentrations are present within Area A of the site.</p> <p>Significantly elevated contamination concentrations have been revealed in the soils within Area B most notably within the south western section. Significant volumes of ash, clinker and slag and well as 'Blue Billy' were noted in this area of the site during the investigation. These materials are likely to be associated with the gas works which was historically located at the site. Contaminants in this area of the site, which have been identified as a potential risk to the health of human receptors associated with the proposed residential development of Area B through soil ingestion and inhalation (including vapours indoor) as the preferential pathway, include arsenic, chromium, complex cyanide, PAH and TPH.</p> <p>Significantly elevated cyanide, PAH and TPH contamination concentrations have been identified in the groundwater in Area B which significantly exceed the guideline concentrations. It is indicated that it is very likely that the groundwater contamination has occurred due to the leaching of shallow soil contamination in the made ground through the soil profile and into the groundwater within the soil eluate. The groundwater results also indicate that the contamination may also be migrating eastwards onto the adjacent site.</p>
<p><b>Recommendations</b></p>	<p>A DQRA is required in both Area A and Area B of the site in order to assess the magnitude of the risk that the contamination identified poses to controlled water receptors. The DQRA will also establish remedial target concentrations should remediation (of the soils and/or groundwater) be required.</p> <p>Based on the gas monitoring undertake at the site to date, the assessment has indicated that basic gas protection measures will be required for the proposed commercial/ industrial development in Area A of the site.</p> <p>The use of a chemically and physically suitable growing medium will be required in garden areas and landscaping to be protective of future site residents in Area B. It is considered that a minimum thickness of 700mm to 900mm of suitable material is required to be placed in all gardens and landscaped areas. The topsoil and contaminated underlying soils should be separated by either a membrane or hard to dig layer. The specification should be agreed with the regulatory authorities prior to implementation. It is also recommended that vapour proof membranes are installed as part of the development.</p>
<p>This executive summary contains an overview of the key findings and conclusions. No reliance should be placed on any part of the executive summary until the whole of the report (ref.NTE285/05/V1) has been read. Other sections of the report may contain information which puts into context the findings which are summarised in the executive summary.</p>	

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## 1.0 INTRODUCTION

### Instruction

- 1.1 BWB Consulting (BWB) was instructed by Mr P. G. Somerfield on behalf of East Staffordshire Borough Council (the Client) to carry out a Phase 2 Geo-environmental Assessment at the site at The Dove Way (Areas A & B), Uttoxeter, Staffordshire. Details of the project brief are included in BWB proposal reference IDN/RC/NTE285 R1 dated January 2010.

### Objectives

- 1.2 The objectives of the report are to:
- Confirm prevailing ground and groundwater conditions across the site.
  - To assess the potential presence and extent of contamination in shallow soil and groundwater beneath the site
  - To assess the significance and magnitude of the observed contamination through comparison of analytical data to appropriate published environmental screening criteria.
  - To determine the strength properties of the soil beneath the site to enable foundation design.
  - To determine the ground gas regime beneath the site.
- 1.3 The above objectives will allow the Preliminary Conceptual Site Model presented in the Phase 1 report to be verified and updated. The report has been completed in accordance with CLR11 "Model Procedures for the Management of Land Contamination".

### Limitations

- 1.4 The assessments and interpretation have been made in line with legislation and guidelines in force at the time of writing, representing best practice at that time.
- 1.5 All of the comments and opinions contained in this report, including any conclusions, are based on the information obtained by BWB during our investigations.
- 1.6 There may be other conditions prevailing on the site which have not been disclosed by this investigation and which have not been taken into account by this report. Responsibility cannot be accepted for conditions not revealed by the investigation.
- 1.7 Any diagram or opinion of the possible configuration of the findings is conjectural and given for guidance only and confirmation of intermediate ground conditions should be considered if deemed necessary.
- 1.8 Except as otherwise requested by the Client, BWB is not obliged and disclaims any obligation to update the report for events taking place after:
- a) the date on which this assessment was undertaken; and
  - b) the date on which the final report is delivered.

- 1.9 BWB makes no representation whatsoever concerning the legal significance of its findings or to other legal matters referred to in the following report.
- 1.10 This report has been prepared for the sole use of East Staffordshire Borough Council. No other third parties may rely upon or reproduce the contents of this report without the written permission of BWB. If any unauthorised third party comes into possession of this report they rely on it at their own risk and the authors do not owe them any Duty of Care or Skill.

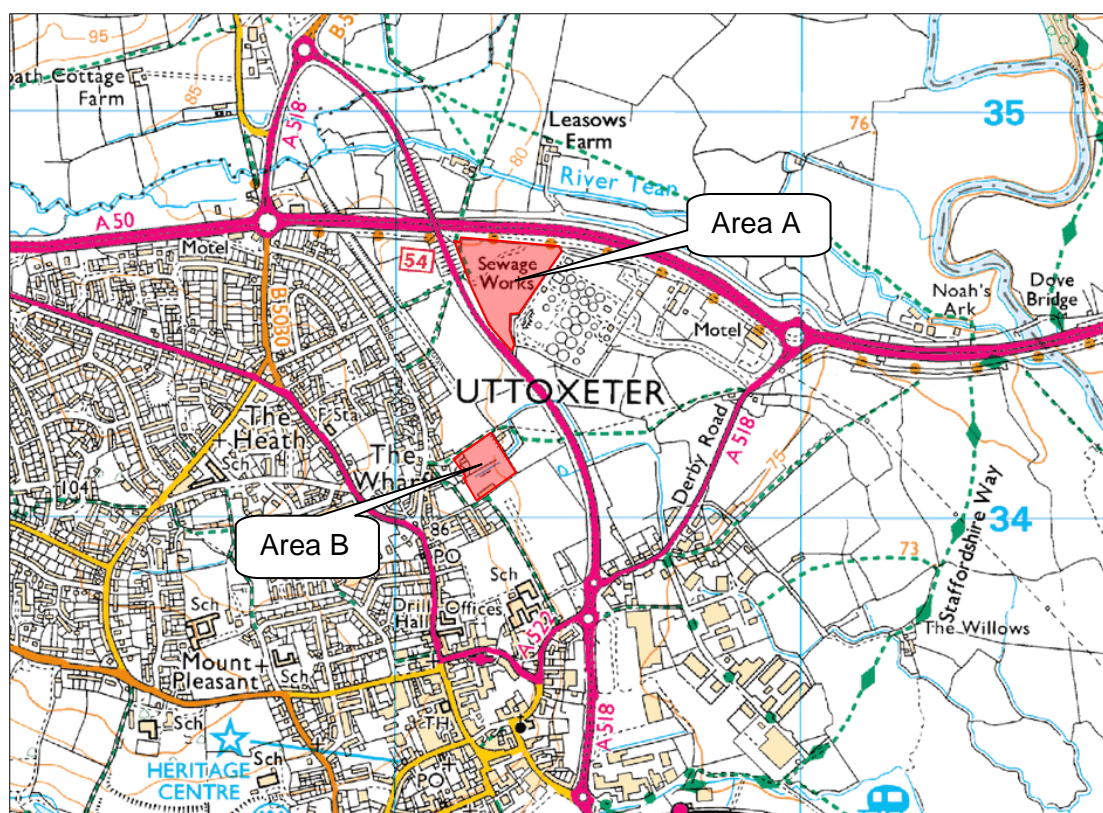


## 2.0 SITE SETTING

### Site Location

- 2.1 The site is located on the north eastern edge of Uttoxeter conurbation approximately 1km north of the town centre. The site is split into two sections situated adjacent/close to The Dove Way; an arterial relief road carrying traffic north east of Uttoxeter. The two parcels of land one to the north and one to the south west are approximately centred at national grid references 409280, 334490 and 409230, 334120 respectively. The location of the site is shown in **Figure 1**.

**Figure 1 - Site Location Plan**



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### Site Description

- 2.2 The site comprises two parcels of land which are approximately triangular and square in shape respectively. These two sections of land comprise part of a wider proposed development area which connects the two parcels of the site. For the purpose of this assessment the site areas will be referred to throughout this report as follows:
- Area A – The Triangular parcel of land which is currently undeveloped open ground and forms the northern part of the site;
  - Area B – A square parcel of land comprising predominantly industrial/commercial use situated in the south eastern area of the proposed development scheme; and

- Area C – Two parcels of land either side of The Dove Way which connect Area A and Area B. This parcel of land has been assessed elsewhere on behalf of Clowes Securities (west Midlands) LLP as part of the joint instruction for investigation.

2.3 A representative of BWB undertook a site reconnaissance visit on 24<sup>th</sup> June 2010. The layout of the site with the main features is presented as **Figure 2**. Photographs from the site visit are presented in **Appendix 1**.

#### Area A

- 2.4 Area A comprises overgrown open land with vegetation including long grass, thistles, nettles and shrubs. The vegetation tentatively identified included small areas of Japanese Knotweed. However, it should be noted that BWB is not a specialised ecologist and it is therefore recommended that a specialist ecologist is commissioned to undertake a survey.
- 2.5 The site boundaries comprise fencing and mature shrubs with access to the site available under a bridge on a public footpath on the western boundary of the site, or through a gate (which was padlocked at the time of the visit) on the south western boundary of the site; only the former is suitable for vehicular access as large boulders prevent access to the latter.
- 2.6 A small footpath runs through the vegetation within the site boundary roughly parallel to the western site boundary. A circular footpath is also present running roughly parallel to the site boundaries in the northern two thirds of the site.
- 2.7 The site lies at approximately 80m above ordnance datum (AOD) and is approximately flat. However there is a small drop in elevation of around 1.5m in the north western area of the site and a small mound of approximately 2.0m in height is present close to the south eastern boundary of the site. The site slopes away steeply at the southern edge of the site with a drop of approximately 3.0m.
- 2.8 Beyond the boundaries of the site The Dove Way forms the western site boundary. The road and the site are at approximately the same elevation at the southern end of the site with the road rising to approximately 10.0m above the site towards the northern edge of the site where the site and road are separated by a steep vegetated slope. Beyond The Dove Way to the west is pasture and park land. To the north of the site is the A50 dual carriageway with farmland beyond. To the south east of the site is a large sewage treatment works.

#### Area B

- 2.9 This parcel of the site comprises a waste recycling facility and a small industrial estate dissected by a stream running within a small valley. The site lies at approximately 80m AOD and falls in height by approximately 3m from the western boundary to the eastern boundary. The northern area is roughly flat which indicates that significant quantities of made ground may be present. The southern area slopes steadily away towards the east with a fall of approximately 3m.
- 2.10 The north eastern section of Area B is occupied by the waste recycling facility. No access was available to the facility on the day of the visit although an inspection was undertaken from the perimeter and photographs taken. The recycling facility

comprised predominantly asphalt hardstand with a small grass verge around the site perimeter. The site boundary was formed by approximately 2.5m high palisade fencing with access provided on the northern side of the site. Bushes indicative of Japanese Knotweed (an invasive plant species) were tentatively identified adjacent to the entrance to the site. A small cabin was situated in the northern area with the main waste disposal area situated centrally. Large waste disposal skips in this area included garden waste, non recyclable household waste, small appliances, non recyclable bulky waste items, cardboard, chipboard and wood and timber. Smaller recycling bank bins in this area comprised paper, books, cloths and textiles, glass, printer ink and cartons. Further waste disposal skips and bins were present along the eastern boundary of the site including hard core and rubble and large kitchen appliances as well as used cooking oil and waste oil tanks. The waste oil tank comprised steel above ground storage tank (AST) of approximately 3,000l in capacity and was positioned within a small steel bund. There were no obvious signs of spillages or leaks from the viewing position. The recycling facility was considered to be well kept and in a tidy condition with no visual signs of impact or odours.

- 2.11 The southern section of Area B is occupied by Hawksworth (Graphics, Prints and Signs) and Dovebank Motors. The site comprises predominantly asphalt hard stand and vegetation in the eastern area with a small industrial unit in the southern area and small toilet block in the central area. Both the unit and toilet block are of single storey brick construction with corrugated cement (possibly asbestos containing) roof. Hawksworth occupied approximately the western two thirds of the unit with Dovebank Motors present in the eastern third.
- 2.12 Adjacent to the unit in the Dovebank Motors area was an AST possibly used as a waste oil tank. The tank was of self banded double skin plastic construction and approximately 2,000l in capacity. No visual or olfactory evidence of contamination was observed within the vicinity of the AST. Adjacent to the AST was a bin for waste oil filters, an empty antifreeze barrel, an old vehicle radiator and a rear axle of a car. A surface water drain was located adjacent to this area with surface staining indicating that contaminants have been washed into the drain. Two ASTs were noted further to the east of the unit which were indicated to be no longer in use. The smaller of the two ASTs was considered to be approximately 1,200l in capacity was of steel construction positioned on breeze block stilts; this AST did not have a bund. The larger AST was considered to be approximately 10,000l in capacity and also of steel construction the tank was situated within a bund with concrete base and brick walls with no product present in the bottom. This tank was housed within a small timber shack with corrugated sheet cement (possibly asbestos containing) sides and roof. No visual or olfactory evidence of contamination was noted in the vicinity of these two ASTs.
- 2.13 The western section of the small industrial estate was overgrown with grass, nettles, thistles and other vegetation including a raised bank indicating potential made ground. Numerous tyres were present in this area and were laid out in a manner which indicated the area was formerly used as a go-kart track. A metal storage drum circa 350l capacity was present in this area which was indicated to have been used to burn waste. Grey ash and burnt items including the remains of aerosol cans and batteries were noted on the ground surrounding the drum. Two large steel storage containers were also situated within this area.



- 2.14 A small brook flows through from west to east through the central area of the site and is culverted at the eastern and western boundaries of the site. The brook flows along a straight artificial concrete channel within a small valley though the slope of the northern bank becomes more significant towards the eastern extents. The banks are predominantly vegetated and largely overgrown, with potential invasive Japanese Knotweed bushes tentatively identified on the northern bank adjacent to the recycling facility. Flow within the channel was noted to be very low though debris within grills along the channel indicated that much more significant flow along the channel does take place. A discharge point was noted toward the western extent of the open channel with a steady constant flow. The water channel was noted to have a frothy surface in this area with a stale/stagnant water type odour noted.
- 2.15 The site is bound to the north by a park and playing fields and to the east by pasture land. To the south of the site is playing fields associated with a nearby school and to the west is residential properties and a small skip hire facility (or similar); though no waste disposal was indicated to take place at the premises. To the north west of Area B, was a small industrial unit of steel frame construction with brick walls and metal cladding on the roof and upper walls. A large shutter was present to the front of the unit. The use for the unit was not ascertained during the visit though was indicative of light industrial use.

### **Proposed Development**

- 2.16 The Dove Way proposed development scheme is anticipated to comprise a mixed use development of residential housing and commercial units with the relocation of the waste recycling facility.
- 2.17 Area A is anticipated to be developed into predominantly commercial and industrial units with associated landscaping and infrastructure. It is proposed that the waste recycling facility will be relocated in the eastern section of Area A.
- 2.18 Area B is anticipated to be developed for residential use with associated gardens, infrastructure and landscaping.
- 2.19 A development masterplan is presented as **Figure 3**.

### **Previous Reports**

- 2.20 BWB completed Phase 1 Geo-environmental Assessment at the site in July 2010 which is detailed in the following report:
- “BWB Consulting Ltd for East Staffordshire Borough Council; Phase I Environmental Assessment Report; The Dove Way (Areas A & B), Uttoxeter, Reference NTE285/01/V1, dated July 2010”
- 2.21 The report comprised a phase I environmental assessment and concluded that there were significant pollutant linkages present at the site and that intrusive investigation was necessary to confirm the presence of pollutant linkages and to confirm ground conditions for foundation design
- 2.22 In addition a Phase II Factual Report has been completed for the site which is detailed in the following report:

- “BWB Consulting Ltd for East Staffordshire Borough Council; Phase II Factual Report; The Dove Way (Areas A & B), Uttoxeter, Reference NTE285/03/V1, dated August 2010”

## **Site History**

### Area A

- 2.23 Area A is indicated to have remained largely undeveloped based on the historical mapping with the exception of the eastern area of the site which is indicated to have been a refuse tip between approximately 1964 and 1978.
- 2.24 Development surrounding the site has comprised a sewage treatment works to the south east of the site from approximately 1922 and the development of the A50 dual carriageway to the north of the site and The Dove Way to the west of the site by around 1938 and 1999 respectively.

### Area B

- 2.25 Area B has been used for industrial purposes since prior to 1882 with the first use comprising a gas works in south western area of the site and extending in to the north western area by 1922. A railway is also indicated to have run north-south through the eastern area of the site since prior to 1882 and up until around 1983. Post 1964 the majority of the site uses are indicated to slowly change, with later uses including a depot/ small industrial estate and a public refuse tip. A stream is also indicated to flow west-east through the central area of the site since the earliest mapping.
- 2.26 Significant earthworks are indicated to have taken place in the second half of the 20<sup>th</sup> Century with a plateau created in the northern area of the site and the railway cutting filled in. Significant thicknesses of made ground can be expected in these areas.
- 2.27 The surrounding land has predominantly remained undeveloped or occupied by residential properties to the west of the site. However a well (Pennycroft) is annotated historically just off site to the east.

## **Regulatory Setting**

- 2.28 A number of consents and permits are indicated to relate to processes and activities which have occurred on site and are therefore considered to have the potential to have had a detrimental impact on the site, when they are considered in the context of the conceptual ground model.
- 2.29 The majority of Area A and northern section of Area B are indicated to have been landfilled in the past. Permitted wastes at the landfill in Area A are known to have included inert, industrial, commercial and household including liquid sludge. There is therefore a high possibility for elevated gas concentrations in both Area A and Area B of the site. The material landfilled may also have a significant possibility of giving rise to elevated contaminant concentrations in the soil leachate.
- 2.30 There are also a number of entries relating to the recycling facility in Area B of the site. The site visit by BWB identified that the facility was currently kept in a tidy state with no obvious signs of contamination impact. However the facility is indicated to

have been present since around 1993. House keeping may not therefore have been so vigilant in the past.

### **Published Ground Conditions**

- 2.31 The site (both Area A and Area B) is indicated to be underlain by solid geology comprising Mercia Mudstone Group. Drift deposits are indicated to directly underlie the entire site area. Area A is indicated to be underlain by Alluvium (clay, silt, sand and gravel) drift deposits with Glaciofluvial Deposits (sand and gravel) along the western fringe of the site. Area B is indicated to be wholly underlain by Glaciofluvial Deposits. Given the landfill sites indicated at the site it is likely that a significant thickness of made ground can also be expected.
- 2.32 Both the Alluvium and Glaciofluvial Deposits indicated at the site are classified by the Environment Agency (EA) as Secondary A Aquifers. The Mercia Mudstone Group solid geology at the site is classified by the EA as a Secondary B Aquifer. The principal migration pathway and receptor is therefore considered to be groundwater in the drift deposits.
- 2.33 The Wharf Brook is present at the site which flows through Area B in a west to east direction. The flow during the BWB site visit was observed to be low. The stream through the site area was observed to flow through an artificial channel which is likely to provide some protection from the groundwater in this area. However, off site to the east the stream has been observed to flow along its natural path and groundwater beneath Area B is therefore likely to flow towards this stream.
- 2.34 The River Tean is situated approximately 150m north of Area A with The Wharf Brook which flows through Area B present approximately 200m south of Area A. The groundwater flow direction is therefore difficult to predict beneath Area A; particularly with both these water courses flowing towards the River Dove, which at its nearest point is located approximately 1.1km east of the site.

### **Ground Gas**

- 2.35 Both the northern area of Area B and the majority of Area A have been indicated to have previously been used for landfilling activities. Southern areas of Area B are also likely to have significant thicknesses of made ground most notably in areas previously occupied by the gas works. Alluvial deposits are also indicated to underlie the majority of Area A which could potentially have a high organic content. These are all potential sources for the production of ground gases.

### **Mining and Mineral Extraction**

- 2.36 There are 7no mineral sites listed within 1km of the site. The closest of these is indicated to be 410m south west of Area B and relates to a brick works. All mineral sites listed are indicated to have extracted clay and shale or sand and gravel.

### 3.0 PRELIMINARY ENVIRONMENTAL RISK ASSESSMENT

#### Introduction

- 3.1 The risk posed by any contaminants in soil or groundwater will depend on the nature of the hazard, the probability of exposure, the pathway by which exposure occurs, and the likely effects on the receptors. A contaminant is defined as a substance that has the potential to cause harm, while a risk is considered to exist if such a substance is present in sufficient concentration to cause harm and a pathway exists for a receptor to be exposed to the substance.
- 3.2 The following sections discuss all the identified potential on and off site sources, pathways and receptors in the context of the proposed development and plausible pollutant linkages which may represent a risk to identified receptors such as human health and/or controlled waters from the data gained from the desk study. At this stage the assessment is qualitative and aimed to determine all pollutant linkages, irrespective of significance or allowing for uncertainty.
- 3.3 Three impact potentials exist for any given site, these are:
- The site impacting upon itself;
  - The site impacting on its surroundings; and
  - The surroundings impacting on the site.
- 3.4 All three impacts need to be considered in a risk assessment

#### Sources

- 3.5 Based on the desk study information and site reconnaissance visit there are a number of potential sources of contamination that have been identified, including:

##### Onsite

- Made ground and landfill material;
- Alluvium drift deposits;
- Former gas works;
- Former railway;
- Vehicle repair and servicing workshop;
- Public refuse and recycling facility;
- Graphics/printing services; and
- Potentially invasive plant species (rhizomes).

##### Offsite

- Sewage treatment works.

- 3.6 **Table 1** overleaf lists the contaminants associated with the potential sources of contamination identified as potentially impacting upon the site. The list is not exhaustive and not all contaminants below may be present at the site as this will depend on the exact processes being undertaken.

**Table 1 – Potential Contaminative Uses**

Site Use	Associated Potential Contaminants
Made Ground and Landfill Material	A wide range of contaminants comprising heavy metals (including arsenic, copper, lead and zinc), oil and fuel hydrocarbons, SVOCs, VOCs PAHs and asbestos. Hazardous ground gases including methane, carbon dioxide, hydrogen sulphide and carbon monoxide may also be generated.
Gas Works	Organic compounds, glycols, petroleum, naphthas, acids and alkalis, inorganic contaminants including complex cyanides, heavy metals and hazardous ground gases from waste products.
Railway	Heavy metals, PAHs, hydrocarbons, polychlorinated biphenyls (PCBs) and asbestos.
Vehicle repair and servicing facility including ASTs	Fuel hydrocarbons, BTEX, lube oils, heavy metals, VOCs, acids and alkalis, glycols and inorganics.
Recycling Facility	Fuel hydrocarbons, BTEX, lube oils, heavy metals, acids and alkalis and inorganics.
Sewage Treatment Works	Heavy metals, inorganic compounds, acids and alkalis, asbestos, organic compounds, PCBs, pathogens and hazardous gases.

### Pathways

3.7 A pathway is defined as a mechanism or route by which a contaminant comes into contact with, or otherwise affects a receptor. Pathways by which the identified receptors may be impacted upon in the context of the proposed development are identified as follows:

- Ingestion;
- Skin contact;
- Inhalation;
- Direct contact by buried structures;
- Leaching of soluble contamination into groundwater;
- Saturated zone flow through Secondary A Aquifer; and
- Accumulation of potentially explosive gas within confined spaces.

### Receptors

3.8 Receptors are defined as people, living organisms, ecological systems, controlled waters, atmosphere, structures and utilities that could be adversely affected by contaminant(s).

#### Human Health

- Site occupiers; and
- Ground workers.

#### Controlled Waters

- Secondary A Aquifer underlying the site;



- Secondary A Aquifer underlying the surrounding area;
- The River Tean; and
- The Wharf Brook.

#### Construction Materials

- Buried concrete; and
- Buried service pipes.

#### Ecological Receptors

- Flora; and
- Fauna.

### **Environmental Risk Assessment**

- 3.9 The preliminary CSM is a hypothesis of the nature and sources of contamination, potential receptors that may be the recipient of contamination arising from those sources and any pathways that may exist, thus creating a plausible source-pathway-receptor pollutant linkage (hazard), set within the context of the ground and groundwater model and proposed end use of the site. The preliminary CSM is presented in **Table 2**.
- 3.10 No significance or uncertainty is attributed to any pollutant linkage identified at this stage.
- 3.11 Based on the preliminary conceptual site model (CSM) for the site, an environmental risk assessment has been undertaken. A simple matrix can provide a consistent basis for decision-making. It should of course be used with caution, recognising the over-simplification that it will normally represent. The probability and consequences are defined according to parameters relevant to the situation; the boundaries of risk acceptability (and tolerability, where relevant) can be tailored to the factors influencing the significance of the risk. Individual situations are mapped onto the matrix to provide a ready and consistent indication of their acceptability or tolerability. These attributes are evaluated qualitatively against individual hazard assessments to determine the likelihood of a given hazard occurring. The risk evaluations for each plausible pollutant linkage are given in the last three columns of **Table 2**.
- 3.12 Based on the previous activities that have taken place on site and the surrounding area the pollution linkage assessment combined with the historical knowledge of the site and its geological setting has indicated that the site represents a **MODERATE** risk to controlled waters set in the context of the proposed development.
- 3.13 The principal risks of impact to controlled waters are due to leaching of shallow soil contamination arising from current and historical site uses and landfill/ made ground material which is indicated at the site.
- 3.14 Based on the proposed end use of the site, the pollution linkage assessment combined with the historical knowledge of the site has indicated that the site represents a **HIGH** to human health set in the context of the proposed development.
- 3.15 This is principally due to the likelihood of hazardous ground gases at the site being generated from decomposition of organic materials within the landfill material and from any potential waste products from the former gas works (such as fowl lime).

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Mitigation from ground gases are likely to comprise the incorporation of gas protection measures into buildings which would comprise a damp proof membrane with joints fully sealed and passive venting.

**Table 2 - Summary of Significant Pollution Linkages**

Source	Pathway	Receptor	Consequence	Probability	Risk	Mitigation/Investigation
On Site: Landfill material, Alluvium drift deposits and made ground	Direct contact, ingestion and inhalation of soil particulates	Site users Ground workers	Medium	Likely	Moderate	Investigation should aim to target shallow soils to identify the presence and magnitude of any contamination arising from made ground/ landfill materials.  Mitigation could comprise removal, or the importation of clean topsoil.
	Accumulation of ground gases in confined spaces leading to asphyxiation or explosion.	Site end users	Severe	Likely	High	The gassing regime of the site should be characterised through monitoring at borehole positions installed into the landfill material.  Mitigation, if required, would comprise the incorporation of gas protection measures into the building fabrication.
	Leaching to the groundwater followed by groundwater migration	The Wharf Brook	Medium	Likely	Moderate	The groundwater quality arriving onsite, within the site area and migrating off site should be determined through analysis of groundwater samples collected from boreholes installed at the site. The Wharf Brook should also be sampled up steam, downstream and at a mid point of the site to identify whether the water quality is impacted by the site.  A wide range of remediation methods may be suitable if required.
The River Tean						
Secondary A Aquifer underlying the site						
Secondary A Aquifer underlying the surrounding area						

Source	Pathway	Receptor	Consequence	Probability	Risk	Mitigation/Investigation
	Direct contact	Buried concrete structures	Mild	Likely	Moderate/Low	The sulphate classification should be determined through investigation to identify any risks to buried concrete structures from chemical attack. Mitigation may comprise the use of chemical resistant concrete.
On Site: Former gas works	Direct contact, ingestion and inhalation of soil particulates	Site users Ground workers	Medium	Likely	Moderate	Investigation should aim to target shallow soils to identify the presence and magnitude of any contamination arising from the former gas works. Mitigation could comprise removal, or the importation of clean topsoil.
	Accumulation of ground gases in confined spaces leading to asphyxiation or explosion.	Site end users	Severe	Low likelihood	Moderate	The gassing regime of the site should be characterised through monitoring at borehole positions installed into the landfill material. Mitigation, if required, would comprise the incorporation of gas protection measures into the building fabrication.
	Leaching to the groundwater followed by groundwater migration	The Wharf Brook Secondary A Aquifer underlying the site Secondary A Aquifer underlying the surrounding area	Medium	Likely	Moderate	The groundwater quality arriving onsite, within the site area and migrating off site should be determined through analysis of groundwater samples collected from boreholes installed at the site. The Wharf Brook should also be sampled up stream, downstream and at a mid point of the site to identify whether the water quality is impacted by the site. A wide range of remediation methods may be suitable if required.

Source	Pathway	Receptor	Consequence	Probability	Risk	Mitigation/Investigation
	Direct contact	Buried concrete structures	Mild	Likely	Moderate/Low	The sulphate classification should be determined through investigation to identify any risks to buried concrete structures from chemical attack. Mitigation may comprise the use of chemical resistant concrete.
On Site: Vehicle repair and servicing workshop including ASTs Public refuse and recycling facility Former railway Graphics/printing workshop	Direct contact, ingestion and inhalation of soil particulates	Site users Ground workers	Medium	Likely	Moderate	Investigation should aim to target shallow soils to identify the presence and magnitude of any contamination arising from the current and historical site uses. Mitigation could comprise removal, or the importation of clean topsoil.
	Leaching to the groundwater followed by groundwater migration	The Wharf Brook	Medium	Likely	Moderate	The groundwater quality arriving onsite, within the site area and migrating off site should be determined through analysis of groundwater samples collected from boreholes installed at the site. The Wharf Brook should also be sampled up stream, downstream and at a mid point of the site to identify whether the water quality is impacted by the site. A wide range of remediation methods may be suitable if required.
		Secondary A Aquifer underlying the site				
		Secondary A Aquifer underlying the surrounding area				
	Inhalation of vapours (indoors)	Site end users	Medium	Low	Moderate/Low	The investigation should target soils in any areas where the greatest potential of contamination incidents may have occurred such as around the ASTs at the site. If required, mitigation could comprise the incorporation of a vapour proof membrane into building fabrications.
Inhalation of vapours (outdoors)	Site end users	Mild	Low	Low	None required.	



Source	Pathway	Receptor	Consequence	Probability	Risk	Mitigation/Investigation
	Direct contact	Utility service pipes	Mild	Likely	Moderate/Low	The results of chemical analysis should be presented to the water utility providers to determine suitable materials for utility pipe construction.
On site: Invasive plant species	Direct contact	Building fabrication/walls etc	Mild	High	Moderate	An ecological survey should be undertaken to identify the presence and extent of Japanese Knotweed or other invasive plant species at the site. Remediation could comprise a course of chemical treatment or excavation and removal to landfill with encasing in concrete.
Offsite: Sewage treatment works	Leaching to the groundwater followed by groundwater migration	Secondary A Aquifer underlying the site	Medium	Low	Moderate/Low	The groundwater quality arriving onsite, within the site area and migrating off site should be determined through analysis of groundwater samples collected from boreholes installed at the site. This could identify whether the groundwater at the site is being impacted from off site sources of contamination.

## 4.0 PHASE II ENVIRONMENTAL AND GEOTECHNICAL ASSESSMENT

### Scope of Works

4.1 The intrusive site investigation works were undertaken at the subject site and across the wider The Dove Way site area by BWB on 5<sup>th</sup> July 2010 and completed on 8<sup>th</sup> July 2010. The works undertaken across the wider site comprised the following activities:

- A utilities assessment at proposed borehole locations to identify the presence and location of buried services;
- The excavation of 37no trial pits (TP101 to TP137) by JCB 3CX to a maximum depth of 4.0m bgl;
- The advancement of 7no. boreholes (WS1 to WS7 inclusive) by Sherwood Drilling Ltd to a maximum depth of 3.0m below ground level (bgl) utilising a windowless sampling technique;
- The advancement of 9no. boreholes (BH1 to BH9 inclusive) by Premier Drilling Ltd to a maximum depth of 11.0m below ground level (bgl) utilising a cable percussive sampling technique;
- Installations comprising standpipes, gas taps and lockable covers in all 9no. cable percussive borehole locations;
- Standard penetration tests (SPTs) at frequent intervals in all cable percussive boreholes
- Collection of soil samples from borehole locations and logging of the soil strata encountered.

4.2 Records of the borehole logs are presented as **Appendix 2** and an exploratory hole location plan is presented as **Figure 4**. Post investigation monitoring comprised the following activities:

- Collection of groundwater samples from the installed boreholes;
- Collection of surface water samples from three positions within The Wharf Brook; and
- Four return visits (at the time of writing; with an additional 2no visits scheduled) to record depth to groundwater, gas flow and ground gas concentrations (carbon dioxide, oxygen, methane, hydrogen sulphide and carbon monoxide).

4.3 The post investigation monitoring results are presented as **Appendix 3**.

### Sampling Strategy

4.4 Three cable percussive boreholes have been positioned in each of Area A and Area B in order to triangulate the groundwater in each area and to establish general ground conditions. The window sample boreholes and trial pits have been positioned to target areas of potential contamination while also providing a good special coverage of the site.

4.5 Based on the above strategy the following justification for the position of each borehole position is provided in **Table 3** below:

**Table 3 – Borehole Location Justification**

Area	Borehole Location	Justification
A	TP109 to TP123	Provide spatial coverage.
A	BH1 to BH3	Triangulate the groundwater in Area A and provide information on the deeper ground conditions.
B	TP135 to TP137	Provide spatial coverage across areas without hard stand within Area B.
B	WS1 to WS7	Provide spatial coverage across Area B primarily where hardstand was present while also targeting the public refuse site (WS1 to WS3) the former gas works (WS4 to WS7) and the current and former ASTs (WS6).
B	BH7 to BH9	Triangulate the groundwater in Area B and provide information on the deeper ground conditions.

- 4.6 The site work was carried out in general accordance with BS5930 1999 'Code of Practice for Site Investigations' and BS10175 2001 'Code of Practice for Investigation of Potentially Contaminated Sites'.

#### **Analytical Strategy**

- 4.7 The Phase I assessment identified a number of potential sources of contamination. Not all contaminants have been targeted; rather, the contaminants that are considered to pose a greater risk to the site have been targeted for sampling. The contaminants that are considered most likely to have impacted upon the site from the sites former use as a gas works in addition to the ASTs present at the site, made ground associated with landfilling and profiling works and the vehicle repair workshop are: hydrocarbons; heavy metals; PAHs; inorganic contaminants (inc cyanide); volatile organic compounds (VOCs); and semi volatile organic compounds (SVOCs).
- 4.8 Soil samples were collected from borehole locations, placed in cool boxes and sent to a UKAS accredited laboratory for chemical analysis. The suite of analytical testing undertaken on soil samples obtained from Areas A & B comprised:
- A total of 30 samples tested for arsenic, barium, beryllium, water soluble boron, cadmium, chromium, copper, lead, mercury, nickel, selenium, vanadium, zinc, water soluble sulphate (2:1 extract), total phenols, total cyanide, free cyanide, complex cyanide, fraction of organic carbon, pH, PAH (United States Environment Protection Agency priority 16 compounds) and Total Petroleum Hydrocarbons (TPH) C6-C40 with TPH column clean up;
  - A total of 12 samples tested for TPH speciated to the UK Criteria Working Group (CWG) aliphatic and aromatic compounds;
  - A total of 2 samples tested for VOCs;
  - An asbestos screen in 6 samples; and
  - Leachate derived from soil samples was analysed from 12 samples. The suite of analytical testing undertaken comprised: arsenic, barium, beryllium, dissolved boron, cadmium, chromium, copper, lead, mercury, nickel, selenium, vanadium, zinc, sulphate, total cyanide and pH.

- 4.9 The results of the soil and soil leachate analytical testing are presented in the Certificate of Analysis report number 91025 and report number 91087 both dated 21<sup>st</sup> July 2010 as **Appendix 4**.
- 4.10 Groundwater samples were taken from 6 monitoring well locations (BH1 to BH3 and BH7 to BH9) and 3 surface water samples were taken from The Wharf Brook and sent to a UKAS accredited laboratory for chemical analysis. During sampling the boreholes were purged by the removal of three well volumes prior to the collection of the groundwater samples. The suite of analytical testing undertaken on all samples comprised:
- Arsenic, barium, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, vanadium, zinc, conductivity, soluble sulphate, sulphide, free sulphur, ammoniacal nitrogen, total phenols, total cyanide, pH, total organic carbon, PAH (US EPA priority 16 compounds) and TPH (BWB Standard Suite); and
  - TPH speciated to the UK CGW and BTEX based on TNRCC method 1006;
- 4.11 The results of the groundwater and surface water analytical testing are presented in the Certificate of Analysis report number 91589 dated 26<sup>th</sup> July 2010 as **Appendix 5**.

### **Geotechnical Strategy**

- 4.12 The principal objectives for the geotechnical investigation were to determine soil parameters for use in foundation design and establish any geotechnical constraints associated with the proposed development. In-situ soil strength testing in the form of SPTs and soil laboratory testing was undertaken to allow preliminary foundation assessment for the proposed development of the site as industrial units/residential housing.
- 4.13 Geotechnical laboratory testing was undertaken on samples collected from Area A & B with the analysis comprising:
- Particle size distribution on 9 samples;
  - Moisture content of clay on 8no samples; and
  - Atterberg Limits on 8no samples.
- 4.14 The results of the geotechnical analytical testing are presented as **Appendix 6**.

## 5.0 GROUND CONDITIONS ENCOUNTERED

### Geology

- 5.1 The ground conditions recorded typically confirmed the published geology discussed in the Phase I report. The ground conditions in Area A typically comprised made ground landfill material overlying a thin layer of alluvial clay in turn overlying Fluvioglacial Sand and Gravel. The solid geology beneath the Fluvioglacial Deposits was Mercia Mudstone. In Area B the geology typically comprised made ground directly overlying the Mercia Mudstone solid geology though Fluvioglacial deposits were noted in certain areas of Area B.
- 5.2 Borehole logs detailing the strata encountered are presented as **Appendix 2** with geological cross sections through the site presented as **Figure 5a** and **Figure 5b**.

### Area A

- 5.3 **Made Ground:** Made ground was encountered in all exploratory holes in Area A with the exception of trial pit TP117 to depths of up to 2.6m bgl at locations TP120 and BH3. The made ground typically comprised a thin layer of topsoil made ground varying from silts and clays to sand and gravels but with abundant rootlets and high organic content. Underlying the topsoil the made ground typically comprised landfilled material. The landfill material comprised a mixture of domestic and industrial wastes comprising a matrix of loose/soft sand, clay, gravel and cobbles with frequent inclusions of glass, textiles, pottery, paper, metals and plastic fragments, pottery and ash. Other less frequent items included machinery parts, shoes, bones, bitumen and tools. Gravel and cobbles typically comprised quartz, brick and concrete. The geological cross section on **Figure 5a** indicates that the landfill material has been placed directly on top on the natural soils thus raising the level of the site.
- 5.4 **Alluvium:** Alluvial deposits were encountered in all exploratory holes in area A with the exception of Trial Pit TP120 where the landfill material directly overlay Fluvioglacial deposits. Where present, the Alluvium was encountered directly underlying the landfill material typically from around 2.0m bgl; however, it was present from the surface at location TP117 where there was no made ground. The Alluvium was typically between 0.5m and 1.0m in thickness and encountered to a maximum depth of 3.4m bgl at location BH3. The Alluvium typically comprised soft to firm grey and/or brown organic clay and was often slightly sandy and gravelly; gravels comprised quartz and coal.
- 5.5 **Fluvioglacial Deposits:** Fluvioglacial deposits comprising medium dense grey and/or brown sand and rounded quartz gravel with occasional cobbles were encountered directly underlying Alluvial deposits across the site where exploratory holes extended beneath the Alluvium. The Fluvioglacial deposits were encountered at depths of between 1.9m bgl (locations TP117 and TP118) and 3.4m bgl (location BH3) and proven to a maximum depth of 10.4m bgl (at location BH1).
- 5.6 **Mercia Mudstone:** Moderately weak red brown mudstone of the Mercia Mudstone Formation was encountered at depths of between 8.4m bgl (location BH3) and 10.4m bgl (location BH1) in the three boreholes advanced across the area. The mudstone was proven to a maximum depth of 11.0m bgl at location BH1.



## Area B

- 5.7 **Made Ground:** Made ground was encountered in all exploratory holes in Area B to depths of up to 2.9m bgl at location TP135. In the northern section of Area B the made ground typically comprised sandy gravelly clay and clayey gravel sand with the gravel comprising coal, brick fragments, quartz and sandstone typically. The made ground in the northern section of Area B was proven to be between 1.6m (location WS2) and 2.7m bgl (location WS3).
- 5.8 In the southern section of Area B the made ground typically comprised slag and clinker gravel, with frequent ash with the thickness of made ground typically greater in the eastern fringes; gravelly clay made ground was also occasionally encountered. Very soft blue clay, which was considered to be Blue Billy (a waste product from gas works), was encountered locally within the granular made ground at location TP137. The majority of this made ground is likely to be associated with waste product/ spent oxides from the former gas works. A thin layer of road stone gravel and/or asphalt covered the surface across much of the southern area of Area B.
- 5.9 **Alluvium:** Alluvial deposits comprising of soft grey brown clay were only encountered in two exploratory hole location in Area B. These locations were BH9 and TP136 both situated close to The Wharf brook on the southern side. The Alluvium was encountered at depths of between 0.5m and 2.2m bgl at location BH9 and between 1.9m bgl and 3.0m bgl at location TP136. The Alluvium directly underlay the made ground.
- 5.10 **Fluvioglacial Deposits:** Fluvioglacial deposits comprising medium dense grey and/or brown sand and rounded quartz gravel with occasional cobbles were encountered directly underlying the made ground or Alluvial deposits (where present) from between 1.7m bgl (location BH7) and 3.3m bgl (location BH3). The Fluvioglacial deposits were proven to depths of up to 7.2m bgl at location BH7.
- 5.11 **Mercia Mudstone:** Moderately weak red brown mudstone of the Mercia Mudstone Formation was encountered at varying depths of between 1.5m bgl (location WS4) and 7.2m bgl (location BH7) in 5no exploratory holes advanced across the area. The mudstone was proven to a maximum depth of 9.0m bgl at location BH7.

## **Hydrogeology and Hydrology**

- 5.12 Groundwater strikes were recorded in all borehole locations (BH1 to BH3 and BH7 to BH9) advanced in both Area A and Area B. Strikes recorded ranged between 4.2m bgl (BH1) and 7.8m bgl (BH2) in Area A and between 3.3m bgl (BH9) and 6.2m bgl (BH7) in Area B. No strikes were recorded within the majority of trial pits or window sample holes advanced/excavated in Area A or Area B though damp soils were noted within granular fluvioglacial deposits in Area A. However, localised strikes in the form of seepage was recorded in several trial pits in Area A, which included TP113 (3.1m bgl), TP115 (2.0m bgl), TP121 (3.1m bgl) and TP123 (3.0m bgl). However, based on the post investigation monitoring results these seepages are not likely to represent significant groundwater strikes. The post investigation monitoring sheets are presented as **Appendix 3**.
- 5.13 The post investigation monitoring undertaken to date has recorded groundwater depths of between 4.11m bgl (76.23m AOD) at location BH2 on 15<sup>th</sup> July 2010 and 4.47m bgl (76.13m AOD) at location BH1 on both 22<sup>nd</sup> July 2010 and 5<sup>th</sup> August 2010

within Area A. In Area B the groundwater depth recorded have been between 1.76m bgl (79.41m AOD) at location BH9 on 5<sup>th</sup> August 2010 and 3.55m bgl (79.76m AOD) at location BH8 on 22<sup>nd</sup> July 2010.

- 5.14 An optical levelling survey was undertaken to infer the groundwater and surface water levels within The Wharf Brook recorded across the site in order calculate groundwater flow directions across the site. A plan indicating the groundwater flow patterns across the site is presented as **Figure 6**.
- 5.15 The plan indicates that the groundwater in Area B is flowing in an easterly direction; though the water in The Wharf Brook is indicated to be higher than in the groundwater and is therefore indicated to be flowing away from the stream; this may be due to surface water discharges in the west of the site. The flow of groundwater from Area B is therefore likely to enter The Wharf Brook close to the eastern edge of Area C or enter the River Dove approximately 1.2km further east of Area C.
- 5.16 The Wharf brook flows through Area B within an artificial concrete channel, entering into its natural flow channel through Area C to the east.
- 5.17 The groundwater flow within Area A is indicated to be flowing in a north easterly direction towards the River Tean located approximately 150m north of Area A. However, as no surface water level information has been obtained for The River Tean due the presence of the A50 dual carriageway is not known whether the groundwater in Area A and the River Tean is in continuity; though it is considered likely. The interpolated groundwater contour plot indicates that the groundwater across the site is in hydraulic continuity.

### Contamination Observations

- 5.18 **Table 4** below details the contamination observations which were made during the intrusive investigation. In addition to those listed within Table 4, ash, clinker and slag was noted in the made ground in many exploratory hole locations within Area A and within the southern section of Area B.

**Table 4 – Contamination Observations**

Area	Exploratory Hole ID	Depth	Strata	Observation/Note	Laboratory testing undertaken
A	TP109	0.2m to 3.8m bgl	Made ground, Alluvium, Fluvioglacial deposits	Localised hydrocarbon odours and staining throughout	TPH CWG @ 2.5m in Fluvioglacial deposits.
A	TP118	0.3m to 1.6m bgl	Made ground	Localised hydrocarbon odours and staining	BWB Standard Suite @ 3.0m in Fluvioglacial deposits.

Area	Exploratory Hole ID	Depth	Strata	Observation/Note	Laboratory testing undertaken
A	TP119	0.25m to 2.2m bgl and 2.7m to 3.9m bgl	Made ground and Fluvioglacial	Localised hydrocarbon odours and staining	BWB Standard and TPH CWG at 0.5m in Made ground  BWB Standard Suite @ 3.2m in Fluvioglacial deposits
A	TP120	0.3m to 2.6m bgl	Made ground	Hydrocarbon odours noted associated with bitumen	BWB Standard and TPH CWG at 0.8m in Made ground  BWB Standard Suite @ 3.0m in Fluvioglacial deposits
A	TP121	1.0m to 2.2m bgl	Made ground	Hydrocarbon odours	-
A	TP122	1.4m to 2.9m bgl	Made ground and Alluvium	Hydrocarbon odours	-
B	TP137	0.3m to 2.69m bgl	Made ground	Slight solvent like odour and localised Blue Billy (ferrous cyanide)	BWB Standard Suite, VOC and TPH CWG @ 0.7m in Made ground  BWB Standard Suite @ 2.0m in Made ground
B	WS4	0.5m to 1.5m bgl	Made ground	Slight hydrocarbon odour	BWB Standard suite in @ 0.1m Made ground  BWB standard Suite and TPH CWG in @ 1.0m in Made ground

## 6.0 CONTAMINANT DISTRIBUTION

- 6.1 The laboratory analytical soil results for the site are presented with laboratory report number 91087 dated 21<sup>st</sup> July 2010 and report number 91025 dated 21<sup>st</sup> July 2010 presented as **Appendix 4**.

### Area A

- 6.2 Many heavy metal concentrations in the made ground landfill material across Area A are present in concentrations which are considered to be greater than background concentrations. The most notable of the elevated concentrations are in samples taken from the made ground at location TP114 at 0.5m bgl and location TP119 at 0.5m bgl indicated that elevated heavy metal concentrations may be present across the Area A in the shallow made ground/topsoil. Elevated metals in these samples include arsenic (maximum of 42.9mg/kg), barium (maximum of 675mg/kg), beryllium (maximum of 5.26mg/kg), cadmium (maximum of 22.2mg/kg), chromium (maximum of 104mg/kg), copper (maximum of 468mg/kg), Lead (maximum of 379mg/kg), mercury (maximum of 1.82mg/kg), nickel (maximum of 69.9mg/kg), selenium (maximum of 9.95mg/kg) and zinc (maximum of 542mg/kg).
- 6.3 The laboratory analytical results also indicated that the made ground soils contain TPH in elevated concentrations with a maximum concentration of 13,800mg/kg total TPH (>C6-C40) at location TP120 at 0.8m bgl where bitumen and hydrocarbon odours were noted during the investigation. The results also indicate that there is a localised low level hydrocarbon impact of the underlying natural strata, most notably at location TP112 at 2.8m bgl and at location TP119 at 3.2m bgl where hydrocarbon impact to the overlying made ground was noted during the investigation.
- 6.4 PAH contamination is also indicated to be present in the made ground across the site with total PAH concentration in the range 7.61mg/kg (TP114 at 0.5m bgl) and 140mg/kg (TP120 at 0.8m bgl), with the maximum concentration found where bitumen and hydrocarbon odours were noted. PAH concentrations in the underlying natural strata were in the range <0.118mg/kg (TP113 at 3.0m bgl) and 6.55mg/kg (TP120 at 3.0m bgl).
- 6.5 No asbestos fibres have been revealed in the made ground across Area A.

### Area B

- 6.6 The laboratory analytical soil results have indicated that significant elevated complex cyanide concentrations are present in the made ground across Area B of the site, most notably in the south eastern section of Area B where the 'Blue Billy' was noted in small pockets with a maximum concentration of 22,200mg/kg at 2.0m bgl at location TP137. Only one elevated free cyanide concentration was revealed; this was at 1.0m bgl at location TP136 with a concentration of 5.12mg/kg. A number of heavy metals have also been revealed to be present in concentrations which are considered to be significantly elevated above background concentrations. Again the most notably elevated concentrations are primarily in the south eastern section of Area B, with the most significantly elevated concentrations also at 2.0m bgl at location TP137. The most notably elevated heavy metals are considered to be Arsenic (50.8mg/kg), cadmium (4.11mg/kg), chromium (82.2mg/kg), lead (325mg/kg), mercury (0.671mg/kg) and zinc (328mg/kg). Localised elevated mercury

concentrations have also been revealed in the made ground beneath the public refuse facility in the northern area of the site.

- 6.7 Elevated Total TPH concentrations (>C6-C40) have been revealed in the made ground across much of the site with concentrations in the range <10mg/kg at between 1.6m and 2.0m at location WS7 and 8,970mg/kg at location TP137 at 2.0m bgl. Elevated PAH concentrations also correlate closely with the elevated TPH concentration with total PAH concentrations in the range <10mg/kg at between 1.6m and 2.0m at location WS7 and 1,030mg/kg at location TP137 at 2.0m bgl.
- 6.8 The results for natural strata beneath the made ground at location TP135 situated in the south eastern section of Area B indicate that slight impact from total cyanide, PAH and TPH may have occurred.
- 6.9 No asbestos fibres have been revealed in the made ground across Area B.
- 6.10 The results indicate that the made ground has been impacted in the vicinity of the ASTs adjacent to the vehicle repair workshop in the south eastern section of Area B. However, the concentrations are not considered to be elevated in excess of the concentrations measured elsewhere in the south eastern section of Area B; the impact may therefore be attributable to the made ground/waste material in the area, which is likely to have been deposited by the former gas works at the site; rather than contemporary site activities.
- 6.11 A sample collected from 0.7m bgl at location TP137, where solvent like odours were noted during the investigation was analysed for volatile organic compounds. The results have revealed that benzene, toluene, ethylbenzene and xylene (BTEX) as well as other petroleum based compounds are present in elevated concentrations at this location.

### **Surface Water**

- 6.12 The laboratory results of the three samples collected from The Wharf Brook indicate elevated concentration of lead and zinc along the whole stretch of the brook. Elevated beryllium has also been revealed at the mid stream point of the brook.
- 6.13 Elevated extractable petroleum hydrocarbons have been revealed in all three samples collected from the brook. However, the TPH total of aromatic and aliphatic (>C5-C35) concentrations are all below the laboratory detection limit which indicate that the hydrocarbons reported are likely to be humic acids and other non hydrocarbon compounds.

### **Groundwater**

- 6.14 The laboratory results have revealed measurable heavy metal concentrations in the groundwater across both Area A and Area B of the site.

#### Area A

- 6.15 Within Area A an isolated sample has been revealed to contain barium above typical concentrations across the site with a concentration of 429µg/l at location BH3. Boron has also been found to be present above typical concentrations across the site in two



samples from Area A with concentrations of 1,540µg/l and 1,180µg/l at locations BH2 and BH3 respectively.

- 6.16 PAH has been revealed at an elevated concentrations of 6.83µg/l at BH1; the concentrations at the other two sample locations in Area A were below the laboratory detection limit.
- 6.17 Elevated extractable petroleum hydrocarbons have been revealed in two of three groundwater samples (BH1 and BH3) collected from Area A. However, the TPH total of aromatic and aliphatic (>C5-C35) concentrations are all below the laboratory detection limit which indicate that the hydrocarbons reported are likely to be humic acids and other non hydrocarbon compounds.

Area B

- 6.18 Total cyanide and selenium have been revealed to be present in concentrations significantly above typical concentrations across the site in Area B at location BH8 and BH9. The concentrations revealed at locations BH8 and BH9 were 1.63mg/l and 0.957mg/l for cyanide respectively and 8.05µg/l and 5.81µg/l for selenium respectively.
- 6.19 Elevated hydrocarbon (total aliphatic and aromatic >C5-C35) concentrations have been revealed in samples BH8 and BH9 of Area B with concentrations of 317µg/l and 964µg/l respectively. Elevated PAH concentrations have also been revealed in all three boreholes but most notably at locations BH8 and BH9 with concentrations of 82.8µg/l and 63.5µg/l respectively.

**Ground Gases**

- 6.20 A summary of the ground gas flow rates and concentrations recorded during the monitoring undertaken at the site (for the period of the time of writing) are indicated below in **Table 5**. The results sheets are presented as **Appendix 3**.

**Table 5 – Ground Gas Monitoring Results Summary**

Borehole Ref.	Flow* (%v/v)		Carbon Dioxide (%v/v)			Methane (%v/v)		
	Min.	Max.	Min.	Max.	Avg.	Min.	Max.	Avg.
BH1	<0.1	-0.2	3.1	7.3	5.8	<0.1	0.1	0.1
BH2	<0.1	1.3	2.2	13.0	10.0	<0.1	0.1	0.1
BH3	<0.1	0.9	12.8	17.2	14.4	<0.1	0.2	0.1
BH4	<0.1	<0.1	0.2	3.0	1.6	<0.1	<0.1	<0.1
BH5	<0.1	<0.1	0.3	0.3	0.3	<0.1	<0.1	<0.1
BH6	<0.1	0.2	0.3	0.7	0.6	<0.1	<0.1	<0.1
BH7	<0.1	0.3	0.9	3.1	2.1	<0.1	0.1	0.1

	Flow* (%v/v)		Carbon Dioxide (%v/v)			Methane (%v/v)		
BH8	<0.1	0.4	<0.1	0.8	0.4	<0.1	<0.1	<0.1
BH9	<0.1	<0.1	1.0	2.7	2.1	<0.1	0.1	0.1
*Atmospheric pressure ranged between 988mb and 1007mb during the monitoring period.								

6.21 All carbon monoxide and hydrogen sulphide flow concentrations have been revealed to be below the detection limit of the equipment used.

## 7.0 GENERIC QUANTITATIVE RISK ASSESSMENT

### Human Health Tier 1 Screening

- 7.1 Soil Contaminant data have been compared against Generic Site Assessment Criteria (GSAC) developed by BWB using the CLEA model 1.04 and the updated CLEA framework (2009) for assessing risk from soil contamination to human health.
- 7.2 The GSACs have been developed with the following assumptions which have been changed from the CLEA default parameter set.
- 7.3 Soil type is a sandy loam with an organic matter content of 1%. This is considered to be more representative of shallow made ground found on most Brownfield sites than the CLEA default of 6% organic matter. Building type for commercial developments assumed to be a post 1970s office which is representative of new commercial buildings.
- 7.4 Further details of the derivation of GSACs are presented in **Appendix 7**.
- 7.5 Area A of the site is anticipated to be developed for commercial end use and therefore the key receptor is considered to be an adult female worker and GSACs for a commercial industrial end use have been adopted.
- 7.6 Area B of the site is currently anticipated to be developed for residential end use therefore the key receptor is considered to be a female child in the first six years of life and GSACs for residential with plant uptake have been adopted.
- 7.7 The potential human health exposure pathways for soil contamination to impact residential and commercial human receptors are presented in **Table 5** and **Table 6** respectively.

**Table 5 - Residential Exposure Pathways**

Source	Shallow Soils			Deep Soils
	Residential housing with private gardens	Residential housing with communal landscaped areas	Residential housing with hardstanding areas	Residential housing
Ingestion of Soil	✓	✓	✗	✗
Ingestion of site derived household dust	✓	✓	✗	✗
Ingestion of contaminated vegetables	✓	✗	✗	✗
Ingestion of soil attached to vegetables	✓	✗	✗	✗
Dermal contact with Soil	✓	✓	✗	✗
Dermal contact with	✓	✓	✗	✗

Source	Shallow Soils			Deep Soils
site derived household dust				
Inhalation of fugitive soil dust	✓	✓	✗	✗
Inhalation of fugitive site derived household dust	✓	✓	✗	✗
Inhalation of vapours outside	✓	✓	✓	✓
Inhalation of vapours inside	✓	✓	✓	✓

**Table 6 - Commercial Exposure Pathways**

Source	Shallow Soils		Deep Soils
Pathway	Commercial / Industrial with managed landscaped areas	Commercial / Industrial with Hardstanding areas	Commercial / Industrial
Ingestion of Soil	✓	✗	✗
Ingestion of site derived household dust	✓	✗	✗
Ingestion of contaminated vegetables	✗	✗	✗
Ingestion of soil attached to vegetables	✗	✗	✗
Dermal contact with Soil	✓	✗	✗
Dermal contact with site derived household dust	✓	✗	✗
Inhalation of fugitive soil dust	✓	✗	✗
Inhalation of fugitive site derived household dust	✓	✗	✗
Inhalation of vapours outside	✓	✓	✓
Inhalation of vapours inside	✓	✓	✓

7.8 CLAIRE report “Guidance on Comparing Soil Contamination Data with a Critical Concentration” sets out a structured approach for the statistical assessment of contaminant data with respect to risks to human health. A flow chart showing the approach is presented as **Appendix 8**.

7.9 The CLEA assessment is made in four stages:

- Stage 1: The site is split into what are known as Averaging Areas, these are those sections of the site as determined by the assessor as being of a similar nature, this can be defined by strata, contaminant impact, location, development zones, etc.
- Stage 2: The dataset is reviewed using graphical, visual and statistical tools whereby all the samples (per contaminant) are combined to establish whether or not the highest values recorded are representative or not of the Averaging Area as a whole. This is known as the outlier Test. A sample that is considered as representative of the whole is referred to as an 'inlier' and one which is considered unrepresentative as an 'outlier'.
- Stage 3: The samples are assessed using graphical, visual and statistical tools to determine whether the dataset is normally distributed. A statistical calculation is then used to determine the upper confidence level (UCL) of the mean to determine whether or not the Averaging Area, as a whole meets the critical concentration. The UCL value is considered against the appropriate generic or site specific screening value as to whether or not a risk exists.
- Stage 4: The outliers in Stage 2 are compared directly against the critical concentration. Thus indicating whether those removed samples represent an Anomalous Zone (or hotspot).

7.10 The statistical assessment for the site has been undertaken based on separate averaging areas for Area A and Area B which have different proposed end uses. The statistical assessment for each area has also been separated into natural soil and made ground averaging areas. The statistical spreadsheets for the assessment are presented as **Appendix 8**.

#### **Soils (and waters if VOCs present)**

##### Area A

7.11 The laboratory analytical soil results for soil samples analysed from Area A of the site have been compared directly against the GSAC for a commercial development. The results have indicated that all soil concentrations are below the GSAC in both the made ground and natural soils and are therefore not considered a risk to human health based on the proposed industrial/commercial development.

7.12 Elevated hydrocarbon concentrations with a maximum concentration of 2,370mg/kg (0.5m at location TP114) have been revealed in the soils across Area A where no speciation has been undertaken and are therefore not directly comparable to the GSAC. However, the greatest hydrocarbon concentration has been revealed at 0.8m bgl at location TP120 with a concentration of 13,800mg/kg where speciation of hydrocarbon banding has been undertaken. As this sample has been revealed to be below the GSAC for a commercial end use and that all other total TPH (>C6-C40) concentrations are significantly below 13,800mg/kg and are assumed to be of a similar nature, the hydrocarbon contamination is not considered to be a significant risk to human receptors associated with the proposed development.

##### Area B

7.13 The analytical soil results for soil samples analysed from Area B of the site have been compared directly against the GSAC for a residential development. This has indicated that there are a number of heavy metal (arsenic, chromium and lead),

inorganic (complex cyanide) and TPH exceedances (aromatic C16-C21 and C21-C35) though most notably there are many PAH (naphthalene, acenaphthylene, phenanthrene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene and dibenzo(a,h)anthracene) exceedances across the site.

- 7.14 **Arsenic:** Two samples have been identified to contain arsenic at concentrations that exceed the GSAC. These samples were both collected from the made ground in the southern section of Area B at location TP137 (2.0m bgl) and WS7 (1.6m bgl). The concentrations recorded were 50.8mg/kg and 44.2mg/kg respectively which exceed the GSAC of 32.4mg/kg. Statistical assessment indicates that these two samples are considered to be localised hotspots of contamination.
- 7.15 **Chromium:** Three samples collected from the southern section of Area B have been revealed to contain chromium in concentrations which exceed the GSAC for a residential end use. Two samples were collected from the made ground with one from the Fluvioglacial deposits at 3.1m bgl. Due to the depth of the sample in the Fluvioglacial deposits, the only preferential pathway to impact directly on human health being through dermal contact or inhalation, the concentrations in the natural soils are not considered a significant risk to human health although they do indicate that leaching from the made ground is impacting deeper soils.
- 7.16 Statistical analysis has been applied to the chromium concentrations in the made ground across Area B which has indicated that the sample taken from location TP137 at 2.0m with a concentration of 82.2mg/kg is considered to be an outlier. When this sample is removed from the statistical analysis all other samples are considered to be part of the sample population.
- 7.17 **Lead:** There is one sample which contains lead at a concentration which exceeds the GSAC of 317mg/kg. The sample was taken from the made ground at location TP137 at 2.0m with a concentration of 325mg/kg. Statistical analysis has been applied to the lead concentrations in the made ground across Area B which has indicated that this concentration is an outlier. Due to the depth of this sample the only preferential pathway to impact directly on human health being through dermal contact or inhalation, the concentrations in the natural soils are not considered a significant risk to human health.
- 7.18 **Complex Cyanide:** There are two samples which contain complex cyanide at concentrations which exceeds the GSAC of 213mg/kg. These samples were collected from the made ground in the south eastern section of Area B at positions TP136 (at 1.0m bgl) and TP137 (at 2.0m bgl) with concentrations of 262mg/kg and 22,200mg/kg. Statistical analysis has been applied to the complex cyanide concentrations in the made ground across Area B which has indicated that the maximum concentration is an outlier. The other exceedance revealed is indicated to be part of the sample population and with the upper confidence limit below the critical concentration.
- 7.19 **TPH:** Three samples have been revealed to contain TPH aromatic C16-C21 and one sample has been revealed to contain TPH aromatic C21-C35 at concentrations that exceed the GSAC from a residential development of 209mg/kg and 806mg/kg respectively. All samples were taken from the made ground in the southern section of Area B. The aromatic C16-C21 sample exceedances were collected from location



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TP135 at 0.1m, location WS4 at 1.0m and location WS6 at 0.3m with concentrations of 227mg/kg, 345mg/kg and 663mg/kg respectively. The aromatic C21-C35 exceedance was collected at location WS6 at 0.3m with a concentration of 1,070mg/kg.

- 7.20 Statistical analysis has been applied to the sample concentrations for these contaminants which indicated that the concentrations are at an unacceptable level in the made ground across the whole of Area B against a residential GSAC.
- 7.21 **PAH:** Numerous PAH exceedances for a number of PAH contaminants have been identified in the made ground across Area B, a summary of which is present in **Table 7** below.
- 7.22 Statistical analysis has been applied to each individual PAH contaminant. The statistical analysis has indicated that for the majority of PAH contaminants, even when outliers are removed that the PAH contaminant concentrations are present in unacceptable concentrations. The PAH concentrations in the made ground are therefore considered a significant risk to human receptors associated with the proposed residential development.

**Table 7 – Summary of PAH GSAC Exceedances**

Location	Depth	Naphthalene	Acenaphthylene	Phenanthrene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthracene
GSAC		1.54	0.133	31.7	11.1	104	4.50	60.0	7.81	8.51	0.826	7.41	0.847
TP135	0.9	0.168	<i>0.307</i>	1.14	2.95	2.49	1.49	1.29	2.01	0.768	<i>1.57</i>	0.979	0.276
TP136	0.5	1.21	<i>3.49</i>	23.7	<i>40.3</i>	32.7	<i>20.1</i>	16.7	<i>23.4</i>	<i>8.65</i>	<i>17</i>	<i>9.36</i>	<i>3.06</i>
TP136	1.0	<i>2.67</i>	<i>3.35</i>	7.63	<i>17.5</i>	14.8	<i>11.1</i>	10.4	<i>21.3</i>	8.09	<i>9.86</i>	<i>9.9</i>	<i>2.74</i>
TP137	0.7	0.592	<i>0.608</i>	2.32	5.31	5.11	2.5	2.14	3.49	1.28	<i>2.48</i>	1.7	0.44
TP137	2.0	<i>44.7</i>	<i>6.42</i>	<i>193</i>	<i>242</i>	<i>178</i>	<i>65.5</i>	<i>63.2</i>	<i>71.2</i>	<i>27.1</i>	<i>31.9</i>	<i>29.5</i>	<i>7.18</i>
WS2	0.1	0.0618	0.129	1.04	3.05	2.57	1.72	1.32	2.46	0.833	<i>1.86</i>	1.1	0.298
WS3	0.1	0.14	<i>0.694</i>	7.48	<i>11.5</i>	12.5	4.16	3.76	<i>12.1</i>	4.04	<i>11.1</i>	7.26	<i>1.7</i>
WS3	1.2	0.261	<i>0.61</i>	2.96	<i>13.3</i>	10.7	<i>6.32</i>	5.84	<i>8.74</i>	3.43	<i>7.09</i>	4.31	<i>1.21</i>
WS4	0.1	0.657	<i>1.01</i>	5.46	<i>16.8</i>	14.4	<i>7.28</i>	6.66	<i>11.2</i>	4.34	<i>8.6</i>	6.24	<i>1.55</i>
WS4	1.0	0.412	<i>1.43</i>	11	<i>23.3</i>	18	<i>12.4</i>	8.76	<i>11.1</i>	3.99	<i>8.62</i>	3.47	<i>1.31</i>
WS5	0.1	1.35	<i>2.86</i>	10.5	<i>28.9</i>	25.4	<i>17.7</i>	14.6	<i>24.9</i>	9	<i>19</i>	<i>12.9</i>	<i>3.57</i>
WS6	0.3	<i>3.16</i>	<i>1.45</i>	<i>106</i>	<i>178</i>	<i>132</i>	<i>64.1</i>	<i>62.2</i>	<i>84.6</i>	<i>29.3</i>	<i>52.1</i>	<i>36.6</i>	<i>8.9</i>

All Concentrations are in mg/kg  
*Exceedance in red and italic*

### Controlled Waters

7.23 The potential pathways associated with controlled waters which are considered as part of the generic groundwater assessment are displayed in **Table 8**.

**Table 8 – Controlled Waters Exposure Pathways**

Controlled Waters Exposure Pathway	Receptor
Leaching of soil contamination into recharge infiltration	✓

Controlled Waters Exposure Pathway	Receptor
Vertical migration of impacted pore water through unsaturated zone into underlying aquifer	✓
Horizontal migration of groundwater through aquifer to off site receptors	✓

7.24 The site is situated on strata classified as a Secondary A Aquifer. Therefore the Environmental Quality Standards (EQS) for freshwater have been adopted as the screening criteria for the assessment of the soil leachate and groundwater results. Where no relevant values exist the UK Drinking Water Standards (UK DWS) or World Health Organisation screening values have been used. The groundwater and surface water features are considered likely to flow into the River Dove located approximately 1.0km east of the site. The River Dove is indicated on the Environment Agency website to have a water hardness of 231mg/l CaCO<sub>3</sub>, the contaminant guideline concentration in the 200mg/l to 250mg/l CaCO<sub>3</sub> has been adopted where a range of water hardness dependant concentrations are provided.

Groundwater

7.25 **Area A:** Within Area A one groundwater sample has been revealed to contain sulphate and one sample has been revealed to contain total PAH at concentrations that exceed the adopted guideline concentrations.

7.26 The sulphate exceedance was collected from location BH2 with a concentration of 413mg/kg which exceeds the guideline concentration of 400mg/kg. Given the sulphate concentrations in the groundwater at other locations across the site (230mg/l at BH1 and 51.3mg/l at BH3) and the marginal exceedance, sulphate is not considered a significant risk to controlled waters.

7.27 The PAH concentration at location BH1 is 6.83µg/l which significantly exceeds the guideline concentration of 0.1µg/l. The concentrations of total PAH in the other two boreholes at the site were both below the laboratory detection limit of 0.1µg/l.

7.28 **Area B:** Within Area B one groundwater sample has been identified to contain sulphate, two samples have been revealed to contain cyanide, two samples have been revealed to contain hydrocarbons and all three samples have been revealed to contain total PAH at concentrations that exceed the guideline concentrations.

7.29 The sulphate exceedance was collected from location BH8 with a concentration of 412mg/kg which exceeds the guideline concentration of 400mg/kg. Given the sulphate concentrations in the groundwater at other locations across the site (85.4mg/l at BH7 and 366mg/l at BH9) and the marginal exceedance, sulphate is not considered a significant risk to controlled waters.

7.30 The total cyanide concentrations in the groundwater in Area B have been revealed to be 1.63mg/l and 0.957mg/l at locations BH8 and BH9 respectively which significantly exceed the guideline concentration of 0.05mg/l. Locations BH8 and BH9 are both located in the south eastern area of the site in close proximity to where significantly elevated soil concentrations in the made ground have been revealed.

- 7.31 The TPH concentrations (total aliphatic and aromatic >C6-C35) have been shown to be significantly in excess of the guideline concentration of 10µg/l at both borehole locations BH8 and BH9 situated in the south eastern area of the site with concentrations of 317µg/l and 964µg/l respectively. Elevated hydrocarbon concentrations have also been revealed in the shallow made ground in this area indicating the hydrocarbon contamination in the made ground may be impacting on the groundwater quality in the underlying Secondary A Aquifer.
- 7.32 All three borehole locations in Area B (locations BH7, BH8 and BH9) have been identified to contain PAH in excess of the guideline concentration of 0.1µg/l with concentrations of 0.63µg/l, 82.8µg/l and 63.5µg/l respectively. The most significantly elevated concentrations are at locations BH8 and BH9 location in the south eastern section of the Area B where other significantly elevated contaminant concentrations (TPH and cyanide) have also been revealed.
- 7.33 Laboratory analysis of groundwater samples of an off site borehole (BH5) located within Area C has shown elevated concentrations of PAH and TPH. Based on the inferred groundwater flow pattern at the site the contamination identified in the south eastern section of Area B may be impacting on the groundwater quality of the Secondary A Aquifer underlying Area C.

#### Surface Water

- 7.34 All three surface water samples collected from The Wharf Brook have been revealed to be impacted with low levels of PAH contamination in concentrations that exceed the guideline concentrations. It is therefore possible that the contamination identified in the soils and groundwater at the site is impacting on the water quality within The Wharf Brook.

#### Soils to controlled waters

- 7.35 **Area A:** The soil leachate analytical results indicate that one sample contains sulphate and two samples contain copper in concentrations that exceed the groundwater assessment criteria. The copper exceedances were found at locations TP112 at 2.8m bgl and TP121 at 0.9m bgl with concentrations of 11.2µg/l and 17.2µg/l which exceed the assessment criteria of 10µg/l. The sulphate exceedance was identified at location TP119 with a concentration of 1,080mg/l which exceeds the assessment criteria of 400mg/l. Given the generally marginal exceedances and the copper and sulphate concentration identified in the groundwater these concentrations are not considered a significant risk to controlled waters.
- 7.36 An exceedance of PAH has been identified in the groundwater in Area A in the north western area of the site. Although the soil PAH concentrations in the north western section of the site were below the GSAC for human health, a significantly elevated concentration have been revealed to be present with a maximum in the north western section of Area A of 10,400µg/kg 0.2m in the made ground at location TP116. The soil contamination may therefore be contributing to poor groundwater quality of the underlying Secondary A Aquifer within the Fluvioglacial deposits.
- 7.37 **Area B:** Elevated cyanide concentrations in the soil leachate have been revealed in all samples in Area B of the site which exceed the groundwater assessment criteria. Concentrations were in the range 0.09mg/l and 2.36mg/l compared to an assessment criteria concentration of 0.05mg/l. Significantly elevated cyanide concentration have

been revealed in both the shallow made ground soils and in the groundwater in the south eastern section of Area B where significant volumes of slag, clinker and other waste residues have been noted which are likely to have been wastes produced by the former gas works at the site. The cyanide in the shallow soils is therefore likely to be leaching in to the underlying Secondary A Aquifer.

- 7.38 Significantly elevated TPH and PAH concentration have been shown in both the soils and groundwater across Area B most notably in the southern area of Area B where significant ash and clinker was noted. It is therefore considered plausible that the contaminants in the shallow soils are leaching into the underlying Secondary A Aquifer.

### **Ground Gas**

- 7.39 CIRIA Report 665 “Assessing Risks Posed by Hazardous ground gases to Buildings” presents current best practice on the assessment of ground gases for commercial and residential buildings (with the exception of low rise traditional housing). The report presents a risk based approach based on gas screening levels which depend on both the concentration and emission rate of gas from the ground. Gas screening levels are calculated as follows:

- 7.40 Gas screening value: (l/hr) =

$$\frac{\text{gas concentration (\%)} \times \text{measured borehole flow rate (l/h)}}{100}$$

- 7.41 The maximum concentrations and flow rates recorded during the monitoring undertaken to date have been used to assess the potential ground gas risk at the site:

#### Area A

- Gas Flow: 1.3l/hr (measured at location BH2 on 5<sup>th</sup> August 2010);
- Carbon Dioxide: 17.2% v/v (measured at location BH3 on 5<sup>th</sup> August 2010); and
- Methane: 0.2% v/v (measured at location BH3 on 15<sup>th</sup> July 2010).

#### Area B

- Gas Flow: 0.4l/hr (measured at location BH8 on 15<sup>th</sup> July 2010);
- Carbon Dioxide: 3.1% v/v (measured at location BH7 on 15<sup>th</sup> July 2010); and
- Methane: None detected.

- 7.42 The gas screening value is therefore 0.224l/hr for carbon dioxide and 0.003l/hr for methane in Area A and 0.012l/hr for carbon dioxide and <0.0004l/hr for methane in Area B:

#### Area A

- 7.43 These gas screening values correspond to a Characteristic Situation 2 – low risk. This is indicative of typical made ground and basic gas protective measure would be

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a likely requirement if the site was redeveloped or extension constructed. Typical measures would comprise:

- Reinforced concrete cast in situ floor slab (suspended, non-suspended or raft) with at least 2000g damp proof membrane.
- Beam and block or pre cast concrete slab and minimum 2000g damp proof membrane/reinforced gas membrane.
- Possibly underfloor venting or pressurisation in combination with the above depending on the proposed use.

Area B

- 7.44 The gas screening values for Area B correspond to a Characteristic Situation 1 – very low risk. This is indicative of typical made ground and no gas protective measures are likely to be a requirement if the site was redeveloped.
- 7.45 Further gas monitoring is being completed and results of the assessment will be reappraised on completion and shall be reported separately at a later date.

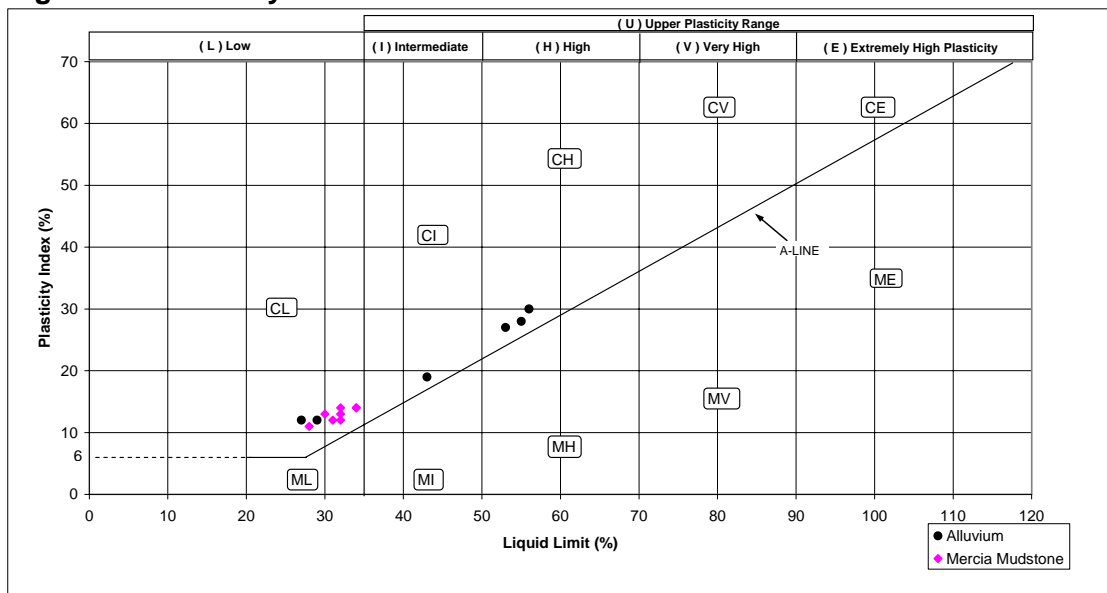


## 8.0 GEOTECHNICAL ASSESSMENT

### Introduction

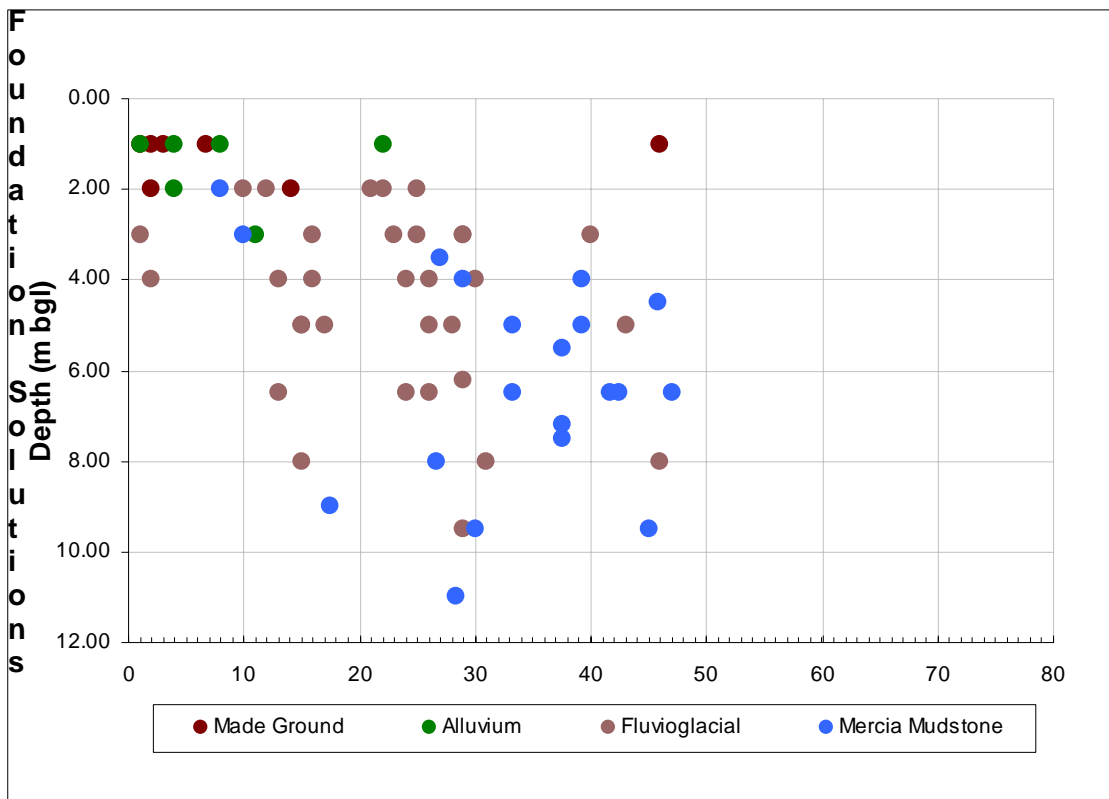
- 8.1 The anticipated site development comprises the construction of residential properties in Area B of the site with associated infrastructure and gardens. Area A of the site is currently anticipated to be developed for a commercial/ light industrial end use with associated infrastructure and parking. The area is also expected to include the relocation of the public waste recycling centre.
- 8.2 A detailed description of the geology encountered at the site is provided in **Section 5.0**
- 8.3 A hand shear vane was utilised within trial pits to determine the shear strength of cohesive materials encountered. The shear strength of the cohesive Alluvium strata between 2.25m bgl and 2.9m bgl range between 18kPa and 70kPa in area A; no hand shear vane testing was undertaken in Area B due to the nature of the strata encountered. The results from the hand shear vane are indicated on the borehole logs presented as **Appendix 2**.
- 8.4 Selected soil samples were scheduled for geotechnical laboratory analysis, the results of which are presented as **Appendix 6**. Geotechnical testing for Atterberg Limits and moisture content indicates that the soils comprise low to high plasticity Alluvial clays and low plasticity Mercia Mudstone clays as indicated in **Figure 7** below.

**Figure 7 – Plasticity Chart**



- 8.5 Standard penetration test (SPT) 'N' values within the Alluvium were recorded between 1 blow and 22 blows, between 2 blows and 47 blows in the made ground, between 1 blow and 46 blows within the Fluvioglacial deposits and between 8 blows and refusal (>50 blows) within the Mercia Mudstone. SPT results are indicated on the borehole logs presented as **Appendix 2** and a plot of SPT 'N' Value v depth is presented as **Figure 8**.

**Figure 8 – SPT ‘N’ Values Vs Depth**



**Foundation Solutions**

Area A

8.6 Based on the ground conditions encountered at the site and the anticipated commercial/industrial end uses (assumed to be steel framed structures with pad foundations transferring the structure load to the underlying geology) the expected maximum loads within 25mm settlement are presented within **Table 9** below. Neither the made ground nor the Alluvium are considered suitable founding strata due to the inconsistency of the soil strength and variable of the strata thickness across the site.

**Table 9 – Area A Expected Maximum Column Loads**

Pad size	Depth	Geology	Max Load (kN)
1.5m x 1.5m	2.0m to 3.0m bgl	Medium dense sand and gravels (Fluvioglacial Deposits)	550
2.0m x 2.0m	2.0m to 3.0m bgl	Medium dense sand and gravels (Fluvioglacial Deposits)	750
2.5m x 2.5m	2.0m to 3.0m bgl	Medium dense sand and gravels (Fluvioglacial Deposits)	930

### Area B

- 8.7 Area B is anticipated to be developed for a residential end use which is expected to comprise lightly loaded dwellings of up to three storeys with loads transferred to traditional 0.6m wide strip footings. The shallow soils at the site currently comprise made ground. The strength of the made ground in its current state is likely to be very variable and is therefore not considered a suitable founding medium without improvement. Similarly the Alluvial clay is also too weak to provide a suitable founding medium. Transferring the footing loads to the Fluvioglacial sand and gravel or Mercia Mudstone is expected to yield safe bearing capacities in excess of 120kN/m and within tolerable settlement. However, depending on the proposed site levels and due to the depth the foundations would have to be excavated based on the present elevations, ground improvement or mini piles transferring loads to the Mercia Mudstone may be considered a more suitable and cost effective foundation solution.

### **Roads and Pavements**

- 8.8 The made ground surface in its present condition is likely to be variable. Subject to proof rolling, a CBR in the range of between 2% and 5% should be assumed for the made ground. Appropriate crushing and grading of suitable demolition arisings prior to development may also yield a competent subgrade material for use beneath areas of hard standing; where such material is deployed, higher CBR values may be expected.

### **Drainage**

- 8.9 The permeability of the Fluvioglacial deposits at the site is likely to be high with good drainage characteristics. Soakaways may be a suitable drainage system at the site and soakaway tests should be undertaken to confirm their suitability. Consideration issues should also be considered as recommended elsewhere in this report.

### **Excavations**

- 8.10 The dewatering of excavations is unlikely to be required if not extended below approximately 3.0m bgl. However, in the event excavations are left open or extended beyond 3.0m they may collect water through rainfall or surface run off, which may then need to be dealt with and the faces of the excavations checked and re-prepared.
- 8.11 It is recommended that no excavations should be entered into below 1.2m without full support and a full risk assessment should be completed prior to entering any excavation.

### **Foundations within the Influence of Trees**

- 8.12 Based on the results of the Atterberg Limits testing, the modified plasticity index of the material has been calculated. The calculated modified plasticity indexes indicated that the soils within the Alluvium have a low to high volume change potential. Due consideration should be given to the depth of foundations when considering the nature of the founding strata and any likely planting regimes in accordance with NHBC guidance 'Chapter 4.2 Building near trees'.

## Chemical Attack on Buried Concrete

- 8.13 The sulphate concentrations indicate that generally Design Sulphate Class DS2 conditions are present within the soil deposits at the site, and Design Sulphate Class DS1 conditions are present within the groundwater at the site in both Area A and Area B as indicated in **Table 10** below.

**Table 10 – Design Sulphate Class Conditions**

Area	Sulphate Concentrations (mg/l)			pH		Design Sulphate Class
	Min	Max	Mean (of the highest two results)	Min	Max	
Area A – Soil	10.9	1,490	1,395	6.59	8.15	DS-2 (AC-1s)
Area A – Groundwater	51.3	413	321.5	7.67	7.85	DS-1 (AC-1s)
Area B – Soil	14.1	1,440	1,420	3.71	8.7	DS-2 (AC-1s)
Area B – Groundwater	85.4	412	389	7.65	8.09	DS-1 (AC-1s)

- 8.14 The recommendations of BRE Special Digest 1, 'Concrete in Aggressive Ground;' should be taken into account when considering the most appropriate type of concrete to be used for any future development at the site in order to resist chemical attack from water soluble sulphate present in the soil and groundwater.

## Earthworks

- 8.15 The suitability of earthworks materials has been assessed on the basis of the testing carried out as part of this investigation. The materials encountered on site may vary from those analysed; furthermore, inclement weather or winter working may result in materials being unsuitable for incorporation within the works without modification by lime, cement or other methods. In particular, cohesive soils are very susceptible to 'wet weathering working' and we strongly recommend that consideration should be given to lime and/or cement stabilisation of these materials if the earthworks are undertaken during inclement weather or the winter period.
- 8.16 Stockpiled materials often deteriorate due to water infiltration and they may become unsuitable for incorporation in the works; further testing and re-assessment should be made prior to the finalisation and implementation of the earthworks design.

## 9.0 REVISED CONCEPTUAL SITE MODEL

### Sources

9.1 Based on the Phase II Environmental Assessment there are a number of sources of contamination that have been identified, including:

#### Area A

- PAH contamination in the shallow soils and groundwater in the north western section of Area A;
- Slightly elevated sulphate concentration in the soils;
- Invasive Plant species; and
- Elevated carbon dioxide concentrations across Area A.

#### Area B

- Arsenic, chromium and cyanide contamination in the shallow made ground soils in the south eastern section of Area B;
- Elevated TPH and PAH contaminant concentration in the made ground across all of Area B;
- Invasive plant species;
- Elevated cyanide, TPH and PAH contaminant concentration in the groundwater across the southern section of Area B and to a lesser extent, PAH contamination also in the northern section of Area B; and
- Slightly elevated sulphate concentration in the soils.

### Pathways

9.2 A pathway is defined as a mechanism or route by which a contaminant comes into contact with, or otherwise affects a receptor. Pathways by which the identified receptors may be impacted upon in the context of the proposed development are identified as follows:

- Ingestion;
- Skin contact;
- Inhalation;
- Direct contact;
- Direct contact by buried structures;
- Leaching of soluble contamination into groundwater;
- Saturated zone flow through Secondary A Aquifer; and
- Accumulation of ground gas within confined spaces leading to asphyxiation.

### Receptors

9.3 Receptors are defined as people, living organisms, ecological systems, controlled waters, atmosphere, structures and utilities that could be adversely affected by contaminant(s). The identified receptors associated with the proposed site development comprise:

#### Human Health

- Site occupiers in Area B;

- Site end users in Area A and
- Ground workers.

#### Controlled Waters

- Secondary A Aquifer underlying the site;
- Secondary A Aquifer underlying the surrounding area;
- The River Tean; and
- The Wharf Brook.

#### Construction Materials

- Buried concrete;
- Building structures and walls etc; and
- Buried service pipes.

#### Ecological Receptors

- Flora; and
- Fauna.

### **Summary of Significant Pollutant Linkages and Mitigation Measures**

- 9.4 All proposed mitigation/ remediation measures proposed should be agreed with various stakeholders prior to implementation (e.g. local authority, NHBC, Environment Agency, statutory undertakers where relevant) and fully developed a part of a Remediation Strategy and Implementation Plan.

#### Ground Gases to Buildings/Human Health (Area A)

- 9.5 Slightly elevated carbon dioxide flow concentrations have been recorded in Area A which are likely to be associated with the degradation of organic materials within the landfill material of the made ground.
- 9.6 To mitigate against the gas concentrations recorded basic gas protection measures should be installed as part of the proposed development.

#### PAH Soil Contamination to Controlled Waters (Area A)

- 9.7 Elevated PAH concentrations have been revealed in the north western section of Area A in both the shallow made ground and the groundwater. Although the concentrations recorded are not considered a significant risk to human health there appears to be a pollutant linkage between the shallow soils and controlled waters through leaching of the contamination through the soil profile.
- 9.8 It is recommended that a detailed quantitative risk assessment (DQRA) is undertaken to quantify the risk between the soils, PAH contamination, and controlled waters which comprise the underlying Secondary A Aquifer and the River Tean.

#### Soil Contamination to Human Health (Area B)

- 9.9 A number of contaminants have been revealed in the made ground in Area B most notably in the south eastern area of the site. The contaminants which have been



assessed to pose a significant risk to human health include complex cyanide, arsenic, chromium, TPH and PAH.

- 9.10 To mitigate the risk of human receptors being exposed to the contamination identified it is recommended that clean imported topsoil is placed in all garden or landscape areas and separated from the underlying made ground by a membrane or hard to dig layer. The thickness of the placed materials should be agreed with the regulatory authorities.

Soil Contamination Vapour to Human Health (Area B)

- 9.11 The preferential pathway for a number of the hydrocarbon (including PAH) contaminants identified in the made ground to migrate and impact human health is through inhalation of contaminant vapours indoors.
- 9.12 To mitigate this potentially significant pathway a vapour proof membrane should be installed as part of the proposed development which would sever the potential for vapour migration.

Soil Contamination to Controlled Waters (Area B)

- 9.13 Shallow soil contamination in the made ground is likely to be impact on the groundwater quality at the site through leaching of soil contaminants which include TPH, PAH and complex cyanide.
- 9.14 It is recommended that a DQRA is undertaken in order to assess the risk to controlled waters comprising the underlying Secondary A Aquifer and The Wharf Brook from the soil contamination identified and to establish remedial target concentrations (if required). If required, remediation may comprise excavation and removal or in-situ/ex-situ remediation by a specialist remediation contractor. However, based on the geotechnical constraints for foundation design due to the variable nature of the made ground, the made ground may require removal or treatment in any case.

**Table 11 – Revised Conceptual Site Model**

Source	Pathway	Receptor	Consequence	Probability	Risk	Mitigation
<b>Area A:</b> PAH Contamination in the shallow soils	Leaching followed by groundwater migration	Underlying Secondary A Aquifer	Medium	Likely	Moderate	DQRA required to assess the magnitude of the contamination and to establish remedial target concentrations (if required).
		The River Tean	Medium	Low	Moderate/Low	
	Direct contact	Water supply pipes	Mild	Likely	Moderate/Low	Provide soil contamination results to the water service providers for their recommendations.
<b>Area A:</b> Slightly elevated carbon dioxide flow concentrations	Accumulation of ground gases in confined spaces leading to asphyxiation	Site end Users	Mild	Low	Low	Install basic gas protection measures as part of the proposed development.
<b>Area A:</b> Slightly elevated sulphate concentrations	Direct contact	Buried concrete structures	Mild	Likely	Moderate/Low	Follow the recommendations of BRE Special Digest 1, 'Concrete in Aggressive Ground;' when considering the most appropriate type of concrete to be used.
<b>Area A &amp; B:</b> Invasive Plant Species	Direct contact	Building structures and walls etc	Mild	High	Moderate	An ecological survey should be undertaken to identify the presence and extent of Japanese Knotweed or other invasive plant species at the site.  Remediation could comprise a course of chemical treatment or excavation and removal to landfill with encasing in concrete.

Source	Pathway	Receptor	Consequence	Probability	Risk	Mitigation
<b>Area B:</b> Arsenic and chromium concentrations in the south western section of the site.	Ingestion and/ or inhalation of contaminated soil particulates	Site occupiers	Medium	Likely	Moderate	It is recommended that a clean growing medium is imported to site to break the pollutant linkage. A membrane or hard to dig layer is also recommended beneath any imported topsoil. The thickness should be agreed with the regulatory authorities.
		Ground workers	Mild	Likely	Moderate/ Low	
<b>Area B:</b> Elevated complex cyanide concentrations in the soils in the south western section of the site	Ingestion and/ or inhalation of contaminated soil particulates	Site occupiers	Medium	Likely	Moderate	It is recommended that a clean growing medium is imported to site to break the pollutant linkage. A membrane or hard to dig layer is also recommended beneath any imported topsoil. The thickness should be agreed with the regulatory authorities.
		Ground workers	Mild	Likely	Moderate/ Low	
	Leaching to the groundwater followed by groundwater migration	The underlying Secondary A Aquifer	Medium	High	High	DQRA required to assess the magnitude of the contamination and to establish remedial target concentrations (if required).
		The underlying Secondary A Aquifer underlying adjacent sites	Medium	Likely	Moderate	

Source	Pathway	Receptor	Consequence	Probability	Risk	Mitigation
		The Wharf Brook	Medium	Low	Moderate/Low	
<b>Area B:</b> Elevated PAH and TPH concentrations in the made ground across the site	Ingestion and/ or inhalation of contaminated soil particulates	Site occupiers	Medium	High	High	It is recommended that a clean growing medium is imported to site to break the pollutant linkage. A membrane or hard to dig layer is also recommended beneath any imported topsoil. The thickness should be agreed with the regulatory authorities.
		Ground workers	Mild	Likely	Moderate/Low	Guidance given in 'HSG 66 Protection of Workers and the General Public During Redevelopment of Contaminated Land' should be followed during ground works for the development.
	Inhalation of vapours (indoors)	Site occupiers	Medium	Likely	Moderate	Vapour proof membranes should be installed as part of the residential development proposed.
	Leaching to the groundwater followed by groundwater migration	The underlying Secondary A Aquifer	Medium	High	High	DQRA required to assess the magnitude of the contamination and to establish remedial target concentrations (if required).
		The underlying Secondary A Aquifer underlying adjacent sites	Medium	High	High	
		The Wharf Brook	Medium	Likely	Moderate	
	Direct contact	Water supply pipes	Mild	Likely	Moderate/Low	Provide soil contamination results to the water service providers for their recommendations.

Source	Pathway	Receptor	Consequence	Probability	Risk	Mitigation
Area A: Slightly elevated sulphate concentrations	Direct contact	Buried concrete structures	Mild	Likely	Moderate/ Low	Follow the recommendations of BRE Special Digest 1, 'Concrete in Aggressive Ground;' when considering the most appropriate type of concrete to be used.

## 10.0 ENVIRONMENTAL LIABILITY ASSESSMENT

### Statutory Liability

The contaminated land regime has implications for those who cause or knowingly permit land to be contaminated, or who own or occupy land that is contaminated.

Contaminated land is defined in Section 78A(2) of Part IIA of the Environmental Protection Act 1990 as:

“Any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under land, that:

- Significant harm is being caused or there is a significant possibility of such harm being caused; or
- Pollution of controlled waters is being or is likely to be, caused.”

Harm is defined in Section 78(4) of the Environmental Protection Act 1990 as:

“Harm to the health of living organisms or other interference with ecological systems of which they form part and, in the case of man, includes harm to property.”

Once an area of land has been identified as contaminated land, appropriate persons will be identified as being responsible for the cost of cleaning up the land by the enforcing authority. The appropriate person will be liable for all or part of the remediation of the land. Two classes of appropriate person have been identified:

- Class A appropriate persons are those who cause or knowingly permit the pollutants to be in, on or under the land.
- Class B appropriate persons are the owners(s) or occupier(s) of the land.

Where no Class A appropriate persons can be identified, then Class B appropriate persons may become liable.

- 10.1 Based on the information available regarding the site, the potential for Statutory Authority action based on “pollution of controlled water” or “significant harm” as defined by Part IIA of the Environmental Protection Act 1990 is considered to be **LOW/ MODERATE** as significant contamination has been revealed although the extent is not indicated to be significantly greater than within the local site area of Area B. A DQRA for both areas A and B are recommended to further evaluate this risk.

### Third Party Liability

- 10.2 Based on the information contained in this report, it is the opinion of BWB that the potential for legal action by surrounding landowners based on the potential for contamination to migrate offsite is considered to be **LOW/ MODERATE**. Although contamination to off site boreholes is indicated to have occurred the issues are not presently likely to be causing significant harm or a nuisance. However, this may change in the context of future site development.

### Public Relations

- 10.3 It is considered that there is a **LOW/ MODERATE** risk of public relations being tarnished as a result of this development on the basis that part of the site is open grasslands and may be regarded as an open space or amenity for local residents.



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## **Development Implications**

- 10.4 A DQRA is required in both Area A and Area B of the site in order to assess the magnitude of the risk that the contamination identified poses to controlled water receptors. The DQRA will also establish remedial target concentrations should remediation (of the soils and/or groundwater) be required.
- 10.5 Based on the gas monitoring undertaken at the site to date, the assessment has indicated that basic gas protection measures will be required for the proposed commercial/ industrial development in Area A of the site.
- 10.6 The use of a chemically and physically suitable growing medium will be required in garden areas and landscaping to be protective of future site residents in Area B. The thickness of the placed topsoil should be agreed with the regulatory authorities. The topsoil and contaminated underlying soils should be separated by either a membrane or hard to dig layer. Topsoil currently present within Area A is not indicated to be suitable for a residential end use application.
- 10.7 It is recommended that soil samples be collected for laboratory analysis from any site sourced topsoil to determine suitability for use in garden and landscaped areas. Alternatively, it is advised that soil samples be collected for laboratory analysis from any potential sources of imported topsoil to confirm suitability, prior to importation to site.
- 10.8 A remediation method statement will be required to be compiled and submitted to the regulatory authorities for their approval. The remediation method statement should be used by any appointed remediation and building contractors as a basis for remediation methods, clean-up targets concentrations and best working practices during the proposed development.

## **Waste Management**

- 10.9 All hazardous and non-hazardous wastes generated from the site that are destined for landfill must undergo pre-treatment to reduce the volume or hazardous nature of the waste or facilitate its handling or enhance recovery. Treatment may comprise any physical, thermal, chemical or biological processes, including sorting, that changes the characteristics of the waste. There are exemptions to the regulations where treatment is not technically feasible or where feasible treatment techniques would not reduce the hazardous nature or volume of material going to landfill.
- 10.10 A site waste management plan (SWMP) must be produced by the main contractor prior to the commencement of the project. The SWMP should describe the volumes and types of waste that are likely to be produced during a project and should set out the actions for recycling, recovery, re-use and disposal for each waste stream.

## 11.0 CONCLUSIONS AND RECOMMENDATIONS

### Conclusions

#### Environmental

- 11.1 The Environmental assessment has identified a number of pollutant linkages at the site which will require further consideration or mitigation measures with respect to the proposed site development.
- 11.2 In Area A, PAH contamination has been identified in both the shallow soils comprising made ground landfill material and in the groundwater of the Secondary A Aquifer in the north western section of the site. This indicates that the shallow soil contamination is impacting the groundwater quality of the Secondary A Aquifer and has the potential to migrate off site and impact on off site controlled water receptors which include the River Tean which is located approximately 100m north of the site.
- 11.3 The ground gas assessment, based on the monitoring results recorded to date, indicates that slightly elevated carbon dioxide flow concentrations are present within Area A of the site.
- 11.4 Significantly elevated contamination concentrations have been revealed in the soils within Area B most notably within the south western section. Significant volumes of ash, clinker and slag and well as 'Blue Billy' were noted in this area of the site during the investigation. These materials are likely to be associated with the gas works which was historically located at the site. Contaminants in this area of the site, which have been identified as a potential risk to the health of human receptors associated with the proposed residential development of Area B through soil ingestion and inhalation (including inhalation of vapours indoors) as the preferential pathway, include arsenic, chromium, complex cyanide, PAH and TPH.
- 11.5 Significantly elevated cyanide, PAH and TPH contamination concentrations have been identified in the groundwater in Area B which significantly exceed the guideline concentrations. It is indicated that it is very likely that the groundwater contamination has occurred due to the leaching of shallow soil contamination in the made ground through the soil profile and into the groundwater within the soil elluate. The groundwater results also indicate that the contamination may also be migrating eastwards onto the adjacent site.

#### Geotechnical

- 11.6 Based on the proposed development in Area A and the expected loads (which are not currently known) steel portal frames transferring their loads to pad foundations founding between 2.0m and 3.0m bgl within the medium dense Fluvioglacial sand and gravel deposits is expected to yield the required strength. A list of the maximum column loads and foundation specifications is indicated in **Table 9**.
- 11.7 Area B is anticipated to be developed for a residential end use which is expected to comprise lightly loaded dwellings of up to three storeys with loads transferred to traditional 0.6m wide strip footings. The shallow soils at the site currently comprise made ground. The strength of the made ground in its current state is likely to be very variable and is therefore not considered a suitable founding medium without improvement. Transferring the footing loads to the Fluvioglacial sand and gravel or

Mercia Mudstone is expected to yield strength in excess of 120kN/m and within tolerable settlement which is likely to be sufficient for the proposed development. However, due to the depth foundation would have to be excavated to ground improvement or mini piles transferring loads to the Mercia Mudstone may be considered a more suitable and cost effective foundation solution.

- 11.8 Due to the variable nature of the made ground and alluvial deposits across area B these are not considered suitable founding strata for the proposed residential development. Similarly the Alluvial clay is also too weak to provide a suitable founding medium. Transferring the footing loads to the Fluvioglacial sand and gravel or Mercia Mudstone is expected to yield safe bearing capacities in excess of 120kN/m and within tolerable settlement. However, depending on the proposed site levels and due to the depth the foundations would have to be excavated based on the present elevations, ground improvement or mini piles transferring loads to the Mercia Mudstone may be considered a more suitable and cost effective foundation solution.
- 11.9 The permeability of the Fluvioglacial deposits at the site is likely to be high with good drainage characteristics. Soakaways may be a suitable drainage system at the site and soakaway tests should be undertaken to confirm their suitability and consideration of the results of the DQRA's recommended.
- 11.10 The sulphate concentrations indicate that generally Design Sulphate Class DS2 conditions are present within both the soil deposits and the groundwater at the site in both Area A and Area B.

## **Recommendations**

### Environmental

- 11.11 A DQRA is required in both Area A and Area B of the site in order to assess the magnitude of the risk that the contamination identified poses to controlled water receptors. The DQRA will also establish remedial target concentrations should remediation (of the soils and/or groundwater) be required.
- 11.12 Based on the gas monitoring undertaken at the site to date, the assessment has indicated that basic gas protection measures will be required for the proposed commercial/ industrial development in Area A of the site.
- 11.13 The use of a chemically and physically suitable growing medium will be required in garden areas and landscaping to be protective of future site residents in Area B. It is considered that a minimum thickness of 700mm to 900mm of suitable material is required to be placed in all gardens and landscaped areas. The topsoil and contaminated underlying soils should be separated by either a membrane or hard to dig layer.
- 11.14 To mitigate the risk of human receptors inhaling contamination vapours from the made ground in Area B the installation of a vapour proof membrane is recommended.
- 11.15 All proposed mitigation/ remediation measures proposed should be agreed with various stakeholders prior to implementation (e.g. local authority, NHBC,

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Environment Agency, statutory undertakers where relevant) and fully developed as part of a Remediation Strategy and Implementation Plan.

- 11.16 An ecological survey should be undertaken to identify the presence and extent of Japanese Knotweed or other invasive plant species at the site.

*Geotechnical*

- 11.17 The recommendations of BRE Special Digest 1, 'Concrete in Aggressive Ground;' 2005 for sites classified as Design Sulphate Class 2 should be taken into account when considering the most appropriate type of concrete to be used at the site in order to resist chemical attack from water soluble sulphate present in the soil.
- 11.18 Soakaway testing is recommended to confirm the suitability of incorporation of sustainable urban drainage systems into the proposed development on the basis further environmental risk assessment (i.e. the DQRA's) indicates this to be a viable consideration.

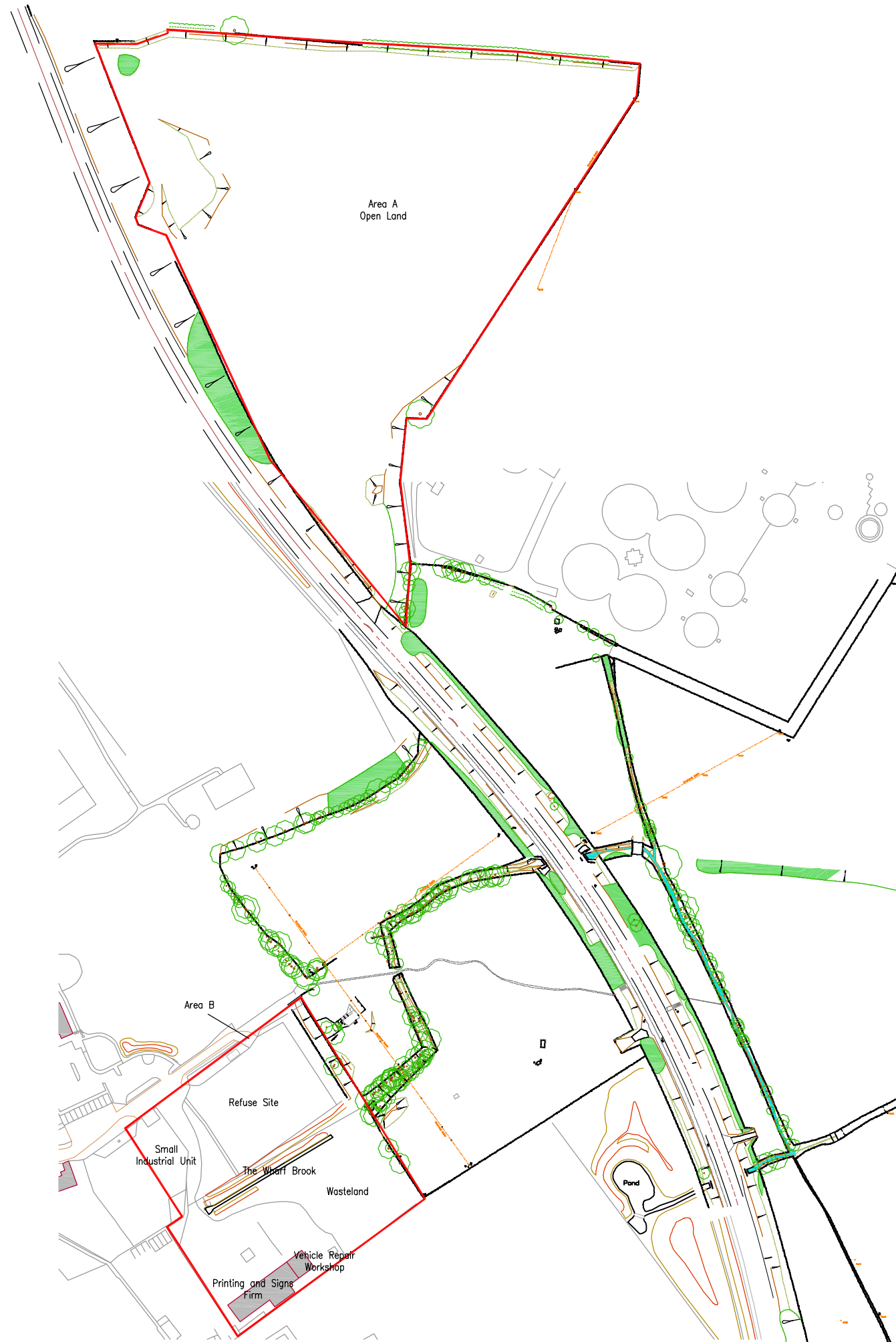
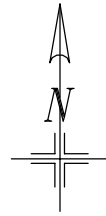
**BWB Consulting Ltd**

**August 2010**

## FIGURES

**FIGURE 2**  
**SITE LAYOUT PLAN**





NOTES

1. DO NOT SCALE THIS DRAWING. ALL DIMENSIONS MUST BE CHECKED/ VERIFIED ON SITE. IF IN DOUBT ASK.
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4. ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.

LINETYPE DENOTES LOCATION OF SITE BOUNDARY

Rev	Date	Description	Drawn	Auth'd
AMENDMENTS				



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Client  
 East Staffordshire Borough Council

Project Title  
 The Dove Way  
 Uttoxeter

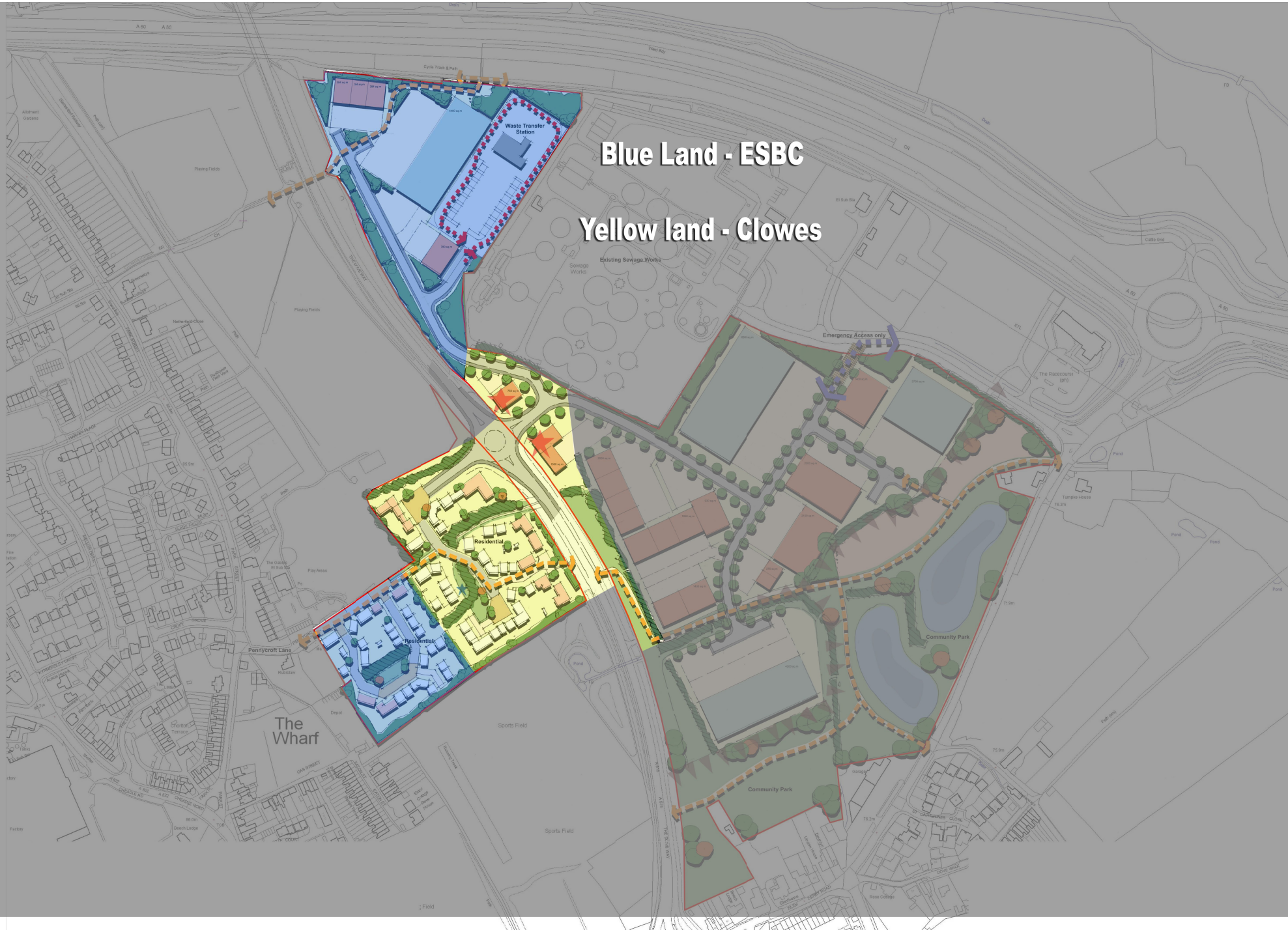
Drawing Title  
 Site Layout Plan

Scale	Date	Drawn	Authorised
1:2,500	30.06.2010	RTR	DRW

Drawing Status  
 FINAL

Drawing No:	Revision
NTE285/01/02	—

**FIGURE 3**  
**SITE DEVELOPMENT MASTERPLAN**



**Blue Land - ESBC**  
**Yellow land - Clowes**

**Key**

- Development Area
- Residential
- Formal residential
- Employment B1
- Employment B2 B8
- Gateway offices buildings
- Waste transfer station
- New community park
- Emergency access only
- Sustainable drainage system
- Proposed indicative planting
- Existing planting
- Footpath / cycleway routes
- Vehicular access
- Primary vehicle route
- Secondary vehicle route
- Square
- Extent of indicative flood plain
- Sewage treatment plant
- Pennycroft Well retained in landscaping
- Employment expansion subject to further flood study

**Schedule**

	Residential	3.89 ha
	Total units (1.89 ha x 62.9% x 50 dpa)	73
	Employment East	9.15 ha
	Coverage	28455 sq m
	Employment West	4.30 ha
	Coverage (excludes 0.15 ha)	7082 sq m

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Revisions  
 (A) General amendments

27 February 2009

# The Dove Way, Uttoxeter, Staffordshire - Illustrative Layout

T 01509 670806 | F 01509 672247 | www.ppg-llp.co.uk | Team PS/ | 09 February 2009 | Scale 1:1250 @ A0 | dwg. EMS.1685-01-02-A | client Conder Developments

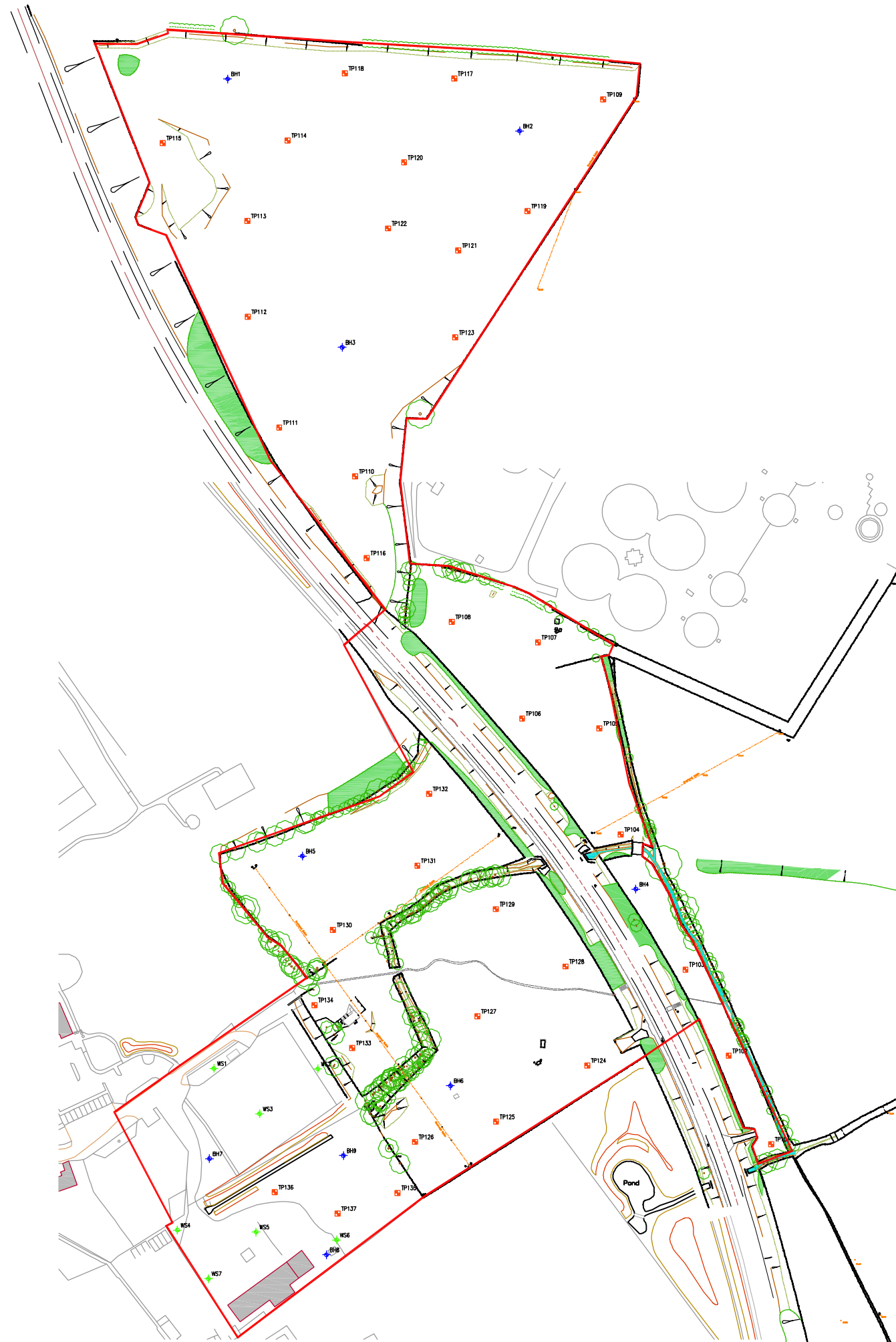
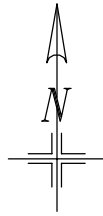
North

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**FIGURE 4**  
**EXPLORATORY HOLE LOCATION PLAN**





NOTES

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	LINETYPE DENOTES LOCATION OF SITE BOUNDARY
	WS** DENOTES LOCATION OF CABLE PERCUSSIVE BOREHOLE
	BH** DENOTES LOCATION OF WINDOW SAMPLE HOLE
	TP** DENOTES LOCATION OF TRAIL PIT

Rev	Date	Description	Drawn	Auth'd
AMENDMENTS				



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Client  
 East Staffordshire Borough Council

Project Title  
 The Dove Way Uttoxeter

Drawing Title  
 Figure 4  
 Exploratory Hole Locations

Scale	Date	Drawn	Authorised
1:2,500	04.08.2010	RTR	DRW

Drawing Status  
 FINAL

Drawing No:	Revision
NTE285/03/01	-

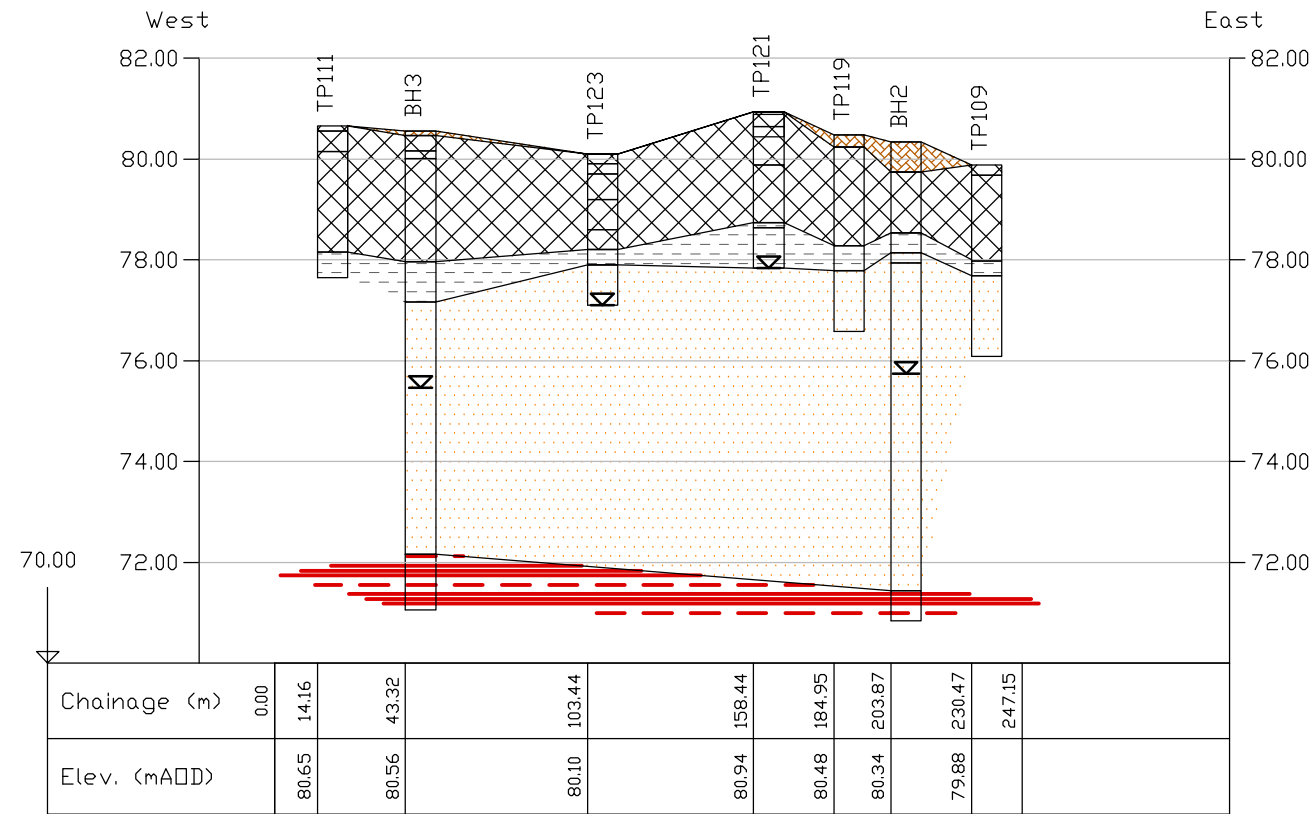
**FIGURE 5**  
**GEOLOGICAL CROSS SECTIONS**

NOTES

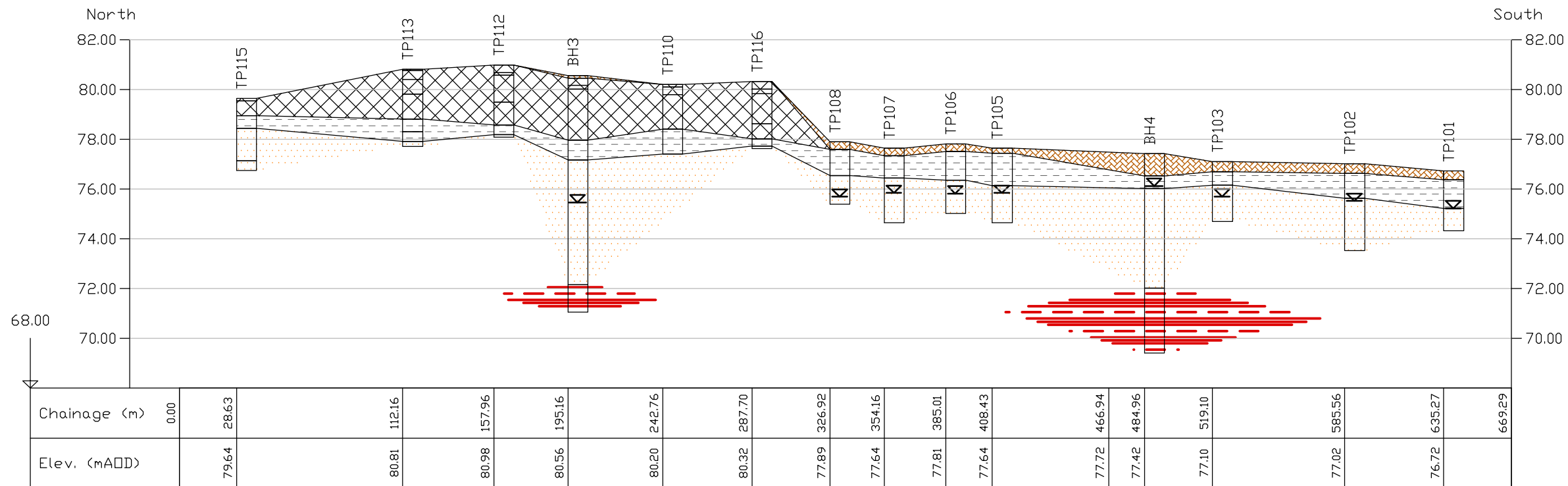
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- ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.

Legend Key

- Topsoil
- Made Ground
- Alluvial Clay
- Fluvioglacial Deposits
- Mercia Mudstone
- Groundwater Strike



SCALE: Horizontal 1:2500 Vertical 1:150



SCALE: Horizontal 1:2500 Vertical 1:200  
(Plotted to Scale for paper size A3)

Rev	Date	Description	Drawn	Auth'd
AMENDMENTS				



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environmental | water | transportation | civil | structural | highways | infrastructure

Client  
**East Staffordshire Borough Council**

Project Title  
**The Dove Way, Uttoxeter**

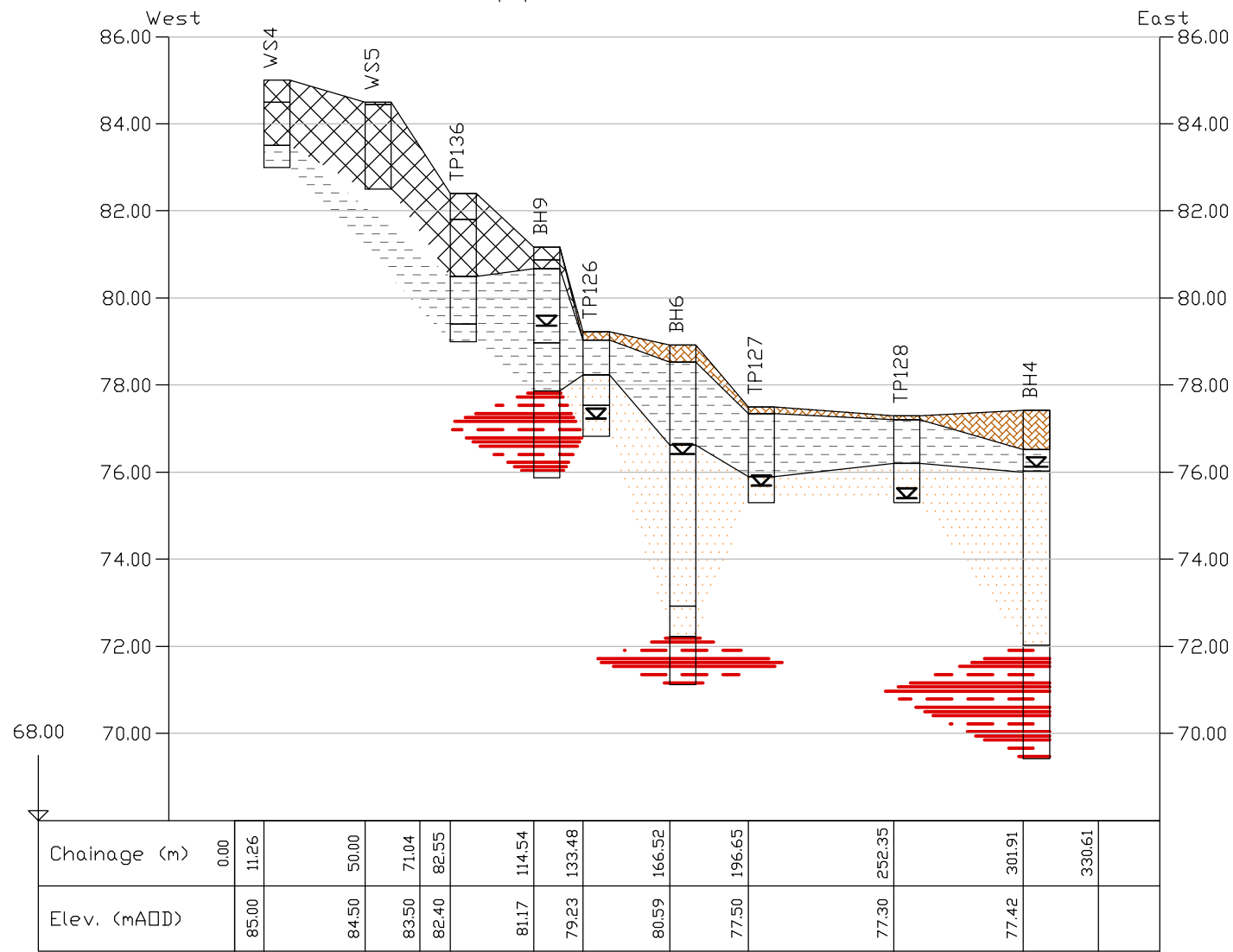
Drawing Title  
**Figure 5a  
Geological Cross Sections**

Scale	Date	Drawn	Authorised
As Shown	11.08.2010	RTR	DRW

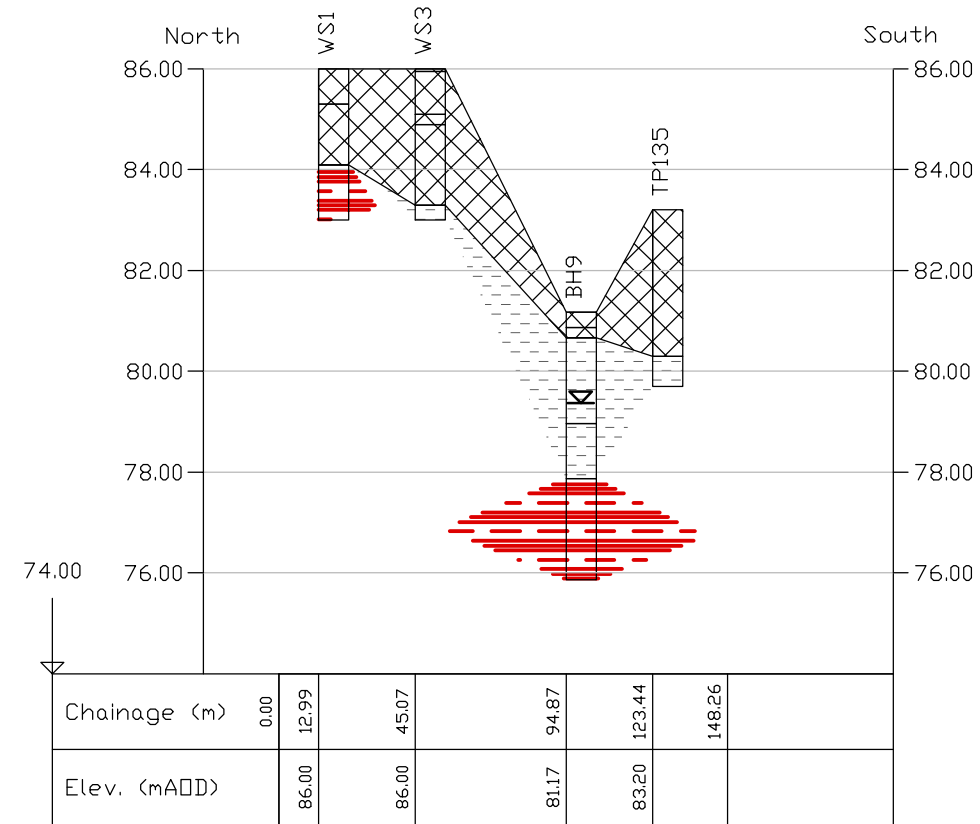
Drawing Status  
**FINAL**

Drawing No:	Revision
NTE285/05/03	-





SCALE: Horizontal 1:2500 Vertical 1:150



SCALE: Horizontal 1:2500 Vertical 1:150  
(Plotted to Scale for paper size A3)

NOTES

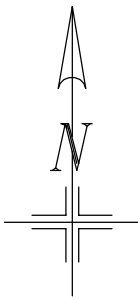
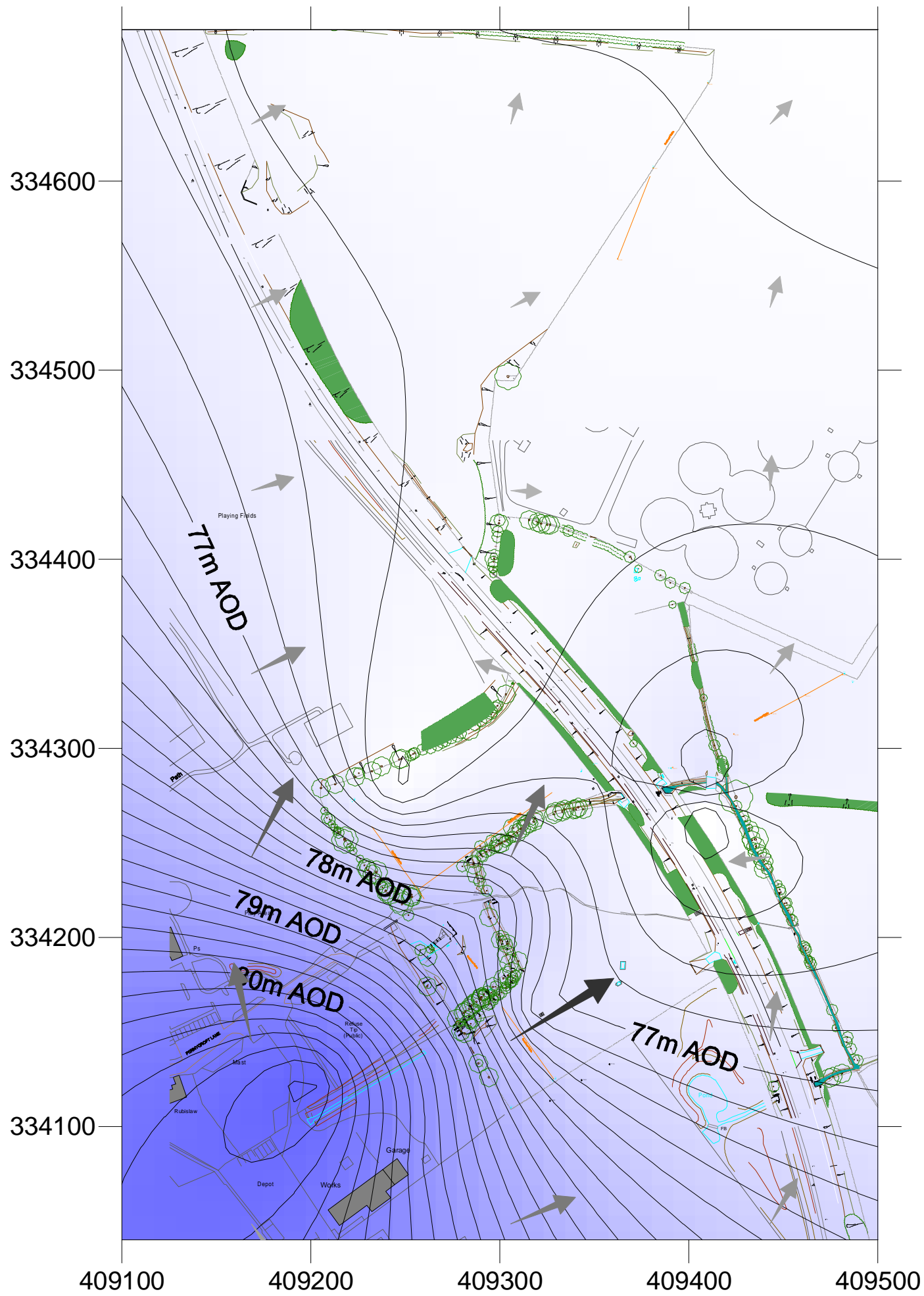
- DO NOT SCALE THIS DRAWING. ALL DIMENSIONS MUST BE CHECKED/ VERIFIED ON SITE. IF IN DOUBT ASK.
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- ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE. ALL LEVELS IN METRES UNLESS NOTED OTHERWISE.
- ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.

Legend Key

- Topsoil
- Made Ground
- Alluvial Clay
- Fluvio-glacial Deposits
- Mercia Mudstone
- Groundwater Strike

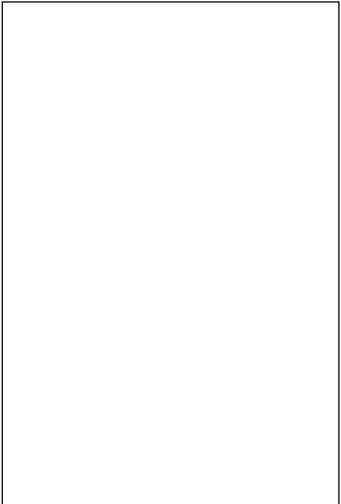
Rev	Date	Description	Drawn	Auth'd
AMENDMENTS				
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<b>Integrated Engineering and Environmental Consultants</b>				
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Client <b>East Staffordshire Borough Council</b>				
Project Title <b>The Dove Way, Uttoxeter</b>				
Drawing Title <b>Figure 5b Geological Cross Sections</b>				
Scale	Date	Drawn	Authorised	
As Shown	11.08.2010	RTR	DRW	
Drawing Status <b>FINAL</b>				
Drawing No: NTE285/05/03			Revision -	

**FIGURE 6**  
**INFERRED GROUNDWATER CONTOUR PLOT**



NOTES

1. DO NOT SCALE THIS DRAWING. ALL DIMENSIONS MUST BE CHECKED/ VERIFIED ON SITE. IF IN DOUBT ASK.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS AND SPECIALISTS DRAWINGS AND SPECIFICATIONS.
3. ALL DIMENSIONS IN MILLIMETRES UNLESS NOTED OTHERWISE. ALL LEVELS IN METRES UNLESS NOTED OTHERWISE.
4. ANY DISCREPANCIES NOTED ON SITE ARE TO BE REPORTED TO THE ENGINEER IMMEDIATELY.



Rev	Date	Description	Drawn	Authd
AMENDMENTS				

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Client  
  
East Staffordshire Borough Council

Project Title  
  
The Dove Way  
Uttoxeter

Drawing Title  
  
Figure 6  
Inferred Groundwater Plot

Scale	Date	Drawn	Authorised
NTS	04.08.2010	RTR	DRW

Drawing Status  
  
FINAL

Drawing No:	Revision
NTE285/05/06	-

## **APPENDICES**

**APPENDIX 1**  
**SITE PHOTOGRAPHS**



Access Gate to Area A off The Dove Way



Mound towards the southern area of Area A with potential Japanese Knotweed clumps.





View South across Area A



View north across Area A





Tunnel under The Dove Way at the western edge of the site



Clump of potential Japanese Knotweed in the northern section of Area A



View east from The Dove Way to the sewage treatment works



Land to the west of Area A and The Dove Way





Unit in the north western section of Area B



Area B—Exit of the Refuse site.



Skips and bins in the central area of the refuse



Waste oil AST in the eastern area of the refuse site.



Potential Japanese Knotweed by the entrance to the refuse site



Entrance to the industrial estate in the south of Area B





Industrial Buildings in the south of Area B



ASTs adjacent to the vehicle repair works



AST, old oil filter bin and other items including evidence of potential contamination migrating into the drainage system.



Former fire and drum with ash and other debris around the area





The Wharf Brook at the discharge point and end of the culvert in the western section of the site



Looking down stream—The Wharf Brook



Potential Japanese Knotweed on the northern bank of The Wharf Brook



Waste land in the south eastern section of Area B



Depot to the west of Area B



Parkland to the north of Area B





School to the south of Area B



Overgrown fields to the east of Area B

**APPENDIX 2**  
**EXPLORATORY HOLE LOGS**

**Project Title** The Dove Way, Uttoxeter **Hole Ref.** BH1

**Client** Clowes Securities & ESBC **Project No.** NTE285

**Plant used** Dando Rig **Start Date** 06/07/2010 **End Date** 07/07/2010

Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing	
Strike	Well					Type	Depth From	To	Depth (m) (SPT Type)
		0.50	Long grass over TOPSOIL with abundant rootlets. - Interpolated from Driller's description	80.10		B	0.50	1.00	
			MADE GROUND: Very loose gravel fill with ash and pottery. (Landfill Material) - Interpolated from Driller's description			D			1.00 (C) N=2 (1,0,0,1,1,0)
		1.80	Firm grey mottled brown CLAY with occasional gravel. (Alluvium) - Interpolated from Driller's description	78.80		D	1.80		2.00 (C) N=21 (2,2/6,7,4,4)
		2.00	Medium dense grey and brown fine to coarse grained SAND and sub rounded to rounded quartz GRAVEL with occasional cobbles. (Fluvioglacial Deposits) - Interpolated from Driller's description	78.60		D	3.00	3.00 (C)	N=23 (4,3/5,6,5,7)
						B	4.00	4.50	4.00 (C) N=26 (4,4/4,6,8,8)
									5.00 (C) N=28 (6,5/9,9,5,5)
									6.50 (C) N=24 (4,5/10,5,4,5)
			Occasional stiff red brown clay.			B	6.90	7.40	
									8.00 (C) N=15 (2,3/3,5,4,3)
									9.50 (C) N=29 (3,5/6,7,7,9)

Continued next sheet

<b>REMARKS</b> 1. Groundwater depth recorded at 4.2m bgl on borehole completion. 2. No visual or olfactory evidence of contamination. 3. Hole cased to 5.0m bgl. 4. Water added between 2.0m bgl and 5.0m bgl. 5. Hole installed with 53mm HDPE Standpiepe with gas tap and raised cover. Response zone between 1.0m bgl and 11.0m bgl. 6. Hole position determined from the site topographical survey plan. 7. Hole level determined from an optical levelling survey.	<b>SOIL SAMPLE TYPE</b> D - 500g to 1kg Disturbed B - 5kg to 20kg Disturbed U - 100mm dia. Undisturbed J - 250ml Amber Glass Jar V - Glass Vial	<b>IN-SITU TESTS</b> SV - Hand Shear Vane HP - Hand Penetrometer N = SPT blows over 300mm S = Split Spoon Sampler C = Solid Cone  PID - Photo Ionisation Detector (ppm)	<b>GROUNDWATER</b> Groundwater strike Standing groundwater level	  <b>Environmental Division</b> 3-4 Kayes Walk The Lace Market Nottingham NG1 1PY Tel : 0115 9241100 Fax : 0115 9503966
	<b>EASTING</b> 409202.00	<b>NORTHING</b> 334669.00	<b>GROUND LEVEL</b> 80.60	
	<b>LOGGED BY</b> RTR	<b>SCALE</b> 1:50	<b>SHEET</b> Sheet 1 of 2	

**Project Title** The Dove Way, Uttoxeter **Hole Ref.** BH1

**Client** Clowes Securities & ESBC **Project No.** NTE285

**Plant used** Dando Rig **Start Date** 06/07/2010 **End Date** 07/07/2010

Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing	
Strike	Well					Type	Depth From To	Depth (m) (SPT Type)	Result
		10.40 11.00	Medium dense grey and brown fine to coarse grained SAND and sub rounded to rounded quartz GRAVEL with occasional cobbles. (Fluvioglacial Deposits) - Interpolated from Driller's description  Moderately weak red brown MUDSTONE. (Mercia Mudstone Formation) - Interpolated from Driller description.  <i>End of hole at 11.00 m</i>	70.20 69.60				11.00 (S)	50 (8,11/18,21,11 for 20mm)

**REMARKS**

- Groundwater depth recorded at 4.2m bgl on borehole completion.
- No visual or olfactory evidence of contamination.
- Hole cased to 5.0m bgl.
- Water added between 2.0m bgl and 5.0m bgl.
- Hole installed with 53mm HDPE Standpiepe with gas tap and raised cover. Response zone between 1.0m bgl and 11.0m bgl.
- Hole position determined from the site topographical survey plan.
- Hole level determined from an optical levelling survey


<b>SOIL SAMPLE TYPE</b> D - 500g to 1kg Disturbed B - 5kg to 20kg Disturbed U - 100mm dia. Undisturbed J - 250ml Amber Glass Jar V - Glass Vial		<b>IN-SITU TESTS</b> SV - Hand Shear Vane HP - Hand Penetrometer N = SPT blows over 300mm S = Split Spoon Sampler C = Solid Cone  PID - Photo Ionisation Detector (ppm)		<b>GROUNDWATER</b> ☒ Groundwater strike ☑ Standing groundwater level	
<b>EASTING</b> 409202.00	<b>NORTHING</b> 334669.00	<b>GROUND LEVEL</b> 80.60			
<b>LOGGED BY</b> RTR	<b>SCALE</b> 1:50	<b>SHEET</b> Sheet 2 of 2			

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Environmental Division  
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Nottingham  
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Fax : 0115 9503966



Project Title					The Dove Way, Uttoxeter		Hole Ref.		BH2		
Client					Clowes Securities & ESBC		Project No.		NTE285		
Plant used					Dando Rig		Start Date		End Date		
					07/07/2010		07/07/2010				
Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing			
Strike	Well					Type	Depth From	Depth To	Depth (m) (SPT Type)	Result	
		0.60	Long grass over TOPSOIL with abundant rootlets - Interpolated from Driller's description.	79.74							
		1.80	MADE GROUND: Very loose soil fill with ash, metal fragments, glass and pottery. (Landfill Material) - Interpolated from Driller's description	78.54		D	1.00		1.00 (C)	N=1 (1,0,0,0,1,0)	
		2.20	Firm grey mottled brown CLAY with occasional gravel. (Alluvium) - Interpolated from Driller's description	78.14		D	1.80		2.00 (S)	N=12 (1,1/1,3,4,4)	
		2.40	Medium dense grey and brown clayey sub rounded to rounded quartz GRAVEL. (Fluvioglacial Deposits) - Interpolated from Driller's description	77.94		B	3.00	3.50	3.00 (C)	N=40 (7,8/10,9,10,11)	
			Medium dense becoming dense from 8.0m grey and brown fine to coarse grained SAND and sub rounded to rounded quartz GRAVEL with occasional cobbles. (Fluvioglacial Deposits) - Interpolated from Driller's description						4.00 (C)	N=24 (3,5/6,7,6,5)	
									5.00 (C)	N=15 (2,3/3,4,4,4)	
						B	6.50	7.00	6.50 (C)	N=13 (3,3/3,3,4,3)	
									8.00 (C)	N=46 (9,9/11,12,12,11)	
		8.90	Moderately weak red brown MUDSTONE. (Mercia Mudstone Formation) - Interpolated from Driller description.	71.44		D	8.90				
		9.50	End of hole at 9.50 m	70.84		B	9.00	9.50			
									9.50 (S)	53 (7,10/12,13,15,13 for 30mm)	
<b>REMARKS</b>				<b>SOIL SAMPLE TYPE</b>		<b>IN-SITU TESTS</b>		<b>GROUNDWATER</b>			
1. Groundwater encountered at approximately 4.5m bgl.				D - 500g to 1kg Disturbed		SV - Hand Shear Vane		∇ Groundwater strike			
2.No visual or olfactory evidence of contamination.				B - 5kg to 20kg Disturbed		HP - Hand Penetrometer		▼ Standing groundwater level			
3.Hole cased throughout.				U - 100mm dia. Undisturbed		N = SPT blows over 300mm					
4. Water added between 2.4m bgl and 4.5m bgl.				J - 250ml Amber Glass Jar		S = Split Spoon Sampler					
5.Hole installed with 53mm HDPE Standpiepe with gas tap and raised cover. Response zone between 2.0m bgl and 9.5m bgl.				V - Glass Vial		C = Solid Cone					
6.Hole position determined from the site topographical survey plan.				PID - Photo Ionisation Detector (ppm)							
7.Hole level determined from an optical levelling survey.											
<b>EASTING</b>		<b>NORTHING</b>		<b>GROUND LEVEL</b>							
409359.00		334639.00		80.34							
<b>LOGGED BY</b>		<b>SCALE</b>		<b>SHEET</b>							
RTR		1:50		Sheet 1 of 1							
						<b>BWB CONSULTING</b>			Environmental Division 3-4 Kayes Walk The Lace Market Nottingham NG1 1PY Tel : 0115 9241100 Fax : 0115 9503966		

Project Title					The Dove Way, Uttoxeter		Hole Ref.		BH3		
Client					Clowes Securities & ESBC		Project No.		NTE285		
Plant used					Dando Rig		Start Date		End Date		
					08/07/2010		08/07/2010				
Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing			
Strike	Well					Type	Depth From	Depth To	Depth (m) (SPT Type)	Result	
		0.10	Long grass over TOPSOIL with abundant rootlets - Interpolated from Driller's description.	80.46							
		0.40	MADE GROUND: Brown silty clayey topsoil with frequent bricks and concrete cobbles - Interpolated from Driller's description	80.16	[Cross-hatched pattern]	D	0.60		1.00 (C)	N=3 (1,0,0,1,1,1)	
		0.55		80.01							
				77.96							
			MADE GROUND: Concrete								
			MADE GROUND: Very loose brown soil fill with ash, metal fragments and bottles. (Landfill Material) - Interpolated from Driller's description			B	2.00	2.50	2.00 (C)	N=2 (1,0,1,0,0,1)	
		2.60	Firm grey mottled brown silty sandy CLAY. (Alluvium) - Interpolated from Driller's description	77.96	[Cross-hatched pattern]	D	2.60		3.00 (S)	N=11 (2,2,2,3,3,3)	
		3.40	Medium dense grey and brown fine to coarse grained SAND and sub rounded to rounded quartz GRAVEL with occasional cobbles. (Fluvioglacial Deposits) - Interpolated from Driller's description	77.16	[Stippled pattern]	B	4.00	4.50	4.00 (C)	N=13 (2,2,3,3,3,4)	
									5.00 (C)	N=15 (2,3,3,4,3,5)	
						B	6.50	7.00	6.50 (C)	N=26 (3,5,7,7,6,6)	
									8.00 (C)	N=31 (4,6,9,7,7,8)	
		8.40	Moderately weak red brown MUDSTONE. (Mercia Mudstone Formation) - Interpolated from Driller description.	72.16	[Horizontal lines pattern]	D	8.40				
		9.50	End of hole at 9.50 m	71.06					9.50 (S)	50 (7,11/15,18,17 for 30mm)	
<b>REMARKS</b> 1. Groundwater encountered at approximately 5.6m bgl. 2. No visual or olfactory evidence of contamination. 3. Hole cased to 8.8m bgl. 4. Hole installed with 53mm HDPE Standpipe with gas tap and raised cover. Response zone between 2.0m bgl and 9.5m bgl. 5. Hole position determined from the site topographical survey plan. 6. Hole level determined from an optical levelling survey.				<b>SOIL SAMPLE TYPE</b> D - 500g to 1kg Disturbed B - 5kg to 20kg Disturbed U - 100mm dia. Undisturbed J - 250ml Amber Glass Jar V - Glass Vial		<b>IN-SITU TESTS</b> SV - Hand Shear Vane HP - Hand Penetrometer N = SPT blows over 300mm S = Split Spoon Sampler C = Solid Cone  PID - Photo Ionisation Detector (ppm)		<b>GROUNDWATER</b> ∇ Groundwater strike ▼ Standing groundwater level		 Environmental Division 3-4 Kayes Walk The Lace Market Nottingham NG1 1PY Tel : 0115 9241100 Fax : 0115 9503966	
<b>EASTING</b>		<b>NORTHING</b>		<b>GROUND LEVEL</b>							
409258.00		334514.00		80.56							
<b>LOGGED BY</b>		<b>SCALE</b>		<b>SHEET</b>							
RTR		1:50		Sheet 1 of 1							

Project Title					The Dove Way, Uttoxeter		Hole Ref.		BH7		
Client					Clowes Securities & ESBC		Project No.		NTE285		
Plant used					Dando Rig		Start Date		End Date		
							07/07/2010		07/07/2010		
Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing			
Strike	Well					Type	Depth From To	Depth (m) (SPT Type)	Result		
			MADE GROUND: Dense brick fill - Interpolated from Driller's description.			B	0.20	0.70			
						D	0.50				
		1.70	Medium dense grey and brown fine grained SAND and sub rounded to rounded quartz GRAVEL with occasional cobbles. (Fluvioglacial Deposits) - Interpolated from Driller's description	83.04		D	1.80		1.00 (C)	N=46 (12,12/10,11,12,13)	
						B	2.00	2.50	2.00 (C)	N=25 (8,5/5,7,7,6)	
									3.00 (C)	N=25 (6,6/7,6,6,6)	
									4.00 (C)	N=30 (8,7/7,8,8,7)	
			Stiff red brown clay.			B	4.50	5.00			
						D	4.60		5.00 (C)	N=26 (6,5/6,6,8,6)	
									6.20 (S)	N=29 (5,7/8,7,7,7)	
		7.20	Weak red brown MUDSTONE. (Mercia Mudstone Formation) - Interpolated from Driller's description.	77.54					7.20 (S)	50 (25/14,16,14,6 for 0mm)	
						B	8.00	8.50			
		9.00	End of hole at 9.00 m	75.74					9.00 (S)	50 (25 for 10mm/32,18 for 30mm)	
<b>REMARKS</b> 1. Groundwater encountered at approximately 6.2m bgl. 2. No visual or olfactory evidence of contamination. 3. Hole cased to 8.5m bgl. 4. Hole installed with 53mm HDPE Standpipe with gas tap and raised cover. Response zone between 1.0m bgl and 8.5m bgl. 5. Hole position determined from the site topographical survey plan. 6. Hole level determined from an optical levelling survey.				<b>SOIL SAMPLE TYPE</b> D - 500g to 1kg Disturbed B - 5kg to 20kg Disturbed U - 100mm dia. Undisturbed J - 250ml Amber Glass Jar V - Glass Vial		<b>IN-SITU TESTS</b> SV - Hand Shear Vane HP - Hand Penetrometer N = SPT blows over 300mm S = Split Spoon Sampler C = Solid Cone  PID - Photo Ionisation Detector (ppm)		<b>GROUNDWATER</b> ∇ Groundwater strike ▼ Standing groundwater level		 <b>Environmental Division</b> 3-4 Kayes Walk The Lace Market Nottingham NG1 1PY Tel : 0115 9241100 Fax : 0115 9503966	
<b>EASTING</b>		<b>NORTHING</b>		<b>GROUND LEVEL</b>							
409200.00		334125.00		84.74							
<b>LOGGED BY</b>		<b>SCALE</b>		<b>SHEET</b>							
RTR		1:50		Sheet 1 of 1							

Project Title						The Dove Way, Uttoxeter		Hole Ref.		BH8	
Client						Clowes Securities & ESBC		Project No.		NTE285	
Plant used						Dando Rig		Start Date		End Date	
						08/07/2010		08/07/2010			
Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing			
Strike	Well					Type	Depth From To	Depth (m) (SPT Type)	Result		
		0.30	MADE GROUND: Brick fill - Interpolated from Driller's description.	83.01		B	0.50	1.00			
			MADE GROUND: Fill including frequent concrete boulders - Interpolated from Driller's description.			D			1.00 (C)	50 (25 for 20mm/50 for 40mm)	
		2.30	Medium dense grey and brown fine grained SAND and sub rounded to rounded quartz GRAVEL with occasional cobbles. (Fluvioglacial Deposits) - Interpolated from Driller's description	81.01		B	3.00	3.50	3.00 (C)	N=29 (7,8,7,7,8)	
						D			2.00 (C)	50 (25 for 0mm/43.7 for 10mm)	
		4.10	Weak red brown MUDSTONE. (Mercia Mudstone Formation) - Interpolated from Driller's description.	79.21		B	5.00	5.50	4.00 (C)	N=29 (6,8/6,8,8,7)	
						D	6.00		5.00 (S)	50 (25/18,17,15 for 50mm)	
		6.50	End of hole at 6.50 m	76.81					6.50 (S)	50 (25/16,15,19 for 50mm)	

**REMARKS**

- Groundwater encountered at approximately 4.1m bgl.
- Slight solvent odour noted between 0.3m bgl and 2.3m bgl.
- Hole cased to 5.0m bgl.
- Hole installed with 53mm HDPE Standpipe with gas tap and raised cover. Response zone between 1.0m bgl and 6.0m bgl.
- Hole position determined from the site topographical survey plan.
- Hole level determined from an optical levelling survey.

<b>SOIL SAMPLE TYPE</b> D - 500g to 1kg Disturbed B - 5kg to 20kg Disturbed U - 100mm dia. Undisturbed J - 250ml Amber Glass Jar V - Glass Vial		<b>IN-SITU TESTS</b> SV - Hand Shear Vane HP - Hand Penetrometer N = SPT blows over 300mm S = Split Spoon Sampler C = Solid Cone  PID - Photo Ionisation Detector (ppm)		<b>GROUNDWATER</b> ▽ Groundwater strike ▼ Standing groundwater level	
<b>EASTING</b> 409258.00	<b>NORTHING</b> 334080.00	<b>GROUND LEVEL</b> 83.31			
<b>LOGGED BY</b> RTR	<b>SCALE</b> 1:50	<b>SHEET</b> Sheet 1 of 1			

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 The Lace Market  
 Nottingham  
 NG1 1PY  
 Tel : 0115 9241100  
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Project Title					The Dove Way, Uttoxeter		Hole Ref.		BH9	
Client					Clowes Securities & ESBC		Project No.		NTE285	
Plant used					Dando Rig		Start Date		End Date	
							07/07/2010		08/07/2010	
Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing		
Strike	Well					Type	Depth From To	Depth (m) (SPT Type)	Result	
		0.30	MADE GROUND: Fine to coarse angular road stone GRAVEL - Interpolated from Driller's description	80.87		B D	0.50	1.00	1.00 (C)	N=1 (1,0,0,0,1,0)
		0.50	MADE GROUND: Fine to coarse angular brick GRAVEL fill - Interpolated from Driller's description.	80.67						
			Very soft to firm CLAY. (Alluvium) - Interpolated from Driller's description.						2.00 (C)	N=10 (1,0,2,3,3,2)
		2.20	Firm sandy gravelly CLAY. Gravel is rounded fine to coarse quartz. (Alluvium) - interpolated from Driller's description.	78.97		B D	2.50	3.00	3.00 (C)	N=16 (2,2/3,3,4,6)
		3.30	Weak red brown MUDSTONE. (Mercia Mudstone Formation) - Interpolated from Driller's description.	77.87						
						D	4.50	4.50 (S)	50 (10,10/13,13,12,12 for 50mm)	
						B	5.00	5.50	5.50 (S) 50 (25 for 60mm/17,14,14,5 for 0m)	
		5.30	End of hole at 5.30 m	75.87						

**REMARKS**

- Groundwater encountered at approximately 3.3m bgl
- No visual or olfactory evidence of contamination.
- Hole cased to 4.5m bgl.
- Hole installed with 53mm HDPE Standpiepe with gas tap and raised cover. Response zone between 1.0m bgl and 4.5m bgl.
- Hole position determined from the site topographical survey plan.
- Hole level determined from an optical levelling survey.

<b>SOIL SAMPLE TYPE</b> D - 500g to 1kg Disturbed B - 5kg to 20kg Disturbed U - 100mm dia. Undisturbed J - 250ml Amber Glass Jar V - Glass Vial		<b>IN-SITU TESTS</b> SV - Hand Shear Vane HP - Hand Penetrometer N = SPT blows over 300mm S = Split Spoon Sampler C = Solid Cone  PID - Photo Ionisation Detector (ppm)		<b>GROUNDWATER</b> ∇ Groundwater strike ▼ Standing groundwater level	
<b>EASTING</b> 409274.00	<b>NORTHING</b> 334135.00	<b>GROUND LEVEL</b> 81.17			
<b>LOGGED BY</b> RTR	<b>SCALE</b> 1:50	<b>SHEET</b> Sheet 1 of 1			




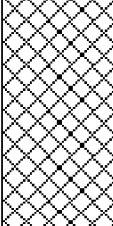
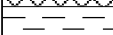
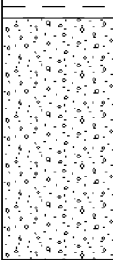
**BWB CONSULTING**

Environmental Division  
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**Project Title** The Dove Way, Uttoxeter **Hole Ref.** TP109

**Client** Clowes Securities & ESBC **Project No.** NTE285

**Plant used** JCB 3CX **Start Date** 08/07/2010 **End Date** 08/07/2010

Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing	
Strike	Well					Type	Depth From To	Depth (m) (SPT Type)	Result
		0.20	MADE GROUND: Grass over firm to stiff brown CLAY with abundant roots.	79.68					
			MADE GROUND: Brown grey ashy gravelly SAND and CLAY in a matrix with frequent glass, bottles, plastics, metals fragments, wood, textiles and pottery. Localised hydrocarbon odours and staining noted. (Landfill Material)			DJV	0.90		
		1.90	Firm grey brown CLAY. (Alluvium)	77.98					
		2.20	Grey and brown fine to coarse grained SAND and sub rounded to rounded quartz GRAVEL with occasional cobbles. Slight hydrocarbon odours and staining noted. (Fluvioglacial Deposits)	77.68		DJV	2.50		
		3.80	End of hole at 3.80 m	76.08					



**REMARKS**

- No significant groundwater strike though sand and gravel strata noted to be damp.
- Localised hydrocarbon odours and staining noted throughout.
- Hole backfilled with arisings on completion.
- Granular strata very unstable.
- Hole terminated to hole instability.
- Hole position and elevation determined from the site topographical survey plan.

**SOIL SAMPLE TYPE**  
 D - 500g to 1kg Disturbed  
 B - 5kg to 20kg Disturbed  
 U - 100mm dia. Undisturbed  
 J - 250ml Amber Glass Jar  
 V - Glass Vial

**IN-SITU TESTS**  
 SV - Hand Shear Vane  
 HP - Hand Penetrometer  
 N = SPT blows over 300mm  
 S = Split Spoon Sampler  
 C = Solid Cone

PID - Photo Ionisation Detector (ppm)

**GROUNDWATER**  
 Groundwater strike  
 Standing groundwater level

<b>EASTING</b> 409389.00	<b>NORTHING</b> 334648.00	<b>GROUND LEVEL</b> 79.88
<b>LOGGED BY</b> RTR	<b>SCALE</b> 1:50	<b>SHEET</b> Sheet 1 of 1







**Environmental Division**  
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**Project Title** The Dove Way, Uttoxeter **Hole Ref.** TP110

**Client** Clowes Securities & ESBC **Project No.** NTE285

**Plant used** JCB 3CX **Start Date** 07/07/2010 **End Date** 07/07/2010

Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing	
Strike	Well					Type	Depth From To	Depth (m) (SPT Type)	Result
		0.10	MADE GROUND: Brick, rubble and plastics.	80.10		DJV	0.40		
		0.40	MADE GROUND: Soft brown sandy gravelly CLAY. Gravel is brick plastics and medium quartz cobbles	79.80		DJV	0.80		
		1.80	MADE GROUND: Medium brown to black sandy gravelly CLAY landfill of plastics, glass, wire, machinery, wood, paper.	78.40		DB DJV	2.50	2.50	SV = 60 kN/m2
		2.80	Soft orange brown to pinkish grey slightly gravelly slightly sandy CLAY. Gravel is fine coal and fibrous organic matter.	77.40					
			End of hole at 2.80 m						

**REMARKS**  
 1. No significant groundwater strike though sand and gravel strata noted to be damp.  
 2. No visual or olfactory evidence of contamination.  
 3. Hole backfilled with arisings on completion.  
 4. Granular strata very unstable.  
 5. Hole terminated to hole instability.  
 6. Hole position and elevation determined from the site topographical survey plan.

<b>SOIL SAMPLE TYPE</b> D - 500g to 1kg Disturbed B - 5kg to 20kg Disturbed U - 100mm dia. Undisturbed J - 250ml Amber Glass Jar V - Glass Vial	<b>IN-SITU TESTS</b> SV - Hand Shear Vane HP - Hand Penetrometer N = SPT blows over 300mm S = Split Spoon Sampler C = Solid Cone  PID - Photo Ionisation Detector (ppm)	<b>GROUNDWATER</b> ∇ Groundwater strike ▼ Standing groundwater level
<b>EASTING</b> 409271.00	<b>NORTHING</b> 334466.00	<b>GROUND LEVEL</b> 80.20
<b>LOGGED BY</b> AM	<b>SCALE</b> 1:50	<b>SHEET</b> Sheet 1 of 1








**Environmental Division**  
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**Project Title** The Dove Way, Uttoxeter **Hole Ref.** TP111

**Client** Clowes Securities & ESBC **Project No.** NTE285

**Plant used** JCB 3CX **Start Date** 07/07/2010 **End Date** 07/07/2010

Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing	
Strike	Well					Type	Depth From To	Depth (m) (SPT Type)	Result
		0.10	MADE GROUND: Brick and rubble.	80.55		DJV	0.40		
		0.50	MADE GROUND: soft brown sandy cobbly CLAY. Cobbles of quartz, glass, tile and brick.	80.15					
			MADE GROUND: Black slightly sandy gravelly cobbly CLAY containing landfill of plastic bags, metal wire, glass, brick, paper, wood, flooring, shoes, bones and occasional quartz sub-rounded quartz.						
		2.50	Soft light orange brown mottled grey slightly gravelly slightly sandy CLAY. Gravel is sub rounded quartz. Contains organic matter and roots. (Alluvium)	78.15		DJV	2.80		
		3.00	End of hole at 3.00 m	77.65					



**REMARKS**

1. No significant groundwater strike though sand and gravel strata noted to be damp.
2. No visual or olfactory evidence of contamination.
3. Hole backfilled with arisings on completion.
4. Granular strata very unstable.
5. Hole terminated to hole instability.
6. Hole position and elevation determined from the site topographical survey plan.

**SOIL SAMPLE TYPE**  
 D - 500g to 1kg Disturbed  
 B - 5kg to 20kg Disturbed  
 U - 100mm dia. Undisturbed  
 J - 250ml Amber Glass Jar  
 V - Glass Vial

**IN-SITU TESTS**  
 SV - Hand Shear Vane  
 HP - Hand Penetrometer  
 N = SPT blows over 300mm  
 S = Split Spoon Sampler  
 C = Solid Cone


PID - Photo Ionisation Detector (ppm)

**GROUNDWATER**  
 Groundwater strike  
 Standing groundwater level

<b>EASTING</b> 409240.00	<b>NORTHING</b> 334491.00	<b>GROUND LEVEL</b> 80.65
<b>LOGGED BY</b> AM	<b>SCALE</b> 1:50	<b>SHEET</b> Sheet 1 of 1



**Environmental Division**  
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<b>Project Title</b> The Dove Way, Uttoxeter					<b>Hole Ref.</b> TP112				
<b>Client</b> Clowes Securities & ESBC					<b>Project No.</b> NTE285				
<b>Plant used</b> JCB 3CX					<b>Start Date</b> 07/07/2010	<b>End Date</b> 07/07/2010			
<b>Groundwater</b>		<b>Depth</b> <b>(m)</b>	<b>Description of Strata</b>	<b>Level</b> <b>(mAOD)</b>	<b>Legend</b>	<b>Samples</b>		<b>In-situ Testing</b>	
<b>Strike</b>	<b>Well</b>					<b>Type</b>	<b>Depth</b> <b>From To</b>	<b>Depth (m)</b> <b>(SPT Type)</b>	<b>Result</b>
		0.30 0.40	MADE GROUND: Brown sandy gravelly CLAY. Gravel is sub-angular to sub-rounded quartz and brick, glass and tile.	80.68 80.58	[Cross-hatched pattern]	DJV	0.80		
			MADE GROUND: Black fine to coarse compacted sand						
		1.50	MADE GROUND: Dark brown to black sandy CLAY landfill with, metal bar, lump hammer, cement, yellow plastic, metal machinery, glass.	79.48	[Cross-hatched pattern]	DJV	2.80		
		2.40	MADE GROUND: Black soft slightly clayey gravelly cobbly SAND with domestic landfill containing, bottles, glass, domestic waste, brick and paper (1967-68).	78.58					
		2.80 2.90	Soft orange brown to pinkish grey slightly gravelly slightly sandy CLAY. Gravel is fine coal and fibrous organic matter.	78.18 78.08	[Dotted pattern]				
			Grey and brown fine to coarse grained SAND and sub rounded to rounded quartz GRAVEL with occasional cobbles. (Fluvioglacial Deposits)						
			<i>End of hole at 2.90 m</i>						
<b>REMARKS</b>			<b>SOIL SAMPLE TYPE</b>	<b>IN-SITU TESTS</b>	<b>GROUNDWATER</b>		 <b>Environmental Division</b> 3-4 Kayes Walk The Lace Market Nottingham NG1 1PY Tel : 0115 9241100 Fax : 0115 9503966		
1. No significant groundwater strike though sand and gravel strata noted to be damp. 2. No visual or olfactory evidence of contamination. 3. Hole backfilled with arisings on completion. 4. Granular strata very unstable. 5. Hole terminated to hole instability. 6. Hole position and elevation determined from the site topographical survey plan.			D - 500g to 1kg Disturbed B - 5kg to 20kg Disturbed U - 100mm dia. Undisturbed J - 250ml Amber Glass Jar V - Glass Vial	SV - Hand Shear Vane HP - Hand Penetrometer N = SPT blows over 300mm S = Split Spoon Sampler C = Solid Cone  PID - Photo Ionisation Detector (ppm)	☒ Groundwater strike ☑ Standing groundwater level				
			<b>EASTING</b> 409223.00	<b>NORTHING</b> 334536.00	<b>GROUND LEVEL</b> 80.98				
			<b>LOGGED BY</b> AM	<b>SCALE</b> 1:50	<b>SHEET</b> Sheet 1 of 1				

**Project Title** The Dove Way, Uttoxeter **Hole Ref.** TP113

**Client** Clowes Securities & ESBC **Project No.** NTE285

**Plant used** JCB 3CX **Start Date** 07/07/2010 **End Date** 07/07/2010

Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing		
Strike	Well					Type	Depth From To	Depth (m) (SPT Type)	Result	
		0.05	MADE GROUND: Brick and Rubble	80.76		DJV	3.00			
		0.40	MADE GROUND: Soft medium brown slightly cobbly slightly sandy CLAY. Cobbles are medium sub-rounded to sub-angular brick and quartzite.	80.41						
		1.00	MADE GROUND: Black slightly gravelly SAND. Gravel is white and artificially made.	79.81						
		2.00	MADE GROUND: Soft medium brown and orange sandy gravelly CLAY with domestic and industrial landfill.	78.81					2.25	SV = 40 kN/m2
		2.50	Soft orange brown to pinkish grey slightly gravelly slightly sandy CLAY. Gravel is fine coal with fibrous organic matter.	78.31					2.80	SV = 45 kN/m2
		2.90	Firm light brown mottled orange brown slightly sandy slightly gravelly CLAY. Gravel is angular fine coal and occasional fine to coarse rounded quartz.	77.91						
		3.10	Firm light brown mottled orange brown slightly sandy slightly gravelly CLAY. Gravel is angular fine coal and occasional fine to coarse rounded quartz.	77.71						
		3.10	Grey and brown fine to coarse grained SAND and sub rounded to rounded quartz GRAVEL with occasional cobbles. (Fluvioglacial Deposits)							
			End of hole at 3.10 m							

**REMARKS**  
 1. Groundwater strike noted at approximately 3.1m bgl.  
 2. No visual or olfactory evidence of contamination.  
 3. Hole backfilled with arisings on completion.  
 4. Granular strata very unstable.  
 5. Hole terminated to hole instability.  
 6. Hole position and elevation determined from the site topographical survey plan.

<b>SOIL SAMPLE TYPE</b> D - 500g to 1kg Disturbed B - 5kg to 20kg Disturbed U - 100mm dia. Undisturbed J - 250ml Amber Glass Jar V - Glass Vial	<b>IN-SITU TESTS</b> SV - Hand Shear Vane HP - Hand Penetrometer N = SPT blows over 300mm S = Split Spoon Sampler C = Solid Cone  PID - Photo Ionisation Detector (ppm)	<b>GROUNDWATER</b> ∇ Groundwater strike ▼ Standing groundwater level
<b>EASTING</b> 409223.00	<b>NORTHING</b> 334590.00	<b>GROUND LEVEL</b> 80.81
<b>LOGGED BY</b> AM	<b>SCALE</b> 1:50	<b>SHEET</b> Sheet 1 of 1

**BWB CONSULTING**  
 Environmental Division  
 3-4 Kayes Walk  
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<b>Project Title</b> The Dove Way, Uttoxeter						<b>Hole Ref.</b> TP114				
<b>Client</b> Clowes Securities & ESBC						<b>Project No.</b> NTE285				
<b>Plant used</b> JCB 3CX						<b>Start Date</b> 07/07/2010	<b>End Date</b> 07/07/2010			
<b>Groundwater</b>		<b>Depth (m)</b>	<b>Description of Strata</b>	<b>Level (mAOD)</b>	<b>Legend</b>	<b>Samples</b>		<b>In-situ Testing</b>		
<b>Strike</b>	<b>Well</b>					<b>Type</b>	<b>Depth From</b>	<b>To</b>	<b>Depth (m) (SPT Type)</b>	<b>Result</b>
		0.45	MADE GROUND: Long grass over brown silty sandy TOPSOIL	80.43		DJV	0.50			
		0.80	MADE GROUND: Soft slightly sandy slightly gravelly CLAY. Contains fibrous organic material.	80.08						
		1.60	MADE GROUND: Soft yellowy brown to orange sandy gravelly CLAY. Contains medium sub-angular brick cobbles and domestic waste.	79.28						
		2.10	MADE GROUND: Black gravelly slightly clayey SAND. Gravel is fine to medium sub-rounded quartz and brick fragments. Contains landfill	78.78						
		2.60	predominantly plastics.	78.28					2.50	SV = 45 kN/m2
		3.10	Firm green and brown grey slightly sandy CLAY. Contains coal fragments and fibrous organic material. (Alluvium)	77.78					2.90	SV = 50 kN/m2
			Firm light brown mottled orange sandy CLAY. Contains coal fragments and fibrous organic material. (Fluvioglacial Deposits)							
			<i>End of hole at 3.10 m</i>							
<b>REMARKS</b>			<b>SOIL SAMPLE TYPE</b>		<b>IN-SITU TESTS</b>		<b>GROUNDWATER</b>		<p>Environmental Division 3-4 Kayes Walk The Lace Market Nottingham NG1 1PY Tel : 0115 9241100 Fax : 0115 9503966</p>	
1. No significant groundwater strike though sand and gravel strata noted to be damp.			D - 500g to 1kg Disturbed		SV - Hand Shear Vane		☒ Groundwater strike			
2.No visual or olfactory evidence of contamination.			B - 5kg to 20kg Disturbed		HP - Hand Penetrometer		▼ Standing groundwater level			
3.Hole backfilled with arisings on completion.			U - 100mm dia. Undisturbed		N = SPT blows over 300mm					
4.Granular strata very unstable.			J - 250ml Amber Glass Jar		C = Solid Cone					
5. Hole terminated to hole instability.			V - Glass Vial		PID - Photo Ionisation Detector (ppm)					
6.Hole position and elevation determined from the site topographical survey plan.			<b>EASTING</b> 409237.00		<b>NORTHING</b> 334634.00		<b>GROUND LEVEL</b> 80.88			
			<b>LOGGED BY</b> AM		<b>SCALE</b> 1:50		<b>SHEET</b> Sheet 1 of 1			

**Project Title** The Dove Way, Uttoxeter **Hole Ref.** TP115

**Client** Clowes Securities & ESBC **Project No.** NTE285

**Plant used** JCB 3CX **Start Date** 07/07/2010 **End Date** 07/07/2010

Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing	
Strike	Well					Type	Depth From To	Depth (m) (SPT Type)	Result
		0.10	MADE GROUND: Long grass over brown silty sandy TOPSOIL	79.54		DJV	0.60	2.80 2.90	SV = 20 kN/m2 SV = 30 kN/m2
		0.70	MADE GROUND: Soft slightly sandy CLAY. Contains occasional medium sub-rounded quartz cobbles and tile.	78.94					
		1.20	Soft orangey brown slightly sandy CLAY. Contains coal fragments and fibrous organic material. (Alluvium)	78.44					
∇	2.00	2.50	Brown orangey red clayey SAND and GRAVEL. Gravel is medium to coarse sub rounded quartz. Sand occurs in pockets and content increases with depth. (Fluvioglacial Deposits)	77.14					
		2.90	Soft red and grey slightly gravelly CLAY. Gravel is fine rounded quartz. (Fluvioglacial Deposits) <i>End of hole at 2.90 m</i>	76.74					

**REMARKS**

1. No significant groundwater strike though sand and gravel strata noted to be damp.
2. No visual or olfactory evidence of contamination.
3. Hole backfilled with arisings on completion.
4. Granular strata very unstable.
5. Hole terminated to hole instability.
6. Hole position and elevation determined from the site topographical survey plan.

**SOIL SAMPLE TYPE**

D - 500g to 1kg Disturbed  
 B - 5kg to 20kg Disturbed  
 U - 100mm dia. Undisturbed  
 J - 250ml Amber Glass Jar  
 V - Glass Vial

**IN-SITU TESTS**

SV - Hand Shear Vane  
 HP - Hand Penetrometer  
 N = SPT blows over 300mm  
 S = Split Spoon Sampler  
 C = Solid Cone

PID - Photo Ionisation Detector (ppm)

**GROUNDWATER**

∇ Groundwater strike  
 ▼ Standing groundwater level

<b>EASTING</b> 409171.00	<b>NORTHING</b> 334656.00	<b>GROUND LEVEL</b> 79.64
<b>LOGGED BY</b> AM	<b>SCALE</b> 1:50	<b>SHEET</b> Sheet 1 of 1








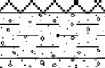
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**Project Title** The Dove Way, Uttoxeter **Hole Ref.** TP116

**Client** Clowes Securities & ESBC **Project No.** NTE285

**Plant used** JCB 3CX **Start Date** 07/07/2010 **End Date** 07/07/2010

Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing	
Strike	Well					Type	Depth From To	Depth (m) (SPT Type)	Result
		0.30	MADE GROUND: Brick and rubble over a black canvas membrane layer.	80.02		DJV	0.20		
		0.50	MADE GROUND: Brown sandy slightly gravelly CLAY. Gravel is medium to coarse sub-angular brick and medium sub-rounded quartz.	79.82					
		1.70	MADE GROUND: Black slightly clayey gravelly SAND. Gravel is fine and sub-angular. Contains glass, wire, brick, fibrous material (clothing and paper) metal. (Ashy fill)	78.62		DJV	1.80		
		2.30	MADE GROUND: Soft medium brown to black slightly sandy slightly gravelly CLAY. Landfill with glass, paper, plastic bags, pots, metal and ash.	78.02					
		2.60		77.72					
		2.70		77.62					
			Soft brown slightly sandy slightly gravelly CLAY. Gravel is medium sub rounded quartz. Contains occasional fine angular coal fragments with fibrous organic material. (Alluvium)						
			Grey and brown fine to coarse grained SAND and sub rounded to rounded quartz GRAVEL with occasional cobbles. (Fluvioglacial Deposits)						
			End of hole at 2.70 m						

**REMARKS**

- No significant groundwater strike though sand and gravel strata noted to be damp.
- No visual or olfactory evidence of contamination.
- Hole backfilled with arisings on completion.
- Granular strata very unstable.
- Hole terminated to hole instability.
- Hole position and elevation determined from the site topographical survey plan.

<b>SOIL SAMPLE TYPE</b> D - 500g to 1kg Disturbed B - 5kg to 20kg Disturbed U - 100mm dia. Undisturbed J - 250ml Amber Glass Jar V - Glass Vial	<b>IN-SITU TESTS</b> SV - Hand Shear Vane HP - Hand Penetrometer N = SPT blows over 300mm S = Split Spoon Sampler C = Solid Cone  PID - Photo Ionisation Detector (ppm)	<b>GROUNDWATER</b> ∇ Groundwater strike ▼ Standing groundwater level
<b>EASTING</b> 409279.00	<b>NORTHING</b> 334418.00	<b>GROUND LEVEL</b> 80.32
<b>LOGGED BY</b> AM	<b>SCALE</b> 1:50	<b>SHEET</b> Sheet 1 of 1



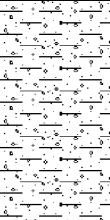
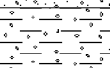

**BWB CONSULTING**

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**Project Title** The Dove Way, Uttoxeter **Hole Ref.** TP117

**Client** Clowes Securities & ESBC **Project No.** NTE285

**Plant used** JCB 3CX **Start Date** 08/07/2010 **End Date** 08/07/2010

Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing	
Strike	Well					Type	Depth From To	Depth (m) (SPT Type)	Result
			Long grass and vegetation over firm friable orange brown slightly gravelly very sandy CLAY. (Alluvium)			DJV	0.50		
		1.50	Soft grey brown slightly gravelly CLAY. Gravel is rounded fine to coarse quartz. (Alluvium)	78.80		DJV	1.80		
		1.90	Grey and brown fine to coarse grained SAND and sub rounded to rounded quartz GRAVEL with occasional cobbles. (Fluvioglacial Deposits)	78.40					
		3.40	End of hole at 3.40 m	76.90					

**REMARKS**  
 1. No significant groundwater strike though sand and gravel strata noted to be damp.  
 2. No visual or olfactory evidence of contamination.  
 3. Hole backfilled with arisings on completion.  
 4. Granular strata very unstable.  
 5. Hole terminated to hole instability.  
 6. Hole position and elevation determined from the site topographical survey plan.

<b>SOIL SAMPLE TYPE</b> D - 500g to 1kg Disturbed B - 5kg to 20kg Disturbed U - 100mm dia. Undisturbed J - 250ml Amber Glass Jar V - Glass Vial	<b>IN-SITU TESTS</b> SV - Hand Shear Vane HP - Hand Penetrometer N = SPT blows over 300mm S = Split Spoon Sampler C = Solid Cone  PID - Photo Ionisation Detector (ppm)	<b>GROUNDWATER</b> ☒ Groundwater strike ☑ Standing groundwater level
<b>EASTING</b> 409335.00	<b>NORTHING</b> 334667.00	<b>GROUND LEVEL</b> 80.30
<b>LOGGED BY</b> RTR	<b>SCALE</b> 1:50	<b>SHEET</b> Sheet 1 of 1



**Environmental Division**  
 3-4 Kayes Walk  
 The Lace Market  
 Nottingham  
 NG1 1PY  
 Tel : 0115 9241100  
 Fax : 0115 9503966

**Project Title** The Dove Way, Uttoxeter **Hole Ref.** TP118

**Client** Clowes Securities & ESBC **Project No.** NTE285

**Plant used** JCB 3CX **Start Date** 08/07/2010 **End Date** 08/07/2010

Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing	
Strike	Well					Type	Depth From To	Depth (m) (SPT Type)	Result
		0.30	Long grass and vegetation over brown silty sandy organic TOPSOIL with abundant rootlets	80.15					
		1.60	MADE GROUND: Soft brown CLAY and gravelly SAND combined in a matrix with ash, wood, metal fragments, glass, wood shavings, textiles and plastics. Gravel is fine to coarse angular to rounded quartz, concrete and brick. Localised hydrocarbon odours and staining noted. (Landfill Material)	78.85		DJV	0.90		
		1.90	Soft grey brown CLAY. (Alluvium)	78.55					
		3.60	Grey and brown fine to coarse grained SAND and sub rounded to rounded quartz GRAVEL with occasional cobbles. (Fluvioglacial Deposits)	76.85		DJV	3.00		
			End of hole at 3.60 m						

**REMARKS**

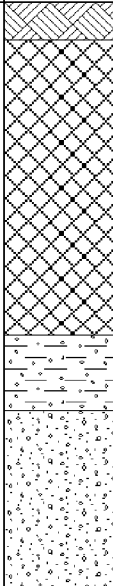

- No significant groundwater strike though sand and gravel strata noted to be damp.
- Localised hydrocarbon odours and staining noted between 0.3m bgl and 1.6m bgl.
- Hole backfilled with arisings on completion.
- Granular strata very unstable.
- Hole terminated to hole instability.
- Hole position and elevation determined from the site topographical survey plan.




<b>SOIL SAMPLE TYPE</b> D - 500g to 1kg Disturbed B - 5kg to 20kg Disturbed U - 100mm dia. Undisturbed J - 250ml Amber Glass Jar V - Glass Vial	<b>IN-SITU TESTS</b> SV - Hand Shear Vane HP - Hand Penetrometer N = SPT blows over 300mm S = Split Spoon Sampler C = Solid Cone  PID - Photo Ionisation Detector (ppm)	<b>GROUNDWATER</b> ∇ Groundwater strike ▼ Standing groundwater level
<b>EASTING</b> 409255.00	<b>NORTHING</b> 334669.00	<b>GROUND LEVEL</b> 80.45
<b>LOGGED BY</b> RTR	<b>SCALE</b> 1:50	<b>SHEET</b> Sheet 1 of 1



**BWB CONSULTING**

Environmental Division  
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The Lace Market  
Nottingham  
NG1 1PY  
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<b>Project Title</b> The Dove Way, Uttoxeter						<b>Hole Ref.</b> TP119			
<b>Client</b> Clowes Securities & ESBC						<b>Project No.</b> NTE285			
<b>Plant used</b> JCB 3CX						<b>Start Date</b> 08/07/2010	<b>End Date</b> 08/07/2010		
<b>Groundwater</b>		<b>Depth</b> <b>(m)</b>	<b>Description of Strata</b>	<b>Level</b> <b>(mAOD)</b>	<b>Legend</b>	<b>Samples</b>		<b>In-situ Testing</b>	
<b>Strike</b>	<b>Well</b>					<b>Type</b>	<b>Depth</b> <b>From</b> <b>To</b>	<b>Depth (m)</b> <b>(SPT Type)</b>	<b>Result</b>
		0.25	Long grass over brown silty sandy organic TOPSOIL with abundant rootlets.	80.23		DJV	0.50		
		2.20	MADE GROUND: Dark brown ashy gravelly SAND with frequent whole bricks, concrete cobbles and boulders, plastics, bottles, metal fragments, wood and textiles with localised organic/hydrocarbon odours and staining. (Landfill Material)	78.28					
		2.70	Firm to stiff orange brown and grey gravelly CLAY. Gravel is rounded fine to medium quartz. (Alluvium)	77.78		DJV	3.20		
		3.90	Grey and brown fine to coarse grained SAND and sub rounded to rounded quartz GRAVEL with occasional cobbles. Slight hydrocarbon/organic odours and staining noted. (Fluvioglacial Deposits)	76.58					
			End of hole at 3.90 m						
<b>REMARKS</b>			<b>SOIL SAMPLE TYPE</b>		<b>IN-SITU TESTS</b>		<b>GROUNDWATER</b>		
1. No significant groundwater strike though sand and gravel strata noted to be damp. 2. Localised hydrocarbon odours and staining noted between 0.25m bgl and 2.2m bgl and between 2.7m bgl and 3.9m bgl. 3. Hole backfilled with arisings on completion. 4. Granular strata very unstable. 5. Hole terminated to hole instability. 6. Hole position and elevation determined from the site topographical survey plan.			D - 500g to 1kg Disturbed		SV - Hand Shear Vane		∇ Groundwater strike		
			B - 5kg to 20kg Disturbed		HP - Hand Penetrometer		▼ Standing groundwater level		
			U - 100mm dia. Undisturbed		N = SPT blows over 300mm				
			J - 250ml Amber Glass Jar		S = Split Spoon Sampler				
			V - Glass Vial		C = Solid Cone				
			PID - Photo Ionisation Detector (ppm)						
			<b>EASTING</b>	<b>NORTHING</b>	<b>GROUND LEVEL</b>		 Environmental Division 3-4 Kayes Walk The Lace Market Nottingham NG1 1PY Tel : 0115 9241100 Fax : 0115 9503966		
			409361.00	334612.00	80.48				
			<b>LOGGED BY</b>	<b>SCALE</b>	<b>SHEET</b>				
			RTR	1:50	Sheet 1 of 1				






<b>Project Title</b> The Dove Way, Uttoxeter						<b>Hole Ref.</b> TP120			
<b>Client</b> Clowes Securities & ESBC						<b>Project No.</b> NTE285			
<b>Plant used</b> JCB 3CX						<b>Start Date</b> 08/07/2010	<b>End Date</b> 08/07/2010		
<b>Groundwater</b>		<b>Depth (m)</b>	<b>Description of Strata</b>	<b>Level (mAOD)</b>	<b>Legend</b>	<b>Samples</b>		<b>In-situ Testing</b>	
<b>Strike</b>	<b>Well</b>					<b>Type</b>	<b>Depth From To</b>	<b>Depth (m) (SPT Type)</b>	<b>Result</b>
		0.30	MADE GROUND: Grass over brown grey sandy angular to rounded fine to coarse brick, quartz and concrete GRAVEL with occasional cobbles.	80.36	[Cross-hatched pattern]	DJV	0.80		
		2.60	MADE GROUND: Brown ashy gravelly fine to coarse grained SAND with frequent metal fragments, cable, glass, plastics, textiles, bottles, newspaper and bitumen. Gravel is angular to rounded fine to coarse brick, concrete and quartz. Hydrocarbon odours noted associated with the bitumen material. (Landfill Material)	78.06		DJV	3.00		
		3.60	Orange brown and occasionally grey clayey silty sandy cobbly rounded fine to coarse GRAVEL. (Fluvioglacial Deposits)	77.06					
			End of hole at 3.60 m						
<b>REMARKS</b>			<b>SOIL SAMPLE TYPE</b>	<b>IN-SITU TESTS</b>	<b>GROUNDWATER</b>		 Environmental Division 3-4 Kayes Walk The Lace Market Nottingham NG1 1PY Tel : 0115 9241100 Fax : 0115 9503966		
1. No significant groundwater strike though sand and gravel strata noted to be damp. 2. Hydrocarbon odours associated with bitumen noted between 0.3m and 2.6m bgl. 3. Hole backfilled with arisings on completion. 4. Granular strata very unstable. 5. Hole terminated to hole instability. 6. Hole position and elevation determined from the site topographical survey plan.			D - 500g to 1kg Disturbed B - 5kg to 20kg Disturbed U - 100mm dia. Undisturbed J - 250ml Amber Glass Jar V - Glass Vial	SV - Hand Shear Vane HP - Hand Penetrometer N = SPT blows over 300mm S = Split Spoon Sampler C = Solid Cone  PID - Photo Ionisation Detector (ppm)	 Groundwater strike  Standing groundwater level				
			<b>EASTING</b> 409309.00	<b>NORTHING</b> 334631.00	<b>GROUND LEVEL</b> 80.66				
			<b>LOGGED BY</b> RTR	<b>SCALE</b> 1:50	<b>SHEET</b> Sheet 1 of 1				

Project Title					The Dove Way, Uttoxeter		Hole Ref.		TP121	
Client					Clowes Securities & ESBC		Project No.		NTE285	
Plant used					JCB 3CX		Start Date		End Date	
					08/07/2010		08/07/2010			
Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing		
Strike	Well					Type	Depth From To	Depth (m) (SPT Type)	Result	
		0.30	MADE GROUND: Long grass over brown silty sandy TOPSOIL	80.64						
		0.50	MADE GROUND: Soft medium brown slightly sandy gravelly CLAY. Gravel is coarse sub-rounded to sub-angular brick and quartz.	80.44						
		1.06	MADE GROUND: Dark brown with occasional orange and black organic gravelly sandy CLAY. Contains landfill including plastic bags, various plastics, wire, syringes and general rubble. (Landfill Material)	79.88		DJV	0.90			
		2.20		78.74		DJV	1.10			
		2.30	MADE GROUND: Black organic sandy gravelly CLAY. Gravel is fine to medium and sub-angular quartz. Contains plastics, glass and industrial waste. Hydrocarbon odour noted. (Landfill Material)	78.64				2.30	SV = 40 kN/m <sup>2</sup>	
		3.10	Firm brown dappled orange slightly gravelly sandy CLAY. Gravel is fine sub-rounded to sub-angular organic material (coal) and quartz. (Alluvium)	77.84				2.50	SV = 40 kN/m <sup>2</sup>	
			Soft light brown and grey sandy CLAY. Sand is grey and occurs in pockets. (Alluvium)							
			Concrete obstruction encountered							
			End of hole at 2.50 m							
<b>REMARKS</b> 1. No significant groundwater strike though sand and gravel strata noted to be damp. 2. Hydrocarbon odours noted between 1.0m bgl and 2.2m bgl 3. Hole backfilled with arisings on completion. 4. Granular strata very unstable. 5. Hole terminated to hole instability. 6. Hole position and elevation determined from the site topographical survey plan.					<b>SOIL SAMPLE TYPE</b> D - 500g to 1kg Disturbed B - 5kg to 20kg Disturbed U - 100mm dia. Undisturbed J - 250ml Amber Glass Jar V - Glass Vial		<b>IN-SITU TESTS</b> SV - Hand Shear Vane HP - Hand Penetrometer N = SPT blows over 300mm S = Split Spoon Sampler C = Solid Cone  PID - Photo Ionisation Detector (ppm)		<b>GROUNDWATER</b> ∇ Groundwater strike ▼ Standing groundwater level	
					<b>EASTING</b>	<b>NORTHING</b>	<b>GROUND LEVEL</b>			
					409330.00	334604.00	80.94			
					<b>LOGGED BY</b>	<b>SCALE</b>	<b>SHEET</b>			
					RTR	1:50	Sheet 1 of 1			






Environmental Division  
 3-4 Kayes Walk  
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Project Title					The Dove Way, Uttoxeter		Hole Ref.		TP122	
Client					Clowes Securities & ESBC		Project No.		NTE285	
Plant used					JCB 3CX		Start Date		End Date	
							07/07/2010		07/07/2010	
Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing		
Strike	Well					Type	Depth From To	Depth (m) (SPT Type)	Result	
		0.10	MADE GROUND: Long grass over brown silty sandy TOPSOIL.	80.55						
		0.60	MADE GROUND: Soft medium brown slightly sandy slightly cobbley CLAY with brick, glass and plastics. Cobbles are sub-rounded to sub-angular quartz and brick. (Landfill Material)	80.05						
		2.40	MADE GROUND: Soft brown black organic sandy gravelly CLAY with glass bottles, wire, plastics, paper, general industrial waste. Hydrocarbon odour noted. (Landfill Material)	78.25		DJV	1.50			
		2.90	Firm grey light brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium angular coal fragments. (Alluvium)	77.75						
		3.00	Brown and orange clayey SAND and GRAVEL. Gravel is medium to coarse sub rounded quartz. (Fluvioglacial Deposits)	77.65		DB	3.00			
			End of hole at 3.00 m							

<b>REMARKS</b> 1. No significant groundwater strike though sand and gravel strata noted to be damp. 2. Hydrocarbon odours noted between 1.4m bgl and 2.9m bgl. 3. Hole backfilled with arisings on completion. 4. Granular strata very unstable. 5. Hole terminated to hole instability. 6. Hole position and elevation determined from the site topographical survey plan.	<b>SOIL SAMPLE TYPE</b> D - 500g to 1kg Disturbed B - 5kg to 20kg Disturbed U - 100mm dia. Undisturbed J - 250ml Amber Glass Jar V - Glass Vial	<b>IN-SITU TESTS</b> SV - Hand Shear Vane HP - Hand Penetrometer N = SPT blows over 300mm S = Split Spoon Sampler C = Solid Cone  PID - Photo Ionisation Detector (ppm)	<b>GROUNDWATER</b>  Groundwater strike  Standing groundwater level
	<b>EASTING</b> 409273.00	<b>NORTHING</b> 334597.00	<b>GROUND LEVEL</b> 80.65
	<b>LOGGED BY</b> AM	<b>SCALE</b> 1:50	<b>SHEET</b> Sheet 1 of 1







**Environmental Division**  
3-4 Kayes Walk  
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**Project Title** The Dove Way, Uttoxeter **Hole Ref.** TP123

**Client** Clowes Securities & ESBC **Project No.** NTE285

**Plant used** JCB 3CX **Start Date** 07/07/2010 **End Date** 07/07/2010

Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing	
Strike	Well					Type	Depth From To	Depth (m) (SPT Type)	Result
		0.20	MADE GROUND: Vegetation over dark brown silty gravelly sandy TOPSOIL. Gravel is fine to medium angular brick. Contains roots.	79.90		DJV	0.30		
		0.40		79.70					
		0.90	MADE GROUND: Soft orange brown slightly sandy gravelly CLAY. Gravel is medium sub-rounded quartz.	79.20					
		1.50	MADE GROUND: Soft dark brown and orange sandy gravelly CLAY containing some landfill material	78.60					
		1.90	MADE GROUND: Soft black sandy gravelly CLAY with high landfill content, includes clothes, plastics, plywood, bags, wire and paper.	78.20		DJV	2.00		
		2.20		77.90					
		3.00	MADE GROUND: Firm dark brown sandy CLAY.	77.10					
			Firm light brown slightly sandy slightly gravelly CLAY. Gravel is angular fine coal. (Alluvium)						
			Grey and brown fine to coarse grained SAND and sub rounded to rounded quartz GRAVEL with occasional cobbles. Occasional decomposed wood fragments. (Fluvioglacial Deposits)						
			End of hole at 3.00 m						

**REMARKS**

- Groundwater noted at approximately 3.0m bgl.
- No visual or olfactory evidence of contamination.
- Hole backfilled with arisings on completion.
- Granular strata very unstable.
- Hole terminated to hole instability.
- Hole position and elevation determined from the site topographical survey plan.

<b>SOIL SAMPLE TYPE</b> D - 500g to 1kg Disturbed B - 5kg to 20kg Disturbed U - 100mm dia. Undisturbed J - 250ml Amber Glass Jar V - Glass Vial		<b>IN-SITU TESTS</b> SV - Hand Shear Vane HP - Hand Penetrometer N = SPT blows over 300mm S = Split Spoon Sampler C = Solid Cone  PID - Photo Ionisation Detector (ppm)		<b>GROUNDWATER</b> ∇ Groundwater strike ▼ Standing groundwater level	
<b>EASTING</b> 409316.00	<b>NORTHING</b> 334543.00	<b>GROUND LEVEL</b> 80.10			
<b>LOGGED BY</b> AM	<b>SCALE</b> 1:50	<b>SHEET</b> Sheet 1 of 1			



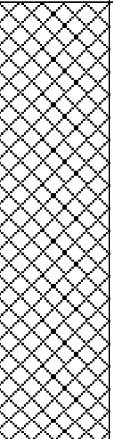

**BWB CONSULTING**

Environmental Division  
3-4 Kayes Walk  
The Lace Market  
Nottingham  
NG1 1PY  
Tel : 0115 9241100  
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**Project Title** The Dove Way, Uttoxeter **Hole Ref.** TP135

**Client** Clowes Securities & ESBC **Project No.** NTE285

**Plant used** JCB 3CX **Start Date** 08/07/2010 **End Date** 08/07/2010

Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing	
Strike	Well					Type	Depth From To	Depth (m) (SPT Type)	Result
			MADE GROUND: Dense vegetation and long grass over dark brown ashy sandy angular to rounded fine to coarse brick, asphalt, concrete, quartz and clinker GRAVEL with roots to 0.5m. Frequent cans, plastics, metal fragments and barbed wire.			DJV	0.90		
		2.90	Soft grey becoming red brown slightly gravelly CLAY. Gravel is rounded fine to coarse quartz. (Fluvioglacial Deposits)	80.30		DJV	3.10		
		3.50	<i>End of hole at 3.50 m</i>	79.70					



**REMARKS**

1. No groundwater encountered.
2. No visual or olfactory evidence of contamination.
3. Hole backfilled with arisings on completion.
4. Granular strata very unstable.
5. Hole terminated to hole instability.
6. Hole position and elevation determined from the site topographical survey plan.

**SOIL SAMPLE TYPE**  
 D - 500g to 1kg Disturbed  
 B - 5kg to 20kg Disturbed  
 U - 100mm dia. Undisturbed  
 J - 250ml Amber Glass Jar  
 V - Glass Vial

**IN-SITU TESTS**  
 SV - Hand Shear Vane  
 HP - Hand Penetrometer  
 N = SPT blows over 300mm  
 S = Split Spoon Sampler  
 C = Solid Cone

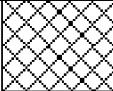
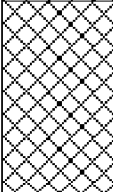
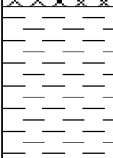
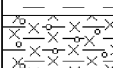
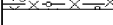
PID - Photo Ionisation Detector (ppm)

**GROUNDWATER**  
 Groundwater strike  
 Standing groundwater level




<b>EASTING</b> 409294.00	<b>NORTHING</b> 334112.00	<b>GROUND LEVEL</b> 83.20
<b>LOGGED BY</b> RTR	<b>SCALE</b> 1:50	<b>SHEET</b> Sheet 1 of 1


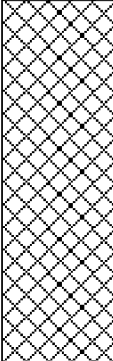


**Environmental Division**  
 3-4 Kayes Walk  
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Project Title					The Dove Way, Uttoxeter		Hole Ref.		TP136	
Client					Clowes Securities & ESBC		Project No.		NTE285	
Plant used					JCB 3CX		Start Date		End Date	
					08/07/2010		08/07/2010			
Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing		
Strike	Well					Type	Depth From To	Depth (m) (SPT Type)	Result	
		0.60	MADE GROUND: Vegetation over brown sandy angular to rounded fine to coarse limestone, brick and quartz GRAVEL.	81.80		DJV	0.50			
			MADE GROUND: Brown black sandy angular fine to medium clinker GRAVEL with occasional glass and wood.			DJV	1.00			
		1.90	Soft grey brown CLAY. (Alluvium)	80.50						
		3.00	Orange brown slightly sandy cobblely very gravelly CLAY. Gravel is rounded fine to coarse quartz. (Fluvioglacial Deposits)	79.40						
		3.40	End of hole at 3.40 m	79.00						

<b>REMARKS</b> 1. No groundwater encountered. 2. No visual or olfactory evidence of contamination. 3. Hole backfilled with arisings on completion. 4. Granular strata very unstable. 5. Hole terminated to hole instability. 6. Hole position and elevation determined from the site topographical survey plan.	<b>SOIL SAMPLE TYPE</b> D - 500g to 1kg Disturbed B - 5kg to 20kg Disturbed U - 100mm dia. Undisturbed J - 250ml Amber Glass Jar V - Glass Vial	<b>IN-SITU TESTS</b> SV - Hand Shear Vane HP - Hand Penetrometer N = SPT blows over 300mm S = Split Spoon Sampler C = Solid Cone  PID - Photo Ionisation Detector (ppm)	<b>GROUNDWATER</b>  Groundwater strike  Standing groundwater level	  Environmental Division 3-4 Kayes Walk The Lace Market Nottingham NG1 1PY Tel : 0115 9241100 Fax : 0115 9503966
	<b>EASTING</b> 409264.00	<b>NORTHING</b> 334099.00	<b>GROUND LEVEL</b> 82.40	
	<b>LOGGED BY</b> RTR	<b>SCALE</b> 1:50	<b>SHEET</b> Sheet 1 of 1	

Project Title					The Dove Way, Uttoxeter		Hole Ref.		TP137	
Client					Clowes Securities & ESBC		Project No.		NTE285	
Plant used					JCB 3CX		Start Date		End Date	
					08/07/2010		08/07/2010			
Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing		
Strike	Well					Type	Depth From To	Depth (m) (SPT Type)	Result	
		0.30	MADE GROUND: Grass and vegetation over light grey brown sandy sub angular to angular fine to coarse limestone GRAVEL.	83.20		DJV	0.70			
			MADE GROUND: Brown grey gravelly cobblely fine to coarse grained SAND with ash and clinker in a matrix with occasional very soft blue grey silty clay (blue Billy). Gravel is angular fine to coarse brick, limestone, slag and concrete including large boulder sized slabs. Slight solvent like odour noted.			DJV	2.00			
		2.69	MADE GROUND: Concrete slab.	80.81						
		2.70	End of hole at 2.70 m	80.80						

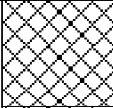
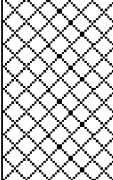
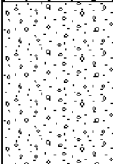
  

<b>REMARKS</b> 1. No groundwater encountered. 2. Slight solvent odours and blue billy noted throughout. 3. Hole backfilled with arisings on completion. 4. Granular strata very unstable. 5. Hole terminated to hole instability. 6. Hole position and elevation determined from the site topographical survey plan.	<b>SOIL SAMPLE TYPE</b> D - 500g to 1kg Disturbed B - 5kg to 20kg Disturbed U - 100mm dia. Undisturbed J - 250ml Amber Glass Jar V - Glass Vial	<b>IN-SITU TESTS</b> SV - Hand Shear Vane HP - Hand Penetrometer N = SPT blows over 300mm S = Split Spoon Sampler C = Solid Cone  PID - Photo Ionisation Detector (ppm)	<b>GROUNDWATER</b> ☒ Groundwater strike ▼ Standing groundwater level	  Environmental Division 3-4 Kayes Walk The Lace Market Nottingham NG1 1PY Tel : 0115 9241100 Fax : 0115 9503966
	<b>EASTING</b> 409234.00	<b>NORTHING</b> 334114.00	<b>GROUND LEVEL</b> 83.50	
	<b>LOGGED BY</b> RTR	<b>SCALE</b> 1:50	<b>SHEET</b> Sheet 1 of 1	

**Project Title** The Dove Way, Uttoxeter **Hole Ref.** WS1

**Client** Clowes Securities & ESBC **Project No.** NTE285

**Plant used** GeoTool Window Sampler **Start Date** 07/07/2010 **End Date** 07/07/2010



Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing	
Strike	Well					Type	Depth From	Depth To	Depth (m) (SPT Type)
		0.70	MADE GROUND: Grass over brown slightly clayey gravelly SAND including fragments of plastic and glass. Gravel is angular to rounded fine to medium brick and quartz.	85.30		DJV	0.10	0.70	
		1.90	MADE GROUND: Firm to stiff brown slightly sandy gravelly CLAY. Gravel is angular to rounded fine to medium coal, sandstone and quartz.	84.10		DJV	1.20	1.60	
		3.00	Grey and brown fine to coarse grained SAND and sub rounded to rounded quartz GRAVEL with occasional cobbles. (Fluvioglacial Deposits)	83.00					
			<i>End of hole at 3.00 m</i>						

**REMARKS**  
 1. No groundwater encountered.  
 2. No visual or olfactory evidence of contamination.  
 3. Hole backfilled with arisings on completion.  
 4. Hole position and elevation determined from the site topographical survey plan.

**SOIL SAMPLE TYPE**  
 D - 500g to 1kg Disturbed  
 B - 5kg to 20kg Disturbed  
 U - 100mm dia. Undisturbed  
 J - 250ml Amber Glass Jar  
 V - Glass Vial

**IN-SITU TESTS**  
 SV - Hand Shear Vane  
 HP - Hand Penetrometer  
 N = SPT blows over 300mm  
 S = Split Spoon Sampler  
 C = Solid Cone

PID - Photo Ionisation Detector (ppm)

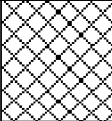
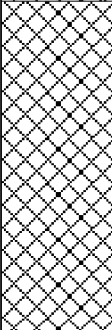

**GROUNDWATER**  
 Groundwater strike  
 Standing groundwater level

<b>EASTING</b> 409202.00	<b>NORTHING</b> 334174.00	<b>GROUND LEVEL</b> 86.00
<b>LOGGED BY</b> RTR	<b>SCALE</b> 1:50	<b>SHEET</b> Sheet 1 of 1



**Environmental Division**  
 3-4 Kayes Walk  
 The Lace Market  
 Nottingham  
 NG1 1PY  
 Tel : 0115 9241100  
 Fax : 0115 9503966



<b>Project Title</b> The Dove Way, Uttoxeter						<b>Hole Ref.</b> WS2			
<b>Client</b> Clowes Securities & ESBC						<b>Project No.</b> NTE285			
<b>Plant used</b> GeoTool Window Sampler						<b>Start Date</b> 07/07/2010		<b>End Date</b> 07/07/2010	
<b>Groundwater</b>		<b>Depth (m)</b>	<b>Description of Strata</b>	<b>Level (mAOD)</b>	<b>Legend</b>	<b>Samples</b>		<b>In-situ Testing</b>	
<b>Strike</b>	<b>Well</b>					<b>Type</b>	<b>Depth From</b>	<b>To</b>	<b>Depth (m) (SPT Type)</b>
		0.80	MADE GROUND: Grass over brown slightly clayey gravelly SAND including fragments of glass. Gravel is angular to rounded fine to medium brick, concrete and quartz.	85.20		DJV	0.10	0.80	
			MADE GROUND: Firm locally soft brown slightly sandy gravelly CLAY. Gravel is angular to rounded fine to coarse brick and quartz. No recovery			DJV	1.10	1.50	
		3.00	End of hole at 3.00 m	83.00					
<b>REMARKS</b>			<b>SOIL SAMPLE TYPE</b>	<b>IN-SITU TESTS</b>	<b>GROUNDWATER</b>				
1. No groundwater encountered.			D - 500g to 1kg Disturbed	SV - Hand Shear Vane	∇ Groundwater strike				
2.No visual or olfactory evidence of contamination.			B - 5kg to 20kg Disturbed	HP - Hand Penetrometer	▼ Standing groundwater level				
3.Hole backfilled with arisings on completion.			U - 100mm dia. Undisturbed	N = SPT blows over 300mm					
4.Hole position and elevation determined from the site topographical survey plan.			J - 250ml Amber Glass Jar	S = Split Spoon Sampler					
			V - Glass Vial	C = Solid Cone					
				PID - Photo Ionisation Detector (ppm)					
<b>EASTING</b>		<b>NORTHING</b>	<b>GROUND LEVEL</b>						
409250.00		334180.00	86.00						
<b>LOGGED BY</b>		<b>SCALE</b>	<b>SHEET</b>						
RTR		1:50	Sheet 1 of 1						
					 <b>Environmental Division</b> 3-4 Kayes Walk The Lace Market Nottingham NG1 1PY Tel : 0115 9241100 Fax : 0115 9503966				

**Project Title** The Dove Way, Uttoxeter **Hole Ref.** WS3

**Client** Clowes Securities & ESBC **Project No.** NTE285

**Plant used** GeoTool Window Sampler **Start Date** 07/07/2010 **End Date** 07/07/2010

Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing	
Strike	Well					Type	Depth From	Depth To	Depth (m) (SPT Type)
		0.05	MADE GROUND: Asphalt.	85.95		DJV	0.10	0.90	
		0.90	MADE GROUND: Brown and grey sandy angular fine to coarse concrete and brick GRAVEL.	85.10					
		1.10	MADE GROUND: Dark brown and grey gravelly fine to coarse grained SAND. Gravel is angular to rounded fine to coarse quartz and concrete with asphalt fragments.	84.90		DJV	1.20	2.00	
		2.70	MADE GROUND: Firm brown sandy gravelly CLAY. Gravel is angular to rounded fine to medium brick and quartz.	83.30					
		3.00	Stiff red brown CLAY. (Mercia Mudstone Formation)	83.00					
			<i>End of hole at 3.00 m</i>						

**REMARKS**  
 1. No groundwater encountered.  
 2. No visual or olfactory evidence of contamination.  
 3. Hole backfilled with arisings on completion.  
 4. Hole position and elevation determined from the site topographical survey plan.

<b>SOIL SAMPLE TYPE</b> D - 500g to 1kg Disturbed B - 5kg to 20kg Disturbed U - 100mm dia. Undisturbed J - 250ml Amber Glass Jar V - Glass Vial	<b>IN-SITU TESTS</b> SV - Hand Shear Vane HP - Hand Penetrometer N = SPT blows over 300mm S = Split Spoon Sampler C = Solid Cone  PID - Photo Ionisation Detector (ppm)	<b>GROUNDWATER</b> ∇ Groundwater strike ▼ Standing groundwater level
<b>EASTING</b> 409226.00	<b>NORTHING</b> 334151.00	<b>GROUND LEVEL</b> 86.00
<b>LOGGED BY</b> RTR	<b>SCALE</b> 1:50	<b>SHEET</b> Sheet 1 of 1


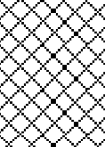
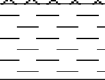
**BWB CONSULTING**

Environmental Division  
 3-4 Kayes Walk  
 The Lace Market  
 Nottingham  
 NG1 1PY  
 Tel : 0115 9241100  
 Fax : 0115 9503966

**Project Title** The Dove Way, Uttoxeter **Hole Ref.** WS4

**Client** Clowes Securities & ESBC **Project No.** NTE285

**Plant used** GeoTool Window Sampler **Start Date** 07/07/2010 **End Date** 07/07/2010



Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing		
Strike	Well					Type	Depth From	To	Depth (m) (SPT Type)	Result
		0.50	MADE GROUND: Short grass and moss over dark brown sandy angular to rounded fine to coarse concrete, limestone and clinker GRAVEL with ash.	84.50		DJV	0.10	0.50		
		1.50	MADE GROUND: Soft to firm brown sandy gravelly CLAY. Gravel is angular to rounded fine to coarse slag and quartz. Slight hydrocarbon odour noted.	83.50		DJV	1.00	1.50		
		2.00	Soft to firm red brown CLAY. (Mercia Mudstone Formation)	83.00						
			End of hole at 2.00 m							

**REMARKS**  
 1. No groundwater encountered.  
 2. Slight hydrocarbon odour noted between 0.5m bgl and 1.5m bgl.  
 3. Hole backfilled with arisings on completion.  
 4. Hole position and elevation determined from the site topographical survey plan.

**SOIL SAMPLE TYPE**  
 D - 500g to 1kg Disturbed  
 B - 5kg to 20kg Disturbed  
 U - 100mm dia. Undisturbed  
 J - 250ml Amber Glass Jar  
 V - Glass Vial

**IN-SITU TESTS**  
 SV - Hand Shear Vane  
 HP - Hand Penetrometer  
 N = SPT blows over 300mm  
 S = Split Spoon Sampler  
 C = Solid Cone

PID - Photo Ionisation Detector (ppm)

**GROUNDWATER**  
 Groundwater strike  
 Standing groundwater level

<b>EASTING</b> 409199.00	<b>NORTHING</b> 334064.00	<b>GROUND LEVEL</b> 85.00
<b>LOGGED BY</b> RTR	<b>SCALE</b> 1:50	<b>SHEET</b> Sheet 1 of 1

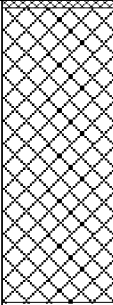


**Environmental Division**  
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 The Lace Market  
 Nottingham  
 NG1 1PY  
 Tel : 0115 9241100  
 Fax : 0115 9503966

**Project Title** The Dove Way, Uttoxeter **Hole Ref.** WS5

**Client** Clowes Securities & ESBC **Project No.** NTE285

**Plant used** GeoTool Window Sampler **Start Date** 07/07/2010 **End Date** 07/07/2010



Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing		
Strike	Well					Type	Depth From	To	Depth (m) (SPT Type)	Result
		0.05	MADE GROUND: Asphalt.	84.45		DJV	0.10	1.00		
		2.00	MADE GROUND: Dark brown clayey sandy angular to rounded fine to coarse brick, slag and quartz	82.50						
			End of hole at 2.00 m							

**REMARKS**  
 1. No groundwater encountered.  
 2. No visual or olfactory evidence of contamination.  
 3. Hole backfilled with arisings on completion.  
 4. Hole position and elevation determined from the site topographical survey plan.

**SOIL SAMPLE TYPE**  
 D - 500g to 1kg Disturbed  
 B - 5kg to 20kg Disturbed  
 U - 100mm dia. Undisturbed  
 J - 250ml Amber Glass Jar  
 V - Glass Vial

**IN-SITU TESTS**  
 SV - Hand Shear Vane  
 HP - Hand Penetrometer  
 N = SPT blows over 300mm  
 S = Split Spoon Sampler  
 C = Solid Cone

PID - Photo Ionisation Detector (ppm)

**GROUNDWATER**  
 Groundwater strike  
 Standing groundwater level

<b>EASTING</b> 409223.00	<b>NORTHING</b> 334095.00	<b>GROUND LEVEL</b> 84.50
<b>LOGGED BY</b> RTR	<b>SCALE</b> 1:50	<b>SHEET</b> Sheet 1 of 1

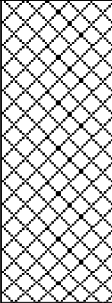


Environmental Division  
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 Nottingham  
 NG1 1PY  
 Tel : 0115 9241100  
 Fax : 0115 9503966

**Project Title** The Dove Way, Uttoxeter **Hole Ref.** WS6

**Client** Clowes Securities & ESBC **Project No.** NTE285

**Plant used** GeoTool Window Sampler **Start Date** 07/07/2010 **End Date** 07/07/2010

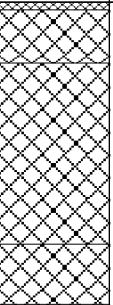
Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples		In-situ Testing	
Strike	Well					Type	Depth From	To	Depth (m) (SPT Type)
			MADE GROUND: Short grass and moss over dark brown and dark grey sandy angular to rounded fine to coarse quartz, brick, slag and clinker GRAVEL with ash.			DJV	0.30	1.00	
		2.00	End of hole at 2.00 m	81.50					

**REMARKS**  
 1. No groundwater encountered.  
 2. No visual or olfactory evidence of contamination.  
 3. Hole backfilled with arisings on completion.  
 4. Hole position and elevation determined from the site topographical survey plan.


<b>SOIL SAMPLE TYPE</b> D - 500g to 1kg Disturbed B - 5kg to 20kg Disturbed U - 100mm dia. Undisturbed J - 250ml Amber Glass Jar V - Glass Vial	<b>IN-SITU TESTS</b> SV - Hand Shear Vane HP - Hand Penetrometer N = SPT blows over 300mm S = Split Spoon Sampler C = Solid Cone  PID - Photo Ionisation Detector (ppm)	<b>GROUNDWATER</b> ∇ Groundwater strike ▼ Standing groundwater level
<b>EASTING</b> 409262.00	<b>NORTHING</b> 334088.00	<b>GROUND LEVEL</b> 83.50
<b>LOGGED BY</b> RTR	<b>SCALE</b> 1:50	<b>SHEET</b> Sheet 1 of 1

**BWB CONSULTING**

Environmental Division  
 3-4 Kayes Walk  
 The Lace Market  
 Nottingham  
 NG1 1PY  
 Tel : 0115 9241100  
 Fax : 0115 9503966

Project Title					The Dove Way, Uttoxeter					Hole Ref.		WS7	
Client					Clowes Securities & ESBC					Project No.		NTE285	
Plant used					GeoTool Window Sampler					Start Date		End Date	
										07/07/2010		07/07/2010	
Groundwater		Depth (m)	Description of Strata	Level (mAOD)	Legend	Samples			In-situ Testing				
Strike	Well					Type	Depth From	Depth To	Depth (m) (SPT Type)	Result			
		0.05	MADE GROUND: Asphalt.	84.85									
		0.40	MADE GROUND: BROWN sandy angular to sub angular fine to coarse granite and concrete GRAVEL.	84.50									
			MADE GROUND: Red brown sandy angular fine to coarse brick GRAVEL.										
		1.60	MADE GROUND: Brown clayey angular fine to coarse quartz GRAVEL.	83.30			DJV	1.60	2.00				
		2.00	End of hole at 2.00 m	82.90									

<b>REMARKS</b> 1. No groundwater encountered. 2. No visual or olfactory evidence of contamination. 3. Hole backfilled with arisings on completion. 4. Hole position and elevation determined from the site topographical survey plan.	<b>SOIL SAMPLE TYPE</b> D - 500g to 1kg Disturbed B - 5kg to 20kg Disturbed U - 100mm dia. Undisturbed J - 250ml Amber Glass Jar V - Glass Vial	<b>IN-SITU TESTS</b> SV - Hand Shear Vane HP - Hand Penetrometer N = SPT blows over 300mm S = Split Spoon Sampler C = Solid Cone  PID - Photo Ionisation Detector (ppm)	<b>GROUNDWATER</b> ☒ Groundwater strike ☑ Standing groundwater level	  Environmental Division 3-4 Kayes Walk The Lace Market Nottingham NG1 1PY Tel : 0115 9241100 Fax : 0115 9503966
	<b>EASTING</b> 409234.00	<b>NORTHING</b> 334114.00	<b>GROUND LEVEL</b> 84.90	
	<b>LOGGED BY</b> RTR	<b>SCALE</b> 1:50	<b>SHEET</b> Sheet 1 of 1	



**APPENDIX 3**  
**GAS AND GROUNDWATER MONITORING RESULTS**

**BWB GAS AND GROUNDWATER MONITORING**

Site:	The Dove Way, Uttoxeter
Client:	Clowes Securities & ESBC
Job No.:	NTE285
Date:	15 July 2010
Start / End Time:	10:30am / 3:30pm
Engineer:	RTR
Installation Details:	50mm HDPE Standpipe and Gas Valve
Monitoring Equipment:	GA2000 Gas Analyser, GF60 Flow Monitor, MiniRAE PID & Dip Meter

Weather Conditions	Start	End
(Dry / Raining)	Dry	Showers
Cloud Cover	7/8	7/8
Wind strength (m/s)	7.7	6.7
Wind Direction (from)	SW	SW
Temperature (°C)	18.0	19.0
Barometric Pressure (mb)	988	992
(Rising / Falling)	Rising	Rising

Ref.	Flow (l/hr)	Methane (%v/v)	Methane (%LEL)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Hydrogen Sulphide (ppm)	Carbon Monoxide (ppm)	PID (ppm)	Depth to water (m)	Base of Response Zone (m)	Groundwater elevation (mAOD)	Notes
BH1	<0.1	<0.1	<2	3.1	17.3	<1	<1	NR	4.35	11.35	76.25	
BH2	0.2	0.1	2.0	12.1	6.5	<1	<1	NR	4.11	9.80	76.23	
BH3	0.2	0.2	4.0	12.8	2.7	<1	<1	NR	4.18	9.93	76.38	
BH4	<0.1	<0.1	<2	0.2	19.8	<1	<1	NR	1.39	6.50	76.03	
BH5	<0.1	<0.1	<2	0.3	20.2	<1	<1	NR	2.55	6.30	76.16	Cover vandalised
BH6	0.2	<0.1	<2	0.6	19.8	<1	<1	NR	3.54	5.95	77.05	
BH7	<0.1	0.1	2.0	3.1	17.4	<1	<1	NR	3.24	8.95	81.50	
BH8	0.4	<0.1	<2	0.6	19.8	<1	<1	NR	3.49	5.95	79.82	
BH9	<0.1	0.1	2.0	2.7	17.2	<1	<1	NR	1.88	4.30	79.29	

### BWB GAS AND GROUNDWATER MONITORING

<b>Site:</b>	The Dove Way, Uttoxeter	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th style="width: 35%;">Weather Conditions</th> <th style="width: 15%;">Start</th> <th style="width: 15%;">End</th> </tr> <tr> <td>(Dry / Raining)</td> <td>Dry</td> <td>Lt showers</td> </tr> <tr> <td>Cloud Cover</td> <td>8/8</td> <td>8/8</td> </tr> <tr> <td>Wind strength (m/s)</td> <td>SE</td> <td>E</td> </tr> <tr> <td>Wind Direction (from)</td> <td>2.1</td> <td>4.6</td> </tr> <tr> <td>Temperature (°C)</td> <td>17.0</td> <td>19.0</td> </tr> <tr> <td>Barometric Pressure (mb)</td> <td>1000</td> <td>1001</td> </tr> <tr> <td>(Rising / Falling)</td> <td>Rising</td> <td>Rising</td> </tr> </table>	Weather Conditions	Start	End	(Dry / Raining)	Dry	Lt showers	Cloud Cover	8/8	8/8	Wind strength (m/s)	SE	E	Wind Direction (from)	2.1	4.6	Temperature (°C)	17.0	19.0	Barometric Pressure (mb)	1000	1001	(Rising / Falling)	Rising	Rising
Weather Conditions	Start		End																							
(Dry / Raining)	Dry		Lt showers																							
Cloud Cover	8/8		8/8																							
Wind strength (m/s)	SE		E																							
Wind Direction (from)	2.1		4.6																							
Temperature (°C)	17.0		19.0																							
Barometric Pressure (mb)	1000		1001																							
(Rising / Falling)	Rising		Rising																							
<b>Client:</b>	Clowes Securities & ESBC																									
<b>Job No.:</b>	NTE285																									
<b>Date:</b>	22 July 2010																									
<b>Start / End Time:</b>	9:50am / 2:10pm																									
<b>Engineer:</b>	RTR																									
<b>Installation Details:</b>	50mm HDPE Standpipe and Gas Valve																									
<b>Monitoring Equipment:</b>	GA2000 Gas Analyser, GF60 Flow Monitor, MiniRAE PID & Dip Meter																									

Ref.	Flow (l/hr)	Methane		Carbon Dioxide (%v/v)	Oxygen (%v/v)	Hydrogen Sulphide (ppm)	Carbon Monoxide (ppm)	PID (ppm)	Depth to water (m)	Base of Response Zone (m)	Groundwater elevation (mAOD)	Notes
		(%v/v)	(%LEL)									
BH1	-0.2	0.1	2.0	6.5	14.5	<1	<1	<1	4.47	11.35	76.13	
BH2	0.1	<0.1	<2.0	2.2	17.8	<1	<1	<1	4.24	9.80	76.10	
BH3	-0.1	<0.1	<2.0	13.6	2.7	<1	<1	<1	NR	9.93		
BH4	<0.1	<0.1	<2.0	3.0	15.2	<1	<1	<1	1.44	6.50	75.98	
BH5	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR		Standpipe vandalised
BH6	<0.1	<0.1	<2.0	0.7	19.9	<1	<1	<1	3.61	5.95	75.10	
BH7	<0.1	<0.1	<2.0	0.9	19.4	<1	<1	<1	3.29	4.30	81.45	
BH8	<0.1	<0.1	<2.0	0.8	19.6	<1	<1	<1	3.55	5.95	79.76	
BH9	<0.1	<0.1	<2.0	1.9	17.5	<1	<1	<1	1.82	8.95	79.35	

LEL Lower Explosive limit (100% LEL = 5% Flammable gas)  
 NR Not recorded



**BWB GAS AND GROUNDWATER MONITORING**

Site:	The Dove Way, Uttoxeter
Client:	Clowes Securities & ESBC
Job No.:	NTE285
Date:	29th September 2010
Start / End Time:	9:20am/10:40am
Engineer:	RTR
Installation Details:	50mm HDPE Standpipe and Gas Valve
Monitoring Equipment:	GA2000 Gas Analyser, GF60 Flow Monitor, MiniRAE PID & Dip Meter

Weather Conditions	Start	End
(Dry / Raining)	Dry	Lt Showers
Cloud Cover	8/8	8/8
Wind strength (m/s)	6.2	4.1
Wind Direction (from)	NW	W
Temperature (°C)	18.0	17.0
Barometric Pressure (mb)	1006	1007
(Rising / Falling)	Rising	Rising

Ref.	Flow (l/hr)	Methane (%v/v)	Methane (%LEL)	Carbon Dioxide (%v/v)	Oxygen (%v/v)	Hydrogen Sulphide (ppm)	Carbon Monoxide (ppm)	PID (ppm)	Depth to water (m)	Base of Response Zone (m)	Groundwater elevation (mAOD)	Notes
BH1	<0.1	<0.1	<2.0	6.3	13.7	<1	<1	2.80	NR	NR		
BH2	<0.1	<0.1	<2.0	12.7	7.0	<1	<1	<0.1	NR	NR		
BH3	<0.1	<0.1	<2.0	13.9	4.5	<1	<1	6.50	NR	NR		
BH4	<0.1	<0.1	<2.0	1.9	18.3	<1	<1	3.70	NR	NR		
BH5	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR		Vandalised
BH6	<0.1	<0.1	<2.0	0.3	20.4	<1	<1	1.0	NR	NR		
BH7	<0.1	<0.1	<2.0	2.0	19.0	<1	<1	<0.1	NR	NR		
BH8	<0.1	<0.1	<2.0	<0.1	20.5	<1	<1	<0.1	NR	NR		
BH9	<0.1	<0.1	<2.0	2.6	17.0	<1	<1	<0.1	NR	NR		

LEL Lower Explosive limit (100% LEL = 5% Flammable gas)  
NR Not recorded



**BWB GAS AND GROUNDWATER MONITORING**

Site:	The Dove Way, Uttoxeter
Client:	Clowes Securities & ESBC
Job No.:	NTE285
Date:	05 August 2010
Start / End Time:	10:30am/ 12:10pm
Engineer:	RTR
Installation Details:	50mm HDPE Standpipe and Gas Valve
Monitoring Equipment:	GA2000 Gas Analyser, GF60 Flow Monitor, MiniRAE PID & Dip Meter

<b>Weather Conditions</b>	<b>Start</b>	<b>End</b>
(Dry / Raining)	Dry	Dry
Cloud Cover	7/8	7/8
Wind strength (m/s)	5.0	4.6
Wind Direction (from)	NW	NW
Temperature (°C)	18.0	19.0
Barometric Pressure (mb)	999	999
(Rising / Falling)	Rising	Rising

Ref.	Flow (l/hr)	Methane (%v/v) (%LEL)		Carbon Dioxide (%v/v)	Oxygen (%v/v)	Hydrogen Sulphide (ppm)	Carbon Monoxide (ppm)	PID (ppm)	Depth to water (m)	Base of Response Zone (m)	Groundwater elevation (mAOD)	Notes
BH1	<0.1	<0.1	<0.1	7.3	13.3	<1	<1	NR	4.47	NR	76.13	
BH2	1.3	<0.1	<0.1	13.0	7.5	<1	<1	NR	4.22	NR	76.12	
BH3	0.9	<0.1	<0.1	17.2	2.4	<1	<1	NR	4.30	NR	76.26	
BH4	<0.1	<0.1	<0.1	1.2	18.7	<1	<1	NR	1.43	NR	75.99	
BH5	-	-	-	-	-	-	-	-	-	-	-	Vandalised
BH6	<0.1	<0.1	<0.1	0.7	19.8	<1	<1	NR	3.63	NR	76.96	
BH7	0.3	<0.1	<0.1	2.2	18.3	<1	<1	NR	3.24	NR	81.50	
BH8	0.2	<0.1	<0.1	<0.1	20.6	<1	<1	NR	3.52	NR	79.79	
BH9	<0.1	<0.1	<0.1	1.0	19.6	<1	<1	NR	1.76	NR	79.41	

LEL Lower Explosive limit (100% LEL = 5% Flammable gas)  
 NR Not recorded



**APPENDIX 4**  
**SOIL AND SOIL LEACHATE LABORATORY**  
**ANALYTICAL RESULTS**





BWB Consulting  
3-4 Kayes Walk  
The Lace Market  
Nottingham  
Nottinghamshire  
NG1 1PY

**Attention:** Richard Robinson

## CERTIFICATE OF ANALYSIS

**Date:** 21 July 2010  
**Customer:** H\_BWB\_NTT-81  
**Sample Delivery Group (SDG):** 100708-104 **Report No.:** 91025  
**Your Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

We received 49 samples on Thursday July 08, 2010 and 28 of these samples were scheduled for analysis which was completed on Wednesday July 21, 2010. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Asbestos testing - we are not accredited for screening soil samples for asbestos fibres. We are only accredited to identify asbestos fibres in bulk material (ACM).

Approved By:

**Iain Swinton**

Operations Director - Land UK & Ireland



<b>SDG:</b>	100708-104	<b>Customer:</b>	BWB Consulting
<b>Job:</b>	H_BWB_NTT-81	<b>Attention:</b>	Richard Robinson
<b>Client Reference:</b>	NTE 285	<b>Order No.:</b>	NE09/616
<b>Location:</b>	THE DOVE WAY UTTOXETER	<b>Report No.:</b>	91025

## Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Sampled Date
1795358	TP101	0.20	05/07/2010
1795377	TP101	2.00	05/07/2010
1795474	TP102	1.00	05/07/2010
1795508	TP103	0.50	05/07/2010
1795533	TP103	2.00	05/07/2010
1795553	TP104	0.60	05/07/2010
1795581	TP105	0.70	05/07/2010
1795611	TP105	2.80	05/07/2010
1795655	TP106		05/07/2010
1795636	TP106	0.20	05/07/2010
1795674	TP107	0.60	05/07/2010
1795713	TP107	1.30	05/07/2010
1795808	TP108	0.50	06/07/2010
1795815	TP108	2.20	06/07/2010
1796216	TP110	0.80	07/07/2010
1796239	TP110	2.60	07/07/2010
1796247	TP111	0.40	07/07/2010
1796796	TP111	2.80	07/07/2010
1796270	TP112	0.80	07/07/2010
1796289	TP112	2.80	07/07/2010
1796306	TP113	0.30	07/07/2010
1796353	TP113	3.00	07/07/2010
1796622	TP116	0.20	07/07/2010
1796327	TP116	1.80	07/07/2010
1795825	TP124	0.80	06/07/2010
1795821	TP124	1.80	06/07/2010
1795848	TP125	0.50	06/07/2010
1796508	TP125	1.70	06/07/2010
1796957	TP125	2.20	06/07/2010
1796053	TP126	0.30	06/07/2010
1796418	TP126	2.20	06/07/2010
1796032	TP127	1.10	06/07/2010
1796087	TP127	2.00	06/07/2010
1796743	TP128	0.40	06/07/2010
1796970	TP128	0.50	06/07/2010
1796662	TP128	1.50	06/07/2010
1796720	TP129	0.60	06/07/2010
1796809	TP129	1.80	06/07/2010
1796767	TP130	0.20	06/07/2010
1796471	TP130	1.70	06/07/2010
1796700	TP131	0.75	06/07/2010
1796382	TP131	1.50	06/07/2010
1796784	TP132	0.60	06/07/2010

<b>SDG:</b>	100708-104	<b>Customer:</b>	BWB Consulting
<b>Job:</b>	H_BWB_NTT-81	<b>Attention:</b>	Richard Robinson
<b>Client Reference:</b>	NTE 285	<b>Order No.:</b>	NE09/616
<b>Location:</b>	THE DOVE WAY UTTOXETER	<b>Report No.:</b>	91025

1796587	TP133	0.60	06/07/2010
1796440	TP133	1.80	06/07/2010
1796915	WS2	0.10 - 0.80	07/07/2010
1796928	WS2	1.10 - 1.50	07/07/2010

Only received samples which have had analysis scheduled will be shown on the following pages.

**SDG:** 100708-104  
**Job:** H\_BWB\_NTT-81  
**Client Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 91025

**SOLID**

Results Legend	Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Container
	<p><b>X</b> Test</p> <p><b>N</b> No Determination Possible</p>	1796562	TP128	1.50
	1796622	TP116	0.20	250g Amber Jar 11g Tub
	1796587	TP133	0.80	250g Amber Jar 89g VOC
	1796508	TP125	1.70	250g Amber Jar 11g Tub
	1796418	TP126	2.20	250g Amber Jar 89g VOC
	1796327	TP116	1.80	250g Amber Jar 40g Tub
	1796353	TP113	3.00	250g Amber Jar 89g VOC
	1796270	TP112	0.80	250g Amber Jar 89g VOC
	1796289	TP112	2.80	250g Amber Jar 40g Tub
	1796247	TP111	0.40	250g Amber Jar 11g Tub
	1796216	TP110	0.80	250g Amber Jar 11g Tub
	1796087	TP127	2.00	250g Amber Jar 40g Tub
	1795825	TP124	0.80	250g Amber Jar 11g Tub
	1795821	TP124	1.80	250g Amber Jar 89g VOC
	1795674	TP107	0.80	250g Amber Jar 40g Tub
	1795636	TP106	0.20	250g Amber Jar 40g Tub
	1795581	TP105	0.70	250g Amber Jar 40g Tub
	1795533	TP103	2.00	250g Amber Jar 40g Tub
	1795474	TP102	1.00	250g Amber Jar 40g Tub
	1795358	TP101	0.20	250g Amber Jar 40g Tub
Anions by Kone (w)	All			
Asbestos Containing Material Screen	All			
Boron Water Soluble	All			
CEN Readings	All			
Cyanide Complex/Free/Total/Thiocyan	All			
Cyanides Complex/Free/Total/Thiocya	Cyanide, Complex			
	Cyanide, Free			
	Cyanide, Total			
Dissolved Metals by ICP-MS	All			
EPH CWG (Aliphatic) GC (S)	All			
EPH CWG (Aromatic) GC (S)	All			
GRO BTEX MTBE GC (S)	All			
Mercury Dissolved	All			
Metals by iCap-OES (Soil)	Arsenic			
	Barium			
	Beryllium			
	Cadmium			
	Chromium			
	Copper			
	Lead			
	Mercury			
	Nickel			
	Selenium			



**SDG:** 100708-104  
**Job:** H\_BWB\_NTT-81  
**Client Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 91025

		1796682	1796622	1796587	1796508	1796418	1796353	1796327	1796289	1796270	1796247	1796216	1796087	1796825	1796821	1796674	1796636	1796581	1796533	1796474	1796368
		TP128	TP116	TP133	TP125	TP126	TP113	TP116	TP112	TP112	TP111	TP110	TP127	TP124	TP124	TP107	TP106	TP105	TP103	TP102	TP101
		1.50	0.20	0.80	1.70	2.20	3.00	1.80	2.80	0.80	0.40	0.80	2.00	0.80	1.80	0.80	0.20	0.70	2.00	1.00	0.20
		250g Amber Jar	400g Tub	250g Amber Jar	250g Amber Jar	400g Tub	250g Amber Jar	250g Amber Jar	400g Tub	250g Amber Jar	250g Amber Jar	1kg LUB	250g Amber Jar	250g Amber Jar	1kg LUB	400g Tub	250g Amber Jar	250g Amber Jar	400g Tub	250g Amber Jar	250g Amber Jar
Metals by iCap-OES (Soil)	Vanadium	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Zinc	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PAH by GCMS	All	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
pH	All	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
pH Value	All	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Phenols by HPLC (S)	All	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sample description	All	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Total Organic Carbon	All	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Total Sulphur	All	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TPH C6-C40 Value of soil	All	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TPH CWG GC (S)	All	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
VOC MS (S)	All																				
Water Soluble Sulphate 2:1	All	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X



		Total																			
		WS2	1:10 - 1:50	819 VOC	250g Amber Jar	1kg TB8	400g Tub	250g Amber Jar	400g Tub	250g Amber Jar	400g Tub	250g Amber Jar	819 VOC	1kg TB8	250g Amber Jar	400g Tub	250g Amber Jar	1kg TB8	250g Amber Jar	400g Tub	
1796928	WS2				X																0 20
1796915	WS2	WS2	0:10 - 0:80		X																0 20
1796809	TP129	TP129	1:80		X																0 20
1796796	TP111	TP111	2:80		X																0 20
1796784	TP132	TP132	0:60		X																0 20
1796767	TP130	TP130	0:20		X																0 20
1796743	TP128	TP128	0:40		X																0 20

**SDG:** 100708-104  
**Job:** H\_BWB\_NTT-81  
**Client Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 91025

## Sample Descriptions

### Grain Sizes:

<0.063mm very fine,  
 0.063mm - 0.1mm fine,  
 0.1mm - 2mm medium,  
 2mm - 10mm coarse,  
 >10mm very coarse

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions
1795358	TP101	0.20	Dark Brown	Sandy Clay	0.1 - 2 mm	Stones
1795474	TP102	1.00	Light Brown	Clay	<0.063 mm	Vegetation
1795533	TP103	2.00	Dark Brown	Sand	0.1 - 2 mm	Stones
1795581	TP105	0.70	Orange	Silty Clay	0.063 - 0.1 mm	N/A
1795636	TP106	0.20	Dark Brown	Silt Loam	0.063 - 0.1 mm	Vegetation
1795674	TP107	0.60	Light Brown	Clay Loam	<0.063 mm	None
1795821	TP124	1.80	Dark Brown	Sand	0.1 - 2 mm	Stones
1795825	TP124	0.80	Dark Brown	Silty Clay	0.063 - 0.1 mm	N/A
1796087	TP127	2.00	Light Brown	Sand	0.1 - 2 mm	Stones
1796216	TP110	0.80	Black	Silt	<0.063 mm	N/A
1796247	TP111	0.40	Dark Brown	Sandy Silt Loam	0.1 - 2 mm	Stones
1796270	TP112	0.80	Dark Brown	Silty Clay	0.063 - 0.1 mm	Stones
1796289	TP112	2.80	Dark Brown	Sandy Clay	0.1 - 2 mm	Stones
1796327	TP116	1.80	Dark Brown	Silty Clay Loam	0.063 - 0.1 mm	Stones
1796353	TP113	3.00	Light Brown	Silty Sand	0.063 - 0.1 mm	Stones
1796418	TP126	2.20	Dark Brown	Sandy Clay	0.063 - 0.1 mm	Stones
1796508	TP125	1.70	Light Brown	Silty Sand	0.063 - 0.1 mm	Stones
1796587	TP133	0.60	Orange	Sand	0.1 - 2 mm	Stones
1796622	TP116	0.20	Light Brown	Clay Loam	0.063 - 0.1 mm	Stones
1796662	TP128	1.50	Dark Brown	Loamy Sand	0.1 - 2 mm	Stones
1796720	TP129	0.60	Light Brown	Clay Loam	0.063 - 0.1 mm	Vegetation
1796743	TP128	0.40	Light Brown	Clay	<0.063 mm	N/A
1796767	TP130	0.20	Light Brown	Silty Sand	0.1 - 2 mm	Brick
1796784	TP132	0.60	Light Brown	Silty Clay	0.063 - 0.1 mm	N/A
1796796	TP111	2.80	Light Brown	Clay Loam	0.063 - 0.1 mm	Stones
1796809	TP129	1.80	Dark Brown	Silt Loam	0.063 - 0.1 mm	Stones
1796915	WS2	0.10 - 0.80	Light Brown	Sandy Silt Loam	0.063 - 0.1 mm	Stones
1796928	WS2	1.10 - 1.50	Dark Brown	Silty Clay	0.063 - 0.1 mm	Stones

<b>SDG:</b>	100708-104	<b>Customer:</b>	BWB Consulting
<b>Job:</b>	H_BWB_NTT-81	<b>Attention:</b>	Richard Robinson
<b>Client Reference:</b>	NTE 285	<b>Order No.:</b>	NE09/616
<b>Location:</b>	THE DOVE WAY UTTOXETER	<b>Report No.:</b>	91025

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

**SDG:** 100708-104  
**Job:** H\_BWB\_NTT-81  
**Client Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 91025

### Test Completion dates

SDG reference: 100708-104

Lab Sample No(s)	1795358	1795474	1795533	1795581	1795636	1795674	1795821	1795825	1796087	1796216	1796247	1796270
Customer Sample Ref.	TP101	TP102	TP103	TP105	TP106	TP107	TP124	TP124	TP127	TP110	TP111	TP112
Depth	0.20	1.00	2.00	0.70	0.20	0.60	1.80	0.80	2.00	0.80	0.40	0.80
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Anions by Kone (w)			15/07/2010						15/07/2010		16/07/2010	
Asbestos Containing Material Screen										14/07/2010		
Boron Water Soluble	14/07/2010	14/07/2010		14/07/2010	15/07/2010	15/07/2010		16/07/2010		16/07/2010		
CEN Readings			16/07/2010						16/07/2010		16/07/2010	
Cyanide Comp/Free/Total/Thiocyanate	14/07/2010	15/07/2010	16/07/2010	14/07/2010	15/07/2010	15/07/2010		16/07/2010	16/07/2010	15/07/2010	16/07/2010	
Dissolved Metals by ICP-MS			16/07/2010						16/07/2010		16/07/2010	
EPH CWG (Aliphatic) GC (S)							20/07/2010					19/07/2010
EPH CWG (Aromatic) GC (S)							20/07/2010					19/07/2010
GRO BTEX MTBE GC (S)							19/07/2010					20/07/2010
Mercury Dissolved			16/07/2010						16/07/2010		16/07/2010	
Metals by iCap-OES (Soil)	15/07/2010	15/07/2010		15/07/2010	16/07/2010	15/07/2010		15/07/2010		15/07/2010		
Moisture Meter			14/07/2010						14/07/2010		14/07/2010	
PAH by GCMS	14/07/2010	14/07/2010		14/07/2010	15/07/2010	15/07/2010		15/07/2010		16/07/2010		
pH	14/07/2010	14/07/2010		14/07/2010	15/07/2010	15/07/2010		15/07/2010		14/07/2010		
pH Value			15/07/2010						15/07/2010		16/07/2010	
Phenols by HPLC (S)	14/07/2010	14/07/2010		15/07/2010	15/07/2010	15/07/2010		16/07/2010		15/07/2010		
Sample description	13/07/2010	13/07/2010	13/07/2010	13/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010	13/07/2010	14/07/2010	13/07/2010	14/07/2010
Total Organic Carbon	15/07/2010	15/07/2010		15/07/2010	15/07/2010	15/07/2010			19/07/2010		19/07/2010	
Total Sulphur	15/07/2010	15/07/2010		14/07/2010	15/07/2010	15/07/2010		16/07/2010		16/07/2010		
TPH c6-40 Value of soil	15/07/2010	15/07/2010		15/07/2010	16/07/2010	16/07/2010		16/07/2010		16/07/2010		
TPH CWG GC (S)							21/07/2010					20/07/2010
VOC MS (S)												20/07/2010
Water Soluble Sulphate 2:1	14/07/2010	14/07/2010		14/07/2010	15/07/2010	15/07/2010		15/07/2010		15/07/2010		

1796289	1796327	1796353	1796418	1796508	1796587	1796622	1796662	1796720	1796743	1796767	1796784	1796796	1796809	1796915
TP112	TP116	TP113	TP126	TP125	TP133	TP116	TP128	TP129	TP128	TP130	TP132	TP111	TP129	WS2
2.80	1.80	3.00	2.20	1.70	0.60	0.20	1.50	0.60	0.40	0.20	0.60	2.80	1.80	0.10 - 0.80
SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
16/07/2010					15/07/2010					16/07/2010				
										14/07/2010				
16/07/2010		16/07/2010	15/07/2010		15/07/2010	16/07/2010	16/07/2010		16/07/2010	15/07/2010	15/07/2010	16/07/2010	16/07/2010	16/07/2010
16/07/2010					16/07/2010					16/07/2010				
16/07/2010		15/07/2010	16/07/2010		16/07/2010	15/07/2010	15/07/2010		15/07/2010	16/07/2010	15/07/2010	16/07/2010	16/07/2010	16/07/2010
16/07/2010					16/07/2010					16/07/2010				
	16/07/2010		16/07/2010	16/07/2010	16/07/2010			20/07/2010			16/07/2010			
	16/07/2010		16/07/2010	16/07/2010	16/07/2010			20/07/2010			16/07/2010			
	21/07/2010		19/07/2010	20/07/2010	19/07/2010			20/07/2010			20/07/2010			
16/07/2010					16/07/2010					16/07/2010				
15/07/2010		15/07/2010	15/07/2010		15/07/2010	16/07/2010	16/07/2010		15/07/2010	15/07/2010	15/07/2010	16/07/2010	15/07/2010	15/07/2010
14/07/2010					14/07/2010					14/07/2010				
15/07/2010		15/07/2010	15/07/2010		15/07/2010	16/07/2010	16/07/2010		15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
14/07/2010		15/07/2010	15/07/2010		15/07/2010	15/07/2010	15/07/2010		14/07/2010	14/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
16/07/2010					15/07/2010					16/07/2010				
15/07/2010		16/07/2010	15/07/2010		15/07/2010	16/07/2010	16/07/2010		15/07/2010	15/07/2010	15/07/2010	16/07/2010	15/07/2010	15/07/2010
13/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010	13/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010	14/07/2010	13/07/2010	14/07/2010	14/07/2010	14/07/2010
19/07/2010		19/07/2010	19/07/2010		19/07/2010	19/07/2010	19/07/2010		19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010
16/07/2010		16/07/2010	15/07/2010		15/07/2010	16/07/2010	16/07/2010		16/07/2010	15/07/2010	15/07/2010	16/07/2010	16/07/2010	16/07/2010
16/07/2010		16/07/2010	16/07/2010		16/07/2010	16/07/2010	16/07/2010		16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010
	21/07/2010		19/07/2010	20/07/2010	19/07/2010			20/07/2010			20/07/2010			
15/07/2010		15/07/2010	15/07/2010		15/07/2010	16/07/2010	16/07/2010		15/07/2010	15/07/2010	15/07/2010	16/07/2010	15/07/2010	15/07/2010

1796928
WS2
1.10 - 1.50
SOLID
16/07/2010
16/07/2010
20/07/2010
20/07/2010
19/07/2010
15/07/2010
20/07/2010
15/07/2010
15/07/2010
14/07/2010
19/07/2010
16/07/2010
16/07/2010
20/07/2010
15/07/2010



**SDG:** 100708-104  
**Job:** H\_BWB\_NTT-81  
**Client Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 91025

Results Legend		Customer Sample Ref.	TP101	TP102	TP103	TP105	TP106	TP107
#	ISO17025 accredited.	<b>Depth (m)</b> <b>Sample Type</b> <b>Date Sampled</b> <b>Date Received</b> <b>SDG Ref</b> <b>Lab Sample No.(s)</b>	0.20	1.00	2.00	0.70	0.20	0.60
M	mCERTS accredited.		Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
aq	Aqueous / settled sample.		05/07/2010	05/07/2010	05/07/2010	05/07/2010	05/07/2010	05/07/2010
diss.filt	Dissolved / filtered sample.		08/07/2010	08/07/2010	08/07/2010	08/07/2010	08/07/2010	08/07/2010
tot.unfilt	Total / unfiltered sample.		100708-104	100708-104	100708-104	100708-104	100708-104	100708-104
*	subcontracted test.		1795358	1795474	1795533	1795581	1795636	1795674
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
Component	LOD/Units	Method						
Moisture	%	PM114			15.4			
Moisture content ratio	%	PM114			18.2			
Dry matter content ratio	%	PM114			84.6			
Phenols, Total monohydric	<0.22 mg/kg	TM062 (S)	<0.22 M	<0.22 M		<0.22 M	<0.22 M	<0.22 M
Sulphate, 2:1 water soluble	<0.003 g/l	TM098	0.0046 M	0.0342 M		0.0218 M	0.008 M	0.0324 M
Sulphur, Total	<0.02 %	TM132	0.07 #	0.03 #		0.02 #	0.05 #	<0.02 #
Fraction Organic Carbon (FOC)	<0.002 -	TM132	0.0519 #	0.0065 #		0.0063 #	0.0593 #	0.0072 #
pH	1 pH Units	TM133	7.48 M	6.56 M		7.18 M	6.01 M	7.71 M
Cyanide, Total	<1 mg/kg	TM153	1.52 M	<1 M		<1 M	<1 M	<1 M
Cyanide, Free	<1 mg/kg	TM153	<1	<1		<1	<1	<1
Cyanide, Complex	<1 mg/kg	TM153	1.45	<1		<1	<1	<1
TPH >C6-C40	<10 mg/kg	TM154	2120 #	55.2 #		48 #	299 #	215 #
Arsenic	<0.6 mg/kg	TM181	16.4 M	12.5 M		15.2 M	18.2 M	10 M
Barium	<0.6 mg/kg	TM181	499 #	328 #		380 #	446 #	311 #
Beryllium	<0.01 mg/kg	TM181	1.74 M	1.54 M		1.59 M	2.46 M	1.5 M
Cadmium	<0.02 mg/kg	TM181	1.17 M	<0.02 M		<0.02 M	0.685 M	<0.02 M
Chromium	<0.9 mg/kg	TM181	39.1 M	39.6 M		37.3 M	34.2 M	37.8 M
Copper	<1.4 mg/kg	TM181	80.9 M	19.5 M		18.4 M	74.7 M	15.6 M
Lead	<0.7 mg/kg	TM181	255 M	19.8 M		24 M	191 M	19.5 M
Mercury	<0.14 mg/kg	TM181	<0.14 M	<0.14 M		<0.14 M	<0.14 M	<0.14 M
Nickel	<0.2 mg/kg	TM181	33.7 M	32.2 M		36.5 M	32.2 M	28.7 M
Selenium	<1 mg/kg	TM181	1.65 #	1.93 #		1.46 #	1.58 #	1.23 #
Vanadium	<0.2 mg/kg	TM181	47.4 #	49.4 #		48 #	45.4 #	46.4 #
Zinc	<1.9 mg/kg	TM181	339 M	130 M		118 M	323 M	104 M
Boron, water soluble	<1 mg/kg	TM222	1.73 M	<1 M		<1 M	1.14 M	1.16 M

**SDG:** 100708-104  
**Job:** H\_BWB\_NTT-81  
**Client Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 91025

### PAH by GCMS

Results Legend		Customer Sample Ref.	TP101	TP102	TP105	TP106	TP107
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	subcontracted test.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
		<b>Depth (m)</b>	0.20	1.00	0.70	0.20	0.60
		<b>Sample Type</b>	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
		<b>Date Sampled</b>	05/07/2010	05/07/2010	05/07/2010	05/07/2010	05/07/2010
		<b>Date Received</b>	08/07/2010	08/07/2010	08/07/2010	08/07/2010	08/07/2010
		<b>SDG Ref</b>	100708-104	100708-104	100708-104	100708-104	100708-104
		<b>Lab Sample No.(s)</b>	1795358	1795474	1795581	1795636	1795674
Component	LOD/Units	Method					
Naphthalene-d8 % recovery**	%	TM218	100	95.2	98.1	93.2	96.8
Acenaphthene-d10 % recovery**	%	TM218	97.7	93.5	95.3	91.3	95.6
Phenanthrene-d10 % recovery**	%	TM218	97.3	92.3	93.5	91.1	94.9
Chrysene-d12 % recovery**	%	TM218	93.5	85.8	88	85.9	87.8
Perylene-d12 % recovery**	%	TM218	98.6	89.8	90	86.4	84.4
Naphthalene	<9 µg/kg	TM218	180	<9	<9	47.3	<9
Acenaphthylene	<12 µg/kg	TM218	296	<12	<12	37.3	<12
Acenaphthene	<8 µg/kg	TM218	98	<8	<8	33.9	<8
Fluorene	<10 µg/kg	TM218	110	<10	<10	25.5	<10
Phenanthrene	<15 µg/kg	TM218	1730	<15	<15	633	<15
Anthracene	<16 µg/kg	TM218	643	<16	<16	163	<16
Fluoranthene	<17 µg/kg	TM218	6260	44	<17	1510	<17
Pyrene	<15 µg/kg	TM218	5510	39	<15	1230	<15
Benzo(a)anthracene	<14 µg/kg	TM218	3450	18.2	<14	652	<14
Chrysene	<10 µg/kg	TM218	3000	24.9	<10	631	<10
Benzo(b)fluoranthene	<15 µg/kg	TM218	5270	45.1	<15	971	<15
Benzo(k)fluoranthene	<14 µg/kg	TM218	2170	21.5	<14	299	<14
Benzo(a)pyrene	<15 µg/kg	TM218	4430	31.6	<15	649	<15
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	3330	24.9	<18	416	<18
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	811	<23	<23	120	<23
Benzo(g,h,i)perylene	<24 µg/kg	TM218	3890	30.3	<24	472	<24
Polyaromatic hydrocarbons, Total USEPA 16	<118 µg/kg	TM218	41200	280	<118	7890	<118

**SDG:** 100708-104  
**Job:** H\_BWB\_NTT-81  
**Client Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 91025

Results Legend		Customer Sample Ref.	TP110	TP111	TP111	TP112	TP113
#	ISO17025 accredited.	<b>Depth (m)</b> <b>Sample Type</b> <b>Date Sampled</b> <b>Date Received</b> <b>SDG Ref</b> <b>Lab Sample No.(s)</b>	0.80	0.40	2.80	2.80	3.00
M	mCERTS accredited.		Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
aq	Aqueous / settled sample.		07/07/2010	07/07/2010	07/07/2010	07/07/2010	07/07/2010
diss.filt	Dissolved / filtered sample.		08/07/2010	08/07/2010	08/07/2010	08/07/2010	08/07/2010
tot.unfilt	Total / unfiltered sample.		100708-104	100708-104	100708-104	100708-104	100708-104
*	subcontracted test.		1796216	1796247	1796796	1796289	1796353
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
Component	LOD/Units	Method					
Moisture	%	PM114		16.7		21.2	
Moisture content ratio	%	PM114		20.1		27	
Dry matter content ratio	%	PM114		83.3		78.8	
Asbestos Containing Material Screen	-	TM001	No ACM Detected				
Phenols, Total monohydric	<0.22 mg/kg	TM062 (S)	<0.22	#	<0.22	M	<0.22
Sulphate, 2:1 water soluble	<0.003 g/l	TM098	0.0439	#	0.0741	M	0.0293
Sulphur, Total	<0.02 %	TM132	0.16	#	0.05	#	0.03
Fraction Organic Carbon (FOC)	<0.002 -	TM132	0.154	#	0.00899	#	0.00434
pH	1 pH Units	TM133	7.59	#	7.1	M	6.98
Cyanide, Total	<1 mg/kg	TM153	<1	#	<1	M	<1
Cyanide, Free	<1 mg/kg	TM153	<1	#	<1	M	<1
Cyanide, Complex	<1 mg/kg	TM153	<1	#	<1	M	<1
TPH >C6-C40	<10 mg/kg	TM154	538	#	126	#	815
Arsenic	<0.6 mg/kg	TM181	7.38	#	10.1	M	10.5
Barium	<0.6 mg/kg	TM181	307	#	262	#	236
Beryllium	<0.01 mg/kg	TM181	0.75	#	1.26	M	0.858
Cadmium	<0.02 mg/kg	TM181	0.151	#	0.0373	M	<0.02
Chromium	<0.9 mg/kg	TM181	9.08	#	29.9	M	24.2
Copper	<1.4 mg/kg	TM181	22.1	#	23.4	M	15.7
Lead	<0.7 mg/kg	TM181	11.9	#	67.3	M	20
Mercury	<0.14 mg/kg	TM181	<0.14	#	<0.14	M	<0.14
Nickel	<0.2 mg/kg	TM181	10.5	#	26.3	M	24.3
Selenium	<1 mg/kg	TM181	<1	#	1.32	#	1.28
Vanadium	<0.2 mg/kg	TM181	7.28	#	37.4	#	27.8
Zinc	<1.9 mg/kg	TM181	48.8	#	156	M	66.6
Boron, water soluble	<1 mg/kg	TM222	1.52	#	4.19	M	4.31

**SDG:** 100708-104  
**Job:** H\_BWB\_NTT-81  
**Client Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 91025

**PAH by GCMS**

Results Legend		Customer Sample Ref.	TP110	TP111	TP112	TP113
#	ISO17025 accredited.					
M	mCERTS accredited.					
aq	Aqueous / settled sample.					
diss.filt	Dissolved / filtered sample.					
tot.unfilt	Total / unfiltered sample.					
*	subcontracted test.					
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.					
		<b>Depth (m)</b>	0.80	2.80	2.80	3.00
		<b>Sample Type</b>	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
		<b>Date Sampled</b>	07/07/2010	07/07/2010	07/07/2010	07/07/2010
		<b>Date Received</b>	08/07/2010	08/07/2010	08/07/2010	08/07/2010
		<b>SDG Ref</b>	100708-104	100708-104	100708-104	100708-104
		<b>Lab Sample No.(s)</b>	1796216	1796796	1796289	1796353
Component	LOD/Units	Method				
Naphthalene-d8 % recovery**	%	TM218	103	99	104	104
Acenaphthene-d10 % recovery**	%	TM218	105	96.3	104	102
Phenanthrene-d10 % recovery**	%	TM218	102	95.3	102	100
Chrysene-d12 % recovery**	%	TM218	86.8	86.6	96.8	95.6
Perylene-d12 % recovery**	%	TM218	70.8	80.9	94.8	91.9
Naphthalene	<9 µg/kg	TM218	1820	<9	17.3	<9
Acenaphthylene	<12 µg/kg	TM218	16.8	<12	<12	<12
Acenaphthene	<8 µg/kg	TM218	31.3	<8	90.7	<8
Fluorene	<10 µg/kg	TM218	52.1	<10	149	<10
Phenanthrene	<15 µg/kg	TM218	1820	34.8	457	<15
Anthracene	<16 µg/kg	TM218	182	<16	131	<16
Fluoranthene	<17 µg/kg	TM218	1120	102	108	<17
Pyrene	<15 µg/kg	TM218	953	86.3	121	<15
Benzo(a)anthracene	<14 µg/kg	TM218	476	48.8	35.4	<14
Chrysene	<10 µg/kg	TM218	456	48.3	36.3	<10
Benzo(b)fluoranthene	<15 µg/kg	TM218	740	45.8	29.8	<15
Benzo(k)fluoranthene	<14 µg/kg	TM218	172	21.7	<14	<14
Benzo(a)pyrene	<15 µg/kg	TM218	397	29.5	22	<15
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	206	<18	<18	<18
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	73.8	<23	<23	<23
Benzo(g,h,i)perylene	<24 µg/kg	TM218	629	<24	<24	<24
Polyaromatic hydrocarbons, Total USEPA 16	<118 µg/kg	TM218	9140	417	1200	<118

**SDG** 100708-104  
**Job:** H\_BWB\_NTT-81  
**Client Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 91025

## TPH CWG (S)

Results Legend		Customer Sample Ref.	TP112				
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	subcontracted test.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
		<b>Depth (m)</b>	0.80				
		<b>Sample Type</b>	Soil/Solid				
		<b>Date Sampled</b>	07/07/2010				
		<b>Date Received</b>	08/07/2010				
		<b>SDG Ref</b>	100708-104				
		<b>Lab Sample No.(s)</b>	1796270				
Component	LOD/Units	Method					
GRO Surrogate % recovery**	%	TM089	11				
GRO >C5-C12	<44 µg/kg	TM089	665				
Benzene	<10 µg/kg	TM089	<10				
Ethylbenzene	<3 µg/kg	TM089	<3				
Toluene	<2 µg/kg	TM089	<2				
m,p-Xylene	<6 µg/kg	TM089	<6				
o-Xylene	<3 µg/kg	TM089	<3				
m,p,o-Xylene	<10 µg/kg	TM089	<10				
BTEX, Total	<10 µg/kg	TM089	<10				
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5				
Aliphatics >C5-C6	<10 µg/kg	TM089	26.7				
Aliphatics >C6-C8	<10 µg/kg	TM089	14.1				
Aliphatics >C8-C10	<10 µg/kg	TM089	119				
Aliphatics >C10-C12	<10 µg/kg	TM089	124				
Aromatics >C6-C7	<10 µg/kg	TM089	<10				
Aromatics >C7-C8	<10 µg/kg	TM089	<10				
Aromatics >EC8-EC10	<10 µg/kg	TM089	178				
Aromatics >EC10-EC12	<10 µg/kg	TM089	186				
Total Aliphatics >C5-C12	<10 µg/kg	TM089	283				
Total Aromatics >C6-C12	<10 µg/kg	TM089	364				
Aliphatics >C12-C16	<100 µg/kg	TM173	332000				
Aliphatics >C16-C21	<100 µg/kg	TM173	4170000				
Aliphatics >C16-C35	<100 µg/kg	TM173	17900000				
Aliphatics >C21-C35	<100 µg/kg	TM173	13700000				
Aliphatics >C35-C44	<100 µg/kg	TM173	672000				
Aromatics >EC12-EC16	<100 µg/kg	TM173	18300				
Aromatics >EC16-EC21	<100 µg/kg	TM173	338000				
Aromatics >EC21-EC35	<100 µg/kg	TM173	1390000				
Aromatics >EC35-EC44	<100 µg/kg	TM173	176000				
Aromatics >EC40-EC44	<100 µg/kg	TM173	66400				
Total Aliphatics >C12-C44	<100 µg/kg	TM173	18900000				
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	1930000				
Total Aliphatics >C5-35	<100 µg/kg	TM173	18200000				
Total Aliphatics >C5-C44	<100 µg/kg	TM173	18900000				
Total Aromatics >C5-35	<100 µg/kg	TM173	1750000				
Total Aromatics >C6-C44	<100 µg/kg	TM173	1930000				
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173	20000000				
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	20800000				

**SDG** 100708-104  
**Job:** H\_BWB\_NTT-81  
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**Location:** THE DOVE WAY UTTOXETER

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No:** 91025

## VOC MS (S)

Results Legend		Customer Sample Ref.	TP112				
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	subcontracted test.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
		<b>Depth (m)</b>	0.80				
		<b>Sample Type</b>	Soil/Solid				
		<b>Date Sampled</b>	07/07/2010				
		<b>Date Received</b>	08/07/2010				
		<b>SDG Ref</b>	100708-104				
		<b>Lab Sample No.(s)</b>	1796270				
Component	LOD/Units	Method					
Dibromofluoromethane**	%	TM116	101				
Toluene-d8**	%	TM116	75.6				
4-Bromofluorobenzene**	%	TM116	149				
Dichlorodifluoromethane	<4 µg/kg	TM116	<40				
Chloromethane	<7 µg/kg	TM116	<70				
Vinyl Chloride	<10 µg/kg	TM116	<100				
Bromomethane	<13 µg/kg	TM116	<130				
Chloroethane	<14 µg/kg	TM116	<140				
Trichlorofluoromethane	<6 µg/kg	TM116	<60				
1.1-Dichloroethene	<10 µg/kg	TM116	<100				
Carbon Disulphide	<7 µg/kg	TM116	95				
Dichloromethane	<10 µg/kg	TM116	<100				
Methyl Tertiary Butyl Ether	<11 µg/kg	TM116	<110				
trans-1-2-Dichloroethene	<11 µg/kg	TM116	<110				
1.1-Dichloroethane	<8 µg/kg	TM116	<80				
cis-1-2-Dichloroethene	<5 µg/kg	TM116	<50				
2.2-Dichloropropane	<12 µg/kg	TM116	<120				
Bromochloromethane	<14 µg/kg	TM116	<140				
Chloroform	<8 µg/kg	TM116	<80				
1.1.1-Trichloroethane	<7 µg/kg	TM116	<70				
1.1-Dichloropropene	<11 µg/kg	TM116	<110				
Carbontetrachloride	<14 µg/kg	TM116	<140				
1.2-Dichloroethane	<5 µg/kg	TM116	<50				
Benzene	<9 µg/kg	TM116	<90				
Trichloroethene	<9 µg/kg	TM116	<90				
1.2-Dichloropropane	<12 µg/kg	TM116	<120				
Dibromomethane	<9 µg/kg	TM116	<90				
Bromodichloromethane	<7 µg/kg	TM116	<70				
cis-1-3-Dichloropropene	<14 µg/kg	TM116	<140				
Toluene	<5 µg/kg	TM116	<50				
trans-1-3-Dichloropropene	<14 µg/kg	TM116	<140				
1.1.2-Trichloroethane	<10 µg/kg	TM116	<100				
1.3-Dichloropropane	<7 µg/kg	TM116	<70				
Tetrachloroethene	<5 µg/kg	TM116	<50				
Dibromochloromethane	<13 µg/kg	TM116	<130				
1.2-Dibromoethane	<12 µg/kg	TM116	<120				
Chorobenzene	<5 µg/kg	TM116	<50				
1.1.1.2-Tetrachloroethane	<10 µg/kg	TM116	<100				
Ethylbenzene	<4 µg/kg	TM116	<40				

**SDG:** 100708-104  
**Job:** H\_BWB\_NTT-81  
**Client Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 91025

**VOC MS (S)**

Results Legend		Customer Sample Ref.	TP112				
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	subcontracted test.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
		<b>Depth (m)</b>	0.80				
		<b>Sample Type</b>	Soil/Solid				
		<b>Date Sampled</b>	07/07/2010				
		<b>Date Received</b>	08/07/2010				
		<b>SDG Ref</b>	100708-104				
		<b>Lab Sample No.(s)</b>	1796270				
Component	LOD/Units	Method					
p/m-Xylene	<14 µg/kg	TM116	<140	#			
o-Xylene	<10 µg/kg	TM116	<100	M			
Styrene	<10 µg/kg	TM116	<100	M			
Bromoform	<10 µg/kg	TM116	<100	M			
Isopropylbenzene	<5 µg/kg	TM116	<50	M			
1.1.2.2-Tetrachloroethane	<10 µg/kg	TM116	<100	#			
1.2.3-Trichloropropane	<17 µg/kg	TM116	<170	M			
Bromobenzene	<10 µg/kg	TM116	<100	M			
Propylbenzene	<11 µg/kg	TM116	<110	M			
2-Chlorotoluene	<9 µg/kg	TM116	<90	M			
1.3.5-Trimethylbenzene	<8 µg/kg	TM116	<80	#			
4-Chlorotoluene	<12 µg/kg	TM116	<120	M			
tert-Butylbenzene	<12 µg/kg	TM116	<120	#			
1.2.4-Trimethylbenzene	<9 µg/kg	TM116	<90	#			
sec-Butylbenzene	<10 µg/kg	TM116	<100	M			
4-Isopropyltoluene	<11 µg/kg	TM116	<110	M			
1.3-Dichlorobenzene	<6 µg/kg	TM116	<60	M			
1.4-Dichlorobenzene	<5 µg/kg	TM116	<50	M			
n-Butylbenzene	<10 µg/kg	TM116	<100	M			
1.2-Dichlorobenzene	<12 µg/kg	TM116	<120	M			
1.2-Dibromo-3-chloropropane	<14 µg/kg	TM116	<140	M			
Tert-amyl methyl ether	<15 µg/kg	TM116	<150				
1.2.4-Trichlorobenzene	<6 µg/kg	TM116	<60	#			
Hexachlorobutadiene	<12 µg/kg	TM116	<120	M			
Naphthalene	<13 µg/kg	TM116	<130	M			
1.2.3-Trichlorobenzene	<6 µg/kg	TM116	<60	M			



**SDG:** 100708-104  
**Job:** H\_BWB\_NTT-81  
**Client Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 91025

Results Legend		Customer Sample Ref.	TP116	TP124	TP126			
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
		<b>Depth (m)</b>	0.20	0.80	2.20			
		<b>Sample Type</b>	Soil/Solid	Soil/Solid	Soil/Solid			
		<b>Date Sampled</b>	07/07/2010	06/07/2010	06/07/2010			
		<b>Date Received</b>	08/07/2010	08/07/2010	08/07/2010			
		<b>SDG Ref</b>	100708-104	100708-104	100708-104			
		<b>Lab Sample No.(s)</b>	1796622	1795825	1796418			
Component	LOD/Units	Method						
Phenols, Total monohydric	<0.22 mg/kg	TM062 (S)	<0.22 M	<0.22 M	<0.22 M			
Sulphate, 2:1 water soluble	<0.003 g/l	TM098	0.19 M	0.117 M	0.062 M			
Sulphur, Total	<0.02 %	TM132	0.07 #	0.14 #	0.05 #			
Fraction Organic Carbon (FOC)	<0.002 -	TM132	0.0238 #	0.0326 #	0.00288 #			
pH	1 pH Units	TM133	8.15 M	6.5 M	6.51 M			
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M			
Cyanide, Free	<1 mg/kg	TM153	<1	<1	<1			
Cyanide, Complex	<1 mg/kg	TM153	<1	<1	<1			
TPH >C6-C40	<10 mg/kg	TM154	1530 #	493 #	<10 #			
Arsenic	<0.6 mg/kg	TM181	13 M	7.89 M	11.1 M			
Barium	<0.6 mg/kg	TM181	291 #	291 #	47.5 #			
Beryllium	<0.01 mg/kg	TM181	1.49 M	0.814 M	0.641 M			
Cadmium	<0.02 mg/kg	TM181	0.386 M	0.306 M	<0.02 M			
Chromium	<0.9 mg/kg	TM181	26.2 M	20.6 M	14 M			
Copper	<1.4 mg/kg	TM181	42.7 M	20.8 M	14.2 M			
Lead	<0.7 mg/kg	TM181	63.7 M	13.1 M	14.8 M			
Mercury	<0.14 mg/kg	TM181	<0.14 M	<0.14 M	<0.14 M			
Nickel	<0.2 mg/kg	TM181	22 M	15.7 M	13.3 M			
Selenium	<1 mg/kg	TM181	1.05 #	<1 #	<1 #			
Vanadium	<0.2 mg/kg	TM181	36.5 #	24 #	31.1 #			
Zinc	<1.9 mg/kg	TM181	137 M	92.2 M	52 M			
Boron, water soluble	<1 mg/kg	TM222	<1 M	<1 M	<1 M			

**SDG:** 100708-104  
**Job:** H\_BWB\_NTT-81  
**Client Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 91025

**PAH by GCMS**

Results Legend		Customer Sample Ref.	TP116	TP124	TP126			
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
		<b>Depth (m)</b>	0.20	0.80	2.20			
		<b>Sample Type</b>	Soil/Solid	Soil/Solid	Soil/Solid			
		<b>Date Sampled</b>	07/07/2010	06/07/2010	06/07/2010			
		<b>Date Received</b>	08/07/2010	08/07/2010	08/07/2010			
		<b>SDG Ref</b>	100708-104	100708-104	100708-104			
		<b>Lab Sample No.(s)</b>	1796622	1795825	1796418			
Component	LOD/Units	Method						
Naphthalene-d8 % recovery**	%	TM218	95.5	112	103			
Acenaphthene-d10 % recovery**	%	TM218	93.4	108	98.9			
Phenanthrene-d10 % recovery**	%	TM218	93.3	106	94.8			
Chrysene-d12 % recovery**	%	TM218	89.5	102	90.1			
Perylene-d12 % recovery**	%	TM218	90.3	98.6	88.7			
Naphthalene	<9 µg/kg	TM218	78.4	<9	103			
Acenaphthylene	<12 µg/kg	TM218	46.8	<12	35.3			
Acenaphthene	<8 µg/kg	TM218	15.6	<8	9.53			
Fluorene	<10 µg/kg	TM218	17.3	<10	12.6			
Phenanthrene	<15 µg/kg	TM218	287	<15	21.4			
Anthracene	<16 µg/kg	TM218	105	<16	<16			
Fluoranthene	<17 µg/kg	TM218	1400	<17	29.4			
Pyrene	<15 µg/kg	TM218	1470	<15	23.7			
Benzo(a)anthracene	<14 µg/kg	TM218	857	<14	16.6			
Chrysene	<10 µg/kg	TM218	869	<10	15.1			
Benzo(b)fluoranthene	<15 µg/kg	TM218	1430	<15	<15			
Benzo(k)fluoranthene	<14 µg/kg	TM218	527	<14	<14			
Benzo(a)pyrene	<15 µg/kg	TM218	1270	<15	<15			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	815	<18	<18			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	216	<23	<23			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	988	<24	<24			
Polyaromatic hydrocarbons, Total USEPA 16	<118 µg/kg	TM218	10400	<118	267			

**SDG** 100708-104  
**Job:** H\_BWB\_NTT-81  
**Client Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No:** 91025

## TPH CWG (S)

Results Legend		Customer Sample Ref.	TP116	TP124	TP125	TP126
#	ISO17025 accredited.					
M	mCERTS accredited.					
aq	Aqueous / settled sample.					
diss.filt	Dissolved / filtered sample.					
tot.unfilt	Total / unfiltered sample.					
*	subcontracted test.					
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.					
		<b>Depth (m)</b>	1.80	1.80	1.70	2.20
		<b>Sample Type</b>	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
		<b>Date Sampled</b>	07/07/2010	06/07/2010	06/07/2010	06/07/2010
		<b>Date Received</b>	08/07/2010	08/07/2010	08/07/2010	08/07/2010
		<b>SDG Ref</b>	100708-104	100708-104	100708-104	100708-104
		<b>Lab Sample No.(s)</b>	1796327	1795821	1796508	1796418
Component	LOD/Units	Method				
GRO Surrogate % recovery**	%	TM089	35	61	125	115
GRO >C5-C12	<44 µg/kg	TM089	3510	<44	<44	<44
Benzene	<10 µg/kg	TM089	<10	<10	<10	<10
Ethylbenzene	<3 µg/kg	TM089	13.5	<3	<3	<3
Toluene	<2 µg/kg	TM089	<2	<2	<2	<2
m,p-Xylene	<6 µg/kg	TM089	101	<6	<6	<6
o-Xylene	<3 µg/kg	TM089	62.1	<3	<3	<3
m,p,o-Xylene	<10 µg/kg	TM089	163	<10	<10	<10
BTEX, Total	<10 µg/kg	TM089	177	<10	<10	<10
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5	<5	<5	<5
Aliphatics >C5-C6	<10 µg/kg	TM089	40.3	<10	<10	<10
Aliphatics >C6-C8	<10 µg/kg	TM089	73.1	<10	<10	<10
Aliphatics >C8-C10	<10 µg/kg	TM089	354	<10	<10	<10
Aliphatics >C10-C12	<10 µg/kg	TM089	935	<10	<10	<10
Aromatics >C6-C7	<10 µg/kg	TM089	<10	<10	<10	<10
Aromatics >C7-C8	<10 µg/kg	TM089	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089	709	<10	<10	<10
Aromatics >EC10-EC12	<10 µg/kg	TM089	1400	<10	<10	<10
Total Aliphatics >C5-C12	<10 µg/kg	TM089	1400	<10	<10	<10
Total Aromatics >C6-C12	<10 µg/kg	TM089	2110	<10	<10	<10
Aliphatics >C12-C16	<100 µg/kg	TM173	77100	<100	16400	<100
Aliphatics >C16-C21	<100 µg/kg	TM173	434000	<100	150000	<100
Aliphatics >C16-C35	<100 µg/kg	TM173	2120000	520	641000	<100
Aliphatics >C21-C35	<100 µg/kg	TM173	1690000	520	492000	<100
Aliphatics >C35-C44	<100 µg/kg	TM173	650000	<100	24300	<100
Aromatics >EC12-EC16	<100 µg/kg	TM173	18800	<100	3340	<100
Aromatics >EC16-EC21	<100 µg/kg	TM173	103000	<100	16800	<100
Aromatics >EC21-EC35	<100 µg/kg	TM173	398000	7540	64300	<100
Aromatics >EC35-EC44	<100 µg/kg	TM173	134000	1330	9440	<100
Aromatics >EC40-EC44	<100 µg/kg	TM173	48800	412	3440	<100
Total Aliphatics >C12-C44	<100 µg/kg	TM173	2850000	520	682000	<100
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	654000	8860	93800	<100
Total Aliphatics >C5-35	<100 µg/kg	TM173	2200000	520	658000	<100
Total Aliphatics >C5-C44	<100 µg/kg	TM173	2850000	520	682000	<100
Total Aromatics >C5-35	<100 µg/kg	TM173	521000	7540	84400	<100
Total Aromatics >C6-C44	<100 µg/kg	TM173	656000	8860	93800	<100
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173	2720000	8060	742000	<100
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	3510000	9380	776000	<100

**SDG:** 100708-104  
**Job:** H\_BWB\_NTT-81  
**Client Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 91025

Results Legend		Customer Sample Ref.	TP127	TP128	TP128	TP129	TP130
#	ISO17025 accredited.	<b>Depth (m)</b> <b>Sample Type</b> <b>Date Sampled</b> <b>Date Received</b> <b>SDG Ref</b> <b>Lab Sample No.(s)</b>	2.00	0.40	1.50	1.80	0.20
M	mCERTS accredited.		Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
aq	Aqueous / settled sample.		06/07/2010	06/07/2010	06/07/2010	06/07/2010	06/07/2010
diss.filt	Dissolved / filtered sample.		08/07/2010	08/07/2010	08/07/2010	08/07/2010	08/07/2010
tot.unfilt	Total / unfiltered sample.		100708-104	100708-104	100708-104	100708-104	100708-104
*	subcontracted test.		1796087	1796743	1796662	1796809	1796767
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
Component	LOD/Units	Method					
Moisture	%	PM114	16.1				11.2
Moisture content ratio	%	PM114	19.1				12.6
Dry matter content ratio	%	PM114	83.9				88.8
Asbestos Containing Material Screen	-	TM001					No ACM Detected
Phenols, Total monohydric	<0.22 mg/kg	TM062 (S)		<0.22	<0.22	<0.22	<0.22
Sulphate, 2:1 water soluble	<0.003 g/l	TM098		0.0269	0.561	0.112	0.0078
Sulphur, Total	<0.02 %	TM132		0.02	1.02	0.37	0.03
Fraction Organic Carbon (FOC)	<0.002 -	TM132		0.00503	0.0196	0.00456	0.0247
pH	1 pH Units	TM133		6.72	5.92	5.37	7.06
Cyanide, Total	<1 mg/kg	TM153		<1	<1	<1	<1
Cyanide, Free	<1 mg/kg	TM153		<1	<1	<1	<1
Cyanide, Complex	<1 mg/kg	TM153		<1	<1	<1	<1
TPH >C6-C40	<10 mg/kg	TM154		<10	249	158	265
Arsenic	<0.6 mg/kg	TM181		11	14	15.8	9.06
Barium	<0.6 mg/kg	TM181		343	54.7	69.3	211
Beryllium	<0.01 mg/kg	TM181		1.29	0.441	0.287	0.751
Cadmium	<0.02 mg/kg	TM181		<0.02	0.208	<0.02	0.296
Chromium	<0.9 mg/kg	TM181		35.6	7.93	6.17	17.9
Copper	<1.4 mg/kg	TM181		18.4	7.86	7.64	28.3
Lead	<0.7 mg/kg	TM181		14.2	6.16	4.65	84.1
Mercury	<0.14 mg/kg	TM181		<0.14	<0.14	<0.14	<0.14
Nickel	<0.2 mg/kg	TM181		29	21.4	10.1	14
Selenium	<1 mg/kg	TM181		1.84	<1	<1	<1
Vanadium	<0.2 mg/kg	TM181		41.8	13.3	9.05	23.9
Zinc	<1.9 mg/kg	TM181		108	43.4	20.4	100
Boron, water soluble	<1 mg/kg	TM222		<1	<1	<1	<1

**SDG:** 100708-104  
**Job:** H\_BWB\_NTT-81  
**Client Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 91025

**PAH by GCMS**

Results Legend		Customer Sample Ref.	TP128	TP128	TP129	TP130
#	ISO17025 accredited.					
M	mCERTS accredited.					
aq	Aqueous / settled sample.					
diss.filt	Dissolved / filtered sample.					
tot.unfilt	Total / unfiltered sample.					
*	subcontracted test.					
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.					
		<b>Depth (m)</b>	0.40	1.50	1.80	0.20
		<b>Sample Type</b>	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
		<b>Date Sampled</b>	06/07/2010	06/07/2010	06/07/2010	06/07/2010
		<b>Date Received</b>	08/07/2010	08/07/2010	08/07/2010	08/07/2010
		<b>SDG Ref</b>	100708-104	100708-104	100708-104	100708-104
		<b>Lab Sample No.(s)</b>	1796743	1796662	1796809	1796767
Component	LOD/Units	Method				
Naphthalene-d8 % recovery**	%	TM218	109	99.3	108	103
Acenaphthene-d10 % recovery**	%	TM218	108	98.6	108	102
Phenanthrene-d10 % recovery**	%	TM218	103	98.8	105	100
Chrysene-d12 % recovery**	%	TM218	99.1	92.3	102	97.2
Perylene-d12 % recovery**	%	TM218	92.1	90.7	98.4	94.4
Naphthalene	<9 µg/kg	TM218	<9	<9	<9	66.4
Acenaphthylene	<12 µg/kg	TM218	<12	<12	<12	587
Acenaphthene	<8 µg/kg	TM218	<8	<8	<8	125
Fluorene	<10 µg/kg	TM218	<10	<10	<10	440
Phenanthrene	<15 µg/kg	TM218	<15	<15	<15	4480
Anthracene	<16 µg/kg	TM218	<16	<16	<16	1070
Fluoranthene	<17 µg/kg	TM218	<17	<17	<17	5260
Pyrene	<15 µg/kg	TM218	<15	<15	<15	4050
Benzo(a)anthracene	<14 µg/kg	TM218	<14	<14	<14	2130
Chrysene	<10 µg/kg	TM218	<10	<10	16.1	1700
Benzo(b)fluoranthene	<15 µg/kg	TM218	<15	<15	20.4	1840
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14	<14	<14	870
Benzo(a)pyrene	<15 µg/kg	TM218	<15	<15	<15	1790
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18	<18	<18	926
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23	<23	<23	263
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24	<24	<24	995
Polyaromatic hydrocarbons, Total USEPA 16	<118 µg/kg	TM218	<118	<118	<118	26600

**SDG** 100708-104  
**Job:** H\_BWB\_NTT-81  
**Client Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 91025

## TPH CWG (S)

Results Legend		Customer Sample Ref.	TP129				
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	subcontracted test.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
		<b>Depth (m)</b>	0.60				
		<b>Sample Type</b>	Soil/Solid				
		<b>Date Sampled</b>	06/07/2010				
		<b>Date Received</b>	08/07/2010				
		<b>SDG Ref</b>	100708-104				
		<b>Lab Sample No.(s)</b>	1796720				
Component	LOD/Units	Method					
GRO Surrogate % recovery**	%	TM089	98				
GRO >C5-C12	<44 µg/kg	TM089	<44				
Benzene	<10 µg/kg	TM089	<10				
Ethylbenzene	<3 µg/kg	TM089	<3				
Toluene	<2 µg/kg	TM089	<2				
m,p-Xylene	<6 µg/kg	TM089	<6				
o-Xylene	<3 µg/kg	TM089	<3				
m,p,o-Xylene	<10 µg/kg	TM089	<10				
BTEX, Total	<10 µg/kg	TM089	<10				
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5				
Aliphatics >C5-C6	<10 µg/kg	TM089	<10				
Aliphatics >C6-C8	<10 µg/kg	TM089	<10				
Aliphatics >C8-C10	<10 µg/kg	TM089	<10				
Aliphatics >C10-C12	<10 µg/kg	TM089	<10				
Aromatics >C6-C7	<10 µg/kg	TM089	<10				
Aromatics >C7-C8	<10 µg/kg	TM089	<10				
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10				
Aromatics >EC10-EC12	<10 µg/kg	TM089	<10				
Total Aliphatics >C5-C12	<10 µg/kg	TM089	<10				
Total Aromatics >C6-C12	<10 µg/kg	TM089	<10				
Aliphatics >C12-C16	<100 µg/kg	TM173	7500				
Aliphatics >C16-C21	<100 µg/kg	TM173	2970				
Aliphatics >C16-C35	<100 µg/kg	TM173	8780				
Aliphatics >C21-C35	<100 µg/kg	TM173	5800				
Aliphatics >C35-C44	<100 µg/kg	TM173	474				
Aromatics >EC12-EC16	<100 µg/kg	TM173	1370				
Aromatics >EC16-EC21	<100 µg/kg	TM173	1500				
Aromatics >EC21-EC35	<100 µg/kg	TM173	2970				
Aromatics >EC35-EC44	<100 µg/kg	TM173	778				
Aromatics >EC40-EC44	<100 µg/kg	TM173	<100				
Total Aliphatics >C12-C44	<100 µg/kg	TM173	16800				
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	6620				
Total Aliphatics >C5-35	<100 µg/kg	TM173	16300				
Total Aliphatics >C5-C44	<100 µg/kg	TM173	16800				
Total Aromatics >C5-35	<100 µg/kg	TM173	5840				
Total Aromatics >C6-C44	<100 µg/kg	TM173	6620				
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173	22100				
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	23400				

**SDG:** 100708-104  
**Job:** H\_BWB\_NTT-81  
**Client Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 91025

Results Legend		Customer Sample Ref.	TP132	TP133	WS2	WS2
#	ISO17025 accredited.					
M	mCERTS accredited.					
aq	Aqueous / settled sample.	Depth (m)	0.60	0.60	0.10 - 0.80	1.10 - 1.50
diss.filt	Dissolved / filtered sample.	Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
tot.unfilt	Total / unfiltered sample.	Date Sampled	06/07/2010	06/07/2010	07/07/2010	07/07/2010
*	subcontracted test.	Date Received	08/07/2010	08/07/2010	08/07/2010	08/07/2010
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100708-104	100708-104	100708-104	100708-104
		Lab Sample No.(s)	1796784	1796587	1796915	1796928
Component	LOD/Units	Method				
Moisture	%	PM114		5.76		
Moisture content ratio	%	PM114		6.11		
Dry matter content ratio	%	PM114		94.2		
Phenols, Total monohydric	<0.22 mg/kg	TM062 (S)	<0.22 M	<0.22 M	<0.22 M	<0.22 M
Sulphate, 2:1 water soluble	<0.003 g/l	TM098	0.0219 M	0.0097 M	0.0141 M	0.131 M
Sulphur, Total	<0.02 %	TM132	<0.02 #	<0.02 #	0.05 #	0.09 #
Fraction Organic Carbon (FOC)	<0.002 -	TM132	0.00398 #	0.00217 #	0.0168 #	0.0515 #
pH	1 pH Units	TM133	7.21 M	5.81 M	8.28 M	8.7 M
Cyanide, Total	<1 mg/kg	TM153	<1 M	<1 M	<1 M	<1 M
Cyanide, Free	<1 mg/kg	TM153	<1	<1	<1	<1
Cyanide, Complex	<1 mg/kg	TM153	<1	<1	<1	<1
TPH >C6-C40	<10 mg/kg	TM154	<10 #	11.9 #	510 #	436 #
Arsenic	<0.6 mg/kg	TM181	10.7 M	9.39 M	8.91 M	10 M
Barium	<0.6 mg/kg	TM181	253 #	53.9 #	284 #	255 #
Beryllium	<0.01 mg/kg	TM181	0.92 M	0.374 M	0.848 M	0.698 M
Cadmium	<0.02 mg/kg	TM181	<0.02 M	<0.02 M	0.334 M	0.214 M
Chromium	<0.9 mg/kg	TM181	19.2 M	11.5 M	19.9 M	13.5 M
Copper	<1.4 mg/kg	TM181	11.3 M	12 M	25.7 M	24.4 M
Lead	<0.7 mg/kg	TM181	10.6 M	30.8 M	99.5 M	103 M
Mercury	<0.14 mg/kg	TM181	<0.14 M	<0.14 M	<0.14 M	0.202 M
Nickel	<0.2 mg/kg	TM181	20.8 M	8.97 M	18.7 M	13.9 M
Selenium	<1 mg/kg	TM181	1.03 #	<1 #	<1 #	<1 #
Vanadium	<0.2 mg/kg	TM181	26.1 #	21 #	27.1 #	20.6 #
Zinc	<1.9 mg/kg	TM181	55.6 M	37.7 M	118 M	100 M
Boron, water soluble	<1 mg/kg	TM222	<1 M	<1 M	<1 M	<1 M



**SDG:** 100708-104  
**Job:** H\_BWB\_NTT-81  
**Client Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 91025

**PAH by GCMS**

Results Legend		Customer Sample Ref.	TP132	TP133	WS2	WS2
#	ISO17025 accredited.					
M	mCERTS accredited.					
aq	Aqueous / settled sample.	<b>Depth (m)</b>	0.60	0.60	0.10 - 0.80	1.10 - 1.50
diss.filt	Dissolved / filtered sample.	<b>Sample Type</b>	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
tot.unfilt	Total / unfiltered sample.	<b>Date Sampled</b>	06/07/2010	06/07/2010	07/07/2010	07/07/2010
*	subcontracted test.	<b>Date Received</b>	08/07/2010	08/07/2010	08/07/2010	08/07/2010
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	<b>SDG Ref</b>	100708-104	100708-104	100708-104	100708-104
		<b>Lab Sample No.(s)</b>	1796784	1796587	1796915	1796928
Component	LOD/Units	Method				
Naphthalene-d8 % recovery**	%	TM218	102	102	98.9	106
Acenaphthene-d10 % recovery**	%	TM218	103	102	96.7	104
Phenanthrene-d10 % recovery**	%	TM218	99.4	99.9	92.3	100
Chrysene-d12 % recovery**	%	TM218	95.6	94.8	88.7	94.4
Perylene-d12 % recovery**	%	TM218	91.1	90.5	85.5	90.6
Naphthalene	<9 µg/kg	TM218	<9	<9	61.8	25.2
Acenaphthylene	<12 µg/kg	TM218	<12	<12	129	14.3
Acenaphthene	<8 µg/kg	TM218	<8	<8	70.5	22.1
Fluorene	<10 µg/kg	TM218	<10	<10	65.2	14.8
Phenanthrene	<15 µg/kg	TM218	<15	30.7	1040	82.2
Anthracene	<16 µg/kg	TM218	<16	<16	349	31.1
Fluoranthene	<17 µg/kg	TM218	<17	33.7	3050	184
Pyrene	<15 µg/kg	TM218	<15	28.2	2570	158
Benzo(a)anthracene	<14 µg/kg	TM218	<14	20.4	1720	130
Chrysene	<10 µg/kg	TM218	<10	17.3	1320	98.7
Benzo(b)fluoranthene	<15 µg/kg	TM218	22.6	24.3	2460	174
Benzo(k)fluoranthene	<14 µg/kg	TM218	<14	<14	833	62.2
Benzo(a)pyrene	<15 µg/kg	TM218	<15	15.9	1860	112
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	<18	<18	1100	71.1
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23	<23	298	<23
Benzo(g,h,i)perylene	<24 µg/kg	TM218	<24	<24	1240	88.2
Polyaromatic hydrocarbons, Total USEPA 16	<118 µg/kg	TM218	<118	171	18200	1270

**SDG** 100708-104  
**Job:** H\_BWB\_NTT-81  
**Client Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No:** 91025

## TPH CWG (S)

Results Legend		Customer Sample Ref.	TP132	TP133	WS2			
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
		<b>Depth (m)</b>	0.60	0.60	1.10 - 1.50			
		<b>Sample Type</b>	Soil/Solid	Soil/Solid	Soil/Solid			
		<b>Date Sampled</b>	06/07/2010	06/07/2010	07/07/2010			
		<b>Date Received</b>	08/07/2010	08/07/2010	08/07/2010			
		<b>SDG Ref</b>	100708-104	100708-104	100708-104			
		<b>Lab Sample No.(s)</b>	1796784	1796587	1796928			
Component	LOD/Units	Method						
GRO Surrogate % recovery**	%	TM089	117	118	33			
GRO >C5-C12	<44 µg/kg	TM089	<44	<44	607			
Benzene	<10 µg/kg	TM089	<10	<10	<10			
Ethylbenzene	<3 µg/kg	TM089	<3	<3	<3			
Toluene	<2 µg/kg	TM089	<2	<2	<2			
m,p-Xylene	<6 µg/kg	TM089	<6	<6	<6			
o-Xylene	<3 µg/kg	TM089	<3	<3	<3			
m,p,o-Xylene	<10 µg/kg	TM089	<10	<10	<10			
BTEX, Total	<10 µg/kg	TM089	<10	<10	<10			
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5	<5	<5			
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	<10	50.5			
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	<10	202			
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	<10	50.1			
Aliphatics >C10-C12	<10 µg/kg	TM089	<10	<10	88.1			
Aromatics >C6-C7	<10 µg/kg	TM089	<10	<10	<10			
Aromatics >C7-C8	<10 µg/kg	TM089	<10	<10	<10			
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	<10	75.2			
Aromatics >EC10-EC12	<10 µg/kg	TM089	<10	<10	132			
Total Aliphatics >C5-C12	<10 µg/kg	TM089	<10	<10	390			
Total Aromatics >C6-C12	<10 µg/kg	TM089	<10	<10	207			
Aliphatics >C12-C16	<100 µg/kg	TM173	<100	<100	7750			
Aliphatics >C16-C21	<100 µg/kg	TM173	<100	<100	17000			
Aliphatics >C16-C35	<100 µg/kg	TM173	<100	<100	137000			
Aliphatics >C21-C35	<100 µg/kg	TM173	<100	<100	120000			
Aliphatics >C35-C44	<100 µg/kg	TM173	<100	<100	45600			
Aromatics >EC12-EC16	<100 µg/kg	TM173	<100	<100	7310			
Aromatics >EC16-EC21	<100 µg/kg	TM173	<100	<100	20800			
Aromatics >EC21-EC35	<100 µg/kg	TM173	<100	<100	119000			
Aromatics >EC35-EC44	<100 µg/kg	TM173	<100	<100	52700			
Aromatics >EC40-EC44	<100 µg/kg	TM173	<100	<100	21200			
Total Aliphatics >C12-C44	<100 µg/kg	TM173	<100	<100	191000			
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	<100	<100	200000			
Total Aliphatics >C5-35	<100 µg/kg	TM173	<100	<100	145000			
Total Aliphatics >C5-C44	<100 µg/kg	TM173	<100	<100	191000			
Total Aromatics >C5-35	<100 µg/kg	TM173	<100	<100	148000			
Total Aromatics >C6-C44	<100 µg/kg	TM173	<100	<100	200000			
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173	<100	<100	293000			
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	<100	<100	391000			

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>	NTE 285	<b>Client Location</b>	THE DOVE WAY UTTOXETER
<b>Mass Sample taken (kg)</b>	0.207	<b>Moisture Content Ratio (%)</b>	18.2
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	84.6
<b>Particle Size &lt;4mm</b>	>95%		

**Case**

<b>SDG</b>	100708-104
<b>Lab Sample Number(s)</b>	1795533
<b>Sampled Date</b>	05-Jul-2010
<b>Customer Sample Ref.</b>	TP103
<b>Depth (m)</b>	2.00

**Solid Waste Analysis**

Total Organic Carbon (%)	-
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	-
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

<b>Eluate Analysis</b>	<b>Conc<sup>n</sup> in 2:1 eluate C<sub>2</sub></b>	<b>2:1 conc<sup>n</sup> leached A<sub>2</sub></b>	<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>		
	<b>mg/l</b>	<b>mg/kg</b>			
Arsenic	0.00224	0.00448	-	-	-
Barium	0.043	0.086	-	-	-
Cadmium	0.000152	0.000304	-	-	-
Chromium	0.00152	0.00304	-	-	-
Copper	0.00315	0.0063	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00002	-	-	-
Molybdenum	-	-	-	-	-
Nickel	0.0182	0.0364	-	-	-
Lead	0.000793	0.00159	-	-	-
Antimony	-	-	-	-	-
Selenium	0.00172	0.00344	-	-	-
Zinc	0.00599	0.012	-	-	-
Chloride	-	-	-	-	-
Fluoride	-	-	-	-	-
Sulphate (soluble)	109	218	-	-	-
Total Dissolved Solids	-	-	-	-	-
Total Monohydric Phenols (W)	-	-	-	-	-
Dissolved Organic Carbon	-	-	-	-	-

**Leach Test Information**

Date Prepared	14-Jul-2010
pH (pH Units)	7.14
Conductivity (µS/cm)	262.00
Temperature (°C)	21.00
Volume Leachant (Litres)	0.318
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>	NTE 285	<b>Client Location</b>	THE DOVE WAY UTTOXETER
<b>Mass Sample taken (kg)</b>	0.207	<b>Moisture Content Ratio (%)</b>	18.2
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	84.6
<b>Particle Size &lt;4mm</b>	>95%		

**Case**

<b>SDG</b>	100708-104
<b>Lab Sample Number(s)</b>	1795533
<b>Sampled Date</b>	05-Jul-2010
<b>Customer Sample Ref.</b>	TP103
<b>Depth (m)</b>	2.00

**Solid Waste Analysis**

Total Organic Carbon (%)	-	-	-
Loss on Ignition (%)	-	-	-
Sum of BTEX (mg/kg)	-	-	-
Sum of 7 PCBs (mg/kg)	-	-	-
Mineral Oil (mg/kg)	-	-	-
PAH Sum of 17 (mg/kg)	-	-	-
pH (pH Units)	-	-	-
ANC to pH 6 (mol/kg)	-	-	-
ANC to pH 4 (mol/kg)	-	-	-

<b>Eluate Analysis</b>	<b>Conc<sup>n</sup> in 2:1 eluate C<sub>2</sub></b>	<b>2:1 conc<sup>n</sup> leached A<sub>2</sub></b>	<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>		
	<b>mg/l</b>	<b>mg/kg</b>			
Beryllium	0.00035	0.0007	-	-	-
Boron	0.0816	0.163	-	-	-
pH	7	14	-	-	-
Total Cyanide (W)	<0.05	<0.1	-	-	-
Vanadium	0.00504	0.0101	-	-	-

**Leach Test Information**

Date Prepared	14-Jul-2010
pH (pH Units)	7.14
Conductivity (µS/cm)	262.00
Temperature (°C)	21.00
Volume Leachant (Litres)	0.318
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>	NTE 285	<b>Client Location</b>	THE DOVE WAY UTTOXETER
<b>Mass Sample taken (kg)</b>	0.209	<b>Moisture Content Ratio (%)</b>	19.1
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	83.9
<b>Particle Size &lt;4mm</b>	>95%		

**Case**

<b>SDG</b>	100708-104
<b>Lab Sample Number(s)</b>	1796087
<b>Sampled Date</b>	06-Jul-2010
<b>Customer Sample Ref.</b>	TP127
<b>Depth (m)</b>	2.00

**Solid Waste Analysis**

Total Organic Carbon (%)	-
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	-
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

<b>Eluate Analysis</b>	<b>Conc<sup>n</sup> in 2:1 eluate C<sub>2</sub></b>	<b>2:1 conc<sup>n</sup> leached A<sub>2</sub></b>	<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>		
	<b>mg/l</b>	<b>mg/kg</b>			
Arsenic	0.00217	0.00434	-	-	-
Barium	0.0535	0.107	-	-	-
Cadmium	<0.0001	<0.0002	-	-	-
Chromium	0.00146	0.00292	-	-	-
Copper	0.00259	0.00518	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00002	-	-	-
Molybdenum	-	-	-	-	-
Nickel	0.00289	0.00578	-	-	-
Lead	0.00112	0.00224	-	-	-
Antimony	-	-	-	-	-
Selenium	0.000859	0.00172	-	-	-
Zinc	0.00606	0.0121	-	-	-
Chloride	-	-	-	-	-
Fluoride	-	-	-	-	-
Sulphate (soluble)	20.5	41	-	-	-
Total Dissolved Solids	-	-	-	-	-
Total Monohydric Phenols (W)	-	-	-	-	-
Dissolved Organic Carbon	-	-	-	-	-

**Leach Test Information**

Date Prepared	14-Jul-2010
pH (pH Units)	7.77
Conductivity (µS/cm)	1.83
Temperature (°C)	20.60
Volume Leachant (Litres)	0.317
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>	NTE 285	<b>Client Location</b>	THE DOVE WAY UTTOXETER
<b>Mass Sample taken (kg)</b>	0.209	<b>Moisture Content Ratio (%)</b>	19.1
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	83.9
<b>Particle Size &lt;4mm</b>	>95%		

**Case**

<b>SDG</b>	100708-104
<b>Lab Sample Number(s)</b>	1796087
<b>Sampled Date</b>	06-Jul-2010
<b>Customer Sample Ref.</b>	TP127
<b>Depth (m)</b>	2.00

**Solid Waste Analysis**

Total Organic Carbon (%)	-	-	-
Loss on Ignition (%)	-	-	-
Sum of BTEX (mg/kg)	-	-	-
Sum of 7 PCBs (mg/kg)	-	-	-
Mineral Oil (mg/kg)	-	-	-
PAH Sum of 17 (mg/kg)	-	-	-
pH (pH Units)	-	-	-
ANC to pH 6 (mol/kg)	-	-	-
ANC to pH 4 (mol/kg)	-	-	-

<b>Eluate Analysis</b>	<b>Conc<sup>n</sup> in 2:1 eluate C<sub>2</sub></b>	<b>2:1 conc<sup>n</sup> leached A<sub>2</sub></b>	<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>		
	<b>mg/l</b>	<b>mg/kg</b>			
Beryllium	0.000097	0.000194	-	-	-
Boron	<0.0094	<0.0188	-	-	-
pH	6.6	13	-	-	-
Total Cyanide (W)	<0.05	<0.1	-	-	-
Vanadium	0.00204	0.00408	-	-	-

**Leach Test Information**

Date Prepared	14-Jul-2010
pH (pH Units)	7.77
Conductivity (µS/cm)	1.83
Temperature (°C)	20.60
Volume Leachant (Litres)	0.317
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>	NTE 285	<b>Client Location</b>	THE DOVE WAY UTTOXETER
<b>Mass Sample taken (kg)</b>	0.210	<b>Moisture Content Ratio (%)</b>	20.1
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	83.3
<b>Particle Size &lt;4mm</b>	>95%		

**Case**

<b>SDG</b>	100708-104
<b>Lab Sample Number(s)</b>	1796247
<b>Sampled Date</b>	07-Jul-2010
<b>Customer Sample Ref.</b>	TP111
<b>Depth (m)</b>	0.40

**Solid Waste Analysis**

Total Organic Carbon (%)	-
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	-
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

<b>Eluate Analysis</b>	<b>Conc<sup>n</sup> in 2:1 eluate C<sub>2</sub></b>	<b>2:1 conc<sup>n</sup> leached A<sub>2</sub></b>	<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>		
	<b>mg/l</b>	<b>mg/kg</b>			
Arsenic	0.000861	0.00172	-	-	-
Barium	0.0927	0.185	-	-	-
Cadmium	0.000112	0.000224	-	-	-
Chromium	0.00393	0.00786	-	-	-
Copper	0.00792	0.0158	-	-	-
Mercury Dissolved (CVAF)	0.0000261	0.0000522	-	-	-
Molybdenum	-	-	-	-	-
Nickel	0.00478	0.00956	-	-	-
Lead	0.000335	0.00067	-	-	-
Antimony	-	-	-	-	-
Selenium	0.00117	0.00234	-	-	-
Zinc	0.00627	0.0125	-	-	-
Chloride	-	-	-	-	-
Fluoride	-	-	-	-	-
Sulphate (soluble)	47	94	-	-	-
Total Dissolved Solids	-	-	-	-	-
Total Monohydric Phenols (W)	-	-	-	-	-
Dissolved Organic Carbon	-	-	-	-	-

**Leach Test Information**

Date Prepared	14-Jul-2010
pH (pH Units)	8.02
Conductivity (µS/cm)	372.00
Temperature (°C)	20.50
Volume Leachant (Litres)	0.315
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates



## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>	NTE 285	<b>Client Location</b>	THE DOVE WAY UTTOXETER
<b>Mass Sample taken (kg)</b>	0.210	<b>Moisture Content Ratio (%)</b>	20.1
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	83.3
<b>Particle Size &lt;4mm</b>	>95%		

**Case**

<b>SDG</b>	100708-104
<b>Lab Sample Number(s)</b>	1796247
<b>Sampled Date</b>	07-Jul-2010
<b>Customer Sample Ref.</b>	TP111
<b>Depth (m)</b>	0.40

**Solid Waste Analysis**

Total Organic Carbon (%)	-	-	-
Loss on Ignition (%)	-	-	-
Sum of BTEX (mg/kg)	-	-	-
Sum of 7 PCBs (mg/kg)	-	-	-
Mineral Oil (mg/kg)	-	-	-
PAH Sum of 17 (mg/kg)	-	-	-
pH (pH Units)	-	-	-
ANC to pH 6 (mol/kg)	-	-	-
ANC to pH 4 (mol/kg)	-	-	-

<b>Eluate Analysis</b>	<b>Conc<sup>n</sup> in 2:1 eluate C<sub>2</sub></b>	<b>2:1 conc<sup>n</sup> leached A<sub>2</sub></b>	<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>		
	<b>mg/l</b>	<b>mg/kg</b>			
Beryllium	<0.00007	<0.00014	-	-	-
Boron	0.217	0.434	-	-	-
pH	8.5	17	-	-	-
Total Cyanide (W)	<0.05	<0.1	-	-	-
Vanadium	0.00176	0.00352	-	-	-

**Leach Test Information**

Date Prepared	14-Jul-2010
pH (pH Units)	8.02
Conductivity (µS/cm)	372.00
Temperature (°C)	20.50
Volume Leachant (Litres)	0.315
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>	NTE 285	<b>Client Location</b>	THE DOVE WAY UTTOXETER
<b>Mass Sample taken (kg)</b>	0.222	<b>Moisture Content Ratio (%)</b>	27.0
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	78.8
<b>Particle Size &lt;4mm</b>	>95%		

**Case**

<b>SDG</b>	100708-104
<b>Lab Sample Number(s)</b>	1796289
<b>Sampled Date</b>	07-Jul-2010
<b>Customer Sample Ref.</b>	TP112
<b>Depth (m)</b>	2.80

**Solid Waste Analysis**

Total Organic Carbon (%)	0.434
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	6.98
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

<b>Eluate Analysis</b>	<b>Conc<sup>n</sup> in 2:1 eluate C<sub>2</sub></b>	<b>2:1 conc<sup>n</sup> leached A<sub>2</sub></b>	<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>		
	<b>mg/l</b>	<b>mg/kg</b>			
Arsenic	0.00429	0.00858	-	-	-
Barium	0.0735	0.147	-	-	-
Cadmium	<0.0001	<0.0002	-	-	-
Chromium	0.00715	0.0143	-	-	-
Molybdenum	-	-	-	-	-
Nickel	0.00814	0.0163	-	-	-
Lead	0.00386	0.00772	-	-	-
Antimony	-	-	-	-	-
Selenium	0.00418	0.00836	-	-	-
Zinc	0.0352	0.0704	-	-	-
Chloride	-	-	-	-	-
Fluoride	-	-	-	-	-
Sulphate (soluble)	49.1	98.2	-	-	-
Total Dissolved Solids	-	-	-	-	-
Total Monohydric Phenols (W)	-	-	-	-	-
Dissolved Organic Carbon	-	-	-	-	-
Copper	0.0112	0.0224	-	-	-
Mercury Dissolved (CVAF)	0.0000248	0.0000496	-	-	-

**Leach Test Information**

Date Prepared	14-Jul-2010
pH (pH Units)	7.39
Conductivity (µS/cm)	200.00
Temperature (°C)	20.40
Volume Leachant (Litres)	0.303
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>	NTE 285	<b>Client Location</b>	THE DOVE WAY UTTOXETER
<b>Mass Sample taken (kg)</b>	0.222	<b>Moisture Content Ratio (%)</b>	27.0
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	78.8
<b>Particle Size &lt;4mm</b>	>95%		

**Case**

<b>SDG</b>	100708-104
<b>Lab Sample Number(s)</b>	1796289
<b>Sampled Date</b>	07-Jul-2010
<b>Customer Sample Ref.</b>	TP112
<b>Depth (m)</b>	2.80

**Solid Waste Analysis**

Total Organic Carbon (%)	0.434
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	6.98
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

<b>Eluate Analysis</b>	<b>Conc<sup>n</sup> in 2:1 eluate C<sub>2</sub></b>	<b>2:1 conc<sup>n</sup> leached A<sub>2</sub></b>	<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>		
	<b>mg/l</b>	<b>mg/kg</b>			
Beryllium	0.000264	0.000528	-	-	-
Boron	1.12	2.24	-	-	-
pH	7.9	16	-	-	-
Total Cyanide (W)	<0.05	<0.1	-	-	-
Vanadium	0.0096	0.0192	-	-	-

**Leach Test Information**

Date Prepared	14-Jul-2010
pH (pH Units)	7.39
Conductivity (µS/cm)	200.00
Temperature (°C)	20.40
Volume Leachant (Litres)	0.303
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

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Mcerts Certification does not apply to leachates

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>	NTE 285	<b>Client Location</b>	THE DOVE WAY UTTOXETER
<b>Mass Sample taken (kg)</b>	0.186	<b>Moisture Content Ratio (%)</b>	6.11
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	94.2
<b>Particle Size &lt;4mm</b>	>95%		

**Case**

<b>SDG</b>	100708-104
<b>Lab Sample Number(s)</b>	1796587
<b>Sampled Date</b>	06-Jul-2010
<b>Customer Sample Ref.</b>	TP133
<b>Depth (m)</b>	0.60

**Solid Waste Analysis**

Total Organic Carbon (%)	0.217
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	<0.01
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	5.81
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

<b>Eluate Analysis</b>	<b>Conc<sup>n</sup> in 2:1 eluate C<sub>2</sub></b>	<b>2:1 conc<sup>n</sup> leached A<sub>2</sub></b>	<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>		
	<b>mg/l</b>	<b>mg/kg</b>			
Arsenic	0.00273	0.00546	-	-	-
Barium	0.0299	0.0598	-	-	-
Cadmium	0.000131	0.000262	-	-	-
Chromium	0.00204	0.00408	-	-	-
Copper	0.0107	0.0214	-	-	-
Mercury Dissolved (CVAF)	<0.00001	<0.00002	-	-	-
Molybdenum	-	-	-	-	-
Nickel	0.00463	0.00926	-	-	-
Lead	0.00629	0.0126	-	-	-
Antimony	-	-	-	-	-
Selenium	<0.00039	<0.00078	-	-	-
Zinc	0.0275	0.055	-	-	-
Chloride	-	-	-	-	-
Fluoride	-	-	-	-	-
Sulphate (soluble)	28.3	56.6	-	-	-
Total Dissolved Solids	-	-	-	-	-
Total Monohydric Phenols (W)	-	-	-	-	-
Dissolved Organic Carbon	-	-	-	-	-

**Leach Test Information**

Date Prepared	14-Jul-2010
pH (pH Units)	7.71
Conductivity (µS/cm)	93.30
Temperature (°C)	20.80
Volume Leachant (Litres)	0.339
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>	NTE 285	<b>Client Location</b>	THE DOVE WAY UTTOXETER
<b>Mass Sample taken (kg)</b>	0.186	<b>Moisture Content Ratio (%)</b>	6.11
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	94.2
<b>Particle Size &lt;4mm</b>	>95%		

**Case**

<b>SDG</b>	100708-104
<b>Lab Sample Number(s)</b>	1796587
<b>Sampled Date</b>	06-Jul-2010
<b>Customer Sample Ref.</b>	TP133
<b>Depth (m)</b>	0.60

**Solid Waste Analysis**

Total Organic Carbon (%)	0.217
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	<0.01
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	5.81
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

**Eluate Analysis**

	Conc <sup>n</sup> in 2:1 eluate C <sub>2</sub>	2:1 conc <sup>n</sup> leached A <sub>2</sub>	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	mg/l	mg/kg			
Beryllium	0.000093	0.000186	-	-	-
Boron	<0.0094	<0.0188	-	-	-
pH	6.7	13	-	-	-
Total Cyanide (W)	<0.05	<0.1	-	-	-
Vanadium	0.00547	0.0109	-	-	-

**Leach Test Information**

Date Prepared	14-Jul-2010
pH (pH Units)	7.71
Conductivity (µS/cm)	93.30
Temperature (°C)	20.80
Volume Leachant (Litres)	0.339
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

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Mcerts Certification does not apply to leachates

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>	NTE 285	<b>Client Location</b>	THE DOVE WAY UTTOXETER
<b>Mass Sample taken (kg)</b>	0.197	<b>Moisture Content Ratio (%)</b>	12.6
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	88.8
<b>Particle Size &lt;4mm</b>	>95%		

**Case**

<b>SDG</b>	100708-104
<b>Lab Sample Number(s)</b>	1796767
<b>Sampled Date</b>	06-Jul-2010
<b>Customer Sample Ref.</b>	TP130
<b>Depth (m)</b>	0.20

**Solid Waste Analysis**

Total Organic Carbon (%)	2.47
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	7.06
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

<b>Eluate Analysis</b>	<b>Conc<sup>n</sup> in 2:1 eluate C<sub>2</sub></b>	<b>2:1 conc<sup>n</sup> leached A<sub>2</sub></b>	<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>		
	<b>mg/l</b>	<b>mg/kg</b>			
Arsenic	0.00173	0.00346	-	-	-
Barium	0.0963	0.193	-	-	-
Cadmium	0.00015	0.0003	-	-	-
Chromium	0.00586	0.0117	-	-	-
Copper	0.0189	0.0378	-	-	-
Mercury Dissolved (CVAF)	0.0000356	0.0000712	-	-	-
Molybdenum	-	-	-	-	-
Nickel	0.00559	0.0112	-	-	-
Lead	0.00111	0.00222	-	-	-
Antimony	-	-	-	-	-
Selenium	0.00211	0.00422	-	-	-
Zinc	0.00526	0.0105	-	-	-
Chloride	-	-	-	-	-
Fluoride	-	-	-	-	-
Sulphate (soluble)	16.5	33	-	-	-
Total Dissolved Solids	-	-	-	-	-
Total Monohydric Phenols (W)	-	-	-	-	-
Dissolved Organic Carbon	-	-	-	-	-

**Leach Test Information**

Date Prepared	14-Jul-2010
pH (pH Units)	8.11
Conductivity (µS/cm)	415.00
Temperature (°C)	20.40
Volume Leachant (Litres)	0.328
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>	NTE 285	<b>Client Location</b>	THE DOVE WAY UTTOXETER
<b>Mass Sample taken (kg)</b>	0.197	<b>Moisture Content Ratio (%)</b>	12.6
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	88.8
<b>Particle Size &lt;4mm</b>	>95%		

**Case**

<b>SDG</b>	100708-104
<b>Lab Sample Number(s)</b>	1796767
<b>Sampled Date</b>	06-Jul-2010
<b>Customer Sample Ref.</b>	TP130
<b>Depth (m)</b>	0.20

**Solid Waste Analysis**

Total Organic Carbon (%)	2.47
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	7.06
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

<b>Eluate Analysis</b>	<b>Conc<sup>n</sup> in 2:1 eluate C<sub>2</sub></b>	<b>2:1 conc<sup>n</sup> leached A<sub>2</sub></b>	<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>		
	<b>mg/l</b>	<b>mg/kg</b>			
Beryllium	<0.00007	<0.00014	-	-	-
Boron	<0.0094	<0.0188	-	-	-
pH	8.6	17	-	-	-
Total Cyanide (W)	<0.05	<0.1	-	-	-
Vanadium	0.00316	0.00632	-	-	-

**Leach Test Information**

Date Prepared	14-Jul-2010
pH (pH Units)	8.11
Conductivity (µS/cm)	415.00
Temperature (°C)	20.40
Volume Leachant (Litres)	0.328
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

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Mcerts Certification does not apply to leachates



## Table of Results - Appendix

SDG Number : 100708-104

Client : BWB Consulting

Client Ref : NTE 285

### REPORT KEY

NDP	No Determination Possible	#	ISO 17025 Accredited	*	Subcontracted Test	M	MCERTS Accredited
NFD	No Fibres Detected	PFD	Possible Fibres Detected	»	Result previously reported (Incremental reports only)	EC	Equivalent Carbon (Aromatics C8-C35)

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10<sup>-7</sup>

Note: Method detection limits are not always achievable due to various circumstances beyond our control

Method No	Reference	Description	Wet/Dry Sample <sup>1</sup>
PM001		Preparation of Samples for Metals Analysis	Dry
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material	Wet
PM114		Leaching Procedure for CEN Two Stage Batch Test 2:1/8:1 Cumulative	
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step	
TM001	In - house Method	Determination of asbestos containing material by screening on solids	
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC	Wet
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)	
TM098	Method 4500E, AWWA/APHA, 20th Ed., 1999	Determination of Sulphate using the Kone Analyser	Dry
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS	
TM132	In - house Method	ELTRA CS800 Operators Guide	Dry
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter	Wet
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS	
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the "Skalar SANS+ System" Segmented Flow Analyser	Wet
TM154	In - house Method	Determination of Petroleum Hydrocarbons by EZ Flash GC-FID in the Carbon range C6- C40	Wet
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID	Dry
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES	Dry
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry	
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers	Dry
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546	Wet
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer	Dry
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate	
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter	

<sup>1</sup> Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

# APPENDIX

## APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following:  
NRA Leach tests, flash point, ammonium as NH<sub>4</sub> by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS TICS.
2. Samples will be run in duplicate upon request, but an additional charge may be incurred.
3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.
4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.
5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.
6. When requested, the individual sub sample scheduled will be screened in house for the presence of large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.
7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample – similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.
8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.
9. NDP – No determination possible due to insufficient/unsuitable sample.
10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals – total metals must be requested separately.
11. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.
12. Results relate only to the items tested
13. **Surrogate recoveries** – Most of our organic methods include surrogates, the recovery of which is monitored and reported.  
For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 – 130 %.
14. **Product analyses** – Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.
15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethylphenol, 3,5 Dimethylphenol).
16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).
17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
19. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.
19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.
20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.
21. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.
22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials – whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.
23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C4 – C10 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

**LIQUID MATRICES EXTRACTION SUMMARY**

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
PCB TOTAL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GS MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM	LIQUID/LIQUID SHAKE	GC MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC FID

**SOLID MATRICES EXTRACTION SUMMARY**

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
Solvent Extractable Matter	D&C	DCM	SOXTHERM	GRAVIMETRIC
Cyclohexane Ext. Matter	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
Thin Layer Chromatography	D&C	DCM	SOXTHERM	IATROSCAN
Elemental Sulphur	D&C	DCM	SOXTHERM	HPLC
Phenols by GCMS	WET	DCM	SOXTHERM	GC-MS
Herbicides	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
Pesticides	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
EPH (DRO)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (Min oil)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (Cleaned up)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH CWG by GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB tot / PCB con	D&C	HEXANE:ACETONE	END OVER END	GC-MS
Polyaromatic Hydrocarbons (MS)	WET	HEXANE:ACETONE	Microwave TM218.	GC-MS
C8-C40 (C6-C40)EZ Flash	WET	HEXANE:ACETONE	SHAKER	GC-EZ
Polyaromatic Hydrocarbons Rapid GC	WET	HEXANE:ACETONE	SHAKER	GC-EZ
Semi Volatile Organic Compounds	WET	DCM:ACETONE	SONICATE	GC-MS

## **Identification of Asbestos in Bulk Materials**

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

### **Visual Estimation Of Fibre Content.**

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: -

Trace – Where only one or two asbestos fibres were identified.

**Further guidance on typical asbestos fibre content of manufactured products can be found in MDHS 100.**

**The identification of asbestos containing materials falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.**

<b><u>Asbestos Type</u></b>	<b><u>Common Name</u></b>
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-



BWB Consulting  
3-4 Kayes Walk  
The Lace Market  
Nottingham  
Nottinghamshire  
NG1 1PY

**Attention:** Richard Robinson

## CERTIFICATE OF ANALYSIS

**Date:** 11 August 2010  
**Customer:** H\_BWB\_NTT-84  
**Sample Delivery Group (SDG):** 100712-18  
**Your Reference:**  
**Location:** THE DOVE WAY-NTE285  
**Report No.:** 93287

We received 34 samples on Monday July 12, 2010 and 25 of these samples were scheduled for analysis which was completed on Wednesday August 11, 2010. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Asbestos testing - we are not accredited for screening soil samples for asbestos fibres. We are only accredited to identify asbestos fibres in bulk material (ACM).

Approved By:

**Iain Swinton**

Operations Director - Land UK & Ireland



<b>SDG:</b>	100712-18	<b>Customer:</b>	BWB Consulting
<b>Job:</b>	H_BWB_NTT-84	<b>Attention:</b>	Richard Robinson
<b>Client Reference:</b>		<b>Order No.:</b>	NE09/616
<b>Location:</b>	THE DOVE WAY-NTE285	<b>Report No.:</b>	93287

## Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
1804942	TP107		2.50	08/07/2010
1804805	TP109		0.70	08/07/2010
1804927	TP109		2.50	08/07/2010
1805000	TP114		0.50	08/07/2010
1805031	TP114		0.60	07/07/2010
1805048	TP116		0.90	08/07/2010
1805082	TP117		0.50	08/07/2010
1805100	TP117		1.80	08/07/2010
1939155	TP118		3.00	08/07/2010
1805350	TP119		0.50	08/07/2010
1805365	TP119		3.20	08/07/2010
1805387	TP120		0.80	08/07/2010
1805409	TP120		1.50	08/07/2010
1805433	TP120		3.00	08/07/2010
1805519	TP121		0.20	07/07/2010
1805459	TP121		0.90	07/07/2010
1805492	TP121		1.50	07/07/2010
1805510	TP123		0.20	07/07/2010
1805546	TP123		2.00	07/07/2010
1805575	TP134		0.30	08/07/2010
1805596	TP135		0.90	08/07/2010
1805613	TP135		3.10	08/07/2010
1805646	TP136		0.50	08/07/2010
1805675	TP136		1.00	08/07/2010
1805701	TP137		0.70	08/07/2010
1805736	TP137		2.00	08/07/2010
1805932	WS3		0.10 - 0.90	07/07/2010
1806100	WS3		1.20 - 2.00	07/07/2010
1806152	WS4		0.10 - 0.50	07/07/2010
1806221	WS4		1.00 - 1.50	07/07/2010
1806285	WS5		0.10 - 1.00	07/07/2010
1806302	WS6		0.30 - 1.00	07/07/2010
1806359	WS7		0.10 - 0.40	07/07/2010
1806335	WS7		1.60 - 2.00	07/07/2010



Only received samples which have had analysis scheduled will be shown on the following pages.



**SDG:** 100712-18  
**Job:** H\_BWB\_NTT-84  
**Client Reference:**  
**Location:** THE DOVE WAY-NTE285

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 93287

**SOLID**

<b>Results Legend</b>   Test   No Determination Possible	Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Container	
		1806100	W53		1.20 - 2.00	1kg TUB 400g Tub 250g Amber Jar
		1805932	W53		0.10 - 0.90	250g Amber Jar 1kg TUB 400g Tub
		1805736	TP137		2.00	250g Amber Jar 89g VOC 400g Tub
		1805701	TP137		0.70	250g Amber Jar 400g Tub
	1805675	TP136		1.00	250g Amber Jar 400g Tub	
	1805646	TP136		0.50	400g Tub 250g Amber Jar	
	1805613	TP135		3.10	400g Tub 250g Amber Jar	
	1805596	TP135		0.90	89g VOC 400g Tub 250g Amber Jar	
	1805575	TP134		0.30	250g Amber Jar 400g Tub	
	1805546	TP123		2.00	250g Amber Jar 400g Tub	
	1805459	TP121		0.90	250g Amber Jar 1kg TUB	
	1805433	TP120		3.00	250g Amber Jar 89g VOC 400g Tub	
	1805387	TP120		0.90	250g Amber Jar 1kg TUB	
	1805365	TP119		3.20	250g Amber Jar 400g Tub	
	1805350	TP119		0.50	89g VOC 250g Amber Jar	
	1805100	TP117		1.90	400g Tub 250g Amber Jar	
	1805082	TP117		0.50	400g Tub 250g Amber Jar	
	1805000	TP114		0.50	250g Amber Jar 1kg TUB	
	1804927	TP109		2.50	89g VOC 400g Tub	
Anions by Kone (w)	All					
Asbestos Containing Material Screen	All					
Boron Water Soluble	All					
CEN Readings	All					
Cyanide Complex/Free/Total/Thiocyan	All					
Cyanides Complex/Free/Total/Thiocya	Cyanide, Complex					
	Cyanide, Free					
	Cyanide, Total					
Dissolved Metals by ICP-MS	All					
EPH CWG (Aliphatic) GC (S)	All					
EPH CWG (Aromatic) GC (S)	All					
GRO BTEX MTBE GC (S)	All					
Mercury Dissolved	All					
Metals by iCap-OES (Soil)	Arsenic					
	Barium					
	Beryllium					
	Cadmium					
	Chromium					
	Copper					

		Total				
1939165	TP118	3.00	400g Tub			0
1806335	WS7	1.80 - 2.00	250g Amber-Jar			10
			60g VOC			0
			400g Tub			6
1806302	WS6	0.30 - 1.00	250g Amber-Jar			0
			60g VOC			21
			250g Amber-Jar			0
			1kg Tub			10
			400g Tub			0
1806285	WS5	0.10 - 1.00	250g Amber-Jar	X		10
			60g VOC			0
			250g Amber-Jar			10
			1kg Tub			0
			400g Tub			21
			60g VOC			0
			250g Amber-Jar			21
			60g VOC			0
			400g Tub			21
			250g Amber-Jar			0
			60g VOC			10
			400g Tub			0
1806221	WS4	1.00 - 1.80	250g Amber-Jar	X		8
			60g VOC			0
			250g Amber-Jar			8
			1kg Tub			0
			400g Tub			10
			60g VOC			0
			250g Amber-Jar			21
			60g VOC			0
			400g Tub			21
			250g Amber-Jar			0
			60g VOC			21
			400g Tub			0
			250g Amber-Jar			21
			60g VOC			0
			400g Tub			21
			250g Amber-Jar			0
			60g VOC			21

**SDG:** 100712-18  
**Job:** H\_BWB\_NTT-84  
**Client Reference:**  
**Location:** THE DOVE WAY-NTE285

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**Order No.:** NE09/616  
**Report No.:** 93287

Sample ID	TP	Depth	1804927	1805000	1805082	1805100	1805350	1805365	1805387	1805433	1805459	1805466	1805475	1805596	1805613	1805646	1805675	1805701	1805736	1805932	1806100
Lead	TP109	2.50		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Mercury	TP114	0.50		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Nickel	TP117	0.50		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Selenium	TP119	0.50		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Vanadium	TP120	0.80		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Zinc	TP121	0.80		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PAH by GCMS	TP122	2.00		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
pH	TP123	2.00		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
pH Value	TP124	0.80		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Phenols by HPLC (S)	TP125	0.80		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sample description	TP126	0.90	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Total Organic Carbon	TP127	1.00		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Total Sulphur	TP128	0.50		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TPH C6-C40 Value of soil	TP129	3.10		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TPH CWG GC (S)	TP130	3.10	X				X														
VOC MS (S)	TP131	0.90					X														
Water Soluble Sulphate 2:1	TP132	0.90		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X



**SDG:** 100712-18  
**Job:** H\_BWB\_NTT-84  
**Client Reference:**  
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**Order No.:** NE09/616  
**Report No.:** 93287

## Sample Descriptions

**Grain Sizes:**

<0.063mm very fine,  
0.063mm - 0.1mm fine,  
0.1mm - 2mm medium,  
2mm - 10mm coarse,  
>10mm very coarse

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions
1804927	TP109	2.50	Dark Brown	Sand	0.1 - 2 mm	Stones
1805000	TP114	0.50	Dark Brown	Silt Loam	0.063 - 0.1 mm	Stones
1805082	TP117	0.50	Dark Brown	Silty Clay	0.063 - 0.1 mm	N/A
1805100	TP117	1.80	Dark Brown	Silty Clay	0.063 - 0.1 mm	Stones
1805350	TP119	0.50	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones
1805365	TP119	3.20	Dark Brown	Silty Clay	0.063 - 0.1 mm	Stones
1805387	TP120	0.80	Dark Brown	Silty Clay	0.063 - 0.1 mm	Stones
1805433	TP120	3.00	Light Brown	Silty Sand	0.063 - 0.1 mm	Stones
1805459	TP121	0.90	Dark Brown	Silty Sand	0.063 - 0.1 mm	Stones
1805546	TP123	2.00	Dark Brown	Clay	<0.063 mm	N/A
1805575	TP134	0.30	Light Brown	Silty Clay	0.063 - 0.1 mm	Stones
1805596	TP135	0.90	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones
1805613	TP135	3.10	Light Brown	Silty Clay	0.063 - 0.1 mm	None
1805646	TP136	0.50	Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Stones
1805675	TP136	1.00	Dark Brown	Silty Sand	0.063 - 0.1 mm	Stones
1805701	TP137	0.70	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones
1805736	TP137	2.00	Dark Brown	Silty Clay	0.063 - 0.1 mm	None
1805932	WS3	0.10 - 0.90	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones
1806100	WS3	1.20 - 2.00	Dark Brown	Silty Clay	0.063 - 0.1 mm	Stones
1806152	WS4	0.10 - 0.50	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones
1806221	WS4	1.00 - 1.50	Dark Brown	Sandy Clay	0.1 - 2 mm	Stones
1806285	WS5	0.10 - 1.00	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones
1806302	WS6	0.30 - 1.00	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones
1806335	WS7	1.60 - 2.00	Dark Brown	Sand	0.1 - 2 mm	Stones
1939155	TP118	3.00	Light Brown	Sandy Clay	0.1 - 2 mm	Stones

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

**SDG:** 100712-18  
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**Order No.:** NE09/616  
**Report No.:** 93287

### Test Completion dates

SDG reference: 100712-18

Lab Sample No(s)	1804927	1805000	1805082	1805100	1805350	1805365	1805387	1805433	1805459	1805546	1805575	1805596
Customer Sample Ref.	TP109	TP114	TP117	TP117	TP119	TP119	TP120	TP120	TP121	TP123	TP134	TP135
Depth	2.50	0.50	0.50	1.80	0.50	3.20	0.80	3.00	0.90	2.00	0.30	0.90
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Anions by Kone (w)				19/07/2010		20/07/2010			19/07/2010	20/07/2010	19/07/2010	
Asbestos Containing Material Screen		16/07/2010			16/07/2010						16/07/2010	
Boron Water Soluble		20/07/2010	20/07/2010		20/07/2010	20/07/2010	20/07/2010	20/07/2010		20/07/2010		20/07/2010
CEN Readings				19/07/2010		20/07/2010			19/07/2010	20/07/2010	19/07/2010	
Cyanide Comp/Free/Total/Thiocyanate		19/07/2010	19/07/2010	20/07/2010	19/07/2010	21/07/2010	19/07/2010	19/07/2010	20/07/2010	21/07/2010	20/07/2010	19/07/2010
Dissolved Metals by ICP-MS				21/07/2010		21/07/2010			21/07/2010	21/07/2010	21/07/2010	
EPH CWG (Aliphatic) GC (S)	20/07/2010				20/07/2010		21/07/2010					20/07/2010
EPH CWG (Aromatic) GC (S)	20/07/2010				20/07/2010		21/07/2010					20/07/2010
GRO by GC-FID (S)	20/07/2010				20/07/2010		20/07/2010					20/07/2010
Mercury Dissolved				20/07/2010		20/07/2010			20/07/2010	20/07/2010	20/07/2010	
Metals by iCap-OES (Soil)		21/07/2010	19/07/2010		20/07/2010	19/07/2010	19/07/2010	19/07/2010		19/07/2010		20/07/2010
Moisture Meter				17/07/2010		16/07/2010			16/07/2010	16/07/2010	17/07/2010	
PAH by GCMS		19/07/2010	19/07/2010		19/07/2010	20/07/2010	19/07/2010	19/07/2010		19/07/2010		19/07/2010
pH		19/07/2010	16/07/2010		19/07/2010	16/07/2010	19/07/2010	19/07/2010		16/07/2010		16/07/2010
pH Value				20/07/2010		20/07/2010			20/07/2010	20/07/2010	20/07/2010	
Phenols by HPLC (S)		19/07/2010	19/07/2010		19/07/2010	19/07/2010	21/07/2010	21/07/2010		19/07/2010		19/07/2010
Sample description	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010
Total Organic Carbon		19/07/2010	19/07/2010		19/07/2010	19/07/2010	19/07/2010	19/07/2010		19/07/2010		19/07/2010
Total Sulphur		19/07/2010	19/07/2010		19/07/2010	19/07/2010	19/07/2010	19/07/2010		19/07/2010		19/07/2010
TPH c6-40 Value of soil		20/07/2010	20/07/2010		20/07/2010	20/07/2010	20/07/2010	20/07/2010		20/07/2010		20/07/2010
TPH CWG GC (S)	21/07/2010				21/07/2010		21/07/2010					21/07/2010
VOC MS (S)												
Water Soluble Sulphate 2:1		20/07/2010	20/07/2010		20/07/2010	20/07/2010	20/07/2010	20/07/2010		20/07/2010		20/07/2010

1805613	1805646	1805675	1805701	1805736	1805932	1806100	1806152	1806221	1806285	1806302	1806335	1939155
TP135	TP136	TP136	TP137	TP137	WS3	WS3	WS4	WS4	WS5	WS6	WS7	TP118
3.10	0.50	1.00	0.70	2.00	0.10 - 0.90	1.20 - 2.00	0.10 - 0.50	1.00 - 1.50	0.10 - 1.00	0.30 - 1.00	1.60 - 2.00	3.00
SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
20/07/2010				19/07/2010	19/07/2010		19/07/2010			19/07/2010		
	16/07/2010				16/07/2010					16/07/2010		
20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010
20/07/2010				19/07/2010	19/07/2010		19/07/2010			19/07/2010		
21/07/2010	19/07/2010	19/07/2010	19/07/2010	20/07/2010	20/07/2010	19/07/2010	20/07/2010	19/07/2010	19/07/2010	20/07/2010	19/07/2010	19/07/2010
21/07/2010				21/07/2010	21/07/2010		21/07/2010			21/07/2010		
			20/07/2010					21/07/2010		21/07/2010	21/07/2010	
			20/07/2010					21/07/2010		21/07/2010	21/07/2010	
			20/07/2010					20/07/2010		20/07/2010	20/07/2010	
20/07/2010				20/07/2010	20/07/2010		20/07/2010			20/07/2010		
20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010
16/07/2010				17/07/2010	16/07/2010		16/07/2010			16/07/2010		
19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010
16/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	16/07/2010
20/07/2010				20/07/2010	20/07/2010		20/07/2010			20/07/2010		
20/07/2010	21/07/2010	21/07/2010	21/07/2010	21/07/2010	19/07/2010	21/07/2010	19/07/2010	21/07/2010	21/07/2010	19/07/2010	21/07/2010	19/07/2010
16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010	16/07/2010
19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010
19/07/2010	19/07/2010	19/07/2010	19/07/2010		19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010
20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010
			21/07/2010					21/07/2010		21/07/2010	21/07/2010	
			20/07/2010									
20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010	20/07/2010



**SDG:** 100712-18  
**Job:** H\_BWB\_NTT-84  
**Client Reference:**  
**Location:** THE DOVE WAY-NTE285

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 93287

Results Legend		Customer Sample Ref.	TP114	TP117	TP117	TP118	TP119
#	ISO17025 accredited.	<b>Depth (m)</b> <b>Sample Type</b> <b>Date Sampled</b> <b>Date Received</b> <b>SDG Ref</b> <b>Lab Sample No.(s)</b> <b>AGS Reference</b>	0.50	0.50	1.80	3.00	0.50
M	mCERTS accredited.		Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
aq	Aqueous / settled sample.		08/07/2010	08/07/2010	08/07/2010	08/07/2010	08/07/2010
diss.filt	Dissolved / filtered sample.		12/07/2010	12/07/2010	12/07/2010	12/07/2010	12/07/2010
tot.unfilt	Total / unfiltered sample.		100712-18	100712-18	100712-18	100712-18	100712-18
*	subcontracted test.		1805000	1805082	1805100	1939155	1805350
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
Component	LOD/Units	Method					
Moisture	%	PM114			26.2		
Moisture content ratio	%	PM114			35.4		
Dry matter content ratio	%	PM114			73.9		
Asbestos Containing Material Screen	-	TM001	No ACM Detected				No ACM Detected
Phenols, Total monohydric	<0.22 mg/kg	TM062 (S)	<0.22	<0.22		<0.22	<0.22
Sulphate, 2:1 water soluble	<0.003 g/l	TM098	0.463	0.0109		0.125	1.49
Sulphur, Total	<0.02 %	TM132	0.318	0.031		0.033	0.237
Fraction Organic Carbon (FOC)	<0.002 -	TM132	0.147	0.0178		0.00372	0.122
pH	1 pH Units	TM133	4.93	6.59		7.16	7.52
Cyanide, Total	<1 mg/kg	TM153	3.51	<1		<1	<1
Cyanide, Free	<1 mg/kg	TM153	<1	<1		<1	<1
Cyanide, Complex	<1 mg/kg	TM153	2.89	<1		<1	<1
TPH >C6-C40	<10 mg/kg	TM154	2370	121		<10	1970
Arsenic	<0.6 mg/kg	TM181	22.2	9.76		6.27	42.9
Barium	<0.6 mg/kg	TM181	675	262		99.2	251
Beryllium	<0.01 mg/kg	TM181	1.97	1.39		0.632	5.26
Cadmium	<0.02 mg/kg	TM181	22.2	0.618		0.333	0.991
Chromium	<0.9 mg/kg	TM181	104	34.6		12.3	33.4
Copper	<1.4 mg/kg	TM181	468	35.6		11.8	187
Lead	<0.7 mg/kg	TM181	339	64.2		18.2	379
Mercury	<0.14 mg/kg	TM181	1.82	<0.14		<0.14	<0.14
Nickel	<0.2 mg/kg	TM181	57.1	31.5		13.1	69.9
Selenium	<1 mg/kg	TM181	9.95	1.5		<1	1.98
Vanadium	<0.2 mg/kg	TM181	24	36.2		16.6	41.7
Zinc	<1.9 mg/kg	TM181	388	192		62	542
Boron, water soluble	<1 mg/kg	TM222	4.03	<1		1.45	6.71

**SDG:** 100712-18  
**Job:** H\_BWB\_NTT-84  
**Client Reference:**  
**Location:** THE DOVE WAY-NTE285

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 93287

**PAH by GCMS**

Results Legend		Customer Sample Ref.	TP114	TP117	TP118	TP119
#	ISO17025 accredited.					
M	mCERTS accredited.					
aq	Aqueous / settled sample.	<b>Depth (m)</b>	0.50	0.50	3.00	0.50
diss.filt	Dissolved / filtered sample.	<b>Sample Type</b>	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
tot.unfilt	Total / unfiltered sample.	<b>Date Sampled</b>	08/07/2010	08/07/2010	08/07/2010	08/07/2010
*	subcontracted test.	<b>Date Received</b>	12/07/2010	12/07/2010	12/07/2010	12/07/2010
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	<b>SDG Ref</b>	100712-18	100712-18	100712-18	100712-18
		<b>Lab Sample No.(s)</b>	1805000	1805082	1939155	1805350
		<b>AGS Reference</b>				
Component	LOD/Units	Method				
Naphthalene-d8 % recovery**	%	TM218	107	103	110	112
Acenaphthene-d10 % recovery**	%	TM218	109	100	112	113
Phenanthrene-d10 % recovery**	%	TM218	111	104	115	117
Chrysene-d12 % recovery**	%	TM218	97.2	85.8	101	99.9
Perylene-d12 % recovery**	%	TM218	105	87.4	115	108
Naphthalene	<9 µg/kg	TM218	516	<9	<9	828
Acenaphthylene	<12 µg/kg	TM218	64.4	<12	<12	204
Acenaphthene	<8 µg/kg	TM218	21.4	<8	<8	2540
Fluorene	<10 µg/kg	TM218	23.9	<10	<10	3120
Phenanthrene	<15 µg/kg	TM218	580	51.5	22.7	6370
Anthracene	<16 µg/kg	TM218	191	<16	<16	6380
Fluoranthene	<17 µg/kg	TM218	705	89.7	42.3	28900
Pyrene	<15 µg/kg	TM218	550	76.2	35.5	21400
Benz(a)anthracene	<14 µg/kg	TM218	449	54.3	31.5	8380
Chrysene	<10 µg/kg	TM218	431	63.9	22.4	7090
Benzo(b)fluoranthene	<15 µg/kg	TM218	1550	77.8	38.6	8880
Benzo(k)fluoranthene	<14 µg/kg	TM218	410	29.8	15.3	3750
Benzo(a)pyrene	<15 µg/kg	TM218	458	38.4	27.9	7310
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	728	33.8	<18	3770
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	166	<23	<23	1020
Benzo(g,h,i)perylene	<24 µg/kg	TM218	766	48	<24	4430
Polyaromatic hydrocarbons, Total USEPA 16	<118 µg/kg	TM218	7610	563	236	114000

**SDG** 100712-18  
**Job:** H\_BWB\_NTT-84  
**Client Reference:**  
**Location:** THE DOVE WAY-NTE285

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 93287

## TPH CWG (S)

Results Legend		Customer Sample Ref.	TP109	TP119			
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	subcontracted test.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
		<b>Depth (m)</b>	2.50	0.50			
		<b>Sample Type</b>	Soil/Solid	Soil/Solid			
		<b>Date Sampled</b>	08/07/2010	08/07/2010			
		<b>Date Received</b>	12/07/2010	12/07/2010			
		<b>SDG Ref</b>	100712-18	100712-18			
		<b>Lab Sample No.(s)</b>	1804927	1805350			
		<b>AGS Reference</b>					
Component	LOD/Units	Method					
GRO Surrogate % recovery**	%	TM089	74	68			
GRO >C5-C12	<44 µg/kg	TM089	185	716			
Benzene	<10 µg/kg	TM089	<10	<10			
Ethylbenzene	<3 µg/kg	TM089	<3	<3	M	M	
Toluene	<2 µg/kg	TM089	<2	<2	M	M	
m,p-Xylene	<6 µg/kg	TM089	<6	<6	M	M	
o-Xylene	<3 µg/kg	TM089	<3	<3	M	M	
m,p,o-Xylene	<10 µg/kg	TM089	<10	<10	M	M	
BTEX, Total	<10 µg/kg	TM089	<10	<10	M	M	
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5	<5	#	#	
Aliphatics >C5-C6	<10 µg/kg	TM089	10.6	16.1			
Aliphatics >C6-C8	<10 µg/kg	TM089	13	22.4			
Aliphatics >C8-C10	<10 µg/kg	TM089	40.6	40.6			
Aliphatics >C10-C12	<10 µg/kg	TM089	18.6	223			
Aromatics >C6-C7	<10 µg/kg	TM089	<10	<10			
Aromatics >C7-C8	<10 µg/kg	TM089	<10	<10			
Aromatics >EC8-EC10	<10 µg/kg	TM089	60.9	60.9			
Aromatics >EC10-EC12	<10 µg/kg	TM089	27.9	335			
Total Aliphatics >C5-C12	<10 µg/kg	TM089	82.8	302			
Total Aromatics >C6-C12	<10 µg/kg	TM089	88.8	396			
Aliphatics >C12-C16	<100 µg/kg	TM173	11500	18500			
Aliphatics >C16-C21	<100 µg/kg	TM173	4610	63900			
Aliphatics >C16-C35	<100 µg/kg	TM173	207000	410000			
Aliphatics >C21-C35	<100 µg/kg	TM173	202000	346000			
Aliphatics >C35-C44	<100 µg/kg	TM173	118000	149000			
Aromatics >EC12-EC16	<100 µg/kg	TM173	3020	23200			
Aromatics >EC16-EC21	<100 µg/kg	TM173	3370	153000			
Aromatics >EC21-EC35	<100 µg/kg	TM173	24200	448000			
Aromatics >EC35-EC44	<100 µg/kg	TM173	24500	155000			
Aromatics >EC40-EC44	<100 µg/kg	TM173	12800	64000			
Total Aliphatics >C12-C44	<100 µg/kg	TM173	336000	578000			
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	55100	780000			
Total Aliphatics >C5-35	<100 µg/kg	TM173	218000	429000			
Total Aliphatics >C5-C44	<100 µg/kg	TM173	336000	578000			
Total Aromatics >C5-35	<100 µg/kg	TM173	30700	625000			
Total Aromatics >C6-C44	<100 µg/kg	TM173	55200	780000			
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173	249000	1050000			
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	391000	1360000			

**SDG** 100712-18  
**Job:** H\_BWB\_NTT-84  
**Client Reference:**  
**Location:** THE DOVE WAY-NTE285

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No:** 93287

Results Legend		Customer Sample Ref.	TP119	TP120	TP120	TP121	TP123	TP134
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.	Depth (m)	3.20	0.80	3.00	0.90	2.00	0.30
diss.filt	Dissolved / filtered sample.	Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
tot.unfilt	Total / unfiltered sample.	Date Sampled	08/07/2010	08/07/2010	08/07/2010	07/07/2010	07/07/2010	08/07/2010
*	subcontracted test.	Date Received	12/07/2010	12/07/2010	12/07/2010	12/07/2010	12/07/2010	12/07/2010
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100712-18	100712-18	100712-18	100712-18	100712-18	100712-18
		Lab Sample No.(s)	1805365	1805387	1805433	1805459	1805546	1805575
		AGS Reference						
Component	LOD/Units	Method						
Moisture	%	PM114	15.3			20.7	16.2	10.1
Moisture content ratio	%	PM114	18.1			26.2	19.3	11.2
Dry matter content ratio	%	PM114	84.7			79.3	83.8	90
Asbestos Containing Material Screen	-	TM001						No ACM Detected
Phenols, Total monohydric	<0.22 mg/kg	TM062 (S)	<0.22	<0.22	2.1		<0.22	
Sulphate, 2:1 water soluble	<0.003 g/l	TM098	0.348	1.3	0.0652		0.0421	
Sulphur, Total	<0.02 %	TM132	0.078	0.931	0.02		0.02	
Fraction Organic Carbon (FOC)	<0.002 -	TM132	0.0163	0.0524	0.00223		0.00444	
pH	1 pH Units	TM133	7.41	7.69	7.79		7.21	
Cyanide, Total	<1 mg/kg	TM153	<1	<1	<1		<1	
Cyanide, Free	<1 mg/kg	TM153	<1	<1	<1		<1	
Cyanide, Complex	<1 mg/kg	TM153	<1	<1	<1		<1	
TPH >C6-C40	<10 mg/kg	TM154	275	13800	<10		<10	
Arsenic	<0.6 mg/kg	TM181	12.6	6.69	6.31		7.55	
Barium	<0.6 mg/kg	TM181	127	524	57.3		158	
Beryllium	<0.01 mg/kg	TM181	0.767	7.11	0.469		0.772	
Cadmium	<0.02 mg/kg	TM181	0.415	<0.02	0.198		0.488	
Chromium	<0.9 mg/kg	TM181	28.2	38.9	7.58		22.2	
Copper	<1.4 mg/kg	TM181	133	20.4	7.72		16.3	
Lead	<0.7 mg/kg	TM181	47.9	23.5	14.4		21.8	
Mercury	<0.14 mg/kg	TM181	<0.14	<0.14	<0.14		<0.14	
Nickel	<0.2 mg/kg	TM181	27.5	12	9.64		24	
Selenium	<1 mg/kg	TM181	<1	3.44	<1		1.58	
Vanadium	<0.2 mg/kg	TM181	19.6	39	14.3		23.5	
Zinc	<1.9 mg/kg	TM181	99.5	103	35.1		97.5	
Boron, water soluble	<1 mg/kg	TM222	1.08	3.79	1.95		3.59	

**SDG:** 100712-18  
**Job:** H\_BWB\_NTT-84  
**Client Reference:**  
**Location:** THE DOVE WAY-NTE285

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 93287

**PAH by GCMS**

Results Legend		Customer Sample Ref.	TP119	TP120	TP120	TP123		
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.	Depth (m)	3.20	0.80	3.00	2.00		
diss.filt	Dissolved / filtered sample.	Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
tot.unfilt	Total / unfiltered sample.	Date Sampled	08/07/2010	08/07/2010	08/07/2010	07/07/2010		
*	subcontracted test.	Date Received	12/07/2010	12/07/2010	12/07/2010	12/07/2010		
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100712-18	100712-18	100712-18	100712-18		
		Lab Sample No.(s)	1805365	1805387	1805433	1805546		
		AGS Reference						
Component	LOD/Units	Method						
Naphthalene-d8 % recovery**	%	TM218	107	102	104	101		
Acenaphthene-d10 % recovery**	%	TM218	106	102	105	99.6		
Phenanthrene-d10 % recovery**	%	TM218	110	105	110	104		
Chrysene-d12 % recovery**	%	TM218	91.5	91.8	99.6	91.4		
Perylene-d12 % recovery**	%	TM218	97	98.9	116	104		
Naphthalene	<9 µg/kg	TM218	104	244	13.3	<9		
Acenaphthylene	<12 µg/kg	TM218	16.3	2130	23.5	<12		
Acenaphthene	<8 µg/kg	TM218	38	65500	212	<8		
Fluorene	<10 µg/kg	TM218	61.3	12100	89.3	<10		
Phenanthrene	<15 µg/kg	TM218	220	9080	877	<15		
Anthracene	<16 µg/kg	TM218	68.1	5400	165	<16		
Fluoranthene	<17 µg/kg	TM218	529	17900	1360	<17		
Pyrene	<15 µg/kg	TM218	413	13300	1110	<15		
Benzo(a)anthracene	<14 µg/kg	TM218	167	3030	472	<14		
Chrysene	<10 µg/kg	TM218	169	3100	436	<10		
Benzo(b)fluoranthene	<15 µg/kg	TM218	193	2440	523	<15		
Benzo(k)fluoranthene	<14 µg/kg	TM218	77.1	1170	182	<14		
Benzo(a)pyrene	<15 µg/kg	TM218	163	2190	507	<15		
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	99.2	865	239	<18		
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23	314	57	<23		
Benzo(g,h,i)perylene	<24 µg/kg	TM218	126	1350	287	<24		
Polyaromatic hydrocarbons, Total USEPA 16	<118 µg/kg	TM218	2440	140000	6550	<118		

**SDG** 100712-18  
**Job:** H\_BWB\_NTT-84  
**Client Reference:**  
**Location:** THE DOVE WAY-NTE285

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No:** 93287

**TPH CWG (S)**

Results Legend		Customer Sample Ref.	TP120				
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	subcontracted test.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
		<b>Depth (m)</b>	0.80				
		<b>Sample Type</b>	Soil/Solid				
		<b>Date Sampled</b>	08/07/2010				
		<b>Date Received</b>	12/07/2010				
		<b>SDG Ref</b>	100712-18				
		<b>Lab Sample No.(s)</b>	1805387				
		<b>AGS Reference</b>					
Component	LOD/Units	Method					
GRO Surrogate % recovery**	%	TM089	17				
GRO >C5-C12	<44 µg/kg	TM089	812				
Benzene	<10 µg/kg	TM089	<10				
Ethylbenzene	<3 µg/kg	TM089	<3				
Toluene	<2 µg/kg	TM089	<2				
m,p-Xylene	<6 µg/kg	TM089	<6				
o-Xylene	<3 µg/kg	TM089	<3				
m,p,o-Xylene	<10 µg/kg	TM089	<10				
BTEX, Total	<10 µg/kg	TM089	<10				
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5				
Aliphatics >C5-C6	<10 µg/kg	TM089	11.8				
Aliphatics >C6-C8	<10 µg/kg	TM089	<10				
Aliphatics >C8-C10	<10 µg/kg	TM089	154				
Aliphatics >C10-C12	<10 µg/kg	TM089	157				
Aromatics >C6-C7	<10 µg/kg	TM089	<10				
Aromatics >C7-C8	<10 µg/kg	TM089	<10				
Aromatics >EC8-EC10	<10 µg/kg	TM089	232				
Aromatics >EC10-EC12	<10 µg/kg	TM089	236				
Total Aliphatics >C5-C12	<10 µg/kg	TM089	323				
Total Aromatics >C6-C12	<10 µg/kg	TM089	467				
Aliphatics >C12-C16	<100 µg/kg	TM173	203000				
Aliphatics >C16-C21	<100 µg/kg	TM173	200000				
Aliphatics >C16-C35	<100 µg/kg	TM173	2040000				
Aliphatics >C21-C35	<100 µg/kg	TM173	1840000				
Aliphatics >C35-C44	<100 µg/kg	TM173	1720000				
Aromatics >EC12-EC16	<100 µg/kg	TM173	206000				
Aromatics >EC16-EC21	<100 µg/kg	TM173	258000				
Aromatics >EC21-EC35	<100 µg/kg	TM173	1130000				
Aromatics >EC35-EC44	<100 µg/kg	TM173	1100000				
Aromatics >EC40-EC44	<100 µg/kg	TM173	504000				
Total Aliphatics >C12-C44	<100 µg/kg	TM173	3960000				
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	2690000				
Total Aliphatics >C5-35	<100 µg/kg	TM173	2240000				
Total Aliphatics >C5-C44	<100 µg/kg	TM173	3960000				
Total Aromatics >C5-35	<100 µg/kg	TM173	1600000				
Total Aromatics >C6-C44	<100 µg/kg	TM173	2700000				
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173	3840000				
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	6660000				

**SDG** 100712-18  
**Job:** H\_BWB\_NTT-84  
**Client Reference:**  
**Location:** THE DOVE WAY-NTE285

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No:** 93287

Results Legend		Customer Sample Ref.	TP135	TP135	TP136	TP136	TP137	TP137
#	ISO17025 accredited.	<b>Depth (m)</b> <b>Sample Type</b> <b>Date Sampled</b> <b>Date Received</b> <b>SDG Ref</b> <b>Lab Sample No.(s)</b> <b>AGS Reference</b>	0.90	3.10	0.50	1.00	0.70	2.00
M	mCERTS accredited.		Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
aq	Aqueous / settled sample.		08/07/2010	08/07/2010	08/07/2010	08/07/2010	08/07/2010	08/07/2010
diss.filt	Dissolved / filtered sample.		12/07/2010	12/07/2010	12/07/2010	12/07/2010	12/07/2010	12/07/2010
tot.unfilt	Total / unfiltered sample.		100712-18	100712-18	100712-18	100712-18	100712-18	100712-18
*	subcontracted test.		1805596	1805613	1805646	1805675	1805701	1805736
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
Component	LOD/Units	Method						
Moisture	%	PM114		27.8				33.5
Moisture content ratio	%	PM114		38.5				50.4
Dry matter content ratio	%	PM114		72.2				66.5
Asbestos Containing Material Screen	-	TM001			No ACM Detected			
Phenols, Total monohydric	<0.22 mg/kg	TM062 (S)	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22
Sulphate, 2:1 water soluble	<0.003 g/l	TM098	0.163	0.209	1.4	0.728	0.0309	0.357
Sulphur, Total	<0.02 %	TM132	0.105	0.052	0.234	0.568	1.07	
Fraction Organic Carbon (FOC)	<0.002 -	TM132	0.0384	0.00987	0.0497	0.233	0.341	0.169
pH	1 pH Units	TM133	7.93	5.61	7.72	5.76	8.33	3.71
Cyanide, Total	<1 mg/kg	TM153	17.2	21	162	267	17.1	22100
Cyanide, Free	<1 mg/kg	TM153	<1	<1	<1	5.12	<1	<1
Cyanide, Complex	<1 mg/kg	TM153	16.9	20.7	163	262	16.3	22200
TPH >C6-C40	<10 mg/kg	TM154	896	97	1830	1210	773	8970
Arsenic	<0.6 mg/kg	TM181	10	8.5	12.6	21.2	3.85	50.8
Barium	<0.6 mg/kg	TM181	357	183	221	251	195	12.3
Beryllium	<0.01 mg/kg	TM181	0.918	0.844	1.21	1.27	1.43	2.12
Cadmium	<0.02 mg/kg	TM181	2.95	0.146	0.419	0.181	0.547	4.11
Chromium	<0.9 mg/kg	TM181	15.8	41.6	14.5	21.1	10.5	82.2
Copper	<1.4 mg/kg	TM181	63.6	28.4	34.1	66.5	92.9	79.6
Lead	<0.7 mg/kg	TM181	94.9	48.6	81.2	128	19.4	325
Mercury	<0.14 mg/kg	TM181	<0.14	<0.14	<0.14	0.246	<0.14	0.671
Nickel	<0.2 mg/kg	TM181	14.4	30.2	19.1	25.2	21.5	53.6
Selenium	<1 mg/kg	TM181	1.62	1.77	1.02	1.74	<1	<10
Vanadium	<0.2 mg/kg	TM181	24.5	38.5	24.2	39	27.5	39.5
Zinc	<1.9 mg/kg	TM181	265	86	55.2	64.6	29.6	328
Boron, water soluble	<1 mg/kg	TM222	3.27	2.4	1.82	1.9	1.19	1.11



**SDG:** 100712-18  
**Job:** H\_BWB\_NTT-84  
**Client Reference:**  
**Location:** THE DOVE WAY-NTE285

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 93287

**PAH by GCMS**

Results Legend		Customer Sample Ref.	TP135	TP135	TP136	TP136	TP137	TP137
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
		<b>Depth (m)</b>	0.90	3.10	0.50	1.00	0.70	2.00
		<b>Sample Type</b>	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
		<b>Date Sampled</b>	08/07/2010	08/07/2010	08/07/2010	08/07/2010	08/07/2010	08/07/2010
		<b>Date Received</b>	12/07/2010	12/07/2010	12/07/2010	12/07/2010	12/07/2010	12/07/2010
		<b>SDG Ref</b>	100712-18	100712-18	100712-18	100712-18	100712-18	100712-18
		<b>Lab Sample No.(s)</b>	1805596	1805613	1805646	1805675	1805701	1805736
		<b>AGS Reference</b>						
Component	LOD/Units	Method						
Naphthalene-d8 % recovery**	%	TM218	107	111	107	114	110	106
Acenaphthene-d10 % recovery**	%	TM218	108	110	107	114	109	99.6
Phenanthrene-d10 % recovery**	%	TM218	109	113	111	115	110	103
Chrysene-d12 % recovery**	%	TM218	92.7	95.2	96.5	96.2	92.3	87.4
Perylene-d12 % recovery**	%	TM218	103	105	99.8	98.8	95.5	87.4
Naphthalene	<9 µg/kg	TM218	168	<9	1210	2670	592	44700
Acenaphthylene	<12 µg/kg	TM218	307	<12	3490	3350	608	6420
Acenaphthene	<8 µg/kg	TM218	60.8	<8	600	609	52.5	2170
Fluorene	<10 µg/kg	TM218	100	<10	2600	748	179	12800
Phenanthrene	<15 µg/kg	TM218	1140	<15	23700	7630	2320	193000
Anthracene	<16 µg/kg	TM218	474	<16	8220	2780	677	21400
Fluoranthene	<17 µg/kg	TM218	2950	32.4	40300	17500	5310	242000
Pyrene	<15 µg/kg	TM218	2490	28.1	32700	14800	5110	178000
Benzo(a)anthracene	<14 µg/kg	TM218	1490	28.8	20100	11100	2500	65500
Chrysene	<10 µg/kg	TM218	1290	16.3	16700	10400	2140	63200
Benzo(b)fluoranthene	<15 µg/kg	TM218	2010	26.3	23400	21300	3490	71200
Benzo(k)fluoranthene	<14 µg/kg	TM218	768	<14	8650	8090	1280	27100
Benzo(a)pyrene	<15 µg/kg	TM218	1570	<15	17000	9860	2480	31900
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	979	<18	9360	9900	1700	29500
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	276	<23	3060	2740	440	7180
Benzo(g,h,i)perylene	<24 µg/kg	TM218	1210	<24	10000	10800	2080	31500
Polyaromatic hydrocarbons, Total USEPA 16	<118 µg/kg	TM218	17300	132	221000	134000	30900	1030000

**SDG** 100712-18  
**Job:** H\_BWB\_NTT-84  
**Client Reference:**  
**Location:** THE DOVE WAY-NTE285

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No:** 93287

**TPH CWG (S)**

Results Legend		Customer Sample Ref.	TP135	TP137			
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	subcontracted test.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
		<b>Depth (m)</b>	0.90	0.70			
		<b>Sample Type</b>	Soil/Solid	Soil/Solid			
		<b>Date Sampled</b>	08/07/2010	08/07/2010			
		<b>Date Received</b>	12/07/2010	12/07/2010			
		<b>SDG Ref</b>	100712-18	100712-18			
		<b>Lab Sample No.(s)</b>	1805596	1805701			
		<b>AGS Reference</b>					
Component	LOD/Units	Method					
GRO Surrogate % recovery**	%	TM089	53	51			
GRO >C5-C12	<44 µg/kg	TM089	107	4190			
Benzene	<10 µg/kg	TM089	<10	<10			
Ethylbenzene	<3 µg/kg	TM089	<3	24.4			
Toluene	<2 µg/kg	TM089	<2	199			
m,p-Xylene	<6 µg/kg	TM089	<6	271			
o-Xylene	<3 µg/kg	TM089	<3	248			
m,p,o-Xylene	<10 µg/kg	TM089	<10	518			
BTEX, Total	<10 µg/kg	TM089	<10	741			
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5	<5			
Aliphatics >C5-C6	<10 µg/kg	TM089	11.4	22.7			
Aliphatics >C6-C8	<10 µg/kg	TM089	10.4	87.2			
Aliphatics >C8-C10	<10 µg/kg	TM089	15.7	309			
Aliphatics >C10-C12	<10 µg/kg	TM089	13	1030			
Aromatics >C6-C7	<10 µg/kg	TM089	<10	<10			
Aromatics >C7-C8	<10 µg/kg	TM089	<10	199			
Aromatics >EC8-EC10	<10 µg/kg	TM089	23.6	1010			
Aromatics >EC10-EC12	<10 µg/kg	TM089	19.5	1540			
Total Aliphatics >C5-C12	<10 µg/kg	TM089	50.5	1450			
Total Aromatics >C6-C12	<10 µg/kg	TM089	43	2740			
Aliphatics >C12-C16	<100 µg/kg	TM173	11900	9490			
Aliphatics >C16-C21	<100 µg/kg	TM173	20500	17900			
Aliphatics >C16-C35	<100 µg/kg	TM173	107000	47900			
Aliphatics >C21-C35	<100 µg/kg	TM173	86800	30100			
Aliphatics >C35-C44	<100 µg/kg	TM173	42600	7000			
Aromatics >EC12-EC16	<100 µg/kg	TM173	57300	11000			
Aromatics >EC16-EC21	<100 µg/kg	TM173	227000	25500			
Aromatics >EC21-EC35	<100 µg/kg	TM173	507000	53100			
Aromatics >EC35-EC44	<100 µg/kg	TM173	209000	21700			
Aromatics >EC40-EC44	<100 µg/kg	TM173	87400	9410			
Total Aliphatics >C12-C44	<100 µg/kg	TM173	162000	64400			
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	1000000	111000			
Total Aliphatics >C5-35	<100 µg/kg	TM173	119000	58900			
Total Aliphatics >C5-C44	<100 µg/kg	TM173	162000	65900			
Total Aromatics >C5-35	<100 µg/kg	TM173	791000	92400			
Total Aromatics >C6-C44	<100 µg/kg	TM173	1000000	114000			
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173	910000	151000			
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	1160000	180000			

**SDG** 100712-18  
**Job:** H\_BWB\_NTT-84  
**Client Reference:**  
**Location:** THE DOVE WAY-NTE285

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No:** 93287

## VOC MS (S)

Results Legend		Customer Sample Ref.	TP137				
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	subcontracted test.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
		<b>Depth (m)</b>	0.70				
		<b>Sample Type</b>	Soil/Solid				
		<b>Date Sampled</b>	08/07/2010				
		<b>Date Received</b>	12/07/2010				
		<b>SDG Ref</b>	100712-18				
		<b>Lab Sample No.(s)</b>	1805701				
		<b>AGS Reference</b>					
Component	LOD/Units	Method					
Dibromofluoromethane**	%	TM116	113				
Toluene-d8**	%	TM116	97.8				
4-Bromofluorobenzene**	%	TM116	117				
Dichlorodifluoromethane	<4 µg/kg	TM116	<4				
Chloromethane	<7 µg/kg	TM116	<7				
Vinyl Chloride	<10 µg/kg	TM116	<10				
Bromomethane	<13 µg/kg	TM116	<13				
Chloroethane	<14 µg/kg	TM116	<14				
Trichlorofluoromethane	<6 µg/kg	TM116	<6				
1.1-Dichloroethene	<10 µg/kg	TM116	<10				
Carbon Disulphide	<7 µg/kg	TM116	<7				
Dichloromethane	<10 µg/kg	TM116	<10				
Methyl Tertiary Butyl Ether	<11 µg/kg	TM116	<11				
trans-1-2-Dichloroethene	<11 µg/kg	TM116	<11				
1.1-Dichloroethane	<8 µg/kg	TM116	<8				
cis-1-2-Dichloroethene	<5 µg/kg	TM116	<5				
2.2-Dichloropropane	<12 µg/kg	TM116	<12				
Bromochloromethane	<14 µg/kg	TM116	<14				
Chloroform	<8 µg/kg	TM116	<8				
1.1.1-Trichloroethane	<7 µg/kg	TM116	<7				
1.1-Dichloropropene	<11 µg/kg	TM116	<11				
Carbontetrachloride	<14 µg/kg	TM116	<14				
1.2-Dichloroethane	<5 µg/kg	TM116	<5				
Benzene	<9 µg/kg	TM116	34.8				
Trichloroethene	<9 µg/kg	TM116	<9				
1.2-Dichloropropane	<12 µg/kg	TM116	<12				
Dibromomethane	<9 µg/kg	TM116	<9				
Bromodichloromethane	<7 µg/kg	TM116	<7				
cis-1-3-Dichloropropene	<14 µg/kg	TM116	<14				
Toluene	<5 µg/kg	TM116	634				
trans-1-3-Dichloropropene	<14 µg/kg	TM116	<14				
1.1.2-Trichloroethane	<10 µg/kg	TM116	<10				
1.3-Dichloropropane	<7 µg/kg	TM116	<7				
Tetrachloroethene	<5 µg/kg	TM116	<5				
Dibromochloromethane	<13 µg/kg	TM116	<13				
1.2-Dibromoethane	<12 µg/kg	TM116	<12				
Chorobenzene	<5 µg/kg	TM116	<5				
1.1.1.2-Tetrachloroethane	<10 µg/kg	TM116	<10				
Ethylbenzene	<4 µg/kg	TM116	69.4				

**SDG:** 100712-18  
**Job:** H\_BWB\_NTT-84  
**Client Reference:**  
**Location:** THE DOVE WAY-NTE285

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 93287

**VOC MS (S)**

Results Legend		Customer Sample Ref.	TP137				
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	subcontracted test.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
		<b>Depth (m)</b>	0.70				
		<b>Sample Type</b>	Soil/Solid				
		<b>Date Sampled</b>	08/07/2010				
		<b>Date Received</b>	12/07/2010				
		<b>SDG Ref</b>	100712-18				
		<b>Lab Sample No.(s)</b>	1805701				
		<b>AGS Reference</b>					
Component	LOD/Units	Method					
p/m-Xylene	<14 µg/kg	TM116	572	#			
o-Xylene	<10 µg/kg	TM116	397	M			
Styrene	<10 µg/kg	TM116	<10	M			
Bromoform	<10 µg/kg	TM116	<10	M			
Isopropylbenzene	<5 µg/kg	TM116	<5	M			
1.1.2.2-Tetrachloroethane	<10 µg/kg	TM116	<10	#			
1.2.3-Trichloropropane	<17 µg/kg	TM116	<17	M			
Bromobenzene	<10 µg/kg	TM116	<10	M			
Propylbenzene	<11 µg/kg	TM116	20.3	M			
2-Chlorotoluene	<9 µg/kg	TM116	<9	M			
1.3.5-Trimethylbenzene	<8 µg/kg	TM116	112	#			
4-Chlorotoluene	<12 µg/kg	TM116	<12	M			
tert-Butylbenzene	<12 µg/kg	TM116	<12	#			
1.2.4-Trimethylbenzene	<9 µg/kg	TM116	353	#			
sec-Butylbenzene	<10 µg/kg	TM116	<10	M			
4-Isopropyltoluene	<11 µg/kg	TM116	<11	M			
1.3-Dichlorobenzene	<6 µg/kg	TM116	<6	M			
1.4-Dichlorobenzene	<5 µg/kg	TM116	<5	M			
n-Butylbenzene	<10 µg/kg	TM116	<10	M			
1.2-Dichlorobenzene	<12 µg/kg	TM116	<12	M			
1.2-Dibromo-3-chloropropane	<14 µg/kg	TM116	<14	M			
Tert-amyl methyl ether	<15 µg/kg	TM116	<15				
1.2.4-Trichlorobenzene	<6 µg/kg	TM116	<6	#			
Hexachlorobutadiene	<12 µg/kg	TM116	<12	M			
Naphthalene	<13 µg/kg	TM116	170	M			
1.2.3-Trichlorobenzene	<6 µg/kg	TM116	<6	M			

**SDG** 100712-18  
**Job:** H\_BWB\_NTT-84  
**Client Reference:**  
**Location:** THE DOVE WAY-NTE285

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No:** 93287

Results Legend		Customer Sample Ref.	WS3	WS3	WS4	WS4	WS5	WS6	
#	ISO17025 accredited.	<b>Depth (m)</b> <b>Sample Type</b> <b>Date Sampled</b> <b>Date Received</b> <b>SDG Ref</b> <b>Lab Sample No.(s)</b> <b>AGS Reference</b>	0.10 - 0.90	1.20 - 2.00	0.10 - 0.50	1.00 - 1.50	0.10 - 1.00	0.30 - 1.00	
M	mCERTS accredited.		Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	
aq	Aqueous / settled sample.		07/07/2010	07/07/2010	07/07/2010	07/07/2010	07/07/2010	07/07/2010	
diss.filt	Dissolved / filtered sample.		12/07/2010	12/07/2010	12/07/2010	12/07/2010	12/07/2010	12/07/2010	
tot.unfilt	Total / unfiltered sample.		100712-18	100712-18	100712-18	100712-18	100712-18	100712-18	
*	subcontracted test.		1805932	1806100	1806152	1806221	1806285	1806302	
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.								
Component	LOD/Units	Method							
Moisture	%	PM114	6.8		11.4			11	
Moisture content ratio	%	PM114	7.3		12.8			12.3	
Dry matter content ratio	%	PM114	93.2		88.7			89	
Asbestos Containing Material Screen	-	TM001	No ACM Detected						No ACM Detected
Phenols, Total monohydric	<0.22 mg/kg	TM062 (S)	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	
Sulphate, 2:1 water soluble	<0.003 g/l	TM098	0.0772	0.198	0.0868	0.298	0.0341	0.0922	
Sulphur, Total	<0.02 %	TM132	0.238	0.112	0.152	0.54	0.274	0.312	
Fraction Organic Carbon (FOC)	<0.002 -	TM132	0.0155	0.0211	0.0925	0.0386	0.197	0.236	
pH	1 pH Units	TM133	8.52	7.85	8.11	6.81	8.44	8.11	
Cyanide, Total	<1 mg/kg	TM153	3.74	8.06	6.9	194	10.8	17.1	
Cyanide, Free	<1 mg/kg	TM153	<1	<1	<1	<1	<1	<1	
Cyanide, Complex	<1 mg/kg	TM153	3.77	9.15	6.83	194	10.4	16.5	
TPH >C6-C40	<10 mg/kg	TM154	3710	1170	2640	1080	789	3090	
Arsenic	<0.6 mg/kg	TM181	2.21	11.4	6.28	9.33	18.9	14.2	
Barium	<0.6 mg/kg	TM181	364	182	246	212	340	247	
Beryllium	<0.01 mg/kg	TM181	3.22	0.723	0.953	1.25	1.61	3	
Cadmium	<0.02 mg/kg	TM181	0.726	0.768	2.93	0.389	0.31	0.737	
Chromium	<0.9 mg/kg	TM181	28	15.9	13.7	35.1	21.2	19.8	
Copper	<1.4 mg/kg	TM181	14.8	38	36.3	27	88.8	94.4	
Lead	<0.7 mg/kg	TM181	18.1	146	41	123	121	119	
Mercury	<0.14 mg/kg	TM181	<0.14	0.147	<0.14	<0.14	<0.14	<0.14	
Nickel	<0.2 mg/kg	TM181	3.94	14.7	19.7	33	45.6	36.6	
Selenium	<1 mg/kg	TM181	1.48	<1	<1	1.56	<10	2.01	
Vanadium	<0.2 mg/kg	TM181	45.2	24.3	28.4	33.3	47.4	45.6	
Zinc	<1.9 mg/kg	TM181	50.3	132	65.7	83.7	79.4	88.3	
Boron, water soluble	<1 mg/kg	TM222	1	2.64	<1	1.68	<1	1.37	

**SDG:** 100712-18  
**Job:** H\_BWB\_NTT-84  
**Client Reference:**  
**Location:** THE DOVE WAY-NTE285

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 93287

**PAH by GCMS**

Results Legend		Customer Sample Ref.	WS3	WS3	WS4	WS4	WS5	WS6
#	ISO17025 accredited.	<b>Depth (m)</b> <b>Sample Type</b> <b>Date Sampled</b> <b>Date Received</b> <b>SDG Ref</b> <b>Lab Sample No.(s)</b> <b>AGS Reference</b>	0.10 - 0.90 Soil/Solid 07/07/2010 12/07/2010 100712-18 1805932	1.20 - 2.00 Soil/Solid 07/07/2010 12/07/2010 100712-18 1806100	0.10 - 0.50 Soil/Solid 07/07/2010 12/07/2010 100712-18 1806152	1.00 - 1.50 Soil/Solid 07/07/2010 12/07/2010 100712-18 1806221	0.10 - 1.00 Soil/Solid 07/07/2010 12/07/2010 100712-18 1806285	0.30 - 1.00 Soil/Solid 07/07/2010 12/07/2010 100712-18 1806302
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
Component	LOD/Units	Method						
Naphthalene-d8 % recovery**	%	TM218	105	111	103	110	109	55.6
Acenaphthene-d10 % recovery**	%	TM218	103	111	102	110	109	56
Phenanthrene-d10 % recovery**	%	TM218	106	114	102	113	112	58.5
Chrysene-d12 % recovery**	%	TM218	91.8	97	84.7	102	99.2	51.5
Perylene-d12 % recovery**	%	TM218	102	106	89.4	113	107	54.7
Naphthalene	<9 µg/kg	TM218	140	261	657	412	1350	3160
Acenaphthylene	<12 µg/kg	TM218	694	610	1010	1430	2860	1450
Acenaphthene	<8 µg/kg	TM218	1340	210	283	407	336	2970
Fluorene	<10 µg/kg	TM218	933	412	309	1740	696	3760
Phenanthrene	<15 µg/kg	TM218	7480	2960	5460	11000	10500	106000
Anthracene	<16 µg/kg	TM218	2710	1490	2060	4320	4400	23400
Fluoranthene	<17 µg/kg	TM218	11500	13300	16800	23300	28900	178000
Pyrene	<15 µg/kg	TM218	12500	10700	14400	18000	25400	132000
Benzo(a)anthracene	<14 µg/kg	TM218	4160	6320	7280	12400	17700	64100
Chrysene	<10 µg/kg	TM218	3760	5840	6660	8760	14600	62200
Benzo(b)fluoranthene	<15 µg/kg	TM218	12100	8740	11200	11100	24900	84600
Benzo(k)fluoranthene	<14 µg/kg	TM218	4040	3430	4340	3990	9000	29300
Benzo(a)pyrene	<15 µg/kg	TM218	11100	7090	8600	8620	19000	52100
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	7260	4310	6240	3470	12900	36600
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	1700	1210	1550	1310	3570	8900
Benzo(g,h,i)perylene	<24 µg/kg	TM218	10500	5150	7560	3390	14100	42600
Polyaromatic hydrocarbons, Total USEPA 16	<118 µg/kg	TM218	91900	72100	94400	114000	190000	830000

**SDG** 100712-18  
**Job:** H\_BWB\_NTT-84  
**Client Reference:**  
**Location:** THE DOVE WAY-NTE285

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 93287

**TPH CWG (S)**

Results Legend		Customer Sample Ref.	WS4	WS6			
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	subcontracted test.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
		<b>Depth (m)</b>	1.00 - 1.50	0.30 - 1.00			
		<b>Sample Type</b>	Soil/Solid	Soil/Solid			
		<b>Date Sampled</b>	07/07/2010	07/07/2010			
		<b>Date Received</b>	12/07/2010	12/07/2010			
		<b>SDG Ref</b>	100712-18	100712-18			
		<b>Lab Sample No.(s)</b>	1806221	1806302			
		<b>AGS Reference</b>					
Component	LOD/Units	Method					
GRO Surrogate % recovery**	%	TM089	68	27			
GRO >C5-C12	<44 µg/kg	TM089	486	142			
Benzene	<10 µg/kg	TM089	12	<10			
Ethylbenzene	<3 µg/kg	TM089	<3	<3	M	M	
Toluene	<2 µg/kg	TM089	<2	<2	M	M	
m,p-Xylene	<6 µg/kg	TM089	<6	<6	M	M	
o-Xylene	<3 µg/kg	TM089	<3	<3	M	M	
m,p,o-Xylene	<10 µg/kg	TM089	<10	<10	M	M	
BTEX, Total	<10 µg/kg	TM089	12	<10	M	M	
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5	<5	#	#	
Aliphatics >C5-C6	<10 µg/kg	TM089	16.2	13			
Aliphatics >C6-C8	<10 µg/kg	TM089	219	23.9			
Aliphatics >C8-C10	<10 µg/kg	TM089	45.3	14.9			
Aliphatics >C10-C12	<10 µg/kg	TM089	50.3	21.6			
Aromatics >C6-C7	<10 µg/kg	TM089	12	<10			
Aromatics >C7-C8	<10 µg/kg	TM089	<10	<10			
Aromatics >EC8-EC10	<10 µg/kg	TM089	67.9	22.4			
Aromatics >EC10-EC12	<10 µg/kg	TM089	75.4	32.4			
Total Aliphatics >C5-C12	<10 µg/kg	TM089	331	73.4			
Total Aromatics >C6-C12	<10 µg/kg	TM089	155	54.8			
Aliphatics >C12-C16	<100 µg/kg	TM173	19700	15900			
Aliphatics >C16-C21	<100 µg/kg	TM173	28200	25700			
Aliphatics >C16-C35	<100 µg/kg	TM173	85600	95000			
Aliphatics >C21-C35	<100 µg/kg	TM173	57400	69200			
Aliphatics >C35-C44	<100 µg/kg	TM173	23900	38800			
Aromatics >EC12-EC16	<100 µg/kg	TM173	38700	25200			
Aromatics >EC16-EC21	<100 µg/kg	TM173	345000	663000			
Aromatics >EC21-EC35	<100 µg/kg	TM173	800000	1070000			
Aromatics >EC35-EC44	<100 µg/kg	TM173	191000	279000			
Aromatics >EC40-EC44	<100 µg/kg	TM173	66400	97800			
Total Aliphatics >C12-C44	<100 µg/kg	TM173	129000	150000			
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	1370000	2040000			
Total Aliphatics >C5-35	<100 µg/kg	TM173	106000	111000			
Total Aliphatics >C5-C44	<100 µg/kg	TM173	130000	150000			
Total Aromatics >C5-35	<100 µg/kg	TM173	1180000	1760000			
Total Aromatics >C6-C44	<100 µg/kg	TM173	1370000	2040000			
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173	1290000	1870000			
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	1500000	2190000			



**SDG:** 100712-18  
**Job:** H\_BWB\_NTT-84  
**Client Reference:**  
**Location:** THE DOVE WAY-NTE285

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 93287

Results Legend		Customer Sample Ref.	WS7				
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	subcontracted test.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
		<b>Depth (m)</b>	1.60 - 2.00				
		<b>Sample Type</b>	Soil/Solid				
		<b>Date Sampled</b>	07/07/2010				
		<b>Date Received</b>	12/07/2010				
		<b>SDG Ref</b>	100712-18				
		<b>Lab Sample No.(s)</b>	1806335				
		<b>AGS Reference</b>					
Component	LOD/Units	Method					
Phenols, Total monohydric	<0.22 mg/kg	TM062 (S)	<0.22				M
Sulphate, 2:1 water soluble	<0.003 g/l	TM098	1.44				M
Sulphur, Total	<0.02 %	TM132	0.526				#
Fraction Organic Carbon (FOC)	<0.002 -	TM132	0.00446				#
pH	1 pH Units	TM133	7.75				M
Cyanide, Total	<1 mg/kg	TM153	18.4				M
Cyanide, Free	<1 mg/kg	TM153	<1				
Cyanide, Complex	<1 mg/kg	TM153	18.4				
TPH >C6-C40	<10 mg/kg	TM154	<10				#
Arsenic	<0.6 mg/kg	TM181	44.2				M
Barium	<0.6 mg/kg	TM181	65.3				#
Beryllium	<0.01 mg/kg	TM181	0.686				M
Cadmium	<0.02 mg/kg	TM181	0.124				M
Chromium	<0.9 mg/kg	TM181	28.4				M
Copper	<1.4 mg/kg	TM181	13.6				M
Lead	<0.7 mg/kg	TM181	32.2				M
Mercury	<0.14 mg/kg	TM181	<0.14				M
Nickel	<0.2 mg/kg	TM181	19				M
Selenium	<1 mg/kg	TM181	1.39				#
Vanadium	<0.2 mg/kg	TM181	29				#
Zinc	<1.9 mg/kg	TM181	50.2				M
Boron, water soluble	<1 mg/kg	TM222	<1				M

**SDG:** 100712-18  
**Job:** H\_BWB\_NTT-84  
**Client Reference:**  
**Location:** THE DOVE WAY-NTE285

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No.:** 93287

**PAH by GCMS**

Results Legend		Customer Sample Ref.	WS7				
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.	Depth (m)	1.60 - 2.00				
diss.filt	Dissolved / filtered sample.	Sample Type	Soil/Solid				
tot.unfilt	Total / unfiltered sample.	Date Sampled	07/07/2010				
*	subcontracted test.	Date Received	12/07/2010				
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.	SDG Ref	100712-18				
		Lab Sample No.(s)	1806335				
		AGS Reference					
Component	LOD/Units	Method					
Naphthalene-d8 % recovery**	%	TM218	113				
Acenaphthene-d10 % recovery**	%	TM218	113				
Phenanthrene-d10 % recovery**	%	TM218	115				
Chrysene-d12 % recovery**	%	TM218	102				
Perylene-d12 % recovery**	%	TM218	112				
Naphthalene	<9 µg/kg	TM218	12.5	M			
Acenaphthylene	<12 µg/kg	TM218	<12	M			
Acenaphthene	<8 µg/kg	TM218	<8	M			
Fluorene	<10 µg/kg	TM218	<10	M			
Phenanthrene	<15 µg/kg	TM218	58.6	M			
Anthracene	<16 µg/kg	TM218	<16	M			
Fluoranthene	<17 µg/kg	TM218	105	M			
Pyrene	<15 µg/kg	TM218	74.8	M			
Benzo(a)anthracene	<14 µg/kg	TM218	62.4	M			
Chrysene	<10 µg/kg	TM218	71.4	M			
Benzo(b)fluoranthene	<15 µg/kg	TM218	116	M			
Benzo(k)fluoranthene	<14 µg/kg	TM218	40.3	M			
Benzo(a)pyrene	<15 µg/kg	TM218	39.2	M			
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	28.9	M			
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	<23	M			
Benzo(g,h,i)perylene	<24 µg/kg	TM218	33.1	M			
Polyaromatic hydrocarbons, Total USEPA 16	<118 µg/kg	TM218	643	M			

**SDG** 100712-18  
**Job:** H\_BWB\_NTT-84  
**Client Reference:**  
**Location:** THE DOVE WAY-NTE285

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/616  
**Report No:** 93287

**TPH CWG (S)**

Results Legend		Customer Sample Ref.	WS7				
#	ISO17025 accredited.						
M	mCERTS accredited.						
aq	Aqueous / settled sample.						
diss.filt	Dissolved / filtered sample.						
tot.unfilt	Total / unfiltered sample.						
*	subcontracted test.						
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.						
		<b>Depth (m)</b>	1.60 - 2.00				
		<b>Sample Type</b>	Soil/Solid				
		<b>Date Sampled</b>	07/07/2010				
		<b>Date Received</b>	12/07/2010				
		<b>SDG Ref</b>	100712-18				
		<b>Lab Sample No.(s)</b>	1806335				
		<b>AGS Reference</b>					
Component	LOD/Units	Method					
GRO Surrogate % recovery**	%	TM089	126				
GRO >C5-C12	<44 µg/kg	TM089	<44				
Benzene	<10 µg/kg	TM089	<10				
Ethylbenzene	<3 µg/kg	TM089	<3				
Toluene	<2 µg/kg	TM089	<2				
m,p-Xylene	<6 µg/kg	TM089	<6				
o-Xylene	<3 µg/kg	TM089	<3				
m,p,o-Xylene	<10 µg/kg	TM089	<10				
BTEX, Total	<10 µg/kg	TM089	<10				
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5				
Aliphatics >C5-C6	<10 µg/kg	TM089	<10				
Aliphatics >C6-C8	<10 µg/kg	TM089	<10				
Aliphatics >C8-C10	<10 µg/kg	TM089	<10				
Aliphatics >C10-C12	<10 µg/kg	TM089	<10				
Aromatics >C6-C7	<10 µg/kg	TM089	<10				
Aromatics >C7-C8	<10 µg/kg	TM089	<10				
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10				
Aromatics >EC10-EC12	<10 µg/kg	TM089	<10				
Total Aliphatics >C5-C12	<10 µg/kg	TM089	<10				
Total Aromatics >C6-C12	<10 µg/kg	TM089	<10				
Aliphatics >C12-C16	<100 µg/kg	TM173	1410				
Aliphatics >C16-C21	<100 µg/kg	TM173	1370				
Aliphatics >C16-C35	<100 µg/kg	TM173	5180				
Aliphatics >C21-C35	<100 µg/kg	TM173	3800				
Aliphatics >C35-C44	<100 µg/kg	TM173	1670				
Aromatics >EC12-EC16	<100 µg/kg	TM173	2100				
Aromatics >EC16-EC21	<100 µg/kg	TM173	13800				
Aromatics >EC21-EC35	<100 µg/kg	TM173	26700				
Aromatics >EC35-EC44	<100 µg/kg	TM173	8900				
Aromatics >EC40-EC44	<100 µg/kg	TM173	3540				
Total Aliphatics >C12-C44	<100 µg/kg	TM173	8260				
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	51500				
Total Aliphatics >C5-35	<100 µg/kg	TM173	6590				
Total Aliphatics >C5-C44	<100 µg/kg	TM173	8260				
Total Aromatics >C5-35	<100 µg/kg	TM173	42600				
Total Aromatics >C6-C44	<100 µg/kg	TM173	51500				
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173	49200				
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	59800				

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>		<b>Client Location</b>	THE DOVE WAY-NTE285
<b>Mass Sample taken (kg)</b>	0.237	<b>Moisture Content Ratio (%)</b>	35.4
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	73.9
<b>Particle Size &lt;4mm</b>	>95%		

## Case

<b>SDG</b>	100712-18
<b>Lab Sample Number(s)</b>	1805100
<b>Sampled Date</b>	08-Jul-2010
<b>Customer Sample Ref.</b>	TP117
<b>Depth (m)</b>	1.80

## Solid Waste Analysis

Total Organic Carbon (%)	-
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	-
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	Conc <sup>n</sup> in 2:1 eluate (mg/l) C <sub>2</sub>		2:1 conc <sup>n</sup> leached (mg/kg) A <sub>2</sub>		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
Arsenic	0.00176	<0.00012	0.00352	<0.0012	-
Barium	0.0487	<0.00003	0.0974	<0.0003	-
Cadmium	0.000209	<0.0001	0.000418	<0.001	-
Chromium	0.00184	<0.00022	0.00368	<0.0022	-
Copper	0.00858	<0.00085	0.0172	<0.0085	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.0001	-
Molybdenum	-	-	-	-	-
Nickel	0.00313	<0.00015	0.00626	<0.0015	-
Lead	0.00248	<0.00002	0.00496	<0.0002	-
Antimony	-	-	-	-	-
Selenium	0.000887	<0.00039	0.00177	<0.0039	-
Zinc	0.0121	<0.00041	0.0242	<0.0041	-
Chloride	-	-	-	-	-
Fluoride	-	-	-	-	-
Sulphate (soluble)	90	<3	180	<3	-
Total Dissolved Solids	-	-	-	-	-
Total Monohydric Phenols (W)	-	-	-	-	-
Dissolved Organic Carbon	-	-	-	-	-

## Leach Test Information

Date Prepared	17-Jul-2010
pH (pH Units)	7.10
Conductivity (µS/cm)	267.00
Temperature (°C)	21.10
Volume Leachant (Litres)	0.288
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

## Client Reference

Mass Sample taken (kg) 0.237  
 Mass of dry sample (kg) 0.175  
 Particle Size <4mm >95%

## Client Location

Moisture Content Ratio (%) 35.4  
 Dry Matter Content Ratio (%) 73.9

THE DOVE WAY-NTE285

## Case

SDG 100712-18  
 Lab Sample Number(s) 1805100  
 Sampled Date 08-Jul-2010  
 Customer Sample Ref. TP117  
 Depth (m) 1.80

## Solid Waste Analysis

Total Organic Carbon (%) -  
 Loss on Ignition (%) -  
 Sum of BTEX (mg/kg) -  
 Sum of 7 PCBs (mg/kg) -  
 Mineral Oil (mg/kg) -  
 PAH Sum of 17 (mg/kg) -  
 pH (pH Units) -  
 ANC to pH 6 (mol/kg) -  
 ANC to pH 4 (mol/kg) -

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## Eluate Analysis

	Conc <sup>n</sup> in 2:1 eluate (mg/l) C <sub>2</sub>		2:1 conc <sup>n</sup> leached (mg/kg) A <sub>2</sub>		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
Beryllium	0.000081	<0.00007	0.000162	<0.0007	- - -
Boron	0.301	<0.0094	0.602	<0.094	- - -
pH	7.5	<0.001	15	<0.01	- - -
Total Cyanide (W)	<0.05	<0.05	<0.1	<0.05	- - -
Vanadium	0.00182	<0.00024	0.00364	<0.0024	- - -

## Leach Test Information

Date Prepared 17-Jul-2010  
 pH (pH Units) 7.10  
 Conductivity (µS/cm) 267.00  
 Temperature (°C) 21.10  
 Volume Leachant (Litres) 0.288  
 Volume of Eluate VE1 (Litres)

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>		<b>Client Location</b>	THE DOVE WAY-NTE285
<b>Mass Sample taken (kg)</b>	0.207	<b>Moisture Content Ratio (%)</b>	18.1
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	84.7
<b>Particle Size &lt;4mm</b>	>95%		

## Case

<b>SDG</b>	100712-18
<b>Lab Sample Number(s)</b>	1805365
<b>Sampled Date</b>	08-Jul-2010
<b>Customer Sample Ref.</b>	TP119
<b>Depth (m)</b>	3.20

## Solid Waste Analysis

Total Organic Carbon (%)	1.63
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	7.41
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	Conc <sup>n</sup> in 2:1 eluate (mg/l) C <sub>2</sub>		2:1 conc <sup>n</sup> leached (mg/kg) A <sub>2</sub>		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
Arsenic	0.00236	<0.00012	0.00472	<0.0012	-
Barium	0.0737	<0.00003	0.147	<0.0003	-
Cadmium	<0.0001	<0.0001	<0.0002	<0.001	-
Chromium	0.00279	<0.00022	0.00558	<0.0022	-
Copper	0.00502	<0.00085	0.01	<0.0085	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.0001	-
Molybdenum	-	-	-	-	-
Nickel	0.0146	<0.00015	0.0292	<0.0015	-
Lead	0.000404	<0.00002	0.000808	<0.0002	-
Antimony	-	-	-	-	-
Selenium	0.00167	<0.00039	0.00334	<0.0039	-
Zinc	0.00989	<0.00041	0.0198	<0.0041	-
Chloride	-	-	-	-	-
Fluoride	-	-	-	-	-
Sulphate (soluble)	1080	<15	2160	<15	-
Total Dissolved Solids	-	-	-	-	-
Total Monohydric Phenols (W)	-	-	-	-	-
Dissolved Organic Carbon	-	-	-	-	-

## Leach Test Information

Date Prepared	16-Jul-2010
pH (pH Units)	7.67
Conductivity (µS/cm)	1,850.00
Temperature (°C)	20.20
Volume Leachant (Litres)	0.318
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>		<b>Client Location</b>	THE DOVE WAY-NTE285
<b>Mass Sample taken (kg)</b>	0.207	<b>Moisture Content Ratio (%)</b>	18.1
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	84.7
<b>Particle Size &lt;4mm</b>	>95%		

**Case**

<b>SDG</b>	100712-18
<b>Lab Sample Number(s)</b>	1805365
<b>Sampled Date</b>	08-Jul-2010
<b>Customer Sample Ref.</b>	TP119
<b>Depth (m)</b>	3.20

**Solid Waste Analysis**

Total Organic Carbon (%)	1.63
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	7.41
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

<b>Eluate Analysis</b>	<b>Conc<sup>n</sup> in 2:1 eluate (mg/l)</b> C <sub>2</sub>		<b>2:1 conc<sup>n</sup> leached (mg/kg)</b> A <sub>2</sub>		<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>
	<b>Result</b>	<b>Limit of Detection</b>	<b>Result</b>	<b>Limit of Detection</b>	
Beryllium	<0.00007	<0.00007	<0.00014	<0.0007	- - -
Boron	0.793	<0.0094	1.59	<0.094	- - -
pH	8.1	<0.001	16	<0.01	- - -
Total Cyanide (W)	<0.05	<0.05	<0.1	<0.05	- - -
Vanadium	0.00131	<0.00024	0.00262	<0.0024	- - -

**Leach Test Information**

Date Prepared	16-Jul-2010
pH (pH Units)	7.67
Conductivity (µS/cm)	1,850.00
Temperature (°C)	20.20
Volume Leachant (Litres)	0.318
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates



## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>		<b>Client Location</b>	THE DOVE WAY-NTE285
<b>Mass Sample taken (kg)</b>	0.220	<b>Moisture Content Ratio (%)</b>	26.2
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	79.3
<b>Particle Size &lt;4mm</b>	>95%		

## Case

<b>SDG</b>	100712-18
<b>Lab Sample Number(s)</b>	1805459
<b>Sampled Date</b>	07-Jul-2010
<b>Customer Sample Ref.</b>	TP121
<b>Depth (m)</b>	0.90

## Solid Waste Analysis

Total Organic Carbon (%)	-	-	-
Loss on Ignition (%)	-	-	-
Sum of BTEX (mg/kg)	-	-	-
Sum of 7 PCBs (mg/kg)	-	-	-
Mineral Oil (mg/kg)	-	-	-
PAH Sum of 17 (mg/kg)	-	-	-
pH (pH Units)	-	-	-
ANC to pH 6 (mol/kg)	-	-	-
ANC to pH 4 (mol/kg)	-	-	-

Eluate Analysis	Conc <sup>n</sup> in 2:1 eluate (mg/l) C <sub>2</sub>		2:1 conc <sup>n</sup> leached (mg/kg) A <sub>2</sub>		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
Arsenic	0.00118	<0.00012	0.00236	<0.0012	-
Barium	0.0774	<0.00003	0.155	<0.0003	-
Cadmium	0.000184	<0.0001	0.000368	<0.001	-
Chromium	0.0117	<0.00022	0.0234	<0.0022	-
Copper	0.0172	<0.00085	0.0344	<0.0085	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.0001	-
Molybdenum	-	-	-	-	-
Nickel	0.00375	<0.00015	0.0075	<0.0015	-
Lead	0.00103	<0.00002	0.00206	<0.0002	-
Antimony	-	-	-	-	-
Selenium	0.00101	<0.00039	0.00202	<0.0039	-
Zinc	0.0111	<0.00041	0.0222	<0.0041	-
Chloride	-	-	-	-	-
Fluoride	-	-	-	-	-
Sulphate (soluble)	74.4	<3	149	<3	-
Total Dissolved Solids	-	-	-	-	-
Total Monohydric Phenols (W)	-	-	-	-	-
Dissolved Organic Carbon	-	-	-	-	-

## Leach Test Information

Date Prepared	16-Jul-2010
pH (pH Units)	8.13
Conductivity (µS/cm)	413.00
Temperature (°C)	20.80
Volume Leachant (Litres)	0.304
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

## Client Reference

Mass Sample taken (kg) 0.220

Mass of dry sample (kg) 0.175

Particle Size &lt;4mm &gt;95%

## Client Location

THE DOVE WAY-NTE285

Moisture Content Ratio (%) 26.2

Dry Matter Content Ratio (%) 79.3

## Case

SDG 100712-18

Lab Sample Number(s) 1805459

Sampled Date 07-Jul-2010

Customer Sample Ref. TP121

Depth (m) 0.90

## Solid Waste Analysis

Total Organic Carbon (%)	-
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	-
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

Eluate Analysis	Conc <sup>n</sup> in 2:1 eluate (mg/l) C <sub>2</sub>		2:1 conc <sup>n</sup> leached (mg/kg) A <sub>2</sub>		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
Beryllium	<0.00007	<0.00007	<0.00014	<0.0007	- - -
Boron	0.343	<0.0094	0.686	<0.094	- - -
pH	8.4	<0.001	17	<0.01	- - -
Total Cyanide (W)	<0.05	<0.05	<0.1	<0.05	- - -
Vanadium	0.00168	<0.00024	0.00336	<0.0024	- - -

## Leach Test Information

Date Prepared	16-Jul-2010
pH (pH Units)	8.13
Conductivity (µS/cm)	413.00
Temperature (°C)	20.80
Volume Leachant (Litres)	0.304
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

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Mcerts Certification does not apply to leachates

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>		<b>Client Location</b>	THE DOVE WAY-NTE285
<b>Mass Sample taken (kg)</b>	0.209	<b>Moisture Content Ratio (%)</b>	19.3
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	83.8
<b>Particle Size &lt;4mm</b>	>95%		

## Case

<b>SDG</b>	100712-18
<b>Lab Sample Number(s)</b>	1805546
<b>Sampled Date</b>	07-Jul-2010
<b>Customer Sample Ref.</b>	TP123
<b>Depth (m)</b>	2.00

## Solid Waste Analysis

Total Organic Carbon (%)	0.444
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	7.21
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	Conc <sup>n</sup> in 2:1 eluate (mg/l) C <sub>2</sub>		2:1 conc <sup>n</sup> leached (mg/kg) A <sub>2</sub>		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
Arsenic	0.00168	<0.00012	0.00336	<0.0012	-
Barium	0.0758	<0.00003	0.152	<0.0003	-
Cadmium	<0.0001	<0.0001	<0.0002	<0.001	-
Chromium	0.00274	<0.00022	0.00548	<0.0022	-
Copper	0.00765	<0.00085	0.0153	<0.0085	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.0001	-
Molybdenum	-	-	-	-	-
Nickel	0.00293	<0.00015	0.00586	<0.0015	-
Lead	0.000655	<0.00002	0.00131	<0.0002	-
Antimony	-	-	-	-	-
Selenium	0.00142	<0.00039	0.00284	<0.0039	-
Zinc	0.00749	<0.00041	0.015	<0.0041	-
Chloride	-	-	-	-	-
Fluoride	-	-	-	-	-
Sulphate (soluble)	43.2	<3	86.4	<3	-
Total Dissolved Solids	-	-	-	-	-
Total Monohydric Phenols (W)	-	-	-	-	-
Dissolved Organic Carbon	-	-	-	-	-

## Leach Test Information

Date Prepared	16-Jul-2010
pH (pH Units)	7.64
Conductivity (µS/cm)	165.00
Temperature (°C)	19.60
Volume Leachant (Litres)	0.316
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>		<b>Client Location</b>	THE DOVE WAY-NTE285
<b>Mass Sample taken (kg)</b>	0.209	<b>Moisture Content Ratio (%)</b>	19.3
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	83.8
<b>Particle Size &lt;4mm</b>	>95%		

## Case

<b>SDG</b>	100712-18
<b>Lab Sample Number(s)</b>	1805546
<b>Sampled Date</b>	07-Jul-2010
<b>Customer Sample Ref.</b>	TP123
<b>Depth (m)</b>	2.00

## Solid Waste Analysis

Total Organic Carbon (%)	0.444
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	7.21
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	Conc <sup>n</sup> in 2:1 eluate (mg/l) C <sub>2</sub>		2:1 conc <sup>n</sup> leached (mg/kg) A <sub>2</sub>		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
Beryllium	0.000092	<0.00007	0.000184	<0.0007	- - -
Boron	0.922	<0.0094	1.84	<0.094	- - -
pH	8	<0.001	16	<0.01	- - -
Total Cyanide (W)	<0.05	<0.05	<0.1	<0.05	- - -
Vanadium	0.00331	<0.00024	0.00662	<0.0024	- - -

## Leach Test Information

Date Prepared	16-Jul-2010
pH (pH Units)	7.64
Conductivity (µS/cm)	165.00
Temperature (°C)	19.60
Volume Leachant (Litres)	0.316
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

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Mcerts Certification does not apply to leachates

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>		<b>Client Location</b>	THE DOVE WAY-NTE285
<b>Mass Sample taken (kg)</b>	0.194	<b>Moisture Content Ratio (%)</b>	11.2
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	90.0
<b>Particle Size &lt;4mm</b>	>95%		

## Case

<b>SDG</b>	100712-18
<b>Lab Sample Number(s)</b>	1805575
<b>Sampled Date</b>	08-Jul-2010
<b>Customer Sample Ref.</b>	TP134
<b>Depth (m)</b>	0.30

## Solid Waste Analysis

Total Organic Carbon (%)	-
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	-
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	Conc <sup>n</sup> in 2:1 eluate (mg/l) C <sub>2</sub>		2:1 conc <sup>n</sup> leached (mg/kg) A <sub>2</sub>		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
Arsenic	0.00586	<0.00012	0.0117	<0.0012	-
Barium	0.0127	<0.00003	0.0254	<0.0003	-
Cadmium	0.000129	<0.0001	0.000258	<0.001	-
Chromium	0.00237	<0.00022	0.00474	<0.0022	-
Copper	0.0159	<0.00085	0.0318	<0.0085	-
Mercury Dissolved (CVAF)	0.0000372	<0.00001	0.0000744	<0.0001	-
Molybdenum	-	-	-	-	-
Nickel	0.00241	<0.00015	0.00482	<0.0015	-
Lead	0.00157	<0.00002	0.00314	<0.0002	-
Antimony	-	-	-	-	-
Selenium	0.00195	<0.00039	0.0039	<0.0039	-
Zinc	0.00408	<0.00041	0.00816	<0.0041	-
Chloride	-	-	-	-	-
Fluoride	-	-	-	-	-
Sulphate (soluble)	<3	<3	<6	<3	-
Total Dissolved Solids	-	-	-	-	-
Total Monohydric Phenols (W)	-	-	-	-	-
Dissolved Organic Carbon	-	-	-	-	-

## Leach Test Information

Date Prepared	16-Jul-2010
pH (pH Units)	8.35
Conductivity (µS/cm)	251.00
Temperature (°C)	18.20
Volume Leachant (Litres)	0.330
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>		<b>Client Location</b>	THE DOVE WAY-NTE285
<b>Mass Sample taken (kg)</b>	0.194	<b>Moisture Content Ratio (%)</b>	11.2
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	90.0
<b>Particle Size &lt;4mm</b>	>95%		

**Case**

<b>SDG</b>	100712-18
<b>Lab Sample Number(s)</b>	1805575
<b>Sampled Date</b>	08-Jul-2010
<b>Customer Sample Ref.</b>	TP134
<b>Depth (m)</b>	0.30

**Solid Waste Analysis**

Total Organic Carbon (%)	-
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	-
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

<b>Eluate Analysis</b>	<b>Conc<sup>n</sup> in 2:1 eluate (mg/l)</b> C <sub>2</sub>		<b>2:1 conc<sup>n</sup> leached (mg/kg)</b> A <sub>2</sub>		<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>
	<b>Result</b>	<b>Limit of Detection</b>	<b>Result</b>	<b>Limit of Detection</b>	
Beryllium	0.000143	<0.00007	0.000286	<0.0007	- - -
Boron	0.0419	<0.0094	0.0838	<0.094	- - -
pH	8.5	<0.001	17	<0.01	- - -
Total Cyanide (W)	<0.05	<0.05	<0.1	<0.05	- - -
Vanadium	0.00471	<0.00024	0.00942	<0.0024	- - -

**Leach Test Information**

Date Prepared	16-Jul-2010
pH (pH Units)	8.35
Conductivity (µS/cm)	251.00
Temperature (°C)	18.20
Volume Leachant (Litres)	0.330
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

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## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>		<b>Client Location</b>	THE DOVE WAY-NTE285
<b>Mass Sample taken (kg)</b>	0.242	<b>Moisture Content Ratio (%)</b>	38.5
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	72.2
<b>Particle Size &lt;4mm</b>	>95%		

## Case

<b>SDG</b>	100712-18
<b>Lab Sample Number(s)</b>	1805613
<b>Sampled Date</b>	08-Jul-2010
<b>Customer Sample Ref.</b>	TP135
<b>Depth (m)</b>	3.10

## Solid Waste Analysis

Total Organic Carbon (%)	0.987
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	5.61
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	Conc <sup>n</sup> in 2:1 eluate (mg/l) C <sub>2</sub>		2:1 conc <sup>n</sup> leached (mg/kg) A <sub>2</sub>		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
Arsenic	0.00381	<0.00012	0.00762	<0.0012	-
Barium	0.0418	<0.00003	0.0836	<0.0003	-
Cadmium	<0.0001	<0.0001	<0.0002	<0.001	-
Chromium	0.0024	<0.00022	0.0048	<0.0022	-
Copper	0.00658	<0.00085	0.0132	<0.0085	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.0001	-
Molybdenum	-	-	-	-	-
Nickel	0.00226	<0.00015	0.00452	<0.0015	-
Lead	0.00254	<0.00002	0.00508	<0.0002	-
Antimony	-	-	-	-	-
Selenium	0.00188	<0.00039	0.00376	<0.0039	-
Zinc	0.0166	<0.00041	0.0332	<0.0041	-
Chloride	-	-	-	-	-
Fluoride	-	-	-	-	-
Sulphate (soluble)	234	<3	468	<3	-
Total Dissolved Solids	-	-	-	-	-
Total Monohydric Phenols (W)	-	-	-	-	-
Dissolved Organic Carbon	-	-	-	-	-

## Leach Test Information

Date Prepared	16-Jul-2010
pH (pH Units)	6.24
Conductivity (µS/cm)	459.00
Temperature (°C)	16.60
Volume Leachant (Litres)	0.283
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates



## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>		<b>Client Location</b>	THE DOVE WAY-NTE285
<b>Mass Sample taken (kg)</b>	0.242	<b>Moisture Content Ratio (%)</b>	38.5
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	72.2
<b>Particle Size &lt;4mm</b>	>95%		

## Case

<b>SDG</b>	100712-18
<b>Lab Sample Number(s)</b>	1805613
<b>Sampled Date</b>	08-Jul-2010
<b>Customer Sample Ref.</b>	TP135
<b>Depth (m)</b>	3.10

## Solid Waste Analysis

Total Organic Carbon (%)	0.987
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	5.61
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	Conc <sup>n</sup> in 2:1 eluate (mg/l) C <sub>2</sub>		2:1 conc <sup>n</sup> leached (mg/kg) A <sub>2</sub>		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
Beryllium	0.000083	<0.00007	0.000166	<0.0007	- - -
Boron	0.667	<0.0094	1.33	<0.094	- - -
pH	7.3	<0.001	15	<0.01	- - -
Total Cyanide (W)	0.25	<0.05	0.5	<0.05	- - -
Vanadium	0.00164	<0.00024	0.00328	<0.0024	- - -

## Leach Test Information

Date Prepared	16-Jul-2010
pH (pH Units)	6.24
Conductivity (µS/cm)	459.00
Temperature (°C)	16.60
Volume Leachant (Litres)	0.283
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>		<b>Client Location</b>	THE DOVE WAY-NTE285
<b>Mass Sample taken (kg)</b>	0.264	<b>Moisture Content Ratio (%)</b>	50.4
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	66.5
<b>Particle Size &lt;4mm</b>	>95%		

## Case

<b>SDG</b>	100712-18
<b>Lab Sample Number(s)</b>	1805736
<b>Sampled Date</b>	08-Jul-2010
<b>Customer Sample Ref.</b>	TP137
<b>Depth (m)</b>	2.00

## Solid Waste Analysis

Total Organic Carbon (%)	16.9
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	3.71
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	Conc <sup>n</sup> in 2:1 eluate (mg/l) C <sub>2</sub>		2:1 conc <sup>n</sup> leached (mg/kg) A <sub>2</sub>		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
Arsenic	0.00339	<0.00012	0.00678	<0.0012	-
Barium	0.0338	<0.00003	0.0676	<0.0003	-
Cadmium	<0.0001	<0.0001	<0.0002	<0.001	-
Chromium	0.000715	<0.00022	0.00143	<0.0022	-
Copper	0.00594	<0.00085	0.0119	<0.0085	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.0001	-
Molybdenum	-	-	-	-	-
Nickel	0.0014	<0.00015	0.0028	<0.0015	-
Lead	0.00155	<0.00002	0.0031	<0.0002	-
Antimony	-	-	-	-	-
Selenium	0.000833	<0.00039	0.00167	<0.0039	-
Zinc	0.0155	<0.00041	0.031	<0.0041	-
Chloride	-	-	-	-	-
Fluoride	-	-	-	-	-
Sulphate (soluble)	404	<3	808	<3	-
Total Dissolved Solids	-	-	-	-	-
Total Monohydric Phenols (W)	-	-	-	-	-
Dissolved Organic Carbon	-	-	-	-	-

## Leach Test Information

Date Prepared	16-Jul-2010
pH (pH Units)	6.28
Conductivity (µS/cm)	803.00
Temperature (°C)	20.10
Volume Leachant (Litres)	0.262
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>		<b>Client Location</b>	THE DOVE WAY-NTE285
<b>Mass Sample taken (kg)</b>	0.264	<b>Moisture Content Ratio (%)</b>	50.4
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	66.5
<b>Particle Size &lt;4mm</b>	>95%		

**Case**

<b>SDG</b>	100712-18
<b>Lab Sample Number(s)</b>	1805736
<b>Sampled Date</b>	08-Jul-2010
<b>Customer Sample Ref.</b>	TP137
<b>Depth (m)</b>	2.00

**Solid Waste Analysis**

Total Organic Carbon (%)	16.9
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	3.71
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

<b>Eluate Analysis</b>	<b>Conc<sup>n</sup> in 2:1 eluate (mg/l)</b> C <sub>2</sub>		<b>2:1 conc<sup>n</sup> leached (mg/kg)</b> A <sub>2</sub>		<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>
	<b>Result</b>	<b>Limit of Detection</b>	<b>Result</b>	<b>Limit of Detection</b>	
Beryllium	<0.00007	<0.00007	<0.00014	<0.0007	- - -
Boron	0.104	<0.0094	0.208	<0.094	- - -
pH	6.7	<0.001	13	<0.01	- - -
Total Cyanide (W)	2.36	<0.05	4.72	<0.05	- - -
Vanadium	0.000799	<0.00024	0.0016	<0.0024	- - -

**Leach Test Information**

Date Prepared	16-Jul-2010
pH (pH Units)	6.28
Conductivity (µS/cm)	803.00
Temperature (°C)	20.10
Volume Leachant (Litres)	0.262
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>		<b>Client Location</b>	THE DOVE WAY-NTE285
<b>Mass Sample taken (kg)</b>	0.188	<b>Moisture Content Ratio (%)</b>	7.30
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	93.2
<b>Particle Size &lt;4mm</b>	>95%		

**Case**

<b>SDG</b>	100712-18
<b>Lab Sample Number(s)</b>	1805932
<b>Sampled Date</b>	07-Jul-2010
<b>Customer Sample Ref.</b>	WS3
<b>Depth (m)</b>	0.10 - 0.90

**Solid Waste Analysis**

Total Organic Carbon (%)	1.55
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	8.52
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

<b>Eluate Analysis</b>	<b>Conc<sup>n</sup> in 2:1 eluate (mg/l)</b> C <sub>2</sub>		<b>2:1 conc<sup>n</sup> leached (mg/kg)</b> A <sub>2</sub>		<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>
	<b>Result</b>	<b>Limit of Detection</b>	<b>Result</b>	<b>Limit of Detection</b>	
Arsenic	0.00581	<0.00012	0.0116	<0.0012	-
Barium	0.0726	<0.00003	0.145	<0.0003	-
Cadmium	<0.0001	<0.0001	<0.0002	<0.001	-
Chromium	0.00353	<0.00022	0.00706	<0.0022	-
Copper	0.018	<0.00085	0.036	<0.0085	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.0001	-
Molybdenum	-	-	-	-	-
Nickel	0.00545	<0.00015	0.0109	<0.0015	-
Lead	0.000735	<0.00002	0.00147	<0.0002	-
Antimony	-	-	-	-	-
Selenium	0.00702	<0.00039	0.014	<0.0039	-
Zinc	0.00418	<0.00041	0.00836	<0.0041	-
Chloride	-	-	-	-	-
Fluoride	-	-	-	-	-
Sulphate (soluble)	257	<3	514	<3	-
Total Dissolved Solids	-	-	-	-	-
Total Monohydric Phenols (W)	-	-	-	-	-
Dissolved Organic Carbon	-	-	-	-	-

**Leach Test Information**

Date Prepared	16-Jul-2010
pH (pH Units)	7.99
Conductivity (µS/cm)	708.00
Temperature (°C)	20.00
Volume Leachant (Litres)	0.337
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>		<b>Client Location</b>	THE DOVE WAY-NTE285
<b>Mass Sample taken (kg)</b>	0.188	<b>Moisture Content Ratio (%)</b>	7.30
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	93.2
<b>Particle Size &lt;4mm</b>	>95%		

**Case**

<b>SDG</b>	100712-18
<b>Lab Sample Number(s)</b>	1805932
<b>Sampled Date</b>	07-Jul-2010
<b>Customer Sample Ref.</b>	WS3
<b>Depth (m)</b>	0.10 - 0.90

**Solid Waste Analysis**

Total Organic Carbon (%)	1.55
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	8.52
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

<b>Eluate Analysis</b>	<b>Conc<sup>n</sup> in 2:1 eluate (mg/l)</b> C <sub>2</sub>		<b>2:1 conc<sup>n</sup> leached (mg/kg)</b> A <sub>2</sub>		<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>
	<b>Result</b>	<b>Limit of Detection</b>	<b>Result</b>	<b>Limit of Detection</b>	
Beryllium	<0.00007	<0.00007	<0.00014	<0.0007	- - -
Boron	0.396	<0.0094	0.792	<0.094	- - -
pH	8.4	<0.001	17	<0.01	- - -
Total Cyanide (W)	0.09	<0.05	0.18	<0.05	- - -
Vanadium	0.013	<0.00024	0.026	<0.0024	- - -

**Leach Test Information**

Date Prepared	16-Jul-2010
pH (pH Units)	7.99
Conductivity (µS/cm)	708.00
Temperature (°C)	20.00
Volume Leachant (Litres)	0.337
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>		<b>Client Location</b>	THE DOVE WAY-NTE285
<b>Mass Sample taken (kg)</b>	0.197	<b>Moisture Content Ratio (%)</b>	12.8
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	88.7
<b>Particle Size &lt;4mm</b>	>95%		

**Case**

<b>SDG</b>	100712-18
<b>Lab Sample Number(s)</b>	1806152
<b>Sampled Date</b>	07-Jul-2010
<b>Customer Sample Ref.</b>	WS4
<b>Depth (m)</b>	0.10 - 0.50

**Solid Waste Analysis**

Total Organic Carbon (%)	9.25
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	8.11
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

<b>Eluate Analysis</b>	<b>Conc<sup>n</sup> in 2:1 eluate (mg/l)</b> C <sub>2</sub>		<b>2:1 conc<sup>n</sup> leached (mg/kg)</b> A <sub>2</sub>		<b>Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg</b>
	<b>Result</b>	<b>Limit of Detection</b>	<b>Result</b>	<b>Limit of Detection</b>	
Arsenic	0.00263	<0.00012	0.00526	<0.0012	- - -
Barium	0.0615	<0.00003	0.123	<0.0003	- - -
Cadmium	0.000347	<0.0001	0.000694	<0.001	- - -
Chromium	0.00581	<0.00022	0.0116	<0.0022	- - -
Copper	0.0126	<0.00085	0.0252	<0.0085	- - -
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.0001	- - -
Molybdenum	-	-	-	-	- - -
Nickel	0.00407	<0.00015	0.00814	<0.0015	- - -
Lead	0.00194	<0.00002	0.00388	<0.0002	- - -
Antimony	-	-	-	-	- - -
Selenium	0.00241	<0.00039	0.00482	<0.0039	- - -
Zinc	0.00236	<0.00041	0.00472	<0.0041	- - -
Chloride	-	-	-	-	- - -
Fluoride	-	-	-	-	- - -
Sulphate (soluble)	66	<3	132	<3	- - -
Total Dissolved Solids	-	-	-	-	- - -
Total Monohydric Phenols (W)	-	-	-	-	- - -
Dissolved Organic Carbon	-	-	-	-	- - -

**Leach Test Information**

Date Prepared	16-Jul-2010
pH (pH Units)	8.24
Conductivity (µS/cm)	341.00
Temperature (°C)	20.70
Volume Leachant (Litres)	0.328
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>		<b>Client Location</b>	THE DOVE WAY-NTE285
<b>Mass Sample taken (kg)</b>	0.197	<b>Moisture Content Ratio (%)</b>	12.8
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	88.7
<b>Particle Size &lt;4mm</b>	>95%		

## Case

<b>SDG</b>	100712-18
<b>Lab Sample Number(s)</b>	1806152
<b>Sampled Date</b>	07-Jul-2010
<b>Customer Sample Ref.</b>	WS4
<b>Depth (m)</b>	0.10 - 0.50

## Solid Waste Analysis

Total Organic Carbon (%)	9.25
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	-
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	8.11
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	Conc <sup>n</sup> in 2:1 eluate (mg/l) C <sub>2</sub>		2:1 conc <sup>n</sup> leached (mg/kg) A <sub>2</sub>		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
Beryllium	<0.00007	<0.00007	<0.00014	<0.0007	- - -
Boron	0.0531	<0.0094	0.106	<0.094	- - -
pH	8.5	<0.001	17	<0.01	- - -
Total Cyanide (W)	1.24	<0.05	2.48	<0.05	- - -
Vanadium	0.0031	<0.00024	0.0062	<0.0024	- - -

## Leach Test Information

Date Prepared	16-Jul-2010
pH (pH Units)	8.24
Conductivity (µS/cm)	341.00
Temperature (°C)	20.70
Volume Leachant (Litres)	0.328
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates

## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>		<b>Client Location</b>	THE DOVE WAY-NTE285
<b>Mass Sample taken (kg)</b>	0.197	<b>Moisture Content Ratio (%)</b>	12.3
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	89.0
<b>Particle Size &lt;4mm</b>	>95%		

## Case

<b>SDG</b>	100712-18
<b>Lab Sample Number(s)</b>	1806302
<b>Sampled Date</b>	07-Jul-2010
<b>Customer Sample Ref.</b>	WS6
<b>Depth (m)</b>	0.30 - 1.00

## Solid Waste Analysis

Total Organic Carbon (%)	23.6
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	<0.01
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	8.11
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	Conc <sup>n</sup> in 2:1 eluate (mg/l) C <sub>2</sub>		2:1 conc <sup>n</sup> leached (mg/kg) A <sub>2</sub>		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
Arsenic	0.0011	<0.00012	0.0022	<0.0012	-
Barium	0.0336	<0.00003	0.0672	<0.0003	-
Cadmium	<0.0001	<0.0001	<0.0002	<0.001	-
Chromium	0.00297	<0.00022	0.00594	<0.0022	-
Copper	0.00486	<0.00085	0.00972	<0.0085	-
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.0001	-
Molybdenum	-	-	-	-	-
Nickel	0.00196	<0.00015	0.00392	<0.0015	-
Lead	0.000045	<0.00002	0.00009	<0.0002	-
Antimony	-	-	-	-	-
Selenium	0.0037	<0.00039	0.0074	<0.0039	-
Zinc	0.00142	<0.00041	0.00284	<0.0041	-
Chloride	-	-	-	-	-
Fluoride	-	-	-	-	-
Sulphate (soluble)	97.8	<3	196	<3	-
Total Dissolved Solids	-	-	-	-	-
Total Monohydric Phenols (W)	-	-	-	-	-
Dissolved Organic Carbon	-	-	-	-	-

## Leach Test Information

Date Prepared	16-Jul-2010
pH (pH Units)	7.59
Conductivity (µS/cm)	384.00
Temperature (°C)	17.90
Volume Leachant (Litres)	0.328
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates



## CEN 2:1 ONE STAGE BATCH TEST

REF-CEN12457-3

<b>Client Reference</b>		<b>Client Location</b>	THE DOVE WAY-NTE285
<b>Mass Sample taken (kg)</b>	0.197	<b>Moisture Content Ratio (%)</b>	12.3
<b>Mass of dry sample (kg)</b>	0.175	<b>Dry Matter Content Ratio (%)</b>	89.0
<b>Particle Size &lt;4mm</b>	>95%		

## Case

<b>SDG</b>	100712-18
<b>Lab Sample Number(s)</b>	1806302
<b>Sampled Date</b>	07-Jul-2010
<b>Customer Sample Ref.</b>	WS6
<b>Depth (m)</b>	0.30 - 1.00

## Solid Waste Analysis

Total Organic Carbon (%)	23.6
Loss on Ignition (%)	-
Sum of BTEX (mg/kg)	<0.01
Sum of 7 PCBs (mg/kg)	-
Mineral Oil (mg/kg)	-
PAH Sum of 17 (mg/kg)	-
pH (pH Units)	8.11
ANC to pH 6 (mol/kg)	-
ANC to pH 4 (mol/kg)	-

Eluate Analysis	Conc <sup>n</sup> in 2:1 eluate (mg/l) C <sub>2</sub>		2:1 conc <sup>n</sup> leached (mg/kg) A <sub>2</sub>		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg
	Result	Limit of Detection	Result	Limit of Detection	
Beryllium	<0.00007	<0.00007	<0.00014	<0.0007	- - -
Boron	0.0885	<0.0094	0.177	<0.094	- - -
pH	8.3	<0.001	17	<0.01	- - -
Total Cyanide (W)	1.89	<0.05	3.78	<0.05	- - -
Vanadium	0.00179	<0.00024	0.00358	<0.0024	- - -

## Leach Test Information

Date Prepared	16-Jul-2010
pH (pH Units)	7.59
Conductivity (µS/cm)	384.00
Temperature (°C)	17.90
Volume Leachant (Litres)	0.328
Volume of Eluate VE1 (Litres)	

Solid Results are expressed on a dry weight basis, after correction for moisture content where applicable

Stated limits are for guidance only and ALcontrol cannot be held responsible for any discrepancies with current legislation

Mcerts Certification does not apply to leachates

## Table of Results - Appendix

SDG Number : 100712-18

Client : BWB Consulting

Client Ref :

### REPORT KEY

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10<sup>-7</sup>

NDP	No Determination Possible	#	ISO 17025 Accredited	*	Subcontracted Test	M	MCERTS Accredited
NFD	No Fibres Detected	PF	Possible Fibres Detected	»	Result previously reported (Incremental reports only)	EC	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control

Method No	Reference	Description	Wet/Dry Sample <sup>1</sup>
PM001		Preparation of Samples for Metals Analysis	Dry
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material	Wet
PM114		Leaching Procedure for CEN Two Stage Batch Test 2:1/8:1 Cumulative	
PM115		Leaching Procedure for CEN One Stage Leach Test 2:1 & 10:1 1 Step	
TM001	In - house Method	Determination of asbestos containing material by screening on solids	
TM062 (S)	National Grid Property Holdings Methods for the Collection & Analysis of Samples from National Grid Sites version 1 Sec 3.9	Determination of Phenols in Soils by HPLC	Wet
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)	
TM098	Method 4500E, AWWA/APHA, 20th Ed., 1999	Determination of Sulphate using the Kone Analyser	Dry
TM116	Modified: US EPA Method 8260, 8120, 8020, 624, 610 & 602	Determination of Volatile Organic Compounds by Headspace / GC-MS	
TM132	In - house Method	ELTRA CS800 Operators Guide	Dry
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter	Wet
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS	
TM153	Method 4500A,B,C, I, M AWWA/APHA, 20th Ed., 1999	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate using the "Skalar SANS+ System" Segmented Flow Analyser	Wet
TM154	In - house Method	Determination of Petroleum Hydrocarbons by EZ Flash GC-FID in the Carbon range C6- C40	Wet
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID	Dry
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES	Dry
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry	
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers	Dry
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546	Wet
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer	Dry
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate	
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter	

<sup>1</sup> Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

**Notification of NDPs (No determination possible)**

<b>SDG Number</b>	100712-18	<b>Location</b>	THE DOVE WAY-NTE285
<b>Client</b>	H_BWB_NTT	<b>Order No.</b>	NE09/616
<b>Client Reference</b>		<b>Report No.</b>	53069-1
<b>Attention</b>	Richard Robinson	<b>Date Received</b>	12/07/2010 08:34:21

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
1805736	TP137	2.00	Total Sulphur	Sample unsuitable for analysis

# APPENDIX

## APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following:  
NRA Leach tests, flash point, ammonium as NH<sub>4</sub> by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS TICS.
2. Samples will be run in duplicate upon request, but an additional charge may be incurred.
3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.
4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.
5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.
6. When requested, the individual sub sample scheduled will be screened in house for the presence of large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.
7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample – similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.
8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.
9. NDP – No determination possible due to insufficient/unsuitable sample.
10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals – total metals must be requested separately.
11. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.
12. Results relate only to the items tested
13. **Surrogate recoveries** – Most of our organic methods include surrogates, the recovery of which is monitored and reported.  
For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 – 130 %.
14. **Product analyses** – Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.
15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethylphenol, 3,5 Dimethylphenol).
16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).
17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
19. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.
19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.
20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.
21. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.
22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials – whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.
23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C4 – C10 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

**LIQUID MATRICES EXTRACTION SUMMARY**

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
PCB TOTAL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GS MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM	LIQUID/LIQUID SHAKE	GC MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC FID

**SOLID MATRICES EXTRACTION SUMMARY**

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
Solvent Extractable Matter	D&C	DCM	SOXTHERM	GRAVIMETRIC
Cyclohexane Ext. Matter	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
Thin Layer Chromatography	D&C	DCM	SOXTHERM	IATROSCAN
Elemental Sulphur	D&C	DCM	SOXTHERM	HPLC
Phenols by GCMS	WET	DCM	SOXTHERM	GC-MS
Herbicides	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
Pesticides	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
EPH (DRO)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (Min oil)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (Cleaned up)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH CWG by GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB tot / PCB con	D&C	HEXANE:ACETONE	END OVER END	GC-MS
Polyaromatic Hydrocarbons (MS)	WET	HEXANE:ACETONE	Microwave TM218.	GC-MS
C8-C40 (C6-C40)EZ Flash	WET	HEXANE:ACETONE	SHAKER	GC-EZ
Polyaromatic Hydrocarbons Rapid GC	WET	HEXANE:ACETONE	SHAKER	GC-EZ
Semi Volatile Organic Compounds	WET	DCM:ACETONE	SONICATE	GC-MS

## **Identification of Asbestos in Bulk Materials**

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

### **Visual Estimation Of Fibre Content.**

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: -

Trace – Where only one or two asbestos fibres were identified.

**Further guidance on typical asbestos fibre content of manufactured products can be found in MDHS 100.**

**The identification of asbestos containing materials falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.**

### **Asbestos Type**

### **Common Name**

Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

**APPENDIX 5**  
**GROUNDWATER AND SURFACE WATER LABORATORY**  
**ANALYTICAL RESULTS**





BWB Consulting  
3-4 Kayes Walk  
The Lace Market  
Nottingham  
Nottinghamshire  
NG1 1PY

**Attention:** Richard Robinson

## CERTIFICATE OF ANALYSIS

**Date:** 09 August 2010  
**Customer:** H\_BWB\_NTT-81  
**Sample Delivery Group (SDG):** 100719-5 **Report No.:** 92959  
**Your Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

We received 12 samples on Monday July 19, 2010 and 12 of these samples were scheduled for analysis which was completed on Monday August 09, 2010. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

All chemical testing (unless subcontracted) is performed at ALcontrol Hawarden Laboratories.

Asbestos testing - we are not accredited for screening soil samples for asbestos fibres. We are only accredited to identify asbestos fibres in bulk material (ACM).

Approved By:

**Iain Swinton**

Operations Director - Land UK & Ireland



<b>SDG:</b>	100719-5	<b>Customer:</b>	BWB Consulting
<b>Job:</b>	H_BWB_NTT-81	<b>Attention:</b>	Richard Robinson
<b>Client Reference:</b>	NTE 285	<b>Order No.:</b>	NE09/619
<b>Location:</b>	THE DOVE WAY UTTOXETER	<b>Report No:</b>	92959

## Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
1836076	BH1			15/07/2010
1835995	BH2			15/07/2010
1836005	BH3			15/07/2010
1836110	BH4			15/07/2010
1836201	BH5			15/07/2010
1836009	BH6			15/07/2010
1836214	BH7			15/07/2010
1836172	BH8			15/07/2010
1836164	BH9			15/07/2010
1836045	BROOK-DOWN			15/07/2010
1836018	BROOK-MID			15/07/2010
1836224	BROOK-UP			15/07/2010

Only received samples which have had analysis scheduled will be shown on the following pages.

**SDG:** 100719-5  
**Job:** H\_BWB\_NTT-81  
**Client Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/619  
**Report No.:** 92959

**LIQUID**

Results Legend	Lab Sample No(s)	1835995	1836005	1836009	1836018	1836045	1836076	1836110	1836164
	Customer Sample Ref.	BH2	BH3	BH6	BROOK-MI D	BROOK-D OWN	BH1	BH4	BH9
	AGS Ref.								
	Depth (m)								
	Container	1l green glass bottle 1plastic H2SO4 NaOH H2SO4 1plastic	1l green glass bottle 1plastic H2SO4 NaOH H2SO4 1plastic	1l green glass bottle Vial NaOH H2SO4 1plastic	1l green glass bottle Vial NaOH H2SO4 1plastic	1l green glass bottle Vial NaOH H2SO4 1plastic	1l green glass bottle Vial NaOH H2SO4 1plastic	1l green glass bottle Vial NaOH H2SO4 1plastic	1l green glass bottle Vial NaOH H2SO4 1plastic
Ammonium	All	X	X	X	X	X	X	X	X
Anions by Kone (w)	All	X	X	X	X	X	X	X	X
Conductivity (at 20 deg.C)	All	X	X	X	X	X	X	X	X
Cyanide Comp/Free/Total/Thiocyanate	All								
Cyanide Complex/Free/Total/Thiocyan	All			X				X	
Dissolved Metals by ICP-MS	All	X	X		X	X	X		X
EPH (DRO) (C10-C40) Aqueous (W)	All	X	X	X	X	X	X	X	X
EPH CWG (Aliphatic) Aqueous GC (W)	All	X	X	X	X	X	X	X	X
EPH CWG (Aromatic) Aqueous GC (W)	All	X	X	X	X	X	X	X	X
GRO BTEX MTBE GC (W)	All		X		X	X	X		X
GRO by GC-FID (W)	All			X				X	
Mercury Dissolved	All	X	X	X	X	X	X	X	X
PAH Spec MS - Aqueous (W)	All	X	X	X	X	X	X	X	X
pH Value	All	X	X	X	X	X	X	X	X
Phenols by HPLC (W)	All		X	X	X	X	X	X	X
TPH CWG (W)	All	X	X	X	X	X	X	X	X



**SDG:** 100719-5  
**Job:** H\_BWB\_NTT-81  
**Client Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/619  
**Report No.:** 92959

### Test Completion dates

SDG reference: 100719-5

Lab Sample No(s)	1835995	1836005	1836009	1836018	1836045	1836076	1836110	1836164	1836172	1836201	1836214	1836224
Customer Sample Ref.	BH2	BH3	BH6	BROOK-MID	BROOK-DOWN	BH1	BH4	BH9	BH8	BH5	BH7	BROOK-UP
Depth												
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammonium	19/07/2010	19/07/2010	02/08/2010	20/07/2010	20/07/2010	19/07/2010	02/08/2010	20/07/2010	20/07/2010	02/08/2010	19/07/2010	20/07/2010
Anions by Kone (w)	21/07/2010	21/07/2010	03/08/2010	21/07/2010	21/07/2010	21/07/2010	03/08/2010	21/07/2010	21/07/2010	03/08/2010	21/07/2010	21/07/2010
Conductivity (at 20 deg.C)	20/07/2010	20/07/2010	02/08/2010	20/07/2010	20/07/2010	20/07/2010	02/08/2010	20/07/2010	20/07/2010	02/08/2010	20/07/2010	20/07/2010
Cyanide	20/07/2010	20/07/2010	02/08/2010	20/07/2010	20/07/2010	20/07/2010	02/08/2010	20/07/2010	20/07/2010	02/08/2010	20/07/2010	20/07/2010
Dissolved Metals by ICP-MS	21/07/2010	21/07/2010	02/08/2010	21/07/2010	21/07/2010	21/07/2010	02/08/2010	23/07/2010	23/07/2010	02/08/2010	21/07/2010	23/07/2010
EPH (DRO) (C10-C40) Aqueous (W)	20/07/2010	21/07/2010	02/08/2010	20/07/2010	20/07/2010	21/07/2010	02/08/2010	20/07/2010	20/07/2010	09/08/2010	20/07/2010	20/07/2010
EPH CWG (Aliphatic) Aqueous GC	22/07/2010	22/07/2010	03/08/2010	22/07/2010	22/07/2010	22/07/2010	03/08/2010	22/07/2010	22/07/2010	09/08/2010	22/07/2010	22/07/2010
EPH CWG (Aromatic) Aqueous GC	22/07/2010	22/07/2010	03/08/2010	22/07/2010	22/07/2010	22/07/2010	03/08/2010	22/07/2010	22/07/2010	09/08/2010	22/07/2010	22/07/2010
GRO by GC-FID (W)	22/07/2010	22/07/2010	05/08/2010	22/07/2010	22/07/2010	22/07/2010	05/08/2010	26/07/2010	22/07/2010	05/08/2010	22/07/2010	22/07/2010
Mercury Dissolved	21/07/2010	21/07/2010	03/08/2010	21/07/2010	21/07/2010	21/07/2010	02/08/2010	21/07/2010	21/07/2010	03/08/2010	21/07/2010	21/07/2010
PAH Spec MS - Aqueous (W)	21/07/2010	21/07/2010	04/08/2010	21/07/2010	21/07/2010	21/07/2010	04/08/2010	21/07/2010	21/07/2010	04/08/2010	21/07/2010	21/07/2010
pH Value	20/07/2010	20/07/2010	02/08/2010	20/07/2010	20/07/2010	20/07/2010	02/08/2010	20/07/2010	20/07/2010	02/08/2010	20/07/2010	20/07/2010
Phenols by HPLC (W)	22/07/2010	22/07/2010	02/08/2010	22/07/2010	22/07/2010	22/07/2010	02/08/2010	22/07/2010	22/07/2010	02/08/2010	22/07/2010	22/07/2010
TPH CWG (W)	22/07/2010	22/07/2010	05/08/2010	22/07/2010	22/07/2010	22/07/2010	05/08/2010	26/07/2010	22/07/2010	09/08/2010	22/07/2010	22/07/2010

**SDG:** 100719-5  
**Job:** H\_BWB\_NTT-81  
**Client Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/619  
**Report No.:** 92959

Results Legend		Customer Sample Ref.	BH1	BH2	BH3	BH4	BH5	BH6
#	ISO17025 accredited.	<b>Depth (m)</b> <b>Sample Type</b> <b>Date Sampled</b> <b>Date Received</b> <b>SDG Ref</b> <b>Lab Sample No.(s)</b> <b>AGS Reference</b>	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
M	mCERTS accredited.		15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
aq	Aqueous / settled sample.		19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010
diss.filt	Dissolved / filtered sample.		100719-5	100719-5	100719-5	100719-5	100719-5	100719-5
tot.unfilt	Total / unfiltered sample.		1836076	1835995	1836005	1836110	1836201	1836009
*	subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
Component	LOD/Units	Method						
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	0.266 #	17.5 #	23.1 #	12.1 #	0.566 #	<0.2 #
Conductivity @ 20 deg.C	<0.014 mS/cm	TM120	1.22 #	1.6 #	1.16 #	1.28 #	0.529 #	0.603 #
Arsenic (diss.filt)	<0.12 µg/l	TM152	2.88 #	1.17 #	1.79 #	0.775 #	0.608 #	0.931 #
Barium (diss.filt)	<0.03 µg/l	TM152	54.8 #	159 #	429 #	67.5 #	52.9 #	90.7 #
Beryllium (diss.filt)	<0.07 µg/l	TM152	<0.07 #	<0.07 #	<0.07 #	<0.07 #	<0.07 #	<0.07 #
Boron (diss.filt)	<9.4 µg/l	TM152	405 #	1540 #	1180 #	477 #	564 #	52.1 #
Cadmium (diss.filt)	<0.1 µg/l	TM152	0.128 #	0.119 #	<0.1 #	0.63 #	0.189 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152	6.52 #	13.6 #	12.9 #	10.1 #	4.12 #	6.54 #
Copper (diss.filt)	<0.85 µg/l	TM152	1.68 #	2.68 #	1.12 #	5.54 #	1.49 #	1.64 #
Lead (diss.filt)	<0.02 µg/l	TM152	0.027 #	0.05 #	<0.02 #	0.37 #	0.288 #	0.136 #
Nickel (diss.filt)	<0.15 µg/l	TM152	11.6 #	17 #	12.4 #	8.6 #	6.37 #	0.949 #
Selenium (diss.filt)	<0.39 µg/l	TM152	0.423 #	1.03 #	1.3 #	1.42 #	0.586 #	1.82 #
Vanadium (diss.filt)	<0.24 µg/l	TM152	2.14 #	4.28 #	4.2 #	3.41 #	1.39 #	1.5 #
Zinc (diss.filt)	<0.41 µg/l	TM152	3.73 #	2.08 #	4.2 #	2.62 #	2.68 #	1.72 #
EPH Range >C10 - C40 (aq)	<46 µg/l	TM172	52.3 #	<46 #	84.4 #	<46 #	382 #	54.9 #
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
Sulphate	<3 mg/l	TM184	230 #	413 #	51.3 #	178 #	74 #	56.7 #
Cyanide, Total	<0.05 mg/l	TM227	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
pH	<1 pH Units	TM256	7.67 #	7.78 #	7.85 #	7.99 #	8.32 #	8.46 #
Phenols, Total monohydric	<0.015 mg/l	TM259	<0.015 #	<0.015 #	<0.015 #	<0.015 #	<0.015 #	<0.015 #

**SDG:** 100719-5  
**Job:** H\_BWB\_NTT-81  
**Client Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/619  
**Report No.:** 92959

## PAH Spec MS - Aqueous (W)

Results Legend		Customer Sample Ref.	BH1	BH2	BH3	BH4	BH5	BH6
#	ISO17025 accredited.							
M	mCERTS accredited.							
aq	Aqueous / settled sample.							
diss.filt	Dissolved / filtered sample.							
tot.unfilt	Total / unfiltered sample.							
*	subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
		<b>Depth (m)</b>						
		<b>Sample Type</b>	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
		<b>Date Sampled</b>	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
		<b>Date Received</b>	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010
		<b>SDG Ref</b>	100719-5	100719-5	100719-5	100719-5	100719-5	100719-5
		<b>Lab Sample No.(s)</b>	1836076	1835995	1836005	1836110	1836201	1836009
		<b>AGS Reference</b>						
Component	LOD/Units	Method						
Naphthalene (aq)	<0.1 µg/l	TM178	<0.1	<0.1	<0.1			
Acenaphthene (aq)	<0.015 µg/l	TM178	0.81	<0.015	0.02			
Naphthalene (aq)	<0.1 µg/l	TM178				<0.1	<0.1	<0.1
Acenaphthene (aq)	<0.015 µg/l	TM178				#	#	#
Acenaphthylene (aq)	<0.011 µg/l	TM178	<0.011	<0.011	<0.011			
Acenaphthylene (aq)	<0.011 µg/l	TM178				#	#	#
Fluoranthene (aq)	<0.014 µg/l	TM178	0.84	0.02	<0.014			
Anthracene (aq)	<0.015 µg/l	TM178	0.5	<0.015	<0.015			
Fluoranthene (aq)	<0.014 µg/l	TM178				0.0272	0.037	0.022
Anthracene (aq)	<0.015 µg/l	TM178				#	#	#
Phenanthrene (aq)	<0.022 µg/l	TM178	3.16	0.04	0.03			
Fluorene (aq)	<0.014 µg/l	TM178	0.7	<0.014	<0.014			
Phenanthrene (aq)	<0.022 µg/l	TM178				#	#	#
Chrysene (aq)	<0.013 µg/l	TM178	0.07	<0.013	<0.013			
Fluorene (aq)	<0.014 µg/l	TM178				#	#	#
Chrysene (aq)	<0.013 µg/l	TM178				0.0228	<0.013	<0.013
Pyrene (aq)	<0.015 µg/l	TM178	0.57	<0.015	<0.015			
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178	0.06	<0.017	<0.017			
Pyrene (aq)	<0.015 µg/l	TM178				0.0271	0.0391	0.0202
Benzo(a)anthracene (aq)	<0.017 µg/l	TM178				#	#	#
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178	0.04	<0.023	<0.023			
Benzo(b)fluoranthene (aq)	<0.023 µg/l	TM178				#	#	#
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178	<0.027	<0.027	<0.027			
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178	0.03	<0.009	<0.009			
Benzo(k)fluoranthene (aq)	<0.027 µg/l	TM178				#	#	#
Benzo(a)pyrene (aq)	<0.009 µg/l	TM178				0.0231	0.0405	0.0109
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178	<0.016	<0.016	<0.016			
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178	0.03	<0.016	<0.016			
Dibenzo(a,h)anthracene (aq)	<0.016 µg/l	TM178				#	#	#
Benzo(g,h,i)perylene (aq)	<0.016 µg/l	TM178				0.0256	0.033	<0.016
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178	0.02	<0.014	<0.014			
Indeno(1,2,3-cd)pyrene (aq)	<0.014 µg/l	TM178				#	#	#
Polyaromatic hydrocarbons, Total USEPA 16 (aq)	<0.1 µg/l	TM178	6.83	<0.1	<0.1			
Polyaromatic hydrocarbons, Total USEPA 16 (aq)	<0.1 µg/l	TM178				0.152	0.241	<0.1
Naphthalene-d8	%	TM178				100	100	100
Acenaphthene-d10	%	TM178				100	100	100
Phenanthrene-d10	%	TM178				100	100	100
Chrysene-d12	%	TM178				100	100	100
Perylene-d12	%	TM178				100	100	100

**SDG:** 100719-5  
**Job:** H\_BWB\_NTT-81  
**Client Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/619  
**Report No.:** 92959

## TPH CWG (W)

Results Legend		Customer Sample Ref.	BH1	BH2	BH3	BH4	BH5	BH6
#	ISO17025 accredited.	<b>Depth (m)</b> <b>Sample Type</b> <b>Date Sampled</b> <b>Date Received</b> <b>SDG Ref</b> <b>Lab Sample No.(s)</b> <b>AGS Reference</b>	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
M	mCERTS accredited.		15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
aq	Aqueous / settled sample.		19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010
diss.filt	Dissolved / filtered sample.		100719-5	100719-5	100719-5	100719-5	100719-5	100719-5
tot.unfilt	Total / unfiltered sample.		1836076	1835995	1836005	1836110	1836201	1836009
*	subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
Component	LOD/Units	Method						
Total Aliphatics >C5-C35 (aq)	<10 µg/l	TM174	<10	<10	<10	<10	148	<10
Total Aromatics >C6-C35 (aq)	<10 µg/l	TM174	<10	<10	<10	<10	170	<10
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	<10	<10	<10	<10	318	<10
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174	<10	<10	<10	<10	<10	<10
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174	<10	<10	<10	<10	<10	<10
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	<10	<10	<10	<10	39	<10
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174	<10	<10	<10	<10	<10	<10
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	<10	<10	<10	<10	109	<10
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174	<10	<10	<10	<10	170	<10
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	<10	<10	<10	<10	148	<10
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174	<10	<10	<10	<10	170	<10
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174	<10	<10	<10	<10	318	<10
GRO Surrogate % recovery**	%	TM245	94	90	91			
GRO >C5-C12	<50 µg/l	TM245	<50	<50	<50			
Benzene	<7 µg/l	TM245	<7 #	<7 #	<7 #			
Ethylbenzene	<5 µg/l	TM245	<5 #	<5 #	<5 #			
Toluene	<4 µg/l	TM245	<4 #	<4 #	<4 #			
m,p-Xylene	<8 µg/l	TM245	<8 #	<8 #	<8 #			
o-Xylene	<3 µg/l	TM245	<3 #	<3 #	<3 #			
m,p,o-Xylene	<10 µg/l	TM245	<10 #	<10 #	<10 #			
BTEX, Total	<10 µg/l	TM245	<10 #	<10 #	<10 #			
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245	<3 #	<3 #	<3 #			
Aliphatics >C5-C6	<10 µg/l	TM245	<10	<10	<10			
Aliphatics >C6-C8	<10 µg/l	TM245	<10	<10	<10			
Aliphatics >C8-C10	<10 µg/l	TM245	<10	<10	<10			
Aliphatics >C10-C12	<10 µg/l	TM245	<10	<10	<10			
Aromatics >C6-C7	<10 µg/l	TM245	<10	<10	<10			
Aromatics >C7-C8	<10 µg/l	TM245	<10	<10	<10			
Aromatics >EC8-EC10	<10 µg/l	TM245	<10	<10	<10			
Aromatics >EC10-EC12	<10 µg/l	TM245	<10	<10	<10			
Total Aliphatics >C5-C12	<10 µg/l	TM245	<10	<10	<10			
Total Aromatics >C6-C12	<10 µg/l	TM245	<10	<10	<10			
GRO Surrogate % recovery**	%	TM245				94	99	101
Benzene	<7 µg/l	TM245				<7 #	<7 #	<7 #
Toluene	<4 µg/l	TM245				<4 #	<4 #	<4 #
Ethylbenzene	<5 µg/l	TM245				<5 #	<5 #	<5 #
m,p-Xylene	<8 µg/l	TM245				<8 #	<8 #	<8 #
o-Xylene	<3 µg/l	TM245				<3 #	<3 #	<3 #
m,p,o-Xylene	<10 µg/l	TM245				<10 #	<10 #	<10 #



SDG: 100719-5  
Job: H\_BWB\_NTT-81  
Client Reference: NTE 285  
Location: THE DOVE WAY UTTOXETER

Customer: BWB Consulting  
Attention: Richard Robinson  
Order No.: NE09/619  
Report No: 92959

TPH CWG (W)

Table with columns: Results Legend, Customer Sample Ref., BH1, BH2, BH3, BH4, BH5, BH6. Rows include BTEX, Total; Methyl tertiary butyl ether (MTBE); GRO >C5-C12; Aliphatics >C5-C6; Aliphatics >C6-C8; Aliphatics >C8-C10; Aliphatics >C10-C12; Total Aliphatics >C5-C12; Aromatics >C6-C7; Aromatics >C7-C8; Aromatics >EC8-EC10; Aromatics >EC10-EC12; Total Aromatics >C6-C12.

**SDG:** 100719-5  
**Job:** H\_BWB\_NTT-81  
**Client Reference:** NTE 285  
**Location:** THE DOVE WAY UTTOXETER

**Customer:** BWB Consulting  
**Attention:** Richard Robinson  
**Order No.:** NE09/619  
**Report No.:** 92959

Results Legend		Customer Sample Ref.	BH7	BH8	BH9	BROOK-DOWN	BROOK-MID	BROOK-UP
#	ISO17025 accredited.	<b>Depth (m)</b> <b>Sample Type</b> <b>Date Sampled</b> <b>Date Received</b> <b>SDG Ref</b> <b>Lab Sample No.(s)</b> <b>AGS Reference</b>	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
M	mCERTS accredited.		15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
aq	Aqueous / settled sample.		19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010
diss.filt	Dissolved / filtered sample.		100719-5	100719-5	100719-5	100719-5	100719-5	100719-5
tot.unfilt	Total / unfiltered sample.		1836214	1836172	1836164	1836045	1836018	1836224
*	subcontracted test.							
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.							
Component	LOD/Units	Method						
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	0.803 #	13.9 #	15.6 #	1.87 #	0.769 #	1.03 #
Conductivity @ 20 deg.C	<0.014 mS/cm	TM120	0.699 #	1.78 #	1.55 #	0.597 #	0.194 #	0.449 #
Arsenic (diss.filt)	<0.12 µg/l	TM152	1.13 #	1.8 #	1.98 #	1.85 #	1.17 #	1.27 #
Barium (diss.filt)	<0.03 µg/l	TM152	44.6 #	54.4 #	86.8 #	56.2 #	21.7 #	47.9 #
Beryllium (diss.filt)	<0.07 µg/l	TM152	<0.07 #	<0.07 #	<0.07 #	<0.07 #	0.091 #	<0.07 #
Boron (diss.filt)	<9.4 µg/l	TM152	110 #	217 #	149 #	90.4 #	31.5 #	49.3 #
Cadmium (diss.filt)	<0.1 µg/l	TM152	0.38 #	0.26 #	0.104 #	<0.1 #	0.122 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152	6.24 #	6.61 #	9.28 #	5.06 #	1.59 #	3.52 #
Copper (diss.filt)	<0.85 µg/l	TM152	0.875 #	6.22 #	3.61 #	1.62 #	5.83 #	4.55 #
Lead (diss.filt)	<0.02 µg/l	TM152	<0.02 #	0.051 #	0.108 #	1.98 #	1.28 #	1.97 #
Nickel (diss.filt)	<0.15 µg/l	TM152	5.14 #	9.35 #	7.43 #	4.3 #	1.18 #	2.58 #
Selenium (diss.filt)	<0.39 µg/l	TM152	0.961 #	8.05 #	5.81 #	0.766 #	0.674 #	0.727 #
Vanadium (diss.filt)	<0.24 µg/l	TM152	4.17 #	2.93 #	2.93 #	2.24 #	3.27 #	2.68 #
Zinc (diss.filt)	<0.41 µg/l	TM152	1.02 #	4.77 #	12.9 #	22.7 #	25.1 #	19.2 #
EPH Range >C10 - C40 (aq)	<46 µg/l	TM172	<46 #	823 #	1880 #	191 #	405 #	235 #
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
Sulphate	<3 mg/l	TM184	85.4 #	412 #	366 #	42.1 #	15.3 #	34.3 #
Cyanide, Total	<0.05 mg/l	TM227	<0.05 #	1.63 #	0.957 #	<0.05 #	<0.05 #	<0.05 #
pH	<1 pH Units	TM256	8.09 #	7.97 #	7.65 #	8.5 #	7.95 #	8.26 #
Phenols, Total monohydric	<0.015 mg/l	TM259	<0.015 #	<0.015 #	<0.015 #	<0.015 #	<0.015 #	<0.015 #

SDG: 100719-5
Job: H\_BWB\_NTT-81
Client Reference: NTE 285
Location: THE DOVE WAY UTTOXETER

Customer: BWB Consulting
Attention: Richard Robinson
Order No.: NE09/619
Report No: 92959

PAH Spec MS - Aqueous (W)

Table with 9 columns: Component, LOD/Units, Method, BH7, BH8, BH9, BROOK-DOWN, BROOK-MID, BROOK-UP. Rows include Naphthalene, Acenaphthene, Acenaphthylene, Fluoranthene, Anthracene, Phenanthrene, Fluorene, Chrysene, Pyrene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Dibenzo(a,h)anthracene, Benzo(g,h,i)perylene, Indeno(1,2,3-cd)pyrene, and Polyaromatic hydrocarbons, Total USEPA 16 (aq).

SDG: 100719-5  
 Job: H\_BWB\_NTT-81  
 Client Reference: NTE 285  
 Location: THE DOVE WAY UTTOXETER

Customer: BWB Consulting  
 Attention: Richard Robinson  
 Order No.: NE09/619  
 Report No: 92959

## TPH CWG (W)

Results Legend		Customer Sample Ref.	BH7	BH8	BH9	BROOK-DOWN	BROOK-MID	BROOK-UP	
#	ISO17025 accredited.	Depth (m) Sample Type Date Sampled Date Received SDG Ref Lab Sample No.(s) AGS Reference	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	
M	mCERTS accredited.		15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010	15/07/2010
aq	Aqueous / settled sample.		19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010	19/07/2010
diss.filt	Dissolved / filtered sample.		100719-5	100719-5	100719-5	100719-5	100719-5	100719-5	100719-5
tot.unfilt	Total / unfiltered sample.		1836214	1836172	1836164	1836045	1836018	1836224	
*	subcontracted test.								
**	% recovery of the surrogate standard to check the efficiency of the method. The results of the individual compounds within the samples are not corrected for this recovery.								
Component	LOD/Units		Method						
Total Aliphatics >C5-C35 (aq)	<10 µg/l		TM174	<10	<10	329	<10	<10	<10
Total Aromatics >C6-C35 (aq)	<10 µg/l		TM174	<10	317	635	<10	<10	<10
Total Aliphatics & Aromatics >C5-35 (aq)	<10 µg/l	TM174	<10	317	964	<10	<10	<10	
Aliphatics >C12-C16 (aq)	<10 µg/l	TM174	<10	<10	<10	<10	<10	<10	
Aromatics >EC12-EC16 (aq)	<10 µg/l	TM174	<10	28	<10	<10	<10	<10	
Aliphatics >C16-C21 (aq)	<10 µg/l	TM174	<10	<10	22	<10	<10	<10	
Aromatics >EC16-EC21 (aq)	<10 µg/l	TM174	<10	75	31	<10	<10	<10	
Aliphatics >C21-C35 (aq)	<10 µg/l	TM174	<10	<10	307	<10	<10	<10	
Aromatics >EC21-EC35 (aq)	<10 µg/l	TM174	<10	214	604	<10	<10	<10	
Total Aliphatics >C12-C35 (aq)	<10 µg/l	TM174	<10	<10	329	<10	<10	<10	
Total Aromatics >EC12-EC35 (aq)	<10 µg/l	TM174	<10	317	635	<10	<10	<10	
Total Aliphatics & Aromatics >C12-C35 (Aqueous)	<10 µg/l	TM174	<10	317	964	<10	<10	<10	
GRO Surrogate % recovery**	%	TM245	96	101	89	87	96	103	
GRO >C5-C12	<50 µg/l	TM245	<50	<50	<50	<50	<50	<50	
Benzene	<7 µg/l	TM245	<7 #	<7 #	<7 #	<7 #	<7 #	<7 #	
Ethylbenzene	<5 µg/l	TM245	<5 #	<5 #	<5 #	<5 #	<5 #	<5 #	
Toluene	<4 µg/l	TM245	<4 #	<4 #	<4 #	<4 #	<4 #	<4 #	
m,p-Xylene	<8 µg/l	TM245	<8 #	<8 #	<8 #	<8 #	<8 #	<8 #	
o-Xylene	<3 µg/l	TM245	<3 #	<3 #	<3 #	<3 #	<3 #	<3 #	
m,p,o-Xylene	<10 µg/l	TM245	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #	
BTEX, Total	<10 µg/l	TM245	<10 #	<10 #	<10 #	<10 #	<10 #	<10 #	
Methyl tertiary butyl ether (MTBE)	<3 µg/l	TM245	<3 #	<3 #	<3 #	<3 #	<3 #	<3 #	
Aliphatics >C5-C6	<10 µg/l	TM245	<10	<10	<10	<10	<10	<10	
Aliphatics >C6-C8	<10 µg/l	TM245	<10	<10	<10	<10	<10	<10	
Aliphatics >C8-C10	<10 µg/l	TM245	<10	<10	<10	<10	<10	<10	
Aliphatics >C10-C12	<10 µg/l	TM245	<10	<10	<10	<10	<10	<10	
Aromatics >C6-C7	<10 µg/l	TM245	<10	<10	<10	<10	<10	<10	
Aromatics >C7-C8	<10 µg/l	TM245	<10	<10	<10	<10	<10	<10	
Aromatics >EC8-EC10	<10 µg/l	TM245	<10	<10	<10	<10	<10	<10	
Aromatics >EC10-EC12	<10 µg/l	TM245	<10	<10	<10	<10	<10	<10	
Total Aliphatics >C5-C12	<10 µg/l	TM245	<10	<10	<10	<10	<10	<10	
Total Aromatics >C6-C12	<10 µg/l	TM245	<10	<10	<10	<10	<10	<10	

## Table of Results - Appendix

SDG Number : 100719-5

Client : BWB Consulting

Client Ref : NTE 285

### REPORT KEY

Results expressed as (e.g.) 1.03E-07 is equivalent to 1.03x10<sup>-7</sup>

<b>NDP</b>	No Determination Possible	<b>#</b>	ISO 17025 Accredited	*	Subcontracted Test	<b>M</b>	MCERTS Accredited
<b>NFD</b>	No Fibres Detected	<b>PFD</b>	Possible Fibres Detected	»	Result previously reported (Incremental reports only)	<b>EC</b>	Equivalent Carbon (Aromatics C8-C35)

Note: Method detection limits are not always achievable due to various circumstances beyond our control

Method No	Reference	Description	Wet/Dry Sample <sup>1</sup>
TM061	Method for the Determination of EPH, Massachusetts Dept. of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)	
TM099	BS 2690: Part 7:1968 / BS 6068: Part 2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser	
TM120	Method 2510B, AWWA/APHA, 20th Ed., 1999 / BS 2690: Part 9:1970	Determination of Electrical Conductivity using a Conductivity Meter	
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS	
TM172	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	EPH in Waters	
TM174	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Waters by GC-FID	
TM178	Modified: US EPA Method 8100	Determination of Polynuclear Aromatic Hydrocarbons (PAH) by GC-MS in Waters	
TM183	BS EN 23506:2002, (BS 6068-2.74:2002) ISBN 0 580 38924 3	Determination of Trace Level Mercury in Waters and Leachates by PSA Cold Vapour Atomic Fluorescence Spectrometry	
TM184	EPA Methods 325.1 & 325.2,	The Determination of Anions in Aqueous Matrices using the Kone Spectrophotometric Analysers	
TM227	Standard methods for the examination of waters and wastewaters 20th Edition, AWWA/APHA Method 4500.	Determination of Total Cyanide, Free (Easily Liberatable) Cyanide and Thiocyanate	
TM245	By GC-FID	Determination of GRO by Headspace in waters	
TM256	The measurement of Electrical Conductivity and the Laboratory determination of pH Value of Natural, Treated and Wastewaters. HMSO, 1978. ISBN 011 751428 4.	Determination of pH in Water and Leachate using the GLpH pH Meter	
TM259			

<sup>1</sup> Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

# APPENDIX

## APPENDIX

1. Results are expressed on a dry weight basis (dried at 35°C) for all soil analyses except for the following:  
NRA Leach tests, flash point, ammonium as NH<sub>4</sub> by the BRE method, VOC TICS, SVOC TICS, TOF-MS SCAN/SEARCH and TOF-MS TICS.
2. Samples will be run in duplicate upon request, but an additional charge may be incurred.
3. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for both soil jars, tubs and volatile jars. All waters and vials will be discarded 10 days after the analysis is completed (e-mailed). All material removed during an asbestos containing material screen and analysed for the presence of asbestos will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALcontrol Laboratories reserve the right to charge for samples received and stored but not analysed.
4. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.
5. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.
6. When requested, the individual sub sample scheduled will be screened in house for the presence of large asbestos containing material fragments/pieces. If no asbestos containing material is found this will be reported as 'no asbestos containing material detected'. If asbestos containing material is detected it will be removed and analysed by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If asbestos containing material is present no further analysis will be undertaken. At no point is the fibre content of the soil sample determined.
7. If no separate volatile sample is supplied by the client, the integrity of the data may be compromised if the laboratory is required to create a sub-sample from the bulk sample – similarly, if a headspace or sediment is present in the volatile sample. This will be flagged up as an invalid VOC on the test schedule or recorded on the log sheet.
8. If appropriate preserved bottles are not received preservation will take place on receipt. However, the integrity of the data may be compromised.
9. NDP – No determination possible due to insufficient/unsuitable sample.
10. Metals in water are performed on a filtered sample, and therefore represent dissolved metals – total metals must be requested separately.
11. A table containing the date of analysis for each parameter is not routinely included with the report, but is available upon request.
12. Results relate only to the items tested
13. **Surrogate recoveries** – Most of our organic methods include surrogates, the recovery of which is monitored and reported.  
For EPH, MO, PAH, GRO and VOCs on soils the result is not surrogate corrected, but a percentage recovery is quoted. Acceptable limits for most organic methods are 70 – 130 %.
14. **Product analyses** – Organic analyses on products can only be semi-quantitative due to the matrix effects and high dilution factors employed.
15. Phenols monohydric by HPLC include phenol, cresols (2-Methylphenol, 3-Methylphenol and 4-Methylphenol) and Xylenols (2,3 Dimethylphenol, 2,4 Dimethylphenol, 2,5 Dimethylphenol, 2,6 Dimethylphenol, 3,4 Dimethylphenol, 3,5 Dimethylphenol).
16. Total of 5 speciated phenols by HPLC includes Phenol, 2,3,5-Trimethyl Phenol, 2-Isopropylphenol, Cresols and Xylenols (as detailed in 14).
17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.
18. Our MCERTS accreditation for PAHs by GCMS applies to all product types apart from Kerosene, where naphthalene only is not accredited.
19. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.
19. Mercury results quoted on soils will not include volatile mercury as the analysis is performed on a dried and crushed sample.
20. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.
21. For all leachate preparations (NRA, DIN, TCLP, BSEN 12457-1, 2, 3) volatile loss may occur, as we do not employ zero headspace extraction.
22. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials – whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.
23. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C4 – C10 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

**LIQUID MATRICES EXTRACTION SUMMARY**

ANALYSIS	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
PAH MS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
EPH	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
EPH CWG	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
MINERAL OIL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC FID
PCB 7 CONGENERS	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GC MS
PCB TOTAL	HEXANE	STIRRED EXTRACTION (STIR-BAR)	GS MS
SVOC	DCM	LIQUID/LIQUID SHAKE	GC MS
FREE SULPHUR	DCM	SOLID PHASE EXTRACTION	HPLC
PEST OCP/OPP	DCM	LIQUID/LIQUID SHAKE	GC MS
TRIAZINE HERBS	DCM	LIQUID/LIQUID SHAKE	GC MS
PHENOLS MS	DCM	SOLID PHASE EXTRACTION	GC MS
TPH by INFRA RED (IR)	TCE	LIQUID/LIQUID EXTRACTION	HPLC
MINERAL OIL by IR	TCE	LIQUID/LIQUID EXTRACTION	HPLC
GLYCOLS	NONE	DIRECT INJECTION	GC FID

**SOLID MATRICES EXTRACTION SUMMARY**

ANALYSIS	D/C OR WET	EXTRACTION SOLVENT	EXTRACTION METHOD	ANALYSIS
Solvent Extractable Matter	D&C	DCM	SOXTHERM	GRAVIMETRIC
Cyclohexane Ext. Matter	D&C	CYCLOHEXANE	SOXTHERM	GRAVIMETRIC
Thin Layer Chromatography	D&C	DCM	SOXTHERM	IATROSCAN
Elemental Sulphur	D&C	DCM	SOXTHERM	HPLC
Phenols by GCMS	WET	DCM	SOXTHERM	GC-MS
Herbicides	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
Pesticides	D&C	HEXANE:ACETONE	SOXTHERM	GC-MS
EPH (DRO)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (Min oil)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH (Cleaned up)	D&C	HEXANE:ACETONE	END OVER END	GC-FID
EPH CWG by GC	D&C	HEXANE:ACETONE	END OVER END	GC-FID
PCB tot / PCB con	D&C	HEXANE:ACETONE	END OVER END	GC-MS
Polyaromatic Hydrocarbons (MS)	WET	HEXANE:ACETONE	Microwave TM218.	GC-MS
C8-C40 (C6-C40)EZ Flash	WET	HEXANE:ACETONE	SHAKER	GC-EZ
Polyaromatic Hydrocarbons Rapid GC	WET	HEXANE:ACETONE	SHAKER	GC-EZ
Semi Volatile Organic Compounds	WET	DCM:ACETONE	SONICATE	GC-MS



## **Identification of Asbestos in Bulk Materials**

The results for asbestos identification for soil samples are obtained from possible Asbestos Containing Material, removed during the 'Screening of soils for Asbestos Containing Materials', which have been examined to determine the presence of asbestos fibres using Alcontrol Laboratories (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2005).

### **Visual Estimation Of Fibre Content.**

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: -

Trace – Where only one or two asbestos fibres were identified.

**Further guidance on typical asbestos fibre content of manufactured products can be found in MDHS 100.**

**The identification of asbestos containing materials falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.**

### **Asbestos Type**

### **Common Name**

Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

**APPENDIX 6**  
**GEOTECHNICAL SOIL LABORATORY ANALYTICAL RESULTS**



# LABORATORY REPORT



4043

**Contract Number: PSL10/1341**

Client's Reference:

Report Date: 04 August 2010

Client Name: BWB Consulting  
3-4 Kayes Walk  
The Lace Market  
Nottingham

NG1 1PY

**For the attention of: Richard Robinson**

Contract Title: The Dove Way, Uttoxeter

Date Received: 19-Jul-10

Date Commenced: 19-Jul-10

Date Completed: 4-Aug-10

**Notes: Observations and Interpretations are outside the UKAS Accreditation**

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. 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 in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

R Gunson  
(Director)

A Watkins  
(Director)


D Lambe  
(Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,  
Doncaster DN4 0AR  
tel: +44 (0)844 815 6641  
fax: +44 (0)844 815 6642  
e-mail: [rgunson@prosoils.co.uk](mailto:rgunson@prosoils.co.uk)  
[awatkins@prosoils.co.uk](mailto:awatkins@prosoils.co.uk)

Page 1 of

## SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Depth m	Description of Sample
BH1		D	1.80	Dark brown gravelly sandy CLAY
BH1		B	4.00-4.50	Brown sandy slightly silty GRAVEL with some cobbles.
BH2		B	3.00-3.50	Brown sandy slightly silty GRAVEL.
BH2		B	6.50-7.00	Brown sandy slightly silty GRAVEL.
BH2		D	8.90	Reddish brown very sandy CLAY.
BH3		D	2.60	Brown slightly sandy CLAY.
BH3		B	4.00-4.50	Brown very sandy silty GRAVEL with occasional cobbles.
BH3		B	6.50-7.00	Brown sandy slightly silty GRAVEL.
BH3		D	8.40	Reddish brown very sandy CLAY.
BH4		D	0.90	Brown slightly sandy CLAY.
BH4		B	1.50-2.00	Brown sandy slightly silty GRAVEL.
BH4		B	3.00-3.50	Brown very sandy slightly silty GRAVEL.
BH4		D	5.40	Reddish brown slightly gravelly very sandy CLAY.
BH5		D	3.00	Reddish brown very sandy CLAY.
BH6		D	0.50	Brown slightly gravelly very sandy CLAY.
BH6		B	3.00-3.50	Brown slightly gravelly slightly silty SAND.
BH6		D	6.70	Reddish brown very sandy CLAY.
BH7		B	0.20-0.70	MADE GROUND dark brown very sandy clayey gravel with some cobbles.
BH7		B	2.00-2.50	Brown very sandy slightly silty GRAVEL.

 <b>Professional Soils Laboratory</b>	Compiled by	Date	Checked by	Date	Approved by	Date
	<i>Mat</i>	29/07/10	<i>es</i>	04/08/10	<i>es</i>	04/08/10
	<b>THE DOVE WAY, UTTOXETER.</b>				Contract No:	PSL10/1341
				Client Ref:	NTE285	

# SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Depth m	Description of Sample
BH7		D	4.60	Reddish brown slightly gravelly very sandy CLAY.
BH8		B	3.00-3.50	Brown very sandy slightly silty GRAVEL.
BH8		D	6.00	Brown gravelly very sandy CLAY.
BH9		D	2.50	Reddish brown gravelly very sandy CLAY.
BH9		D	4.50	Reddish brown gravelly very sandy CLAY.
TP101		D	0.50	Brown mottled grey slightly sandy CLAY.
TP101		B	2.00	Brown very sandy silty GRAVEL.
TP108		B	2.20	Brown slightly gravelly slightly silty SAND.



Compiled by	Date	Checked by	Date	Approved by	Date
<i>Maat</i>	29/07/10	<i>es</i>	04/08/10	<i>es</i>	04/08/10
<b>THE DOVE WAY, UTTOXETER.</b>				<b>Contract No:</b>	<b>PSL10/1341</b>
				<b>Client Ref:</b>	<b>NTE285</b>


# SUMMARY OF SOIL CLASSIFICATION TESTS

(B.S. 1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Depth m	Moisture Content % <small>Clause 3.2</small>	Bulk Density Mg/m <sup>3</sup> <small>Clause 7.2</small>	Dry Density Mg/m <sup>3</sup> <small>Clause 7.2</small>	Particle Density Mg/m <sup>3</sup> <small>Clause 8.</small>	Liquid Limit % <small>Clause 4.3/4.4</small>	Plastic Limit % <small>Clause 5.</small>	Plasticity Index % <small>Clause 6.</small>	% Passing .425mm	Remarks
BH1		D	1.80	25				43	24	19	80	Intermediate plasticity CI.
BH2		D	8.90	15				32	18	14	100	Low plasticity CL.
BH3		D	2.60	34				56	26	30	100	High plasticity CH.
BH3		D	8.40	17				32	19	13	100	Low plasticity CL.
BH4		D	0.90	28				55	27	28	100	High plasticity CH.
BH4		D	5.40	18				30	17	13	96	Low plasticity CL.
BH5		D	3.00	20				34	20	14	100	Low plasticity CL.
BH6		D	0.50	22				29	17	12	95	Low plasticity CL.
BH6		D	6.70	24				34	20	14	100	Low plasticity CL.
BH7		D	4.60	18				32	20	12	98	Low plasticity CL.
BH8		D	6.00	21				31	19	12	84	Low plasticity CL.
BH9		D	2.50	12				27	15	12	81	Low plasticity CL.
BH9		D	4.50	17				28	17	11	80	Low plasticity CL.
TP101		D	0.50	34				53	26	27	100	High plasticity CH.

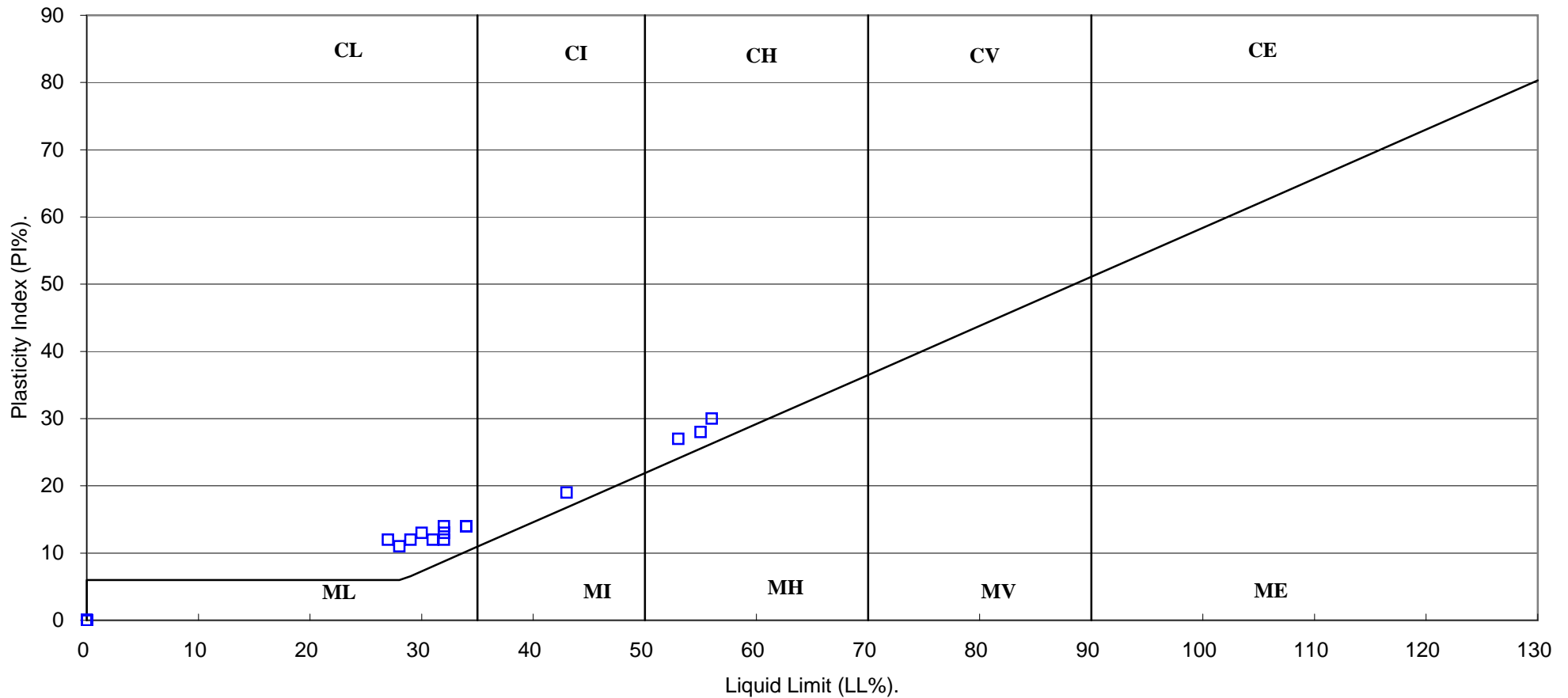
SYMBOLS : NP : Non Plastic

\* : Liquid Limit and Plastic Limit Wet Sieved.

	Compiled by	Date	Checked by	Date	Approved by	Date
	<i>Mat</i>	29/07/10	<i>eg</i>	04/08/10	<i>eg</i>	04/08/10
	<b>THE DOVE WAY, UTTOXETER.</b>					Contract No:
					Client Ref:	NTE285

# PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

(B.S.5930 : 1999)



Compiled by	Date	Checked by	Date	Approved by	Date
<i>Mat</i>	29/07/10	<i>es</i>	04/08/10	<i>es</i>	04/08/10
<b>THE DOVE WAY, UTTOXETER.</b>				Contract No:	PSL10/1341
				Client Ref:	NTE285

# Particle Size Distribution Test

BS1377 : Part 2 : 1990

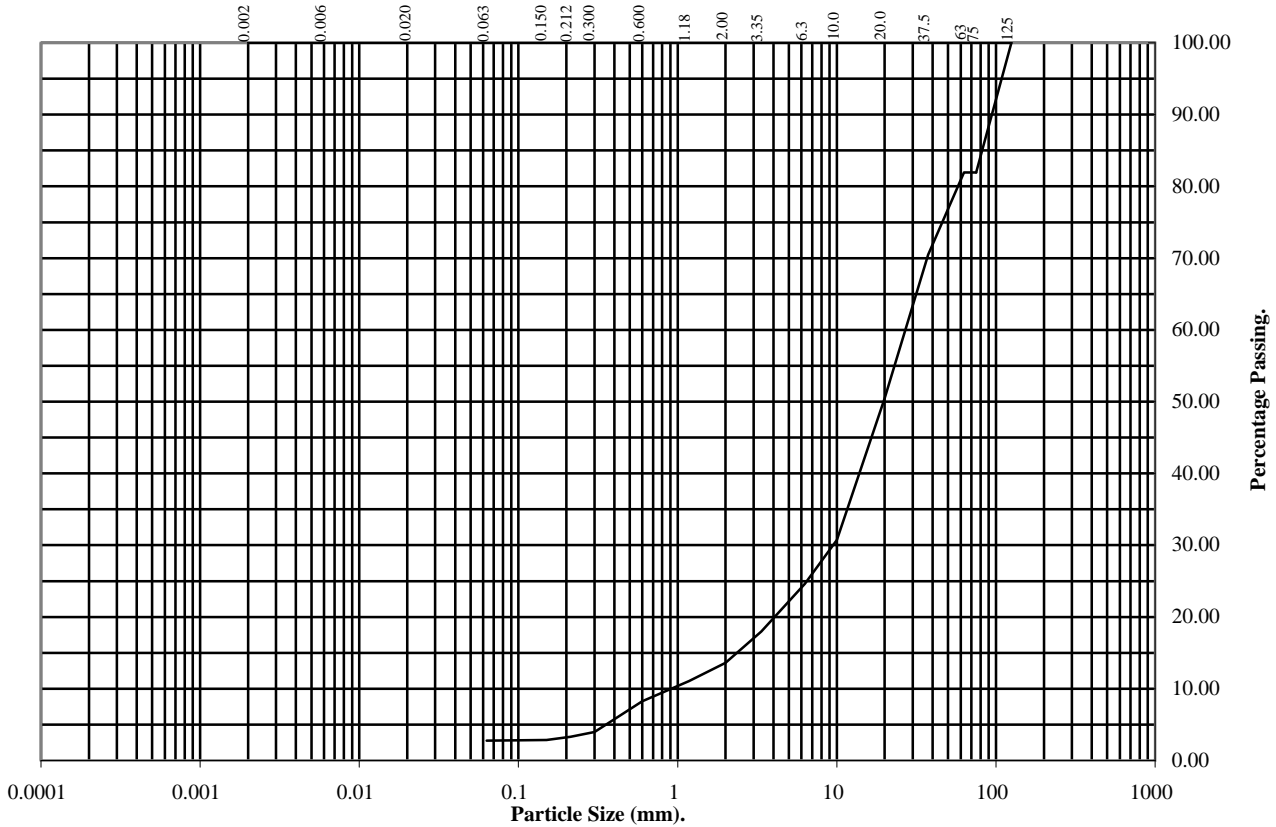
Wet Sieve, Clause 9.2

Hole Number: **BH1**

Depth (m): **4.00-4.50**

Sample Number:

Sample Type: **B**



BS Test Sieve	Percentage Passing
125	100
75	82
63	82
37.5	70
20	50
10	31
6.3	25
3.35	18
2	14
1.18	11
0.6	8
0.3	4
0.212	3
0.15	3
0.063	3

Soil Fraction	Total Percentage
Cobbles	18
Gravel	68
Sand	11
Silt / Clay	3

**Remarks:**  
See summary of soil descriptions.

Checked By	Date	Approved By	Date
<i>[Signature]</i>	04/08/10	<i>[Signature]</i>	04/08/10

 <b>Professional Soils Laboratory</b>	<b>THE DOVE WAY, UTTOXETER.</b>	<b>Contract No.:</b> <b>PSL10/1341</b>
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# Particle Size Distribution Test

BS1377 : Part 2 : 1990

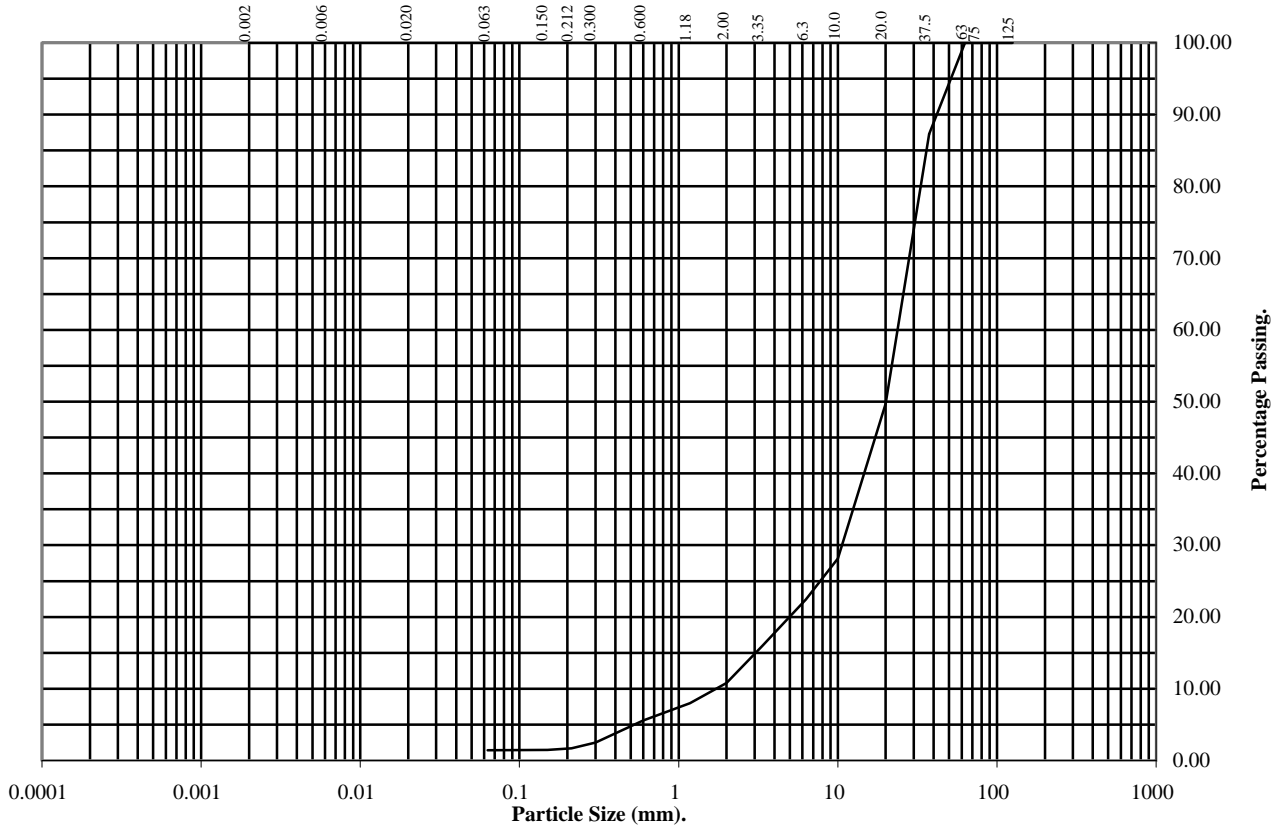
Wet Sieve, Clause 9.2

Hole Number: BH2

Depth (m): 3.00-3.50

Sample Number:

Sample Type: B



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	87
20	50
10	28
6.3	22
3.35	16
2	11
1.18	8
0.6	6
0.3	2
0.212	2
0.15	1
0.063	1

Soil Fraction	Total Percentage
Cobbles	0
Gravel	89
Sand	10
Silt / Clay	1

**Remarks:**  
See summary of soil descriptions.

Checked By	Date	Approved By	Date
<i>[Signature]</i>	04/08/10	<i>[Signature]</i>	04/08/10

 <b>Professional Soils Laboratory</b>	<b>THE DOVE WAY, UTTOXETER.</b>	<b>Contract No.:</b> <b>PSL10/1341</b>
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# Particle Size Distribution Test

BS1377 : Part 2 : 1990

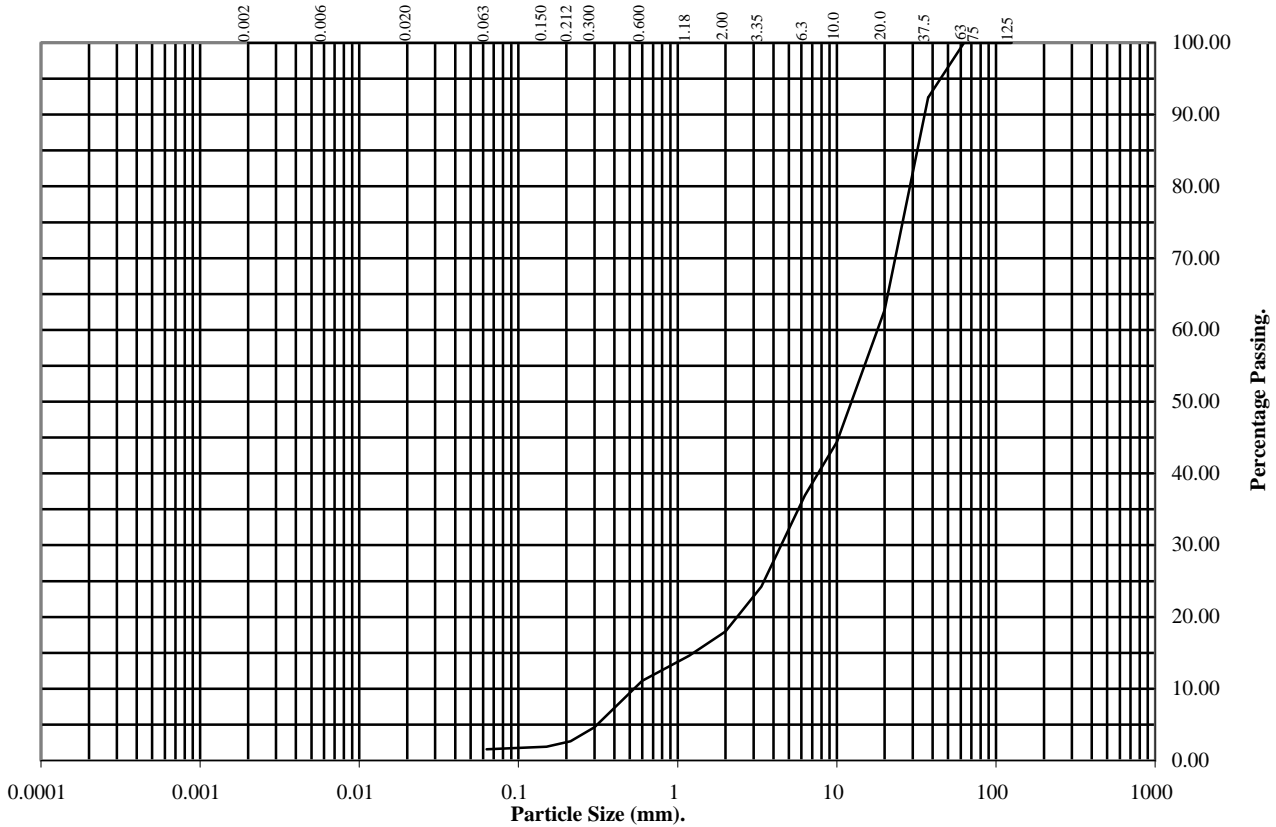
Wet Sieve, Clause 9.2

Hole Number: BH2

Depth (m): 6.50-7.00

Sample Number:

Sample Type: B



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	92
20	63
10	44
6.3	37
3.35	24
2	18
1.18	15
0.6	11
0.3	5
0.212	3
0.15	2
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	82
Sand	16
Silt / Clay	2

**Remarks:**  
See summary of soil descriptions.

Checked By	Date	Approved By	Date
<i>[Signature]</i>	04/08/10	<i>[Signature]</i>	04/08/10

 <b>Professional Soils Laboratory</b>	<b>THE DOVE WAY, UTTOXETER.</b>	<b>Contract No.:</b> <b>PSL10/1341</b>
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# Particle Size Distribution Test

BS1377 : Part 2 : 1990

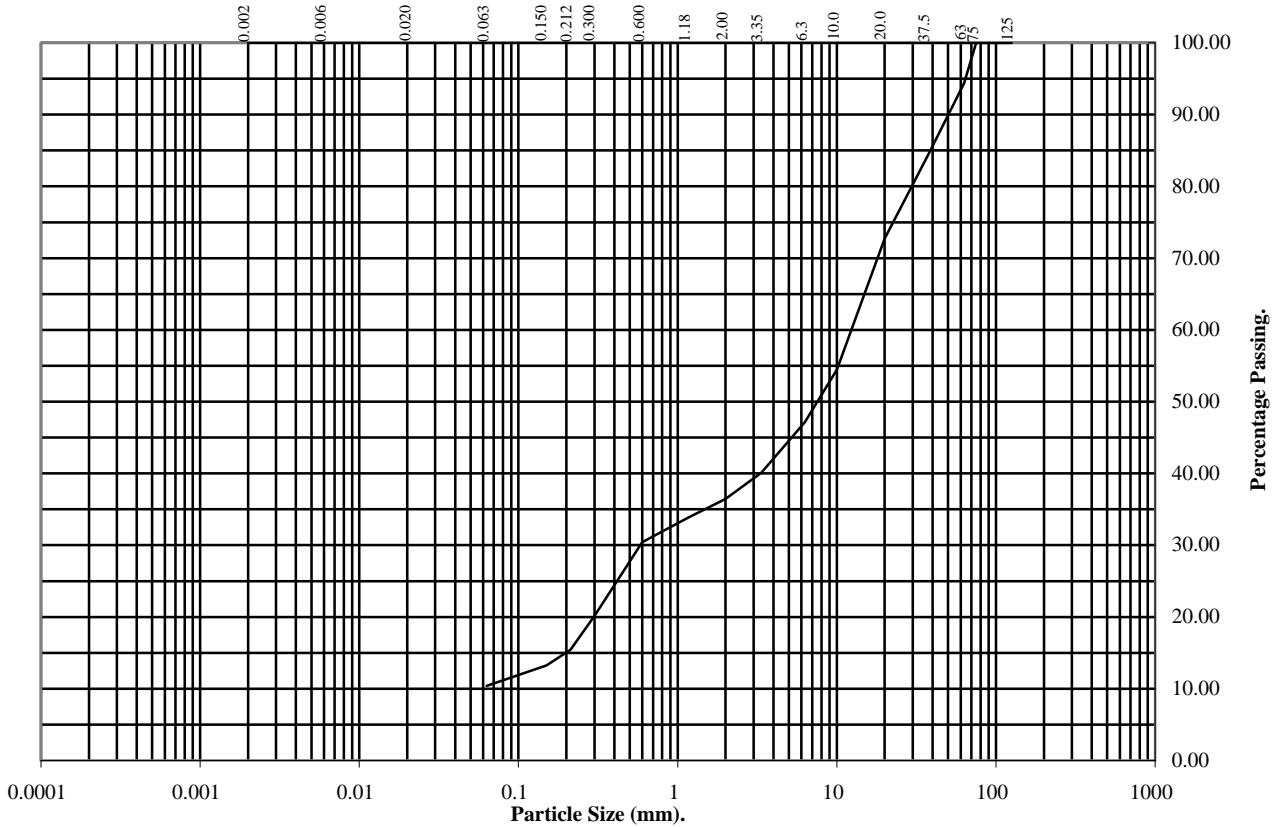
Wet Sieve, Clause 9.2

Hole Number: BH3

Depth (m): 4.00-4.50

Sample Number:

Sample Type: B



BS Test Sieve	Percentage Passing
125	100
75	100
63	94
37.5	84
20	73
10	54
6.3	47
3.35	40
2	36
1.18	34
0.6	30
0.3	20
0.212	15
0.15	13
0.063	10

Soil Fraction	Total Percentage
Cobbles	6
Gravel	58
Sand	26
Silt / Clay	10

**Remarks:**  
See summary of soil descriptions.

Checked By	Date	Approved By	Date
<i>[Signature]</i>	04/08/10	<i>[Signature]</i>	04/08/10



THE DOVE WAY, UTTOXETER.

Contract No.: PSL10/1341

# Particle Size Distribution Test

BS1377 : Part 2 : 1990

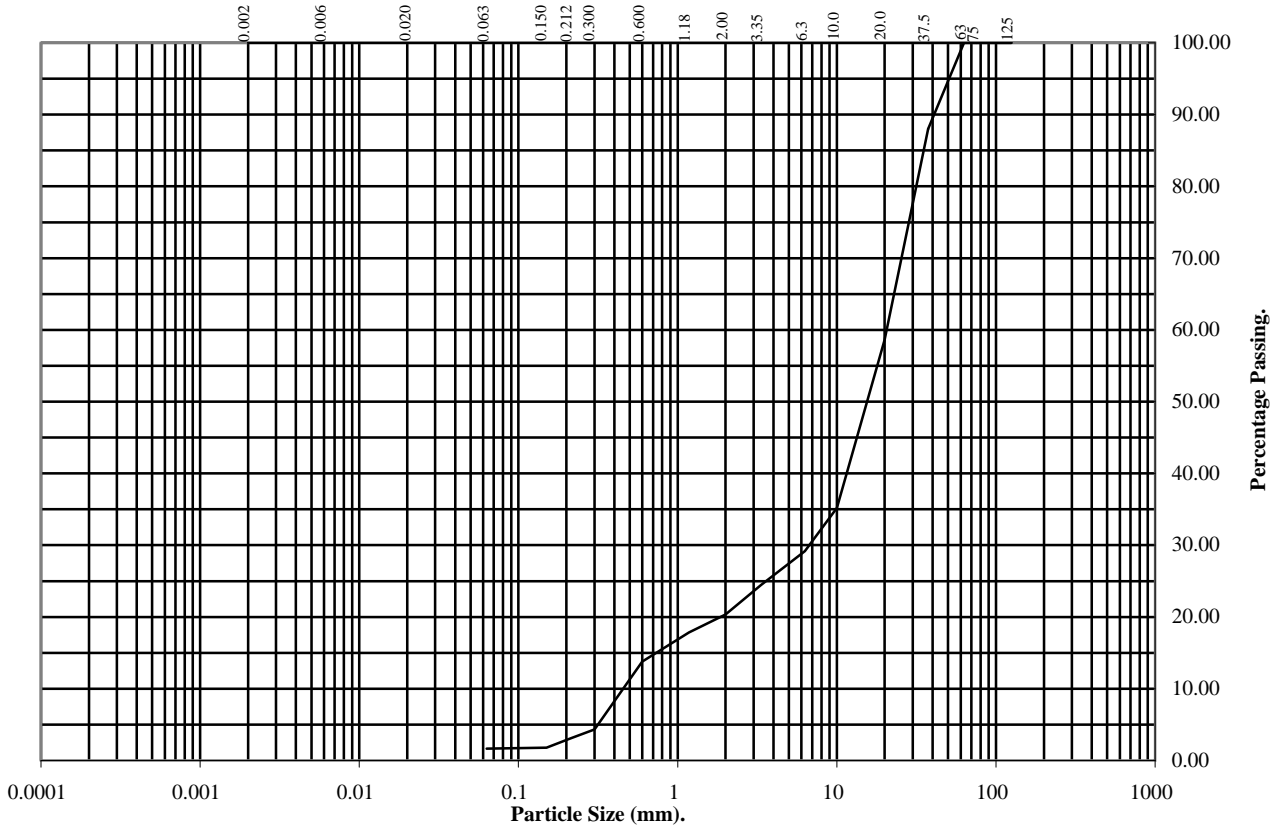
Wet Sieve, Clause 9.2

Hole Number: BH3

Depth (m): 6.50-7.00

Sample Number:

Sample Type: B



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	88
20	59
10	35
6.3	29
3.35	24
2	20
1.18	18
0.6	14
0.3	4
0.212	3
0.15	2
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	80
Sand	18
Silt / Clay	2

**Remarks:**  
See summary of soil descriptions.

Checked By	Date	Approved By	Date
<i>[Signature]</i>	04/08/10	<i>[Signature]</i>	04/08/10

 <b>Professional Soils Laboratory</b>	<b>THE DOVE WAY, UTTOXETER.</b>	<b>Contract No.:</b> <b>PSL10/1341</b>
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# Particle Size Distribution Test

BS1377 : Part 2 : 1990

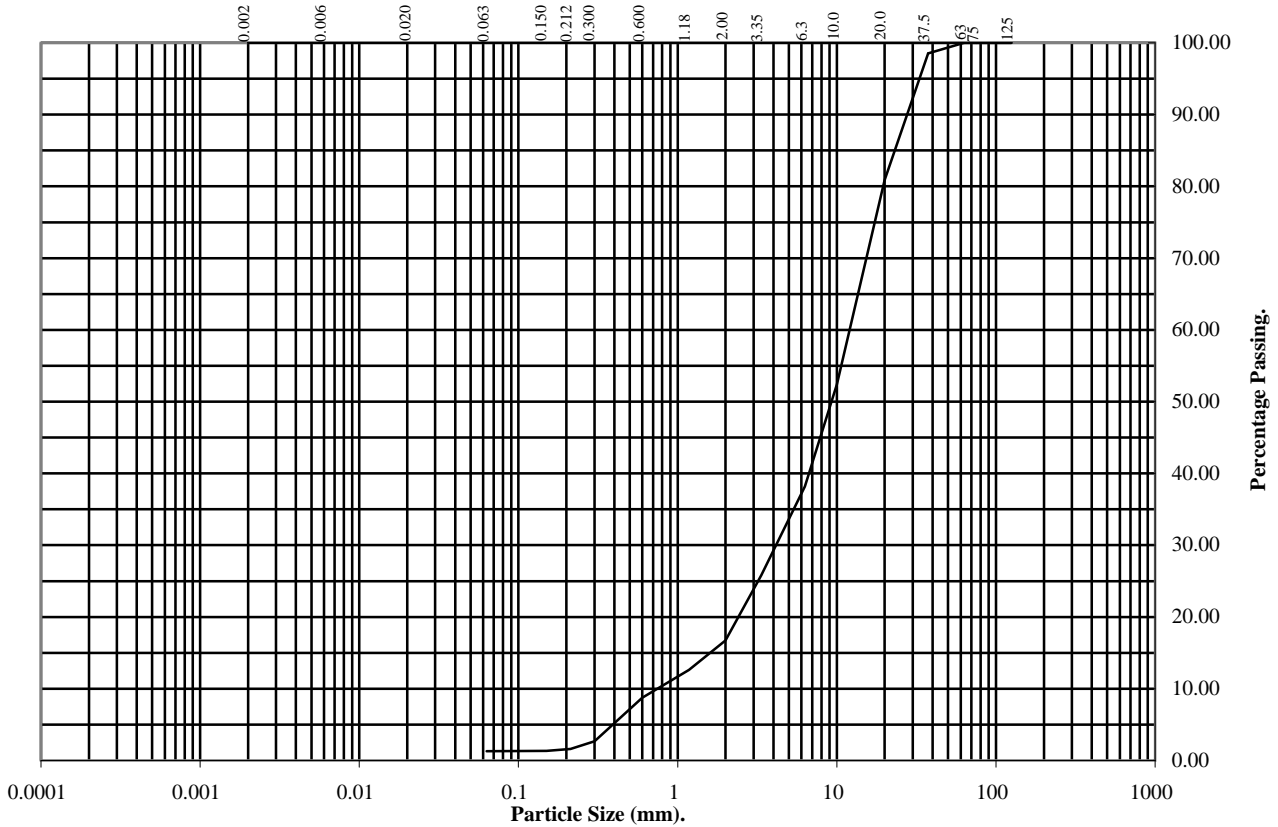
Wet Sieve, Clause 9.2

Hole Number: **BH4**

Depth (m): **1.50-2.00**

Sample Number:

Sample Type: **B**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	99
20	81
10	52
6.3	38
3.35	26
2	17
1.18	13
0.6	9
0.3	3
0.212	2
0.15	1
0.063	1

Soil Fraction	Total Percentage
Cobbles	0
Gravel	83
Sand	16
Silt / Clay	1

**Remarks:**  
See summary of soil descriptions.

Checked By	Date	Approved By	Date
<i>[Signature]</i>	04/08/10	<i>[Signature]</i>	04/08/10

 <b>Professional Soils Laboratory</b>	<b>THE DOVE WAY, UTTOXETER.</b>	<b>Contract No.:</b> <b>PSL10/1341</b>
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# Particle Size Distribution Test

BS1377 : Part 2 : 1990

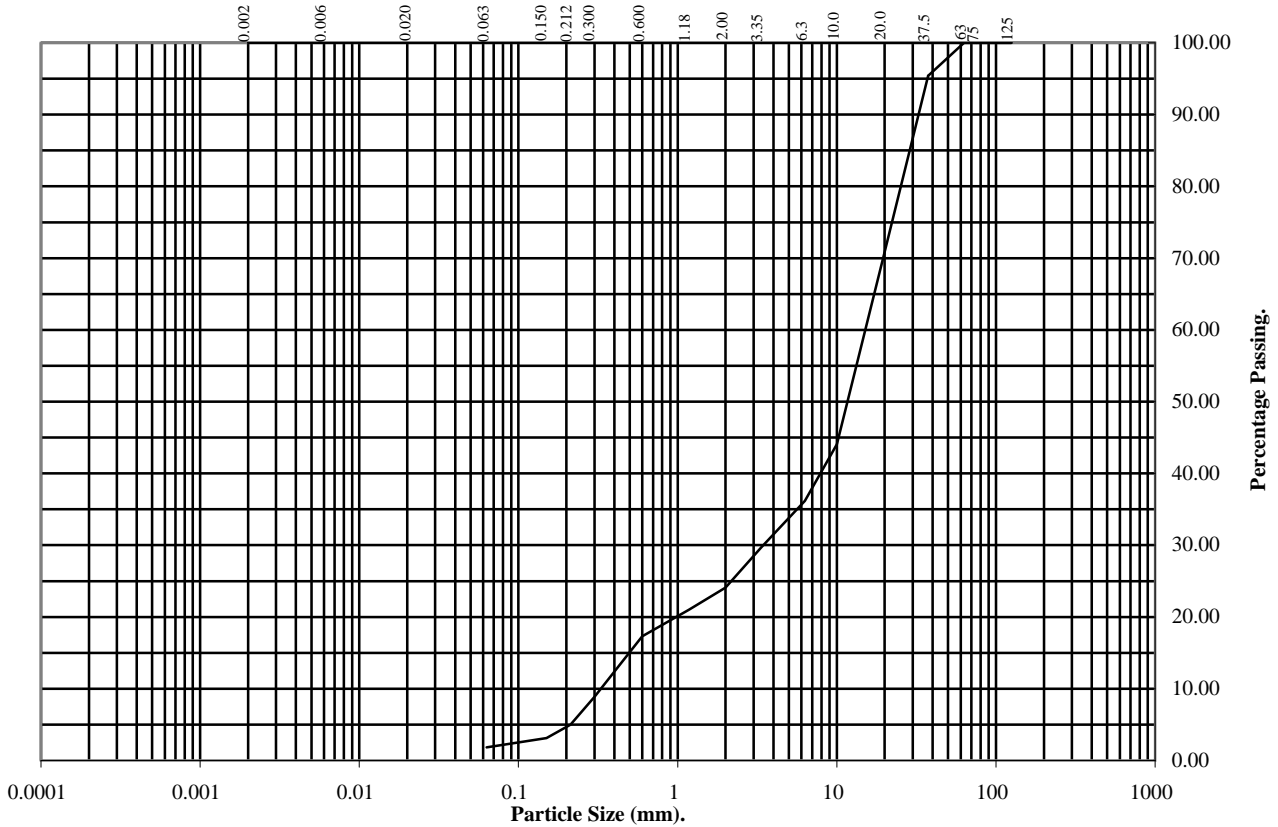
Wet Sieve, Clause 9.2

Hole Number: **BH4**

Depth (m): **3.00-3.50**

Sample Number:

Sample Type: **B**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	95
20	71
10	44
6.3	36
3.35	30
2	24
1.18	21
0.6	17
0.3	9
0.212	5
0.15	3
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	76
Sand	22
Silt / Clay	2

**Remarks:**  
See summary of soil descriptions.

Checked By	Date	Approved By	Date
<i>[Signature]</i>	04/08/10	<i>[Signature]</i>	04/08/10

 <b>Professional Soils Laboratory</b>	<b>THE DOVE WAY, UTTOXETER.</b>	<b>Contract No.:</b> <b>PSL10/1341</b>
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# Particle Size Distribution Test

BS1377 : Part 2 : 1990

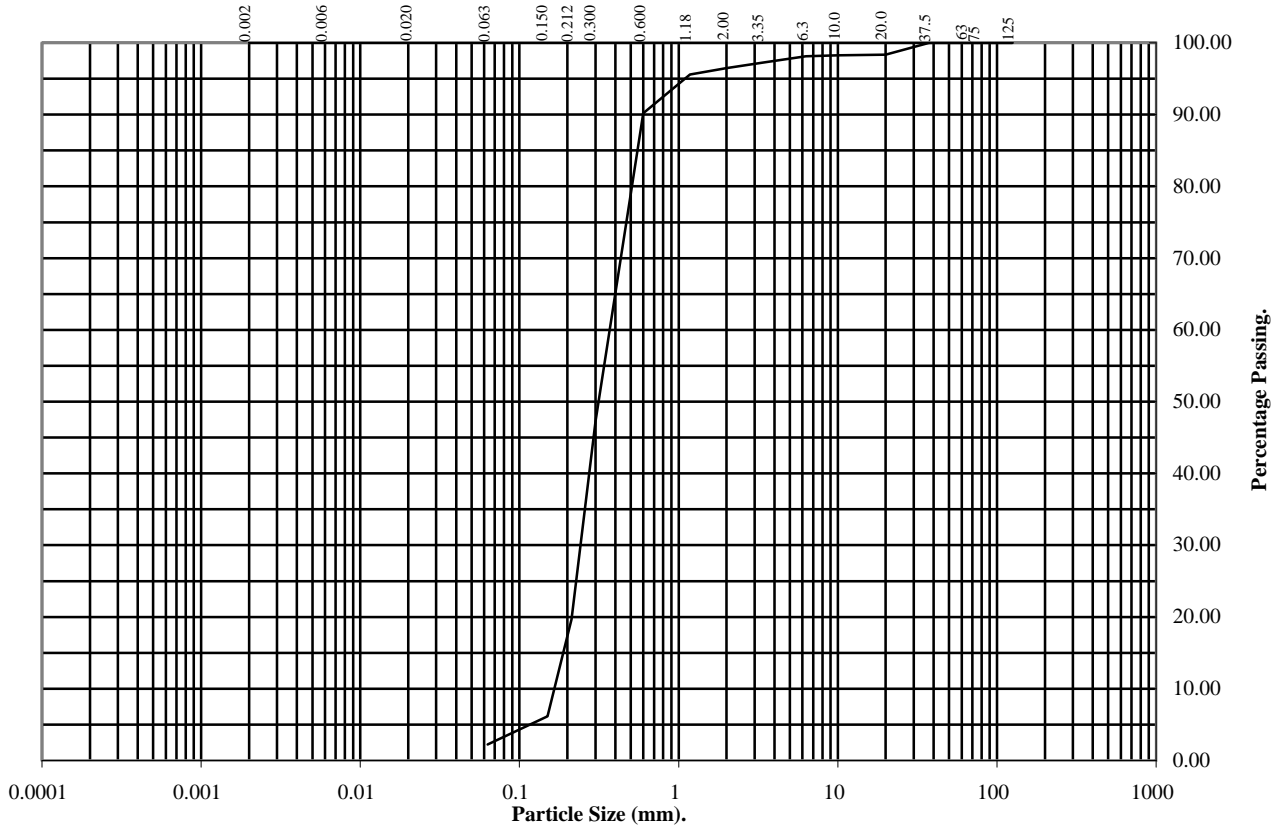
Wet Sieve, Clause 9.2

Hole Number: **BH6**

Depth (m): **3.00-3.50**

Sample Number:

Sample Type: **B**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	98
6.3	98
3.35	97
2	96
1.18	96
0.6	90
0.3	47
0.212	20
0.15	6
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	4
Sand	94
Silt / Clay	2

**Remarks:**  
See summary of soil descriptions.

Checked By	Date	Approved By	Date
<i>[Signature]</i>	04/08/10	<i>[Signature]</i>	04/08/10

**PSL**  
Professional Soils Laboratory

THE DOVE WAY, UTTOXETER.

Contract No.:  
PSL10/1341

# Particle Size Distribution Test

BS1377 : Part 2 : 1990

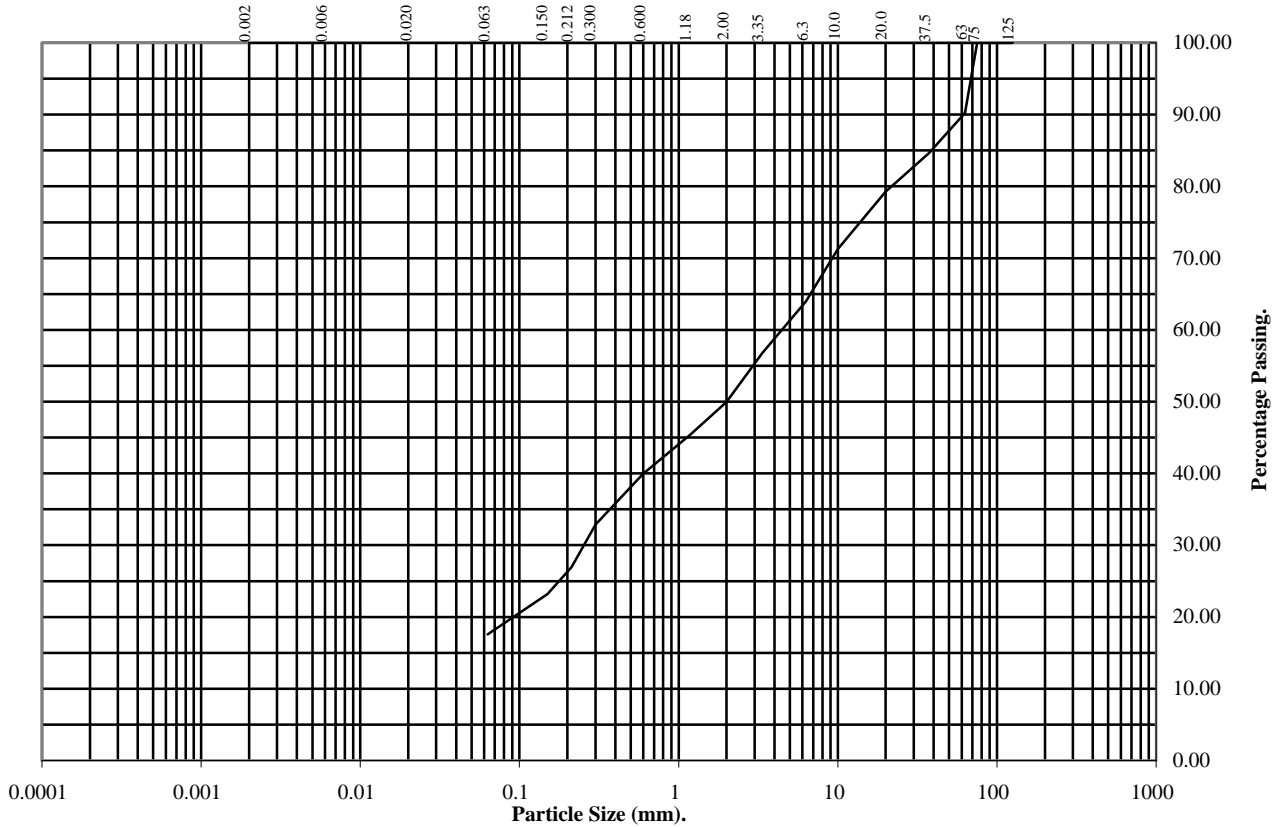
Wet Sieve, Clause 9.2

Hole Number: **BH7**

Depth (m): **0.20-0.70**

Sample Number:

Sample Type: **B**



BS Test Sieve	Percentage Passing
125	100
75	100
63	90
37.5	85
20	79
10	71
6.3	64
3.35	57
2	50
1.18	45
0.6	40
0.3	33
0.212	27
0.15	23
0.063	18

Soil Fraction	Total Percentage
Cobbles	10
Gravel	40
Sand	32
Silt / Clay	18

**Remarks:**  
See summary of soil descriptions.

Checked By	Date	Approved By	Date
<i>[Signature]</i>	04/08/10	<i>[Signature]</i>	04/08/10

 <b>Professional Soils Laboratory</b>	<b>THE DOVE WAY, UTTOXETER.</b>	<b>Contract No.:</b> <b>PSL10/1341</b>
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# Particle Size Distribution Test

BS1377 : Part 2 : 1990

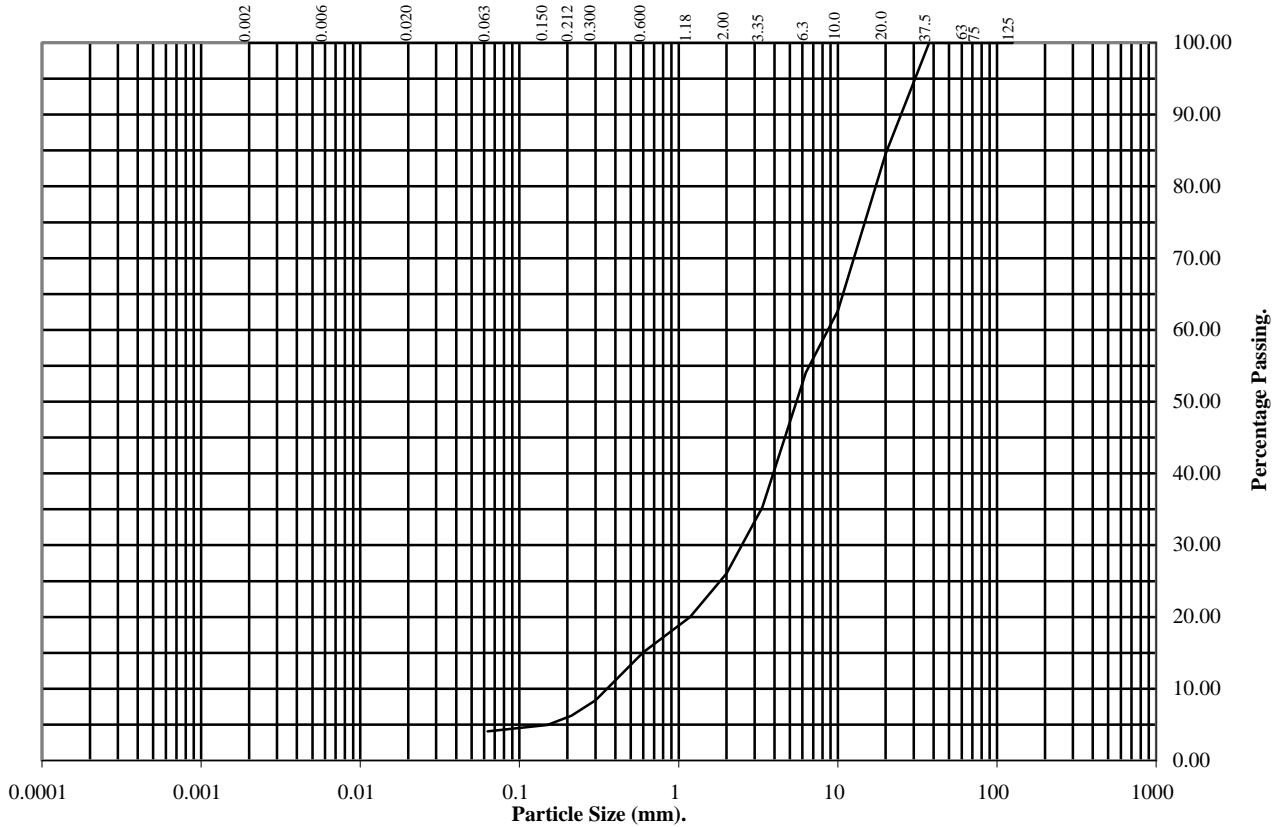
Wet Sieve, Clause 9.2

Hole Number: **BH7**

Depth (m): **2.00-2.50**

Sample Number:

Sample Type: **B**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	100
20	85
10	63
6.3	54
3.35	35
2	26
1.18	20
0.6	15
0.3	8
0.212	6
0.15	5
0.063	4

Soil Fraction	Total Percentage
Cobbles	0
Gravel	74
Sand	22
Silt / Clay	4

**Remarks:**  
See summary of soil descriptions.

Checked By	Date	Approved By	Date
<i>[Signature]</i>	04/08/10	<i>[Signature]</i>	04/08/10

 <b>Professional Soils Laboratory</b>	<b>THE DOVE WAY, UTTOXETER.</b>	<b>Contract No.:</b> <b>PSL10/1341</b>
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# Particle Size Distribution Test

BS1377 : Part 2 : 1990

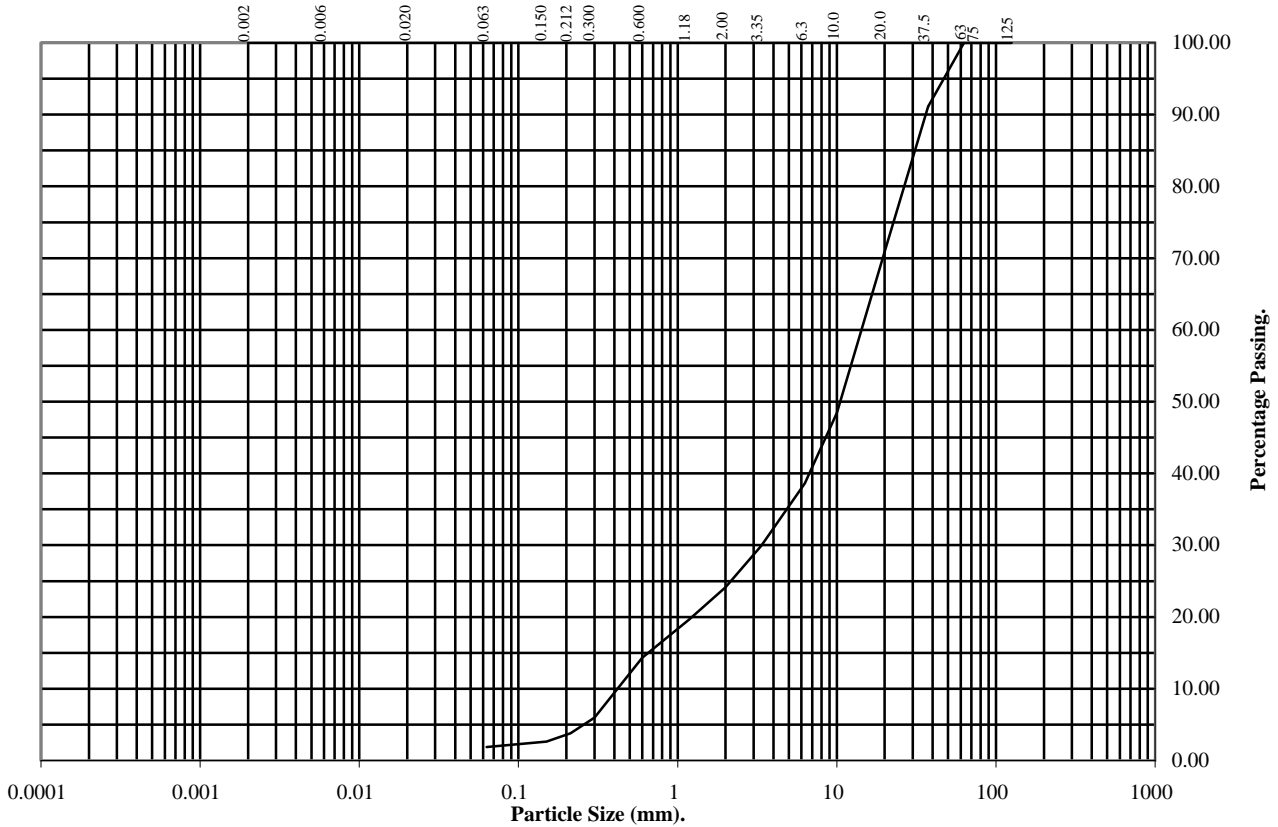
Wet Sieve, Clause 9.2

Hole Number: **BH8**

Depth (m): **3.00-3.50**

Sample Number:

Sample Type: **B**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	91
20	71
10	48
6.3	39
3.35	30
2	24
1.18	20
0.6	14
0.3	6
0.212	4
0.15	3
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	76
Sand	22
Silt / Clay	2

**Remarks:**  
See summary of soil descriptions.

Checked By	Date	Approved By	Date
<i>[Signature]</i>	04/08/10	<i>[Signature]</i>	04/08/10

 <b>Professional Soils Laboratory</b>	<b>THE DOVE WAY, UTTOXETER.</b>	<b>Contract No.:</b> <b>PSL10/1341</b>
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# Particle Size Distribution Test

BS1377 : Part 2 : 1990

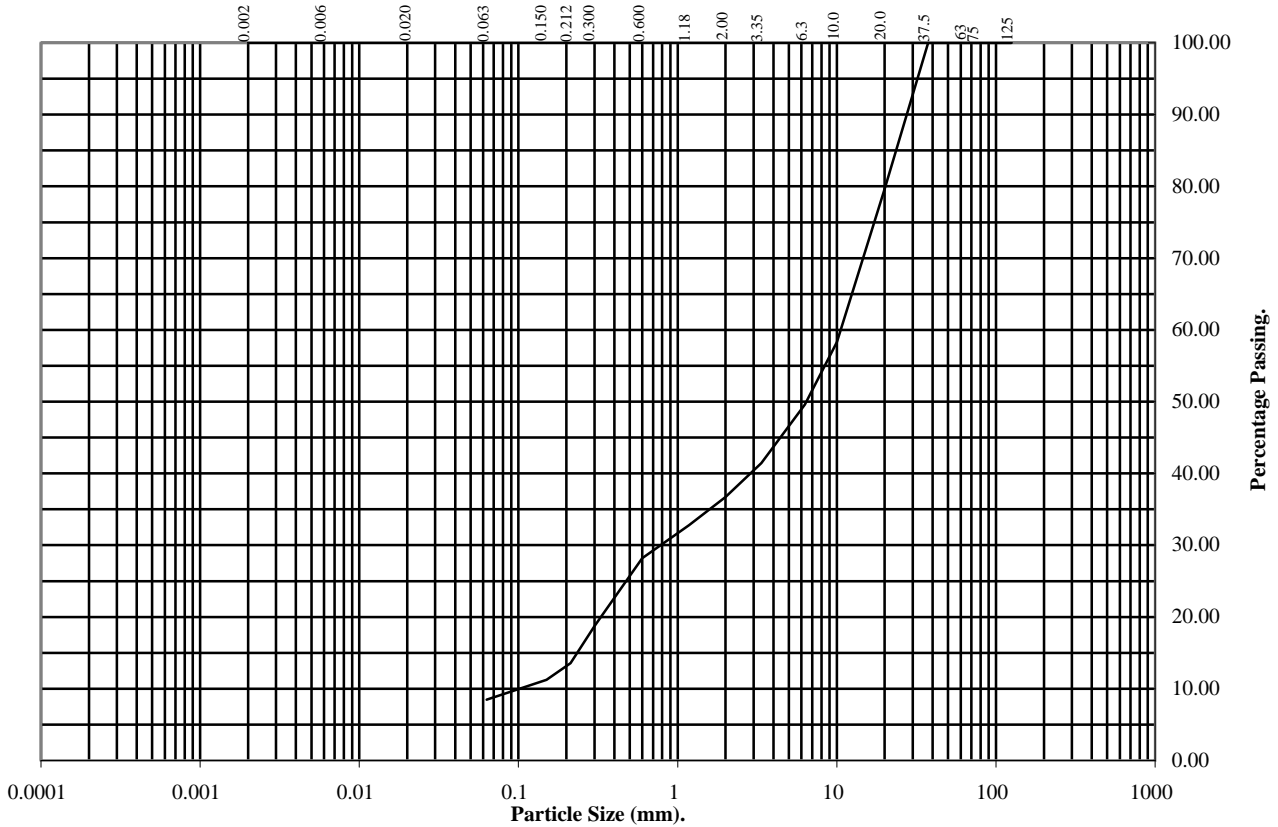
Wet Sieve, Clause 9.2

Hole Number: TP101

Depth (m): 2.00

Sample Number:

Sample Type: B



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	100
20	80
10	58
6.3	50
3.35	41
2	37
1.18	33
0.6	28
0.3	19
0.212	14
0.15	11
0.063	8

Soil Fraction	Total Percentage
Cobbles	0
Gravel	63
Sand	29
Silt / Clay	8

**Remarks:**  
See summary of soil descriptions.

Checked By	Date	Approved By	Date
<i>[Signature]</i>	04/08/10	<i>[Signature]</i>	04/08/10

 <b>Professional Soils Laboratory</b>	<b>THE DOVE WAY, UTTOXETER.</b>	<b>Contract No.:</b> <b>PSL10/1341</b>
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# Particle Size Distribution Test

BS1377 : Part 2 : 1990

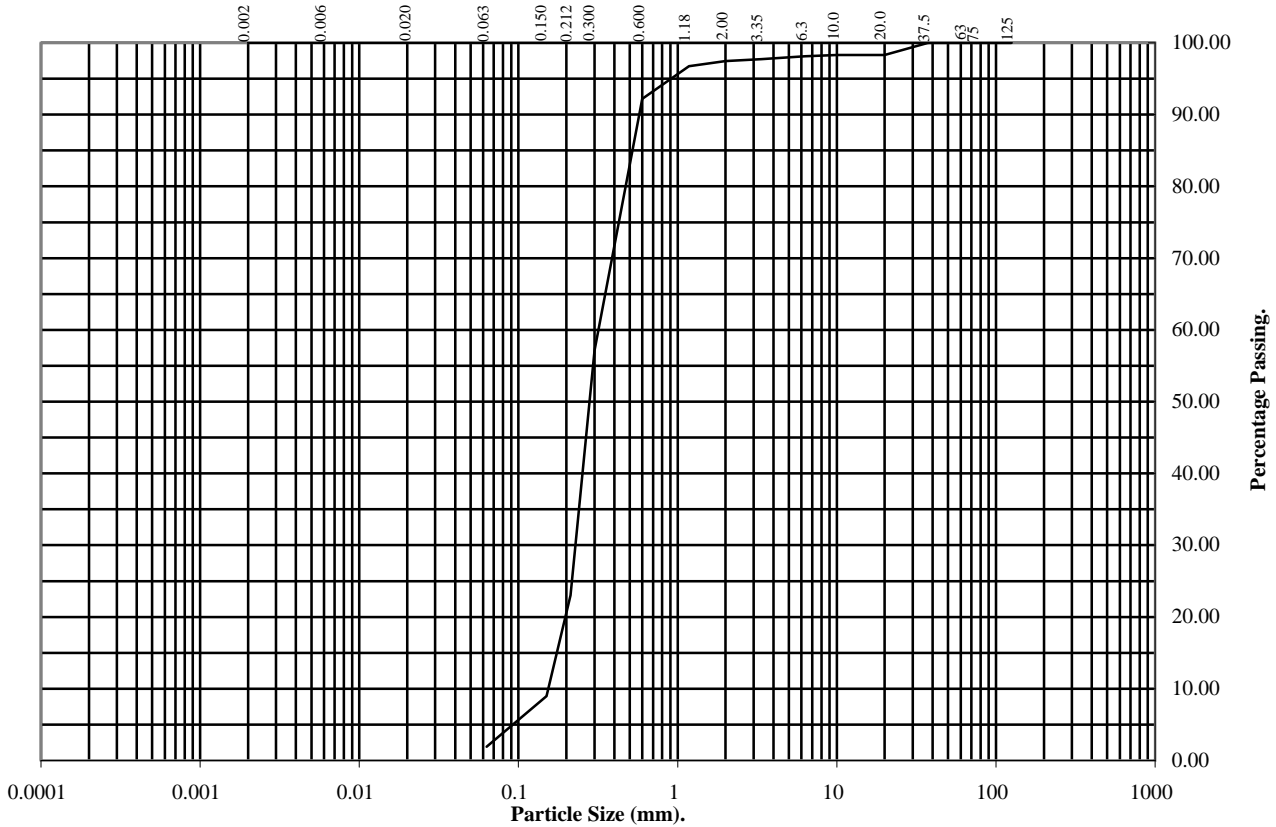
Wet Sieve, Clause 9.2

Hole Number: TP108

Depth (m): 2.20

Sample Number:

Sample Type: B



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
37.5	100
20	98
10	98
6.3	98
3.35	98
2	97
1.18	97
0.6	92
0.3	57
0.212	23
0.15	9
0.063	2

Soil Fraction	Total Percentage
Cobbles	0
Gravel	3
Sand	95
Silt / Clay	2

**Remarks:**  
See summary of soil descriptions.

Checked By	Date	Approved By	Date
<i>[Signature]</i>	04/08/10	<i>[Signature]</i>	04/08/10

 <b>Professional Soils Laboratory</b>	<b>THE DOVE WAY, UTTOXETER.</b>	<b>Contract No.:</b> <b>PSL10/1341</b>
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**APPENDIX 7**  
**DERIVATION OF GSACS**

## BWB APPROACH TO HUMAN HEALTH GENERIC QUANTITATIVE RISK ASSESSMENT (GQRA)

### Human Health Screening Criteria

#### Conceptual Site Model

The standard exposure pathways and Conceptual Models for human exposure to contaminants for different site uses are set out in CLR10. CLR10 identifies 10 potential exposure pathways by which contaminated soils may impact human health. CLR10 also sets out which pathways are applicable for four standard land uses. The pathways for the residential and commercial end uses are shown below.

#### Pathway Selection - Generic Site Assessment Criteria

**Table 1 - Residential Exposure pathways**

Source	Shallow Soils			Deep Soils
	Residential housing with private gardens	Residential housing with communal landscaped areas	Residential housing with hardstanding areas	Residential housing
Ingestion of Soil	ü	ü	ü	ü
Ingestion of site derived household dust	ü	ü	ü	ü
Ingestion of contaminated vegetables	ü	ü	ü	ü
Ingestion of soil attached to vegetables	ü	ü	ü	ü
Dermal contact with Soil	ü	ü	ü	ü
Dermal contact with site derived household dust	ü	ü	ü	ü
Inhalation of fugitive soil dust	ü	ü	ü	ü
Inhalation of fugitive site derived household dust	ü	ü	ü	ü
Inhalation of vapours outside	ü	ü	ü	ü
Inhalation of vapours inside	ü	ü	ü	ü

**Table 2 - Commercial Exposure pathways**

Source	Shallow Soils		Deep Soils
	Commercial / Industrial with managed landscaped areas	Commercial / Industrial with Hardststanding areas	Commercial / Industrial
Ingestion of Soil	ü	ü	ü
Ingestion of site derived household dust	ü	ü	ü
Ingestion of contaminated vegetables	ü	ü	ü
Ingestion of soil attached to vegetables	ü	ü	ü
Dermal contact with Soil	ü	ü	ü
Dermal contact with site derived household dust	ü	ü	ü
Inhalation of fugitive soil dust	ü	ü	ü
Inhalation of fugitive site derived household dust	ü	ü	ü
Inhalation of vapours outside	ü	ü	ü
Inhalation of vapours inside	ü	ü	ü

**Descriptive Conceptual Models (From CLR10)**

<p><b>Residential</b></p> <p>People live in a wide variety of dwellings including, for example, detached, semi-detached and terraced property up to two storeys high. This land use takes into account several different house designs including buildings based on suspended floors and ground-bearing slabs. It assumes that residents have private gardens and/or access to community open space close to the home. Exposure has been estimated with and without a contribution from eating homegrown vegetables, which represents the key difference in potential exposure to contamination between those living in a house with a garden and those living in a house where no private garden area is available</p>
<p><b>Commercial/industrial</b></p> <p>There are many different kinds of workplace and work-related activities. This land-use assumes that work takes place in a permanent single-storey building, factory, or warehouse where employees spend most time indoors involved in office-based or relatively light physical work. This land use is not designed to consider those sites involving 100% hard cover (such as car parks) where the risks to site-user are from ingestion or skin contact because of the implausibility of such exposures arising while the constructed surface remains intact.</p>

**Exposure Pathways**

In the absence of a robust CLEA model and the expected changes to the regime resulting from CLAN6/06 “The Way Forward” BWB adopt a number of different tools to derive generic assessment criteria that are consistent with the CLEA framework. The tools have been selected to provide a robust transparent methodology which can be readily audited.

In terms of comparison to commercially available models such as BPRisc the individual algorithms and exposure parameters used by BWB are fundamentally the same. Any major differences in GSACs are likely to be down to the selection of different contaminant specific parameters although in many cases the publication of EA and TPHCWG reports have provided a standard set of input parameters for PAH and TPH contaminants.

Individual criteria are generated for each pathway that is relevant so, for example, in a residential with vegetable uptake scenario we would need seven individual criteria:-

- Ingestion of soil and dust
- Ingestion of contaminated vegetables
- Ingestion of soil attached to vegetables
- Dermal contact indoors and outdoors
- Fugitive dust inhalation indoors and outdoors
- Vapour inhalation indoors
- Vapour inhalation outdoors

The final overall assessment criteria is calculated by adding together the inverse of the individual criteria for each pathway, therefore if several of the individual criteria are of similar magnitude the final criteria may be substantially lower than the lowest individual criteria so that total exposure is below the respective health threshold.

$$1/\text{GSAC} = \sum 1/\text{ASC}_{\text{ingestion}} + 1/\text{ASC}_{\text{inhalation}} + 1/\text{ASC}_{\text{dermal}}$$

### Model Selection

The SNIFFER 2003 model has been retained to calculate assessment sub criteria for pathways where the equations are compliant with CLR10. The SNIFFER calculation for inhalation of vapours indoors is not compatible with CLR10 and is not used by BWB.

- Ingestion of soil and dust
- Ingestion of soil attached to vegetables
- Ingestion of contaminated site grown vegetables
- Inhalation of vapours outdoors

The USEPA Johnson and Ettinger spreadsheets (Feb 2004 edition) have been used to calculate exposure through the Inhalation of vapours indoors. Building dimensions relevant to the model have been taken from CLEA briefing Note 3. The Johnson and Ettinger spreadsheets carry out the same calculations as specified in CLEA briefing note 2.

Pathway	Model
Ingestion of Soil	SNIFFER (CLR10 compliant)
Ingestion of site derived household dust	SNIFFER (CLR10 compliant)
Ingestion of contaminated vegetables	SNIFFER (CLR10 compliant)
Ingestion of soil attached to vegetables	SNIFFER (CLR10 compliant)
Dermal contact with Soil	CLEA Briefing Note 1



Dermal contact with site derived household dust	CLEA Briefing Note 1
Inhalation of fugitive soil dust	CLR10
Inhalation of fugitive site derived household dust	CLR10
Inhalation of vapours outside	SNIFFER (CLR10 compliant)
Inhalation of vapours inside	CLEA Briefing Notes 2 and 3 Johnson and Ettinger 2003 USEPA Spreadsheet

An integrated GSAC has been derived using the following equation. This ensures that the total intake of a contaminant from all exposure pathways is taken into account in the calculation of GSAC.

$$1/\text{GSAC} = \sum 1/\text{ASC}_{\text{ingestion}} + 1/\text{ASC}_{\text{inhalation}} + 1/\text{ASC}_{\text{dermal}}$$

### Parameter Selection

#### Ingestion of soil and site derived household dust

SNIFFER model defaults adopted.

#### Ingestion of contaminated vegetables

SNIFFER model defaults adopted. Soil density, fraction organic carbon, soil water content based on CLR10 briefing note 2 sand soil type.

#### Ingestion of soil attached to vegetables

SNIFFER model defaults adopted.

#### Dermal contact with soil and site derived household dust

In-house deterministic model based on CLR10 briefing note 1

#### Inhalation of fugitive soil dust and site derived household dust

In-house deterministic model based on CLR10

#### Inhalation of vapours indoors

Johnson and Ettinger model USEPA spreadsheet SL ADV Version 3.1 issued February 2004

Soil organic matter 1% lowest value adopted for SGVs

Soil properties CLR10 briefing note 2 Sand soil type

Building type – Bungalow without basement for residential CLR10 briefing Note 3  
 - Office without basement for Commercial/industrial CLR10 Briefing Note 3

#### Inhalation of vapours outdoors

SNIFFER model defaults adopted.

Source zone 15m CLR 10 default  
Depth to contamination 1m CLR 10 and ASTM recommended value  
Soil organic matter 1% lowest value adopted for SGVs  
Soil properties CLR10 briefing note 2 Sand soil type  
Temperature 10°C CLR 10 default  
Wind speed 3m/s CLR 10 default  
Time averaged body height 0.93m residential 1.623m Commercial CLR10 default for 0-6 year old child and adult female.

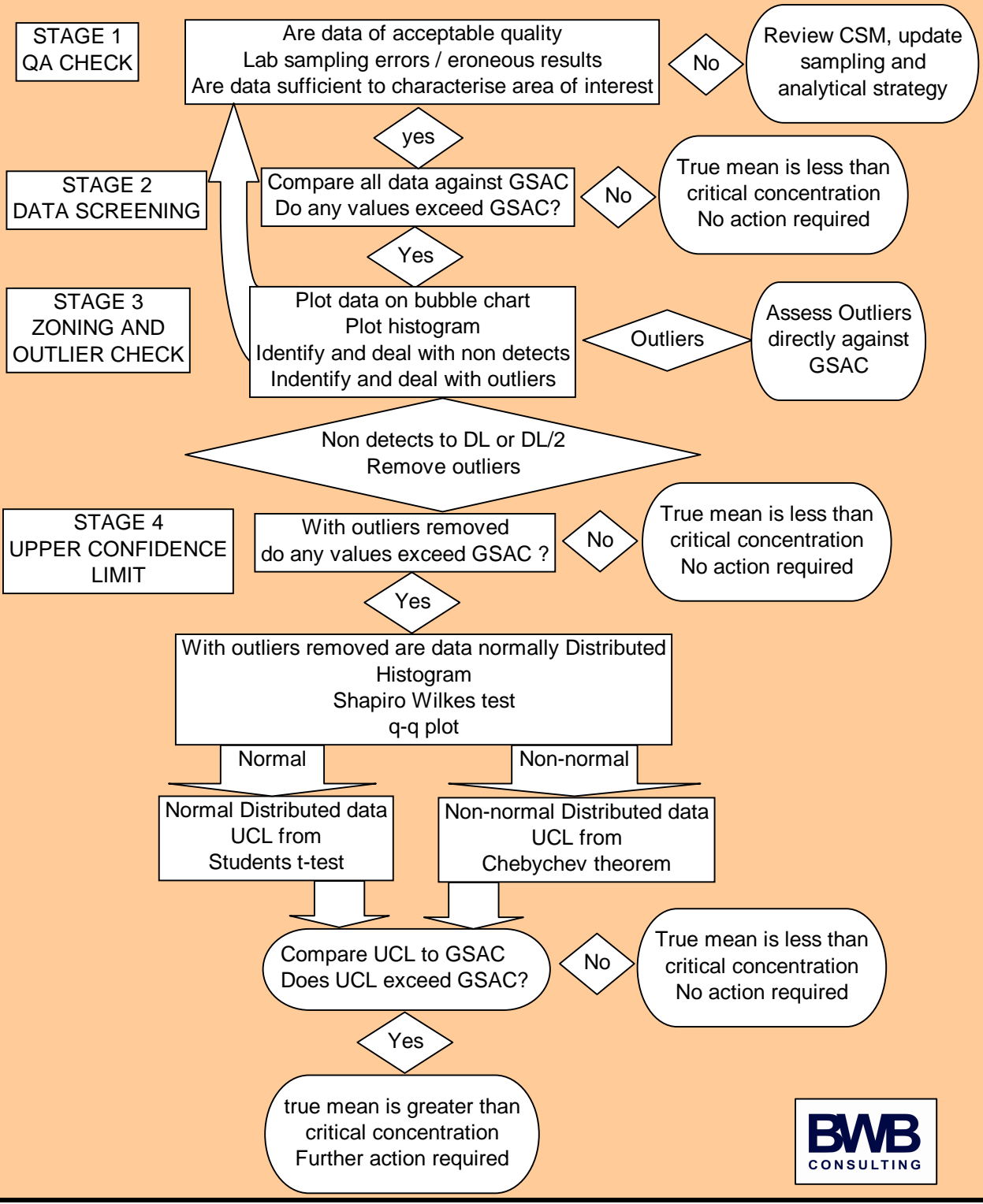
## References

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- USEPA; 2004; User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings

**APPENDIX 8**  
**STATISTICAL SPREADSHEETS**

**STATISTICAL APPROACH FOR ASSESSING RISK TO HUMAN HEALTH FROM CONTAMINATED LAND 2008**

CIEH/CLAIRE Guidance on Comparing Soil Contamination Data with a Critical Concentration May 2008



# Human Health Generic QRA Worksheet



<b>The Doww Way (Area A)</b>	<b>NTE285</b>
All samples	

<b>Key Receptor (Residential / Commercial)</b>	<b>Commercial</b>
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<b>Exposure Pathway Selection</b>	
<b>(Residential/Commercial scenarios only)</b>	
<b>Soil Ingestion, dermal contact, particulate inhalation</b>	<b>TRUE</b>
<b>Ingestion of site grown vegetables and soil attached to vegetables</b>	<b>TRUE</b>
<b>Inhalation of vapours Indoors</b>	<b>TRUE</b>
<b>Inhalation of vapours Outdoors</b>	<b>TRUE</b>

<b>Default pathways</b>	
<b>Residential</b>	<b>Commercial</b>
<b>TRUE</b>	<b>TRUE</b>
<b>Optional</b>	<b>FALSE</b>
<b>TRUE</b>	<b>TRUE</b>
<b>TRUE</b>	<b>TRUE</b>

<b>pH (Only required for vegetable uptake pathway)</b>	<b>7</b>
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V3.04, October 2009

Generic Assessment Criteria		Commercial mg/kg	Source
The Dow Way (Area A) NTE285			
Arsenic		6.35E+02	BWB
Barium		2.21E+05	BWB
Beryllium		2.23E+02	BWB
Boron		2.37E+05	BWB
Cadmium		2.30E+02	BWB
Chromium		3.29E+02	BWB
Copper		1.77E+05	BWB
Lead*		6.01E+03	SGV
Inorganic Mercury		3.64E+03	BWB
Nickel		1.79E+03	BWB
Selenium		1.30E+04	BWB
Vanadium		5.58E+03	BWB
Zinc		8.74E+05	BWB
Cyanide (Free)		4.30E+01	SNIFFER
Cyanide (Complex)		2.13E+02	SNIFFER
Phenols (Total)		3.20E+03	BWB
Ethyl benzene		2.50E+04	BWB
m-Xylene		9.99E+03	BWB
p-Xylene		9.63E+03	BWB
o-Xylene		1.07E+04	BWB
TPH (EC5-6) aliphatic		5.47E+02	BWB
TPH (>EC6-8) aliphatic		1.42E+03	BWB
TPH (>EC8-10) aliphatic		3.91E+02	BWB
TPH (>EC10-12) aliphatic		2.27E+03	BWB
TPH (>EC12-16) aliphatic		1.04E+04	BWB
TPH (>EC16-21) aliphatic		7.72E+05	BWB
TPH (>EC21-35) aliphatic		7.72E+05	BWB
TPH (>EC35-44) aliphatic		7.72E+05	BWB
TPH (>EC6-7) aromatic (benzene)		4.36E+01	BWB
TPH (>EC7-8) aromatic (toluene)		8.62E+04	BWB
TPH (>EC8-10) aromatic		6.56E+02	BWB
TPH (>EC10-12) aromatic		3.62E+03	BWB
TPH (>EC12-16) aromatic		1.39E+04	BWB
TPH (>EC16-21) aromatic		2.36E+04	BWB
TPH (>EC21-35) aromatic		2.73E+04	BWB
TPH (>EC35-44) aromatic		2.73E+04	BWB
Naphthalene		3.17E+02	BWB
Acenaphthylene		2.60E+01	BWB
Acenaphthene		7.71E+02	BWB
Fluorene		6.90E+04	BWB
Phenanthrene		4.83E+03	BWB
Anthracene		5.41E+05	BWB
Fluoranthene		1.02E+03	BWB
Pyrene		1.01E+04	BWB
Benzo(a)anthracene		1.34E+02	BWB
Chrysene		1.38E+03	BWB
Benzo(b)fluoranthene		1.41E+02	BWB
Benzo(k)fluoranthene		1.42E+02	BWB
Benzo(a)pyrene		1.41E+01	BWB
Indeno(1,2,3-c,d)pyrene		1.40E+02	BWB
Dibenzo(a,h)anthracene		1.42E+01	BWB



Generic Assessment Criteria		
The Doww Way (Area A) NTE285	Commercial mg/kg	Source
Benzo(g,hi)perylene	5.46E+04	BWB



Generic Assessment Criteria		
The Doww Way (Area A) NTE285	Commercial mg/kg	
Tetrachloroethene (PCE)	2.57E+02	BWB
Trichloroethene (TCE)	1.88E+01	BWB
Vinyl Chloride (VC)	1.03E-01	BWB
1,1,2,2-Tetrachloroethane (PCA)	4.49E+02	BWB
1,1,1-Trichloroethane (TCA)	1.11E+03	BWB
1,2-Dichloroethane	1.14E+00	BWB
Carbon Tetrachloride	4.80E+00	BWB



Location	Sample depth	Easting	Northing	Surface Level	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Copper	Lead	Inorganic Mercury	Nickel	Selenium	Vanadium	Zinc	Cyanide (Free)	Cyanide (Complex)	Phenols (Total)
<b>Detection Limit</b>					0.6	0.6	0.01	1	0.02	0.9	1.4	0.7	0.14	0.2	1	0.2	1.9	1	1	0.22
<b>GSAC</b>					6.35E+02	2.21E+05	2.23E+02	2.37E+05	2.30E+02	3.29E+02	1.77E+05	6.01E+03	3.64E+03	1.79E+03	1.30E+04	5.58E+03	8.74E+05	4.30E+01	2.13E+02	3.20E+03
TP109	2.5	409389	334648	79.88																
TP110	0.8	409271	334466	80.2	7.38	307	0.75	1.52	0.151	9.08	22.1	11.9	0.14	10.5	1	7.28	48.8	1	1	0.22
TP111	0.4	409240	334491	80.65																
TP111	2.8	409240	334491	80.65	10.1	262	1.26	4.19	0.0373	29.9	23.4	67.3	0.14	26.3	1.32	37.4	156	1	1	0.22
TP112	0.8	409223	334536	80.98																
TP112	2.8	409223	334536	80.98	10.5	236	0.858	4.31	0.02	24.2	15.7	20	0.14	24.3	1.28	27.8	66.6	1	1	0.22
TP113	3	409223	334590	80.81	7.45	73.9	0.642	1.23	0.02	12	12.2	19.7	0.14	10.9	1	18.3	48.6	1	1	0.22
TP114	0.5	409237	334634	80.88	22.2	675	1.97	4.03	22.2	104	468	339	1.82	57.1	9.95	24	388	1	2.89	0.22
TP116	0.2	409279	334418	80.32	13	291	1.49	1	0.386	26.2	42.7	63.7	0.14	22	1.05	36.5	137	1	1	0.22
TP116	1.8	409279	334418	80.32																
TP116	3	409279	334418	80.32	6.27	99.2	0.632	1.45	0.333	12.3	11.8	18.2	0.14	13.1	1	16.6	62	1	1	0.22
TP117	0.5	409335	334667	80.3	9.76	262	1.39	1	0.618	34.6	35.6	64.2	0.14	31.5	1.5	36.2	192	1	1	0.22
TP117	1.8	409335	334667	80.3																
TP119	0.5	409361	334612	80.48	42.9	251	5.26	6.71	0.991	33.4	187	379	0.14	69.9	1.98	41.7	542	1	1	0.22
TP119	3.2	409361	334612	80.48	12.6	127	0.767	1.08	0.415	28.2	133	47.9	0.14	27.5	1	19.6	99.5	1	1	0.22
TP120	0.8	409309	334631	80.66	6.69	524	7.11	3.79	0.02	38.9	20.4	23.5	0.14	12	3.44	39	103	1	1	0.22
TP120	3	409309	334631	80.66	6.31	57.3	0.469	1.95	0.198	7.58	7.72	14.4	0.14	9.64	1	14.3	35.1	1	1	2.1
TP121	0.9	409330	334604	80.94																
TP123	2	409316	334543	80.1	7.55	158	0.772	3.59	0.488	22.2	16.3	21.8	0.14	24	1.58	23.5	97.5	1	1	0.22

Location	Sample depth	Ethyl benzene	m-Xylene	p-xylene	o-xylene	TPH (EC5-6) aliph	TPH (>EC6-8) aliph	TPH (>EC8-10) aliph	TPH (>EC10-12) aliph	TPH (>EC12-16) aliph	TPH (>EC16-21) aliph	TPH (>EC21-35) aliph	TPH (>EC35-44) aliph	TPH (>EC6-7) arom	TPH (>EC7-8) arom	TPH (>EC8-10) arom	TPH (>EC10-12) arom	TPH (>EC12-16) arom	TPH (>EC16-21) arom	TPH (>EC21-35) arom	TPH (>EC35-44) arom
Detection Limit		0.003	0.006	0.006	0.003	0.01	0.01	0.01	0.01	0.1	0.1	0.1	0.1	0.01	0.01	0.01	0.01	0.1	0.1	0.1	0.1
<b>GSAC</b>		2.50E+04	9.99E+03	9.63E+03	1.07E+04	5.47E+02	1.42E+03	3.91E+02	2.27E+03	1.04E+04	7.72E+05	7.72E+05	7.72E+05	4.36E+01	8.62E+04	6.56E+02	3.62E+03	1.39E+04	2.36E+04	2.73E+04	2.73E+04
TP109	2.5	0.003	0.006	0.006	0.003	0.0106	0.013	0.0406	0.0186	11.5	4.61	202	118	0.01	0.01	0.0609	0.0279	3.02	3.37	24.2	24.5
TP110	0.8																				
TP111	0.4																				
TP111	2.8																				
TP112	0.8	0.003	0.006	0.006	0.003	0.0267	0.0141	0.119	0.124	332	4170	13700	672	0.01	0.01	0.178	0.186	18.3	338	1390	176
TP112	2.8																				
TP113	3																				
TP114	0.5																				
TP116	0.2																				
TP116	1.8	0.0135	0.101	0.101	0.0621	0.0403	0.0731	0.354	0.935	77.1	434	1690	650	0.01	0.01	0.709	1.4	18.8	103	398	134
TP116	3																				
TP117	0.5																				
TP117	1.8																				
TP119	0.5	0.003	0.006	0.006	0.003	0.0161	0.0224	0.0406	0.223	18.5	63.9	346	149	0.01	0.01	0.0609	0.335	23.2	153	448	155
TP119	3.2																				
TP120	0.8	0.003	0.006	0.006	0.003	0.0118	0.01	0.154	0.157	203	200	1840	1720	0.01	0.01	0.232	0.236	206	258	1130	1100
TP120	3																				
TP121	0.9																				
TP123	2																				



Location	Sample depth	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b)fluoranth	Benzo(k)fluoranth	Benzo(a)pyrene	Indeno(1,2,3-c,d)pp	Dibenzo(a,h)anthr	Benzo(g,h)perylene
Detection Limit		9	12	8	10	15	16	17	15	14	10	15	14	15	18	23	24
<b>GSAC</b>		3.17E+02	2.60E+01	7.71E+02	6.90E+04	4.83E+03	5.41E+05	1.02E+03	1.01E+04	1.34E+02	1.38E+03	1.41E+02	1.42E+02	1.41E+01	1.40E+02	1.42E+01	5.46E+04
TP109	2.5																
TP110	0.8	1.82	0.0168	0.0313	0.0521	1.82	0.182	1.12	0.953	0.476	0.456	0.74	0.172	0.397	0.206	0.0738	0.629
TP111	0.4																
TP111	2.8	0.009	0.012	0.008	0.01	0.0348	0.016	0.102	0.0863	0.0488	0.0483	0.0458	0.0217	0.0295	0.018	0.023	0.024
TP112	0.8																
TP112	2.8	0.0173	0.012	0.0907	0.149	0.457	0.131	0.108	0.121	0.0354	0.0363	0.0298	0.014	0.022	0.018	0.023	0.024
TP113	3	0.009	0.012	0.008	0.01	0.015	0.016	0.017	0.015	0.014	0.01	0.015	0.014	0.015	0.018	0.023	0.024
TP114	0.5	0.516	0.0644	0.0214	0.0239	0.58	0.191	0.705	0.55	0.449	0.431	1.55	0.41	0.458	0.728	0.166	0.766
TP116	0.2	0.0784	0.0468	0.0156	0.0173	0.287	0.105	1.4	1.47	0.857	0.869	1.43	0.527	1.27	0.815	0.216	0.988
TP116	1.8																
TP116	3	0.009	0.012	0.008	0.01	0.0227	0.016	0.0423	0.0355	0.0315	0.0224	0.0386	0.0153	0.0279	0.018	0.023	0.024
TP117	0.5	0.009	0.012	0.008	0.01	0.0515	0.016	0.0897	0.0762	0.0543	0.0639	0.0778	0.0298	0.0384	0.0338	0.023	0.048
TP117	1.8																
TP119	0.5	0.828	0.204	2.54	3.12	6.37	6.38	28.9	21.4	8.38	7.09	8.88	3.75	7.31	3.77	1.02	4.43
TP119	3.2	0.104	0.0163	0.038	0.0613	0.22	0.0681	0.529	0.413	0.167	0.169	0.193	0.0771	0.163	0.0992	0.023	0.126
TP120	0.8	0.244	2.13	65.5	12.1	9.08	5.4	17.9	13.3	3.03	3.1	2.44	1.17	2.19	0.865	0.314	1.35
TP120	3	0.0133	0.0235	0.212	0.0893	0.877	0.165	1.36	1.11	0.472	0.436	0.523	0.182	0.507	0.239	0.057	0.287
TP121	0.9																
TP123	2	0.009	0.012	0.008	0.01	0.015	0.016	0.017	0.015	0.014	0.01	0.015	0.014	0.015	0.018	0.023	0.024

Commercial/Industrial Pathway Specific Assessment Sub Criteria derived March 2009	Vapour Inhalation (Indoors)	Vapour Inhalation (Outdoors)	Soil Ingestion	Dermal contact	Particulate Dust Inhalation	Commercial GSAC
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Arsenic	NR	NR	6.67E+02	1.35E+04	6.95E+02	6.35E+02
Barium	NR	NR	2.22E+05	NR	3.48E+07	2.21E+05
Beryllium	NR	NR	3.97E+03	NR	2.36E+02	2.23E+02
Boron	NR	NR	2.38E+05	NR	3.72E+07	2.37E+05
Cadmium	NR	NR	4.00E+02	2.42E+05	3.87E+02	2.30E+02
Chromium	NR	NR	6.25E+03	NR	3.48E+02	3.29E+02
Copper	NR	NR	1.78E+05	NR	2.78E+07	1.77E+05
Lead	NR	NR	7.93E+03	NR	2.48E+04	6.01E+03
Inorganic Mercury	NR	NR	4.41E+03	NR	2.09E+04	3.64E+03
Nickel	NR	NR	2.25E+04	2.73E+06	1.79E+03	1.79E+03
Selenium	NR	NR	1.31E+04	NR	2.05E+06	1.30E+04
Vanadium	NR	NR	5.94E+03	NR	9.20E+04	5.58E+03
Zinc	NR	NR	8.79E+05	NR	1.38E+08	8.74E+05
Cyanide (free)						4.30E+01
Cyanide (Complex)						2.13E+02
Phenol	2.72E+05	1.43E+06	1.54E+06	4.23E+04	3.28E+06	3.20E+03
Ethylbenzene	2.90E+04	3.83E+06	2.22E+05	1.34E+06	7.58E+07	2.50E+04
m-xylene	1.04E+04	1.18E+06	4.00E+05	2.42E+06	2.02E+07	9.99E+03
p-xylene	9.99E+03	1.16E+06	4.00E+05	2.42E+06	2.02E+07	9.63E+03
o-xylene	1.12E+04	1.22E+06	4.00E+05	2.42E+06	2.02E+07	1.07E+04
TPH (<EC5-6) aliphatic	5.47E+02	5.26E+06	1.11E+07	5.17E+07	9.14E+08	5.47E+02
TPH (>EC6-8) aliphatic	1.42E+03	8.49E+06	1.11E+07	5.17E+07	9.14E+08	1.42E+03
TPH (>EC8-10) aliphatic	3.93E+02	1.04E+06	1.11E+05	5.17E+05	4.97E+07	3.91E+02
TPH (>EC10-12) aliphatic	2.33E+03	2.53E+06	1.11E+05	5.17E+05	4.97E+07	2.27E+03
TPH (>EC12-16) aliphatic	1.17E+04	5.68E+06	1.11E+05	5.17E+05	4.97E+07	1.04E+04
TPH (>EC16-35) aliphatic	1.35E+06	1.61E+08	2.22E+06	1.03E+07	3.48E+08	7.72E+05
TPH (>EC21-35) aliphatic	1.35E+06	1.61E+08	2.22E+06	1.03E+07	3.48E+08	7.72E+05
TPH (>EC35-44) aliphatic	1.35E+06	1.61E+08	2.22E+06	1.03E+07	3.48E+08	7.72E+05
TPH (>EC6-7) aromatic (benzene)	4.75E+01	1.17E+04	6.44E+02	3.90E+03	4.87E+05	4.36E+01
TPH (>EC7-8) aromatic (toluene)	1.09E+05	1.83E+07	4.95E+05	3.00E+06	4.84E+08	8.62E+04
TPH (>EC8-10) aromatic	6.69E+02	6.05E+05	4.44E+04	2.07E+05	9.91E+06	6.56E+02
TPH (>EC10-12) aromatic	4.03E+03	1.48E+06	4.44E+04	2.07E+05	9.91E+06	3.62E+03
TPH (>EC12-16) aromatic	2.27E+04	3.50E+06	4.44E+04	2.07E+05	9.91E+06	1.39E+04
TPH (>EC16-21) aromatic	1.81E+05	6.96E+06	3.33E+04	1.55E+05	5.21E+06	2.36E+04
TPH (>EC21-35) aromatic	3.64E+07	5.20E+07	3.33E+04	1.55E+05	5.21E+06	2.73E+04
TPH (>EC35-44) aromatic	3.64E+07	5.20E+07	3.33E+04	1.55E+05	5.21E+06	2.73E+04
Naphthalene	3.22E+02	7.85E+04	4.42E+04	2.06E+05	2.85E+05	3.17E+02
Acenaphthylene	2.69E+01	1.77E+03	4.44E+03	2.07E+04	2.43E+03	2.60E+01
Acenaphthene	8.32E+02	3.83E+04	4.44E+04	2.07E+05	2.43E+04	7.71E+02
Fluorene	1.39E+06	3.70E+07	8.88E+04	4.14E+05	1.39E+07	6.90E+04
Phenanthrene	7.91E+03	8.13E+04	4.44E+04	2.07E+05	2.43E+04	4.83E+03
Anthracene	7.22E+07	5.60E+08	6.67E+05	3.10E+06	1.04E+08	5.41E+05
Fluoranthene	4.38E+03	1.47E+04	4.44E+03	2.07E+04	2.43E+03	1.02E+03
Pyrene	4.29E+04	1.40E+05	4.44E+04	2.07E+05	2.43E+04	1.01E+04
Benzo(a)anthracene	3.47E+03	3.27E+03	4.44E+02	2.07E+03	2.43E+02	1.34E+02
Chrysene	2.23E+05	2.85E+04	4.44E+03	2.07E+04	2.43E+03	1.38E+03
Benzo(b)fluoranthene	6.56E+04	4.02E+03	4.44E+02	2.07E+03	2.43E+02	1.41E+02
Benzo(k)fluoranthene	1.09E+05	4.78E+03	4.44E+02	2.07E+03	2.43E+02	1.42E+02
Benzo(a)pyrene	9.37E+03	4.43E+02	4.44E+01	2.07E+02	2.43E+01	1.41E+01
Indeno(123-cd)pyrene	5.46E+04	3.72E+03	4.44E+02	2.07E+03	2.43E+02	1.40E+02
Dibenzo(ah)anthracene	4.49E+03	5.51E+02	4.44E+01	2.07E+02	2.43E+01	1.42E+01
Benzo(a,h)anthracene	9.73E+09	3.46E+08	6.66E+04	3.10E+05	1.04E+07	5.46E+04
Tetrachloroethene (PCE)	2.59E+02	6.38E+05	3.08E+04	1.87E+05	2.37E+07	2.57E+02
Trichloroethene (TCE)	1.89E+01	4.63E+04	1.16E+04	5.38E+04	1.81E+06	1.88E+01
Vinyl Chloride (VC)	1.03E-01	7.47E+02	3.11E+01	1.88E+02	1.04E+05	1.03E-01
1,1,2,2-Tetrachloroethane (PCA)	4.69E+02	2.49E+05	1.28E+04	7.76E+04	2.01E+06	4.49E+02
1,1,1-Trichloroethane (TCA)	1.11E+03	3.81E+06	1.33E+06	8.07E+06	2.07E+08	1.11E+03
1,2-Dichloroethane	1.14E+00	1.68E+03	2.67E+02	1.61E+03	4.17E+04	1.14E+00
Carbon Tetrachloride	4.81E+00	1.65E+04	3.15E+03	1.91E+04	8.85E+05	4.80E+00

# Human Health Generic QRA Worksheet



<b>The Dove Way, Uttoxeter</b>	<b>NTE285</b>
Area B Made ground	

<b>Key Receptor (Residential / Commercial)</b>	<b>Residential</b>
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<b>Exposure Pathway Selection</b>	
<b>(Residential/Commercial scenarios only)</b>	
<b>Soil Ingestion, dermal contact, particulate inhalation</b>	<b>TRUE</b>
<b>Ingestion of site grown vegetables and soil attached to vegetables</b>	<b>TRUE</b>
<b>Inhalation of vapours Indoors</b>	<b>TRUE</b>
<b>Inhalation of vapours Outdoors</b>	<b>TRUE</b>

<b>Default pathways</b>	
<b>Residential</b>	<b>Commercial</b>
<b>TRUE</b>	<b>TRUE</b>
<b>Optional</b>	<b>FALSE</b>
<b>TRUE</b>	<b>TRUE</b>
<b>TRUE</b>	<b>TRUE</b>

<b>pH (Only required for vegetable uptake pathway)</b>	<b>7</b>
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V3.04, October 2009

**Generic Assessment Criteria**



**The Dove Way, Uttoxeter  
NTE285**

**Residential  
mg/kg**

**Source**

Arsenic	3.24E+01	BWB
Barium	1.33E+03	BWB
Beryllium	2.38E+01	BWB
Boron	1.48E+02	BWB
Cadmium	1.04E+01	BWB
Chromium	3.42E+01	BWB
Copper	3.47E+03	BWB
Lead*	3.17E+02	SGV
Inorganic Mercury	1.69E+02	BWB
Nickel	1.27E+02	BWB
Selenium	3.50E+02	BWB
Vanadium	1.00E+02	BWB
Zinc	5.13E+03	BWB
Cyanide (Free)	4.30E+01	SNIFFER
Cyanide (Complex)	2.13E+02	SNIFFER
Phenols (Total)	1.84E+02	BWB
Ethyl benzene	6.52E+01	BWB
m-Xylene	4.36E+01	BWB
p-Xylene	4.17E+01	BWB
o-Xylene	4.52E+01	BWB
TPH (EC5-6) aliphatic	2.97E+00	BWB
TPH (>EC6-8) aliphatic	7.75E+00	BWB
TPH (>EC8-10) aliphatic	2.13E+00	BWB
TPH (>EC10-12) aliphatic	1.26E+01	BWB
TPH (>EC12-16) aliphatic	6.28E+01	BWB
TPH (>EC16-21) aliphatic	6.73E+03	BWB
TPH (>EC21-35) aliphatic	6.73E+03	BWB
TPH (>EC35-44) aliphatic	6.73E+03	BWB
TPH (>EC6-7) aromatic (benzene)	7.92E-02	BWB
TPH (>EC7-8) aromatic (toluene)	1.19E+02	BWB
TPH (>EC8-10) aromatic	3.46E+00	BWB
TPH (>EC10-12) aromatic	1.76E+01	BWB
TPH (>EC12-16) aromatic	6.77E+01	BWB
TPH (>EC16-21) aromatic	2.09E+02	BWB
TPH (>EC21-35) aromatic	8.26E+02	BWB
TPH (>EC35-44) aromatic	8.26E+02	BWB
Naphthalene	1.54E+00	BWB
Acenaphthylene	1.33E-01	BWB
Acenaphthene	5.13E+00	BWB
Fluorene	6.26E+02	BWB
Phenanthrene	3.17E+01	BWB
Anthracene	8.27E+03	BWB
Fluoranthene	1.11E+01	BWB
Pyrene	1.04E+02	BWB
Benzo(a)anthracene	4.50E+00	BWB
Chrysene	6.00E+01	BWB
Benzo(b)fluoranthene	7.81E+00	BWB
Benzo(k)fluoranthene	8.51E+00	BWB
Benzo(a)pyrene	8.26E-01	BWB
Indeno(1,2,3-c,d)pyrene	7.41E+00	BWB
Dibenzo(a,h)anthracene	8.47E-01	BWB

Generic Assessment Criteria		
The Dove Way, Uttoxeter NTE285	Residential mg/kg	Source
Benzo(g,hi)perylene	2.20E+03	BWB

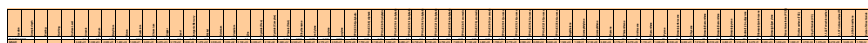


Generic Assessment Criteria		Residential mg/kg	Source
The Dove Way, Uttoxeter NTE285			
Tetrachloroethene (PCE)		1.20E+00	BWB
Trichloroethene (TCE)		1.06E-01	BWB
Vinyl Chloride (VC)		4.73E-04	BWB
1,1,2,2-Tetrachloroethane (PCA)		1.37E+00	BWB
1,1,1-Trichloroethane (TCA)		6.21E+00	BWB
1,2-Dichloroethane		5.34E-03	BWB
Carbon Tetrachloride		1.78E-02	BWB









# STATISTICAL ASSESMENT RESULTS

Select Contaminant

Arsenic



The Dove Way, Uttoxeter

NTE285

### Basic Statistics

Sample mean (mg/kg)	10.74
Standard Deviation	5.55
Sample Size	14
Minimum (mg/kg)	2.21
Maximum (mg/kg)	50.80
Kurtosis	0.048612
Skewness	0.440935

### Test for Normality

W	0.96
Shapiro Wilkes test statistic	0.86

### Recommended UCL to use

T-test

### Outlier Test 5% Significance

Were Exceedances present  
Exceedances remaining  
Outliers present  
Number of Outliers removed  
Non detects  
% Non-detects

### Use Normal

Were Exceedances present	Yes
Exceedances remaining	No
Outliers present	No
Number of Outliers removed	2
Non detects	0
% Non-detects	0%

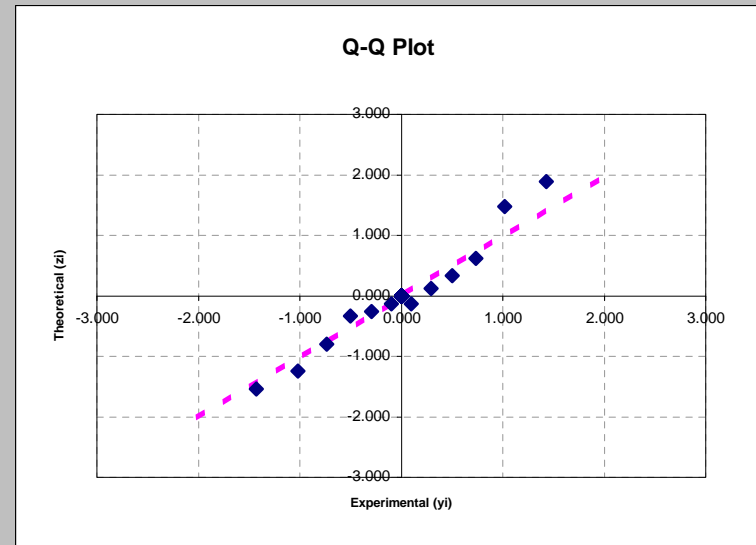
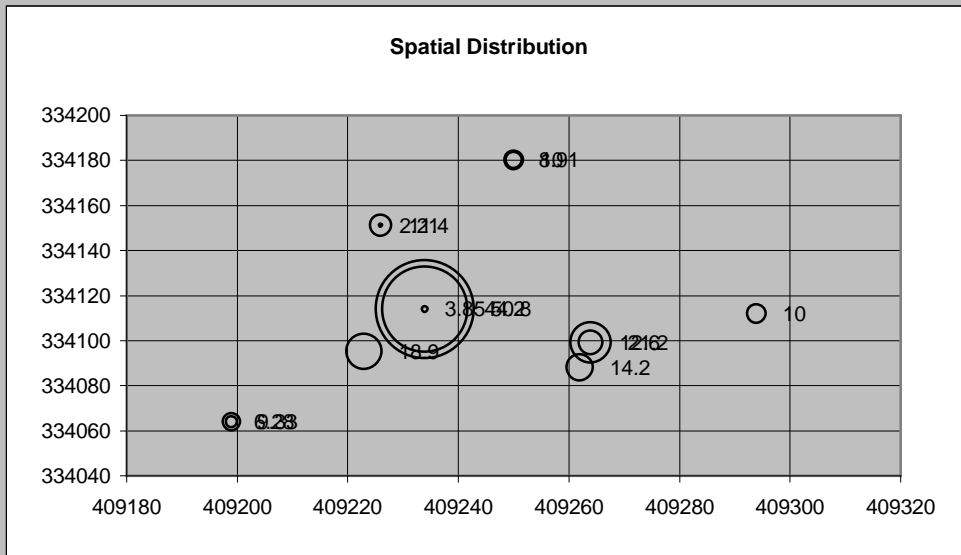
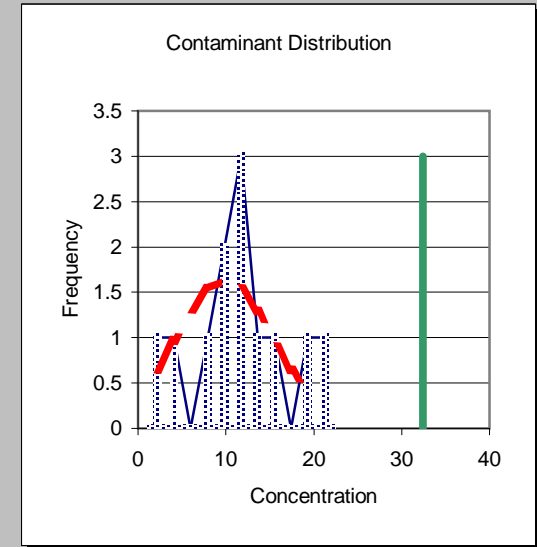
### Upper Confidence Level

UCL used  
Critical Concentration (mg/kg)  
UCL (mg/kg)

### Change UCL

UCL used	Chebychev
Critical Concentration (mg/kg)	3.24E+01
UCL (mg/kg)	17.72

Mean is equal or less than critical concentration



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# STATISTICAL ASSESMENT RESULTS

Select Contaminant

Chromium



The Dove Way, Uttoxeter

NTE285

### Basic Statistics

Sample mean (mg/kg)	19.80
Standard Deviation	7.08
Sample Size	14
Minimum (mg/kg)	10.50
Maximum (mg/kg)	82.20
Kurtosis	0.269557
Skewness	0.89339

### Test for Normality

W	0.92
Shapiro Wilkes test statistic	0.87

### Recommended UCL to use

T-test

### Outlier Test 5% Significance

Were Exceedances present  
 Exceedances remaining  
 Outliers present  
 Number of Outliers removed  
 Non detects  
 % Non-detects

### Use Normal

Were Exceedances present	Yes
Exceedances remaining	Yes
Outliers present	No
Number of Outliers removed	1
Non detects	0
% Non-detects	0%

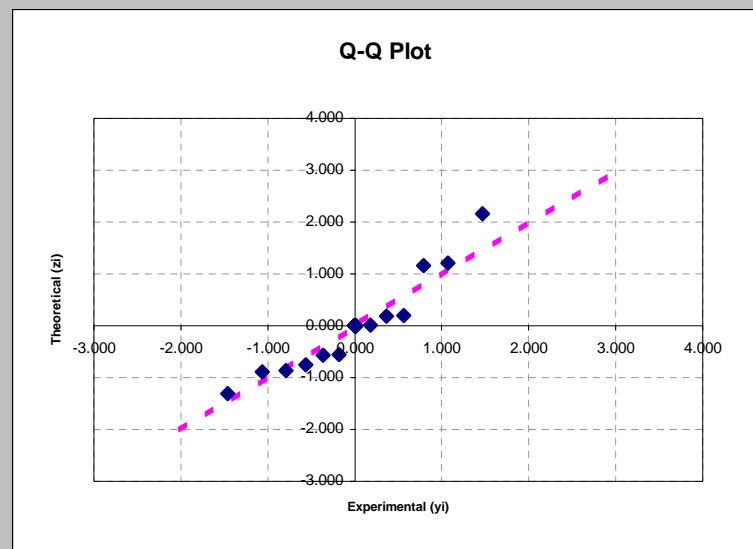
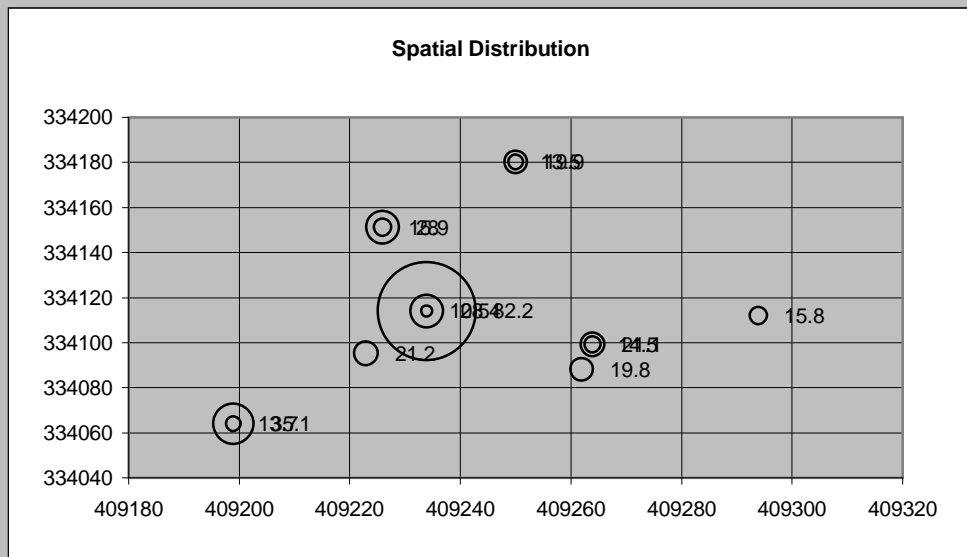
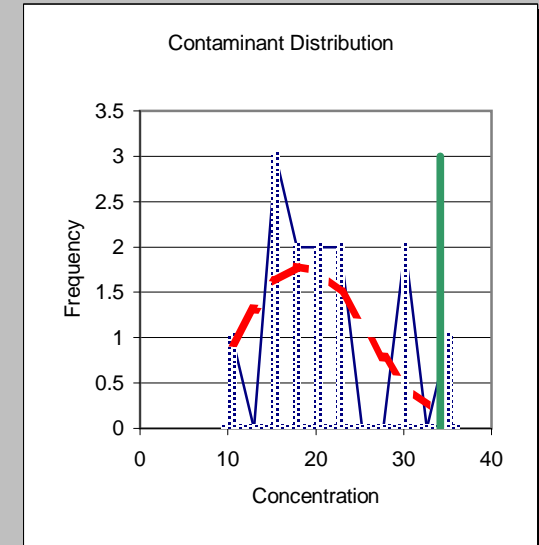
### Upper Confidence Level

UCL used  
 Critical Concentration (mg/kg)  
**UCL (mg/kg)**

### Change UCL

UCL used	Chebychev
Critical Concentration (mg/kg)	3.42E+01
<b>UCL (mg/kg)</b>	<b>28.36</b>

Mean is equal or less than critical concentration



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# STATISTICAL ASSESMENT RESULTS

Select Contaminant

Lead



The Dove Way, Uttoxeter

NTE285

### Basic Statistics

Sample mean (mg/kg)	86.64
Standard Deviation	44.33
Sample Size	14
Minimum (mg/kg)	18.10
Maximum (mg/kg)	325.00
Kurtosis	-1.23804
Skewness	-0.53472

### Test for Normality

W	0.89
Shapiro Wilkes test statistic	0.87

### Recommended UCL to use

**T-test**

### Outlier Test 5% Significance

Were Exceedances present  
Exceedances remaining  
Outliers present  
Number of Outliers removed  
Non detects  
% Non-detects

### Use Normal

Were Exceedances present	Yes
Exceedances remaining	No
Outliers present	No
Number of Outliers removed	1
Non detects	0
% Non-detects	0%

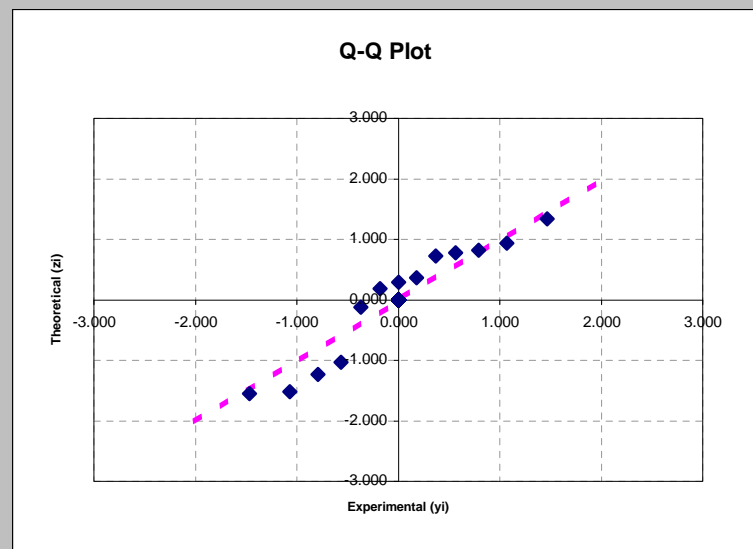
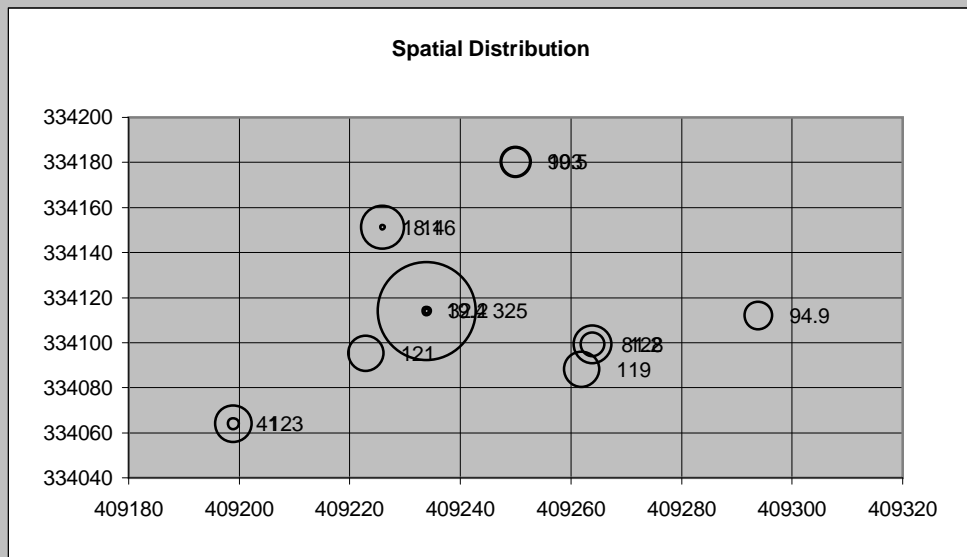
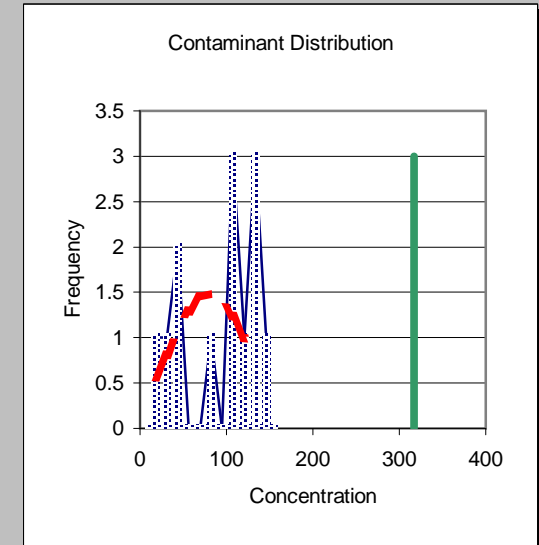
### Upper Confidence Level

UCL used  
Critical Concentration (mg/kg)  
**UCL (mg/kg)**

### Change UCL

UCL used	Chebychev
Critical Concentration (mg/kg)	3.17E+02
<b>UCL (mg/kg)</b>	<b>140.24</b>

**Mean is equal or less than critical concentration**



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# STATISTICAL ASSESMENT RESULTS

Select Contaminant

Cyanide (Complex)



The Dove Way, Uttoxeter

NTE285

### Basic Statistics

Sample mean (mg/kg)	55.33
Standard Deviation	88.73
Sample Size	14
Minimum (mg/kg)	1.00
Maximum (mg/kg)	22200.00
Kurtosis	1.358287
Skewness	1.657586

### Test for Normality

W	0.64
Shapiro Wilkes test statistic	0.87

### Recommended UCL to use

Chebychev

### Outlier Test 5% Significance

Were Exceedances present  
 Exceedances remaining  
 Outliers present  
 Number of Outliers removed  
 Non detects  
 % Non-detects

### Use Normal

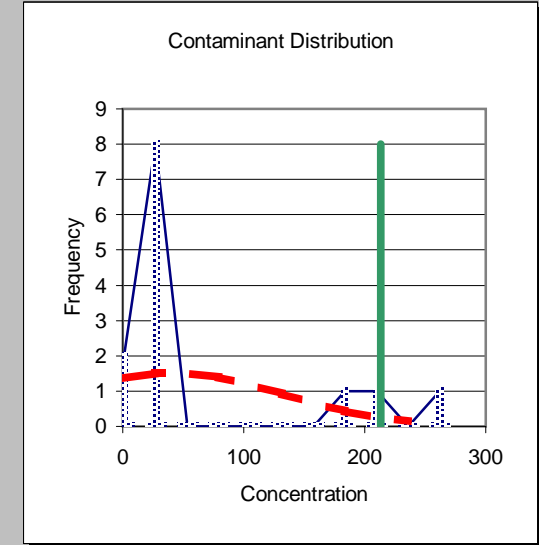
Were Exceedances present	Yes
Exceedances remaining	Yes
Outliers present	No
Number of Outliers removed	1
Non detects	2
% Non-detects	14%

### Upper Confidence Level

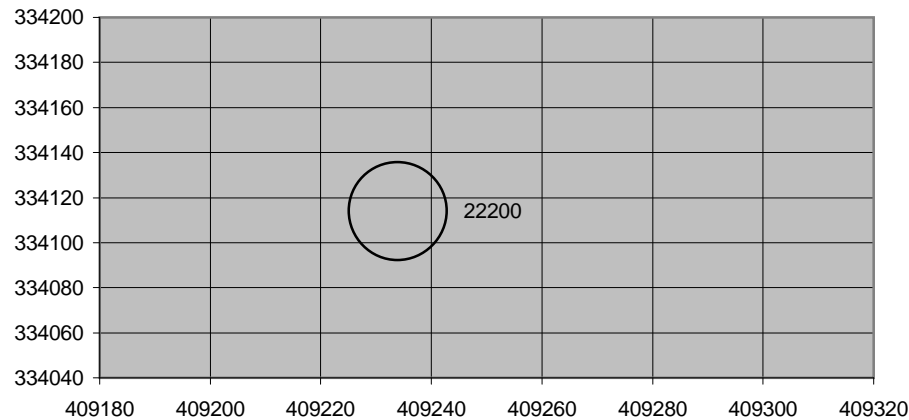
UCL used  
 Critical Concentration (mg/kg)  
 UCL (mg/kg)

UCL used	Chebychev
Critical Concentration (mg/kg)	2.13E+02
UCL (mg/kg)	162.62

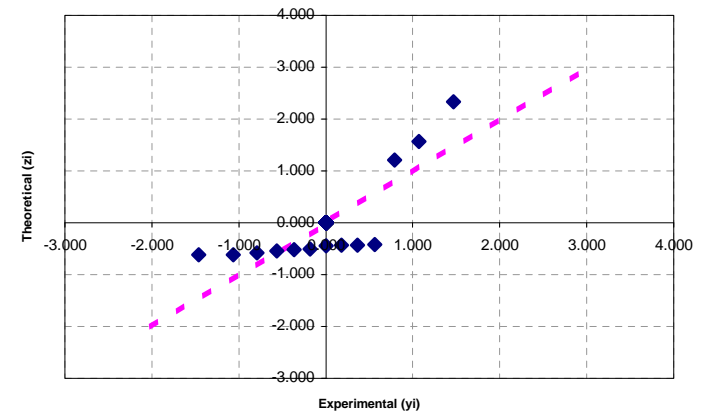
Mean is equal or less than critical concentration



### Spatial Distribution



### Q-Q Plot



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# STATISTICAL ASSESMENT RESULTS

Select Contaminant

TPH (>EC16-21) aromatic



The Dove Way, Uttoxeter

NTE285

## Basic Statistics

Sample mean (mg/kg)	215.85
Standard Deviation	257.62
Sample Size	6
Minimum (mg/kg)	13.80
Maximum (mg/kg)	663.00
Kurtosis	0.850562
Skewness	1.210534

## Test for Normality

W	0.83
Shapiro Wilkes test statistic	0.79

## Recommended UCL to use

**T-test**

## Outlier Test 5% Significance

Were Exceedances present  
 Exceedances remaining  
 Outliers present  
 Number of Outliers removed  
 Non detects  
 % Non-detects

## Use Normal

Were Exceedances present	Yes
Exceedances remaining	Yes
Outliers present	No
Number of Outliers removed	0
Non detects	0
% Non-detects	0%

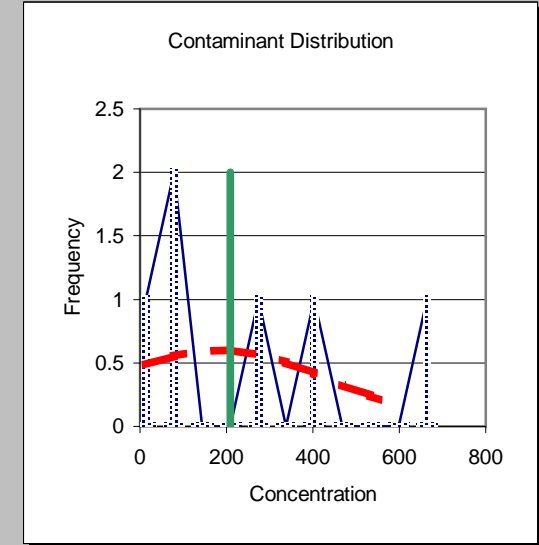
## Upper Confidence Level

UCL used  
 Critical Concentration (mg/kg)  
**UCL (mg/kg)**

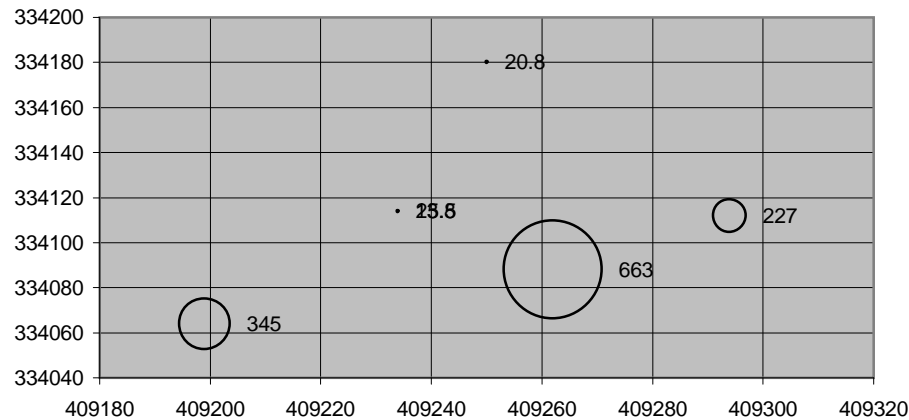
## Change UCL

UCL used	Chebychev
Critical Concentration (mg/kg)	2.09E+02
<b>UCL (mg/kg)</b>	<b>674.41</b>

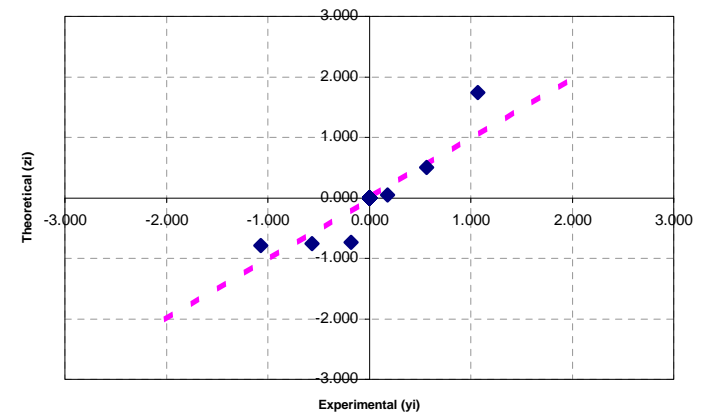
**Mean greater than the critical concentration**



## Spatial Distribution



## Q-Q Plot



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# STATISTICAL ASSESMENT RESULTS

Select Contaminant

TPH (>EC21-35) aromatic



The Dove Way, Uttoxeter

NTE285

## Basic Statistics

Sample mean (mg/kg)	429.30
Standard Deviation	436.77
Sample Size	6
Minimum (mg/kg)	26.70
Maximum (mg/kg)	1070.00
Kurtosis	-1.57605
Skewness	0.597814

## Test for Normality

W	0.88
Shapiro Wilkes test statistic	0.79

## Recommended UCL to use

**T-test**

## Outlier Test 5% Significance

Were Exceedances present  
 Exceedances remaining  
 Outliers present  
 Number of Outliers removed  
 Non detects  
 % Non-detects

## Use Normal

Were Exceedances present	Yes
Exceedances remaining	Yes
Outliers present	No
Number of Outliers removed	0
Non detects	0
% Non-detects	0%

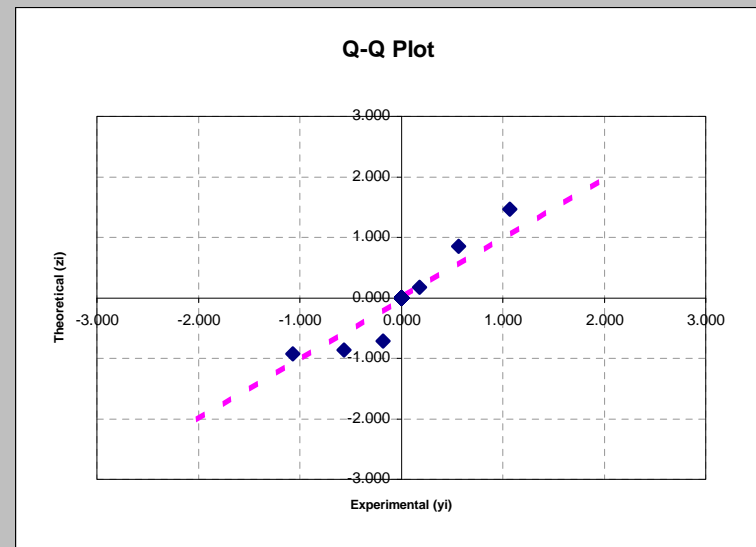
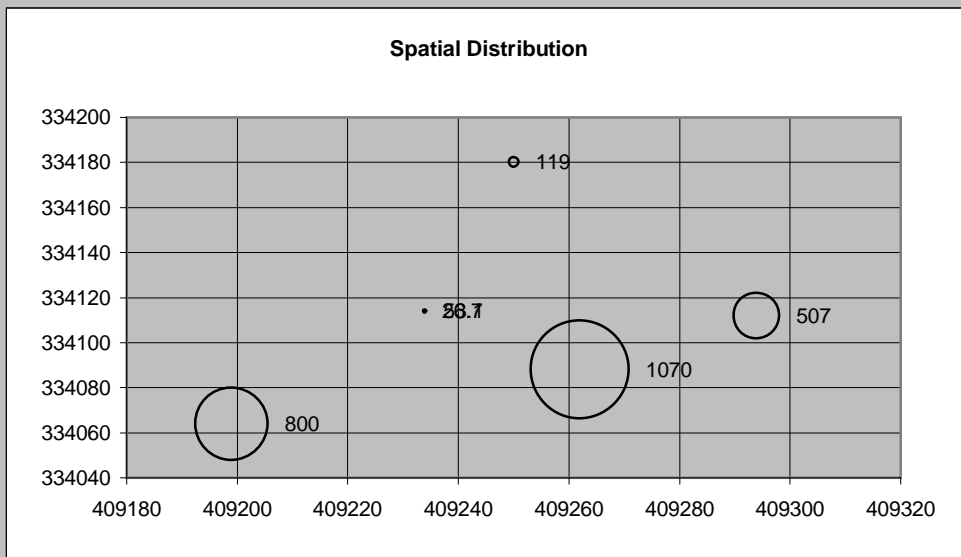
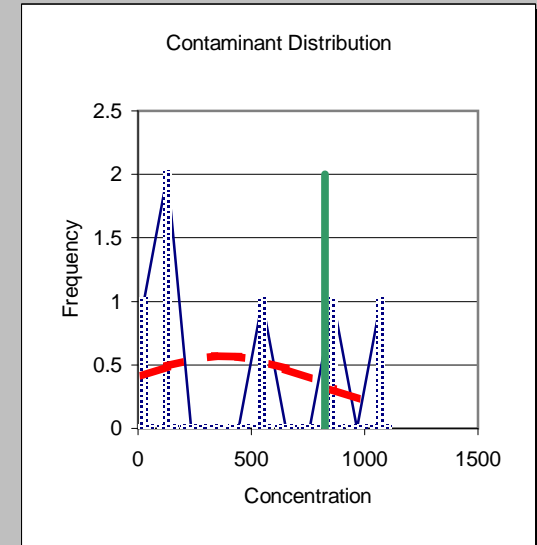
## Upper Confidence Level

UCL used  
 Critical Concentration (mg/kg)  
**UCL (mg/kg)**

## Change UCL

UCL used	Chebychev
Critical Concentration (mg/kg)	8.26E+02
<b>UCL (mg/kg)</b>	<b>1206.74</b>

**Mean greater than the critical concentration**



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# STATISTICAL ASSESMENT RESULTS

Select Contaminant

Naphthalene



The Dove Way, Uttoxeter

NTE285

### Basic Statistics

Sample mean (mg/kg)	0.82
Standard Deviation	1.03
Sample Size	14
Minimum (mg/kg)	0.01
Maximum (mg/kg)	44.70
Kurtosis	1.44159
Skewness	1.537364

### Test for Normality

W	0.78
Shapiro Wilkes test statistic	0.87

### Recommended UCL to use

Chebychev

### Outlier Test 5% Significance

Were Exceedances present  
 Exceedances remaining  
 Outliers present  
 Number of Outliers removed  
 Non detects  
 % Non-detects

### Use Normal

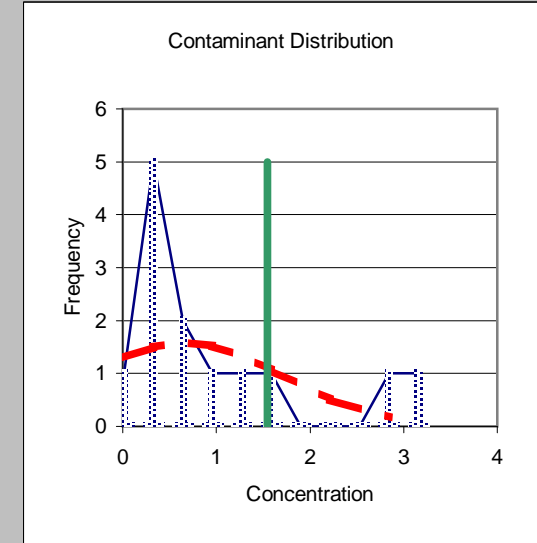
Were Exceedances present	Yes
Exceedances remaining	Yes
Outliers present	No
Number of Outliers removed	1
Non detects	0
% Non-detects	0%

### Upper Confidence Level

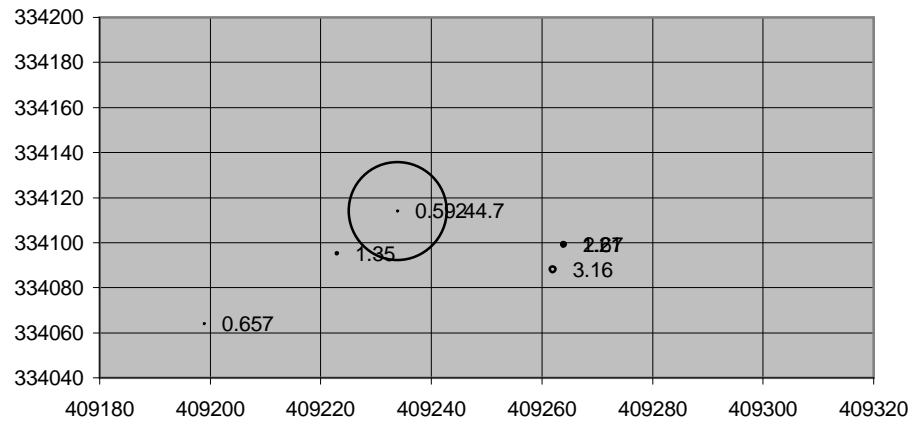
UCL used  
 Critical Concentration (mg/kg)  
 UCL (mg/kg)

UCL used	Chebychev
Critical Concentration (mg/kg)	1.54E+00
UCL (mg/kg)	2.07

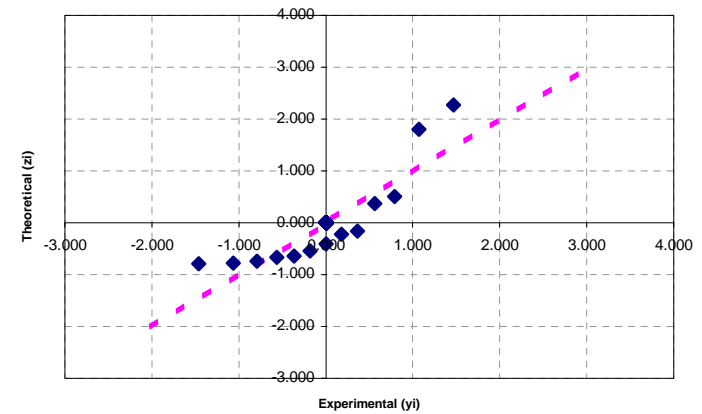
Mean greater than the critical concentration



### Spatial Distribution



### Q-Q Plot



V3.04 October 200

# STATISTICAL ASSESMENT RESULTS

Select Contaminant

Acenaphthylene



The Dove Way, Uttoxeter

NTE285

### Basic Statistics

Sample mean (mg/kg)	1.23
Standard Deviation	1.24
Sample Size	14
Minimum (mg/kg)	0.01
Maximum (mg/kg)	6.42
Kurtosis	-0.41198
Skewness	0.987501

### Test for Normality

W	0.84
Shapiro Wilkes test statistic	0.87

### Recommended UCL to use

Chebychev

### Outlier Test 5% Significance

Were Exceedances present  
 Exceedances remaining  
 Outliers present  
 Number of Outliers removed  
 Non detects  
 % Non-detects

### Use Normal

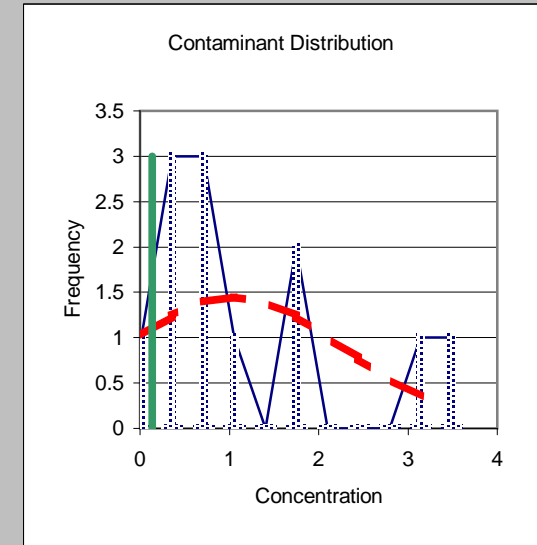
Were Exceedances present	Yes
Exceedances remaining	Yes
Outliers present	No
Number of Outliers removed	1
Non detects	0
% Non-detects	0%

### Upper Confidence Level

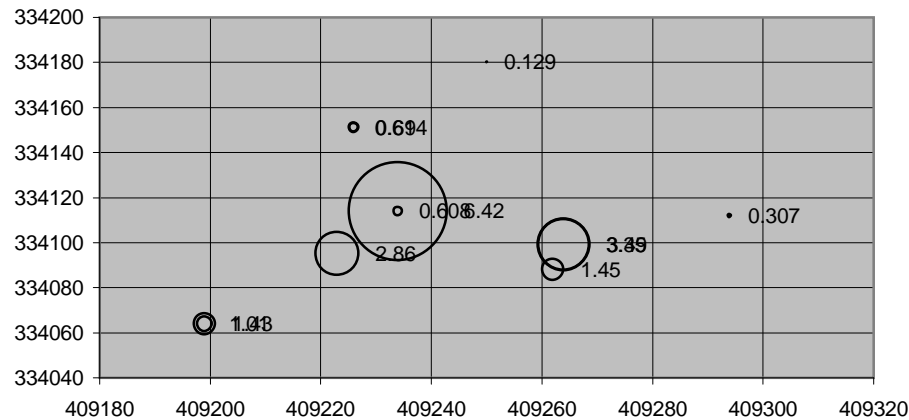
UCL used  
 Critical Concentration (mg/kg)  
**UCL (mg/kg)**

UCL used	Chebychev
Critical Concentration (mg/kg)	1.33E-01
<b>UCL (mg/kg)</b>	<b>2.73</b>

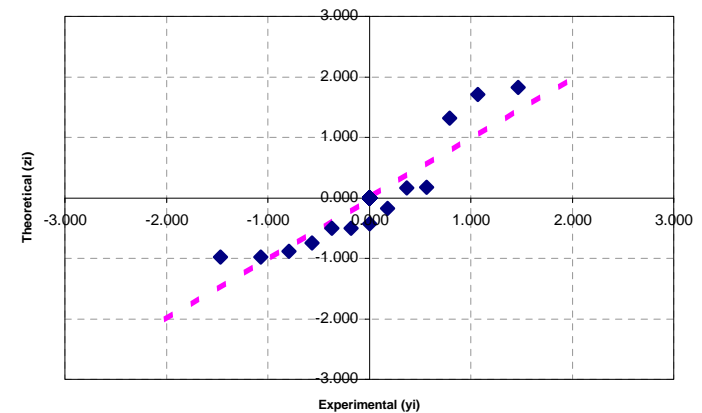
Mean greater than the critical concentration



### Spatial Distribution



### Q-Q Plot



V3.04 October 200

# STATISTICAL ASSESMENT RESULTS

Select Contaminant

Phenanthrene



The Dove Way, Uttoxeter

NTE285

### Basic Statistics

Sample mean (mg/kg)	6.11
Standard Deviation	6.77
Sample Size	14
Minimum (mg/kg)	0.06
Maximum (mg/kg)	193.00
Kurtosis	3.510399
Skewness	1.706601

### Test for Normality

W	0.82
Shapiro Wilkes test statistic	0.86

### Recommended UCL to use

Chebychev

### Outlier Test 5% Significance

Were Exceedances present  
Exceedances remaining  
Outliers present  
Number of Outliers removed  
Non detects  
% Non-detects

### Use Normal

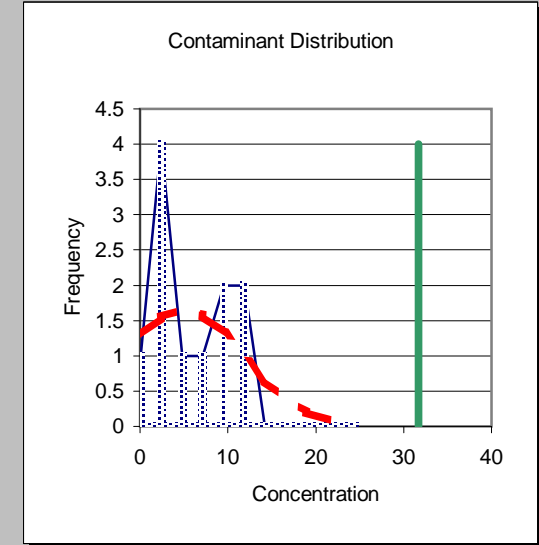
Were Exceedances present	Yes
Exceedances remaining	No
Outliers present	Yes
Number of Outliers removed	2
Non detects	0
% Non-detects	0%

### Upper Confidence Level

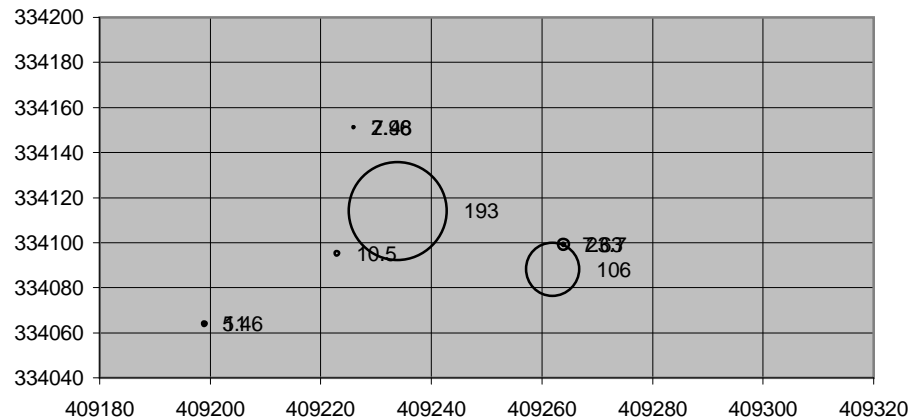
UCL used  
Critical Concentration (mg/kg)  
UCL (mg/kg)

UCL used	Chebychev
Critical Concentration (mg/kg)	3.17E+01
UCL (mg/kg)	14.64

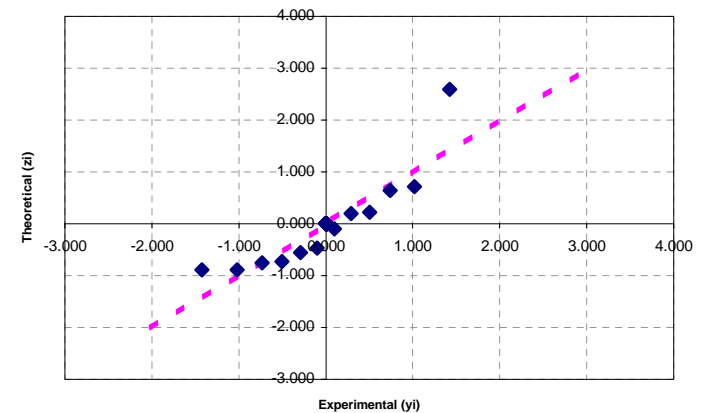
Mean is equal or less than critical concentration



### Spatial Distribution



### Q-Q Plot



V3.04 October 200

# STATISTICAL ASSESMENT RESULTS

Select Contaminant

Fluoranthene



The Dove Way, Uttoxeter

NTE285

### Basic Statistics

Sample mean (mg/kg)	13.60
Standard Deviation	12.53
Sample Size	14
Minimum (mg/kg)	0.11
Maximum (mg/kg)	242.00
Kurtosis	0.237636
Skewness	0.875809

### Test for Normality

W	0.92
Shapiro Wilkes test statistic	0.86

### Recommended UCL to use

**T-test**

### Outlier Test 5% Significance

Were Exceedances present  
Exceedances remaining  
Outliers present  
Number of Outliers removed  
Non detects  
% Non-detects

### Use Normal

Were Exceedances present	Yes
Exceedances remaining	Yes
Outliers present	No
Number of Outliers removed	2
Non detects	0
% Non-detects	0%

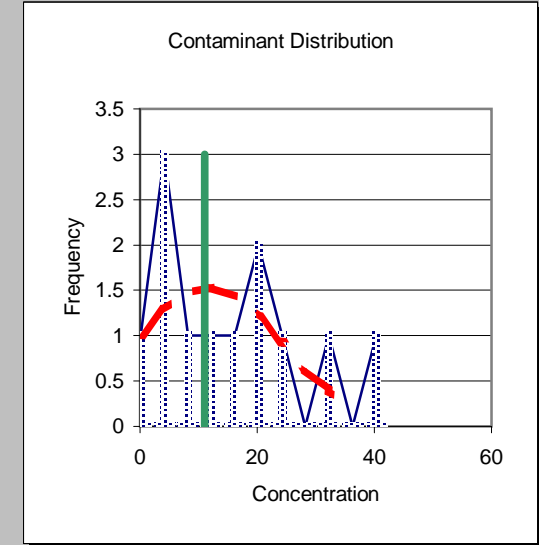
### Upper Confidence Level

UCL used  
Critical Concentration (mg/kg)  
**UCL (mg/kg)**

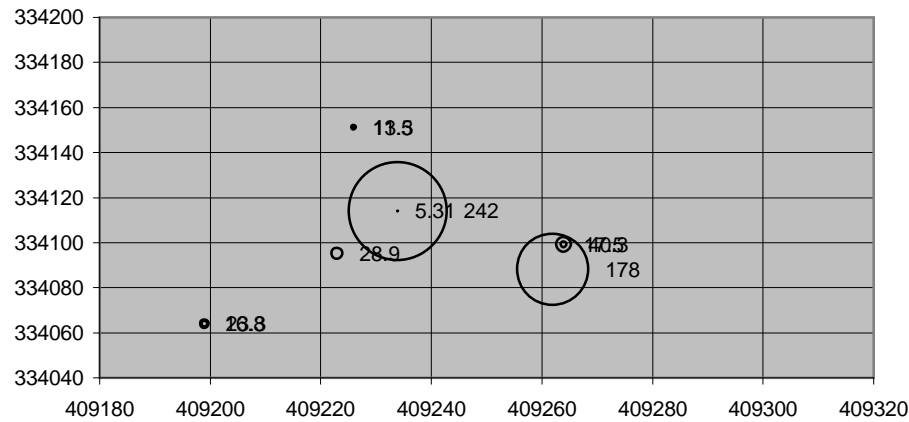
### Change UCL

UCL used	Chebychev
Critical Concentration (mg/kg)	1.11E+01
<b>UCL (mg/kg)</b>	<b>29.37</b>

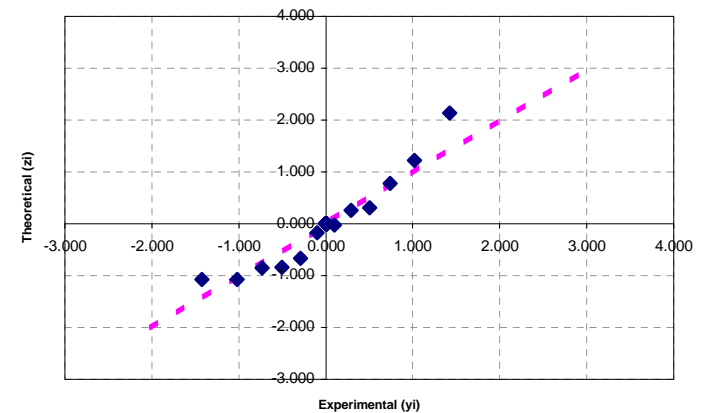
**Mean greater than the critical concentration**



### Spatial Distribution



### Q-Q Plot



V3.04 October 200

# STATISTICAL ASSESMENT RESULTS

Select Contaminant

Pyrene



The Dove Way, Uttoxeter

NTE285

### Basic Statistics

Sample mean (mg/kg)	11.58
Standard Deviation	10.30
Sample Size	14
Minimum (mg/kg)	0.07
Maximum (mg/kg)	178.00
Kurtosis	-0.01086
Skewness	0.762104

### Test for Normality

W	0.92
Shapiro Wilkes test statistic	0.86

### Recommended UCL to use

**T-test**

### Outlier Test 5% Significance

Were Exceedances present  
Exceedances remaining  
Outliers present  
Number of Outliers removed  
Non detects  
% Non-detects

### Use Normal

Were Exceedances present	Yes
Exceedances remaining	No
Outliers present	No
Number of Outliers removed	2
Non detects	0
% Non-detects	0%

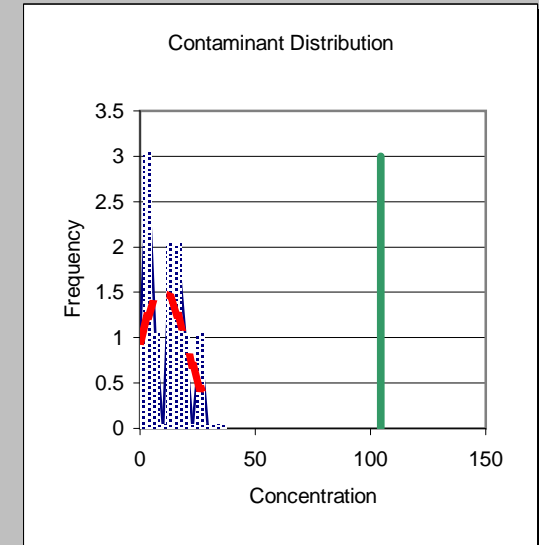
### Upper Confidence Level

UCL used  
Critical Concentration (mg/kg)  
**UCL (mg/kg)**

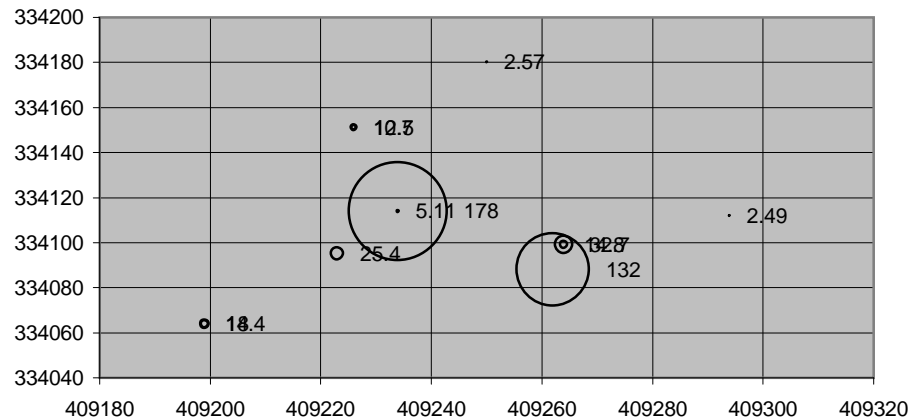
### Change UCL

UCL used	Chebychev
Critical Concentration (mg/kg)	1.04E+02
<b>UCL (mg/kg)</b>	<b>24.54</b>

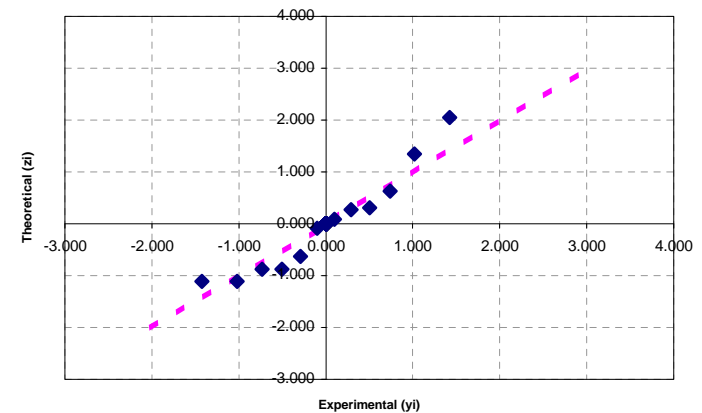
**Mean is equal or less than critical concentration**



### Spatial Distribution



### Q-Q Plot



V3.04 October 200

# STATISTICAL ASSESMENT RESULTS

Select Contaminant

Benzo(a)anthracene



The Dove Way, Uttoxeter

NTE285

### Basic Statistics

Sample mean (mg/kg)	7.08
Standard Deviation	6.84
Sample Size	14
Minimum (mg/kg)	0.06
Maximum (mg/kg)	65.50
Kurtosis	-0.46019
Skewness	0.848975

### Test for Normality

W	0.89
Shapiro Wilkes test statistic	0.86

### Recommended UCL to use

T-test

### Outlier Test 5% Significance

Were Exceedances present  
Exceedances remaining  
Outliers present  
Number of Outliers removed  
Non detects  
% Non-detects

### Use Normal

Were Exceedances present	Yes
Exceedances remaining	Yes
Outliers present	No
Number of Outliers removed	2
Non detects	0
% Non-detects	0%

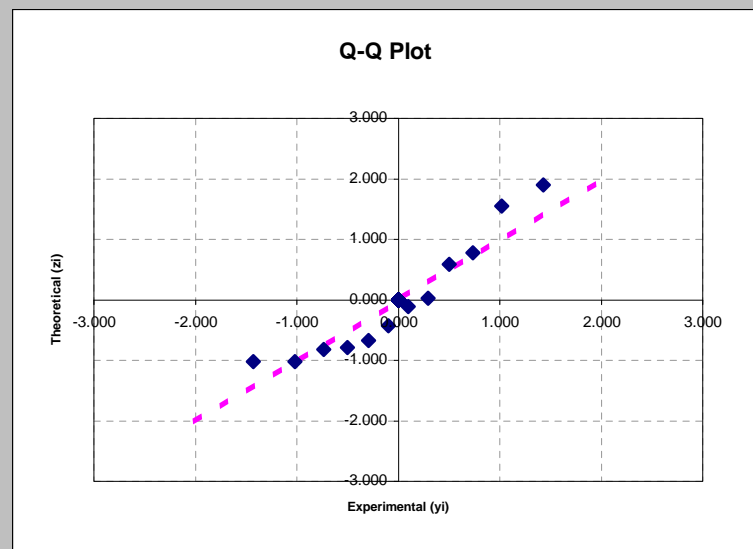
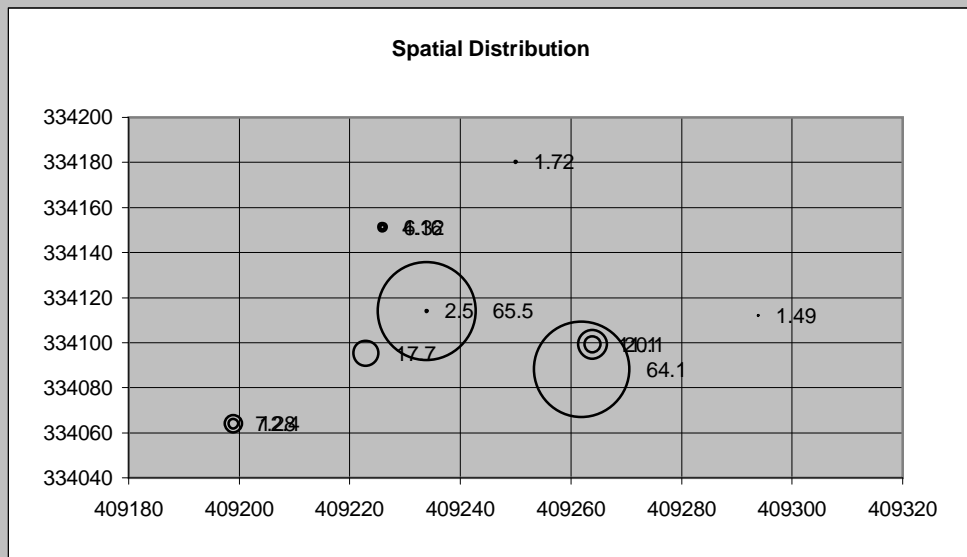
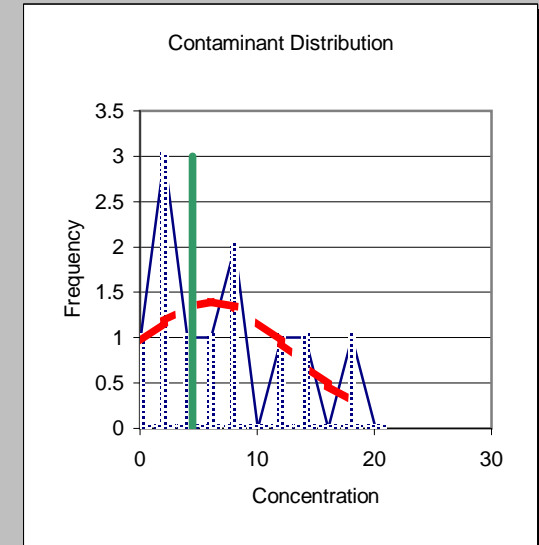
### Upper Confidence Level

UCL used  
Critical Concentration (mg/kg)  
UCL (mg/kg)

### Change UCL

UCL used	Chebychev
Critical Concentration (mg/kg)	4.50E+00
UCL (mg/kg)	15.69

Mean greater than the critical concentration



V3.04 October 200

# STATISTICAL ASSESMENT RESULTS

Select Contaminant

Chrysene



The Dove Way, Uttoxeter

NTE285

### Basic Statistics

Sample mean (mg/kg)	14.07
Standard Deviation	21.24
Sample Size	14
Minimum (mg/kg)	0.07
Maximum (mg/kg)	63.20
Kurtosis	2.982672
Skewness	2.025706

### Test for Normality

W	0.64
Shapiro Wilkes test statistic	0.87

### Recommended UCL to use

Chebychev

### Outlier Test 5% Significance

Were Exceedances present  
 Exceedances remaining  
 Outliers present  
 Number of Outliers removed  
 Non detects  
 % Non-detects

### Use Normal

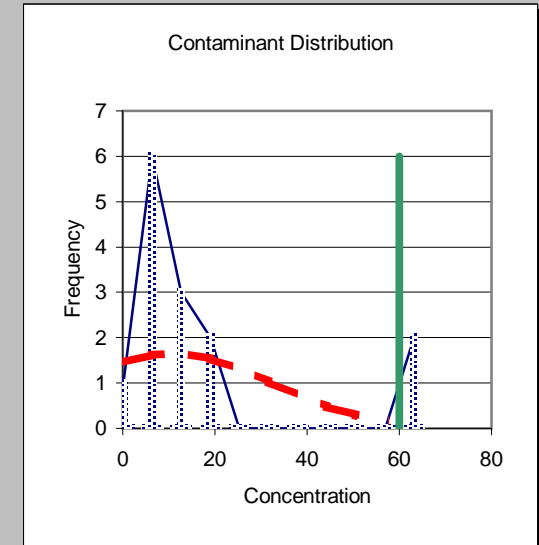
Were Exceedances present	Yes
Exceedances remaining	Yes
Outliers present	No
Number of Outliers removed	0
Non detects	0
% Non-detects	0%

### Upper Confidence Level

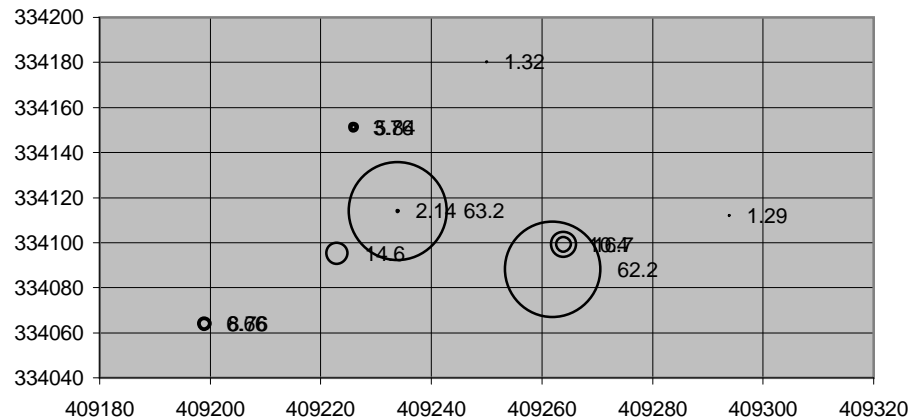
UCL used  
 Critical Concentration (mg/kg)  
**UCL (mg/kg)**

UCL used	Chebychev
Critical Concentration (mg/kg)	6.00E+01
<b>UCL (mg/kg)</b>	<b>38.83</b>

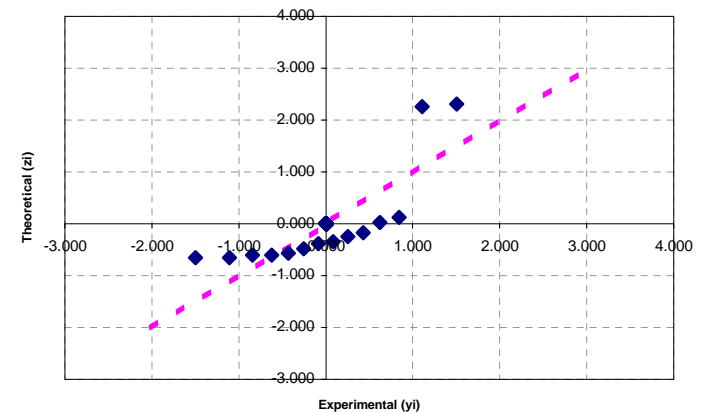
Mean is equal or less than critical concentration



### Spatial Distribution



### Q-Q Plot



V3.04 October 200

# STATISTICAL ASSESMENT RESULTS

Select Contaminant

Benzo(b)fluoranthene



The Dove Way, Uttoxeter

NTE285

### Basic Statistics

Sample mean (mg/kg)	10.08
Standard Deviation	9.02
Sample Size	14
Minimum (mg/kg)	0.12
Maximum (mg/kg)	84.60
Kurtosis	-1.07001
Skewness	0.5672

### Test for Normality

W	0.89
Shapiro Wilkes test statistic	0.86

### Recommended UCL to use

T-test

### Outlier Test 5% Significance

Were Exceedances present  
Exceedances remaining  
Outliers present  
Number of Outliers removed  
Non detects  
% Non-detects

### Use Normal

Were Exceedances present	Yes
Exceedances remaining	Yes
Outliers present	No
Number of Outliers removed	2
Non detects	0
% Non-detects	0%

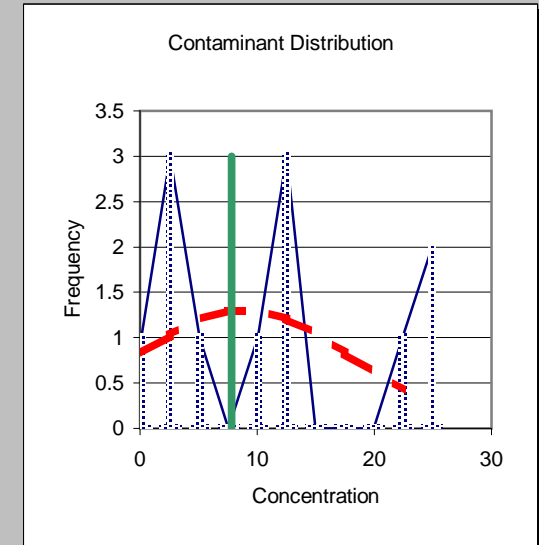
### Upper Confidence Level

UCL used  
Critical Concentration (mg/kg)  
UCL (mg/kg)

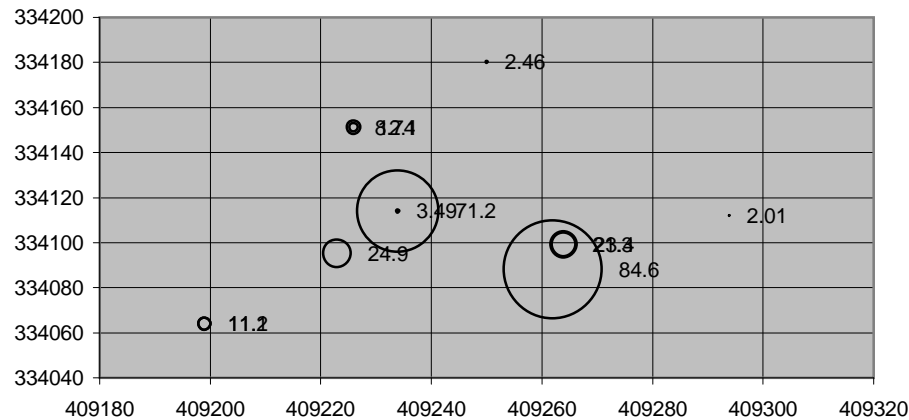
### Change UCL

UCL used	Chebychev
Critical Concentration (mg/kg)	7.81E+00
UCL (mg/kg)	21.44

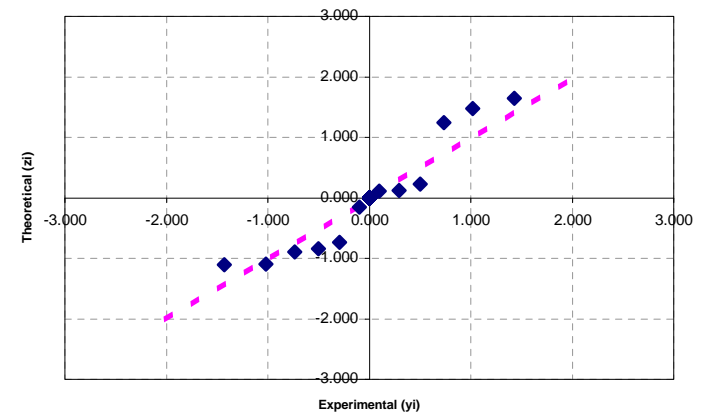
Mean greater than the critical concentration



### Spatial Distribution



### Q-Q Plot



V3.04 October 200



# STATISTICAL ASSESMENT RESULTS

Select Contaminant

Benzo(k)fluoranthene



The Dove Way, Uttoxeter

NTE285

### Basic Statistics

Sample mean (mg/kg)	7.21
Standard Deviation	9.42
Sample Size	14
Minimum (mg/kg)	0.04
Maximum (mg/kg)	29.30
Kurtosis	2.467272
Skewness	1.833272

### Test for Normality

W	0.71
Shapiro Wilkes test statistic	0.87

### Recommended UCL to use

Chebychev

### Outlier Test 5% Significance

Were Exceedances present  
Exceedances remaining  
Outliers present  
Number of Outliers removed  
Non detects  
% Non-detects

### Use Normal

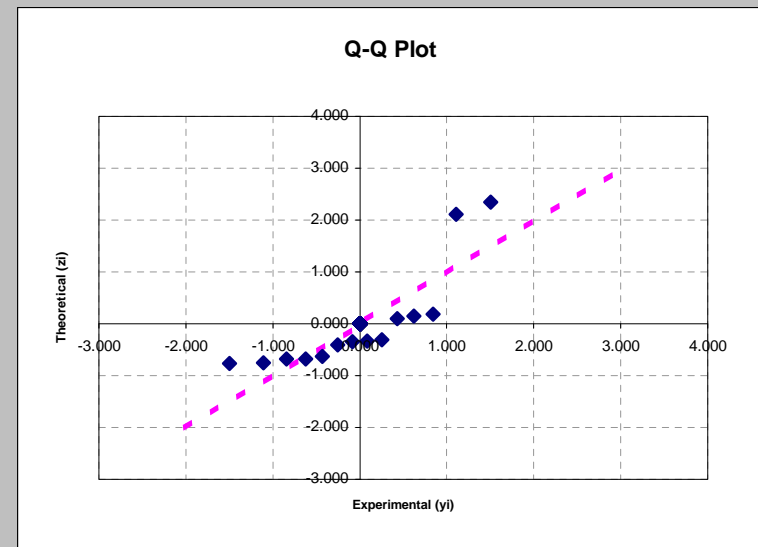
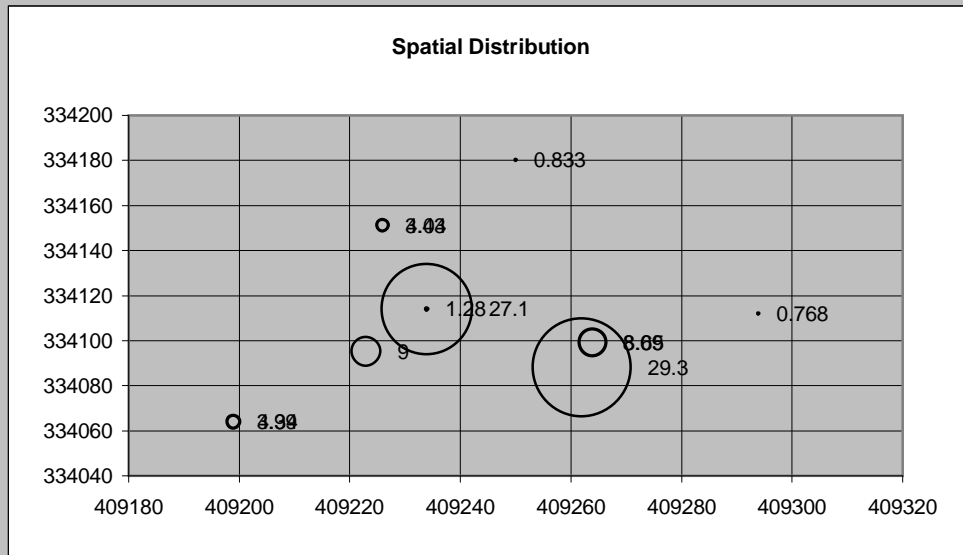
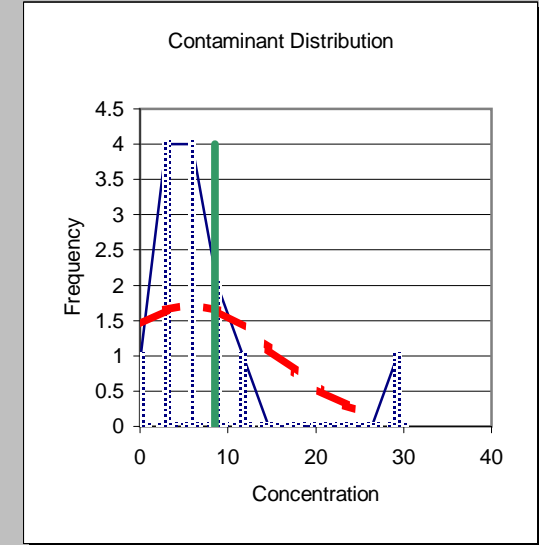
Were Exceedances present	Yes
Exceedances remaining	Yes
Outliers present	No
Number of Outliers removed	0
Non detects	0
% Non-detects	0%

### Upper Confidence Level

UCL used  
Critical Concentration (mg/kg)  
UCL (mg/kg)

UCL used	Chebychev
Critical Concentration (mg/kg)	8.51E+00
UCL (mg/kg)	18.18

Mean greater than the critical concentration



V3.04 October 200

# STATISTICAL ASSESMENT RESULTS

Select Contaminant

Benzo(a)pyrene



The Dove Way, Uttoxeter

NTE285

### Basic Statistics

Sample mean (mg/kg)	7.28
Standard Deviation	6.36
Sample Size	14
Minimum (mg/kg)	0.04
Maximum (mg/kg)	52.10
Kurtosis	-0.58278
Skewness	0.594737

### Test for Normality

W	0.91
Shapiro Wilkes test statistic	0.86

### Recommended UCL to use

T-test

### Outlier Test 5% Significance

Were Exceedances present  
Exceedances remaining  
Outliers present  
Number of Outliers removed  
Non detects  
% Non-detects

### Use Normal

Were Exceedances present	Yes
Exceedances remaining	Yes
Outliers present	No
Number of Outliers removed	2
Non detects	0
% Non-detects	0%

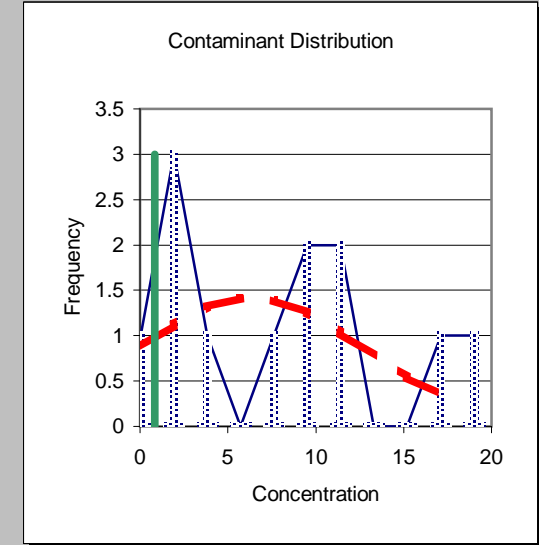
### Upper Confidence Level

UCL used  
Critical Concentration (mg/kg)  
UCL (mg/kg)

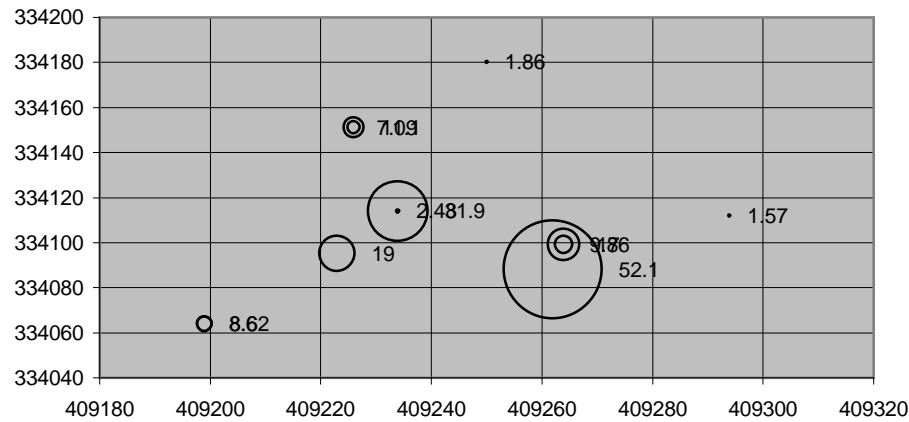
### Change UCL

UCL used	Chebychev
Critical Concentration (mg/kg)	8.26E-01
UCL (mg/kg)	15.29

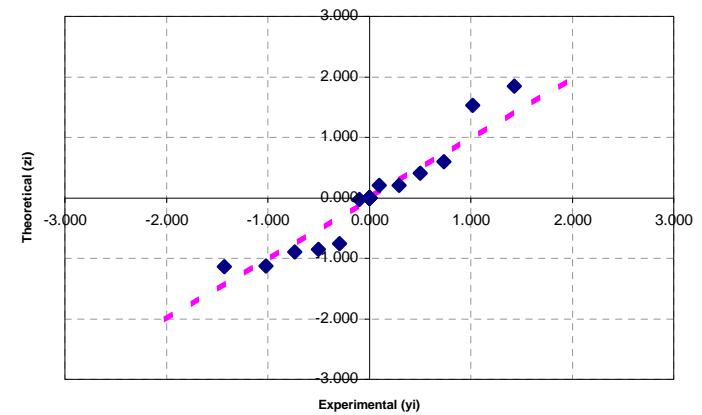
Mean greater than the critical concentration



### Spatial Distribution



### Q-Q Plot



V3.04 October 200

# STATISTICAL ASSESMENT RESULTS

Select Contaminant

Indeno(1,2,3-c,d)pyrene



The Dove Way, Uttoxeter

NTE285

## Basic Statistics

Sample mean (mg/kg)	4.78
Standard Deviation	4.32
Sample Size	14
Minimum (mg/kg)	0.03
Maximum (mg/kg)	36.60
Kurtosis	-0.87078
Skewness	0.59168

## Test for Normality

W	0.92
Shapiro Wilkes test statistic	0.86

## Recommended UCL to use

**T-test**

## Outlier Test 5% Significance

Were Exceedances present  
Exceedances remaining  
Outliers present  
Number of Outliers removed  
Non detects  
% Non-detects

## Use Normal

Were Exceedances present	Yes
Exceedances remaining	Yes
Outliers present	No
Number of Outliers removed	2
Non detects	0
% Non-detects	0%

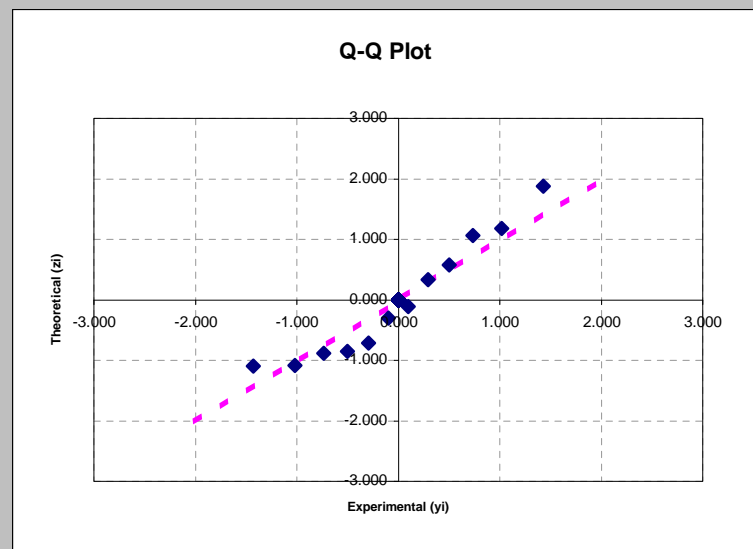
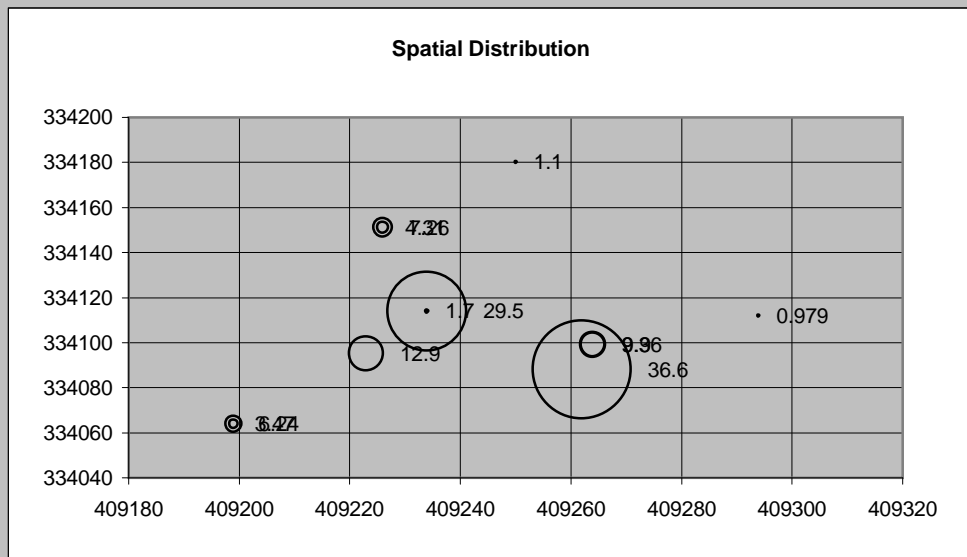
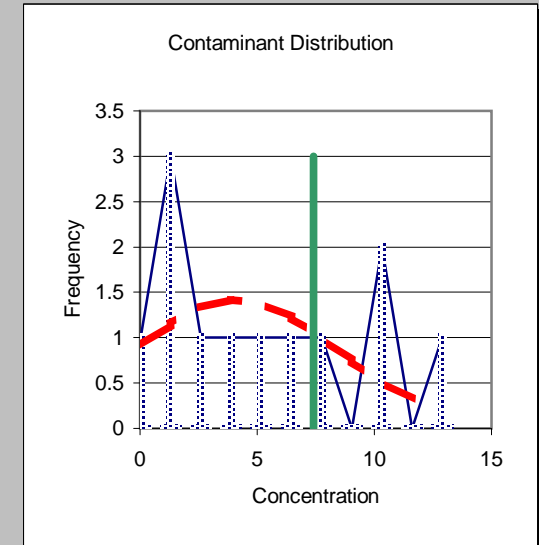
## Upper Confidence Level

UCL used  
Critical Concentration (mg/kg)  
**UCL (mg/kg)**

## Change UCL

UCL used	Chebychev
Critical Concentration (mg/kg)	7.41E+00
<b>UCL (mg/kg)</b>	<b>10.22</b>

**Mean greater than the critical concentration**



V3.04 October 200

# STATISTICAL ASSESMENT RESULTS

Select Contaminant

Dibenzo(a,h)anthracene



The Dove Way, Uttoxeter

NTE285

### Basic Statistics

Sample mean (mg/kg)	1.35
Standard Deviation	1.23
Sample Size	14
Minimum (mg/kg)	0.02
Maximum (mg/kg)	8.90
Kurtosis	-0.83996
Skewness	0.639415

### Test for Normality

W	0.90
Shapiro Wilkes test statistic	0.86

### Recommended UCL to use

**T-test**

### Outlier Test 5% Significance

Were Exceedances present  
 Exceedances remaining  
 Outliers present  
 Number of Outliers removed  
 Non detects  
 % Non-detects

### Use Normal

Were Exceedances present	Yes
Exceedances remaining	Yes
Outliers present	No
Number of Outliers removed	2
Non detects	0
% Non-detects	0%

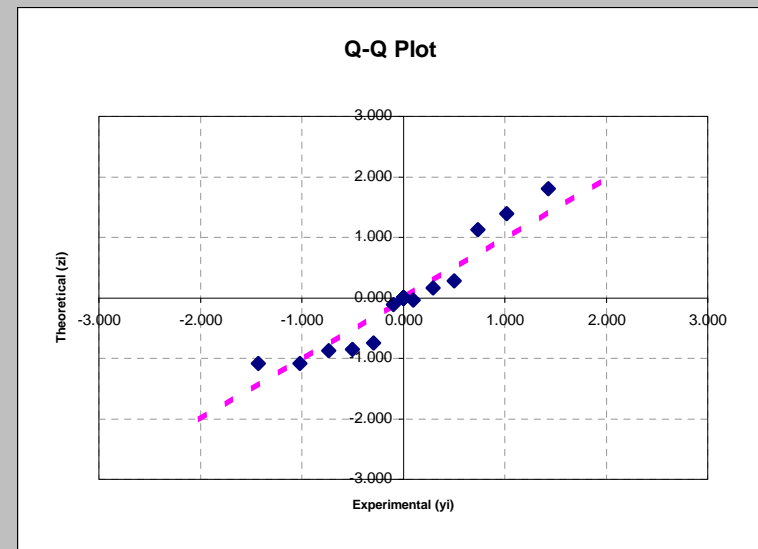
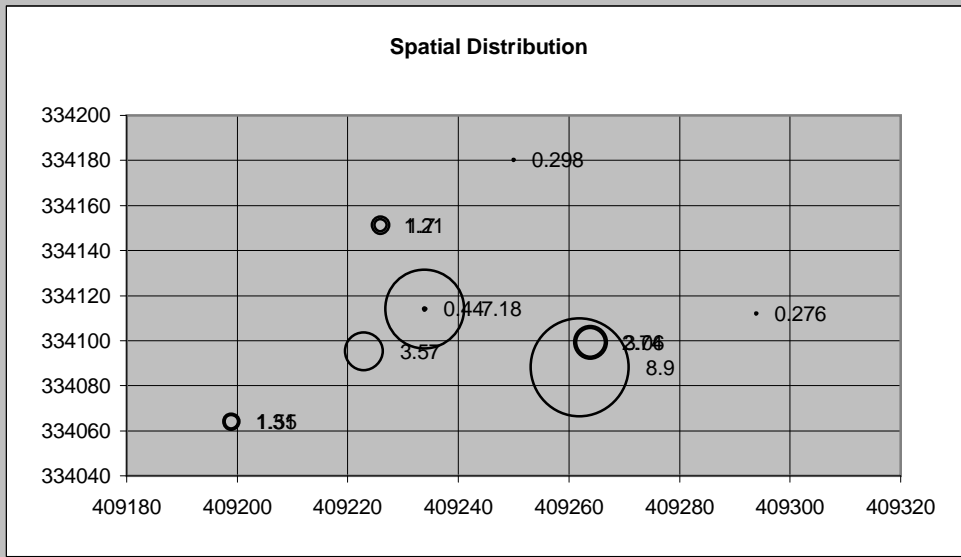
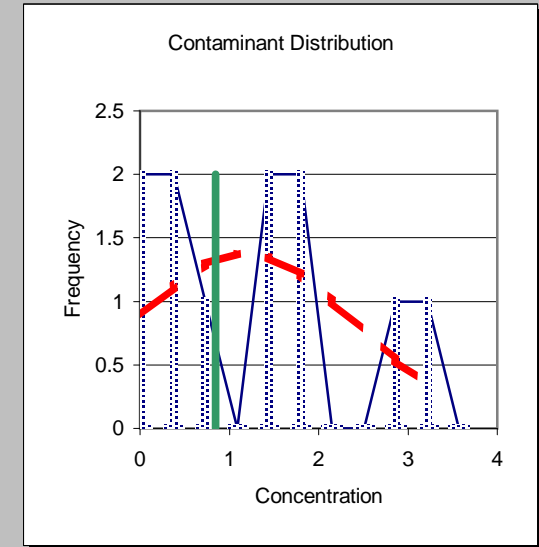
### Upper Confidence Level

UCL used  
 Critical Concentration (mg/kg)  
**UCL (mg/kg)**

### Change UCL

UCL used	Chebychev
Critical Concentration (mg/kg)	8.47E-01
<b>UCL (mg/kg)</b>	<b>2.90</b>

**Mean greater than the critical concentration**



V3.04 October 200

Residential Pathway Specific Assessment Sub Criteria derived March 2009	Vapour Inhalation (Indoors)	Vapour Inhalation (Outdoors)	Soil Ingestion	Ingestion of Contaminated Vegetables and soil attached to	Dermal contact	Particulate Dust Inhalation	Residential GSAC
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	mg/kg
Arsenic	NR	NR	4.04E+01	4.29E+02	2.62E+02	8.50E+01	3.24E+01
Barium	NR	NR	1.35E+04	1.48E+03	NR	4.25E+06	1.33E+03
Beryllium	NR	NR	1.56E+02	1.03E+03	NR	2.89E+01	2.38E+01
Boron	NR	NR	1.08E+04	1.50E+02	NR	3.40E+06	1.48E+02
Cadmium	NR	NR	1.20E+02	1.22E+01	1.64E+04	1.82E+02	1.04E+01
Chromium	NR	NR	3.06E+02	4.05E+02	NR	4.25E+01	3.42E+01
Copper	NR	NR	1.08E+04	5.13E+03	NR	3.40E+06	3.47E+03
Lead	NR	NR	4.81E+02	1.33E+03	NR	3.03E+03	3.17E+02
Inorganic Mercury	NR	NR	2.62E+02	5.81E+02	NR	2.55E+03	1.69E+02
Nickel	NR	NR	8.09E+02	1.64E+03	3.15E+04	1.27E+02	1.27E+02
Selenium	NR	NR	5.97E+02	8.51E+02	NR	1.88E+05	3.50E+02
Vanadium	NR	NR	2.30E+02	1.82E+02	NR	8.29E+03	1.00E+02
Zinc	NR	NR	4.37E+04	5.82E+03	NR	1.38E+07	5.13E+03
Cyanide (free)							4.30E+01
Cyanide (Complex)							2.13E+02
Phenol	5.89E+02	5.52E+05	9.17E+04	4.53E+02	6.63E+02	3.22E+05	1.84E+02
Ethylbenzene	1.70E+02	1.79E+06	1.34E+04	1.07E+02	2.62E+04	9.01E+06	6.52E+01
m-xylene	5.56E+01	5.04E+05	2.42E+04	2.05E+02	4.71E+04	2.19E+06	4.36E+01
p-xylene	5.34E+01	4.94E+05	2.42E+04	1.93E+02	4.71E+04	2.19E+06	4.17E+01
o-xylene	5.98E+01	5.23E+05	2.42E+04	1.87E+02	4.71E+04	2.19E+06	4.52E+01
TPH (>EC5-6) aliphatic	2.97E+00	2.53E+06	6.74E+05	9.69E+03	1.01E+06	1.12E+08	2.97E+00
TPH (>EC6-8) aliphatic	7.75E+00	4.08E+06	6.74E+05	3.30E+04	1.01E+06	1.12E+08	7.75E+00
TPH (>EC8-10) aliphatic	2.14E+00	4.99E+05	6.74E+03	2.29E+03	1.01E+04	6.08E+06	2.13E+00
TPH (>EC10-12) aliphatic	1.27E+01	1.22E+06	6.74E+03	1.75E+04	1.01E+04	6.08E+06	1.26E+01
TPH (>EC12-16) aliphatic	6.38E+01	2.73E+06	6.74E+03	2.23E+05	1.01E+04	6.08E+06	6.28E+01
TPH (>EC16-35) aliphatic	7.35E+03	7.74E+07	1.35E+05	1.16E+07	2.02E+05	4.25E+07	6.73E+03
TPH (>EC21-35) aliphatic	7.35E+03	7.74E+07	1.35E+05	1.16E+07	2.02E+05	4.25E+07	6.73E+03
TPH (>EC35-44) aliphatic	7.35E+03	7.74E+07	1.35E+05	1.16E+07	2.02E+05	4.25E+07	6.73E+03
TPH (>EC6-7) aromatic (benzene)	2.69E-01	5.63E+03	3.91E+01	1.13E-01	7.61E+01	5.95E+04	7.92E-02
TPH (>EC7-8) aromatic (toluene)	6.26E+02	8.62E+06	3.00E+04	1.48E+02	5.84E+04	5.81E+07	1.19E+02
TPH (>EC8-10) aromatic	3.64E+00	2.91E+05	2.70E+03	7.45E+01	4.04E+03	1.21E+06	3.46E+00
TPH (>EC10-12) aromatic	2.18E+01	7.11E+05	2.70E+03	9.71E+01	4.04E+03	1.21E+06	1.76E+01
TPH (>EC12-16) aromatic	1.23E+02	1.68E+06	2.70E+03	1.67E+02	4.04E+03	1.21E+06	6.77E+01
TPH (>EC16-21) aromatic	9.47E+02	3.34E+06	2.02E+03	3.45E+02	3.03E+03	6.37E+05	2.09E+02
TPH (>EC21-35) aromatic	1.21E+05	2.50E+07	2.02E+03	2.66E+03	3.03E+03	6.37E+05	8.26E+02
TPH (>EC35-44) aromatic	1.21E+05	2.50E+07	2.02E+03	2.66E+03	3.03E+03	6.37E+05	8.26E+02
Naphthalene	1.64E+00	3.17E+04	2.64E+03	2.72E+01	3.96E+03	2.93E+04	1.54E+00
Acenaphthylene	1.36E-01	8.48E+02	2.70E+02	8.15E+00	4.04E+02	2.97E+02	1.33E-01
Acenaphthene	5.27E+00	1.84E+04	2.70E+03	2.34E+02	4.04E+03	2.97E+03	5.13E+00
Fluorene	8.67E+03	1.77E+07	5.39E+03	8.53E+02	8.07E+03	1.70E+06	6.26E+02
Phenanthrene	3.44E+01	3.91E+04	2.70E+03	6.69E+02	4.04E+03	2.97E+03	3.17E+01
Anthracene	3.41E+05	2.69E+08	4.04E+04	1.30E+04	6.06E+04	1.27E+07	8.27E+03
Fluoranthene	1.59E+01	7.09E+03	2.70E+02	5.59E+01	4.04E+02	2.97E+02	1.11E+01
Pyrene	1.52E+02	6.71E+04	2.70E+03	4.96E+02	4.04E+03	2.97E+03	1.04E+02
Benzo(a)anthracene	1.12E+01	1.57E+03	2.70E+01	2.72E+01	4.04E+01	2.97E+01	4.50E+00
Chrysene	5.91E+02	1.37E+04	2.70E+02	1.87E+02	4.04E+02	2.97E+02	6.00E+01
Benzo(b)fluoranthene	1.72E+02	1.93E+03	2.70E+01	3.81E+01	4.04E+01	2.97E+01	7.81E+00
Benzo(k)fluoranthene	2.83E+02	2.30E+03	2.70E+01	5.52E+01	4.04E+01	2.97E+01	8.51E+00
Benzo(a)pyrene	2.44E+01	2.13E+02	2.70E+00	4.75E+00	4.04E+00	2.97E+00	8.26E-01
Indeno(123-cd)pyrene	1.43E+02	1.79E+03	2.70E+01	3.13E+01	4.04E+01	2.97E+01	7.41E+00
Dibenzo(ah)anthracene	1.22E+01	2.65E+02	2.70E+00	7.15E+00	4.04E+00	2.97E+00	8.47E-01
Benzo(g,h,i)perylene	2.56E+07	1.66E+08	4.04E+03	2.41E+04	6.06E+03	1.27E+06	2.20E+03
Tetrachloroethene (PCE)	1.35E+00	2.65E+05	1.82E+03	1.07E+01	3.55E+03	2.50E+06	1.20E+00
Trichloroethene (TCE)	1.10E-01	2.22E+04	7.01E+02	2.85E+00	1.05E+03	2.21E+05	1.06E-01
Vinyl Chloride (VC)	5.43E-04	3.59E+02	1.89E+00	3.70E-03	3.67E+00	1.27E+04	4.73E-04
1,1,2,2-Tetrachloroethane (PCA)	2.76E+00	1.17E+05	7.67E+02	2.72E+00	1.49E+03	2.41E+05	1.37E+00
1,1,1-Trichloroethane (TCA)	6.33E+00	1.79E+06	8.09E+04	3.22E+02	1.57E+05	2.46E+07	6.21E+00
1,2-Dichloroethane	6.46E-03	8.09E+02	1.62E+01	3.07E-02	3.15E+01	5.10E+03	5.34E-03
Carbon Tetrachloride	1.81E-02	5.07E+03	1.90E+02	1.06E+00	3.70E+02	6.93E+04	1.78E-02

<b>Date</b>	<b>Version</b>	<b>Author</b>	<b>Checked</b>	<b>Authorisation</b>	<b>Notes</b>
17/09/2008	1	TJH			Initial beta issue
23/10/2008	2	TJH			Lognormal outlier test added, bug fixes
06/02/2009	3	TJH			Revised CLEA 2008 GSACs
15/04/2009	3.01	TJH			Revised 2009 TOX reports for Hg, Se, BTEX, Soil saturation limit added
04/06/2009	3.02	TJH			Revised 2009 TOX reports for As, Ni, Outlier test updated, format changes to report sheet
22/07/2009	3.03	TJH			Revised 2009 TOX reports for Phenol and Cadmium
19/10/2009	3.04	TJH			Non standard landuses added for schools and playing fields





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