The Environmental Protection Group Ltd

Contamination Assessment Report

Midland Road, Scunthorpe

FINAL, ISSUE 2

November 2013

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NON TECHNICAL SUMMARY

The Midland Road Industrial Estate, and area of public open space located to the west, is an old ironstone quarry which was excavated using open cast methods between 1908 and the mid 1940's. When quarrying ended the excavation was used as a landfill and filled with waste by former Humberside County Council. Commercial and industrial units were then built on the site in the 1960's/1970's and 1980's at a time when the impact of development on top of landfills was not well understood or recognised.

The former Scunthorpe Borough Council investigated the site in the early 1990's and as a result put in place measures to protect local residents along Lilac Avenue and Warwick Avenue from the build-up of landfill gas in their homes. This work needed to be reassessed in the light of today's scientific knowledge about landfill sites.

North Lincolnshire Council undertook an initial desk based assessment of the old landfill site in 2011/12 (Preliminary Risk Assessment, Midland Road Former Landfill Site Scunthorpe North Lincolnshire, May 2012 (PRA, May 2012)). This assessment was undertaken in order to try and understand the potential health risks associated with the site, as the council had also become aware of an isolated incident relating to smells of gases inside the council's Cottage Beck Road Depot.

Landfill waste has the potential to generate gas. On most older sites the gas is not being generated in large enough volumes to cause problems to the site or surrounding areas. The most common gases generated by landfills are methane and carbon dioxide. In certain circumstances methane can accumulate within and/or beneath properties and cause explosions. Carbon dioxide is an asphyxiant. Landfills may also contain very small amounts of toxic gases.

Landfill waste deposits can also contain substances which are potentially harmful to human health, for example; arsenic, asbestos and lead. These substances are only harmful to health if there is enough in the ground and people can come into contact with it.

In the UK Local Authorities are required to inspect their areas to identify any pieces of land which may be considered 'Contaminated Land'. The term 'Contaminated Land' is defined in the UK in a piece of legislation known as Part 2A of the Environmental Protection Act 1990.

North Lincolnshire Council has identified that the Midland Road site should be assessed to identify whether or not it meets the legal definition of 'Contaminated Land', as the Council identified that landfill gas was present in the waste deposits and it had gathered information to suggest that landfill gases might be entering some business premises on the industrial estate. The council successfully bid for funding from central government to carry out the site investigation. The purpose of the site investigation is to find out if the landfill gas poses a significant possibility of significant harm (SPOSH) either to residents in houses adjacent to the public open space (Lilac Avenue and Warwick Road) and/or to tenants who work in buildings on the industrial estate. The investigation also included work to identify whether the capping soils on the public open space pose significant possibility of significant harm (SPOSH) to people who use the green space regularly (e.g. dog walkers).

The term (SPOSH) is an important aspect of the overall assessment of the landfill site as in April 2012 the Department for Environment, Food and Rural Affairs (DEFRA), together with the Environment Agency (EA), released updated Statutory Guidance to help define the meaning of 'Contaminated Land'. This document includes the concept of SPOSH, in other words for a site to meet the legal definition of 'Contaminated Land' it must be proven that Significant Possibility of Significant Harm (SPOSH) exists.

The initial desk based assessment of the site by North Lincolnshire Council (PRA, May 2012) and the site investigation has drawn together information about the waste that was deposited in the landfill site, which is summarised below.

The oldest wastes (placed before 1961) were deposited to the south and east of Midland Road, under the industrial buildings which were subsequently built in the 1960's / 70's. Recent site investigation has confirmed that this older waste is mostly ash, with some brick, concrete, slag and coal. Occasionally newspapers and plastic bags are also present within the waste. This type of waste does not generally produce a lot of landfill gas.

To the north and west of Midland Road, underlying the industrial units built in the 1970's / 80's, the waste was placed between 1961 and 1970. This waste includes a lot of wood, plastic, polythene and metal – again mixed in with ash, brick, coal, slag and concrete.

Beneath the public open space the youngest wastes are present, dating from between 1970 to 1976. This waste material is mostly ash, wood and plastic with some pottery, cloth, shoe leather, metal, rope, decomposing newspapers, cloth, banding straps, rubber, bikes, sofas, net and tyres.

It is known that the landfill waste beneath what is now the area of public open space was covered over with soil (capped) in 1979/1980. This soil has subsequently been 'restored' (vegetated with grass and trees), making the public open space which is now used by local residents.

The main part of the investigation was completed in December 2012 and included digging holes across the industrial estate and public open space, together with testing the soils and groundwater underneath the site to see how much contamination is in the ground. Monitoring for landfill gas has also been undertaken, both beneath the ground and within some buildings on the industrial estate and in houses next to the public open space.

A scientific assessment of the information about the contamination and landfill gas has been completed following Government and scientific guidelines. The assessment works were completed by the Environmental Protection Group Limited (EPG), independently of North Lincolnshire Council.

EPG's assessment has been checked by the Environmental Protection Officer for North Lincolnshire Council, together with two independent UK experts in the field of contamination assessment and landfill gas risk assessment.

The assessment works have concluded the following:

- The soils which form the capping on the public open space DO NOT pose a significant possibility of significant harm (SPOSH) to people that use the land from chemicals in the ground such as arsenic and lead;
- The waste deposits within the former quarry DO NOT pose a significant possibility of significant harm (SPOSH) to residents in the adjacent residential properties located along Lilac Avenue and Warwick Road; and
- The older (pre 1961) waste deposits within the former quarry located to the south and east of Midland Road are not producing enough gas for it to come out of the ground fast enough to be a problem. The waste DOES NOT pose a significant possibility of significant harm (SPOSH) to users of these industrial buildings.

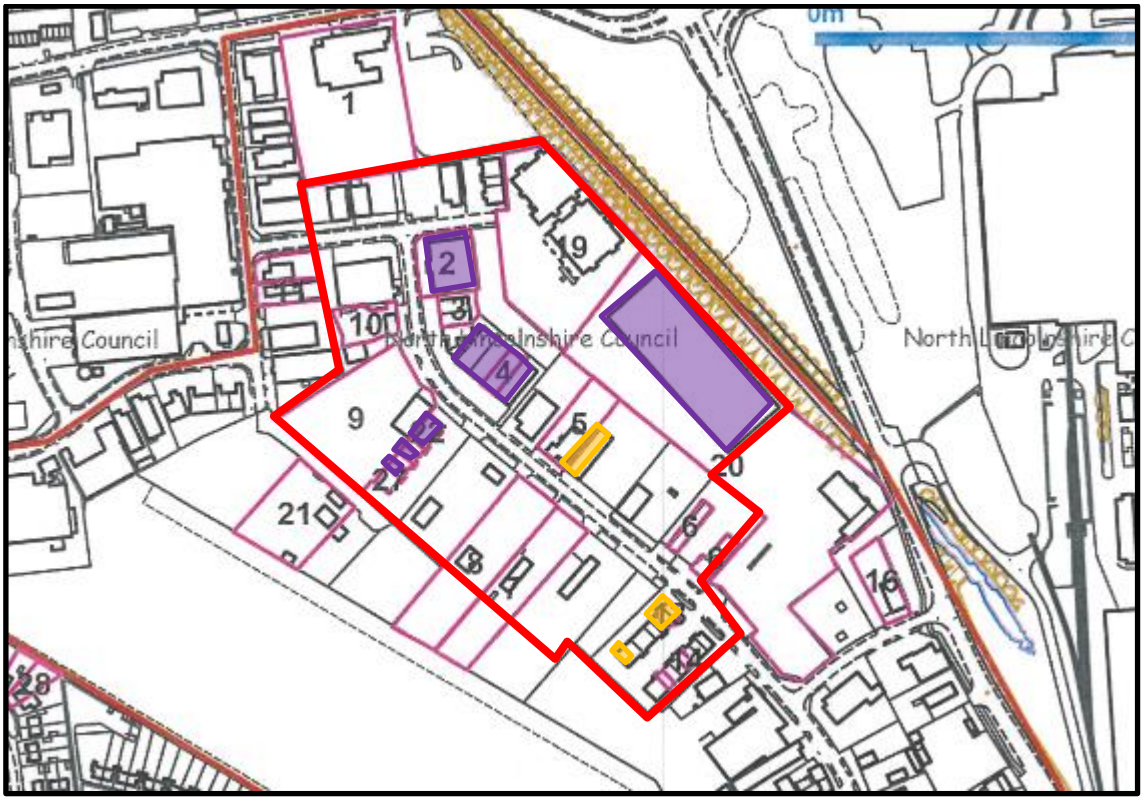
However, the assessment works have identified the following:

- Asbestos has been locally identified within the capping soils on the open space (two test locations). *Note: Risks associated with the localised presence of asbestos have been assessed separately by specialist Consultants and the results of this additional assessment will be made available to all parties;*

- The younger (1961 to 1970) waste deposits within the former quarry located to the north and west of Midland Road have been found to be generating gas, which in some instances (to date ten properties) has migrated in small quantities into overlying industrial units. Six properties where evidence of landfill gas ingress has been observed have been assessed as Category 1: Human Health, i.e. '*significant harm would occur if no action is taken to stop it'* (Paragraph 4.19 of the Contaminated Land Statutory Guidance, April 2012). A further four properties have been assessed as Category 2: Human Health, i.e. '*there is a significant possibility of significant harm and on the basis of the available evidence, including expert opinion, there is a strong case for taking action under Part 2A on a precautionary basis'* (Paragraphs 4.24 and 4.25(a) of the Contaminated Land Statutory Guidance, April 2012). Given the risks associated with gas ingress into all ten of these buildings mitigation measures will be implemented to stop the gas migration. The mitigation measures proposed (i.e. sealing of floor slab cracks, utility service penetrations and floor slab joints) are proportionate for the identified risks and can be implemented with minimal disturbance to existing tenants and at minimal cost. Monitoring of the buildings (both Category 1 and Category 2) will continue such that North Lincolnshire Council can ensure that the mitigation measures are working and landfill gas ingress managed.

- The ground model developed for the site indicates that, in addition to the ten buildings where evidence of landfill gas ingress has been observed, other industrial properties are located on the younger (1961 to 1970) waste mass. These properties have been assessed as Category 3: Human Health, i.e. '*risks are not low, but nonetheless the authority considers that Regulatory intervention under the Part 2A regime is not warranted'* (Paragraph 4.25(b) of the Contaminated Land Statutory Guidance, April 2012). In summary, whilst there is no evidence to suggest landfill gas ingress into these properties to date, the potential does exist for ingress to occur in the future and therefore a management plan is recommended - to include annual inspection and monitoring of the buildings.

The following plan shows the redline boundary, inside which all properties should be inspected and monitored on an annual basis for evidence of landfill gas ingress (i.e. assessed as Category 3: Human Health). Buildings which have been assessed as Category 1: Human Health are highlighted 'purple', with Category 2: Human Health buildings highlighted 'orange'.



1. INTRODUCTION

1.1 Background

Part 2A of the Environmental Protection Act 1990 requires that Local Authorities inspect their areas with a view to identifying 'Contaminated Land'. Relevant sections of the Part 2A Act include:

- Section 78B(1): Every local authority shall cause its area to be inspected from time to time for the purpose – (a) of identifying contaminated land; and (b) of enabling the authority to decide whether any such land is land which is required to be designated as a special site.

- Section 78B(2): In performing [these] functions….a local authority shall act in accordance with any guidance issued for the purpose by the Secretary of State.

In April 2012 the Department for Environment, Food and Rural Affairs (DEFRA) published the revised Contaminated Land Statutory Guidance, which clarifies Local Authority inspection duties, the legal definition of 'Contaminated Land', the determination process (if appropriate) and the associated remediation process (if required).

As part of North Lincolnshire Councils (NLCs) 'strategic' inspection duties the former Midland Road Landfill Site (now the Midland Road Industrial Estate) was identified to require 'detailed' inspection, as it considered that there was a reasonable possibility that a significant contaminant linkage existed in relation to the accumulation of landfill gas in properties on or nearby the landfill site. NLC prepared a Preliminary Risk Assessment (PRA, May 2012) for the site. A summary of the risk estimation as defined as part of the PRA is presented in the NLC Supplied Information Appendix. The PRA identified two potentially 'significant contaminant linkages':

- Potential gas/vapour risks to both on-site buildings/occupants and off-site dwellings/residents via lateral/vertical migration/ingress; and

- Potential human health risks associated with direct contact pathways via exposure to soils within the Public Open Space.

A copy of the PRA was provided to DEFRA and the Environment Agency (EA). NLC obtained Contaminated Land Capital Grant Funding from the 2012/13 budget in order to assess the potentially significant contaminant linkages identified by the PRA.

Other potentially complete contaminant linkages may exist at the site. However, on the basis of the evidence collected as part of the PRA it was not considered that Significant Possibility of Significant Harm (SPOSH) could reasonably exist for these other contaminant linkages and they were therefore outside the remit of the further "detailed" inspection works funded by the Contaminated Land Capital Grant Funding and are therefore outside the reporting scope of this document.

1.2 Scope

Utilising the Contaminated Land Capital Grant Funding, a scope of intrusive works was defined to help assess the potentially significant contaminant linkages – whilst reflecting budgetary constraints associated with the monies obtained from DEFRA and the EA.

The scope of intrusive works was outlined in NLCs document 'Request for Quotation: Ground Investigation – Midland Road Industrial Estate, Scunthorpe', which was released for competitive tender via the Councils procurement system (Supplier and Contract Management System (SCMS), Ref 27827). Geocore Limited (Geocore) successfully tendered for the Ground Investigation package and was awarded the contract for the intrusive works by NLC on 29 November 2011.

Separate to the above, NLC set out requirements for Consultancy support in relation to the project in their document 'Provision of Interpretative Reporting and Site Investigation Supervisor Role for the Part 2A Ground Investigation of Midland Road, Scunthorpe'. This document was similarly released for competitive tender via the NLC procurement system (SCMS Ref. 28192). The Environmental Protection Group Limited (EPG) successfully tendered for the Consultancy package and was awarded the contract for the works by NLC on 6 December 2012.

1.3 Objectives

The following report sets out the information ascertained from the detailed inspection of the Midland Road Industrial Estate – specifically in relation to the two potentially significant contaminant linkages identified by NLCs PRA. This report is provided to NLC such that they can make a scientifically-based, authoritative and relevant assessment of risks associated with the Midland Road Industrial Estate – consistent with Part 2A of the EPA 1990 and the associated Statutory Guidance (DEFRA, April 2012).

2. THE SITE

2.1 Site Location

The site is known as the Midland Road Industrial Estate and is located in Scunthorpe, North Lincolnshire. The National Grid Reference for the approximate centre of the site is 490741 410304. The site covers an area of approximately 39.8 hectares, located at an approximate level of 30mAOD. The location of the site and the site boundary is shown below in Plate 1, as supplied by NLC.

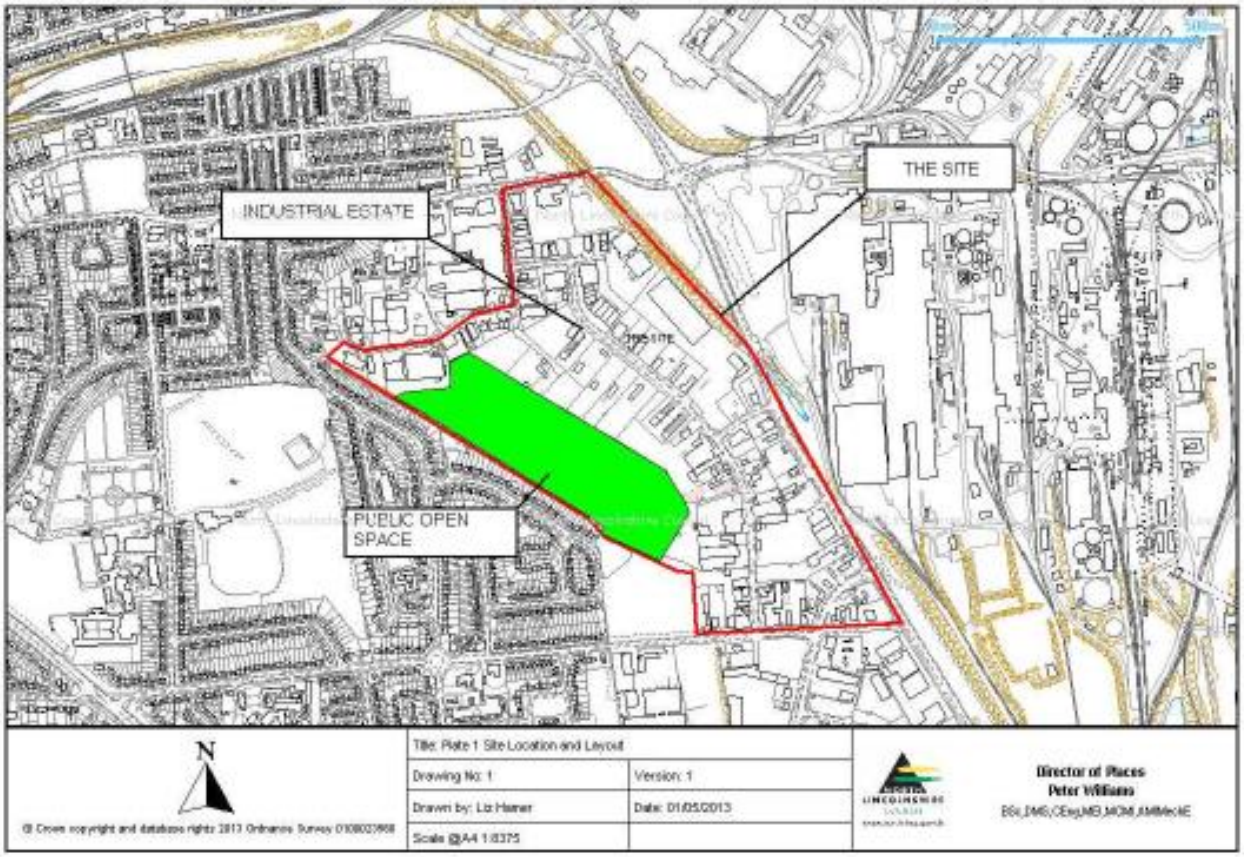


Plate 1. Site Location and Layout

2.2 Site Description

The site may broadly be divided into two discrete areas, as demonstrated in Plate 1;

- The industrial estate (31.8 hectares); and
- Public Open Space (8.0 hectares).

The industrial estate comprises 146 No. commercial / light industrial properties. Approximately 60% of these units are owned by NLC. A detailed walkover of the industrial estate was completed by NLC as part of the PRA. Further walkovers of the general site area have been completed by EPG as part of the intrusive works. Key observations may be summarised as follows:

- **Building design**: Detailed design drawings of the buildings were not available from the Local Authority Building Control Department. However the site walkover indicated properties to predominantly have solid ground bearing floor slabs. No evidence of passive ventilation was seen around the periphery of the buildings – with the exception of the Trinity Park buildings, where possible air vents were noted (although no information is available to confirm the nature of these installations).

- **Gas protection measures**: Information gathered from the site walkover suggests that gas protection measures (i.e. gas membranes) exist in only 18 relatively recently developed offices/warehouses (see the information provided to EPG in the NLC-Appendix). However, no verification information is available for these membrane installations. Only NLCs Cottage Beck Road Depot (located on the north-eastern portion of the site) has a fixed gas detection system. It is understood that this gas detection system was installed in June 2011 and has not triggered since installation.

- **Drainage**: Foul waste is disposed to mains sewer. Surface water appears to discharge to a mixture of soakaways and a combined system which accepts both foul and surface water. Occupiers of some premises complained about subsidence in the roads and considered this to be contributing to some drainage problems such as flooding in very heavy rain.

- **Structural Repair:** Many premises were in a poor state of repair with evidence of cracking and subsidence observed in walls and floor slabs. Subsidence is also evident along the public highway.

- **General Housekeeping:** The general housekeeping standards of many premises were poor.

- **Inspection Pits:** Site visits revealed 18 inspection pits although most were either infilled or not in use. Activities were varied amongst the premises visited and there were 62 recorded premises with indoor sources of ignition (e.g. welding).

- **Evidence of gas emissions:** Four premises recorded experiencing indoor odour problems, usually after the building had been closed for a period of time. One alleged a gassy/sewerage type drinking water problem. Two premises had noted bubbling in puddles after rainfall.

- **Evidence of waste:** Three premises had found waste during excavation works and one had found a void in the waste. Another site had identified waste (cloth and newspaper) that had not biodegraded. They described the waste as being dry.

NLC has no current plans to develop, sell or change the current landholdings on the site which are in its ownership.

The western portion of the site comprises Public Open Space (POS) which is an open, grassed area of land. Along the western boundary of the POS a gravel filled vent trench is present. No 'as-built' drawings are available to confirm the vent trench construction. However, drawings for the proposed installation indicate that it is 2m wide and extended to between 2.5m and 3.5m bgl, approximately 0.5m below groundwater level. The trench was to be lined with a geo-textile and geo-membrane, then backfilled with no fines 20mm to 40mm aggregate. Recent inspection of the vent trench has indicated that is has become overgrown with vegetation along much of its surface area. In some locations residents of the adjacent residential properties have extended their gardens onto the POS, directly incorporating a small portion of the vent trench within their extended fence line boundaries.

2.3 Surrounding Land Uses

Land uses surrounding the site may be summarised as follows:

- North: Cottage Beck Road, with commercial / industrial units beyond;
- East: Brigg Road, with Scunthorpe Integrated Steel Works Site beyond;
- South: East Common Lane, with commercial / industrial units beyond; and
- West: Warwick Road / Lilac Avenue residential dwellings.

Detailed inspection of the surrounding commercial / industrial units has not been completed. However, given their age they are considered likely to be of a similar construction to those located on the Midland Road Industrial Estate.

A walkover has been completed generally around the streets of Warwick Road and Lilac Avenue. This walkover has indicated that the dwellings are likely to have ground bearing floor slabs, with no evidence of passive ventilation.

3. PRELIMIARY RISK ASSESSMENT

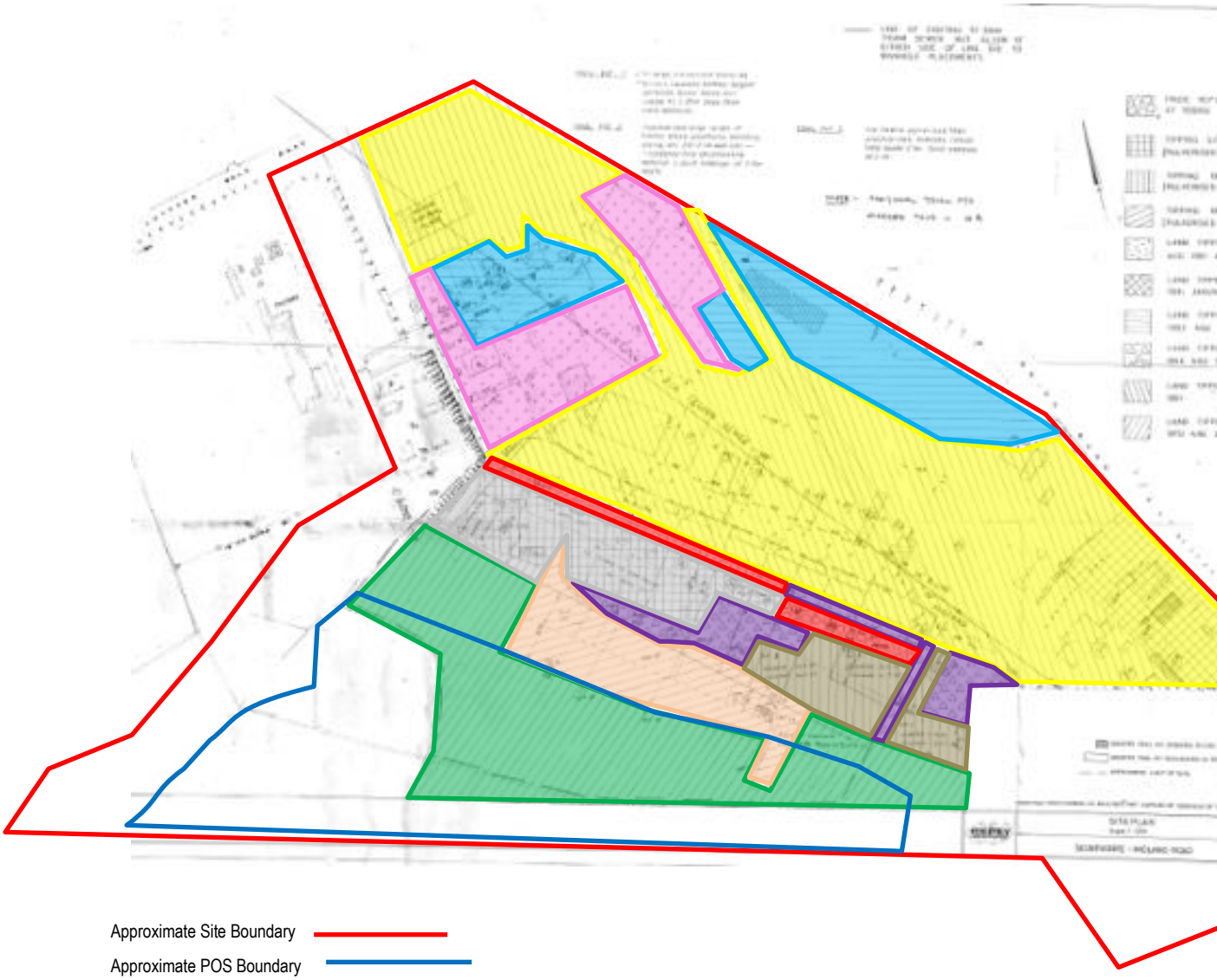
For detailed PRA information the report prepared by NLC should be referenced (PRA, May 2012). However, for ease of reference key pieces of information are summarised in the following sections.

3.1 Site History

The site is underlain by the Lower Jurassic Frodingham Ironstone Formation, which was extracted using open cast methods between 1908 and the mid 1940's. The method of working the ironstone involved excavating a "Gullet" on a moving front across the site. This is essentially a long trench that progresses across the area where Ironstone is to be extracted. Overburden would be removed from unworked areas in front of the trench and placed in worked out areas behind the trench. Thus partial backfilling of the ironstone quarry would occur as the extraction progressed. Information on historical records indicates that the ironstone band that was worked was at least 3m thick with between 1m to 2.5m of overburden material above it. The site was subsequently utilised as a landfill, with small scale filling commencing in the late 1940's. Information pertaining to the landfilling processes which occurred at the site is limited. However, the PRA undertaken by NLC identified a drawing prepared by Wimpey Laboratories in around 1978 to 1981 (Ref. S/17956), which indicates areas and dates of landfilling and is reported to be based on a drawing provided at that time by the Borough of Scunthorpe (Drawing No. EN/C/622A/487). NLC have not been able to provide a copy of drawing EN/C/622A/487 for review by EPG. However, based on the Wimpey Laboratories drawing the landfilling pattern at the site may be summarised as follows:

- Wastes to the east of Midland Road generally comprise older material, tipped prior to 1961;
- The exception to the above are wastes tipped in the vicinity of the Banbury Road / Midland Road junction and on the central-northern portion of the industrial estate (toward Brigg Road), where wastes dating between 1961 and 1966 are indicated to be present;
- To the west of Midland Road (extending to the approximate boundary with the POS) there is a complex deposition sequence of waste, although typically all the material was placed between 1966 and 1970. The waste appears to have typically been pulverised prior to deposition in this area – although locally 'crude' waste appears to be present immediately in the proximity of Midland Road; and
- Wastes deposited in the POS are the youngest disposed of at the landfill, dating between 1970 and 1976, i.e. closure of the landfill in 1978.

To help demonstrate the above observations more clearly Wimpey Laboratories drawing Ref. S/17956 is reproduced below as Plate 2 and annotated for ease of reference.



Approximate Site Boundary

Approximate POS Boundary

Waste Pre 1961, assumed remainder of industrial estate to south-ease contains wastes of similar age

Waste tipped 1961-1963

Waste tipped 1963-1966

Waste tipped by 1966 (pulverised)

Tipping 1967 (pulverised)

Crude refuse station at 1968

Waste tipped 1966-1970 (pulverised)

Waste tipped 1969-1970 (pulverised)

Waste 1970-1976, remainder of POS assumed to contain wastes of similar age consistent with close of landfill in 1978

Plate 2. Annotated Wimpey Laboratories Drawing

For the purposes of this report 'early' wastes have been defined as those deposited prior to 1960, i.e. those tipped generally to the east of Midland Road. Information relating to the nature of these wastes is very limited. However, anecdotal information obtained by EPG from tenants of the industrial estate indicates that wastes east of Midland Road were derived from the adjacent steel works. These wastes were deposited when it was thought the steel works may be extended onto the subject site. However, this clearly did not occur and subsequently the industrial units were constructed.

Later landfilling operations (i.e. post 1960) were managed by Humberside County Council. Review of the Control of Pollution Act (COPA, 1974 (Reference Number 55/17/0018)) record for the landfill indicates accepted wastes to have included pulverised refuse, scrap metal, construction / excavation / building waste and untreated domestic refuse. These types of waste are consistent with the information presented in the Wimpey Laboratories drawing.

Anecdotal evidence provided by local residents to EPG suggests that the area of the POS operated as a domestic refuse site, although items such as sofas, cars etc. were reportedly end tipped into the former quarry base. Residents recall the area of deposition extending right up to the boundary of the POS with the adjacent residential dwellings on Warwick Road / Lilac Avenue – with some recounting how domestic waste was simply thrown over the fence from these domestic properties.

Following closure of the landfill in 1978 approximately 80% of the former landfill area was developed with light industrial / commercial units. The remaining 20% of the site (western area) comprises Public Open Space (POS), which was restored for amenity use in 1978/79 – although the source, composition and thickness of any capping soil utilised is unknown.

3.2 Ground Conditions

Ground conditions underlying the site will clearly comprise landfill material / reworked overburden deposits, which are anticipated to be in the region of approximately 5m thick. Beneath the waste deposits remnants of the Frodingham Ironstone Formation may be anticipated, with the Scunthorpe Mudstone at depth.

The Lower Jurassic Frodingham Ironstone Formation forms the upper part of the Scunthorpe Mudstone Formation and is thought to extend to a maximum depth of 9.0m bgl in the proximity of the site.

The Scunthorpe Mudstone formation is grey, variably calcareous and described as a silty, blockey or fissile mudstone with thin beds of argillaceous limestone and calcareous siltstone particularly near the base and in the upper part which is ferruginous. The expected maximum thickness of this unit is 128m.

No drift deposits are present on site, although Blown Sand is shown on the geological map to the west of the site, beneath the residential properties located on Warwick Road and Lilac Avenue. The Blown Sand deposits are of Quaternary Age and are well sorted un-cemented deposits which are pale brown and fine grained in texture.

3.3 Hydrology and Hydrogeology

Reference to the Environment Agency website indicates the bedrock geology underlying the site (i.e. the Lower Frodingham Ironstone and the Scunthorpe Mudstone) to be designated as a Secondary-A Aquifer. Similarly, the Blown Sand drift deposit to the west is also designated as a Secondary-A Aquifer. A Secondary-A aquifer is defined as a permeable layer capable of supporting water supplies at a local, rather than strategic, scale and in some cases forming an important source of base flow to rivers. These are generally aquifers which were formerly classified as minor aquifers.

The site is not located within a Groundwater Source Protection Zone.

Two watercourses are located within the proximity of the site, Brumby Beck to the east (adjacent to Brigg Road) and Cottage Beck to the north (adjacent to Cottage Beck Road). Both of these surface waters are in underground culverts in the proximity of the site.

3.4 Nuisance

During the walkover completed by NLC as part of the PRA occupants of the industrial units were asked if they had received any complaints potentially relating to the landfill. A summary of the responses is presented in Table 1.

The complaints typically relate to evidence of settlement, although a number of properties have recorded odour issues and locally occupants of properties have reported headaches (Cottage Beck Road Depot) and tainted water supplies (Unit 4, Albion Park). The locations of the buildings where complaints have been made are plotted onto Figure 1, as supplied by NLC. Broadly the complaints received relate to properties which are located along the northern end of Midland Road, in the proximity of the more recent (1960's onwards) waste stream, see Plate 2.

Table 1. Record of Complaints Received by NLC during PRA Walkover

Property	Location	Odours	Subsidence	Gas bubbling	Drainage	Wastes Found
NLC Depot	Cottage Beck Rd	Historically elevated LEL readings recorded (13%LEL, 10/2/10 and 10%LEL, 22/10/10). National Grid indicate unlikely associated with mains gas supply. Isolated to office area and recorded during works on site which increased external hardstanding. Some workers have also reported headaches. In June 2011 a continuous gas detection alarm was fitted inside the building, no alarms have been triggered.	-	-	-	-
NLC Depot	53-55 Midland Rd	-	Floor subsidence, Offices pulled away from garage, cracks in walls etc. External subsidence.	-	-	-
NL Components	Plot 6 Colin Rd	After being closed up for the weekend odours have been found which are not from the drains. Described as an 'odd smell'.	-	-	-	-
Viking Hardware	39-45 Midland Rd	Strong gas smell in summer 2010, gas board called no gas detected.	-	-	-	-
Compart 2011 Ltd	Units 10-11 Albion Park	Can sometimes smell something on opening up and during the day.	-	-	-	-
Automech Ltd	49-51 Midland Rd	-	Issues with floor subsidence, sorted by LAS Metals. External subsidence investigated.	-	-	-
Scunthorpe Radiators	Unit 4 Albion Park	Alleged tap water often smells gassy or of sewerage.	-	-	-	-

Peter's Garage	Unit 7 Albion Park	-	-	-	Twice in 2 years has smelt odour near toilet/drains.	-
BJW Crane Hire	35 Midland Rd	-	Evidence of subsidence – building in poor state of repair.	Gas bubbling in puddles seen.	-	-
J & M Machining Services	East Common Lane	-	Owner said the leg of a Hi Ab broke through tarmac and into a void below.	-	-	-
Easimix Ltd Pogsons Ltd & Brumby Wood Motors	23/25 Midland Rd	-	A lot of external undulations in hard surface which have required repairs.	-	-	-
M Gould Scunthorpe Ltd	46 Midland Rd	-	Some subsidence externally.	-	Odour around sewer cover worse recently.	-
Murphy Ltd	Plot 36 Midland Rd	-	Some subsidence seen.	-	-	-
PH Construction & APS Crushing	36-38 Midland Rd	-	Some subsidence seen.	-	-	-
D Beacroft Joinery	Plot 7 Colin Rd	-	-	Gas bubbles in puddles.	-	-
Jack Tighe	East Common Lane	-	-	-	-	Stated before site was hard standing they would find bottles coming up to the surface.
Engineering & Welding Ltd	Nostell Rd	-	-	-	-	When they dug up the yard they found rubbish at about 2 meters.
LAS Metals	44 Midland Rd					During SI found dry cloth, (garment making quality) still new, no loss of colour.

3.5 Initial Conceptual Site Model

As discussed in Section 1, the PRA prepared for the site by NLC included a qualitative risk assessment. A summary of which is presented in the NLC Appendix of provided information.

The qualitative risk assessment highlighted a number of potentially complete pollutant linkages in relation to the site. However, for a site to meet the statutory definition of Contaminated Land, as set out in Part 2A of the EPA 1990 and clarified by the Statutory Guidance, it must be proven by robust science-based evidence that Significant Possibility of Significant Harm (SPOSH) exists. Having developed an initial Conceptual Site Model (CSM) NLC concluded that two potentially significant pollutant linkages exist at the site, which could result in SPOSH and therefore require more detailed investigation and risk assessment to inform categorisation of the site. These potentially significant contaminant linkages may be summarised as follows:

- Potential gas/vapour risks (associated with the landfill waste deposits) to both on-site buildings/occupants and off-site dwellings/residents via lateral/vertical migration/ingress; and

- Potential human health risks associated with direct contact pathways via exposure to near surface capping soils within the Public Open Space.

3.6 Information Data Gap Assessment & Site Investigation Scope

A data gap assessment was completed in order to assess the information requirements necessary to inform detailed risk assessment for the potentially significant pollutant linkages identified at the site. Additional information was required to clarify the following:

- The current state of decomposition of the waste mass and its future potential to generate gas;

- Confirmation of ground conditions both beneath and adjacent to the landfill – specifically to confirm the underlying / surrounding geology, groundwater conditions and the depth / construction of the existing vent trench;

- The condition of floor slabs associated with buildings on the industrial estate and the precise dimensions and internal layout of the buildings; and

- Confirmation of the nature of the capping soils as placed on the POS - notably the material thickness and chemical composition.

In order to inform the identified information data gap a scope of intrusive works was defined as part of the Ground Investigation tender package. A synopsis of this is presented within the NLC Appendix provided as part of this document. The scope of intrusive works implemented reflects this document and the available Contaminated Land Capital Grant Funding. The scope of works is summarised in Table 2.

Table 2. Scope of Intrusive Works

Item	Original Scope as per Tender Document	Status	Discussion
Enabling Works	Provision of all equipment, personnel and consumables. Setting up of site compound / welfare area. Provision of Method Statements and Risk Assessments for each element of the works. Obtaining all statutory utility service data (to supplement the existing information as supplied as part of NLC's PRA). Liaising with Site Investigation Supervisor and Project Manager to agree all working locations and access / egress routes.	Complete	-
Trial Pit Excavations	The excavation of up to 24 trial pits - primarily focusing on the area of POS where the younger wastes are present. Where access and existing site surfacing permits, trial pit excavations also to be completed on the industrial estate. The trial pits are to be extended to the maximum depth of the excavators reach in all cases, dependent upon ground conditions. The trial pits are being completed to permit sampling of near surface soils for human health assessment (on the POS) and permit detailed observation / logging of the landfill waste material to inform the site assessment (across the entire site).	Complete	In total 27 No. trial pits were excavated across the Midland Road Landfill as part of the intrusive works. Of these 17 No. were excavated on the POS and 10 No. were excavated on the industrial estate.
Trial Trenches	Trial trenches to be excavated at regular intervals (approximately 50m over its approximated 300m length, i.e. 6 No.) perpendicular to an existing gas vent trench which borders the western boundary of the site (between the landfill and adjacent residential dwellings). These trenches are to be completed in order to determine the lateral extent of the waste mass in relation to the vent trench and the composition of any drift material between the two.	Complete	In total 3 No. trial trench excavations were completed through the vent trench construction. Given the consistency of the vent trench construction as observed in these trenches, and the ground conditions encountered immediately adjacent, further trenches were not considered necessary.
Deep Cable Percussive / Rotary Core Boreholes	The drilling of 6 deep boreholes to approximately 10m depth (proving 3m of bedrock), to include cable percussive drilling through waste/overburden deposits and follow-on rotary core drilling of bedrock geology (with appropriate core recovery to inform the ground model for assessment of fracture and weathering). These boreholes are also to enable the installation of deep monitoring standpipes for the assessment of the deep gas and groundwater regime beneath the site/surrounding area.	Complete	The intrusive works encountered bedrock shallower than originally anticipated therefore the boreholes terminated at between 4.4m and 8.0mbgl.

Probehole Boreholes	The drilling of 15 probehole boreholes to approximately 5m depth in order to permit installation of shallow monitoring standpipes for assessment of the shallow gas and groundwater regime beneath the site/surrounding area.	Complete	Ground conditions encountered during drilling of the probehole boreholes resulted in termination at between 0.95m and 3.75mbgl.
Topographical Surveying	Locating all exploratory holes to Ordnance Datum.	Complete	-
Soil and Groundwater / Leachate Sampling	-	Complete	-
Chemical Laboratory Testing of both Soils and Groundwater / Leachate	-	Complete	-
Ground Gas Monitoring	-	Complete	-
Internal space gas and vapour monitoring within selected buildings	-	Complete	In view of the ground conditions encountered during the intrusive works (and the subsequent results of the soil chemical test data) it was concluded that volatile phase contamination at the site is unlikely to be of significant concern. Therefore internal space monitoring focused on permanent gas risks – assessed using an Flame Ionisation Detector (FID). The scope of FID monitoring was extended as part of the monitoring works, reflecting data obtained as part of the borehole permanent gas monitoring programme.
Gas Sampling	-	Complete	Gas sampling was restricted to boreholes which exhibited the highest permanent gas concentrations recorded on site. In view of the ground conditions encountered (and the subsequent results of the soil chemical test data) it was concluded that internal building gas sampling was not required.
Geophysical Surveying	-	Not Completed	In view of the information ascertained from the trial trenching exercise it was agreed by EPG and NLC that geophysical surveying of the vent trench was not required.

Detailed information pertaining to these intrusive works is discussed in the following sections of this report.

4. SITE INVESTIGATION METHODOLOGY

4.1 Site Investigation Timescales

Intrusive works were completed in general accordance with the ground investigation tender package by the nominated Contractor, Geocore. Enitial Limited was an approved sub-contractor to Geocore and completed the gas / groundwater monitoring and sampling activities. Paul Evans Surveying Limited was an approved sub-contractor to Geocore and completed the topographical survey works.

As part of the enabling works Geocore provided method statements and risk assessments for each element of the works to EPG (acting as Site Investigation Supervisor) and NLC for comment and approval.

Geocore have assimilated all the data collated as part of the intrusive works within a Factual Report. This information is presented as supporting appendices to this report as follows:

- Appendix A – Factual Report Text
- Appendix B – Trial Pit Exploratory Hole Log Sheets
- Appendix C – Probehole exploratory Log Sheets
- Appendix D – Cable Percussive and Rotary Core Borehole Log Sheets
- Appendix E – Soil Chemical Test Data
- Appendix F – Water / Leachate Chemical Test Data
- Appendix G – Gas / Vapour Chemical Test Data
- Appendix H – Groundwater Sampling Data
- Appendix I – Permanent Gas and Vapour Monitoring Data (inc. Calibration Certificates)
- Appendix J – Internal Space Monitoring Data

All works were carried out in general accordance with ‘BS 5930:1999. Code of Practice for Site Investigations’ and ‘BS10175:2011. Code of Practice for the Investigation of Potentially Contaminated Sites’.

Timescales associated with the intrusive works are summarised in Table 3.

Table 3. Intrusive Works Timescales

Item	Date of Works	Supervision
Enabling Works	Pre-site works commencement	-
Trial Pit Excavations	4 December 2012 to 13 December 2012	Geocore Full Time EPG Part Time
Trial Trenches	6 December 2012 to 11 December 2012	Geocore Full Time EPG Full Time
Deep Cable Percussive / Rotary Core Boreholes	4 December 2012 to 10 December 2012	Geocore Full Time EPG Part Time
Probehole Boreholes	11 December 2012 to 13 December 2012	Geocore Full Time EPG Part Time
Topographical Surveying	12 December 2012	Paul Evans Surveying Geocore Full Time EPG Part Time
Groundwater Sampling	5 February 2013	Completed by Enitial
Gas Sampling	12 February 2013	Completed by Enitial
Ground Gas Monitoring *Note: Total 12 No. gas monitoring events completed.*	8 January 2013 14 January 2013 22 January 2013 29 January 2013 5 February 2013 12 February 2013 21 February 2013 28 February 2013 12 March 2013 19 March 2013 27 March 2013 3 April 2013	Completed by Enitial Visit 8/1/13 supervised by EPG
Internal space FID monitoring – selected buildings on industrial estate *Note: Further visits to be completed bi-monthly in August and October 2013.*	26/27 February 2013 9/10/11 April 2013 26/27/28 June 2013	Completed by Enitial Visit 26/2/13 supervised by EPG

Additional internal space FID monitoring – Residential houses 103 and 105 Warwick Road *Note: Reflecting information ascertained from borehole monitoring on POS.*	7 March 2013 12 March 2013 19 March 2013 27 March 2013 3 April 2013	Completed by Enitial Visit 7/3/13 supervised by NLC Visit 3/4/13 included garden and vent trench monitoring with FID
Additional internal space FID monitoring – selected further industrial units *Note: Reflecting information ascertained from borehole monitoring on industrial estate, further visits to be completed bi-monthly in April, June, August and October 2013.*	7 March 2013 11 March 2013 12 March 2013 13 March 2013 14 March 2013 15 March 2013	Completed by Enitial

4.2 Exploratory Hole Location Rationale

The exploratory hole locations were selected in order to inform the data gaps identified as part of the PRA review. In summary, the primary purpose of the exploratory hole locations was to permit detailed assessment of ground conditions beneath the POS, industrial estate and surrounding land to the west (notably with regard to the decomposition status of the waste mass, groundwater conditions, vent trench construction and capping soil composition (on the POS)).

Utilising the information ascertained from the topographical survey NLC populated their GIS database to show the exploratory hole positions completed as part of the intrusive works. A copy of this is presented as Figure 2. The rationale for the exploratory hole locations is summarised in Table 4.

Table 4. Rationale for Exploratory Hole Locations

Hole ID	Depth (mbgl)	Standpipe Installation Target Stratum	Discussion
Trial Pit Excavations (Including TP2/TP3&TP6/6A Vent Trench Excavations)			
TP1	-	-	Omitted at discretion of Site Investigation Supervisor.
TP2	3.5	N/A	In POS, near historic BH2 which has previously indicated elevated permanent gas concentrations. Also to inform assessment of adjacent vent trench construction and surrounding ground conditions.
TP3	3.2	N/A	In POS, to inform assessment of adjacent vent trench construction and surrounding ground conditions.
TP4	-	-	Omitted at discretion of Site Investigation Supervisor
TP5	-	-	Omitted at discretion of Site Investigation Supervisor.
TP6/TP6A	1.2	N/A	In POS, to inform assessment of adjacent vent trench construction and surrounding ground conditions.
TP7	3.4	N/A	In POS to inform assessment of ground conditions.
TP8	3.0	N/A	In POS to inform assessment of ground conditions.
TP9	3.0	N/A	In POS to inform assessment of ground conditions.
TP10	2.4	N/A	In POS to inform assessment of ground conditions.
TP11	2.7	N/A	In POS to inform assessment of ground conditions.
TP12	2.6	N/A	In POS to inform assessment of ground conditions.
TP13	3.3	N/A	In POS to inform assessment of ground conditions.
TP14	2.5	N/A	In POS to inform assessment of ground conditions.
TP15	2.0	N/A	In POS to inform assessment of ground conditions.
TP16	3.0	N/A	In POS to inform assessment of ground conditions.
TP17	2.8	N/A	In POS to inform assessment of ground conditions.
TP18	0.7	N/A	In POS to inform assessment of ground conditions.
TP19	3.0	N/A	In POS to inform assessment of ground conditions.
TP20	3.0	N/A	In POS to inform assessment of ground conditions.

TP21	2.0	N/A	In industrial estate to inform assessment of ground conditions in waste post 1960's deposition.
TP22	0.25	N/A	In industrial estate to inform assessment of ground conditions in waste post 1960's deposition.
TP23	3.2	N/A	In industrial estate to assess extent of post 1960's deposition.
TP24	3.0	N/A	In industrial estate to inform assessment of ground conditions on waste pre 1960's deposition.
TP25	2.7	N/A	In industrial estate to inform assessment of ground conditions in waste post 1960's deposition.
TP26	3.4	N/A	In industrial estate to inform assessment of ground conditions on waste pre 1960's deposition.
TP27	1.5	N/A	In industrial estate to inform assessment of ground conditions in waste pre 1960's deposition.
TP28	3.8	N/A	In industrial estate to inform assessment of ground conditions in waste post 1960's deposition.
TP29	2.9	N/A	In industrial estate to inform assessment of ground conditions on waste pre 1960's deposition.
TP30	3.6	N/A	In industrial estate to inform assessment of ground conditions on waste pre 1960's deposition.
Probehole Boreholes			
PHA	1.8	Made Ground	To permit monitoring of near surface gas concentrations beneath industrial estate, immediately adjacent to POS and residential houses.
PHB	1.2	Blown Sand	To permit monitoring of near surface gas concentrations via drift deposits in proximity of POS and residential houses.
PHC	1.15	Made Ground	To permit monitoring of near surface gas concentrations in proximity of POS and residential houses.
PHD	0.95	Made Ground / Blown Sand	To permit monitoring of near surface gas concentrations in proximity of POS and residential houses.
PHE	1.05	Blown Sand / weathered Bedrock.	To permit monitoring of near surface gas concentrations in proximity of POS and residential houses / POS outside landfill.
PHF	3.1	Made Ground (Waste)	To permit monitoring of gas concentrations in Made Ground (waste) deposits pre 1960's deposition. On industrial estate.
PHG	2.7	Made Ground (Waste)	To permit monitoring of gas concentrations in Made Ground (waste) deposits pre 1960's deposition. On industrial estate.
PHH	3.4	Made Ground (Waste)	To permit monitoring of gas concentrations in Made Ground (waste) deposits pre 1960's deposition. On industrial estate.

PHI	3.0	Made Ground (Waste)	To permit monitoring of gas concentrations in Made Ground (waste) deposits post 1960's deposition. On industrial estate.
PHJ	3.7	Made Ground (Waste)	To permit monitoring of gas concentrations in Made Ground (waste) deposits pre 1960's deposition (but close to post 1960's waste deposition). On industrial estate.
PHK	3.75	Made Ground (Waste)	To permit monitoring of gas concentrations in Made Ground (waste) deposits post 1960's deposition. On industrial estate.
PHL	3.0	Made Ground (Waste)	To permit monitoring of gas concentrations in Made Ground (waste) deposits post 1960's deposition. On industrial estate.
PHM	3.4	Blown Sand	To permit monitoring of gas concentrations in granular drift deposits in close proximity to Midland Road NLC depot.
PHN	3.0	Made Ground (Waste)	To permit monitoring of gas concentrations in Made Ground (waste) deposits post 1970's deposition. On POS.
PHO	3.1	Made Ground (Waste)	To permit monitoring of gas concentrations in Made Ground (waste) deposits post 1970's deposition. On POS.
Deep Cable Percussive / Rotary Core Boreholes			
BH101(R)	6.4	Frodingham Ironstone Formation	To permit monitoring of gas concentrations at depth in bedrock geology, immediately adjacent to POS.
BH102(R)	8.0	Frodingham Ironstone Formation	To permit monitoring of gas concentrations at depth in bedrock geology, immediately beneath industrial estate.
BH103(R)	6.0	Frodingham Ironstone Formation	To permit monitoring of gas concentrations at depth in bedrock geology, immediately beneath industrial estate, adjacent to POS.
BH104(R)	8.0	Frodingham Ironstone Formation	To permit monitoring of gas concentrations at depth in bedrock geology, immediately beneath POS.
BH105(R)	8.4	Frodingham Ironstone Formation	To permit monitoring of gas concentrations at depth in bedrock geology, immediately beneath industrial estate.
BH106(R) Shallow	7.0	Made Ground (Waste)	To permit monitoring of gas concentrations in Made Ground (waste) deposits post 1960's deposition. In close proximity to Midland Road NLC depot.
BH106(R) Deep		Frodingham Ironstone Formation	To permit monitoring of gas concentrations at depth in bedrock geology, immediately beneath industrial estate.

4.3 Permanent Gases and Vapour

4.3.1 Monitoring - Boreholes

In total 12 No. rounds of gas monitoring have been completed, spanning a 3-month period between 8 January 2013 and 3 April 2013. These monitoring events have included periods of high, low, rising and falling atmospheric pressure. They have also included visits when the ground has been wet following rainfall and icy following snow / freezing weather conditions.

An infrared gas meter (GA2000) was used to measure concentrations of carbon dioxide (CO_2), methane (CH_4) and oxygen (O_2) in percentage by volume, while hydrogen sulphide (H_2S) and carbon monoxide (CO) were recorded in parts per million (ppm). Initial and steady state concentrations were recorded.

Initial and steady state flow readings were also recorded using an infrared gas meter (GA2000). During the visits completed 8 January 2013 and 28 February 2013 flow rates were cross-checked utilising a GFM430.

During each of the 12 No. gas monitoring rounds a Photo Ionisation Detector (PID, 10.6eV lamp, calibrated with Isobutylene) has been utilised to screen the headspace within each standpipe installation for concentrations of volatile organics.

The monitoring data collected by Enitial is presented in Appendix I and discussed in subsequent sections of this report. Calibration certificates for all the machines utilised as part of the monitoring program are also presented in Appendix I.

4.3.2 Internal Space Monitoring – Industrial Units

As part of the site assessment 19 No. industrial units were targeted for internal space monitoring utilising a Flame Ionisation Detector (FID). The buildings selected for this internal monitoring reflected the buildings listed in Table 2, where complaints potentially relating to the landfill had been made previously. These buildings were monitored 26/27 February.

The FID monitoring of these buildings targeted areas which are typically prone to gas ingress, e.g. soil pipes, service riser cupboards and any cracks / joints within the floor slab construction. The FID monitoring also targets areas where any gas ingress is most likely to build up, e.g. in small cupboards and offices at ground floor level. As part of these works all 19 No. buildings were surveyed by NLC, such that a regular and consistent approach to the internal monitoring was adopted and all locations are easily identifiable.

Following completion of the initial rounds of borehole gas monitoring it was identified that two probehole boreholes on the industrial estate (PHL and PHK) were detecting relatively high concentrations of permanent gases. These probeholes were generally located in the area where complaints have been made previously, i.e. on the northern portion of the industrial estate. In response to these observations the scope of the internal building monitoring was extended to include a further 8 No. buildings – all located in the general proximity of PHL and PHK. Monitoring of these 8 No. additional industrial buildings was completed 7 March 2013 and followed the same principles as the survey of the original 19 No. buildings.

The additional monitoring works completed 7 March 2013 identified elevated FID concentrations specifically in two industrial properties. As such all 8 No. properties were targeted for additional daily monitoring over a continuous 5-day period commencing 11 March 2013. The requirement of this monitoring was to clearly define the gas ingress points into the buildings and determine the associated 'gas bubble' (i.e. the lateral / vertical extent of the identified gas ingress). These works were completed by Enitial, under consultation with EPG and NLC.

The subsequent internal space monitoring visit completed in April (9/10/11th) incorporated all original 19 No. buildings, plus the additional eight.

Reflecting the observations made during the internal space monitoring visits up to and including April 2013, it was agreed with NLC that future internal space monitoring events would focus on buildings located on the central-northern portion of the industrial estate (see Plate 8, Section 8.5.3). A visit targeting these properties was completed 26/27/28 June 2013. Further visits targeting these properties will be completed in August and October 2013.

The available results of the internal building monitoring are presented in Appendix J and discussed in subsequent sections of this report. Industrial units where internal space monitoring has been completed are identified in Figure 3 (internal space monitoring events up to April 2013) and Figure 4 (targeted internal space monitoring events; June, August and October 2013).

4.3.3 Internal Space Monitoring – Residential Properties

During monitoring of the standpipes installed on site 4 No. historic boreholes were identified on the western boundary of the POS, in close proximity to the existing gas vent trench. One of these boreholes (BH2) identified elevated concentrations of permanent gases during the initial period of gas monitoring.

Review of the monitoring data collected from BH2 identified that further work was required in order to inform the assessment of risks to potentially sensitive receptors (i.e. occupants of the adjacent residential properties). As such the two nearest residential properties to BH2 (103 and 105 Warwick Road) were targeted for internal space FID monitoring on 5 No. occasions (7 March, 12 March, 19 March, 27 March and 3 April 2013).

The internal space FID monitoring of the residential properties comprised a comprehensive sweep of the ground floor, notably targeting service cupboards, soil pipes etc. The FID survey also included outbuildings such as garages and sheds. The results of the internal residential dwelling monitoring are presented in Appendix J and discussed in Section 7.3.

4.3.4 Sampling

Following review of the borehole gas monitoring data it was decided by EPG that monitoring locations PHN, PHK and PHL would be targeted for gas sampling. Broadly these boreholes have detected the highest concentrations of permanent gases during the monitoring events, with PHK and PHL also being located in relatively close proximity to buildings on the industrial estate – including those in which gas has been detected by the additional FID monitoring (see Section 4.3.2).

The probeholes were sampled on 12 February 2013 utilising gas canisters as supplied by Jones Environmental Laboratory. The gas samples were collected by Enitial using the protocol for gas canister sampling as provided by Jones Environmental Laboratory and returned to the laboratory for analysis.

4.3.5 Laboratory Testing

Environment Agency guidance document LFTGN04 provides Guidance for the Monitoring of Trace Components on Landfill Sites (EA, Version 3, 2010). The 3 No. gas samples submitted to Jones Environmental Laboratory were submitted for the following suite of testing, which is considered to represent the key trace and permanent gases typically encountered within landfill waste deposits:

- Permanent gases (carbon dioxide, carbon monoxide, methane, nitrogen, oxygen, ethane, propane, butane, hexane and heptane);
- Top-20 vapour compounds plus Tentatively Identified Compounds (TICS); and
- Total Petroleum Hydrocarbons CWG C_4-C_{12}.

The results of the gas laboratory testing are presented in Appendix G and discussed further in Section 6.7.

4.4 Soil

4.4.1 Monitoring

All soil samples collected as part of the trial pitting were screened for volatile phase contaminants using a Photo Ionisation Detector (PID, calibrated with Isobutylene utilising a 10.6eV lamp). The process of this screening involved taking a small sub-sample of the soil, placing it in an air tight bag and then storing the bag in an air tight container. At the end of each days work on site these containers were opened and a small hole made into the bag, through which the PID probe was then inserted for monitoring of head space concentration (parts per million, ppm). The same process was adopted for any samples obtained from the deep boreholes and/or shallow probeholes where any visual and/or olfactory evidence of contamination was observed. The results of the PID screening are presented as part of the exploratory hole log sheets in Appendices B to D inclusive. It is stressed that the PID screening was not undertaken to prove or dis-prove the presence of volatile phase contaminants, simply as a line of evidence to support the observations made on site during the intrusive works.

4.4.2 Sampling

The soil sampling strategy adopted on site was designed to reflect the identified potentially significant pollutant linkages. In summary, the following strategy was adopted:

- On the public open space samples of topsoil (capping) were removed from immediately beneath the grass cover (approximately <0.3mbgl);
- Within the waste deposits on the industrial estate / public open space soil samples were collected at a typical interval of 1m; and
- Any soils which were noted to demonstrate visual or olfactory evidence of contamination were targeted for specific sampling.

Each soil sample group comprised 1 No. plastic tub, 1 No. glass jar and 1 No. VOC vial. Where visual and/or olfactory evidence of contamination was observed a second VOC vial was obtained. All samples were stored in cool boxes, with regular deliveries arranged to the chemical laboratory (ALcontrol Laboratories). All cool boxes were transferred under Chain of Custody record sheets.

4.4.3 Laboratory Testing

The soil samples submitted to the laboratory were scheduled for analysis by EPG. The scope of chemical testing was designed to reflect the potentially significant pollutant linkages identified by the PRA. Where appropriate the soil testing was UKAS and/or MCERTS accredited. The soil chemical testing specified is summarised in Table 5.

Table 5. Scope and Rationale for Soil Chemical Testing

Hole ID and Depth	Stratum & Location	Rational and Chemical Test Determinants
TP7 0.2 TP3 0.1m TP10 0.2m TP12 0.3m TP14 0.15m TP15 0.2m TP16 0.2m TP17 0.3m TP19 0.2m TP20 0.1m	10 No. Topsoil Samples, all collected from the POS	Rationale: To assess contaminant concentrations of near surface soils on POS, to which members of public may be exposed. • CLEA Metals Suite • Speciated Poly Aromatic Hydrocarbons • Speciated Total Petroleum Hydrocarbons CWG with BTEX • Asbestos screen (with identification, if required) • pH • TOC
BH102 1.5m BH102 2.0m BH102 3.0m BH104 3.0-3.1m BH105 1.5-1.6m BH105 2.0-2.1m BH105 3.0-3.1m BH106 2.0m PHA 1.5m PHF 2.5m PHH 2.0m PHI 1.5m PHJ 2.5m PHL 2.5m TP2 2.0m TP2 3.5m TP3 3.2m TP7 2.0m TP7 3.4m TP8 1.5m TP8 3.0m TP9 1.5m	44 No. Made Ground (waste) samples, collected from a combination of the POS and industrial estate	Rationale: To aid in classification of waste and assessment of gas generation potential. • TOC (all samples) • Asbestos screen (with identification, if required) (selected samples to facilitate accredited TOC tests)

TP10 2.5m TP11 1.0m TP13 3.2m TP 14 1.0m TP14 2.5m TP15 1.5m TP16 3.0m TP17 2.8m TP19 1.5m TP19 2.5m TP20 1.5m TP20 3.0m TP21 2.0m TP24 3.0m TP25 1.0m TP25 2.0m TP25 2.7m TP26 2.0m TP26 3.0m TP28 3.6m TP30 1.5m TP30 3.5m		
TP3 3.2m	Made Ground (waste), POS	Rationale: Reflecting strong odour as encountered during excavation. • Speciated TPH CWG with BTEX • Semi Volatile Organic Compounds • Volatile Organic Compounds • TOC / pH
TP9 1.5m	Made Ground (waste), POS	Rationale: Reflecting strong excrement odour as encountered during excavation. • Speciated TPH CWG with BTEX • Semi Volatile Organic Compounds with TICS • Volatile Organic Compounds • TOC / pH
TP27 0.3m	Made Ground (waste) , industrial estate	Rationale: Reflecting hydrocarbon odour as encountered during excavation. • Speciated TPH CWG with BTEX
TP27 0.5m	Made Ground (waste) , industrial estate	Rationale: Reflecting hydrocarbon odour as encountered during excavation. • Speciated TPH CWG with BTEX • Semi Volatile Organic Compounds • Volatile Organic Compounds • Asbestos screen (with identified, if required) • pH

TP27 1.5m	Made Ground (waste) , industrial estate	Rationale: Reflecting hydrocarbon odour as encountered during excavation. • Speciated TPH CWG with BTEX • Asbestos screen (with identified, if required)
BH105 3.0-3.1m	Made Ground (waste), industrial estate	Rationale: Reflecting hydrocarbon odour as encountered during drilling. • TOC / pH determination • Speciated TPH CWG with BTEX
Notes: BTEX – Benzene, Toluene, Ethyl Benzene and Xylene TOC – Total Organic Carbon TICS – Tentatively Identified Compounds		

The results of the soil laboratory testing are presented in Appendix E and discussed further in subsequent sections of this report.

4.5 Groundwater

4.5.1 Monitoring

Groundwater conditions as observed during the intrusive works are recorded within the exploratory hole log sheets presented in Appendices B to D inclusive.

Depths to groundwater were recorded subsequently via each standpipe installation using an interface meter as part of each gas monitoring event. The measurements were consistently recorded relative to the borehole Top of Casing. These results have subsequently been reduced to reflect the height of the casing relative to ground level, with the topographical survey information used to assess groundwater levels relative to Ordnance Datum.

The groundwater monitoring data is presented as part of the gas monitoring data in Appendix I and discussed further in subsequent sections of this report.

4.5.2 Sampling

Following installation of the standpipes on site each exploratory hole was developed via the removal of three well volumes (or until the installation bailed dry, whichever was sooner) on 14 December 2012.

Groundwater samples were subsequently retrieved from probehole locations PHF, PHI, PHK, PHN and PHO on 5 February 2013 using low-flow purging and sampling techniques. These probehole locations were selected for sampling based on the following considerations:

- The groundwater head within the monitoring locations was conducive to being able to retrieve the requisite sample to permit chemical testing;
- The probeholes all targeted the waste deposits; and
- The probeholes provided a good cross section of the waste deposits present beneath the POS / industrial estate.

The low-flow samples were collected following stabilisation of indicator parameters (pH, temperature, electrical conductivity, redox potential and dissolved oxygen). The data sheets from the sampling events are presented in Appendix H.

Each group of groundwater samples comprised 2 No. amber glass bottle, 2 No. plastic bottle and 4 No. VOC vials. The containers were filled to capacity to minimise volatilisation and transferred to the laboratory (ALcontol laboratories) in cool boxes. All cool boxes were transferred under Chain of Custody record sheets.

4.5.3 Laboratory Testing

The groundwater samples submitted to the laboratory were scheduled for analysis by EPG. The scope of chemical testing was designed to reflect the potentially significant contaminant linkages identified by the PRA, with the suite of testing specifically chosen as it provides a good indication of the degradation advancement of waste material.

The groundwater chemical testing specified at the site is summarised in Table 6.

Table 6. Scope of Groundwater Chemical Testing

Hole ID	Stratum	Chemical Test Determinants
PHF PHI PHK PHN PHO	Made Ground (waste) deposits	• Biological Oxygen Demand • Total Organic Carbon • Chemical Oxygen Demand • Arsenic, barium, beryllium, boron, cadmium, chromium, copper, lead, manganese, nickel, selenium, vanadium, zinc and mercury determination • Phosphate and nitrate • Volatile Fatty Acids • Dissolved methane and dissolved carbon dioxide • Iron • Hardness and pH

The results of the groundwater chemical testing are presented in Appendix F and discussed in subsequent sections of this report.

5. GROUND CONDITIONS – PUBLIC OPEN SPACE

Ground conditions beneath the Public Open Space (POS) are consistent with the known geology of the area and the history of the site. In summary, capping soils were encountered across the full extent of the POS, underlain by landfill waste deposits with the bedrock geology at depth. These units are discussed in more detail in the following sections.

5.1 Capping Soils (POS)

The POS is surfaced extensively with grass cover. Underlying the grass cover and associated root ball, capping soils are present, which generally comprise brown, very clayey, medium sand, locally with inclusions of plastic toward the base of the unit and occasional fragments of wire, brick and wood. Of note was the general homogeneity of the capping soils across the area of the POS, which showed no distinct variation apart from some minor color change (orange brown to brown) and slight variability in plastic content. The thickness of the capping soils varies between 0.15m (TP3) and 1.3m (TP7), with an average thickness of 0.5m. The capping soils are directly underlain by landfill waste deposits.

5.2 Landfill Waste Deposits (POS)

The thickness of the landfill waste material beneath the POS was only proven in BH104(R), where the waste was found to be 3.1m thick. As BH104(R) is located in the central area of the POS, and in view of the information collated from other boreholes completed on the industrial estate, there is reasonable confidence to conclude that BH104(R) reflects the general thickness of the waste mass beneath the POS.

With regard to the landfill deposits beneath the POS, detailed review of the trial pit records indicates the ratio of waste material to matrix to be highly variable across the POS. However, there are some general trends, which may be summarised as follows:

- The landfill matrix typically comprises a predominantly sand sized fraction with much ash, clinker, brick, concrete and mortar. Fine twigs were also noted to be dominant within the landfill matrix, similar to the washings collected by street cleaning vehicles;

- The granular element of the landfill matrix was generally observed to be present within a cohesive mass – consistent with the on-going processes of waste degradation where the component parts of the waste body are maturating to form a homogenous mass;

- The major component of the waste material mass is typically wood and plastic / polythene. However, other inclusions are regularly present – including; pottery, cloth, shoe leather, metal, rope, decomposing newspapers, crisp packets / crisps, cloth, banding straps, rubber, bikes, sofas, net and tyres;

- The plastic content of the waste mass was observed to increase on the northern portion of the POS, with the plastic generally being more legible and less degraded. These observations were interpreted on site to reflect a younger waste mass on this area of the POS relative to elsewhere; and

- At depths typically in excess of 2.2m large pieces of wood (e.g. wooden fencing posts) generally became dominant within the waste mass, together with glass bottles and metal. These observations were interpreted on site to reflect an older waste mass to be present at depth more generally across the POS.

In summary, review of the log sheets collated for the POS has indicated the landfill waste mass to be a highly heterogeneous mix of anthropogenic components. However, the main constituents of the waste are consistent with its known age, whereby a 1970's waste is typically dominated by ash, wood and plastic. Smaller proportions of pottery, cloth, shoe leather, metal, rope, decomposing newspapers, cloth, banding straps, rubber, bikes, sofas, net and tyres were also noted, again consistent with a 1970's waste stream and anecdotal information provided by local residents. The presence of crisps / crisp packets locally within the waste mass is likely to reflect the known historical industries present in the vicinity of the site – notably including a number of former crisp manufacturing facilities.

5.3 Bedrock Geology (POS)

The bedrock geology beneath the POS was only encountered by BH104(R), where it was recorded at 3.7mbgl (30.11mAOD). The bedrock geology comprised a 0.4m thickness of moderately weathered, strong limestone / ironstone, underlain by mudstone. The mudstone was typically described as being moderately weathered, with fractures that were closely to very closely spaced, undulating smooth and either open or filled with up to 2.5mm of clay. The underlying limestone (encountered at 5.55mbgl) was described as being fresh and un-fractured in-situ. The Rock Quality Designation (RQD) for the bedrock immediately beneath the waste (3.7m-5.2m) was 35%, indicative of 'poor' rock quality. However, this increased significantly with depth, with the rotary run between 5.2m-6.7m recording an RQD of 71%, indicative of 'fair' rock quality.

5.4 Groundwater Conditions (POS)

The trial pit excavations completed on the POS are considered to provide the most accurate indication of groundwater conditions within the more recent area of landfilling. These observations are summarised in Table 7.

Table 7. Groundwater Conditions, Trial Pit Excavations - POS

Hole ID	Strike Depth & Stratum	Strike (mAOD)	Observation
TP2	3.2m, Waste	32.58	Excavation unstable below water table
TP3	3.1m, Waste	31.44	-
TP6	1.2m, Waste	30.70	Water strike forced termination of trial pit excavation
TP7	3.2m, Waste	31.85	Groundwater induces instability within trial pit walls
TP8	2.6m, Waste	31.51	Excavation unstable below water table
TP9	2.7m, Waste	32.02	-
TP10	2.2m, Waste	32.11	Excavation unstable below water table
TP11	2.2m, Waste	31.91	Excavation unstable below water table
TP12	2.4m, Waste	31.56	Excavation unstable below water table
TP13	3.2m, Waste	29.99	-
TP14	1.9m, Waste	31.71	Water strike forced termination of trial pit excavation
TP15	1.6m, Waste	31.60	Excavation unstable below water table
TP16	2.6m, Waste	29.92	Excavation unstable below water table
TP17	Dry	-	TP extended to 2.8mbg, unstable but dry
TP18	0.7m, Waste	31.05	Water strike forced termination of trial pit excavation
TP19	2.4m, Waste	29.10	-
TP20	2.7m, Waste	28.55	Excavation unstable below water table

As summarised in Table 7, during excavation of the trial pits water strikes were typically recorded at between 2.2m and 3.2mbgl. Groundwater strikes typically coincided with instability of the waste deposits within the excavation pit walls. In some instances the rate of water ingress precluded further excavation of the trial pit.

The only exceptions to the above are TP6, TP14, TP15 and TP18. These trial pits are all located on the central southern portion of the POS and recorded water strikes at shallower depths, between 0.7m and 1.9mbgl. BH104 is also located on this area of the site, and recorded a water strike at 1.4mbgl during completion. Anecdotal information provided by local residents at the time of the intrusive works indicated that this area of the POS was often waterlogged during wetter periods – which is consistent with a locally shallower water table being present within the waste on this portion of the site.

Subsequent monitoring of groundwater conditions on the POS has been completed via locations PHN and PHO (which target the landfill waste), together with BH104 (which targets the underlying bedrock geology).

Monitoring location PHN recorded groundwater between 1.83m and 2.02mbgl (32.58-32.77mAOD). PHO, again located on the central southern area of the POS, recorded a shallower water table of between 0.47m and 0.94mbgl (31.14-31.61mAOD). These results are consistent with the observations made during completion of the trial pit excavations.

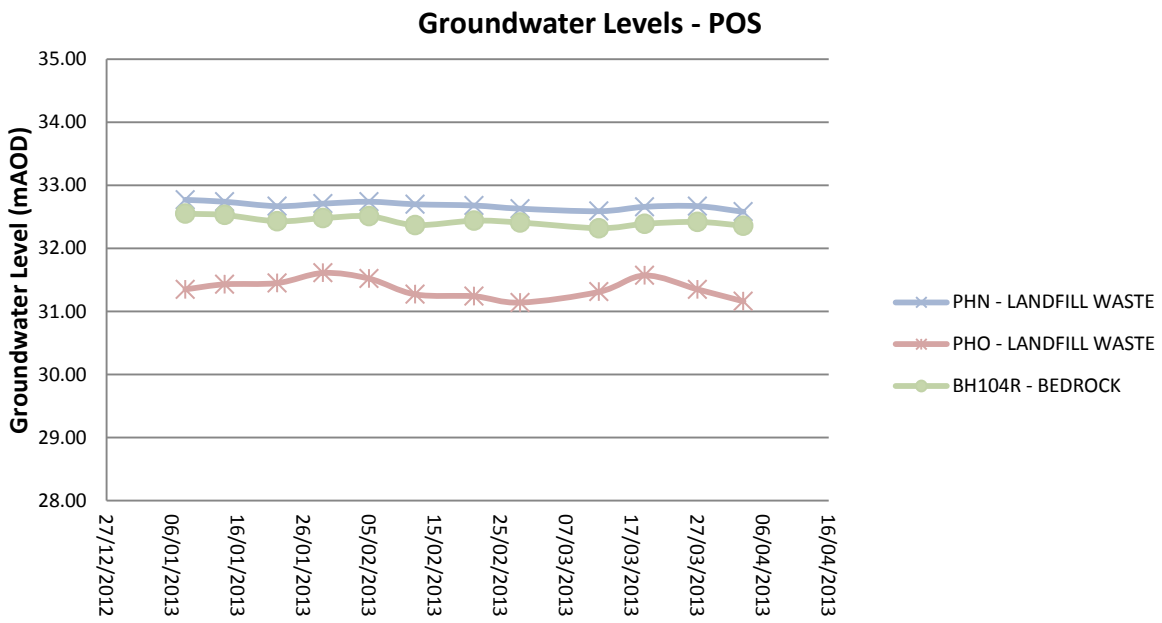
Deep borehole BH104(R) recorded groundwater at between 1.26m and 1.49mbgl (32.32m-32.55mAOD). These observations indicate that groundwater within the bedrock geology may well be in hydraulic continuity with the waste deposits – such that the waste material is likely to be saturated to depth.

Groundwater conditions as encountered beneath the industrial estate and surrounding land (external to the landfill) are discussed in Sections 6.4 and 7.2 respectively. What was made clear by the site investigation however is that;

- Beneath the POS the waste mass is largely saturated;
- Beneath the industrial estate the older wastes are typically dry with perched water locally present; and
- External to the landfill / at depth beneath the industrial estate groundwater is present at the interface of the drift Blown Sand deposits with the underlying bedrock geology.

The presence of a largely consistent groundwater table beneath the POS is likely to reflect both the nature of the waste encountered and the POS surfacing (grass cover over sandy capping), which allows percolation of infiltration water. Experience of similar sites has shown that water within landfills will often 'sit' in the waste deposits (rather like a 'bath-tub') which is consistent with the observations made on site.

The consistency of the groundwater monitoring data collected via the monitoring wells installed on the POS is demonstrated in the following graph.



5.5 Water / Leachate Quality (POS)

As discussed in Section 4.5, water samples were retrieved from two locations on the POS, PHN and PHO. Both these installations target the waste deposits. The chemical test results have been assessed using Table A.5 of Waste Management Paper 26A – Landfill Completion. This table provides an indication of the typical composition of leachate from domestic wastes at various stages of decomposition. The results are presented in Table 8.

Table 8. Water / Leachate Quality - POS

Parameter	Indicative of Fresh Waste (mg/l)	Indicative of Aged Waste (mg/l)	Indicative of Waste with High Moisture Content (mg/l)	Measured Range (mg/l)	Measured Concentration Indicative Designation
pH	6.2	7.5	8.0	7.39 to 7.63	Aged waste
COD	23800	1160	1500	27.8 to 177	Aged waste
BOD	11900	260	500	<2 to 12.2	Aged waste
TOC	8000	465	450	15.8 to 44.2	Aged waste
Volatile Acids	5688	5	12	<LoD for all compounds (10mg/l)	Aged waste
Ammoniacal Nitrogen as N	790	370	1000	0.929 to 88.4	Aged waste
Nitrate as NO_3	3	1.0	1.0	<0.3 to 0.445	Aged waste
Ortho-phosphate	0.73	1.4	1.0	<0.05	-

Manganese	27	2.1	0.05	1290 to 1490	Manganese is a free element in nature, typically associated with the presence of iron. The concentrations recorded most likely reflect the ironstone seams present beneath the site
Iron	540	23	2.0	0.0329 to 0.256	Aged waste
Nickel	0.6	0.1	0.2	15.1 to 16.4	These compounds are often naturally present within ironstones, alternatively they may reflect the ashy nature of the waste deposits.
Copper	0.12	0.03	-	1.59 to 1.98	
Zinc	21.5	0.4	0.5	17.3 to 180	
Lead	0.4	0.14	-	0.219 to 0.702	

As summarised in Table 8, the results of the water / leachate testing are consistent with the waste mass present beneath the POS being an 'aged' waste. This is another line of evidence which indicates maturation and fermentation stages associated with waste decomposition are well under way.

Concentrations of dissolved methane within the water samples varied between 9.77mg/l and 19.9mg/l. Concentrations of dissolved carbon dioxide varied between 104mg/l and 200mg/l. Such concentrations are relatively high (a concentration of 1600ug/l is sufficient to achieve the Lower Explosive Limit for methane should outgassing occur in a potentially confined space (Gooddy and Darling (BGS, 2005 – The Potential for Methane Emissions from Groundwaters of the UK)). However, the dissolved gases are present within an unconfined aquifer, whereby soil pores immediately above the water table are most likely in equilibrium with the dissolved phase gases and diffusion to atmosphere can readily occur through the soil pores within the waste mass and through the overlying clayey sand cap. To contextualize these results, the dissolved gas within the water / leachate is similar to a bottle of fizzy pop which has been left without the lid on – i.e. gas is present within the liquid but there is no confining pressure to induce a reaction. This is consistent with data collected from off-site boreholes (see Section 7.3), where there is no indication of gas migration in solution with boreholes detecting consistently low concentrations of both methane (<0.1%v/v) and carbon dioxide (maximum 2.2%v/v).

There are some sewers which cross the POS and theoretically the dissolved phase gases could migrate into these structures should any cracks be present. However, in reality the associated risks are likely to be low – notably because the methane content of the sewerage is likely to be much higher than any load contributed from the landfill / water / leachate.

5.6 Monitoring of Permanent Gases and Vapour (POS)

Consistent with the methodology outlined in Section 4.3.1, monitoring for permanent gases and vapour has been completed on the POS via standpipe installations constructed in PHN / PHO (targeting the waste material) and BH104 (targeting the underlying bedrock geology). As part of the intrusive works a number of historical boreholes were also identified on the western boundary of the POS, immediately adjacent to the vent trench. These have been identified from archive information collated as part of NLC's PRA as BH1, BH2, BH3 and BH4.

The gas monitoring data for each of these boreholes is summarised in Table 9. For ease of reference 5%v/v methane (Lower Explosive Limit for methane) and 10%v/v carbon dioxide (Typical Maximum Concentration for Amber 1 designation, NHBC Traffic Lights (2006)) have been adopted for initial screening, with concentrations exceeding these levels highlighted.

Table 9. Summary of Permanent and Vapour Monitoring Data - POS

Hole ID[1]	Target Stratum	Flow range (l/hr)	Peak CH_4 (%v/v)	Peak CO_2 (%v/v)	Minimum O_2 (%v/v)	Peak PID (ppm)	Peak CO (ppm)	Peak H_2S (ppm)
PHN	Waste	0.8 to 0.0	87.5	12.9	<0.1	1.2	10.0	0.0
PHO	Waste	45 to -8.4	39.2	8.0	4.8	0.0	0.0	0.0
BH1(S)	Waste / Bedrock	0.2 to 0.0	0.0	5.9	10.1	2.2	0.0	0.0
BH1(D)		0.2 to 0.0	0.0	6.0	10.0	0.3	0.0	0.0
BH2(S)	Waste / Blown Sand	0.0	38.6	15.8	0.0	0.1	19.0	12.0
BH2(D)		0.4 to -0.1	38.8	16.0	0.0	0.2	17.0	12.0
BH3(S)	Waste	0.0 to -0.1	0.0	3.8	14.7	0.0	0.0	0.0
BH3(D)		0.3 to -0.4	0.0	3.8	14.9	0.0	0.0	0.0
BH4(S)	Waste	0.0	0.0	4.3	14.4	0.0	0.0	0.0
BH4(D)		1.2 to 0.0	0.0	2.3	15.8	0.0	0.0	0.0
BH104(R)	Bedrock	0.5 to 0.0	0.4	3.5	18.7	2.2	16.0	0.0

Notes:

1. Historic boreholes BH1 to BH4 have double headed gas taps with two tubes extending into the borehole construction – referred to as shallow and deep by Enitial as part of the 2013 monitoring works.

As summarised in Table 9, the gas monitoring completed on the POS has indicated that the waste mass is producing both methane and carbon dioxide. However, methane concentrations appear to be dominant. This is consistent with a saturated waste mass, as evidenced during excavation of the trial pits.

The highest concentrations of methane were detected in PHN, which is located on the northern portion of the POS. As discussed in Section 5.2, the wastes on this portion of the POS appeared to be more recent than elsewhere and it is therefore consistent that the associated permanent gas concentrations will be higher.

Of note is the relatively high permanent gas concentrations observed in BH2 (maximum 38.8%v/v), which is located on the immediate western boundary of the POS. Reference to the exploratory hole log sheet for BH2 indicates the waste mass in the proximity of this borehole to include paper – a component of the waste which is absent from historic boreholes BH1, BH3 and BH4. The presence of paper within the proximity of BH2 is considered likely to explain the more elevated permanent gas concentrations recorded locally.

Flow rates in all exploratory holes are typically low, with a typical maximum of 1.2l/hr. The only exception to this is PHO where flow rates have been found to vary between 45l/hr and -8.4l/hr. As discussed in Section 5.4, a shallow water table was observed in PHO (varying between 0.47m and 0.94mbgl). It is known that variations in shallow water tables can have a considerable influence on flow rates – effectively compressing any gas present within the standpipe between the water head and gas tap in an artificial 'vacuum'. Consistent with this, when Enitial monitored the flow rates recorded in PHO they were consistently observed to dissipate to 0.0l/hr within a few minutes – which is considered likely to reflect the dissipation of pressures within the confined standpipe vacuum. When the flow rates were re-tested the maximum rate recorded in PHO was 1.3l/hr, which is consistent with the flow rate recorded elsewhere on the POS.

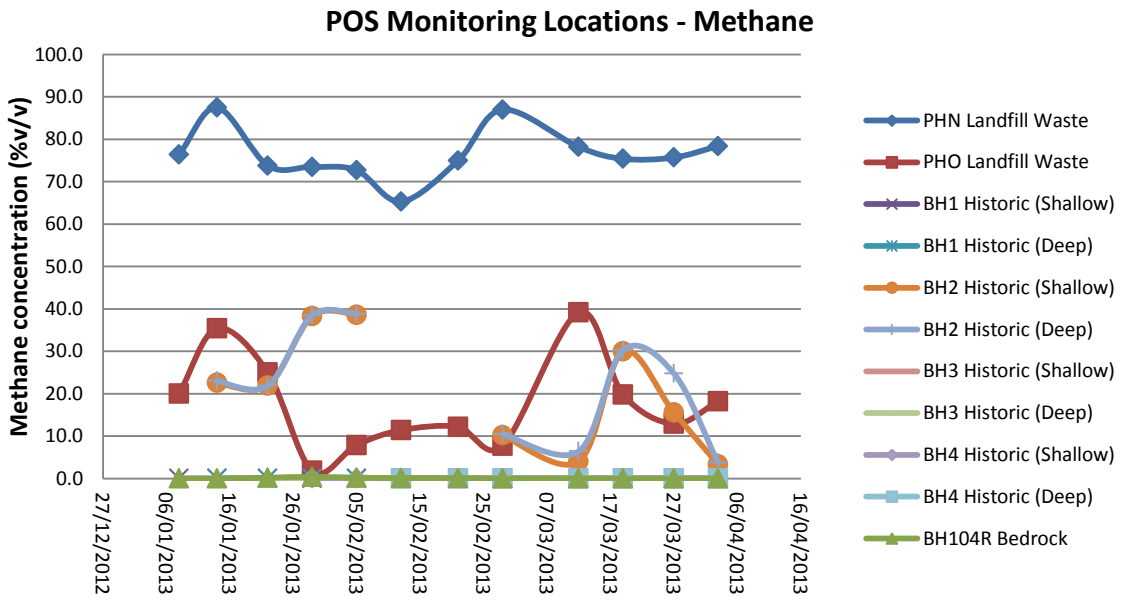
PID readings obtained during the monitoring works recorded consistently low concentrations of <10ppm. Low concentrations of carbon monoxide (maximum 19ppm) were also recorded.

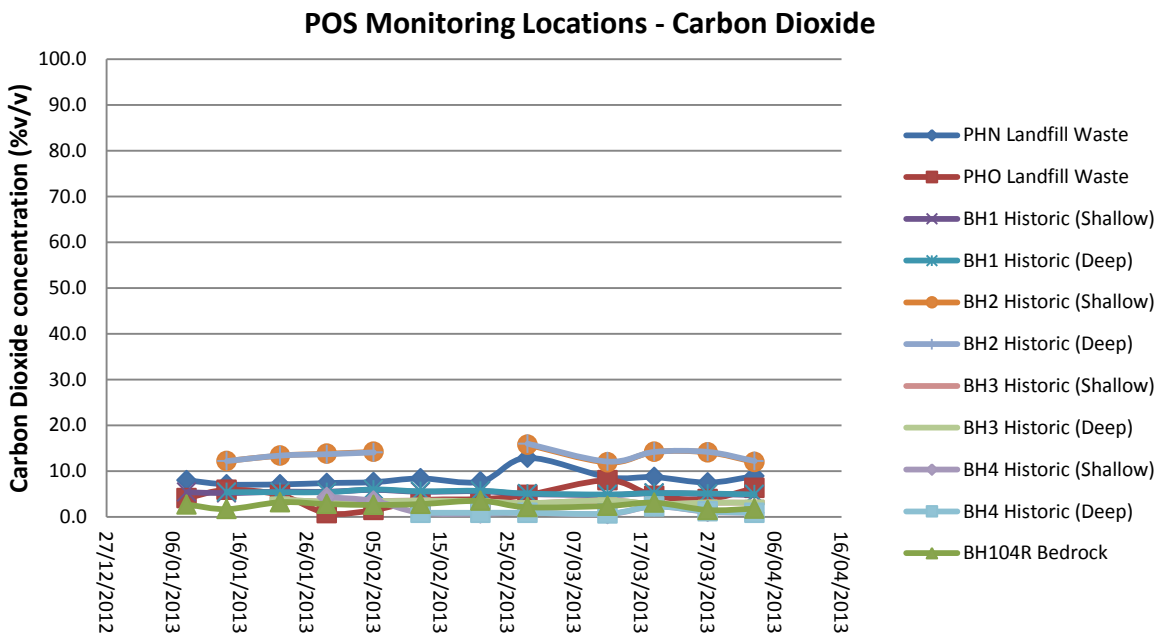
A maximum concentration of 12ppm hydrogen sulphide was recorded during monitoring events completed on the POS. The long-term occupation exposure limit for hydrogen sulphide is 5ppm (HSE, Table 1: List of Approved Workplace Exposure Limited, December 2011). When considering risks associated with hydrogen sulphide it is important to note that the concentration recorded was identified within a borehole (BH2) which was installed with a standpipe directly into the waste / Blown Sand deposits, immediately adjacent to the vent trench construction. In reality any localised hydrogen sulphide present within the vicinity of this borehole will most likely vent to surface via the path of least resistance offered by the granular backfill within the vent trench, not migrate toward off-site residential receptors or occupants of the industrial estate.

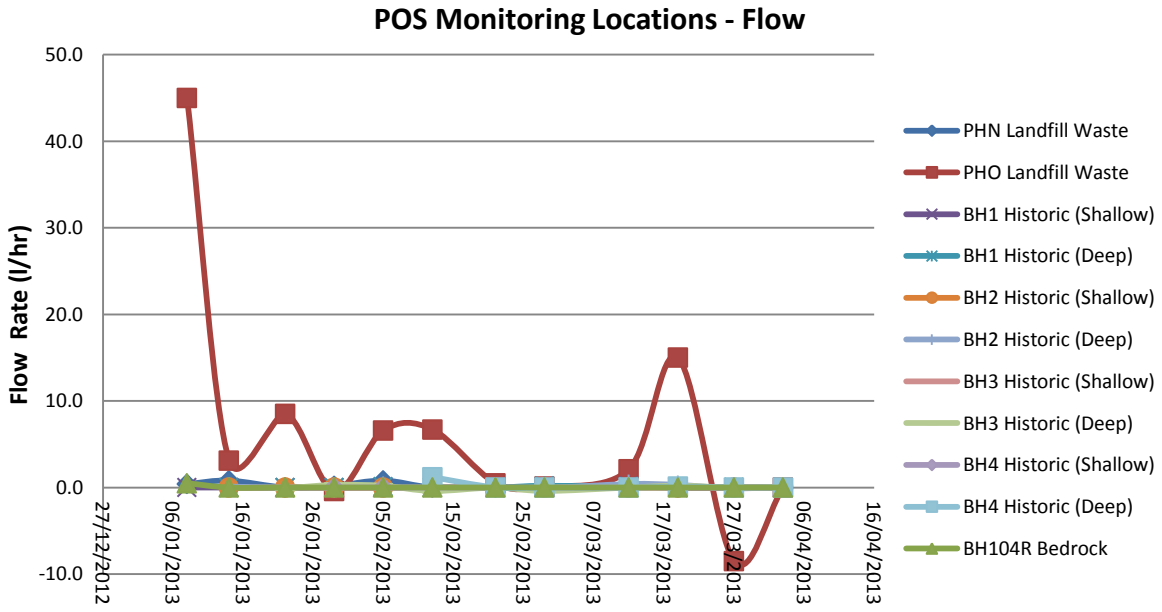
Certainly across the remainder of the POS and industrial estate the normal indicator of hydrogen sulphide (rotten egg smell) was not observed – which is consistent with the monitoring data obtained from the remainder of the site which typically indicate low concentrations to be present (<1ppm).

Consideration has been given to the potential for leakage of the wells and how this may affect the gas regime monitored beneath the site. Having reviewed the data available it is concluded that there is no evidence to suggest the well installations on site are leaking, which is consistent with the bentonite backfill of the wells being hydrated during construction. However, some oxygen ingress may be occurring. This is likely to be governed by the sandy capping which is relatively thin on the POS and thus permitting flow of atmospheric air into the relatively thin landfill waste body. Regardless, when assessing risks associated with permanent gases the influence of any oxygen ingress is considered to be low – notably since the monitoring data from the worst-case borehole has been utilised for the mathematical modelling input parameters (i.e. PHN, where no oxygen was recorded).

Of particular note is the consistency in the monitoring data, which is demonstrated in the following graphs for methane, carbon dioxide and flow rate.







The results of the gas monitoring are discussed in more detail in Section 8.5.

5.7 Visual and Olfactory Evidence of Contamination (POS)

No visual or olfactory evidence of contamination was observed within the near surface capping soils located across the POS during the intrusive works.

Associated with the waste mass encountered beneath the capping soils a moderate to strong odour of maturating waste was noted. However, apart from this normal process of landfill waste degradation no visual and / or olfactory evidence of contamination was observed on the POS with the exception of the following:

- During the excavation of TP3 (located on the central-western boundary of the POS, adjacent to the vent trench) strong odour was noted within the landfill waste material below 2.7m. The nature of the odour was not clear, but it tended to have a more 'chemical' type odour than 'waste'. TP3 is located in relatively close proximity to historical borehole BH3. The borehole log sheet for BH3 reports a similar 'chemical' odour within the landfill waste material. Reflecting these observations soil samples were retrieved from TP3 at 3.2m and tested for a suite of contaminants as summarised in Table 5 of Section 4.4.3; and

- During the excavation of TP9 (located on the central-northern portion of the POS, in close proximity to PHN) a strong 'excrement' type odour was noted within the landfill waste between 0.65m and 2.3m. This odour appeared to be associated with clumps of card / paper and non-decomposed crisps as noted locally in this position and may well reflect decomposition of this material. However, reflecting the odour observed soil samples were retrieved from TP9 at 1.5m and tested for a suite of contaminants as summarised in Table 5 of Section 4.4.3.

As the samples removed from TP3 and TP9 are targeted it is not appropriate to complete statistical analysis. As such, the results of the chemical testing are summarised in Table 10 and have been compared directly to Generic Assessment Criteria (GAC) appropriate for an 'Open Space' end use as derived by ATKINS (ATRISK^{SOIL}) utilising the CLEA framework (V1.06) as released by the Environment Agency in October 2009, which incorporates the UK approach to human health risk assessment. EPG is a registered subscriber with ATKINS for the utilisation of these GAC's. It should be noted that exceedances of these GAC values do not under any circumstances indicate proof of SPOSH. However, they provide a framework for initial assessment of soil chemical test data from the POS.

Table 10. Chemical Test Data – Targeted Samples, POS

Determinant[1]	GAC (mg/kg)	Maximum Recorded Concentration (m/gkg)	Comments
Toluene	79,300[2]	0.004	-
Ethyl Benzene	35,200[2]	0.001	-
Xylene (sum)	179,100[2]	0.033	-
Aliphatics C5-C6	327[2&3]	0.0565	-
Aliphatics C6-C8	158[2&3]	0.0801	-
Aliphatics C8-C10	82.5[2&3]	0.738	-
Aliphatics C10-C12	49.9[2&3]	1.36	-
Aliphatics C12-C16	21[2&3]	4.5	-
Aliphatics C16-C35	590000[2]	830.5	-
Aromatics C8-C10	614[2&3]	0.526	-
Aromatics C10-C12	370[2&3]	0.907	
Aromatics C12-C16	155[2&3]	26.5	-
Aromatics C16-C21	5380[2]	169	-
Aromatics C21-C35	5380	848	-
n-Dioctyl phthalate	32.6[2&3]	1.33	-
n-Dibutyl phthalate	4.62[2&3]	0.415	-
Butylbenzy phthalate	26.1[2&3]	0.237	-
Bis(2-ethylhexyl) phthalate	8.66[2%3] / 11400[2]	33.60	No free phase product was observed and measured concentration does not exceed SSV.
Dibenzofuran	87[7]	1.56	-
Carbazole	12,600[8]	1.68	-
1,-Dichlorobenzene	42.5[2&4]	0.921	-
2-Methylnaphthalene	5420[2&5]	0.311	-
Acenaphylene	170	0.159	-
Acenaphthene	18,400[2]	3.52	-
Anthracene	96,600[2]	5.6	-
Benzo(a)anthracene	28.7[2]	11.3	-
Benzo(b)fluoranthene	35.5[2]	7.7	-

Benzo(k)fluoranethene	381[2]	6.89	-
Benzo(a)pyrene	20.5[6]	9.75	-
Benzo(ghi)perylene	451[2]	3.49	-
Chrysene	3010[2]	9.49	-
Fluoranthene	13,000[2]	22.9	-
Fluorene	12,600[2]	3.77	-
Indeno(123-cd)pyrene	34.4[2]	3.0	-
Phenanthrene	92	16.8	-
Pyrene	9,710[2]	18.6	-
Naphthalene	5420[2]	0.257	-
Dibenzo(ah)anthracene	3.96[2]	1.2	-
Carbon Disulphide	844[2]	0.855	-
Dichloromethane	971[2]	0.0135	-

Notes:

1. Only those compounds recorded in excess of the laboratory Limit of Detection (LoD) are included in this table.
2. ATKINS ATRISK^{soil} Open Spaces 1% SOM.
3. Vapour based saturation limit adopted for screening assessment.
4. No GAC provided, benzene GAC adopted for assessment.
5. No GAC provided, naphthalene GAC adopted for assessment.
6. Site specific value, see discussion in Section 8.3.1.
7. In the absence of a UK screening value the US EPA Regional Screening Level for a residential end use has been adopted.
8. No GAC provided, fluorine GAC adopted for assessment.

As demonstrated in Table 10, review of the chemical test results as obtained from samples which targeted areas of identified visual and/or olfactory evidence of contamination did not identify any gross contamination to be present.

5.8 Vent Trench Construction

Three trial pits (TP2, TP3 and TP6/6A) were excavated alongside and through the granular filled vent trench which borders the western boundary of the POS, between the waste deposits in the landfill and the adjacent residential properties on Warwick Road and Lilac Avenue.

In simplistic terms, the vent trench comprises a linear excavation which has been lined with geotextile and backfilled with single sized (cobble) aggregate. TP2 identified the presence of a heavy duty liner along the side of the vent trench which backs directly onto the adjacent residential houses; however this was not observed in TP3 or TP6/6A. The aggregate within the vent trench appeared relatively clean when excavated, with no indication of excessive fines or soil / waste within the matrix. However, a layer of grass / weed cover has formed over much of the vent trench surface area.

The vent trench is typically ~2.0m wide and was found to vary in depth between 2.6m and 1.4m. These depths are minimum depths for the granular backfill, notably as spalling of the aggregate typically resulted in the trial pit excavations being forced to terminate prior to the base of the vent trench backfill being proven.

Observations made in the vent trench trial pits are summarised in Table 11.

Table 11. Vent Trench Exploratory Works Observations

Detail	TP2	TP3	TP6/6A
Adjacent Ground Conditions	GL to 0.4m Capping 0.4m to 3.5m+ Waste	GL to 0.15m Capping 0.15m to 3.2m+ Waste	GL to 1.1m Capping 1.1m to 1.4m+ Waste
Depth to Groundwater	Water strike at 3.2mbgl, confirmed by adjacent BH2 which recorded groundwater between 2.75m and 3.11mbgl.	Water strike at 3.1mbgl, confirmed by adjacent BH3 which recorded groundwater between 2.06m and 1.90mbgl.	Water strike at 1.2m, confirmed by adjacent BH4 which recorded groundwater between 1.64m and 1.44mbgl.
Depth of Vent Trench Proven	2.2m minimum	2.6m minimum	1.4m minimum
Width of Vent Trench	2.0m	2.0m	2.6m
Liners Observed	Geotextile liner adjacent to waste, membrane adjacent to residential dwellings.	Geotextile liner adjacent to waste and adjacent residential dwellings – membrane not observed.	Geotextile liner adjacent to waste and adjacent residential dwellings – membrane not observed.
Comments	Excavation not feasible beyond 2.2m due to continuous collapse of trial pit excavation.	Excavation not feasible beyond 2.6m due to continuous collapse of trial pit excavation.	Excavation no feasible beyond 1.4m due to continuous collapse of trial pit excavation and fast water ingress.

As summarised in Table 11, typically the vent trench excavations proved the extent to of the single sized aggregate to a minimum depth of 1m above groundwater. In reality the vent trench more than likely extends closer to groundwater than proven by these excavations, but excavation instability precluded this from being proven.

6. GROUND CONDITIONS – INDUSTRIAL ESTATE

Ground conditions beneath the industrial estate are generally consistent with the known geology of the area and the information ascertained in relation to the landfilling processes. The ground conditions encountered are discussed in more detail in the following sections.

6.1 Ground Surface (Industrial Estate)

The industrial estate is surfaced with tarmac, concrete or 'rough' ground (e.g. slag, hardcore etc.). Very locally some small areas of grass covered topsoil are present. With the exception of NLC's Cottage Beck Road Depot the surfacing across the site is typically in poor condition and has clearly not been maintained for some years. Locally there is evidence of settlement.

6.2 Landfill Waste Deposits (Industrial Estate)

As discussed in Section 3.1, the history of filling beneath the industrial estate is complex. However, based on the information ascertained from the intrusive works it is clear that there are two dominant types of waste beneath the industrial estate:

- Consistent with the areas of deposition where the 'older' (i.e. pre 1960's) wastes were anticipated the landfill material typically comprises predominantly ash material with various inclusions such as brick, sandstone, concrete, slag, coal, metal, shoe leather and pottery. Locally some putrescible material was noted (e.g. in PHH and BH105) – including clumps of newspapers and plastic bags. However, based on the observations made on site the volume of this putrescible material was much lower in the older waste mass than elsewhere on site;

- Material more consistent with 'younger' waste streams (i.e. post 1960's) was encountered in PHK, PHL, TP25, TP26, TP27. With the exception of TP26 these positions are all in the proximity of areas where post 1960's waste streams are anticipated – consistent with Wimpey Laboratories drawing S/17956 (see discussion in Section 3.1). The waste mass in these areas was typically noted to include abundant wood, plastic / plastic bag / polythene and metal (bicycles, box section, steel bars, mattress springs etc.), generally in a matrix of sandy ash with brick, coal, slag and concrete.

In addition to the above, it is of note that evidence of green waste (topsoil, roots, stems, wood and garden waste) was noted at depth in locations TP26 and TP27, which are located in generally close proximity to PHL on the central-eastern portion of the industrial estate. The thickness of the landfill waste material was proven in a number of locations, with BH105 recording the thickest deposits (4.3m).

6.3 Natural Geology (Industrial Estate)

Four of the exploratory holes completed on the industrial estate identified 'drift' deposits to be present beneath the landfill waste (PHJ, BH106, TP29 and TP30). The drift typically comprised medium sand, locally with an increased gravel / clay content. It was very difficult to determine if the drift deposits identified were natural / undisturbed or reworked (potentially reflecting the 'gullet' process of excavation discussed in Section 3.1).

Bedrock geology was encountered at between 1.7m in PHA (33.61mAOD) and 4.4m in BH105(R) (23.64mAOD). BH102, BH105 and BH106 penetrated the bedrock. The bedrock geology comprised between 0.65m and 1.0m of strong limestone / ironstone, underlain by mudstone with limestone at depth. Fractures within the limestone / ironstone immediately beneath the waste were typically extremely closely to closely spaced, with local clay infill. The Rock Quality Designation (RQD) for the bedrock immediately beneath the waste varied between 20% and 31%, indicative of 'poor' rock quality. However, the RQD increased with depth, with the second rotary run recording an RQD of between 48% and 78%, indicative of 'fair' rock quality.

6.4 Groundwater Conditions (Industrial Estate)

The trial pit excavations completed on the industrial estate are considered to provide the most accurate indication of groundwater conditions within the area of landfilling. These observations are summarised in Table 12.

Table 12.. Groundwater Conditions, Trial Pit Excavations – Industrial Estate

Hole ID	Strike Depth & Stratum	Strike (mAOD)	Observation
TP21	1.2m, Waste	33.02	Unable to progress significantly beyond water ingress
TP22	N/A	-	Terminated on obstruction at 0.25mbgl
TP23	Dry	-	Terminated at 3.2mbgl (26.36mAOD)
TP24	Dry	-	Terminated at 3.0mbgl (25.35mAOD)
TP25	2.2m, Waste	32.45	Excavation unstable below water table
TP26	Dry	-	Terminated at 3.2mbgl (31.14mAOD)
TP27	0.7m, Waste	33.63	Excavation terminated on concrete slab at 1.5mbgl
TP28	Dry	-	Excavation terminated at 3.8mbgl (31.29mAOD)
TP29	Dry	-	Excavation terminated at 2.9mbgl (33.59mAOD)
TP30	3.5m, Drift (sand)	26.16	-

As summarised in Table 12, groundwater conditions beneath the industrial estate are notably different to the POS. In general the trial pit excavations did not encounter water within the waste deposits. The exceptions to this are TP21, TP25, TP27 and TP30:

- TP21 is located in close proximity to the central southern portion of the POS where higher water levels were encountered. The presence of a shallow water table within the waste at around 1.2mbgl in this location is consistent with the observations made on the adjacent POS, see discussion in Section 5.4;

- TP25 is located in relatively close proximity to the northern portion of the POS and encountered relatively similar ground conditions. The presence of a water table within the waste at around 2.2mbgl is consistent with the observations made on the adjacent POS, see discussion in Section 5.4;

- TP27 encountered water at 0.7mbgl – however, the intrusive works were not able to penetrate a concrete slab encountered at 1.5mbgl to prove if this was perched; and

- TP30 encountered groundwater within the underlying sandy drift deposits at 3.5mbgl – most likely reflecting the approximate depth to natural groundwater beneath the site.

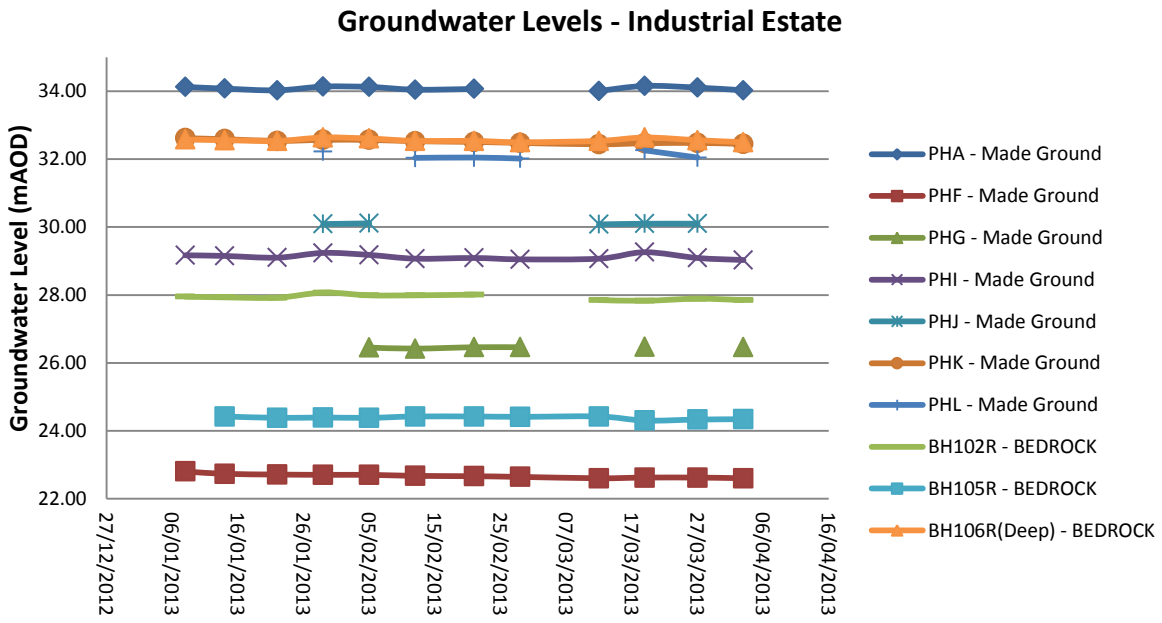
Subsequent monitoring of groundwater conditions beneath the industrial estate has been completed via standpipe installations in the probeholes and deep cable / rotatory core boreholes, see Table 13.

Table 13. Summary of Groundwater Monitoring Data – Industrial Estate

Hole ID	Target Stratum	Groundwater Level (mbgl)	Groundwater Level (mAOD)	Comments
PHA	Waste	1.63 – 1.48	34.16 – 34.01	-
PHF	Waste	2.68 - 2.48	22.80 – 22.60	-
PHG	Waste	2.53 – 2.48	26.47 – 26.42	-
PHH	Waste	Dry	-	Dry throughout majority of monitoring events
PHI	Waste	2.72 – 2.49	29.26 – 29.03	-
PHJ	Waste	2.44 – 2.41	30.11 – 30.08	Dry during a number of monitoring events
PHK	Waste	2.44 – 2.26	32.62 – 32.44	-
PHL	Waste	3.09 – 2.85	32.26 – 32.02	Dry during a number of monitoring events
BH106(Shallow)	Waste	Dry	-	Dry throughout majority of monitoring events
BH102(R)	Bedrock	4.12 - 3.88	28.07 – 27.83	-
BH105(R)	Bedrock	3.74 – 3.62	24.42 – 24.30	-
BH106(R)(Deep)	Bedrock	2.88 – 2.74	32.64 – 32.50	-

As summarised in Table 13, a number of the monitoring installations constructed on site recorded 'dry' conditions within the landfill waste either for part, or the full duration, of the monitoring events. This is consistent with the observations made during the excavation of the trial pits, i.e. water generally on the industrial estate is perched locally in pockets within the landfill waste material – with a deeper groundwater table within the underlying drift / bedrock geology at depth.

Notwithstanding the above, the consistency of the groundwater monitoring data collected via the monitoring wells installed on the industrial estate is demonstrated in the following graph.



6.5 Water / Leachate Quality (Industrial Estate)

As discussed in Section 4.5, water samples were retrieved from three locations on the industrial estate, PHF, PHI and PHK. All three of these installations target the waste deposits. PHF targets the older (pre 1960's) waste, PHI targets the wastes deposited to the immediate south of Midland Road (1960-70's) and PHK targets wastes deposited in the late 1960's which were pulverised. Again the results have been assessed using Table A.5 of Waste Management Paper 26A – Landfill Completion and are summarised in Table 14.

Table 14. Water / Leachate Quality – Industrial Estate

Parameter	Indicative of Fresh Waste (mg/l)	Indicative of Aged Waste (mg/l)	Indicative of Waste with High Moisture Content (mg/l)	Measured Range (mg/l)	Measured Concentration Indicative Designation
pH	6.2	7.5	8.0	7.08 to 7.64	Aged waste
COD	23800	1160	1500	<7 to 107	Aged waste
BOD	11900	260	500	<2 to 5.45	Aged waste
TOC	8000	465	450	7.17 to 44.9	Aged waste
Volatile Acids	5688	5	12	<LoD for all compounds (10mg/l)	Aged waste
Ammoniacal Nitrogen as N	790	370	1000	<0.2 to 51.9	Aged waste
Nitrate as NO_3	3	1.0	1.0	<0.3 to 29.8	Aged waste
Ortho-phosphate	0.73	1.4	1.0	<0.05	-
Manganese	27	2.1	0.05	2.67 to 973	Manganese is a free element in nature, typically associated with the presence of iron. The concentrations recorded most likely reflect the ironstone seams present beneath the site
Iron	540	23	2.0	0.0568 to 15.8	Aged waste
Nickel	0.6	0.1	0.2	0.00426 to 0.0101	Aged waste
Copper	0.12	0.03	-	<0.00085 to 0.00546	
Zinc	21.5	0.4	0.5	0.0029 to 0.188	
Lead	0.4	0.14	-	0.000154 to 0.000723	

As summarised in Table 14, the results of the water / leachate testing are consistent with the waste mass present beneath the industrial estate being an 'aged' waste. This is another line of evidence which indicates maturation and fermentation stages associated with waste decomposition are well under way.

Concentrations of dissolved methane within the water samples varied between 0.00105mg/l and 7.53mg/l, with a trend for increased dissolved methane within the younger waste mass. Concentrations of dissolved carbon dioxide varied between 124mg/l and 139mg/l, showing no obvious trend.

As discussed in Section 5.5, risks associated with these dissolved phase gases are considered unlikely to be high as they are not confined and the potential for significant pressure changes (which can release gas out of solution) unlikely. However, beneath the industrial estate these dissolved phase gases may present a source of on-going diffuse gas release.

6.6 Monitoring of Permanent Gases and Vapour (Industrial Estate)

Consistent with the methodology outlined in Section 4.3.1, monitoring for permanent gases and vapour has been completed on the industrial estate via standpipe installations constructed in each exploratory hole location.

The gas monitoring data for each of these boreholes is summarised in Table 15. For ease of reference 5%v/v methane (Lower Explosive Limit for methane) and 10%v/v carbon dioxide (Typical Maximum Concentration for Amber 1 designation, NHBC Traffic Lights (2006)) have been adopted as initial screening values, with concentrations exceeding these levels highlighted in Table 15.

Table 15. Summary of Permanent and Vapour Monitoring Data – Industrial Estate

Hole ID[1]	Target Stratum	Flow range (l/hr)	Peak CH_4 (%v/v)	Peak CO_2 (%v/v)	Minimum O_2 (%v/v)	Peak PID (ppm)	Peak CO (ppm)	Peak H_2S (ppm)
PHA	Waste	0.0 to -0.1	0.0	2.6	18.6	4.5	0.0	0.0
PHF	Waste	0.0 to 0.1	0.0	8.5	10.9	1.7	0.0	0.0
PHG	Waste	0.3 to -0.2	0.0	1.7	18.0	2.2	0.0	0.0
PHH	Waste	0.5 to -0.4	0.0	11.5	2.0	1.7	0.0	0.0
PHI	Waste	0.2 to 0.0	3.0	7.6	0.0	3.5	12.0	0.0
PHJ	Waste	0.0 to -0.4	1.9	12.8	0.0	6.1	6.0	0.0
PHK	Waste	0.1 to 0.0	22.4	8.9	0.0	0.0	16.0	1.0
PHL	Waste	0.9 to 0.0	24.7	4.1	0.0	0.1	12.0	0.0
BH106(Shallow)	Waste	0.4 to -0.2	0.0	0.9	16.6	6.2	0.0	0.0
BH102(R)	Bedrock	0.9 to -5.7	4.1	1.5	3.3	1.5	16.0	0.0
BH105(R)	Bedrock	0.1 to -8.3	0.4	5.4	6.8	0.6	0.0	0.0
BH106(R)(Deep)	Bedrock	0.1 to -0.2	0.0	0.7	16.8	5.9	0.0	0.0

As summarised in Table 15, the gas monitoring completed on the industrial estate has indicated that the waste mass is producing both methane and carbon dioxide. However, excluding PHK and PHL, carbon dioxide concentrations appear to be dominant. This is consistent with a largely dry waste mass, as evidenced during excavation of the trial pits. The highest concentrations of methane detected were in PHK and PHL;

- PHK is located on the immediate boundary of the pulverised waste (deposited 1966) and more recent landfill deposits (deposited 1970-1976). Review of the exploratory hole log sheet for PHK indicates the waste material in this area to include abundant wood, plastic and metal in an ash matrix with slag, sandstone, concrete, clinker and brick. The description of this waste body, notably its general homogenous matrix, would suggest that PHK has most likely intercepted the 1966 pulverised waste. The concentrations of methane recorded in PHK are consistent with this source and the putrescible materials contained therein.

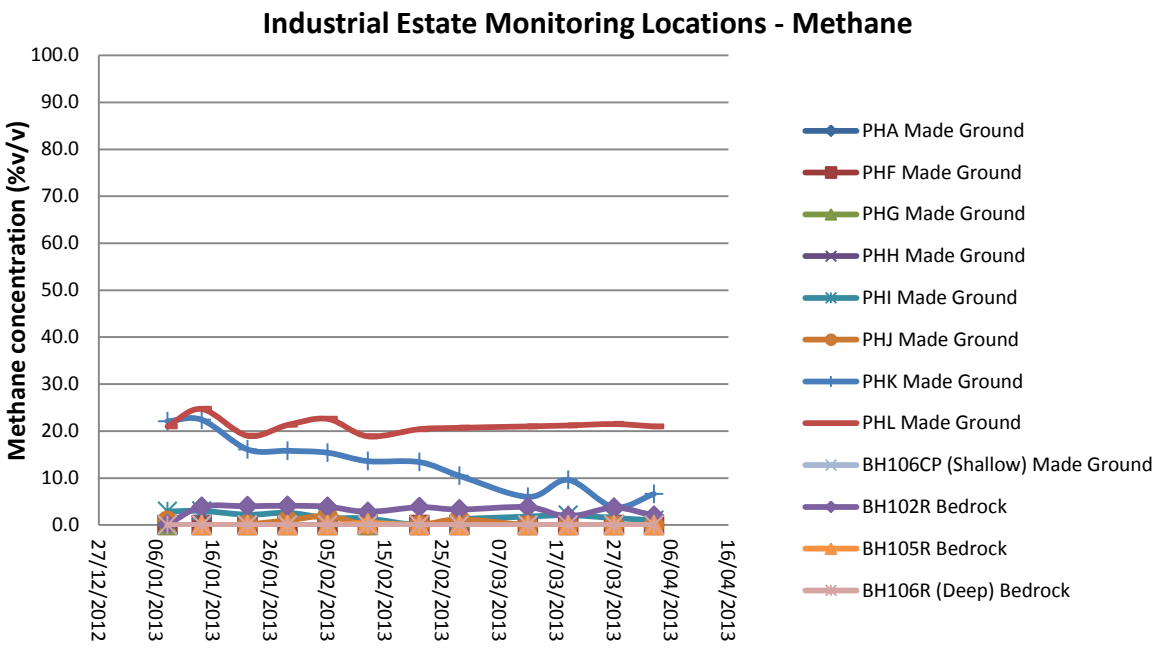
- PHL is located in an area where waste was deposited between 1963 and 1966. Review of the exploratory hole log sheets indicates the waste material recorded in PHL to comprise a predominantly ash matrix with plastic bags, paper, metal, glass and pottery. The concentrations of methane recorded in PHL are consistent with this source and the putrescible materials contained therein.

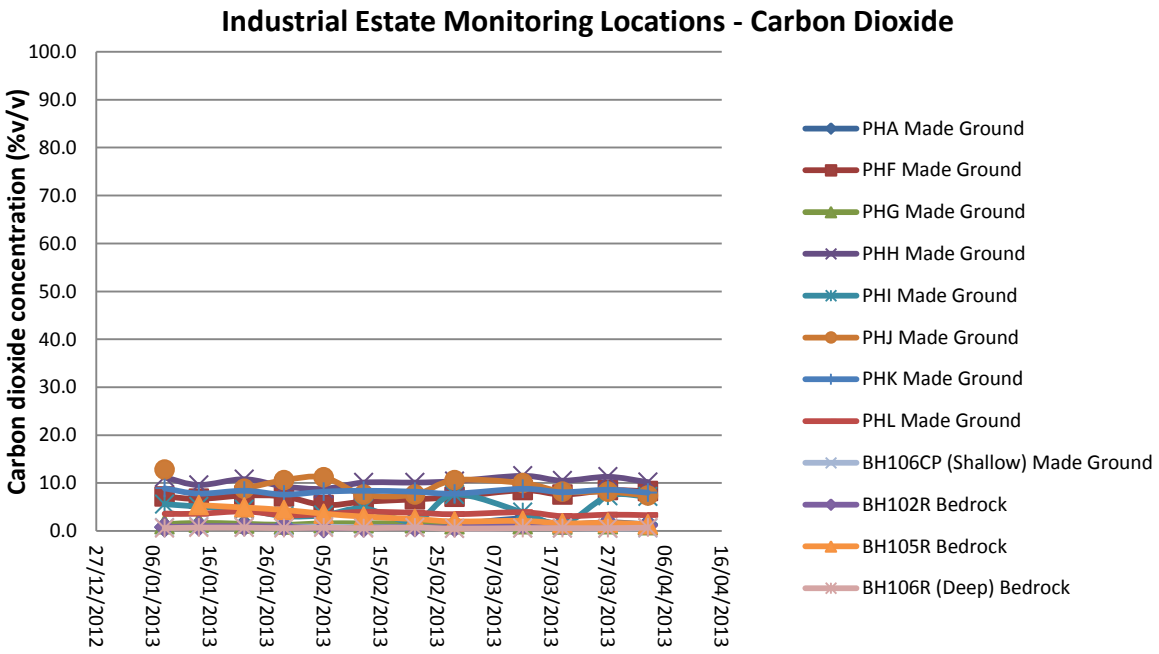
Flow rates in all exploratory holes are low, with a typical maximum of 0.9l/hr. Two of the deeper boreholes (BH102(R) and BH105(R)) have recorded slightly higher negative flow rates of -5.7l/hr and -8.3l/hr respectively. Negative flow rates typically occur in response to draw-down within a standpipe installation, generally as a result of groundwater level fluctuations. Enitials' log for the flow results relating to these boreholes indicates that the negative flows quickly dissipate, with steady readings of 0.0l/hr typically recorded within 30 to 120 seconds.

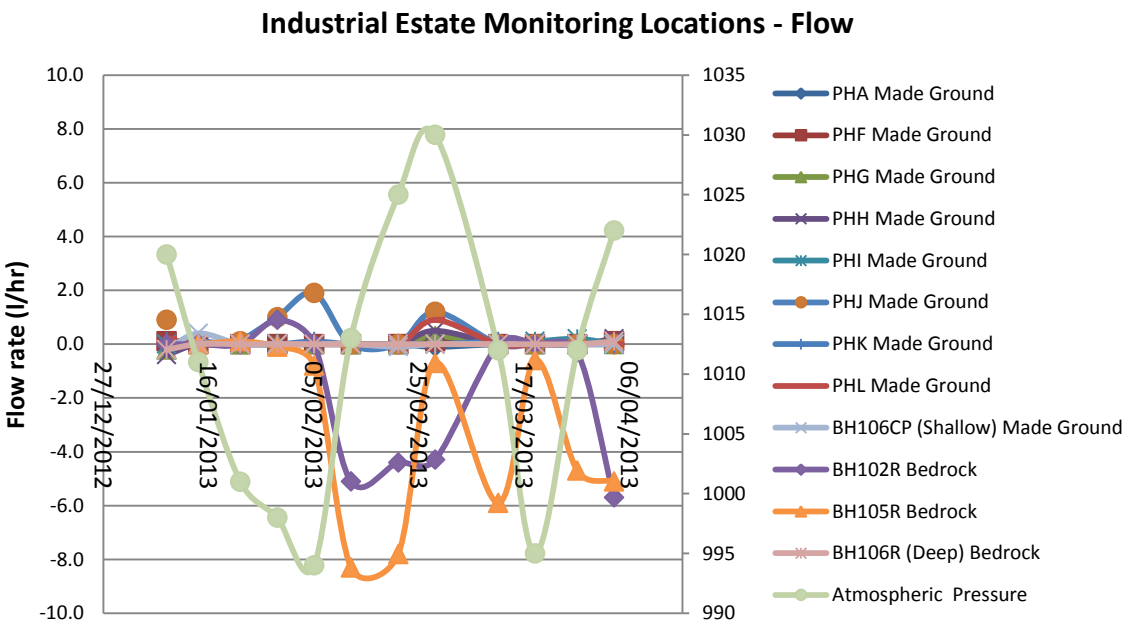
PID readings obtained during the monitoring works recorded consistently low concentrations of <10ppm. Similarly low concentrations of carbon monoxide (maximum 16ppm) and hydrogen sulphide (maximum 1ppm) were recorded.

Consideration has been given to the potential for leakage of the wells and how this may affect the gas regime monitored beneath the industrial estate. Having reviewed the data available it is concluded that there is no evidence to suggest the well installations on site are leaking or that oxygen ingress is occurring. This most likely reflects the fact that the bentonite seal of all well installations was hydrated during construction and most boreholes on the industrial estate are sealed into hardstanding.

Of particular note is the consistency in the monitoring data, which is demonstrated in the following graphs for methane, carbon dioxide and flow rate.


Industrial Estate Monitoring Locations - Methane
Methane concentration (%v/v)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
27/12/2012
06/01/2013
16/01/2013
26/01/2013
05/02/2013
15/02/2013
25/02/2013
07/03/2013
17/03/2013
27/03/2013
06/04/2013
16/04/2013
PHA Made Ground
PHF Made Ground
PHG Made Ground
PHH Made Ground
PHI Made Ground
PHJ Made Ground
PHK Made Ground
PHL Made Ground
BH106CP (Shallow) Made Ground
BH102R Bedrock
BH105R Bedrock
BH106R (Deep) Bedrock


Industrial Estate Monitoring Locations - Carbon Dioxide
Carbon dioxide concentration (%v/v)
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
27/12/2012
06/01/2013
16/01/2013
26/01/2013
05/02/2013
15/02/2013
25/02/2013
07/03/2013
17/03/2013
27/03/2013
06/04/2013
16/04/2013
PHA Made Ground
PHF Made Ground
PHG Made Ground
PHH Made Ground
PHI Made Ground
PHJ Made Ground
PHK Made Ground
PHL Made Ground
BH106CP (Shallow) Made Ground
BH102R Bedrock
BH105R Bedrock
BH106R (Deep) Bedrock



The results of the gas monitoring are discussed in more detail in Section 8.5.

6.7 Sampling of Permanent Gases and Vapour (Industrial Estate)

As discussed in Sections 4.3.4 and 4.3.5, canister gas samples were removed from the three standpipe installations where monitoring had indicated the highest permanent gas concentrations to be present (PHN, PHK and PHL). PHN is located on the POS, although similar waste material is present in the proximity of PHK (which is located on the industrial estate). PHL is located on the industrial estate, in the proximity of the post 1960's waste stream. In this relation, the laboratory results for all three monitoring positions have been assessed together – assuming the worst-case, i.e. that they represent conditions beneath the industrial estate buildings.

The laboratory data is summarised in Table 16 and has initially been compared to long-term occupational exposure limits as prepared by the Health and Safety Executive (Table 1: List of approved workplace exposure limits (as consolidated with amendments, December 2011)). The adoption of the long-term exposure limits is considered reasonable given that buildings overlying the waste deposits comprise commercial / industrial premises. Benzene is known to be one of the most volatile and toxic compounds. As such a check of this compound has been completed via calculation of Inhalation Reference Concentrations (RfC's, i.e. the estimate of daily inhalation exposure of the human population that is likely to be without appreciable risk of deleterious effects during a lifetime). A similar approach has been adopted for compounds where long-term occupational exposure limits (8-hr TWA Reference Period) are not available.

Table 16. Laboratory Data for Permanent Gases and Vapour

Determinant[1]	Measured Concentrations			Screening Value	Comments
	PHN	PHK	PHL		
Carbon Dioxide	8.01%	7.51%	3.04%	N/A	Laboratory results consistent with site monitoring data – assessed separately.
Methane	68.8%	13.7%	18.64%	N/A	
Oxygen	3.2%	3.0%	3.7%	N/A	
Ethane	8ppmV (0.0008%)	7ppmV (0.0007%)	18ppmV (0.0018%)	3%[2]	-
Pentane	-	578.7ug/m^3 (0.579mg/m^3)	607ug/m^3 (0.607mg/m^3)	1800mg/m^3[(3)]	-
Cyclohexane	151ug/m^3 (0.151mg/m3)	-	62ug/m^3 (0.062mg/m^3)	350mg/m^3[(3)]	-
Vinyl Chloride	-	23.8ug/m^3 (0.0238mg/m^3)	75.9ug/m^3 (0.0759mg/m^3)	7.8mg/m^3[(3)]	-
Benzene	31.9ug/m^3 (0.0319mg/m^3)	85.3ug/m^3 (0.0853mg/m^3)	53.7ug/m^3 (0.0537mg/m^3)	3.25mg/m^3[(3)] 5ug/m^3[(5)]	See discussion
Toluene	523ug/m^3 (0.523mg/m^3)	563.3ug/m^3 (0.5633mg/m^3)	454.4ug/m^3 (0.4544mg/m^3)	191mg/m^3[(3)]	-
Ethyl Benzene	68.6ug/m^3 (0.0686mg/m^3)	72.1ug/m^3 (0.0721mg/m^3)	65.1ug/m^3 (0.0651mg/m^3)	441mg/m^3[(3)]	-
Xylene (sum m,p,o)	360.4ug/m^3 (0.3604mg/m^3)	373ug/m^3 (0.373mg/m^3)	338.3ug/m^3 (0.3383mg/m^3)	220mg/m^3[(3)]	-
1,3,5-trimethylbenzene	-	16.2ug/m^3 (0.0162mg/m^3)	13.3ug/m^3 (0.0133mg/m^3)	125mg/m^3[(3,4)]	-
1,2,4-trimethylbenzene	-	47.7ug/m^3 (0.0477mg/m^3)	34.4ug/m^3 (0.0344mg/m^3)		-
1,2,3-trimethylbezene	-	13.8ug/m^3 (0.0138mg/m^3)	-		-
Naphthalene	5.7ug/m^3 (0.0057mg/m^3)	7.2ug/m^3 (0.0072mg/m^3)	-	3ug/m^3[(6)]	See discussion
Aliphatics C4-C6	2634ug/m^3	2286ug/m^3	4015ug/m^3	5300ug/m^3[(7)]	-
Aliphatic C6-C8	2200ug/m^3	724ug/m^3	822ug/m^3	200ug/m^3[(7)]	See discussion
Aliphatics C8-C10	11256ug/m^3	2387ug/m^3	5014ug/m^3	900ug/m^3[(7)]	See discussion
Aromatic C5-EC7 (Benzene)	[<32ug/m3]	86ug/m^3	54ug/m^3	-	*Consistent with above*
Aromatics EC7-EC8 (Toluene)	254ug/m^3	565ug/m^3	456ug/m^3	-	*Consistent with above*
Aromatics EC8-EC10	486ug/m^3	506ug/m^3	456ug/m^3	200ug/m^3[(7)]	See discussion

Notes:

1. Only determinants recorded in excess of the laboratory Limit of Detection are included in the table.
2. Lower explosive limit adopted for assessment.
3. Long-term exposure limit (8-hr TWA Reference Period)EH40/2004 Workplace Exposure Limits - Table 1: List of Approved Workplace Exposure Limits (as consolidated with amendments, December 2011)
4. Sum of all Trimethylbenzene isomers or mixtures.
5. Calculated RfC, source Air Quality Objective (2009 TOX Report)
6. Calulcated RfC, source 2003 TOX Report.
7. Calulcated RfC, source TPH CWG / 1997b.

As demonstrated in Table 16, the results of the gas / vapour sampling have typically indicated concentrations of individual compounds to be present at concentrations significantly lower than the long-term exposure limits. However, further analysis of the results utilising calculated Inhalation Reference Concentrations (RfC's) has indicated that concentrations of individual compounds typically exceed the adopted screening criteria. It is important to note that the test results obtained are from boreholes drilled into the ground, the concentrations recorded are certainly not representative of concentrations physically within the buildings overlying the waste. Between the concentrations leaving the ground and any gas entering the buildings there will be significant reductions in overall concentration as a result of numerous processes including; dilution within the ground, oxidation within the ground, migration retardation through the building floor slab construction and dilution within the buildings. Together it is anticipated that these effects will mitigate risk by a factor of 1000 (Folkes, Kurtz and Wannamaker – Vapour Intrusion Attenuation Factors Based on Long Term Monitoring Data (2010)), whereby the concentrations recorded in the boreholes will all be significantly lower than the calculated RfC's.

The laboratory monitoring for gas and vapour samples included an assessment of Tentatively Identified Compounds (TICS). Review of these TICS indicates them to typically comprise landfill related gases such as butane, pentane, hexane and octane. The concentrations recorded (maximum 354ppbV) are all considerably lower than the Lower Explosive Limits (LEL; 1.8%, 1.32%, 1.0% and 0.79% respectively) for these compounds.

6.8 Internal Space Monitoring (Industrial Estate)

As discussed in Section 4.3.2 to date three internal space monitoring events have been completed (26/27 February 2013, 9/10/11 April 2013 and 26/27/28 June 2013), supplemented by targeted visits of selected buildings on 7, 11, 12, 13, 14 and 15 March 2013. Additional monitoring visits will be completed in August and October 2013. The results of the internal space monitoring as obtained to date are summarised in Table 17.

All the results of the internal space monitoring visits are presented in Excel spreadsheets in Appendix J.

For screening purposes a Flame Ionisation Detector (FID) concentration of 50ppm has been adopted for initial assessment of the site. This screening concentration reflects experience of various sites, where concentrations below 50ppm are generally indicative of ambient background concentrations.

This is not to say that concentrations in excess of 50ppm are indicative of landfill gas ingress, indeed in many cases it is more likely that the FID concentrations recorded are a consequence of general occupant activities, which include spray painting, sand blasting, solvent application and vehicular maintenance.

During the FID monitoring process care was taken so ensure that where 'elevated' concentrations were recorded the source of this reading was identified, so far as possible. This monitoring highlighted that gas ingress into 10 No. buildings was most likely associated with the landfill, with concentrations locally >10,000ppm (>1%v/v) recorded along 'point sources' such as cracks/joints within the floor slab construction and/or around utility service inlets. The FID monitoring included assessment of the lateral / vertical extent of the 'gas bubble' from these point sources of ingress. In the vast majority of cases the distance from the point source where the gas was detected (e.g. a crack / joint) to the point at which the gas was no longer detectable within the ambient atmosphere of the room was less than 5cm. Properties where point sources of landfill gas ingress were observed may be summarised as follows:

- PD Logistics, 21 Midland Road: Maximum FID reading >10,000ppm, typically associated with gas ingress via cracks in floor slab;
- H&L Engineering, 31-33 Midland Road: Maximum 2000ppm, typically associated with gas ingress via cracks in floor slab;
- Dan Page and Viking Hardware, 39-41 Midland Road: Maximum FID reading 8000ppm, in electricity riser cupboard, also evidence of gas ingress via cracks in floor slab;
- NLC Depot, 53-55 Midland Road: Maximum FID reading 8000ppm, typically associated with gas ingress via cracks in floor slab;
- Bernand XH, Units 1-3 Trinity Park: Maximum FID reading >10,000ppm. Ingress typically associated with an electricity plug socket in a small office area and more generally via cracks in floor slab;
- Product Design, Unit 5 Trinity Park: Maximum FID reading 8000ppm from slab / post joint, also evidence of gas at electric main;
- Body Torque, Unit 7 Trinity Park: Maximum FID reading 2000ppm, typically associated with gas ingress via cracks in floor slab;

- Compart 2011, Units 10 and 11 Albion Park: Maximum FID reading 200ppm from joint in slab / wall construction;
- Scunthorpe Computers, Unit 12 Albion Park: Maximum 500ppm from joint in slab / wall construction; and
- Scunthorpe Boxing Club, Unit 16 Albion Park: Maximum 3000ppm from base of wall / post.

As noted above, in the vast majority of cases the lateral / vertical extent of the 'gas bubble' was observed to be small and ambient FID concentrations within the general buildings remained <50ppm. The exceptions to this are;

- Dan Page, where ambient concentrations within the electricity riser cupboard were recorded up to 100ppm;
- Bernand XH where elevated FID concentrations were recorded in the vicinity of an electricity plug socket and ambient concentrations within the associated small office space where the plug socket was located were recorded at between 200ppm and 300ppm; and
- H&L Engineering when an ambient concentration of up to 200ppm was recorded near the bottom of a stair well.

Upon receiving this data NLC immediately advised occupants of Dan Page to vent the electricity riser cupboard, Bernand XH to ventilate the small office area and H&L Engineering to ventilate the stairwell where the elevated ambient concentrations had been recorded.

In addition to the above, the internal space monitoring identified elevated FID concentrations (maximum 8000ppm) in Unit 4 on Trinity Park, occupied by Global Motorcycles. During the monitoring visits very strong solvent odour (including the use of turpentine) was noted and there was no clear indication (e.g. from an identified point source) that the ambient concentrations being recorded were from landfill gas ingress. However, in view of the FID readings observed in Units 1-3, 5 and 7 Trinity Park it would clearly be prudent to inspect Unit 4 further as part of the FID monitoring visits proposed for completion in August and October.

In summary, from the results of the internal space monitoring completed to date it is clear that evidence of gas ingress has been observed within 10 properties, the locations of which are identified in Plate 3.

Plate 3. Buildings with Evidence of Landfill Gas Ingress

NLC has provided all of the above properties with written advice regarding temporary ventilation of these buildings.

Table 17. Internal Space Monitoring Data

Property Ref.	Address	Internal Space Monitoring Visit 1: February 2013	Supplementary Monitoring Visits: March 2013	Internal Space Monitoring Visit: 2 April 2013	Internal Space Monitoring Visit 3: June 2013
1	Cottage Beck Road Depot, Cottage Beck Road, DN16 1TS	<50ppm		<50ppm, apart from one reading of 60ppm which was via a possible sewer in the gents toilet.	
2	NLC Depot, 53-55 Midland Road, DN16 1DQ	<50ppm		9 No. readings in excess of 50ppm, maximum 1500ppm. Identified around skirting boards in mess area and along joints / cracks within building floor slab. Significant evidence of settlement.	9 readings >50ppm, maximum 8000ppm. All elevated readings from cracks in slabs, gas bubble 0.0ppm at 1cm.
3	Automech Ltd, 49-51 Midland Road, DN16 1DQ	80-90ppm recorded in location G01, most likely associated with general car workshop activities including various drums, containers etc.		<50ppm	<50ppm
4	Viking Hardware Warehouse and Dan Page Car Repairs, 39-41 Midland Road, DN16 1DQ	100ppm recorded in location G14, in office of Dan Page near electricity riser cupboard. Access restricted during visit. Very strong solvent odours in main warehouse building, associated with paint spraying activities. Anecdotal information supplied by workers indicates that in summer there is often a strong smell of landfill gas within the main warehouse, beneath the stairs.		9 No. readings in excess of 50ppm, maximum 8000ppm, again near electricity riser cupboard where easier access was now possible. In main warehouse elevated concentrations were observed along joints and crack in floor slab, although ambient concentrations may well reflect strong solvent odour associated with paint spraying.	1 reading >50ppm, 200ppm from slab joint in Viking warehouse. Electric riser cupboard (0.0ppm), open as previously requested.
5	35 Midland Road (Formerly BJW Crane Hire)	<50ppm		<50ppm	<50ppm

6	R Pogson & Brumby Wood Motors, 25 Midland Road, DN16 1DQ	<50ppm		<50ppm	<50ppm
6a	Easimix, 23 Midland Road, DN16 1DQ	<50ppm		<50ppm	<50ppm
7	Murphy Ltd, 36 Midland Road, DN16 1DQ	<50ppm		<50ppm	<50ppm
8	P&H Construction and GPS Crushing, 36-38 Midland Road, DN16 1DQ	<50ppm		<50ppm	<50ppm
9	LAS Metals, 44 Midland Road, DN16 1DQ	<50ppm		<50ppm	50ppm from slab joint, all other readings <50ppm
10	M Gould, 46 Midland Road, DN16 1DQ	80ppm recorded in location G09, most likely associated with strong air freshener odour in ladies toilet.		<50ppm	<50ppm
11	D Beacroft Joinery, 7 Colin Road, DN16 1TT	<50ppm		<50ppm	
12	NL Components, 6 Colin Road, DN16 1TT	<50ppm		<50ppm	
13	Compart 2011 Ltd, Units 10 and 11 Albion Park, Midland Road, DN16 1DJ	<50ppm		<50ppm	27/6/13 <50ppm Workers report waste odour in morning when opening up. 28/6/13 @0750 200ppm from joint in slab / wall, <10ppm ambient
14	Scunthorpe Radiators, 4 Albion Park, Midland Road, DN16 1DJ	<50ppm		One reading of 100ppm recorded, near gas fire.	20-30ppm ambient, associated with fresh spray paint
15	Peters Garage, 7 Albion Park, Midland Road, DN16 1DJ	<50ppm		<50ppm	<50ppm

16	Engineering and Welding Supplies Limited, Nostell Road, DN16 1DL	<50ppm		<50ppm	
17	Masey's Café, East Common Land, DN16 1DA	<50ppm		<50ppm	
18	Jack Tighe, East Common Lane, DN16 1DF	Between 100ppm and 200ppm recorded in locations G13, G14 and G15. In general atmosphere of rooms, most likely associated with very strong paint odour, paint store, wet paint and chemicals.		3 No. readings >50ppm, maximum 200ppm – most likely associated with very strong paint odour and re-spraying works.	
19	Tayto, Banbury Road, DN16 1UN	-	7/3/13 <50ppm	<50ppm	<50ppm
20	PD Logistics, 21 Midland Road, DN16 1DQ	-	7/3/13 Concentrations in excess of 50ppm in 9 No. locations, maximum >10,000ppm. Concentrations prevalent along cracks in floor slab. 11/3/13 Concentrations in excess of 50ppm in 12 No. locations, maximum 2000ppm, again near cracks in floor slab. 12/3/13 Concentrations in excess of 50ppm recorded in 9 No. locations, maximum 5000ppm. 13/3/13 Concentrations in excess of 50ppm recorded in 7 No. locations, maximum 2500ppm. 14/3/13 Concentrations in excess of 50ppm recorded in 6 No. locations, maximum 1500ppm. 15/3/13 Concentrations in excess of 50ppm recorded in 9 No. locations, maximum 3000ppm.	17 No. readings >50ppm, maximum 8000ppm.	5 No. readings >50ppm, maximum 4000ppm from edge of slab, gas bubble 0.0ppm at 5cm.

21	B&K Recycling, Colin Road, DN16 1DQ	-	7/3/13 <50ppm	<50ppm	
22	Bernand XH Limited, Units 1-3 Trinity Park, DN16 1BG	-	7/3/13 Concentration in excess of 50ppm in 9 No. locations, maximum 5000ppm. Concentrations prevalent along joints and cracks in floor slab, around skirting boards and near electricity plug socket in small office area. 11/3/13 Concentrations in building much reduced, maximum 50ppm in one location near crack in floor slab. 100ppm near external vent – possibly associated with sub-floor ventilation(?). 12/3/13 Concentrations in excess of 50ppm recorded in 5 No. locations, maximum >10,000ppm. 13/3/13 Concentrations in excess of 50ppm recorded in 6 No. locations, maximum 8,000ppm. 14/3/13 Concentrations in excess of 50ppm recorded in 5 No. locations, maximum 2500ppm. 15/3/13 Concentrations in excess of 50ppm recorded in 8 No. locations, maximum 5000ppm.	2 No. readings >50ppm, maximum 100ppm along joints in floor slab.	10,000ppm+, 2000ppm 500ppm from joints in wall / base of walls. Ambient in small office 300ppm.

23	Global Motorcycles, Unit 4, Trinity Park, DN16 1BG	-	7/3/13 No access. 11/3/13 <50ppm 12/3/13 <50ppm 13/3/13 Concentrations in excess of 50ppm recorded in two locations, maximum 250ppm. Associated with point sources of degreaser and ambient odour from cleaning products. 14/3/13 Maximum concentration 60ppm, associated with a musty odour. 15/3/13 <50ppm	3 No. readings >50ppm, maximum 8000ppm – most likely associated with very strong solvent odour and man working with turpentine.	3 No readings >50ppm, all ambient – possible associated with solvent odour.
24	Product Design Ltd, Unit 5 Trinity Park, DN16 1BG	-	7/3/13 <50ppm 11/3/13 <50ppm 12/3/13 <50ppm 13/3/13 <50ppm 14/3/13 <50ppm 15/3/13 <50ppm	<50ppm	4 readings >50ppm, maximum 8000ppm from slab / post joint. 100ppm at electric main. Gas bubble 0.0ppm at 1cm.
25	Yew Tree Engineering, Unit 6 Trinity Park, DN16 1BG	-	7/3/13 No access. 11/3/13 No access. 12/3/13 No access. 13/3/13 No access. 14/3/13 No access. 15/3/13 No access.	No access	No access.
26	Body Torque, Unit 7 Trinity Park, DN16 1BG	-	7/3/13 <50ppm 11/3/13 <50ppm 12/3/13 <50ppm 13/3/13 <50ppm 14/3/13 Concentrations in excess of 50ppm recorded in two locations, maximum 100ppm along top of skirting board. 15/3/13 <50ppm	<50ppm	3 readings >50ppm, maximum 2000ppm from crack in floor / wall. Gas bubble 10ppm at 10cm.

27	Myers Tyres, Unit 8 and 9 Trinity Park, DN16 1BG	-	7/3/13 No access. 11/3/13 <50ppm 12/3/13 <50ppm 13/3/13 No access. 14/3/13 No access. 15/3/13 No access.	<50ppm	No access.
-	H&L Engineering, 31-33 Midland Road, DN16 1DQ	-	15/3/13 Concentrations in excess of 50ppm recorded in 9 No. locations, maximum 1000ppm along joints in floor slab. Note higher ambient concentration of maximum 200ppm.	-	4 readings >50ppm, maximum 2000ppm from slab joint, gas bubble 0.0ppm at 2cm. Ambient concentration maximum 50ppm.
	Cody's Café, Unit 1 and 2 Albion Park, Midland Road	-	-	-	<50ppm
	Bon Apetite and Horse Treats, Unit 3 Albion Park, Midland Road	-	-	-	No access
	NS Motor Engineers, Unit 5 Albion Park, Midland Road	-	-	-	<50ppm
	One Click Studios, Unit 6 Albion Park, Midland Road	-	-	-	<50ppm
	Jaymek Engineering, Unit 8 Albion Park, Midland Road	-	-	-	<50ppm
	Scunthorpe Computers (OBS PCs), Unit 12 Albion Park, Midland Road	-	-	-	27/6/13 80ppm from base of wall just inside door, ambient <10ppm 28/6/13 500ppm from same location, 10ppm at 1cm, 0ppm at 2cm
	John Espin Signs, Unit 14 and 15 Albion Park, Midland Road	-	-	-	<50ppm

	Scunthorpe Boxing Club, Unit 16 Albion Park, Midland Road	-	-	-	3000ppm at base of building from post, 800ppm at base of wall. 20/30ppm ambient.
	Essence Flowers, Unit 1, Banbury Road, Bedford Park	-	-	-	<50ppm, restricted access
	Woodworx, Unit 2, Banbury Road, Bedford Park	-	-	-	<50ppm
	Scunthorpe Foodbank, Unit 3, Banbury Road, Bedford Park	-	-	-	<50ppm
	Rubie Gates, Units 4 and 5, Banbury Road, Bedford Park	-	-	-	Unit 4: <50ppm Unit 5: No access
	Kaths Cabs, Units 5 and 7, Banbury Road	-	-	-	<50ppm
	Queensway Engineering, Plot 3A and 3B, Banbury Road	-	-	-	<50ppm
	Brumby Gymnastics, Plot 1, Banbury Road	-	-	-	No access
	T/A Bass Tyre Service, Corner Plot, Midland Road / Banbury Road	-	-	-	<50ppm
	Corridians, Plot 40 and 41, Midland Road	-	-	-	<50ppm, office locked
	Mal Bradley Diesel, Plot 34, Midland Road	-	-	-	No access
	Tractor Refurbishment Shed, Plot 34A, Midland Road	-	-	-	<50ppm
	Newey and Eyre, Plot S28, Midland Road	-	-	-	<50ppm

	Midland Fabrication, Plot 27, Midland Road	-	-	-	<50ppm
	Scunthorpe Power Tools, Plot 29 Midland Road	-	-	-	<50ppm
	S&E Mechanical and Fabrication Ltd, Plot 37, Midland Road	-	-	-	50ppm from slab joint
	Fed-Ex Warehouse, Plot 47 Midland Road	-	-	-	<50ppm

6.9 Visual & Olfactory Evidence of Contamination (Ind. Estate)

Associated with the waste mass encountered during the intrusive works a moderate to strong odour of maturating waste was noted. However, in general apart from this normal process of landfill waste degradation no visual and / or olfactory evidence of contamination was observed on the industrial estate with the exception of the following:

- During excavation of TP27 slight hydrocarbon odour was observed in the near surface waste deposits, becoming stronger with depth. Reflecting these observations soil samples were retrieved from TP27 at 0.3m, 0.5m and 1.5m and tested for a suite of contaminants as summarised in Table 5 of Section 4.4.3; and

- During the drilling of BH105 hydrocarbon odour was noted within waste deposits at between 2.0m and 2.6m depth. Reflecting these observations a soil sample recovered from between 3.0m and 3.1m depth was submitted for testing as summarised in Table 5 of Section 4.4.3.

The samples removed from the above positions are targeted and therefore it is not appropriate to complete statistical analysis. As such, the results of the chemical testing are summarised in Table 18 and have been compared directly to Generic Assessment Criteria (GAC) appropriate for a 'Commercial' end use as derived by ATKINS (ATRISK^{SOIL}) utilising the CLEA framework (V1.06) as released by the Environment Agency in October 2009, which incorporates the UK approach to human health risk assessment. EPG is a registered subscriber with ATKINS for the utilisation of these GAC's. It should be noted that exceedances of these GAC values do not under any circumstances indicate proof of SPOSH. However, they provide a framework for initial assessment of soil chemical test data from the industrial estate.

Table 18. Chemical Test Data – Targeted Samples, Industrial Estate

Determinant[1]	GAC (mg/kg)	Maximum Recorded Concentration (m/gkg)	Comments
Toluene	414,000[2]	0.007	-
Aliphatics C5-C6	327[2&3]	0.0198	-
Aliphatics C6-C8	158[2&3]	0.113	-
Aliphatics C8-C10	82.5[2&3]	1.90	-
Aliphatics C10-C12	49.9[2&3]	6.78	-
Aliphatics C12-C16	21[2&3]	236.0	All samples obtained from TP27 exceeded the adopted GAC.
Aliphatics C16-C35	-[7]	2,395	Samples obtained from TP27 at 0.5m and 1.5m recorded 1081mg/kg and 2395mg/kg respectively.
Aromatics C8-C10	614[2&3]	1.29	-

Aromatics C10-C12	370[2&3]	4.52	-
Aromatics C12-C16	155[2&3]	197	The sample obtained from TP27 at 0.5m exceeded the adopted GAC.
Aromatics C16-C21	28,400[2]	788	-
Aromatics C21-C35	28,400[2]	1460	-
Bis(2-ethylhexyl) phthalate	8.66[2%3]	0.359	-
Dibenzofuran	87[8]	2.48	-
Carbazole	12,600[9]	2.45	-
2-Methylnaphthalene	75[2,3&5]	0.531	-
Acenaphylene	170	0.553	-
Acenaphthene	157[2&3]	3.93	-
Anthracene	3.48[2&3]	12.9	The sample obtained from TP27 at 0.5m exceeded the adopted GAC.
Benzo(a)anthracene	1.71[2&3]	38.2	
Benzo(b)fluoranthene	1.22[2&3]	28.3	
Benzo(k)fluoranethene	0.686[2&3]	29.2	
Benzo(a)pyrene	0.911[2&3]	34.8	
Benzo(ghi)perylene	0.0187[2&3]	14.1	
Chrysene	0.44[2&3]	39.2	
Fluoranthene	18.9[2&3]	85.1	
Fluorene	125[2&3]	6.29	-
Indeno(123-cd)pyrene	0.0614[2&3]	11.4	The sample obtained from TP27 at 0.5m exceeded the adopted GAC.
Phenanthrene	92	55.2	-
Pyrene	2.20[2&3]	70.9	The sample obtained from TP27 at 0.5m exceeded the adopted GAC.
Naphthalene	75[2&3]	0.633	-
Dibenzo(ah)anthracene	0.00393[2]	3.8	The sample obtained from TP27 at 0.5m exceeded the adopted GAC.
Carbon Disulphide	11.6[2]	0.0817	-

Notes:

1. Only those compounds recorded in excess of the laboratory Limit of Detection (LoD) are included in this table.
2. ATKINS ATRISK[soil] Commercial 1% SOM.
3. Vapour based saturation limit adopted for screening assessment.
4. No GAC provided, benzene GAC adopted for assessment.
5. No GAC provided, naphthalene GAC adopted for assessment.
6. Site specific value, see discussion in Section 8.3.1.
7. This fraction is not considered volatile and the inhalation of vapour pathways have not been considered (TPH-CWG, 1997). However, at concentrations exceeding 1kg/kg free product is likely to be present and risks associated with dermal pathways should be considered.
8. In the absence of a UK screening value the US EPA Regional Screening Level for a residential end use has been adopted.
9. No GAC provided, fluorine GAC adopted for assessment.

As demonstrated in Table 18, review of the chemical test data has indicated various organic compounds to be present at concentrations which exceed the adopted screening values within the proximity of TP27. It should be noted that this assessment is based on utilisation of the aqueous or vapour phase saturation limit for each individual compound. This reflects the visual observations made during excavation of TP27, whereby a water strike was recorded within the near surface Made Ground (0.7mbgl) – with a sheen noted on the groundwater during excavation. Monitoring locations PHL, PHJ and PHK triangulate TP27 and have not detected any free phase hydrocarbons to be present during monitoring with the interface meter. Similarly, exploratory holes completed in the proximity of TP27 (including TP's 21, 22, 25, 26 and 28) did not indicate any evidence of widespread hydrocarbon contamination to be present.

Indeed, during the entire site investigation process the only evidence of hydrocarbon contamination within the waste mass on the industrial estate was in TP27 and BH105.

Review of the log sheet for TP27 indicates that the hydrocarbon odour within the excavation was encountered at 0.2m depth, beneath a thin granular surfacing layer. The odour continued to depth, becoming stronger below 1.3m, with the excavation terminating at 1.5m after encountering a concrete slab. The water strike recorded at 0.7m depth most likely reflects a perched body of water, on top of the underlying concrete slab. The depth of the hydrocarbon odour (i.e. commencing at 0.2mbgl) suggests that the source of this contamination is a surface spill / point source (e.g. an old above ground fuel tank), which has leaked and impacted the soils beneath – potentially migrating via the pocket of perched water in the proximity of TP27 and/or along the surface of the underlying concrete slab. Discussions with the site investigation Contractor (Geocore) have indicated that this is consistent with their observations on site, although it is accepted that no point source or clear evidence of a spill was identified in the proximity of TP27. Ultimately there is no evidence to suggest that the hydrocarbon contamination in the proximity of TP27 is extensive.

7. GROUND CONDITIONS – OUTSIDE LANDFILL

Ground conditions encountered outside the landfill were consistent with those inferred from geological maps for the area. These ground conditions are discussed further in the following sections.

7.1 Ground Conditions (Outside Landfill)

In total 5 No. probeholes (PHB, PHC, PHD, PHE and PHM) and 2 No. deep cable percussive / rotary core boreholes (BH101(R) and BH103(R)) were completed either outside the site boundary and/or outside the area of landfilling. These all encountered similar ground conditions, comprising a thin mantle of Made Ground / reworked drift deposit, over Blown Sand with bedrock (limestone / ironstone) beneath. The thickness of Blown Sand along the western boundary of the site (i.e. between the POS / vent trench and the residential houses located along Wawrick Road / Lilac Avenue) was noted to be minimal (<1.15m thickness of combined Made Ground and Drift) compared to that encountered south of the POS (BH101 recorded 2.3m of Blown Sand) and to the north-east (PHM recorded 2.8m of Blown Sand). Ground conditions are summarised in Table 19.

Table 19. Ground Conditions – Outside Area of Landfill

Typical Description	Depth to Top of Unit (mbgl)	Thickness (m)
Clayey sandy gravel of slag, concrete, sandstone, ash, brick and ironstone. Locally with occasional inclusions of wood and plastic. **[MADE GROUND]**	GL	0.1 to 1.05
Silty medium SAND, locally with gravel comprising ironstone and quartz. **[BLOWN SAND]** *Note: Absent from PHC where unit has been reworked and therefore classified as Made Ground.*	0.1 to 0.75	0.2 to 2.8 *[Along western boundary of site thickness varied between 0.2m and 0.75m]*
Strong to very strong, grey, partially crystalline / partially oolitic fine grained calcareous LIMESTONE / IRONSTONE. Fresh to moderately weathered. Very closely spaced fractures, rough and open to moderately wide with orange brown discoloration on fracture surface. **[LOWER FRODINGHAM LIMESTONE]** RQD 37% BH101R 2.4-3.4m RQD 18% BH103R 1.2-2.9m RQD 53% BH103R 2.9-4.5m *Notes: Unit weathered to gravel at PHE, 0.55-1.0mbgl. Unit comprises interbedded Mudstone and Limestone at depth.*	0.95 to 3.2m	Not proven

7.2 Groundwater Conditions (Outside Landfill)

All standpipes installed to the west of the site (i.e. between the POS / vent trench and Warwick Road / Lilac Avenue) were dry when monitored. This most likely reflects the shallow nature of these installations, reflecting the limited thickness of Blown Sand encountered. To the south of the POS, BH101R recorded groundwater levels at between 2.29m and 2.54mbgl (27.93-28.18mAOD), indicative of a shallow water table within the bedrock. To the north of the POS, BH103R recorded shallow groundwater, which fluctuated between artesian (maximum head 0.11m above ground level) and 0.13mbgl (33.91-34.15mAOD). This borehole was targeting the underlying limestone / ironstone bedrock geology. To the north-east of the industrial estate, PHM fluctuated between being dry and recording groundwater between 2.87m and 3.0mbgl (32.18-32.31mAOD), consistent with groundwater at the interface of the drift with the underlying bedrock.

In summary, monitoring of groundwater outside the area of the landfill has indicated groundwater to be present at depth, at the interface with the Frodingham Ironstone Formation. Considering that the site is a former quarry this most likely reflects why excavation of the ironstone terminated at this depth.

7.3 Monitoring of Permanent Gases & Vapours (Outside Landfill)

Consistent with the methodology outlined in Section 4.3.1, monitoring for permanent gases and vapour has been completed outside the area of the landfill via standpipe installations constructed in the exploratory hole positions listed in Table 20 – which also summarises the monitoring data collected. For ease of reference 5%v/v methane (Lower Explosive Limit for methane) and 10%v/v carbon dioxide (Typical Maximum Concentration for Amber 1 designation, NHBC Traffic Lights (2006)) have been adopted as initial screening values, with concentrations exceeding these levels highlighted in Table 20.

Table 20. Summary of Permanent and Vapour Monitoring Data – Outside Landfill

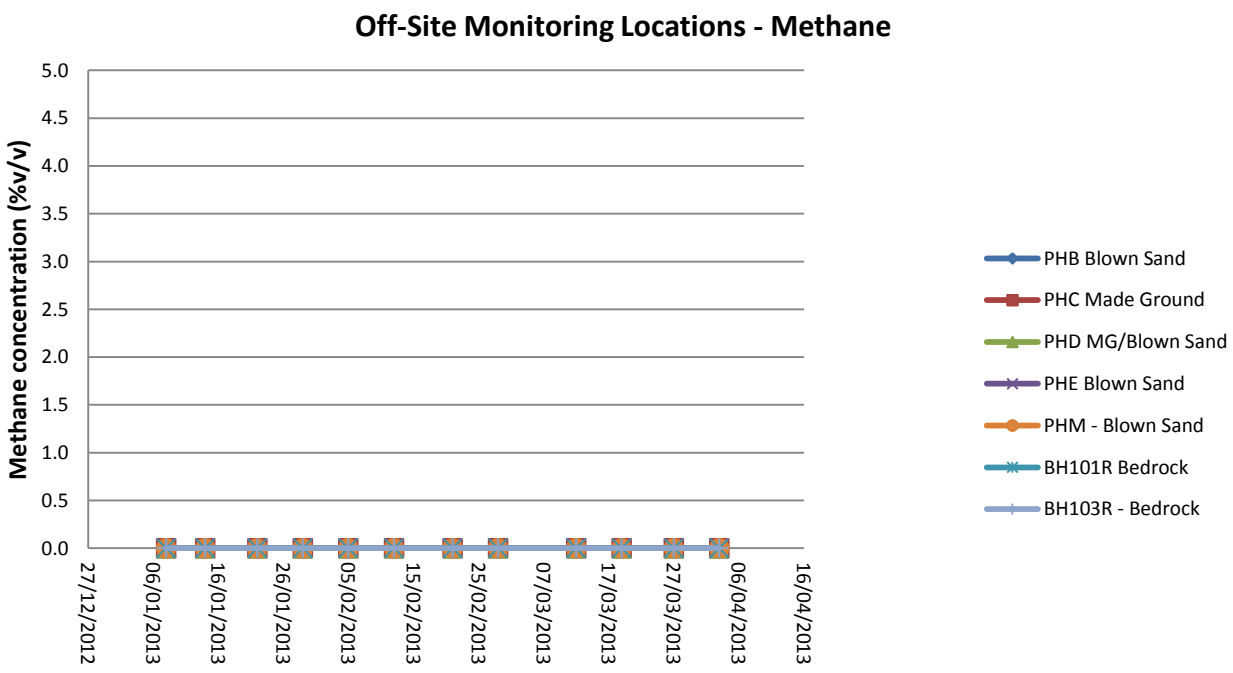
Hole ID[1]	Target Stratum	Flow range (l/hr)	Peak CH_4 (%v/v)	Peak CO_2 (%v/v)	Minimum O_2 (%v/v)	Peak PID (ppm)	Peak CO (ppm)	Peak H_2S (ppm)
PHB	Blown Sand	0.3 to -0.1	<0.1	1.4	18.7	1.5	0.0	0.0
PHC	Made Ground	0.1 to -0.1	<0.1	2.2	16.2	2.8	0.0	0.0
PHD	Made Ground / Blown Sand	0.1 to 0.0	<0.1	0.6	18.7	1.8	0.0	0.0
PHE	Blown Sand / Weathered Bedrock	0.1 to 0.0	<0.1	1.1	16.6	2.4	0.0	0.0
PHM	Blown Sand	0.1 to 0.0	<0.1	1.2	19.3	1.2	0.0	0.0
BH101R	Frodingham	0.1 to -0.1	<0.1	1.8	16.4	4.4	0.0	0.0

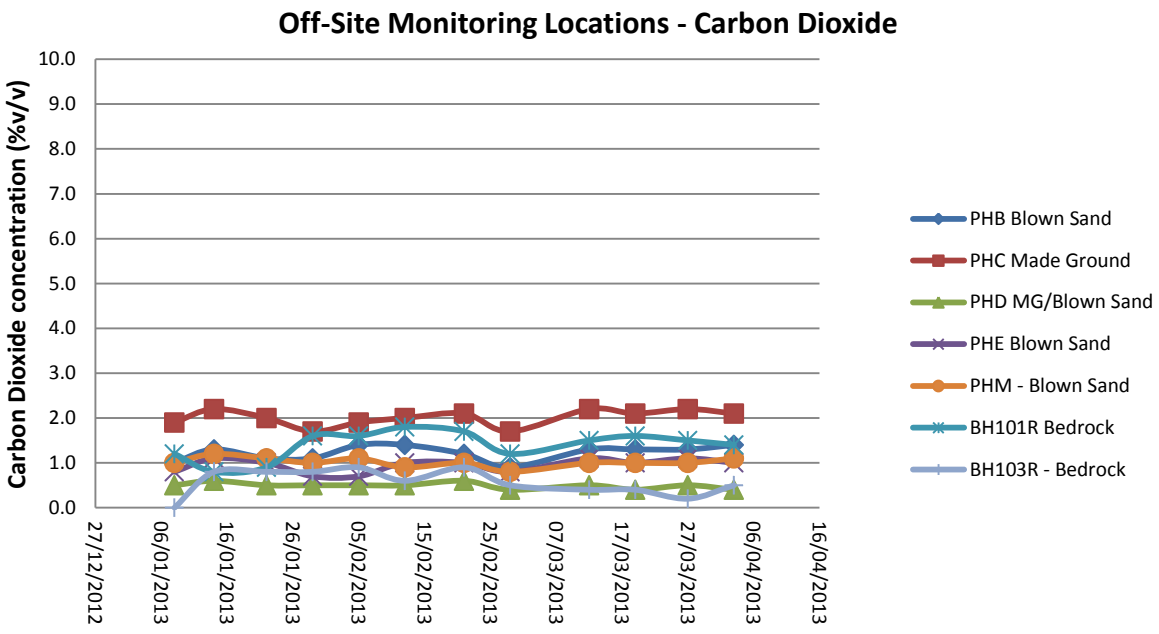
BH103R	Ironstone Formation / Scunthorpe Mudstone Formation	2.7 to -7.8	<0.1	0.9	17.0	1.1	0.0	0.0

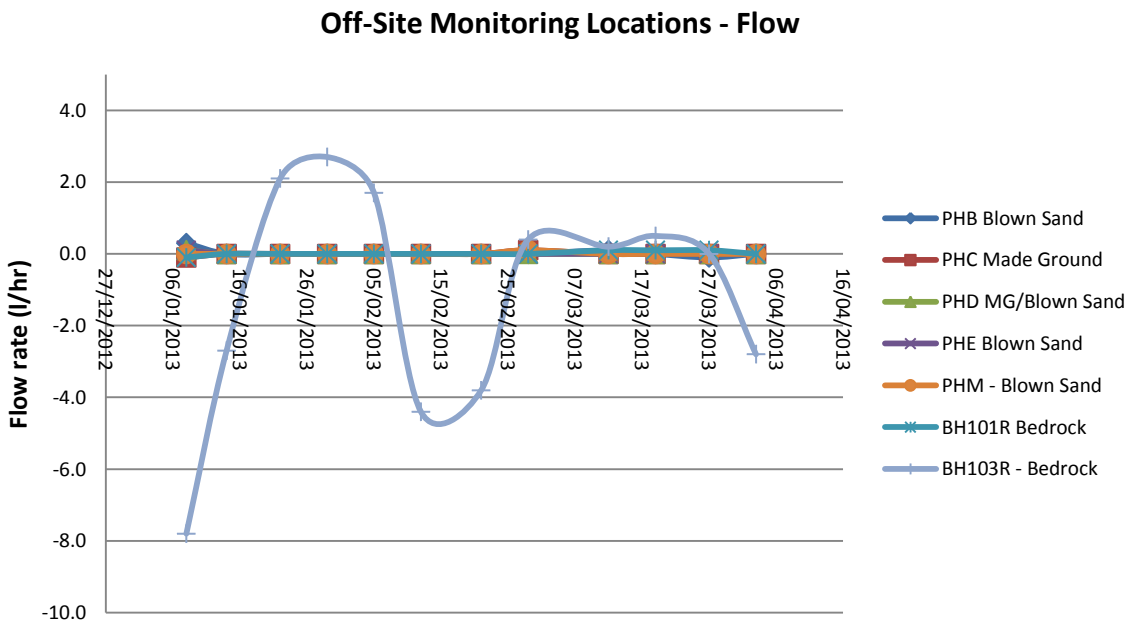
As summarised in Table 20, permanent gas concentrations outside the area of landfilling have remained consistently low (<0.1%v/v methane, maximum 2.2%v/v carbon dioxide). Similarly, PID readings have also remained low (<10ppm) and no carbon monoxide (<0.0ppm) or hydrocarbon sulphide (<0.0ppm) has been detected.

Flow rates have also been typically low, with a maximum of 0.3l/hr recorded in all wells except BH103R. BH103R recorded more variable flow rates (2.7l/hr to -7.8l/hr) which are considered likely to reflect the groundwater conditions encountered in this portion, which fluctuated between artesian and sub-artesian. These initial 'peak' readings of flow quickly dissipated, with steady flow readings not typically exceeding 0.3l/hr, which is consistent with other boreholes installed external to the landfill.

Again the consistency of the monitoring data is noted, which is demonstrated in the following graphs for methane, carbon dioxide and flow rate.







The results of the gas monitoring are discussed in more detail in Section 8.5.

7.4 Internal Space Monitoring (Outside Landfill)

As discussed in Section 4.3.3, during borehole monitoring on the POS it was highlighted that historic BH2 was detecting relatively elevated concentrations of permanent gases. Flow rates remained consistently low therefore it was considered that associated risks were unlikely to be significant, notably since the vent trench structure as proven during the intrusive works (see Section 5.8) should limit lateral migration of gas. However, to confirm this, and provide a supplementary line of evidence, it was agreed with NLC that the two properties located nearest to BH2 (103 and 105 Warwick Road) would be selected for internal space monitoring. The data collected from these visits is summarised in Table 21.

Table 21. Summary of Permanent and Vapour Monitoring Data – Outside Landfill

Date	103 Warwick Road	105 Warwick Road	Comments
	Maximum Ambient FID Concentration Recorded in Dwelling		
7/3/13	Ambient within rooms 3ppm Mains gas supply has leak in joint, 200ppm recorded. Occupant aware.	2ppm	-
12/3/13	Ambient within rooms 4ppm Mains gas supply has leak in joint, 200ppm recorded. Occupant aware.	5ppm	-
19/3/13	Ambient within rooms 6ppm Mains gas supply has leak in joint, 200ppm recorded. Occupant aware.	2ppm	-
27/3/13	Ambient within rooms 5ppm Mains gas supply has leak in joint, 200ppm recorded. Occupant aware.	7ppm (air freshener odour)	-
3/4/13	Ambient within rooms 2ppm Mains gas supply fixed.	10ppm (air freshener odour)	Rear gardens checked as part of this visit, consistently recorded 0.0ppm close to ground surface.

The internal space monitoring visits within the residential houses confirms that low concentrations of gases are present within these dwellings. This is consistent with other lines of evidence ascertained from the works completed on and around the landfill, which indicates there is no movement of gas away from the area of waste deposition toward the existing residential properties.

7.5 Visual & Olfactory Evidence of Contamination (Outside Landfill)

Other than for inclusions of ash, slag etc. in near surface Made Ground deposits, no visual or olfactory evidence of contamination was identified in exploratory hole locations completed outside the area of landfilling.

8. RISK ASSESSMENT

8.1 Review of Data Information Gaps

Review of the PRA as prepared by NLC identified a number of data information gaps as discussed in Section 3.6. The scope of intrusive works implemented at Midland Road, Scunthorpe was designed to address these data information gaps. The status of the data information gap analysis has therefore been updated and is summarised in Table 22.

Table 22. Data Information Gap - Update

Information Data Gap	Addressed	Comments
The current state of decomposition of the waste mass and its future potential to generate gas.	✓	The nature of the waste deposits both beneath the industrial estate and POS are now known, together with groundwater conditions and associated permanent gas / vapour concentrations.
Confirmation of ground conditions both beneath and adjacent to the landfill – specifically to confirm the underlying / surrounding geology, groundwater conditions and the depth / construction of the existing vent trench.	✓	Ground conditions both beneath the landfill and immediately adjacent are now known, together with groundwater conditions and associated permanent gas / vapour concentrations. The depth / construction of the existing vent trench has been confirmed.
The condition of floor slabs associated with buildings on the industrial estate and the precise dimensions and internal layout of the buildings.	✓	Buildings where nuisance and/or intrusive works have indicated potential for elevated permanent gases have been surveyed on site and subject to internal space monitoring. *Note: Internal space monitoring is on-going.*
Confirmation of the nature of the capping soils as placed on the POS - notably the material thickness and chemical composition.	✓	The thickness and nature of the capping soils on the POS has been confirmed. Samples have been removed for chemical testing.

In summary, the works implemented at the site have addressed the identified information data gaps such that the potentially significant pollutant linkages identified as part of the PRA can be assessed.

8.2 Linkages for Assessment

This report is provided in response to the two potentially significant contaminant linkages identified as part of the PRA:

- Potential human health risks associated with direct contact pathways via exposure to near surface capping soils within the Public Open Space; and
- Potential gas/vapour risks (associated with the landfill waste deposits) to both on-site buildings/occupants and off-site dwellings/residents via lateral/vertical migration/ingress.

The two potentially significant contaminant linkages are discussed further within the following sections of this report. The data collected from both the PRA and subsequent intrusive / monitoring works has been used to inform the risk assessment process, such that a robust and scientific-based categorisation of the site is provided – consistent with the requirements of Part 2A of the EPA 1990 as clarified by the Statutory Guidance.

8.3 Direct Contact with Near Surface Capping Soils

As discussed in Section 5.1, intrusive works on the POS proved the capping soils to comprise a relatively homogenous unit of brown, very clayey, medium sand; locally with inclusions of plastic toward the base of the unit and occasional fragments of wire, brick and wood. No visual or olfactory evidence of contamination was observed within the capping soils on the POS during the intrusive works. The thickness of the capping soils was found to vary between 0.15m and 1.3m, with an average thickness of 0.5m.

Ten representative samples of the capping soils were submitted to the chemical test facility for analysis of a suite of contaminants, as set out in Table 5 (Section 4.4.3). Given the relative homogeneity of the unit these samples were obtained via non-targeted sampling methods, so as to provide a generalised representative data-set of the capping soil chemical composition. The rate of testing implemented on the POS is considered to provide a reasonable minimal level of information, such that any key issues associated with the chemical composition of the soils will be highlighted to permit more focused assessment going forward, if required. This process of iterative site investigation reflects budgetary constraints associated with the intrusive works, whilst aiming to maintain the integrity of the site investigation process so far as possible, and is consistent with the ethos of Contaminated Land Report CLR11 – Model Procedures for the Management of Land Contamination (DEFRA and the Environment Agency, 2004).

The results of the soil chemical testing are presented in Appendix E.

Initial review of the capping soil chemical test data has been undertaken utilising Generic Assessment Criteria (GAC) as derived by ATKINS (ATRISK^{SOIL}). ATKINS have derived these GAC utilising the CLEA framework (V1.04/1.06) and in line with Environment Agency guidance (SR2, SR3, SR4, SR7) published in October 2009, which incorporates the UK approach to human health risk assessment. EPG is a registered subscriber with ATKINS for the utilisation of these GAC's. For initial assessment purposes the chemical test results have been compared directly to Critical Concentrations (Cc) as derived for two land-use scenarios, assuming a Soil Organic Matter of 1% (see Note 2 in Table 23A):

- Residential without the consumption of home-grown produce land-use (i.e. residential without plant uptake); and
- Open spaces.

A direct comparison of the chemical test results obtained from the POS relative to these Critical Concentrations is presented as Table 23A.

Table 23A. Summary of Chemical Test Data – Capping Soils, POS

Analyte	Critical Concentration (Cc) (mg/kg)		Measured Range (mg/kg)	Exceedances (mg/kg)	
	Residential without Plant Uptake	Open Spaces		Residential without Plant Uptake	Open Spaces
Arsenic	35	138	12.2 to 29.7	-	-
Barium	1340	5240	57.5 to 183	-	-
Beryllium	94.7	903	0.456 to 4.03	-	-
Cadmium	83.6	83.6	0.173 to 1.02	-	-
Chromium	38.2	729	15.8 to 36.4	-	-
Copper	8370	40600	13 to 49.2	-	-
Lead	383	1590	31.8 to 82.6	-	-
Mercury	238	1010	<0.14 to 0.227	-	-
Nickel	130	3070	12.6 to 33.7	-	-
Selenium	595	2320	<1 to 2.85	-	-
Vanadium	352	1410	29.9 to 121	-	-
Zinc	46800	183000	53.9 to 182	-	-
Naphthalene	0.598	5420	0.03 to 0.137	-	-
Acenaphthylene	2000	2000	0.01 to 0.54	-	-
Acenapthene	4710	18400	0.01 to 6.69	-	-
Fluorene	3180	12600	0.01 to 4.74	-	-
Phenanthrene	840	840	0.18 to 106	-	-
Anthracene	22000	96600	0.04 to 20.6	-	-
Fluoranthene	3110	13000	0.39 to 103	-	-

Pyrene	2330	9710	0.33 to 71.6	-	-
Benzo(a) anthracene	5.42	28.7	0.21 to 34.9	TP14_0.15m_(10.5) TP17_0.3m_(15.5) TP3_0.1m_(34.9)	TP3_0.1m_(34.9)
Chrysene	852	3010	0.19 to 25	-	-
Benzo(b) fluoranthene	9.68	35.5	0.23 to 23.9	TP14_0.15m_(9.99) TP17_0.3m_(14.7) TP3_0.1m_(23.9)	-
Benzo(k) fluoranthene	99.7	381	0.11 to 12.5	-	-
Benzo(a)pyrene	0.989	3.7	0.23 to 23.7	TP14_0.15m_(10.7) TP17_0.3m_(15.9) TP3_0.1m_(23.7) TP16_0.2m_(2.98) TP19_0.2m_(1.27)	TP14_0.15m_(10.7) TP17_0.3m_(15.9) TP3_0.1m_(23.7)
Indeno(123-cd) pyrene	9.53	34.4	0.13 to 11.4	TP3_0.1m_(11.4)	-
Dibenzo(ah) anthracene	0.949	3.96	0.03 to 3.75	TP14_0.15m_(1.58) TP17_0.3m_(2.29) TP3_0.1m_(3.75)	-
Benzo(ghi) perylene	102	451	0.16 to 10.9	-	-
Toluene	219	79300	<0.002 to 0.0026	-	-
Aliphatics C12-C16	5210	21700	<0.1 to 7.49	-	-
Aliphatics C16-C35	146000	590000	10.5 to 68.4	-	-
Aromatics C12-C16	1800	8700	<0.1 to 67.8	-	-
Aromatic C16-C21	1330	5380	4.92 to 686	-	-
Aromatic C21-C35	1330	5380	24.8 to 1220	-	-
Asbestos	No UK generic screening values		Detected in 2 of 10 samples screened	*Qualitative Testing:* TP15 at 0.2m: Loose brown Amosite (brown) fibres; and TP16 at 0.2m: Loose Chrysotile (white) fibres and Asbestos Containing Material (ACM) board. *Quantitative Testing:* TP15 at 0.2m: Loose Chrysotile (white) fibres, 0.0012%; and TP16 at 0.2m: No description, 0.0039%.	

Notes:

1. Only analytes recorded above limit of laboratory detection have been included within Table 23.
2. The Cc adopted are based on 1% Soil Organic Matter (TOC results varied between 1.0% and 2.74%, equivalent to between 1.72% and 4.72% SOM, average 3.53% SOM).

As demonstrated in Table 23A, direct comparison of the chemical test data indicates that the measured concentrations of potential contaminants within the POS capping soils do not typically exceed the adopted screening values for either a 'residential without plant uptake' or 'open space' end use scenario. The exceptions to this are asbestos (see discussion in Section 8.3.2) and five Polycyclic Aromatic Hydrocarbon (PAH) compounds:

- Benzo(a)anthracene;
- Benzo(b)fluoranthene;
- Benzo(a)pyrene;
- Indeno(123-cd)pyrene; and
- Dibenzo(a,h)anthracene.

Of the above listed PAH compounds only Benzo(a)anthracene and Benzo(a)pyrene were recorded at concentrations which exceed the 'open space' end use scenario.

It should be noted that exceedances of the adopted screening values does not indicate proof of SPOSH. However, they provide a framework for initial screening of the POS capping soil chemical test data and in this instance have been utilised as a means of focusing the statistical analysis and quantitative risk assessment works.

In line with current CL:AIRE and Chartered Institute of Environmental Health (CIEH) guidance the five PAH compounds which exceed the adopted screening values have been statistically assessed following the published step by step statistical process (Guidance on Comparing Soil Contamination Data with a Critical Concentration, CL:AIRE and CIEH (May 2008)).

The site is being considered under Part 2A of the EPA 1990, whereby the key question (Section 6.2.2, CL:AIRE and CIEH, May 2008) is **'Is there sufficient evidence that the true mean concentration of the contaminant (μ) is greater than the critical concentration (Cc)?'** Therefore, if the site is to be designated as 'Contaminated Land' under Part 2A of the EPA 1990, the Alternative (**H_1**) Hypothesis must be accepted and sufficient evidence obtained to demonstrate that Significant Possibility of Significant (SPOSH) exists. The Alternative (**H_1**) Hypothesis is defined as:

$H_1 : \mu > Cc$ (i.e. the true mean concentration is greater than the critical concentration)

The results of the statistical analysis are summarised in Plate 4.

	Benzo(a)anthracene#1 (5.42)	Benzo(a)anthracene#2 (28.7)	Benzo(b)fluoranthene#1 (9.68)	Benzo(b)fluoranthene#2 (35.5)	Benzo(a)pyrene#1 (0.989)	Benzo(a)pyrene#2 (3.7)	Benzo(a)pyrene#3 (20.5)	Indeno(123-cd)pyrene#1 (9.53)	Indeno(123-cd)pyrene#2 (34.4)	Dibenzo(ah)anthracene#1 (0.949)	Dibenzo(ah)anthracene#2 (3.96)
Critical concentration, C.	5.42	28.7	9.68	35.5	0.989	3.7	20.5	9.53	34.4	0.949	3.96
Notes	Residential with plant uptake	Open space	Residential with plant uptake	Open space	Residential with plant uptake	Open space	SSSI	Residential with plant uptake	Open space	Residential with plant uptake	Open space
Sample size, n	10	10	10	10	10	10	10	10	10	10	10
Sample mean, $\bar{x}$	6.756	6.756	5.536	5.536	5.687	5.687	5.687	2.776	2.776	0.858	0.858
Standard deviation, s	11.1738884	11.1738884	8.11546973	8.11546973	8.2818128	8.2818128	8.2818128	3.98721624	3.98721624	1.27675631	1.27675631
Number of non-detects	0	0	0	0	0	0	0	0	0	0	0
Set non-detect values to:	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit	Half detection limit
Outliers?	Yes	Yes	Yes	Yes	No	No	No	No	No	Yes	Yes
Distribution	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal	Non-normal
Statistical approach	Auto: Chebyshev	Auto: Chebyshev	Auto: Chebyshev	Auto: Chebyshev	Auto: Chebyshev	Auto: Chebyshev	Auto: Chebyshev	Auto: Chebyshev	Auto: Chebyshev	Auto: Chebyshev	Auto: Chebyshev
Test scenario:	Part 2A: is true mean higher than critical concentration (μ > Cc)?				Evidence level required:		95%	Use Normal distribution to test for outlier			
t statistic, t_s (or k_s)	0.378096039	-6.21028405	-1.614752943	-11.675786	1.793856103	0.758704146	-5.656106952	-5.356625284	-25.08112496	-0.225389345	-7.683052162
Lower confidence limit (on true mean concentration, μ)	<0	<0	<0	<0	<0	<0	<0	<0	<0	<0	<0
Evidence (upper bound)	64%	0%	7%	0%	95%	77%	0%	0%	0%	41%	0%
level (lower bound)	13%	0%	0%	0%	76%	37%	0%	0%	0%	0%	0%
Base decision on:	lower bound	upper bound	lower bound	lower bound	lower bound	lower bound	lower bound	lower bound	lower bound	lower bound	lower bound
Result	μ ≤ Cc	μ ≤ Cc	μ ≤ Cc	μ ≤ Cc	μ > Cc (BoP)	μ ≤ Cc	μ ≤ Cc	μ ≤ Cc	μ ≤ Cc	μ ≤ Cc	μ ≤ Cc
Select dataset	○	○	○	○	●	○	○	○	○	○	○

Back to data | Go to outlier test | Go to normality test | Show individual summary

As demonstrated in Plate 4, statistical assessment of the chemical test data for the five PAH compounds of concern indicates that utilising the Part 2A test for statistical assessment a probability level of 95% is achieved for all compounds with the exception of Benzo(a)pyrene, i.e. with the exception of Benzo(a)pyrene the Null Hypothesis is not rejected (the calculated true mean concentrations is less than the adopted critical concentration (μ ≤ Cc)) and there is no basis for defining the site as contaminated for these chemicals and therefore they cannot be included within the scope of any further Part 2A assessment of the land. Benzo(a)pyrene (BaP), is discussed further in Section 8.3.1.

8.3.1 Benzo(a)Pyrene (BaP)

BaP concentrations ranging between 0.23mg/kg and 23.7mg/kg have been observed within the near surface capping soils on the POS. For the purposes of the initial screening Critical Concentrations (Cc's) of 0.989mg/kg (residential without plant uptake) and 3.7mg/kg (open space) have been adopted for assessment.

As demonstrated in Plate 4, statistical assessment based on the 'residential without plant uptake' screening value indicates that on the Balance of Probabilities (BoP) there is sufficient evidence (76% lower bound, 95% upper bound) to indicate that the null hypothesis can be rejected and the calculated sample mean (μ) does exceed the Cc.

However, it is important to note that this is based on a 'residential without plant uptake' land use scenario, which would be considered overly conservative for Part 2A assessment purposes on the POS, notably as it includes pathways associated with on-site dwellings (e.g. indoor dermal contact, inhalation of indoor dust and inhalation of indoor vapour), which are not relevant to the exposure scenario for the POS.

The Cc calculated for 'open spaces' (3.7mg/kg) does not include pathways associated with on-site dwellings as described above, but includes the relevant pathways of direct soil and dust ingestion, dermal contact with soil and inhalation of soil dust. Utilising this Cc statistical analysis indicates that the required evidence level of 95% is achieved i.e. the Null Hypothesis is not rejected ($\mu \leq Cc$) and there is no basis for defining the land as contaminated for this chemical.

In order to assess risks associated with Benzo(a)pyrene more robustly a Site Specific Screening Value (SSSV) has been derived, utilising Version 1.06 of the CLEA model. The modelling was based on an 'allotment' scenario, but with various input parameters altered to reflect a situation which is more consistent with the POS at Midland Road, Scunthorpe. These alterations to the model may be summarised as follows:

- All pathways associated with buildings and indoor occupancy have been turned off, reflecting that no buildings are present on the POS;
- All pathways associated with exposure to home-grown vegetables and soil attached to home-grown vegetables have been turned off, reflecting that no vegetables or fruit have been observed growing on the POS;
- A receptor aged between 5 and 12 years has been adopted for the assessment which reflects that children may utilise the POS on an ad-hoc basis, specifically if they walk across it to get to the adjacent play area;
- It has been assumed that any child who utilises the POS does so for 1hr per day, 365 days per year, which is considered relatively conservative given that no children were observed using the POS throughout the duration of the intrusive works;
- Within the model hard/vegetative cover has been modelled at 80%, which is considered conservative given the extensive grass cover which was observed across the POS with very little evidence of exposed soil;
- A soil Adherence Factor (AF) of 0.2mg/cm^{-2} has been adopted, which is the geometric mean of USEPA data, consistent with CLEA Science Report (SR) SR3 (Section 8.1.1);

- Calculation of exposed skin area has been assessed using Table 4.8 of CLEA SR3 (Section 4.2.2). This assumes that younger children have their face, hands, forearms and lower legs exposed whilst older children will have their face, hands and forearms exposed. Given the climate in the north-east this is considered likely to be a conservative assumption for much of the year. Section 4.4.2 of CLEA SR3 suggests that the typical exposed skin area is one third of the maximum, thus the CLEA default value has been divided by three;

- The inhalation rate quoted within the CLEA model is based on a central tendancy value derived from the USEPA. However, the USEPA values have subsequently been altered and thus the inhalation rate has been altered to reflect child specific exposures as quoted in USEPA Report EPA/600R/R-06/096F; and

- A soil ingestion rate of 50mg/day has been assumed, which is considered reasonable based on the information presented in Sections 6.1.3 and 6.1.4 of CLEA SR3.

No adjustments to the CLEA default input parameters for the toxicity or bioavailability of Benzo(a)Pyrene have been made. Particularly in relation to bioavailability this is considered to add a layer of conservatism to the risk assessment modelling.

The result of these site specific inputs is the derivation of a Site Specific Screening Value (SSSV) for Benzo(a)pyrene on the POS at Midland Road, Scunthorpe of 20.5mg/kg. This value has been utilised as part of the revised statistical analysis for BaP, see Table 23B.

Table 23B. Revised Statistical Analysis for Benzo(a)Pyrene – Capping Soils, POS

Analyte	Site Specific Screening Value (SSSV) (mg/kg)	Measured Range (mg/kg)	Distribution / Outliers Identified	Statistical Test		Outcome Based on Evidence Level of 95%		Reject Null Hypothesis
				Type	Justification	Sample Mean	Test Results Exceeding SSSV	Conclusion
Benzo(a)pyrene	20.5	0.23 to 23.7	Non-Normal No outliers	Chebychev	Data set size and distribution	5.687	TP3 at 0.1m (23.7mg/kg)	**No** **μ ≤ Cc**

The statistical analysis indicates that the Null Hypothesis can-not be rejected for Benzo(a)pyrene utilising the Site Specific Screening Value calculated, i.e. the calculated mean concentration is less than the critical concentration (μ ≤ Cc) and there is no basis for defining the land as contaminated for this chemical. Further, the maximum concentration of Benzo(a)pyrene observed in the POS capping soils (23.7mg/kg) is less than 15% higher than the derived SSSV and therefore it is considered that there is no plausible potential for an acute risk to be realised.

Thus, as with all the other soil contaminants tested for within the capping soils across the POS, it may be concluded that the true mean concentration of the contaminants in the soil (μ) is less than the adopted Critical Concentrations (Cc). As such, the null hypothesis is not rejected and SPOSH does not exist.

8.3.2 Asbestos

The chemical testing of near surface soils on the POS included asbestos screening. Of the ten samples screened two (20%) tested positive for asbestos:

- TP15 at 0.2m: Loose brown Amosite (brown) fibres; and
- TP16 at 0.2m: Loose Chrysotile (white) fibres and Asbestos Containing Material (ACM) board.

Additional testing was requested on both these samples in order to permit quantification of the asbestos content. The quantification testing identified the following:

- TP15 at 0.2m: Loose Chrysotile (white) fibres, 0.0012%; and
- TP16 at 0.2m: No description, 0.0039%.

The results of the asbestos testing are subject to independent review / assessment by a specialist Consultant (Land Quality Management Limited) and will be reported separately.

8.4 POS Capping Soils - Conclusions & Recommendations

In summary, the review of near surface capping soils has indicated that concentrations of potential contaminants do not typically exceed the adopted screening values for the assessment of human health risks. On this basis it is considered reasonable to conclude that the Null Hypothesis is not rejected and Significant Possibility of Significant Harm (SPOSH) does not exist. Thus for these contaminants capping soils located on the POS may be assessed as '*Category 4: Human Health'* in accordance with DEFRA's Contaminated Land Statutory Guidance (April 2012), i.e. the level of risk is low and does not meet the legal test for SPOSH.

With regard to asbestos in the near surface capping soils, the results of the laboratory testing are being independently reviewed and assessed by Land Quality Management Limited. A report pertaining to asbestos risks within the near surface capping soils on the POS will be issued separately.

8.5 Permanent Gases and Vapour

Risks associated with bulk gases and vapour generally relate to two different groups of receptors associated with the site;

- Off-site residents, associated with adjacent residential dwellings; and
- On-site workers within the industrial estate buildings.

The following sections of this report deal with permanent gas and vapour risks toward these groups of receptors, utilising the information ascertained from the intrusive works to inform various lines of evidence and facilitate a robust and scientific based assessment of gas risks at the site.

8.5.1 Risks to Off-Site Residents

The Midland Road, Scunthorpe site is surrounded by potential receptors. To the north, east and south these include workers within commercial / industrial premises. To the west these include occupants of residential dwellings located along Lilac Avenue and Warwick Road. For the purpose of this assessment the occupants of these residential properties have been considered as most critical, reflecting that they are located close to the POS, where the more recent (younger) wastes were deposited in the 1970's. The dwellings located along Lilac Avenue and Warwick Road are understood to have ground bearing floor slabs, with no gas membrane or passive ventilation.

The intrusive works completed as part of this assessment have greatly improved the understanding of the ground model for the assessment of risks in relation to these residential properties. Key elements are discussed in Table 24, which also clarifies why these observations are important with respect to the assessment of permanent gas / vapour risk and the lines of evidence collected to support the confidence of the data.

Table 24. Ground Model for Permanent Gas and Vapours – POS and Residential Dwellings

Information	Confidence	EPG Discussion
The capping soils across the POS are typically of limited thickness (0.15m to 1.3m, average 0.5m) and predominantly comprise clayey sand topsoil.	Good	Where capping soils are predominantly sandy and of limited thickness this enables atmospheric air to diffuse into the landfill waste mass and promotes aerobic degradation processes. Where capping soils are predominantly sandy and of limited thickness this permits release of gas through the landfill surface, thus reducing the potential for pressure driven lateral (via the landfill sides) or deep (via the bedrock geology) migration. Gas monitoring on the POS has confirmed that pressures within the waste body are low, with a maximum steady flow rate of 1.3l/hr recorded.

The thickness of the waste mass has been proven to be ~3.1m.	Good	Typically aerobic degradation of a waste mass is dominant where the thickness of a waste mass does not exceed 5m. The geometry of the waste mass is such that it has a large surface area relative to its depth. This, combined with the composition of the capping soils, is likely to promote vertical migration of gas upwards rather than laterally or downwards into the bedrock geology. This is consistent with the gas monitoring data collected outside the landfill, which has indicated low concentrations of permanent gases to be present.
The waste mass beneath the POS is typically dominated by ash, wood and plastic, with smaller proportions of pottery, cloth, shoe leather, metal, rope, decomposing newspapers, banding straps, rubber, bikes, sofas, net and tyres.	Good	Clearly the waste mass does contain some elements which are putrescible, notably the decomposing newspapers and wood. However, there is a significant proportion of the waste mass which will not easily decompose and produce gas – notably the ash and plastic content. The bulk gas concentrations recorded on the POS are consistent with this source.
The waste mass is typically wet, with water encountered at between 2.2m and 3.2mbgl (higher on the central-southern area at between 0.7m and 1.9mbgl).	Good	All wastes decompose over time and it is known that the presence of water facilitates this decomposition process, whilst drier conditions may slow this process down. Landfilling at the site ceased in 1989, thus the waste mass in the proximity of the residential dwellings is in excess of 30years old and should be well progressed in terms of maturation and fermentation. This is consistent with the observations made on site and the presence of water within the waste. This is also consistent with the results of the water / leachate testing and gas monitoring.
The bedrock geology comprises a layer of Ironstone / Limestone with Mudstone and Limestone interbedded beneath. Groundwater within the bedrock geology beneath the POS appears to be in hydraulic continuity with the waste mass.	Reasonable	Some weathering of the bedrock geology was identified as part of the intrusive works. However, typically the rock mass is strong with only relatively small fractures which are unlikely to be vertically or horizontally extensive and thus able to promote widespread lateral / vertical migration of ground gas beneath the POS and toward off-site receptors. Further, groundwater within the bedrock geology appears to be in hydraulic continuity with the waste, with artesian and sub-artesian pressures noted in some off-site monitoring positions. This upward pressure of groundwater flow within the bedrock geology will limit the potential for lateral / vertical migration of gas.
The vent trench installation has been proven to be ~2m wide and between 1.4m and 2.6m deep (minimum), the shallower depth being recorded on the southern portion of the POS (where groundwater conditions are higher).	Good	In simplistic terms it appears that the vent trench installation reaches depths which are typically within 1m of the groundwater surface. The single size aggregate which was observed to be relatively clear of fines will permit diffusion of any landfill gas beneath the termination depth of the installation by around 1m, i.e. commensurate with groundwater. Thus it may be concluded that the vent trench is capable of forming a cut off for gas migration in the direction of the residential properties. Clearly groundwater fluctuations in drier summer months could influence the efficacy of this cut-off, although summer months are typically associated with periods of higher atmospheric pressure when gas generation rates and pressures are reduced. The efficacy of the vent trench has been demonstrated by boreholes located on its passive side (i.e. toward the residential dwellings) which have not detected any elevated permanent gas concentrations. This has also been confirmed via internal space FID monitoring within two properties located on Warwick Road, which identified low concentrations of gas to be present.

Ground conditions to the immediate west of the vent trench have been proven to comprise approximately 1m of Made Ground / Blown Sand, underlain by Ironstone / Limestone bedrock, with interbedded Mudstone and Limestone to depth.	Good	The PRA originally completed by NLC raised concerns that the Blown Sand drift deposits could facilitate a migration pathway for the movement of gas from the landfill toward the adjacent residential properties. The intrusive works have proven that there is no viable pathway for gas migration via the Blown Sand as the vent trench is of adequate depth to intercept any gas migration. With regard to the bedrock, as noted above, the rock mass is strong with only relatively small fractures which are unlikely to be vertically or horizontally extensive and thus able to promote widespread lateral / vertical migration of ground gas beneath the POS and toward off-site receptors beneath the vent trench structure. Any migration via this pathway is likely to be limited by the presence of groundwater. This is consistent with off-site monitoring completed outside the area of landfilling, which has indicated low concentration of permanent gases to be present.
Intrusive works have not identified any evidence of gross contamination beneath the POS.	Good	Clearly the waste mass has a high ash content which is likely to give rise to elevated metals and Polycyclic Hydrocarbons. However, during the intrusive works visual and/or olfactory evidence of contamination was only noted locally. Chemical testing of soil samples targeted at these areas did not indicate concentrations of potential contaminants to exceed the adopted screening values, which take account of vapour inhalation pathways.

Utilising the above information a refined ground model has been defined for the POS and the adjacent residential dwellings. This is presented below as Plate 5.

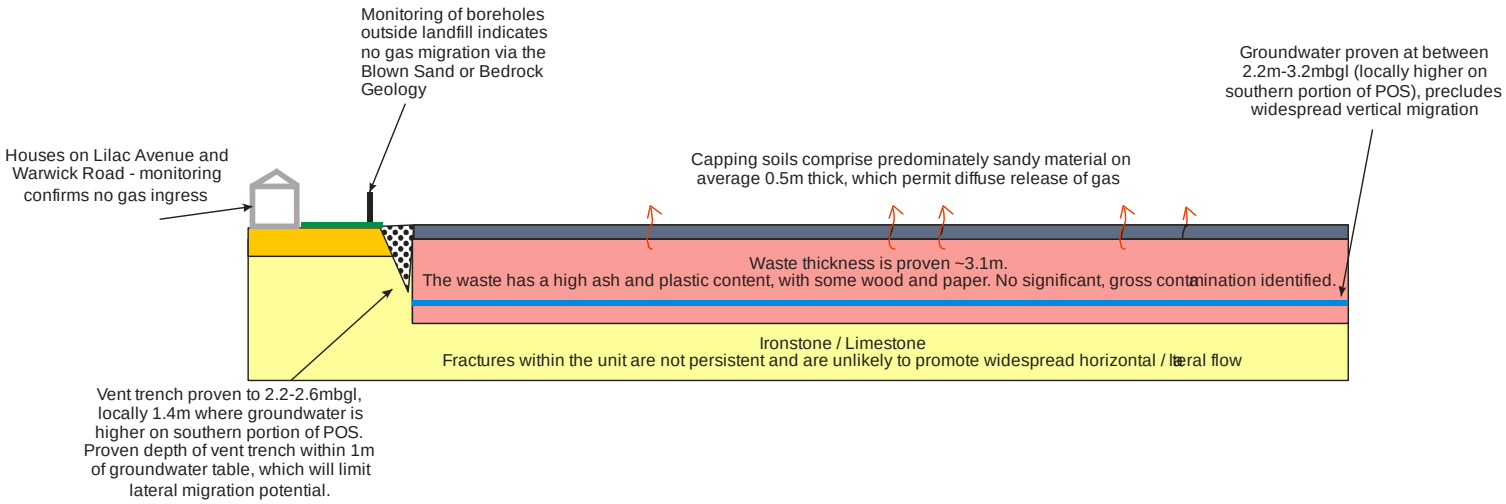


Plate 5. Revised Ground Model for POS and Adjacent Residential Dwellings

As demonstrated in Plate 5, the information ascertained from the intrusive works has indicated that there is negligible potential for off-site migration of gas toward the existing residential dwellings. This is supported by numerous lines of evidence, as summarised in Table 24.

In order to confirm the ground model mathematical modelling has been completed to determine the following:

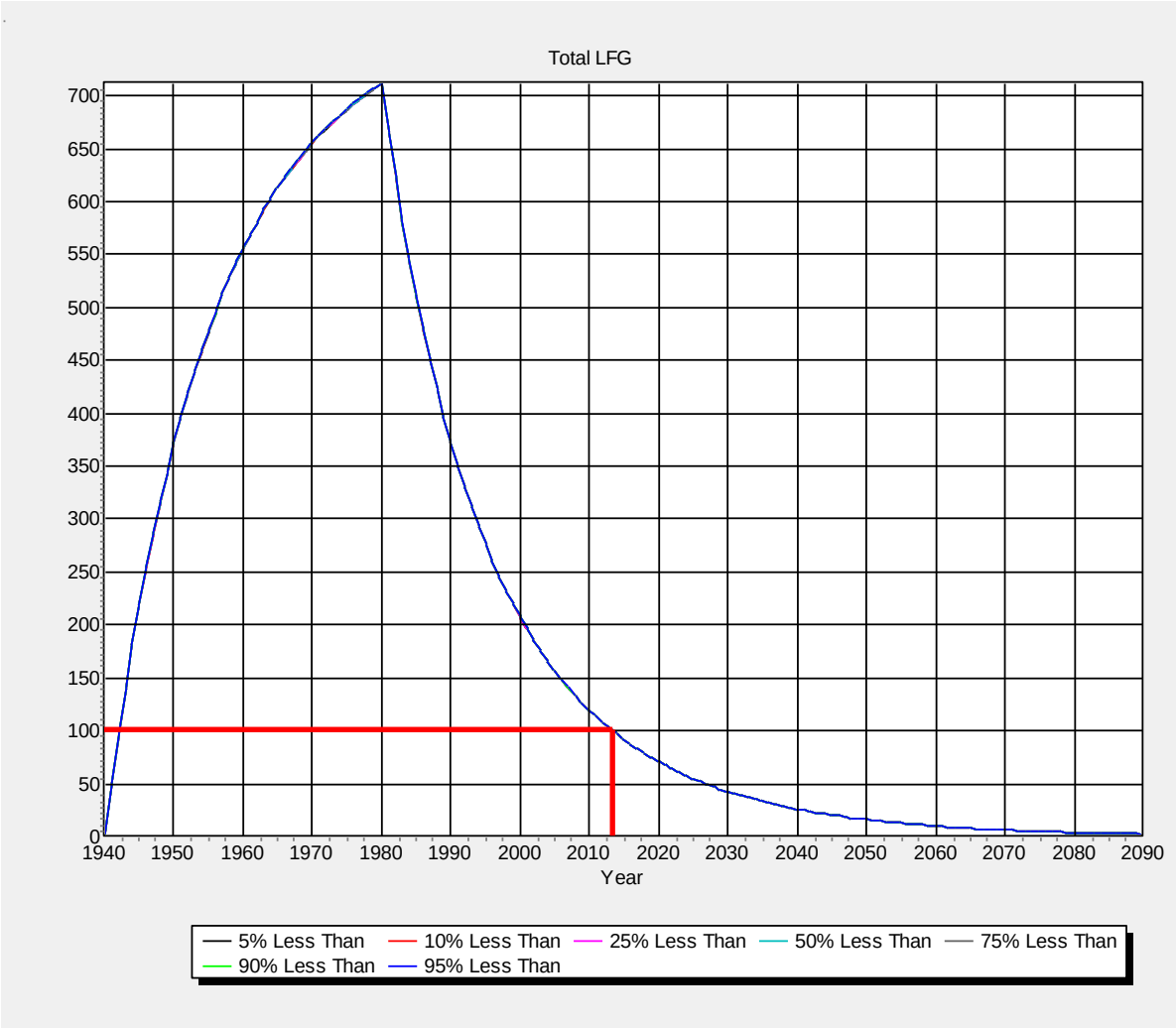
- Gas generation potential (utilising GasSim). *Note: This is a very simplistic model because the exact details of the filling are not known (volumes placed each year, etc). However it does give a rough guide to the proportion of degradation that should have occurred to support observations from other data;*
- Calculation of horizontal gas migration by advection;
- Calculation of vertical gas migration by advection; and
- Calculation of equilibrium concentrations within the residential dwellings.

Input parameters for the GasSim modelling are summarised in Table 25.

Table 25. GasSim Input Parameters – POS & Residential Receptors

Detail	Input	Rationale
Infiltration		
Rate	700mm/yr	Environment Agency R&D Technical Report W5-074/TR1, Appendix 1, Fig 4/5
Landfill Characteristics		
Length	900m	Approximate area based on Google mapping
Width	700m	Approximate area based on Google mapping
Capping	0.2m-1.3m	Uniform input, based on minimum and maximum capping observations during SI
Hydraulic conductivity of capping	$1x10^{-06}$m/s	Reflecting predominantly sandy nature of capping as proven during SI
Liner	None	Supplied data and no evidence during SI
Source		
Deposition	1940 to 1979	Based on known history of landfill
Tonnage	201,6000	Assuming bulk density of 0.8 (i.e. no compaction)
Waste stream	1980-2010, modified to comprise: 40% Domestic 20% Civic amenity 20% Commercial 10% Composted organic material 10% Incinerator ash	Reflects observations made during SI
Waste composition		
Capping	100%	Reflects observations made during SI
Waste moisture content	Moderate	Reflects groundwater observations on POS during SI, whereby waste deposits were typically observed to be wet.

The gas generation calculations completed by the GasSim model indicate that total landfill gas generation at the site is now in decline, with an anticipated generation rate of approximately 100m^3/hr. The GasSim gas production graph is presented below.



The ground model has demonstrated how the surface area of the landfill is large compared to its vertical extent. This, combined with the sandy nature and relatively limited thickness of the capping on the POS, is considered likely to promote vertical migration of landfill gas – thus limiting the potential for horizontal migration out of the sides of the landfill. Sensitivity analysis has been completed assuming different ratios of lateral to vertical migration. This is summarised in Table 26, which also details the calculated surface emission rate within the landfill and the equivalent borehole flow rate.

Table 26. GasSim Vertical to Horizontal Migration Ratio Sensitivity Analysis - POS

	Sensitivity Analysis		
Vertical (%)	99	90	80
Horizontal (% per side)	0.25	2.5	5
Calculated surface emission rate ($m^3/h/m^2$)	1.57E-04	1.42E-04	1.27E-04
Equivalent borehole flow rate (l/h)	2.57	1.43	1.27

As discussed in Section 5.6, maximum steady flow rates on the POS were recorded between 1.2l/hr and 1.3l/hr. This is consistent with the mathematical modelling, which indicates that based on 80% horizontal and 5% (per side) vertical migration a calculated surface emission rate of 1.27E-04 $m^3/h/m^2$ is estimated, equivalent to 1.27l/hr flow.

For the purposes of this assessment any retardation of gas migration provided by the vent trench has been omitted, thereby reflecting a worse-case scenario in which the vent trench is not maintained and becomes defunct. Thus, assuming horizontal migration outside the landfill over the typical plan area of a residential property (8m x 8m, $64m^2$) the maximum vertical migration rate beneath the property has been calculated as 3.75E04$m^3/h/m^2$, equivalent to 3.57l/hr (i.e. this is the total flow of landfill gas beneath the property adopting the Peckson correlation. In simplistic terms, this is the maximum rate of gas being generated and thus migration cannot exceed this value). This assumes that gas is able to migrate toward the house at the same rates as calculated on the landfill, but the vertical migration pathway is buffered by a factor of 5 to reflect a reduction in vertical permeability.

Utilising the information ascertained from the intrusive works various calculations have been completed to determine the limiting factors for equilibrium concentrations within the residential properties. These calculations are based on the approach outlined in the CIEH Local Authority Guide to Ground Gas. The calculation data sheets are presented in Appendix K and the results are summarised in Table 27.

Table 27. Calculation of Equilibrium Gas Concentrations – Residential Dwellings

Note:

1. **Equilibrium gas concentration calculations are based on methane (CH_4) as this is considered to be the main risk driver at the site, reflecting that CH_4 was the predominant permanent gas recorded within the landfill waste deposits.**

Calculations Assumptions:

- **Vertical to horizontal migration proportions are equivalent to 80% vertical, 5% horizontal (per side).**
- **Pressure within the landfill has been modelled at 10Pa, consistent with monitoring during the SI.**
- **Pressure outside landfill has been modelled at 5.4Pa, assuming pressure is reduced outside landfill site and main driving force is sack effect inside buildings.**
- **K_{Darcy} of bedrock has been calculated as $1E^{-06}$m/s, based on RQD values ascertained from the SI and empirical relationships.**
- **The equivalent Intrinsic Permeability of the bedrock is $1.02E^{-13}$m/s.**
- **K_{Darcy} of the Blown Sand has been defined as $6E^{-05}$m/s, consistent with CLEA Briefing Note 2, Table 3.**
- **The equivalent Intrinsic Permeability of the Blown Sand is $6.12E^{-12}$m/s.**
- **There is typically 20m between the area of the landfill and the residential dwellings, as per Google mapping.**
- **Calculations are based on maximum recorded methane concentrations on the POS, 87.5%v/v.**
- **Vertical migration routes are buffered by a factor of 5 reflecting material permeability.**
- **The volume of the residential dwelling is 8mx8mx2m, consistent with on-site observations.**
- **A ventilation rate within the residential buildings of 0.5 air changes per hour has been adopted, reflecting CLEA Briefing Note 3, Page 9.**

Limiting Factor	Surface emission rate of ground gas ($m^3/h/m^2$)	Equilibrium concentration in residential dwelling with $64m^2$ plan area
Calculated horizontal gas migration by advection, limiting values in Bedrock. *NB: Assuming no changes to the chemical composition of the gas during migration (e.g. oxidation of methane).*	$3.12E^{-06}$	-
Calculated vertical gas migration by advection, limiting values in Blown Sand. *NB: Assuming no changes to the chemical composition of the gas during migration (e.g. oxidation of methane).*	$4.62E^{-06}$	-
Calculated equilibrium concentration of CH_4 in building.	-	0.000462%

As demonstrated in Table 27, the mathematical calculations estimate that the equilibrium concentration of gas within residential properties to the west of the POS will be 0.000462%. This theoretical concentration is consistent with the monitoring data collected both via boreholes located between the POS and the residential dwellings, and the results of the internal space monitoring within the houses.

There is conservatism within the model as it does not take into account any mitigation of risk offered by the gas vent trench, any oxidation of methane as it migrates or any retardation of ingress as a result of the ground bearing floor slabs.

In the absence of any other technical tools to assist it deciding whether or not SPOSH exists in relation to landfill gas EPG have defined a protocol for the assessment of SPOSH, a copy of which is presented in Appendix L. This protocol follows advice presented in Paragraph 3.30 of the Contaminated Land Statutory Guidance, April 2012. A graphical representation of the SPOSH framework is presented below in Plate 6.

Modelling (Table 27) has demonstrated that the equilibrium concentration of methane within the residential dwellings is not likely to exceed 0.000462% by volume (which is the equivalent of 4.62ppm). Utilising the SPOSH framework presented in Plate 6 this is indicative of '*minimal*' risk, i.e. is significantly lower than the upper bound threshold of 100ppm (0.01% by volume). It is considered that the confidence / certainty attached to this assessment is '*good*', having been supported by multiple lines of evidence as discussed within previous sections of this report and summarised in Table 24.

As such it is concluded that risks from migration of landfill gas toward the residential dwellings which border the western boundary of the POS may be assessed as '***Category 4: Human Health***' in accordance with DEFRA's Contaminated Land Statutory Guidance (April 2012), i.e. the level of risk associated with gas migration from the landfill toward the residential houses is minimal and the land is excluded from the need for further inspection.

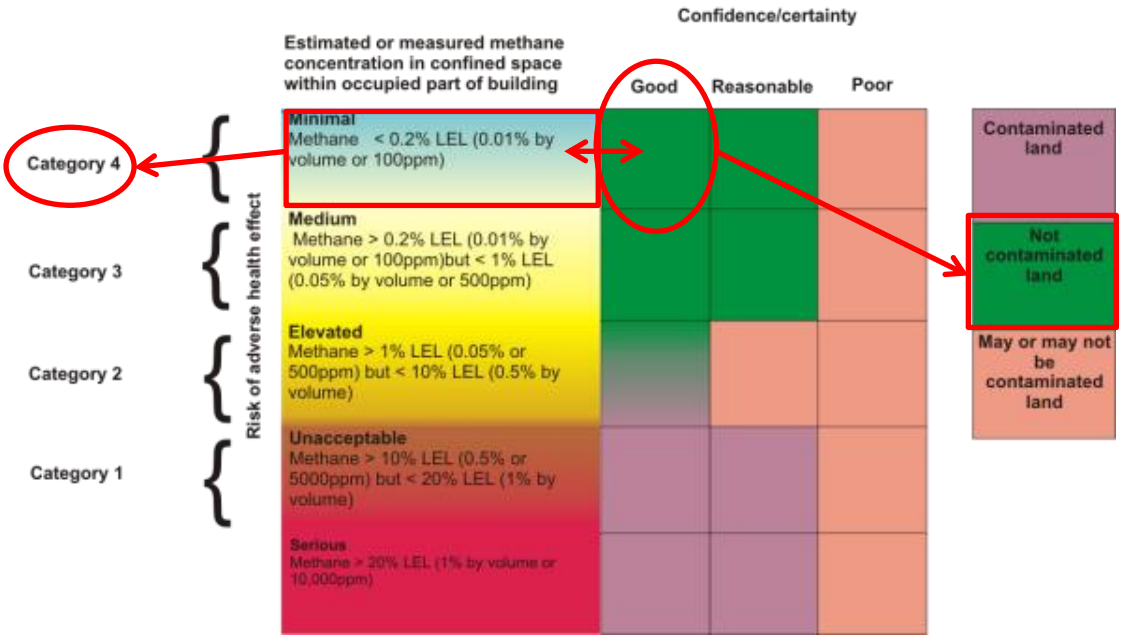


Plate 6. SPOSH Framework for Landfill Gas Assessment – Residential Houses

8.5.2 Risks to On-Site Occupants of the Industrial Units

Clearly on the industrial estate there are a number of workers within the commercial / industrial structures. The intrusive works completed as part of this assessment have greatly improved the understanding of the ground model for the assessment of risks in relation to these receptors. Key elements are discussed in Table 28, which also clarifies why these observations are important with respect to the assessment of permanent gas / vapour risk and the lines of evidence collected to support the confidence of the data.

Table 28. Ground Model for Permanent Gas and Vapours – Industrial Estate

Information	Confidence	EPG Discussion
The composition of the older (pre 1960's) waste mass has been confirmed as typically comprising ash with various inclusions such as brick, sandstone, concrete, slag, coal, metal, shoe leather and pottery. Locally putrescible material is present (e.g. clumps newspapers), although the volume of this material is low comparative to the younger waste streams.	Good	The composition of the older waste mass is considered likely to have a low gas generation potential. This is consistent with gas monitoring data collected across much of the industrial estate, which indicates relatively low concentrations of methane (maximum 3%v/v) / carbon dioxide (maximum 12.8%v/v) and low flow rates (maximum 0.5l/hr).
The composition of the more recent waste mass (post 1960's) has been defined in more detail, together with its extent. The material includes abundant wood, plastic / plastic bag / polythene and metal (bicycles, box section, steel bars, mattress springs etc.), generally in a matrix of sandy ash with brick, coal, slag and concrete. Evidence of green waste has been noted in the proximity of TP26 and TP27.	Reasonable	Investigation of the area of more recent waste deposition was restricted to some degree by the presence of buildings and related infrastructure. However, the information ascertained provides a good indication of ground conditions and is consistent with evidence collected from the POS and the gas monitoring data. In summary, methane concentrations up to 24.7%v/v and carbon dioxide concentrations up to 8.9%v/v were recorded, together with flow rates up to 0.9l/hr.
The thickness of the waste mass has been proven to be ~4.3m.	Good	Typically aerobic degradation of a waste mass is dominant where the thickness of a waste mass does not exceed 5m. This is consistent with carbon dioxide generation being dominant on the area of the older waste mass. The geometry of the waste mass is such that it has a large surface area relative to its depth. This, combined with the generally poor quality of the industrial estate surfacing, is likely to promote vertical migration of gas upwards rather than laterally or downwards into the bedrock geology. This is consistent with the gas monitoring data collected outside the landfill and at depth, in boreholes which target the bedrock.

Groundwater within the waste on the industrial estate appears to be perched in pockets, with some areas of the waste dry.	Good	All wastes decompose over time and it is known that the presence of water facilitates this decomposition process, whilst drier conditions may slow this process down. Landfilling on this portion of the site ceased in the early 1970's, thus the waste mass is in excess of 40years old and should be well progressed in terms of maturation and fermentation. This is consistent with the water / leachate chemical test data, although caution should be exercised when assessing the waste mass given its locally dry nature. The dry nature of the waste is also likely to result in aerobic degradation being dominant, as observed in the older waste mass.
The bedrock geology comprises a layer of Ironstone / Limestone with Mudstone and Limestone interbedded beneath.	Reasonable	Some weathering of the bedrock geology was identified as part of the intrusive works. However, typically the rock mass is strong with only relatively small fractures which are unlikely to be vertically or horizontally extensive and thus able to promote widespread lateral / vertical migration of ground gas beneath the industrial estate and toward off-site receptors (e.g. surrounding industrial units).
Intrusive works have identified only localised evidence of contamination beneath the industrial estate, most likely associated with on-site practices.	Good	Clearly the waste mass has a high ash content which is likely to give rise to elevated metals and Polycyclic Hydrocarbons. However, during the intrusive works visual and/or olfactory evidence of contamination was only noted locally. Chemical testing of soil samples targeted at these areas identified a potential area of hydrocarbon contamination in the proximity of TP27, although this is considered most likely to be associated with on-site practise such as a spill or leak from a point source.
Internal space monitoring has identified gas ingress into some buildings.	Good	Internal space monitoring has identified evidence of gas ingress into some buildings located on the central-northern portion of the industrial estate, consistent with the area of post 1960's deposition. The monitoring has indicated that migration is typically via cracks / joints within the floor slab construction of these buildings and/or via service penetrations. The lateral and vertical extent of this ingress is typically limited to less than 5cm, although locally ambient concentrations within small spaces (e.g. service cupboards, small office spaces) has been impacted. Further internal space monitoring is proposed within selected buildings on the industrial estate, the results of which will be forwarded to NLC either within separate letter reports or as an update to this report upon completion.

Utilising the above information a refined ground model has been defined for the industrial estate. This is presented as Plate 7.

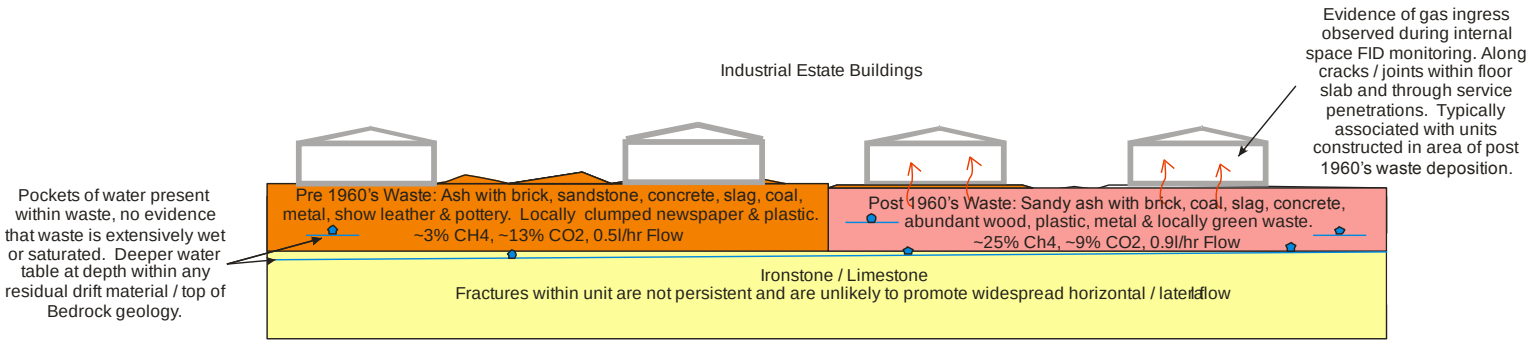


Plate 7. Revised Ground Model for Industrial Estate

As demonstrated in Plate 7, the information ascertained from the intrusive works has indicated that there is evidence to suggest migration of gas into industrial properties located within the proximity of the post 1960's waste mass. In order to assess associated risks further mathematical modelling has been completed to determine the following:

- Gas generation potential (utilising GasSim);
- Calculation of vertical gas migration by advection; and
- Calculation of equilibrium concentrations within the industrial buildings.

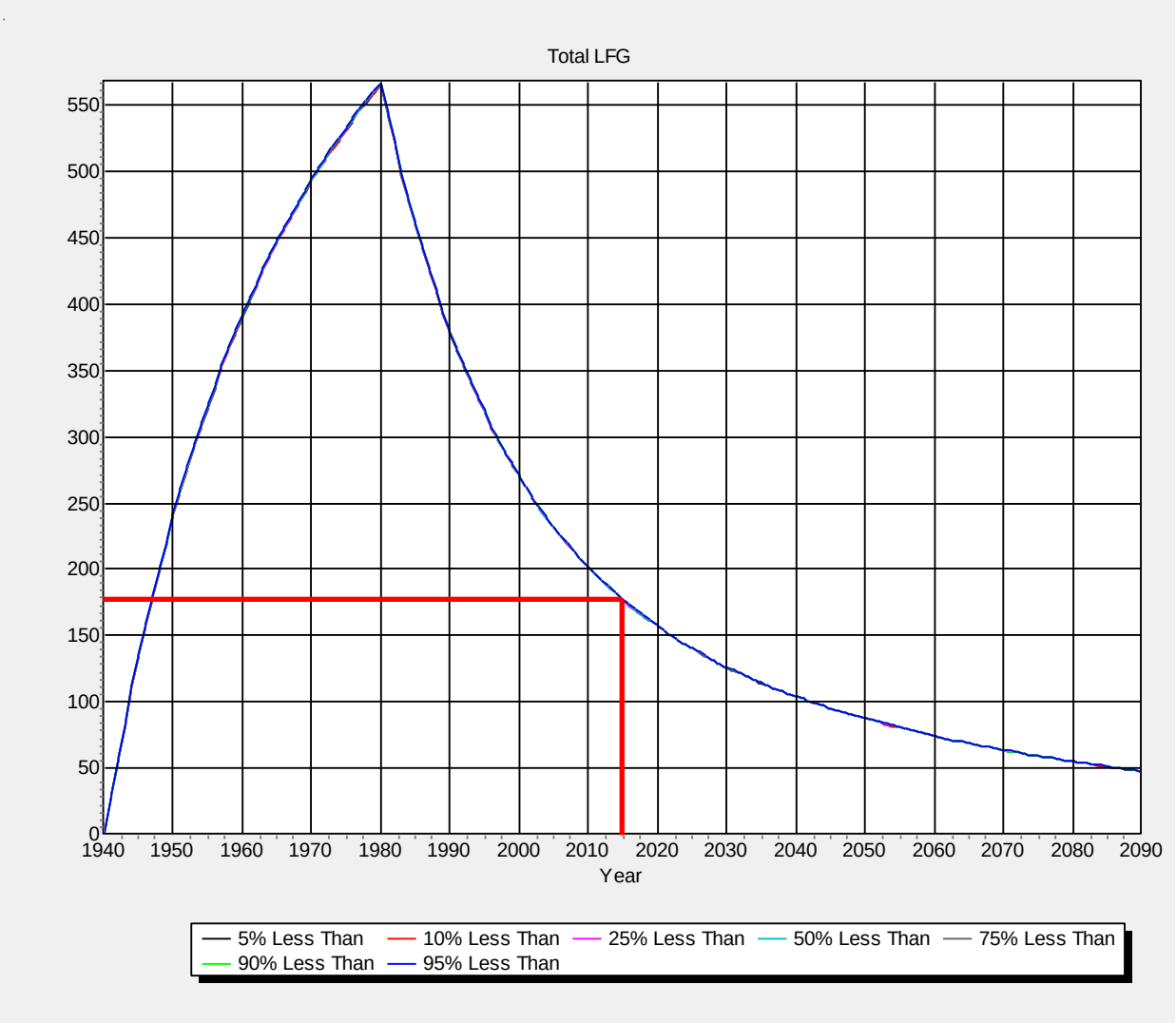
Input parameters for the GasSim modelling are summarised in Table 29.

Table 29. GasSim Input Parameters – Industrial Estate

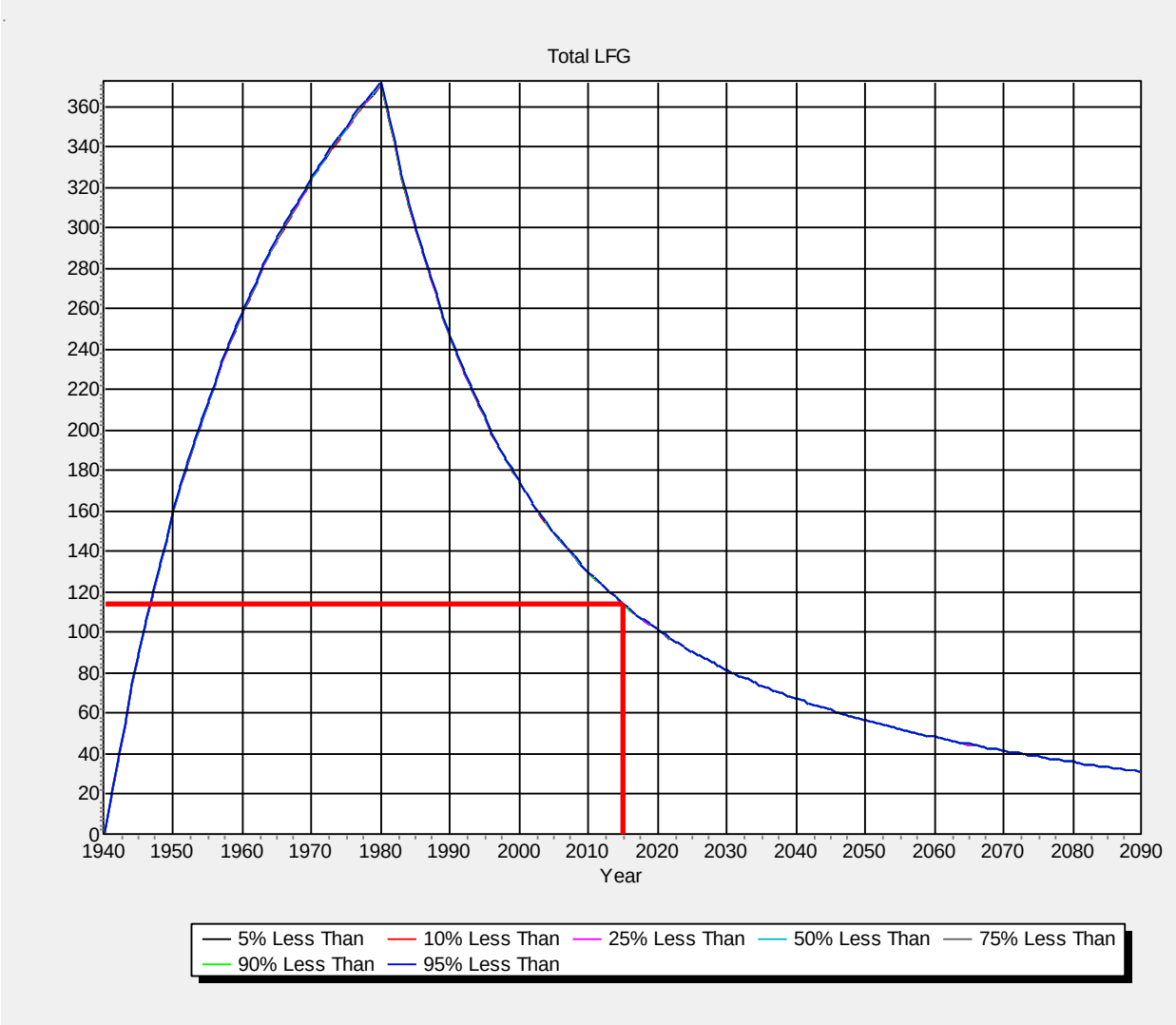
Detail	Input	Rationale
Infiltration		
Rate	700mm/yr	Environment Agency R&D Technical Report W5-074/TR1, Appendix 1, Fig 4/5
Landfill Characteristics		
Length	900m	Approximate area based on Google mapping
Width	700m	Approximate area based on Google mapping
Capping	0.3	Nominal surfacing of tarmac / concrete over sub-base, or rough sub-base without surfacing
Hydraulic conductivity of capping	$1x10^{-06}$m/s	Reflects observations made during SI where surfacing is generally of poor quality with regular cracks
Liner	None	Supplied data and no evidence during SI
Source		
Deposition	1940 to 1979	Based on known history of landfill
Tonnage	252,000	Assumes bulk density of 1.0 (i.e. some compaction of post-1960's pulverised waste)
	201,6000	Assuming bulk density of 0.8 (i.e. no compaction of pre-1960's waste)
Waste Body		
Waste composition (Post 1960's Waste Mass)	1980-2010, modified to comprise: 40% Domestic 15% Civic amenity 15% Commercial 20% Composted organic material 10% Incinerator ash	Reflects observations made during SI
Waste composition (Pre 1960's Waste Mass)	1980-2010, modified to comprise: 40% Domestic 10% Civic amenity 10% Commercial 10% Composted organic material 30% Incinerator ash	Reflects observations made during SI

Capping	100%	Reflects observations made during SI
Waste moisture content	Dry	Reflects groundwater observations on industrial estate during SI, whereby locally the waste deposits were observed to be dry – thus slowing down the degradation process timescale.
Notes: The waste composition adopted for input into the GasSim model is based on EPG's observations of the ground conditions encountered during the site investigation works. In reality waste deposits prior to the Clean Air Act 1956 will have very little cellulose content, whilst those deposited post 1956 will show increasing cellulose content over time, depending on how the smoke control areas were implemented locally. In reality, the ratios of waste modelled are likely to reflect a conservative composition of the waste body when considering gas generation potential.		

The GasSim gas production graphs are presented below for two scenarios, the first reflecting the post 1960's waste mass composition and the second reflecting the pre 1960's waste mass composition.



Post 1960's Waste Stream – Gas Generation Modelling (GasSim)



Pre 1960's Waste Stream - Gas Generation Modelling (GasSim)

The gas generation calculations completed by the GasSim model indicate that total landfill gas generation at the site is now in decline, irrespective of the waste mass composition. For the post-1960's waste mass an anticipated generation rate of approximately 180m^3/hr has been calucated, whilst for the pre-1960's waste mass an antipcated generation rate of approximately 118m^3/hr has been calculated.

The ground model has demonstrated how the surface area of the landfill is large compared to its vertical extent. This, combined with the nature of the site surfacing (typically poor quality tarmac, concrete and loose gravel) is considered likely to promote vertical migration of landfill gas – thus reducing the potential for horizontal migration out of the sides of the landfill.

Sensitivity analysis has been completed assuming different ratios of lateral to vertical migration. These are summarised in Tables 30A and 30B, which also detail the calculated surface emission rates within the landfill and the equivalent borehole flow rates.

Table 30A. Vertical to Horizontal Migration Ratio Sensitivity Analysis – Industrial Est, Post-1960 Waste.

	Sensitivity Analysis		
Vertical (%)	60	50	40
Horizontal (% per side)	10	12.5	15
Calculated surface emission rate ($m^3/h/m^2$)	1.76E-04	1.47E-04	1.17E-04
Equivalent borehole flow rate (l/h)	1.76	1.47	1.17

Table 30B. Vertical to Horizontal Migration Ratio Sensitivity Analysis – Industrial Est, Pre-1960 Waste.

	Sensitivity Analysis		
Vertical (%)	60	50	40
Horizontal (% per side)	10	12.5	15
Calculated surface emission rate ($m^3/h/m^2$)	1.14E-04	9.52E-05	7.62E-05
Equivalent borehole flow rate (l/h)	1.14	0.95	0.76

As demonstrated in Table 15, boreholes located within the proximity of the post-1960's waste recorded a maximum flow rate of 0.9l/hr. This is consistent with the mathematical modelling, which indicates that based on 40% horizontal and 15% (per side) vertical migration a calculated surface emission rate of 1.17E-04 $m^3/h/m^2$ is estimated, equivalent to 1.17l/hr flow. Boreholes located in the pre-1960's waste recorded a maximum flow rate of 0.5l/hr. Again this is consistent with the mathematical modelling based on 40% horizontal and 15% (per side) vertical migration, with a calculated surface emission rate of 7.62E-05 $m^3/h/m^2$ estimated, equivalent to 0.76l/hr flow

Following the methodology outlined in the CIEH Local Authority Guide to Ground Gas vertical rates of gas migration via advection have been calculated, together with anticipated equilibrium gas concentrations within buildings. Separate calculations have been completed for the buildings located on the pre- and post-1960's waste mass. Spreadsheets for these calculations are presented in Appendix K and summarised in Tables 31A (post-1960's waste mass) and Table 31B (pre-1960's waste mass).

Table 31A. Calculation of Equilibrium Gas Concs. – Industrial Buildings, Post-1960's Waste

Note:

1. **Equilibrium gas concentration calculations are based on methane (CH_4) as this is considered to be the main risk driver at the site, reflecting that CH_4 was the predominant permanent gas recorded within the landfill waste deposits in the proximity of the post-1960's waste mass.**

Calculations Assumptions:

- **Vertical to horizontal migration proportions are equivalent to 40% vertical, 15% horizontal (per side).**
- **Pressure within the landfill has been modelled at 10Pa, consistent with monitoring during the SI.**
- **K_{Darcy} of landfill waste has been modelled as $1E^{-05}$m/s.**
- **The equivalent Intrinsic Permeability of the waste is $1.02E^{-12}$m/s.**
- **Calculations are based on the maximum recorded methane concentrations on the industrial estate in the proximity of the post-1960's waste mass, 25%v/v.**
- **The migration depth has been modelled as 2m, i.e. midway through the landfill profile.**
- **The area of a typical building has been calculated as 2mx27mx15m, consistent with observations on site.**
- **A ventilation rate within the industrial buildings of 1.0 air changes per hour has been adopted, reflecting CLEA Briefing Note 3, Page 9.**

Limiting Factor	Surface emission rate of ground gas ($m^3/h/m^2$)	Equilibrium concentration in industrial building
Calculated vertical migration rate. *NB: Assuming no changes to the chemical composition of the gas during migration (e.g. oxidation of methane).*	$4.46E^{-04}$	-
Calculated equilibrium concentration of gas in building.	-	0.0223%

Table 31B. Calculation of Equilibrium Gas Concs. – Industrial Buildings, Pre-1960's Waste

Note:

1. **Equilibrium gas concentration calculations are based on methane (CH_4) as this is considered to be the main risk driver at the site, reflecting generally low methane and carbon dioxide concentrations observed in pre-1960's waste mass and large, warehouse type nature of on-site buildings (i.e. which are likely to quickly dissipate the effects of carbon dioxide ingress).**

Calculations Assumptions:

- **Vertical to horizontal migration proportions are equivalent to 40% vertical, 15% horizontal (per side).**
- **Pressure within the landfill has been modelled at 10Pa, consistent with monitoring during the SI.**
- **K_{Darcy} of landfill waste has been modelled as $1E^{-05}$m/s.**
- **The equivalent Intrinsic Permeability of the waste is $1.02E^{-12}$m/s.**
- **Calculations are based on the maximum recorded methane concentrations on the industrial estate in the proximity of the pre-1960's waste mass, 3%v/v.**
- **The migration depth has been modelled as 2m, i.e. midway through the landfill profile.**
- **The area of a typical building has been calculated as 2mx27mx15m, consistent with observations on site.**
- **A ventilation rate within the industrial buildings of 1.0 air changes per hour has been adopted, reflecting CLEA Briefing Note 3, Page 9.**

Limiting Factor	Surface emission rate of ground gas ($m^3/h/m^2$)	Equilibrium concentration in industrial building
Calculated vertical migration rate. *NB: Assuming no changes to the chemical composition of the gas during migration (e.g. oxidation of methane).*	5.35^{-05}	-
Calculated equilibrium concentration of gas in building.	-	0.00381%

As demonstrated in Tables 31A and 31B, the mathematical calculations completed estimate that the equilibrium concentration of gas within a property located on the industrial estate in the proximity of the post-1960's waste will be 0.0223% by volume (223ppm), whilst in the proximity of the post-1960's waste will be 0.00381% by volume (38.1ppm).

In context, using EPG's SPOSH assessment framework (Appendix L and Plate 6) the properties located on the industrial estate may be assessed as follows:

- Properties located in proximity of post-1960's waste where equilibrium methane concentrations have been calculated at 0.0223% by volume (223ppm) are considered to have 'medium' risk of adverse effect; whilst
- Properties located in proximity of pre-1960's waste where equilibrium methane concentrations have been calculated at 0.00381% by volume (38.1ppm) are considered to have 'minimal' risk of adverse effect.

This is consistent with the vast majority of industrial units on the industrial estate, i.e. where no nuisance complaints have been made, internal space gas monitoring suggests no evidence of gas ingress and monitoring of boreholes in the older (pre-1960's) waste mass has not indicated significantly elevated concentrations of permanent gases to be present. On this basis it is considered there is 'reasonable' to 'good' level of confidence / certainty that the vast majority of properties located on the older pre-1960's waste stream may be assessed as '***Category 4: Human Health'*** in accordance with DEFRA's Contaminated Land Statutory Guidance (April 2012), i.e. the level of risk associated with gas migration from the landfill into the industrial units is minimal and the land is excluded from the need for further inspection.

However, internal space monitoring (as discussed in Section 6.8) clearly has identified gas ingress into some buildings, notably those located on the central portion of the industrial estate – in the proximity of the post-1960's waste mass, where it has been concluded via the modelling that a 'medium' risk exists. Typically quantitative modelling of risk is conservative. In EPG's experience it is unusual that concentrations of permanent gases as measured on site are significantly higher than the predicted concentrations from mathematical modelling. However, in the proximity of the post-1960's waste mass this is clearly the case, with the monitored FID concentrations exceeding the anticipated equilibrium concentrations derived by the mathematical modelling, albeit generally in very small volumes around concentrated around the point of ingress. The most likely reason for this is that the properties constructed on top of the post-1960's waste were constructed after only a relatively short period of time of the waste being deposited in the ground. The pulverised nature of the post-1960's waste would mean that rates of permanent gas generation occurred quickly after deposition, but the placement of the buildings and associated hardstanding cover may have effectively 'sealed' the gas into the ground, which over subsequent years has been diffusing through points of weakness within the overlying hard cover (e.g. along cracks within building floor slabs and preferentially along utility services). This is consistent with the rates of gas ingress into the buildings being relatively small (the 'bubble' of gas ingress has been proven as typically <5cm) and low flow rates as recorded during gas monitoring events (which indicate gas pressures within the ground are low). These conditions are indicative of diffusive flow being dominant, not advective (pressure driven) flow. In reality the small gas bubble and low flow rates / gas pressures within the ground indicate that risks associated with permanent gas ingress into properties located on the post-1960's waste are in decline, consistent with a finite volume of gas being present within the ground as generated by the waste. However, it is important to note that risks associated with permanent gases are acute, i.e. it only takes a one-off event to result in harm.

At this time the properties where specific evidence of gas ingress has been noted are defined as:

- PD Logistics, 21 Midland Road: Maximum FID reading >10,000ppm, typically associated with gas ingress via cracks in floor slab;
- H&L Engineering, 31-33 Midland Road: Maximum 2000ppm, typically associated with gas ingress via cracks in floor slab;
- Dan Page and Viking Hardware, 39-41 Midland Road: Maximum FID reading 8000ppm, in electricity riser cupboard, also evidence of gas ingress via cracks in floor slab;
- NLC Depot, 53-55 Midland Road: Maximum FID reading 8000ppm, typically associated with gas ingress via cracks in floor slab;
- Bernand XH, Units 1-3 Trinity Park: Maximum FID reading >10,000ppm. Ingress typically associated with an electricity plug socket in a small office area and more generally via cracks in floor slab;
- Product Design, Unit 5 Trinity Park: Maximum FID reading 8000ppm from slab / post joint, also evidence of gas at electric main;
- Body Torque, Unit 7 Trinity Park: Maximum FID reading 2000ppm, typically associated with gas ingress via cracks in floor slab;
- Compart 2011, Units 10 and 11 Albion Park: Maximum FID reading 200ppm from joint in slab / wall construction;
- Scunthorpe Computers, Unit 12 Albion Park: Maximum 500ppm from joint in slab / wall construction; and
- Scunthorpe Boxing Club, Unit 16 Albion Park: Maximum 3000ppm from base of wall / post.

To put these internal monitoring results in context, EPG's protocol for SPOSH assessment (Plate 6) has been utilised. This assessment may be summarised as follows:

Category 1: Human Health: In accordance with DEFRA's Contaminated Land Statutory Guidance (April 2012), i.e. it is known that similar land or situations have caused harm before in the United Kingdom and elsewhere:

- **PD Logistics, 21 Midland Road;**
- **Dan Page and Viking Hardware, 39-41 Midland Road;**
- **NLC Depot, 53-55 Midland Road;**
- **Bernand XH, Units 1-3 Trinity Park;**
- **Product Design, Unit 5 Trinity Park; and**
- **Body Torque, Unit 7 Trinity Park (see discussion below).**

In addition to the above, it is possible that subject to the results of further internal space monitoring events the following properties may also be assessed as Category 1: Human Health:

- Global Motorcycles, Unit 4 Trinity Park – see discussion below;
- Yew Tree Engineering, Unit 6 Trinity Park – see discussion below; and
- Myers Tyres, Unit 8 Trinity Park – see discussion below.

Mitigation measures will be required to manage risks associated with these properties (see Section 8.5.3).

Trinity Park Discussion:

Trinity Park is a single building comprising 8 No. individual units. When considering risks associated with landfill gas ingress it is important to note that the full extent of the building is likely to be located on the same ground conditions (i.e. pulverised waste, circa 1966) and that the construction of the building does not obviously vary between the 8 tenanted 'units'. Further:

- *Of the eight units present, relatively high FID concentrations have been detected in Units 1-3, 5 and 7;*
- *The FID concentrations detected in units 1-3 and 5 are indicative of a Category 1: Human Health designation in accordance with EPG's framework for SPOSH assessment;*
- *The FID concentrations detected in Unit 7 (Body Torque) are consistent with a Category 2 designation utilising EPG's framework for SPOSH assessment. However, it is clear that this unit has a similar potential for landfill gas ingress as Units 1-3 / 5. To ensure consistency in approach, it is recommended that this property (Unit 7) is also assessed as Category 1: Human Health;*

- *With regard to Unit 4 (Global Motorcycles) the monitoring data available to date does not conclusively indicate evidence of landfill gas ingress, with the ambient levels recorded possibly reflecting the very strong solvent odours noted within the unit from the on-going business use of the property. However, clearly the monitoring events proposed for August and October 2013 should specifically target this property to determine if there is any evidence of point source landfill gas ingress which may require implementation of mitigation measures; and*
- *With regard to Unit 6 (Yew Tree Engineering) and Unit 8 (Myers Tyres) it is important that access permission is obtained into these units prior to the August and October internal space monitoring events. To date no monitoring data has been collected inside Unit 6 and only limited data is available for Unit 8. Given the monitoring data collected from adjacent units it is considered possible that evidence of gas ingress will be observed within these units which would be likely to require Category 1: Human Health designation and implementation of associated mitigation requirements.*

Category 2: Human Health: In accordance with DEFRA's Contaminated Land Statutory Guidance (April 2012), i.e. there is a strong basis for considering that the risks from the land are of sufficient concern, that the land poses a significant possibility of significant harm and that there is a strong case for taking action under Part 2A on a precautionary basis:

- **H&L Engineering, 31-33 Midland Road;**
- **Scunthorpe Boxing Club, Unit 16 Albion Park;**
- **Compart 2011, Unit 10/11 Albion Park – see discussion below; and**
- **Scunthorpe Computers, Unit 12 Albion Park – see discussion below.**

In addition to the above, it is possible that subject to the results of further internal space monitoring events the following property may also be assessed as Category 2: Human Health:

- John Espin Signs, Unit 14/15 Albion Park – see discussion below.

Mitigation measures will be required to manage risks associated with these properties (see Section 8.5.3).

Albion Park Discussion:

Albion Park (Units 10 to 16) is a single building comprising 4 No. tenanted 'units'. When considering risks associated with landfill gas ingress it is important to note that the full extent of the building is likely to be located on the same ground conditions (i.e. pulverised waste, circa 1967) and that the construction of the building does not obviously vary between the individual 'units'.

Albion Park Units 1 to 8 comprises a similar building, with theoretically similar ground conditions, but no evidence of landfill gas ingress has been observed in any of these units to date.

With regard to the assessment of Albion Park Units 10 to 16 the following should be noted:

- *Compart 2011 (Units 10 / 11 Albion Park) and Scunthorpe Computers (Unit 12 Albion Park) have both recorded relatively lower concentrations of landfill gas ingress equivalent to a Category 3: Human Health designation utilising EPG's approach for SPOSH assessment. However, these premises form part of the same building as Scunthorpe Boxing Club (Unit 16) and therefore, given the acute risk associated with permanent gases, likelihood of similar ground conditions and the consistency in building construction between the individual 'units', it is recommended that mitigation measures also be implemented in these properties, where point sources of landfill gas ingress have been detected.*
- *With regard to Units 14 / 15 (John Espin Signs) to date no evidence of landfill gas has been observed. However, this is based on one monitoring event and given the FID concentrations recorded in adjacent units this data should be targeted for additional monitoring as part of the August and October internal space monitoring events. If evidence of landfill gas ingress is observed then mitigation measures consistent with Section 8.5.3 should be implemented.*

Category 3: Human Health: In accordance with DEFRA's Contaminated Land Statutory Guidance (April 2012), i.e. the legal test for significant possibility of significant harm is not met and regulatory intervention under Part 2A is not warranted for all other buildings located on the post-1960's waste mass within the redline boundary depicted in Plate 8 (Section 8.5.3).

However, when considering permanent gases it is important to note that the regime of the source can vary over time (e.g. during periods of rapid falling atmospheric pressure rates of generation and/or migration can increase), pathways for migration can alter over time (e.g. settlement cracks may result in new preferential pathways for migration into buildings) and receptor based activities can change (e.g. on an industrial estate processes such as welding could be introduced to a property – potentially creating an ignition source).

In view of the above, and in due consideration of the internal space monitoring data collected on the site to date, it is recommended that a management plan be put in place such that a consistent approach is implemented and documented by NLC for the on-going assessment of risks and implementation of mitigation requirements (if required). This management framework is discussed further in Section 8.5.3.

8.5.3 Mitigation Requirements

It is recommended that in the short term (4-months) the following measures be put in place to control gas ingress into these areas;

Stage 1:

- Dan Page, 39-41 Midland Road: Seal the service inlet points with expanding polyurethane foam and mastic sealant. Install high level and low level vent grills to the service cupboard door to facilitate ventilation; and
- Bernand XH, Units 1-3 Trinity Park: Investigate the small office space (Room ID FID Monitoring Location G03) and seal any service inlet points where possible, particularly focusing on the electricity plug socket on the wall where gas ingress has been noted (and trace the cable back from this socket to where it enters the building), see discussion below. Install high and low level vent louvers to the office door.

Trinity Park Discussion: It is understood that on the 30 July 2013 National Grid attended Trinity Park Units 1 to 8 in response to a potential mains supply gas leak. No gas leak was detected by National Grid (the mains supply having been terminated some years previous). However, whilst on site National Grid identified 4%LEL (2000ppm, 0.2%v/v flammable gas) within electricity riser cupboards which are located on the exterior walls of the Trinity Park units. National Grid advised that there was potential for gas to enter the Trinity Park units via the open electricity ducts and recommended venting of the ducts (via the installation of metal grates at ground level). It is recommended that this venting of electricity service ducts be checked with the utility service provider as appropriate prior to implementation. However, if the statutory provider is in agreement of the proposed mitigation strategy it would clearly be beneficial. EPG would also recommend that where possible open ducts are sealed to limit the potential for them to act as conduits for gas migration. The doors of the service riser cupboards external to the building should also be ventilated, via the placement of louvers or ventilation grill on the doors. It is understood that a similar arrangement of external electricity riser cupboards is present on the Albion Park units. Consistent with Trinity Park it would be prudent to ventilate the doors of these riser cupboards with louvers or ventilation grills.

Stage 2:

Mitigation measures need to be put in place to deal with the properties where evidence of landfill gas ingress has been identified. Consistent with Section 8.5.2 these may be summarised as follows (and are listed in order to priority):

- Bernand XH, Units 1-3 Trinity Park;
- Dan Page and Viking Hardware, 39-41 Midland Road;
- H&L Engineering, 31-33 Midland Road;
- PD Logistics, 21 Midland Road;
- NLC Depot, 53-55 Midland Road;
- Product Design, Unit 5 Trinity Park;
- Scunthorpe Boxing Club, Unit 16 Albion Park;
- Body Torque, Unit 7 Trinity Park;
- Scunthorpe Computers, Unit 12 Albion Park; and
- Compart 2011, Unit 10/11 Albion Park.

Note: It is possible that the internal space monitoring events proposed in August and October 2013 will identify further properties to require adoption of mitigation measures, notably: Global Motorcycles (Unit 4 Trinity Park), Yew Tree Engineering (Unit 6 Trinity Park), Myers Tyres (Unit 8 Trinity Park) and John Espin Signs (Unit 14/15 Albion Park).

The mitigation measures adopted in relation to the above properties must be proportionate with the risks identified and the nature of the site, i.e. it is a busy industrial estate with tenants occupying all units.

It is clear that although gas is entering these buildings it is not building up to unacceptable concentrations within the occupied spaces at this time as it is rapidly diluted only a few centimetres from the source of ingress. Given the use of the buildings it is considered that retro fitting full gas protection is not warranted (e.g. retro fitting sub slab or in ground venting or gas membranes). The most cost effective approach to prevent gas ingress in the future would be to seal the points of ingress which have been identified.

Where ingress is via service pipes these can be sealed with a combination of expanding polyurethane foam and mastic sealant. For cracks in concrete slabs the cracks should be ground out to 25mm depth and 10mm width with vertical sides and infilled with a suitable flexible sealant such as a flexible epoxy or a polyurethane sealant.

A management plan should be agreed with each building owner/occupier to put in place procedures for an annual inspection to make sure the sealant remains effective and that the buildings remain well ventilated.

Once the floor slabs / joints / penetrations are sealed internal monitoring with the FID should be undertaken to conform that gas ingress has stopped. Internal space monitoring events are currently proposed for August and October 2013. These visits should include all properties located within the red defined boundary presented in Plate 8, thus targeting areas of the site where intrusive works have indicated post 1960's waste are likely to be present and evidence of gas ingress has been noted to date.

Going forward a management plan should be implemented which sets out a process of annual inspection and internal FID monitoring for all properties located within the redline boundary depicted in Plate 8. This boundary represents properties which are primarily located on the post-1960's waste and/or buildings where evidence of landfill gas ingress has been observed to date.

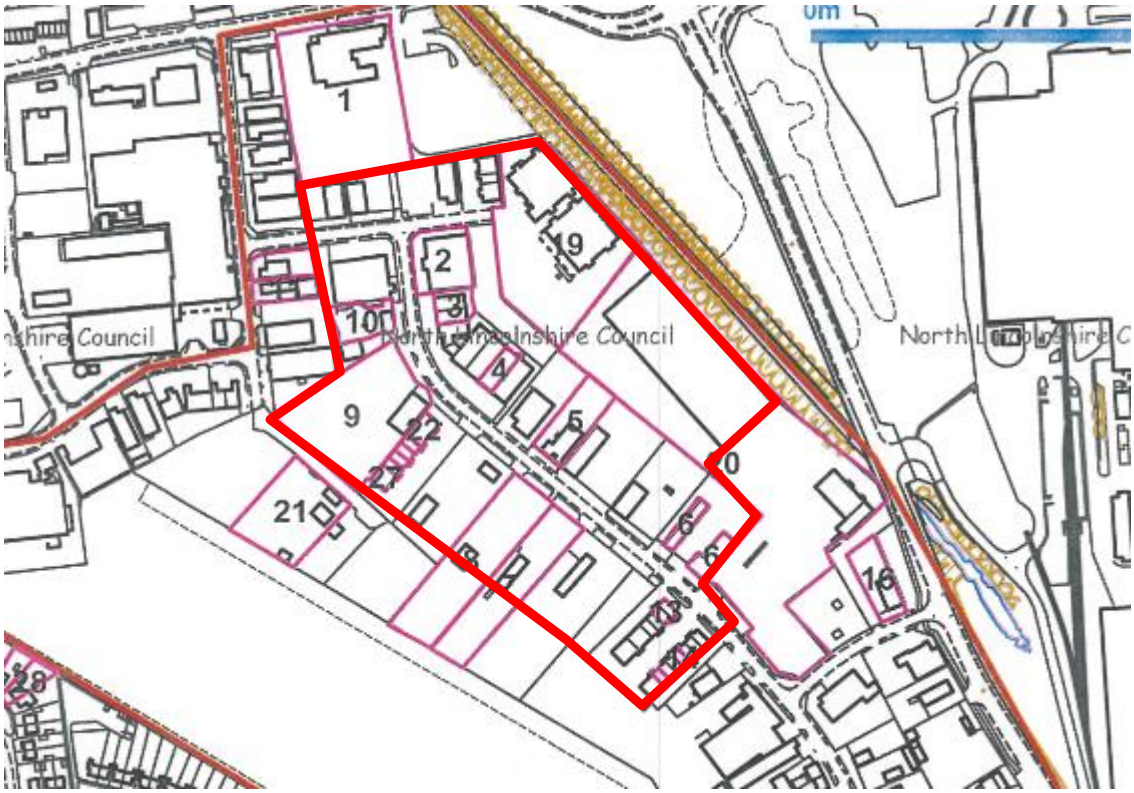


Plate 8. Buildings to be Incorporated within Future Internal Space Monitoring Events

9. CONCLUSIONS & RECOMENDATIONS

The works completed at Midland Road, Scunthorpe were undertaken in order to assess if Significant Possibility of Significant Harm (SPOSH) existed with respect to two potentially significant pollutant linkages:

- Potential gas/vapour risks (associated with the landfill waste deposits) to both on-site buildings/occupants and off-site dwellings/residents via lateral/vertical migration/ingress; and
- Potential human health risks associated with direct contact pathways via exposure to near surface capping soils within the Public Open Space.

The intrusive works implemented have provided various lines of evidence to permit robust and scientific assessment of these potentially significant pollutant linkages, whilst working within the budgetary constraints of the Contaminated Land Capital Grant Funding (2012/2013 budget) as obtained by NLC from the EA and DEFRA.

In summary, six specific categorisations have been adopted for the assessment of the potentially significant pollutant linkages, which are summarised in Table 32. Risks associated with the localised occurrence of asbestos within the near surface capping soils are being addressed separately and will be reported independently.

Table 32. Summary of SPOSH Assessment

Potentially Significant Pollutant Linkage	Categorisation In Accordance with Contaminated Land Statutory Guidance	SPOSH Proven with Respect to Part 2A of the EPA 1990	Action Required
Permanent gas risks to occupants of residential dwellings located on Lilac Avenue and Warwick Road.	Category 4 : Human Health	No	As a purely precautionary measure it is recommended that the vent trench is maintained, with vegetation currently present (e.g. grass cover) removed.
Permanent gas risks to workers within industrial units located on pre-1960's waste.	Category 4 : Human Health	No	None
Permanent gas risks to workers within industrial units located on post-1960's waste.	Category 1 : Human Health	Yes	See Stage 1 Mitigation Requirements (as outlined in Section 8.5.3) specifically in relation to points of landfill gas ingress via utility services in Bernand XH (Units 1-3 Trinity Park) and Dan Page & Viking Hardware (39-41 Midland Road). Stage 2 Mitigation Requirements as outlined in Section 8.5.3. Specifically these relate to: • Bernand XH, Units 1-3 Trinity Park; • Dan Page and Viking Hardware, 39-41 Midland Road; • PD Logistics, 21 Midland Road; • NLC Depot, 53-55 Midland Road; • Product Design, Unit 5 Trinity Park; and • Body Torque, Unit 7 Trinity Park. *See Table 32, Note 1.*
	Category 2 : Human Health	Yes	See Stage 2 Mitigation Requirements as outlined in Section 8.5.3. • H&L Engineering, 31-33 Midland Road; • Scunthorpe Boxing Club, Unit 16 Albion Park; • Scunthorpe Computers, Unit 12 Albion Park; and • Compart 2011, Unit 10/11 Albion Park. *See Table 32, Note 1.*
	Category 3 : Human Health	No	A Management Plan should be put in place to deal with the annual inspection and monitoring of all properties located within the redline boundary defined in Plate 8 (see Section 8.5.3).
Direct contact pathways associated with near surface capping soils on Public Open Space – General contaminants as listed in Table 5, excluding asbestos (see below).	Category 4 : Human Health	No	None
Direct contact pathways associated with near surface capping soils on Public Open Space – Asbestos.	This aspect of works is being assessed separately by a Specialist Consultant and will be reported independently.		
Note 1. Additional internal space monitoring visits are proposed for August and October 2013. It is possible that these visits will identify additional premises which show evidence of landfill gas ingress requiring mitigation.			

The Stage 1 mitigation measures relate to the sealing of utility services in two specific locations where evidence of preferential gas migration has been observed.

The Stage 2 mitigation measures relate to the more generalised sealing of locations where ingress of landfill gas has been noted, primarily along joints / cracks within the floor slab construction.

It is considered that these measures can be put in place with minimal disturbance to tenants and at minimal cost via:

- The sealing of all utility services;
- The grinding out of all cracks within the floor slab construction to 25mm depth and 10mm wide with vertical sides and infilling with a suitable flexible sealant (e.g. a flexible epoxy or a polyurethane sealant); and
- Once the floor slabs are sealed internal monitoring with a FID to conform that gas ingress has stopped.

Going forward a Management Plan should be implemented which outlines a regime of annual inspection and monitoring of all buildings located within the redline boundary defined in Plate 8 of Section 8.5.3. This is to make sure the sealant remains effective in Category 1 / 2 buildings and to identify if any further buildings are showing evidence of landfill gas ingress (i.e. those buildings currently assessed as Category 3).

Figures

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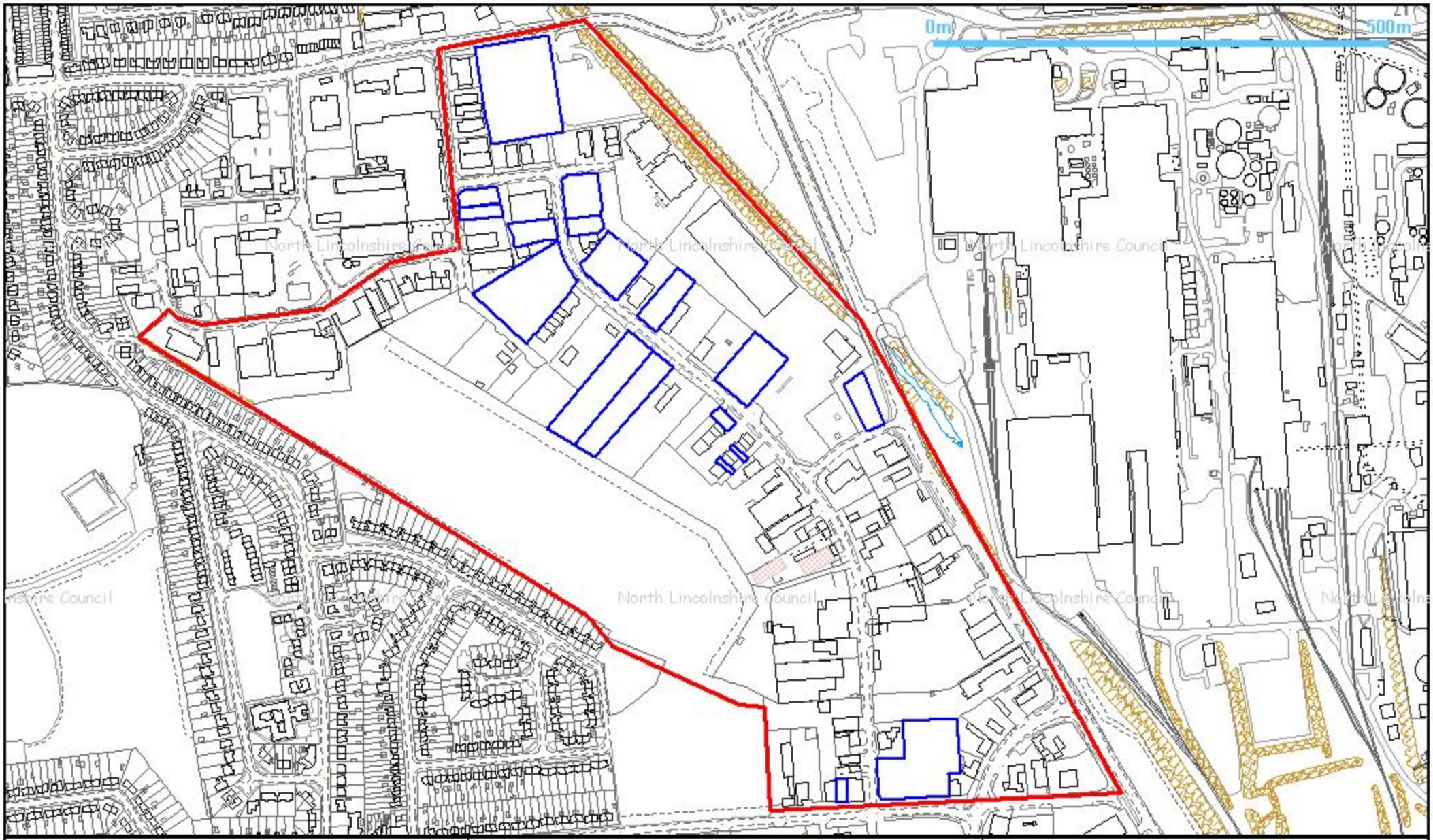

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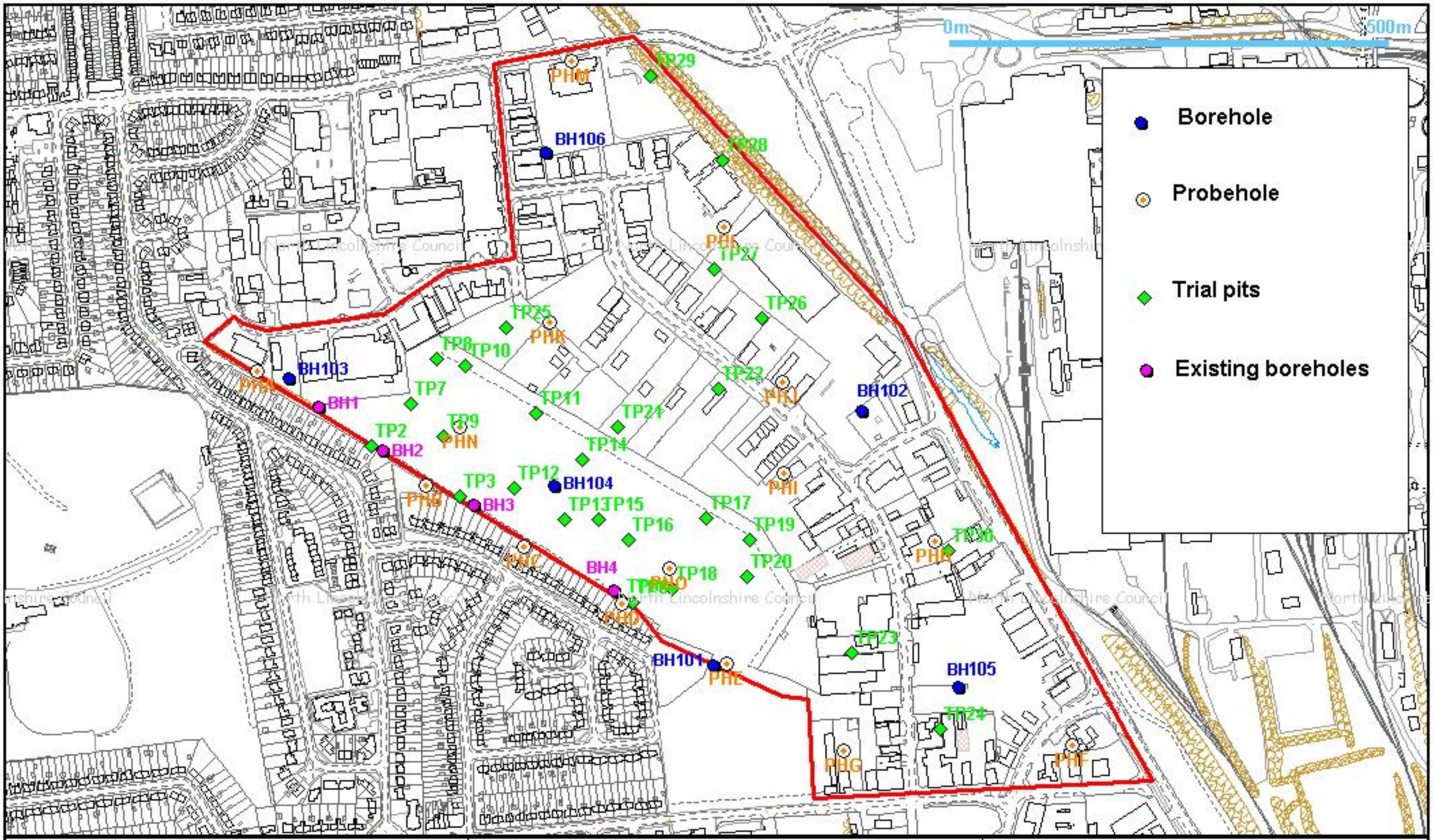

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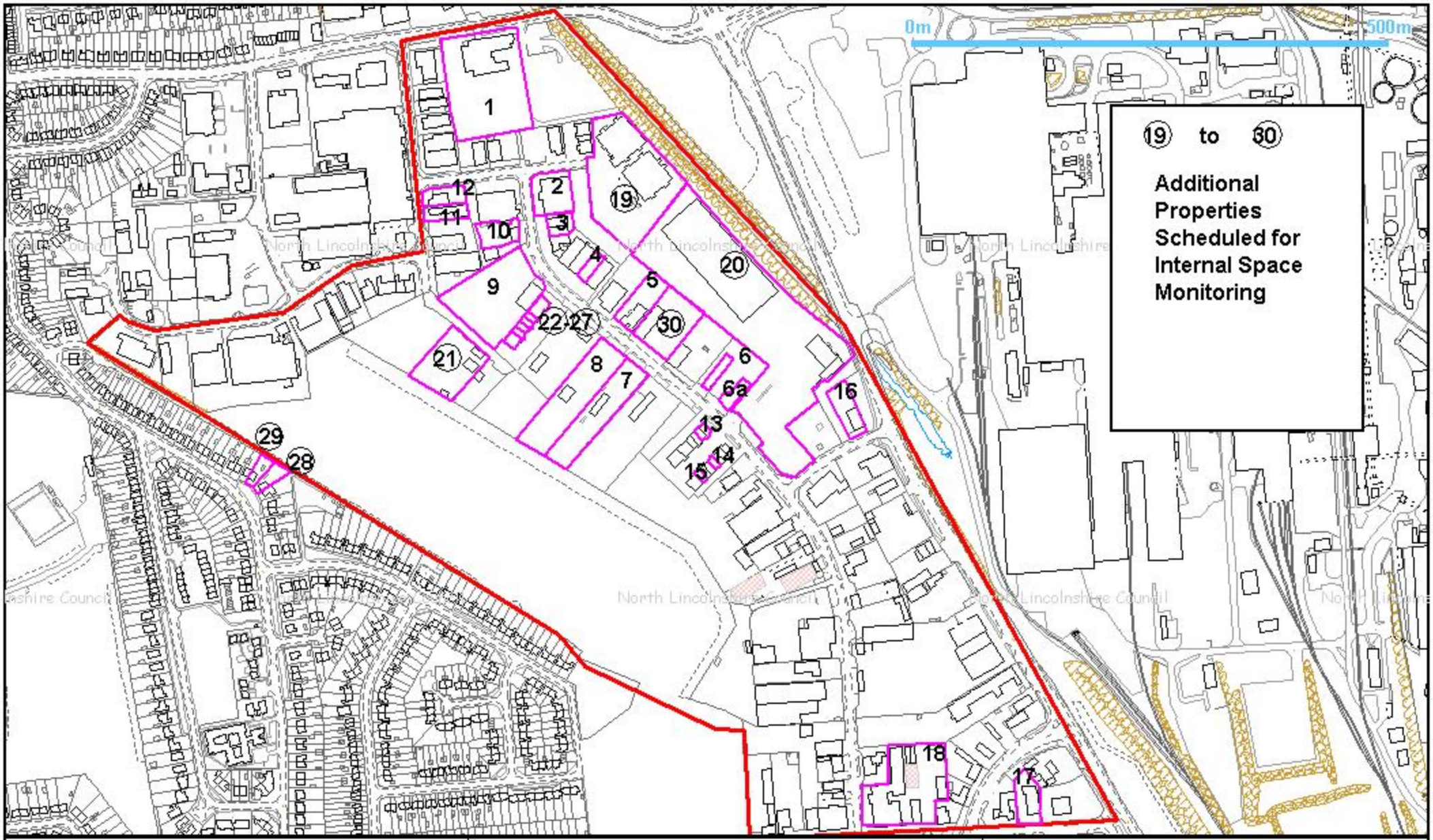

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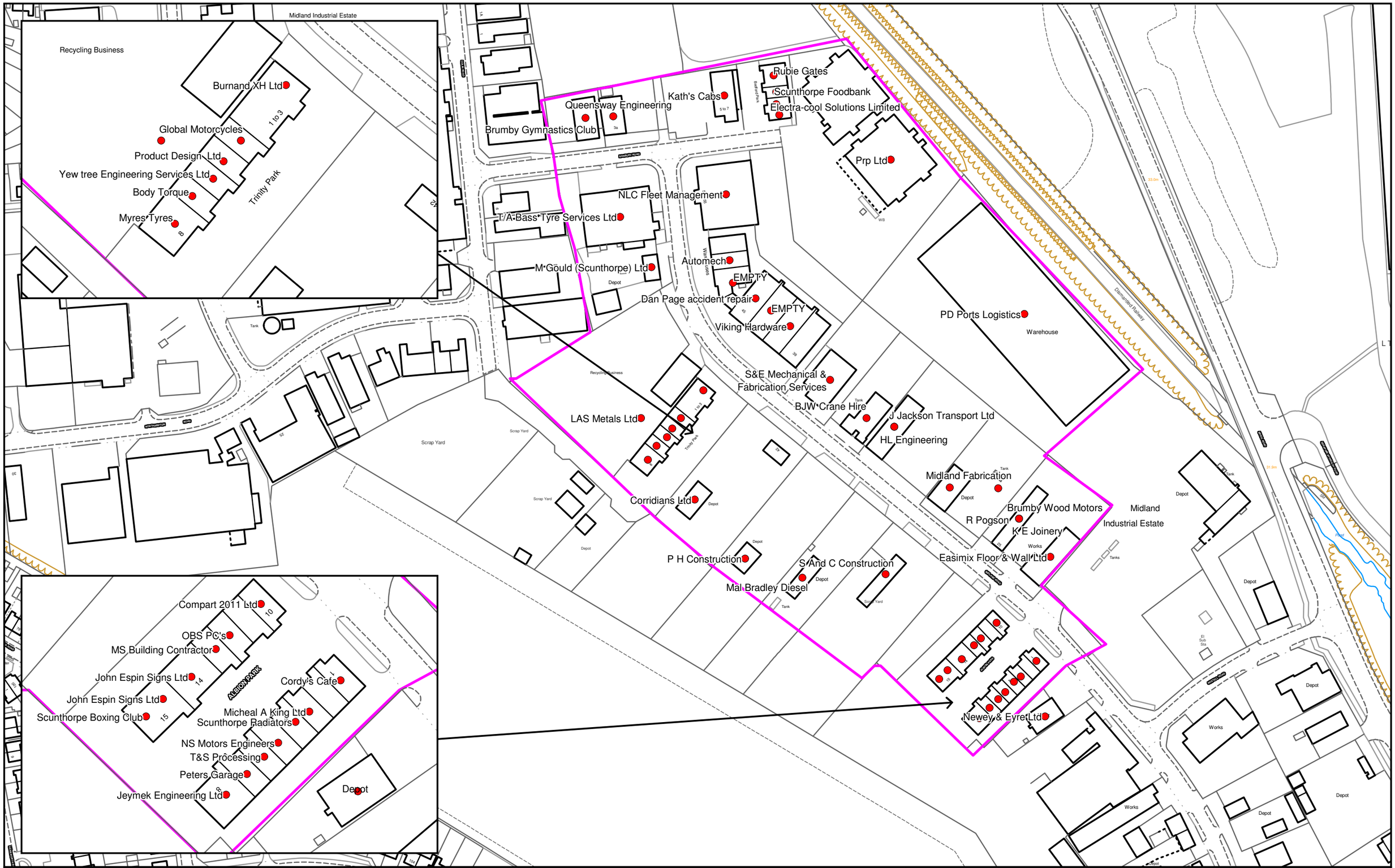

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NLC Appendix

Supplied Information

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Site number	180
Site name	Cottage Beck Road (Midland Road)
Reference Number	55/17/0018
Site Type	17
Number	18
Status	Closed (Humberside County Council)
OS Map number	112
Grid Reference	SE906103
District Council	Scunthorpe Borough
Enforcement Area	South
Geology	Sand overlying Frodingham ironstone and mudstone – The floor of the pit probably consists of Scunthorpe mudstones.
Geological Bore Logs	None
Landfill Gas Information	Yes
Waste Permitted By	Not Licensed
Other wastes taken at source	A) Pulverised refuse (Planning permission dated 14/8/1962) Appendix 4.9.C B) Scrap metal (collection skip on site) C) Excavation and construction waste D) Building waste (untreated domestic waste)
Depth of quarry	6m
Area	22.4 Acres
Total Volume	433,000m^3
Original site use	Sand Quarry
Year of Filling	1961
Site Closed	1978
Site Restored	1978/79

No	Source	Pathway	Receptor	Likelihood	Consequence	Risk/Justification
1	Landfill Waste	Cracks/penetrations in floor slabs, resulting in ingress and accumulation of gas	Occupants of commercial/industrial premises	High	High	HIGH Occupants have reported odour nuisance and headaches. Internal space monitoring has identified locally elevated concentrations of volatiles gases. This is anecdotal information and has not been substantiated via robust data collection. Further the validity of the monitoring data is unclear notably as it was most likely collected using un-calibrated monitoring equipment by untrained personnel.
2	Landfill Waste	Accumulation in service pits	Occupants of commercial/industrial premises	High	High	HIGH On-site monitoring has identified locally elevated concentrations of volatile gases in service pits. The validity of the monitoring data is unclear, notably as it was most likely collected using un-calibrated monitoring equipment by untrained personnel.
3	Landfill waste	Lateral migration via diffusion flow in drift deposits	Occupants of residential dwellings off site	Low	High	MEDIUM The potential for high methane concentrations has been noted within the landfill where monitoring has recorded up to 70% methane. The effectiveness of the vent trench installed along the western boundary of the site is not known although the possibility of it being completely ineffective is low.
4	Landfill waste	Lateral migration via pressure driven flow in bedrock	Occupants of residential dwellings	Low	High	MEDIUM The intrusive works completed to date have not assessed the potential for pressure driven preferential migration via rock strata.
5	Landfill waste	Lateral migration via preferential pathways- notably utility infrastructure	Off site residents/site users	Low	High	MEDIUM The investigation completed to date has not assessed the potential for preferential migration via utility services

Properties Thought to Have Gas Protection Measures

	Address		
1	North Lincolnshire Council Cottage Beck Road Depot Cottage Beck Road Scunthorpe DN16 1TS	Fixed Gas Detection System	Verified
2	Unit 1 Albion Park Midland Road Scunthorpe DN16 1DJ	Membrane	Not verified
3	Unit 2 Albion Park Midland Road Scunthorpe DN16 1DJ	Membrane	Not verified
4	Unit 3 Albion Park Midland Road Scunthorpe DN16 1DJ	Membrane	Not verified
5	Unit 4 Albion Park Midland Road Scunthorpe DN16 1DJ	Membrane	Not verified
6	Unit 5 Albion Park Midland Road Scunthorpe DN16 1DJ	Membrane	Not verified
7	Unit 6 Albion Park Midland Road Scunthorpe DN16 1DJ	Membrane	Not verified
8	Unit 7 Albion Park Midland Road Scunthorpe DN16 1DJ	Membrane	Not verified
9	Unit 8 Albion Park Midland Road Scunthorpe DN16 1DJ	Membrane	Not verified
10	Unit 10 Albion Park Midland Road Scunthorpe DN16 1DJ	Membrane	Not verified
11	Unit 11 Albion Park Midland Road Scunthorpe DN16 1DJ	Membrane	Not verified
12	Unit 12 Albion Park Midland Road Scunthorpe DN16 1DJ	Membrane	Not verified
13	Unit 12A Albion Park Midland Road Scunthorpe DN16 1DJ	Membrane	Not verified
14	Unit 14 Albion Park Midland Road Scunthorpe DN16 1DJ	Membrane	Not verified
15	Unit 15 Albion Park Midland Road Scunthorpe DN16 1DJ	Membrane	Not verified
16	Unit 16 Albion Park Midland Road Scunthorpe DN16 1DJ	Membrane	Not verified
17	Fender Steel 20 (Plots S18-24) Midland Road Scunthorpe DN16 1DQ	Membrane	Not verified
18	LAS Plot 44 Midland Road	Membrane	Not verified
19	D Beacroft Joinery Plot 7 Colin Road Scunthorpe DN16 1TT	Membrane to extension only.	Not verified

Sampling Strategy For Detailed Inspection of Midland Road Landfill

1. Introduction

The sampling strategy has been designed to:

- target and assess critical areas of the site, identified in the Preliminary Risk Assessment (PRA) produced by North Lincolnshire Council (May 2012) and
- fit the budget provided to NLC via Defra Capital Grant Funding.

It should be noted that the council received approximately one third of the budget originally applied for, and therefore the site investigation has been designed to maximise the data obtained from the budget that is available, with a view to meeting the aims and objectives outlined below.

2. Aims and Objectives

The aim of detailed inspection is:

- To provide scientific and technical evidence for “the site” which will allow a subsequent robust assessment of all individual contaminant linkages with respect to the presence of Significant Harm (SH) and the Significant Possibility of Significant Harm (SPOSH) as defined by the Environmental Protection Act 1990 Part 2A.

The objectives of detailed inspection are:

- To provide site specific data that will enable the conceptual site model and site characteristics to be tested and reviewed in order that the risk assessment can be updated
- To obtain further information about “the site” in terms of contaminants, likely pathways and areas of unacceptable risks.
- To obtain further information about “the site” in terms of geology, geochemistry, and hydrogeology.
- To provide site specific data that will inform a preliminary options appraisal to mitigate risks associated with Category 1, 2 or 3 individual contaminant linkage(s).

3. Contaminant Linkages and Proposed Method of Assessment

The contaminant linkages identified by the PRA and the proposed method of site investigation/assessment are presented in Table 1 below.

Table 1 Contaminant Linkages and Proposed Methods of Assessment

	Pathway	Receptor	Risk	Methods of Assessment
1	Gas migration and accumulation into buildings through cracks and penetrations in floor slabs	On site commercial industrial units	High	Indoor Air Monitoring/Building Surveys
2	Gas migration and accumulation into service pits	On site commercial industrial units	High	Indoor air monitoring/Building Surveys
3	Lateral migration via diffusion flow in drift deposits	Adjacent residential dwellings and commercial/industrial units	Medium	Probehole Boreholes
4	Lateral migration via pressure driven flow in bedrock	Adjacent residential dwellings and commercial/industrial units	Medium	Cable percussive/rotary core boreholes
5	Lateral migration via preferential pathways (utility services)	Adjacent residential dwellings and commercial/industrial units	Medium	Assessment of service locations
6	Direct contact with surface soils	Users of the Public Open Space (POS)	Medium	Shallow surface sampling in POS

4. Uncertainties

The Preliminary Risk Assessment identified unacceptable uncertainty in the ground gas data collected to date and further information is required to enable a robust assessment of the gas contaminant linkages to take place. Table 2 below sets out the unacceptable uncertainties and the proposed methods of site investigation/ assessment, which will assist in making an appropriate scientific and technical assessment of risk for the individual gas contaminant linkages.

Table 2 Uncertainties and Proposed Methods of Investigation

Number	**Uncertainty**	**Proposed method of investigation**
1	The current state of decomposition of the waste	Trial pit excavations in waste deposits carefully logged to BS EN 14688-1
2	The future potential to generate gas	Trial pit excavations in waste deposits carefully logged to BS EN 14688-1, Quantitative assessment of the main waste proportions and laboratory sampling of key gas indicator compounds such as Total Organic Carbon and pH.
3	Detailed geology of the area including groundwater levels and permeability of strata	Detailed logging of rotary core boreholes to confirm geology and physical composition via wire line drilling/down hole CCTV surveys etc. Careful logging of groundwater strikes.
4	Depth/extent of vent trench	Geophysical Investigation
5	Conditions of floor slabs and precise dimensions and internal layout of the buildings	Building Survey

5. Number and Period of Gas Monitoring

The monitoring period will aim to monitor low-pressure weather systems experienced in the UK during the late autumn/winter months. The PRA identified that the highest risks were posed to on site development by the younger waste deposits (medium to very high risk) and that the level of risk was dependent upon

1. the nature of the fill;
2. the moisture content of the fill and
3. the condition of overlying floor slabs of properties on the industrial estate.

The risks for lateral migration off site to residential properties was identified as a medium to very high risk, depending upon

4. the effectiveness of the vent trench.

Therefore increased temporal resolution will be obtained by monitoring for bulk gases on 12 occasions at regular intervals over a 3 month period when low and falling pressures can be expected. All installed boreholes and probeholes (21 no') will be monitored during every monitoring visit over the three month period.

The monitoring wells are targeted to assess critical areas of the site identified in the PRA, however taking into account the size of the site the approximate borehole spacing is in the order of 150m.

The bulk gas monitoring events will aim to target low or falling atmospheric pressure and measure atmospheric pressures, flow rates, methane concentrations, carbon dioxide concentrations, oxygen concentrations, hydrogen sulphide concentrations, measures of Lower Explosive Limit, and monitoring via a Photo Ionisation Detector.

6. Deep Site Investigation Works Via Cable Percussive/ Rotary Core Boreholes

A deep gas investigation will take place via 6 cable percussive/rotary core boreholes to:

1. identify gas migration out of the landfill;
2. provide ground gas background concentrations in bedrock geology underlying the landfill site;
3. identify ground conditions with respect to bedrock geology (including detailed logging to record physical composition, strata dip, strike, fracture and weathering) and
4. identify hydrogeology (to include careful recording of groundwater strikes) underlying the site.

Details of the borehole locations and the rationale for their indicative position are set out in Table 3 below.

Gas monitoring standpipes will be installed in the Frodingham Ironstone Formation/Scunthorpe Mudstone Formation. The response zone will aim to reflect gas conditions with respect to bedrock geology in order to obtain background concentrations; however, this will need to be confirmed by the Site Investigation Supervisor subject to the site-specific ground conditions encountered.

Sufficient core recovery will be obtained to allow detailed logging of the underlying bedrock geology, and to confirm its physical composition, dip, strike and fracture spacing.

Table 3 Deep Boreholes (Combined Cable Percussive/Rotary Core)

Hole Number	**Depth/standpipe installation**	**Rationale**	**Comment**
Borehole 101	10m (min 3m into bedrock) Standpipe installation in bedrock	To identify gas migration outside of landfill	No landfill deposits anticipated.
Borehole 102	10m (min 3m into bedrock) Standpipe installation in bedrock	Located in older waste deposits to the East (pre-1960's) Enhances site coverage and informs ground model with respect to bedrock ground	Likely to encounter waste deposits (depth of which unknown circa max 6m)
Borehole 103	10m (min 3m into bedrock) Standpipe installation in bedrock	To provide an indication of, off-site gas migration to residential properties to the west of the site via bedrock geology	Near (or on?) blown sand drift deposits. Not likely to encounter waste deposits.
Borehole 104	10m (min 3m into bedrock) Standpipe installation in bedrock	To provide background ground gas concentrations in bedrock geology underlying the landfill. Informs bedrock ground conditions.	Likely to encounter waste deposits (depth of which unknown circa 6m)
Borehole 105	10m (min 3m into bedrock) Standpipe installation in bedrock	Located in older landfill deposits to the south (pre-1960's) Enhances site coverage and informs ground model with respect to bedrock ground	Likely to encounter waste deposits (depth of which unknown, circa 6m)
Borehole 106	10m (min 3m into bedrock) Standpipe installation in bedrock	Located in older landfill deposits to the north. Reflects complaints arising from council Cottage Beck Road Depot and informs ground model with respect to bedrock ground conditions.	Likely to encounter waste deposits.

7. Shallow Site Investigation Works Via Probehole Boreholes

A shallow gas investigation will take place via the drilling of 15 probehole boreholes in order to assess the shallow gas and groundwater regime beneath the site and

surrounding area, which could impact upon surface development on site and adjacent residential housing to the west. Table 4 below sets out the probehole borehole locations and the rationale for their indicative position which is identified in Figure 2.

Table 4 Probehole Boreholes

Hole Number	Depth/standpipe installation	Rationale	Comment
PHA	5m to be extended as deep as possible subject to ground conditions. Standpipe installation in Made Ground/drift deposits above bedrock.	To assess near surface migration towards residential dwellings to the west. Targeting possible Blown Sand if present?	Unlikely to encounter waste deposits, may not intercept Blown Sand Deposits. Response zone to primarily target Blown Sand if present.
PHB	5m to be extended as deep as possible subject to ground conditions. Standpipe installation in Made Ground/drift deposits above bedrock.	Located on the far side (west) of the vent trench away from landfill materials to assess near surface migration to residential dwellings and efficiency of the vent trench.	Unlikely to encounter waste deposits. Likely to encounter Blown Sand Deposits. Response zone to primarily target Blown Sand if present.
PHC	5m to be extended as deep as possible subject to ground conditions. Standpipe installation in Made Ground/drift deposits above bedrock.	Located on the far side (west) of the vent trench away from landfill materials to assess near surface migration to residential dwellings and efficiency of the vent trench.	Unlikely to encounter waste deposits. Likely to encounter Blown Sand Deposits. Response zone to primarily target Blown Sand if present.
PHD	5m to be extended as deep as possible subject to ground conditions. Standpipe installation in Made Ground/drift deposits above bedrock.	Located on the far side (west) of the vent trench away from landfill materials to assess near surface migration to residential dwellings and efficiency of the vent trench.	Unlikely to encounter waste deposits. Likely to encounter Blown Sand Deposits. Response zone to primarily target Blown Sand if present.
PHE	5m to be extended as deep as possible subject to ground conditions. Standpipe installation in Made Ground/drift deposits above bedrock.	To identify shallow gas migration towards residential properties to the west.	Unlikely to encounter waste deposits. Likely to encounter Blown Sand Deposits. Response zone to primarily target Blown Sand if present.
Hole Number	**Depth/standpipe installation**	**Rationale**	**Comment**
PHF	5m to be extended as deep as possible subject to ground conditions. Standpipe installation in landfill waste	To provide an indication of gas concentrations beneath industrial buildings on older waste deposits pre-1960	Likely to encounter waste deposits. Response zone to primarily target landfill waste material.
PHG	5m to be extended as deep	To provide an indication	Likely to encounter waste

	as possible subject to ground conditions. Standpipe installation in landfill waste	of gas concentrations beneath industrial buildings on older waste deposits pre-1960	deposits. Response zone to primarily target landfill waste material.
PHH	5m to be extended as deep as possible subject to ground conditions. Standpipe installation in landfill waste	To provide an indication of gas concentrations beneath industrial buildings on older waste deposits pre-1960	Likely to encounter waste deposits. Response zone to primarily target landfill waste material.
PHI	5m to be extended as deep as possible subject to ground conditions. Standpipe installation in landfill waste	To provide an indication of gas concentrations beneath industrial buildings on older waste deposits pre-1960	Likely to encounter waste deposits. Response zone to primarily target landfill waste material.
PHJ	5m to be extended as deep as possible subject to ground conditions. Standpipe installation in landfill waste	To provide an indication of gas concentrations beneath industrial buildings on older waste deposits pre-1960	Likely to encounter waste deposits. Response zone to primarily target landfill waste material.
PHK	5m to be extended as deep as possible subject to ground conditions. Standpipe installation in landfill waste	To provide an indication of gas concentrations beneath industrial buildings on older waste deposits post-1960	Likely to encounter waste deposits. Response zone to primarily target landfill waste material.
PHL	5m to be extended as deep as possible subject to ground conditions. Standpipe installation in landfill waste	To provide an indication of gas concentrations beneath industrial buildings on older waste deposits post-1960	Likely to encounter waste deposits. Response zone to primarily target landfill waste material.
PHM	5m to be extended as deep as possible subject to ground conditions. Standpipe installation in landfill waste	To reflect complaints made in Cottage Beck Road Depot and provide an indication of gas concentrations beneath industrial buildings on older waste deposits post-1960	Likely to encounter waste deposits. Response zone to primarily target landfill waste material.
PHN	5m to be extended as deep as possible subject to ground conditions. Standpipe installation in landfill waste	To provide an indication of the gas concentrations in the newer waste deposits post-1960	Likely to encounter waste deposits. Response zone to primarily target landfill waste material..
PHO	5m to be extended as deep as possible subject to ground conditions. Standpipe installation in landfill waste	To provide an indication of the gas concentrations in the newer waste deposits post-1960	Likely to encounter waste deposits. Response zone to primarily target landfill waste material.

8. Trial Pit Site Investigation

Twenty four trial pits are proposed to target the public open space area where there are newer waste deposits, and areas of the industrial estate which are located on the older waste deposits. Indicative locations for the trial pits are indicated on figure 2 which is presented in Appendix 4 of the Request for Quotation document and the

rationale is as set out in table 5 below. The trial pitting will assess the current state of decomposition of the waste and the sites future potential to generate gas via careful descriptions of the waste and sampling for key gas indicator compounds.

Table 5 Trial Pits

Location	**Depth/standpipe installation**	**Rationale**	**Comment**
Trial Pit Excavations 6-20 (14 number)	4.5m	To target area of public open space and areas of newer waste deposits post 1960 and provide comprehensive descriptions of waste.	Likely to encounter waste deposits. Description of waste to BS EN 14688-1 and visual quantitative assessment of proportion of main waste components.
Trial Pit Excavations 21-30 (10 number)	4.5m	To target strategic and accessible areas of the industrial estate located on older waste deposits post and pre 1960 and provide comprehensive descriptions of waste.	Likely to encounter waste deposits. Description of waste to BS EN 14688-1 and visual quantitative assessment of proportion of main waste components.

9. Site Investigation of the Vent Trench

The exact construction details of the vent trench are not known, though the depth is thought to be in the region of 2.5-3.0m. Its length is in the order of 300m.

In order to determine the precise depth and width of the vent trench a geophysical survey of the trench will take place at 25m intervals along its length, in conjunction with a topographical survey. At this stage, it is anticipated that resistivity surveys will be required perpendicular to the vent trench. However, this will be subject to review and confirmation by the Contractors Geophysics Team.

In order to prove the lateral distance between waste deposits and the vent trench and prove composition of drift material between vent trench and landfill waste 6 trial trenches will take place at 50m intervals along its length as detailed in Table 6 below.

Table 6 Trial Trenches

Location	**Depth/standpipe installation**	**Rationale**	**Comment**
Trial Trench 1-6	2.5m at 50m intervals perpendicular to gas vent trench	To define the extent of the landfill waste in relation to the gas vent trench/site boundary and underlying geology.	Likely to encounter waste deposits and Blown Sand

10. Sampling

10.1 Trial Pit Near Surface Sampling in Public Open Space

In order to provide chemical data to inform the Human Health Generic Quantitative Risk Assessment (GQRA), the near surface soils (10 no') of the public open space will be retrieved from trial pit excavations and tested for a general suite of metals and organics as detailed in testing suite E which can be found in Table 7 below. The depth of sampling proposed is <300mm to reflect the likely presence of contaminants at the soil surface and the receptor exposure via contact with the potentially contaminated ground.

10.2 Trial Pit Minimum Sampling Depths

In accordance with BS 10175 (2011) sampling depths shall reflect the following :

- <300mm (in POS)
- 0.2-0.3 m below ground level (in all areas excluding POS, to exclude tarmac/surface finishes);
- 0.5 m depth intervals in general Made Ground deposits;
- 1.0m depth intervals in landfill waste material;
- 1.0m depth intervals in natural soils (e.g. Blown Sand Drift) and
- Each change in strata type

Additional soil samples should be obtained where there is visual and/or olfactory evidence of contamination.

10.3 Probehole and Cable Percussive/Rotary Core Borehole Sampling Depths

In accordance with BS 10175 (2011) sampling depths will reflect the following :

- Initial soil sampling at 0.5 m below existing ground level;
- 0.5 m depth intervals in general Made Ground deposits;
- 1.0m depth intervals in landfill waste material;
- 1.0m depth intervals in natural soils (e.g. Blown Sand Drift) and
- Each change in strata type

Additional soil samples will be obtained where there is visual and/or olfactory evidence of contamination.

10.4 Gas Canister Sampling

In order to assess the risks posed by bulk and traces gases, one round of sampling will take place via gas canisters from three wells where the highest bulk landfill gases/vapours which have been identified via Photo Ionisation Detector.

10.5 Internal Air Space Monitoring

As part of the Preliminary Risk Assessment it has been identified that a number of industrial buildings (18 no') were subject of complaint regarding odour/settlement and gas bubbling in puddles outside. In order to assess the risks posed to occupants of the building from gas ingress, a walkover survey of each of the 18 buildings is to take place on 6 occasions on a bi-monthly basis, using a Flame Ionisation Detector with combined GC-MS (if available). The monitoring will aim to target higher risk areas such as inspection pits, cupboards, service penetrations etc.

Where any buildings present FID readings >50ppm on two consecutive visits (which cannot be attributed to business related activities) internal fixed space monitoring via diffusion tubes will take place for the top 20 vapour compounds and Total Petroleum Hydrocarbons CWG C4-C12.

11. Dimensions of buildings and internal layouts

In order to provide data to inform the gas risk assessment, the internal layout and dimensions and service entries (water, electricity, gas and sewer) of 10% of commercial premises (15 no') on the industrial estate will be surveyed/located to provide 2D drawings. It is proposed that this survey will focus upon the premises that have been the subject of complaint. This information is to be collated and provided by North Lincolnshire Council.

12. Structural Survey

In order to provide data to inform the gas risk assessment the locations of all cracks in building wall/floor slabs will be located as part of a structural survey of 10% of commercial premises (15 no') on the industrial estate. This information is to be collated and provided by North Lincolnshire Council.

13. Pre-inspection Questionnaire

North Lincolnshire Council carried out a pre-inspection questionnaire in January 2012 as part of the Preliminary Risk Assessment to identify any complaints which have been made which were associated with the landfill. This information has been collated and plotted on Figure 2 included in Appendix 4. This information will be updated and provided to the Consultant by North Lincolnshire Council in order that this contemporaneous information can be taken into account when drawing a conclusion about the level of risk associated with the gas contaminant linkages.

14. Groundwater

Little is known about the groundwater regime of the site. Evidence suggests that the waste deposits are dry in many instances. Groundwater strikes will be carefully noted and groundwater will be monitored from all 6 boreholes and 15 probeholes on 12 occasions over 3 months concurrently with gas monitoring.

Groundwater/leachate samples (10 no') will take place from 6 probeholes and 4 cable percussive/rotary core boreholes to provide good site coverage. The groundwater interface will be assessed for the presence of Light or Dense Non Aqueous Phase Liquids.

15. Chemical Testing Regime

15.1 Surface Sampling on the Public Open Space

Near surface (<300mm) soil samples (10 No.) will be retreived from trial pit excavations targeting the POS and will be tested for a suite of compounds as set out in Test Suite E as detailed in Table 7 below.

15.2 Chemical Analysis of Landfill Waste Soil Samples

Landfill waste soil samples (40 no') will be retrieved from a combination of trial pits and deep/probehole boreholes and tested for key gas indicator compounds as set out in testing suite F as detailed in Table 8 below.

Where visual and/or olfactory evidence is observed such as a “chemical odour” as noted in previous phases of site investigation works, then samples will be submitted for the “Additional Determinands” as set out in testing suite F as detailed in Table 8 below.

15.3 Chemical Analysis of Groundwater/landfill Leachate Samples

One round of groundwater/landfill leachate sampling will take place in 6 of the probehole boreholes and 4 of the deep cable percussive/rotary core boreholes and tested for the suite of determinants identified in testing suite G as set out in Table 9 below.

Where monitoring records indicate a need additional determinands as set out in testing suite G (Table 9) may be required.

15.4 Gas Canister Analysis

Gas canister sampling is to take place from 3 boreholes which identify the highest bulk gas landfill and/or vapours based upon PID readings. The canisters will be analysed for the determinants identified in testing suite H as set out in Table 10 below.

15.5 Internal Air Monitoring Analysis

Diffusion samples are to be collected from properties where FID readings are >50ppm (equivalent of 0.1% LEL methane) on two consecutive monitoring events (which cannot be attributed to business related activities) using testing suite H as set out in Table 10 below.

Table 7 Suite E

Suite E – Soil samples (<300mm, POS)			
Determinand (Procurer to list required determinands)	**Limit of detection ~~required~~/offered[1]**	**Test method ~~required~~/offered[1]**	**Accreditation ~~required~~/offered[1]**
Arsenic			
Cadmium			
Chromium (total)			
Chromium (speciated III & VI)			
Copper			
Lead			
Mercury			
Nickel			
Zinc			
pH			
Total Organic Carbon			
Water soluble sulphate (as SO_4)			
Speciated Total petroleum hydrocarbons (TPH CWG)			
Speciated polyaromatic hydrocarbons (USEPA			

Suite E – Soil samples (<300mm, POS)			
Determinand (Procurer to list required determinands)	**Limit of detection ~~required~~/offered[1]**	**Test method ~~required~~/offered[1]**	**Accreditation ~~required~~/offered[1]**
16) + coronene			
Asbestos Screen			
Asbestos ID (if encountered)			
Additional determinands			
SVOC			
VOC			
VOC+TICs			
SVOC+TICs			
Phenol – total monohydric phenols			
Cyanide – total and free			

Table 8 Suite F

Suite F – Soil samples (Waste deposits)			
Determinand (Procurer to list required determinands)	**Limit of detection ~~required~~/offered[1]**	**Test method ~~required~~/offered[1]**	**Accreditation ~~required~~/offered[1]**
pH			
Total Organic Carbon			
Additional determinands			
VOC+TICs			
SVOC+TICs			
Speciated TPH-CWG			
Speciated PAH (16-EPA)			
Total Organic Carbon			
pH			

Table 9 Suite G

Suite G – Groundwater / Leachate samples			
Determinand (Procurer to list required determinands)	**Limit of detection ~~required~~/offered[1]**	**Test method ~~required~~/offered[1]**	**Accreditation ~~required~~/offered[1]**
pH			
Hardness			
BOD			
COD			
Chlorine			
Ammoniacal Nitrogen			
Iron			
Manganese			
Ortho Phosphate			
Volatile Acids			
Nitrate			
Dissolved Methane			
Dissolved Carbon Dioxide			
Additional determinands			
Speciated TPH			
Speciated PAH			
VOC+TICs			
SVOC+TICs			

Table 10 Suite H

Suite H – Gas (canister) samples			
Determinand (Procurer to list required determinands)	**Limit of detection ~~required/offered~~[1]**	**Test method ~~required/offered~~[1]**	**Accreditation ~~required/offered~~[1]**
Methane			
Carbon dioxide			
Oxygen			
Nitrogen			
Hydrogen Sulphide			
Carbon monoxide			
Top-20 vapour compounds			
Total Petroleum Hydrocarbons CWG C4-C12			

The Preliminary (qualitative) Risk Assessment produced by NLC was undertaken in accordance with CLR 11 (EA 2004).

Hazard Identification

Hazard identification assessment, recognised the following potential hazards:

1. Bulk landfill gases and vapours arising from the decomposition of wastes
2. Chemical contamination in near surface soils
3. Asbestos in near surface soils
4. Radioactivity in waste materials
5. Chemical contamination in soils/sludges and wastes with the potential to impact upon groundwaters and surface waters

Pathway Identification

It recognised that the principal mechanisms for gas migration include diffusion and pressure differential (advection) flow. These mechanisms could allow gas migration into buildings on site via a number of ingress routes, but the main ones are considered to be:

A. Cracks in the ground bearing floor slab (as identified in the structural review of the buildings which noted numerous settlement cracks); and
B. Through gaps around service penetrations which penetrate the floor slab

Off-site gas migration could occur via the following routes:

C. Preferential migration along utility service trenches
D. Migration through drift geology (notably Blown Sand if it is present); and
E. Preferential migration along fractures or bedding in the surrounding. This is considered to be the most likely route.
F. The risk of gas migration will be reduced into buildings over the landfill site where they are provided with gas protection measures, however the site walkover identified a limited number of gas protection measures in place.

Other non-gas pathways are those associated with inhalation, dermal contact and ingestion.

Receptor Identification

Receptors on this site are primarily at risk from ground gas migration and can be broadly divided into two:

a) On site (occupants of commercial/industrial units and maintenance workers in the ground); and
b) Off site (notably of the residential dwellings to the west and immediately adjacent commercial/industrial properties.

Whilst there is a theoretical risk of gas migration to distant off site receptors such as the bowling green/golf club etc., it is considered improbable that circumstances would arise whereby significant harm was likely. Similarly the likelihood of significant harm arising from the outdoor inhalation pathway is low for public open space receptors.

Other receptors on the site are those associated with contaminants in the surface soils and shallow waste deposits (chemical, asbestos and radiation). Receptors associated with these secondary risks can be broadly divided into three:

c) On site (occupants of commercial/industrial units and maintenance workers in the ground); and
d) On site users of the public open space and
e) Controlled waters (controlled waters: underlying secondary aquifer and surface waters)

Risk Estimation and Evaluation

Landfill Gases: Due to unconfirmed anecdotal reports of potential gas migration into buildings and the acute risks associated with landfill gas ingress, the assessment has predicted a number of HIGH risk potentially complete pollutant linkages which are capable of resulting in “significant harm” as defined by EPA 1990 Part 2A. These are:

A. Migration of landfill gas through cracks and service penetrations and accumulation in on site commercial/industrial units
B. Migration and accumulation of landfill gas in service pits located in on site commercial/industrial units

Due to the presence of a vent trench and the lack of an engineered cap that allows vertical migration of ground gases, other landfill gas MEDIUM risks have been predicted which are capable of resulting in “significant harm” these are:

C. Lateral migration via diffusion flow in drift deposits to off site residential and commercial/industrial premises
D. Lateral migration via pressure driven flow in bedrock to off site residential and commercial/industrial premises
E. Lateral migration via preferential pathways (utilities)

Chemical Contamination and Asbestos in Shallow Surface Soils: The majority of the pollutant linkages associated with shallow surface soils on the site are considered to be a MEDIUM risk due to the lack of a proper cap on the landfill site, the poor quality external surfacing on many of the industrial estate sites and the presence of sensitive receptors (children) on the recreation field area. At present there is no evidence in the form of sampling to support the predicted risk estimation and evaluation. The grant provided by Defra allowed funding for limited shallow sampling of the POS only. Once the results of the site investigation have been obtained a decision will be made as to whether the shallow surface soils on the

industrial estate area are likely to present a significant contaminant linkage that warrants further investigation.

Controlled Waters: All contaminant linkages associated with controlled waters are considered to be of a MEDIUM risk due to the lack of an engineered cap, liner and leachate management system, the presence of preferential flow paths on site (old drains) and the low sensitivity of the groundwater (Secondary A aquifer) and adjacent surface waters (poor to bad quality). The Environment Agency Groundwater Team (Midlands Region) was consulted in order to reach this view about the site. There is no evidence in the form of sampling to support the predicted risk estimation and evaluation. Funding was not received to investigate the risks associated with controlled waters, although if the site investigation data gathered demonstrates a potential risk a further assessment will be made in agreement with the Environment Agency.

Radioactivity: All potential contaminant linkages associated with radioactivity were considered LOW risk as historical evidence demonstrated that local radioactive wastes were considered unlikely to be capable of giving rise to an individual effective dose of 3 millisieverts/year above the local natural background levels under any reasonable scenario. Radioactivity is therefore not considered capable of giving rise to “significant harm” as defined under the Environmental Protection Act 1990 Part 2A.

Appendix A

Factual Report Text (Geocore)

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GEOCORE

Site Investigations Ltd.

SITE INVESTIGATION FACTUAL REPORT

CLIENT: North Lincolnshire Council

ADDRESS: Midland Road Industrial Estate, Scunthorpe

OUR REF: RT/12/55272

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1 Introduction

This Investigation was carried out on behalf of the North Lincolnshire Council (NLC) in accordance with the ICE *UK Specification for Ground Investigation*, 2nd edition published by Thomas Telford Limited 2011. Geocore Site Investigations Ltd were appointed by NLC as The Contractor to work in conjunction with the appointed consultants (The Environmental Protection Group Ltd) who would act as Investigation supervisor. The investigation was also carried in general accordance with the recommendations of BS10175: 2011 and A Guide for Safe Working on Contaminated Sites (CIRIA, 1996)'

As a former Landfill, the site has been identified to require detailed inspection to determine if it meets the statutory definition of 'Contaminated Land' as defined by the Environmental Protection Act 1990 Part 2A and the supporting Contaminated Land Statutory Guidance (Department for Environment, Food and Rural Affairs, April 2012). The focus of the investigation was to provide factual information relating to the ground conditions beneath the site including the near surface soil chemical composition and underlying gas regime.

This report details the work carried out both on site and in the environmental and geotechnical laboratories. Information on the nature of the underlying ground conditions at the site is provided on the logs, which are included within this report, together with the laboratory test results.

The investigation was carried out by Mini Rig Percussion Windowless Sampling, Light Cable Percussive Boring and rotary coring techniques including the installation of a gas and groundwater monitoring wells. A of number of machine trial pits were also excavated together with topographic surveying, gas and groundwater monitoring/sampling and internal space gas monitoring.

The information included in this report is based entirely on the ground conditions encountered at the discrete sampling points on site and on the results of laboratory testing on the samples taken. However, conditions may vary elsewhere on the site. It should be noted that groundwater levels may vary due to seasonal and/or other effects, and may at times differ to those measured, at the time of the investigation.

This report was prepared by Geocore Site Investigations Ltd for exclusive use by North Lincolnshire Council. Any other parties using the information do so at their own risk. Any duty of care to those parties is excluded.

2 Site Description

2.1 Location and Topography

The site is located in Scunthorpe, North Lincolnshire at the approximate National Grid Reference 490741 410304. The site is bounded to the north by Cottage Beck Road, to the east by Brigg Road, to the south by East Common Land and to the west by Warwick Road / Lilac Avenue. The location of the site and the site boundary is shown below in Figure 1.

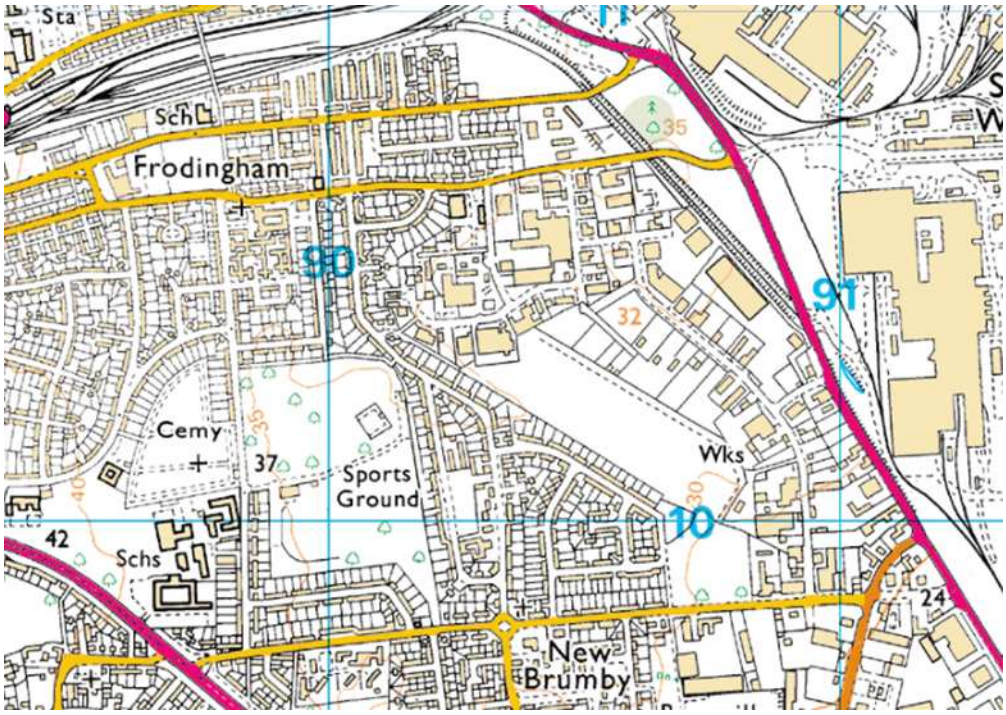


Figure 1 –Site location (North Lincolnshire Council RFQ)

Between 1908 and the early 1950's the site was occupied by an opencast quarry which extracted the underlying Frodingham Ironstone for use in the local steel industry. The site was subsequently utilised as a landfill between the early 1950's and late 1970's before being redeveloped in the early 1980's. Approximately 80% of the former landfill area was developed with light industrial / commercial units. The remaining 20% of the site becoming landscaped Public Open Space (POS).

2.2 Geology

Published geological records of the area from the British Geological Survey, (BGS) indicate that the site is underlain by the Frodingham Ironstone Formation underlain by the Scunthorpe Mudstone Formation. Excavations in the in the formally quarried part of the site generally encountered the

Frodingham Ironstone at depth off approximately 4.0m overlain by landfill waste.

Beyond the boundaries of the former landfill, superficial deposits were limited to silty medium to coarse sands consistent with the 'Blown Sand' drift deposits described in publish BGS records.

3 Fieldwork

3.1 Intrusive investigation.

Six combined Cable Percussive and Rotary deep Boreholes (BH10-BH106) and Fifteen Windowless Sampling Probeholes (PHA-PHO) were excavated between 4th December 2012 to 13th December 2012, at the positions shown on the attached plan (Appendix A). The deep boreholes and Windowless sampling Probeholes were progressed to depths of between 6.4-8.4m and 0.9-3.7m respectively.

Prior to the commencement of drilling, hand trial pits were excavated to a depth of 1.2m with the exception of BH103, PHB, PHC, PHD and PHE where bedrock was encountered at shallower depth. The trial pits were continued at the base by Percussive Windowless, Sampling reducing in diameter from 100mm (OD), or Cable Percussive drilling at a diameter of either 200mm or 150mm (ID).

Cable percussive drilling encountered the bedrock in BH101-BH106 at depths of between 1.2 and 4.3m. Rotary casing was then lowered into hole and sealed to 2m above the bedrock with hydrated bentonite. The boreholes were then continued by rotary coring and terminated at the discretion of the Investigation Supervisor. The core was returned to Geocore Site Investigations Ltd for subsequent detailed Logging and Photographing. (Appendix B & Apenddinx D)

On completion, all deep boreholes and Window Sample Probeholes were installed with gas and groundwater monitoring wells at the Investigation Supervisor’s discretion.

A further twenty-seven machine excavated trial pits were also undertaken between 4th December 2012 to 12th December 2012 (Appendix A). The trial pits were advanced to depths of up to 3.8m depending upon obstructions and the discretion of the Investigation Supervisor. It should also be noted that TP1, TP4 and TP5 were omitted from the works at the discretion of the Investigation Supervisor.

The trial pitting was primarily undertaken to permit sampling of near surface soils for human health assessment (on the POS) and permit detailed observation / logging of the landfill waste material across the entire site. Three of the positions however (namely TP2, TP3 TP6(6A)) were excavated perpendicular to an existing gas vent trench which borders the western boundary of the site. Their purpose was to determine the lateral extent of the waste mass in relation to the vent trench and the composition of any drift material between the two. Details of the data recovered from these excavations are provided in sketch format immediately following each trial pit log (Appendix B).

Environmental samples were sub-sampled form the Cable Percussion boreholes, Probeholes and trail pits on site and returned via courier to Alcontrol Laboratories for subsequent environmental testing. A small number of samples were also returned to the Professional Soils Laboratory (PSL) for geotechnical analysis. All trail pit samples were screened on site with a Photo Ionisation Detector (PID), together with selected samples from the Borehole and Probeholes (chosen on the basis of visual or olfactory signs of contamination). The excavations were logged on site in general accordance with the recommendations of BS EN 14688-1. Detailed descriptions, together with the results of PID testing, are given in the logs included in this report (Appendix B).

On completion of the intrusive works the location and elevation of all exploratory holes were surveyed to National Grid and Ordnance datum. It should also be noted that a topographic survey of the existing vent trench was also undertaken to determine its length/breadth and the extent of any overgrown vegetation. The topographic data is in included electronically in Appendix E.

The Environmental Protection Group Ltd (EPG) determined the scope of the investigation, including the type of drilling equipment and sampling frequency. The general locations of the intrusive excavations were first agreed on site by NLC and Geocore Site Investigations Ltd and finally located on the basis of service drawings and CAT scanning by Straightline Surveys Ltd.

3.2 Gas and groundwater monitoring

On completion of the initial drilling works, ten weekly gas and groundwater monitoring visits were undertaken by Enitial Ltd, commencing on 8th January 2013. The gas monitoring included atmospheric pressures, flow rates, methane concentrations, carbon dioxide concentrations, oxygen concentrations, hydrogen sulphide concentrations, measures of Lower Explosive Limit and

monitoring via a Photo Ionisation Detector. Groundwater levels were also monitored via the use Solinst Interface Dip meter. All monitoring data, including details of the equipment utilised, was reported directly to EPG on a weekly basis and will be incorporated in to the final EPG interpretive report. Calibration certificates for the equipment used on site are included in Appendix F.

3.3 Gas and groundwater sampling.

On the basis data recorded on the first four weekly monitoring visits five monitoring wells (namely PHF, PHI, PHK, PHN and PHO) were selected by EPG for groundwater sampling and analysis. The ground water samples were recovered by Enitial Ltd on 5th of February 2013 using low flow monitoring techniques. Prior to sampling, micro purging of the wells was undertaken until conductivity, pH, temperature, dissolved oxygen and redox potential had stabilised. All data pertaining to the Low Flow Sampling event was reported directly to EPG.

A further three wells were also selected by EPG for gas sampling and analysis. Gas samples were taken from PHN, PHK and PHL by Enitial Ltd 12th February 2013 utilising the Jones Environmental gas canister method.

3.4 Internal Space Gas Monitoring.

As part of the PRA 18 buildings were identified on the industrial estate where complaints had been made regarding issues potentially associated with the landfill underlying the These complaints primarily included odour, settlement and gas bubbling on puddles outside. In order to assess potential risks, six bi-monthly walkover surveys of the buildings will be completed using a calibrated Flame Ionisation Detector with combined GC-MS Enitial Ltd. During the monitoring process further areas of interest were identified by EPG on the basis of gas levels encountered in the standpipes and elevaed readings encocounted in some of the buildings. All monitoring data reported directly to EPG and will be incorporated in to the final EPG interpretive report. Calibration certificates for the equipment used on site are included in Appendix F.

4 LABORATORY TESTING

4.1 Soils Testing Environmental

Environmental soil samples were returned via courier to Alcontrol Laboratories (UKAS 1291) for laboratory testing. The analysis was scheduled directly by the Investigation supervisor and included CLEA Metals, pH, TOC, Water Soluble Sulphate, Speciated TPH-CWG, Speciated PAH (USEPA16

plus Coronene), Asbestos ID and Quantification. Additional determinands also included VOC+TICS, SVOC+TICS. The results of this analysis were sent directly to EPG and are included electronically in Appendix C.

4.1 Soils Testing Getechnical

Three samples for potential geotechnical testing were returned to PSL Laboratories in Doncaster (UKAS 4043). Particle size distribution tests were undertaken by sieving in accordance with BS1377: Part 2: 1990. The results of this analysis were sent directly to EPG and are included electronically in Appendix C.

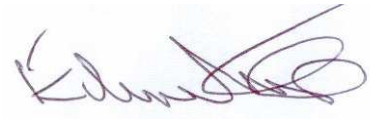
4.3 Gas and Ground Water Testing

Groundwater samples, recovered from selected installations were retuned by courier to Alcontrol Laboratories (UKAS 1291) and tested for determinands of pH, Hardness, BOD, COD, Chlorine, Ammoniacal Nitrogen, Iron, Manganese, Ortho Phosphate, Volatile Acids, Nitrate, Dissolved Methane, Dissolved Carbon Dioxide, CLEA Metals and TOC. The results of this analysis were sent directly to EPG and are included electronically in Appendix C.

Gas Samples, recovered from the selected installations were returned to Jones Environmental (UKAS 4225) and tested for determinands of Methane, Carbon dioxide, Oxygen, Nitrogen, Carbon monoxide, Top-20 vapour compounds and Total Petroleum Hydrocarbons CWG C4-C12. The results of this analysis were sent directly to EPG and are included electronically in Appendix C.

All gas and groundwater analysis was scheduled as per EPG specifications

We trust you find the results of this report satisfactory and we will be pleased to provide any further assistance you may require with this matter.



Edward Lodge BSc (Hons)
(Geotechnical Coordinator)

Appendix B

Trial Pit Exploratory Hole Log Sheets

 © EPG LTD

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP02**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	11-12-12	35.78	E 490,326.0 N 410,251.4	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
0.20	ES1	PID 0.0ppm		35.38		(0.40) 0.40	MADE GROUND. Brown very clayey medium sand.	
				34.78		(0.60) 1.00	MADE GROUND. Dark grey very clayey medium sand with many cobbles. Gravel is of angular fine to coarse brick and concrete. Cobbles are angular brick.	
				34.28		(0.50) 1.50	MADE GROUND. Brown very silty gravelly medium sand with some orange brown silty sand inclusions and occasional cobbles. Gravel is of angular fine to coarse quartz, sandstone, brick and mortar. Cobbles are angular brick. (Many tree roots noted).	
2.00	ES2	PID 2.3ppm		33.58		(0.70) 2.20	LANDFILL DEPOSITS (50% WASTE 50% MATRIX). MADE GROUND. Brown very silty gravelly medium sand with some orange brown silty sand inclusions and occasional cobbles. Gravel is of angular fine to coarse quartz, sandstone, brick and mortar. Cobbles are angular brick. (Many tree roots noted). No dominant waste fraction. Waste comprises wood, fresh polythene, rubber tyre, metal sheets, carpet and cloth. Brick rubble and rubber hoses noted at 2.0m.	
			↓	32.28		(1.30) 3.50	MADE GROUND. Brown very silty medium sand with some orange brown silty sand inclusions and occasional plastic and brick rubble. Water strike at 3.2m.	
3.50	ES3	PID 0.1ppm					*'The percentages of waste to matrix and waste composition are based on Geocores qualitative assessment of the visual observations made during the trial pit excavations'*	

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	Borehole terminated at 3.5m on hard surface. Water prevented identification. Excavation remained stable with standing water at 3.2m on completion.

All dimensions in metres Scale 1:25	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP03**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	06-12-12	34.54	E 490,428.1 N 410,193.7	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				34.39		0.15	MADE GROUND. Light brown very clayey medium sand.	
0.10	ES1	PID 0.6ppm		33.04		(1.35) 1.50	MADE GROUND. Light brown mottled orange brown slightly silty clayey medium sand with occasional cobbles and tile fragments. Gravel is of angular fine to coarse brick, concrete and mortar. Cobbles are angular brick.	
				31.94		(1.10) 2.60	MADE GROUND. Brown/dark grey very gravelly coarse sand with many cobbles and occasional clayey sand inclusions and pottery. Gravel is of angular fine to coarse ash, brick, mortar and concrete.	
2.70	ES2	PID 1.2ppm	⊻	31.34		(0.60) 3.20	MADE GROUND. Dark grey slightly clayey gravelly coarse sand with occasional (~5%) pottery, cloth, shoe leather, wood and metal. From 2.7m~25% large wood fragments (including posts) with rope and cloth (strong 'landfill' odour from 2.7m). Water strike at 3.1m.	
3.20	ES3	PID 1.1ppm						

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Trial pit terminated at 3.2m (beyond water strike at 3.1m).
Excavation remained reasonably stable with standing water at 3.1m on completion.

All dimensions in metres Scale 1:25	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP06**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	11-12-12	31.90	E 490,625.1 N 410,072.1	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
0.20	ES1	PID 1.4ppm		30.80		(1.10) 1.10	MADE GROUND. Brown very clayey medium sand with some polythene and wire fragments (<5%).	
1.15	ES2	PID 0.7ppm	↓	30.50		(0.30) 1.40	MADE GROUND. Dark brown/grey very clayey gravelly coarse sand with some cobbles and occasional boulders. Gravel is angular fine to coarse sandstone, quartz, ash, concrete and brick. Cobbles and boulders are of angular brick and concrete. Fast water strike at 1.2m.	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Trial pit terminated at 1.4m due to fast water strike.
Excavation unstable at 1.2m with standing water at 1.2m on completion.

All dimensions in metres Scale 1:25	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP07**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	10-12-12	35.05	E 490,372.1 N 410,300.2	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
							MADE GROUND. Dark brown very clayey medium sand.	
0.20	ES1	PID 0.0ppm		34.65		(0.40) 0.40		
							MADE GROUND. Light brown silty fine to medium sand.	
0.50	ES2	PID 0.0ppm		33.75		(0.90) 1.30		
							LANDFILL DEPOSITS (80% WASTE 20% MATRIX). MADE GROUND dark grey very sandy slightly gravelly clay. Gravel is of angular fine to coarse brick, coal, ash and clinker.	
1.50	ES3	PID 0.3ppm		33.45		(0.30) 1.60	Dominant waste fraction is plastic/polythene bags. Minor large wood piece.	
							LANDFILL DEPOSITS (50% MATRIX 50% WASTE). MADE GROUND. Dark brown and dark grey gravelly very clayey medium sand with many dark grey silty clay inclusions. Gravel is of angular fine to coarse concrete, mortar, sandstone and brick.	
2.00	ES4	PID 0.0ppm		32.45		(1.00) 2.60	Dominant waste fraction is wood (20%) (sheets, boards, twigs, stakes) and plastic/polythene (15%). Minor rubble, metal, record player, sofas, springs. From 2.2m 80% waste. Dominant waste fraction is large wooden posts and minor metal, brick, slag and concrete rubble.	
							LANDFILL DEPOSITS. 70% MATRIX 30% WASTE. MADE GROUND. Dark grey very clayey gravelly coarse sand with many fine wood fragments. Sand sized fraction is predominantly ash. Gravel is of angular fine to coarse ash, coal, brick, concrete.	
3.00	ES5	PID 0.8ppm	↓	31.65		(0.80) 3.40	Dominant waste fraction is plastic and wood with minor glass, metal. From 3.0m minor metal, rubble, wire, rubber and decomposing paper and practically fresh books.	
3.40	ES6	Tubs. PID 1.4ppm					Water strike at 3.2m.	

'The percentages of waste to matrix and waste composition are based on Geocores qualitative assessment of the visual observations made during the trial pit excavations'

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Trial pit terminated at 3.4m (beyond water strike at 3.2m).
Excavation unstable 1.6-3.4m with standing water at 3.2m on completion.

All dimensions in metres Scale 1:25	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP08**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	10-12-12	34.11	E 490,401.7 N 410,350.3	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
0.10	ES1	PID 0.0ppm		33.66		(0.45) 0.45	MADE GROUND. Brown very clayey medium sand.	
0.50	ES2	PID 0.0ppm		32.81		(0.85) 1.30	LANDFILL DEPOSITS (75% MATRIX 25% WASTE). MADE GROUND. Light brown very clayey slightly gravelly medium sand with occasional cobbles. Gravel is of angular fine to coarse sandstone, brick, coal, clinker. Dominant waste fraction is plastic/polythene (legible text), minor small wood (<10%) and shoe leather, cloth, metal, semi decomposed newspaper (legible).	
1.50	ES3	PID 0.1ppm		31.11		(1.70) 3.00	LANDFILL DEPOSITS (65% MATRIX 35% WASTE) (STRONG LANDFILL ODOUR). MADE GROUND. Dark grey very clayey slightly gravelly coarse sand with many fine wood fragments (twigs). Sand sized fraction is ~50% ash. Gravel is angular fine to coarse ash, clinker, brick, concrete. Dominant waste fraction is plastic (illegible) and cloth with minor wood (posts), fine metal, decomposed paper clumps and polystyrene. Traffic cone and concrete boulder noted at 2.0m.	
2.50	ES4	PID 0.0ppm	↓				From 2.4m 85% matrix 15% waste. Sand sized fraction is 80% ash. Water strike at 2.6m. From 2.6m 50% WASTE 50% MATRIX. Dominant waste fraction is large wood pieces with minor plastic, glass bottles, string, metal and decomposing paper (wallpaper sample book).	
3.00	ES5	PID 0.1ppm						

'The percentages of waste to matrix and waste composition are based on Geocores qualitative assessment of the visual observations made during the trial pit excavations'

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Trial pit terminated at 3.0m (beyond water strike at 2.6m).
Excavation unstable at 2.6-3.0m with standing water at 2.6m on completion.

All dimensions in metres Scale 1:25	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP09**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	12-12-12	34.72	E 490,409.0 N 410,262.6	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				34.52		(0.20) 0.20	MADE GROUND. Brown very clayey medium sand.	
0.15	ES1	PID 0.8ppm		34.07		(0.45) 0.65	MADE GROUND. Orange brown silty medium sand.	
1.50	ES2	PID 12.1ppm		32.42		(1.65) 2.30	LANDFILL DEPOSITS (75% WASTE 25% MATRIX) (LANDFILL ODOUR). MADE GROUND. Dark grey very clayey slightly gravelly coarse sand with abundant fine wood fragments (twigs). Sand size fraction is ~50% ash. Gravel is of angular fine to coarse ash, coal, sandstone, concrete and brick. Dominant waste fraction is plastic and polythene with legible writing (50%) and medium sized wood (20%). Minor card clumps of paper (strong excrement odour), leather shoes, cloth, banding straps, polystyrene , metal. From 1.7m 95% waste ~60% plastic and 30% wood. From 2.0m multiple large fresh crisp packets and large wood pieces and occasional rubber. Actual non decomposed crisps noted at 2.0m. Large concrete girder with 10mm rebar noted 2.2m.	
2.50	ES3	PID 7.7ppm	↓	31.72		(0.70) 3.00	MADE GROUND. Light brown very silty medium sand with some dark grey and orange brown sandy clay inclusions and occasional fine plastic. Water strike at 2.7m.	
							'The percentages of waste to matrix and waste composition are based on Geocores qualitative assessment of the visual observations made during the trial pit excavations'	

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	Trial pit terminated at 3.0m (beyond water strike at 2.7m). Excavation remained stable with standing water at 2.7m on completion.

All dimensions in metres Scale 1:25	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP10**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	10-12-12	34.31	E 490,433.9 N 410,342.4	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
						(0.30)	MADE GROUND. Dark brown very clayey medium sand.	
0.20	ES1	PID 0.2ppm		34.01		0.30		
						(0.50)	MADE GROUND. Light brown very silty medium sand with occasional orange brown sandy clay inclusions.	
0.50	ES2	PID 0.1ppm		33.51		0.80		
1.00	ES3	PID 5.9ppm				(1.10)	LANDFILL DEPOSITS (60% WASTE 40% MATRIX) (LANDFILL ODOUR). MADE GROUND. Dark grey gravelly very clayey coarse sand with much fine wood fragments (twigs). Gravel is of angular fine to coarse ash, clinker, concrete and brick. Dominant waste fraction is plastic with minor wood (small pieces), rope, banding straps, cloth, plastic bottles. Plastic margarine tubs and carrier bags show legible writing. From 1.5m 90% WASTE, minor polystyrene.	
				32.41		1.90		
2.00	ES4	PID 0.3ppm	⊻			(1.00)	LANDFILL DEPOSITS (50% WASTE 50% MATRIX). Brown very clayey gravelly coarse sand with many fine wood fragments. Gravel is of angular fine to coarse brick, sandstone, concrete. Waste 25% plastic, 25% rubble, minor metal and glass. Water Strike at 2.2m	
2.80	ES5	PID 1.5ppm		31.41		2.90		
							'The percentages of waste to matrix and waste composition are based on Geocores qualitative assessment of the visual observations made during the trial pit excavations'	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Trial pit terminated at 2.9m (beyond water strike at 2.2m)
Excavation unstable below 2.2m with standing water at 2.2m on completion.

All dimensions in metres Scale 1:25	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP11**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	10-12-12	34.11	E 490,513.9 N 410,289.0	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
						(0.35)	MADE GROUND. Dark brown very clayey medium sand.	
0.20	ES1	PID 0.0ppm		33.76		0.35		
0.50	ES2	PID 0.0ppm				(0.55)	LANDFILL DEPOSITS (75% WASTE 25% MATRIX). MADE GROUND. Brown very clayey slightly gravelly medium sand with occasional cobbles. Gravel is of angular fine to coarse concrete, mortar and clinker. Cobbles are angular concrete. Dominant waste fraction is polythene/plastic with minor banding straps, metal, wood.	
				33.21		0.90		
1.00	ES3	PID 6.7ppm				(1.80)	LANDFILL DEPOSITS (60% WASTE 40% MATRIX) (STRONG LANDFILL ODOUR). MADE GROUND. Dark grey/black very clayey gravelly coarse sand with abundant fine wood (twigs). Gravel is of angular fine to coarse ash, coal, clinker. Dominant waste fraction is plastic/polythene (30%) and wood (25%). Minor cloth, glass, rubber. From 1.7m 80% waste. Minor metal, pottery and glass noted.	
2.00	ES4	PID 1.7ppm	▼				Large wood posts noted 2.2m. Water strike 2.2m. From 2.4m dominant waste fraction is large wood pieces and rubble.	
				31.41		2.70		
2.70	ES5	PID 0.4ppm					*'The percentages of waste to matrix and waste composition are based on Geocores qualitative assessment of the visual observations made during the trial pit excavations'*	

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											Trial pit terminated at 2.7m (beyond water strike at 2.0m). Excavation unstable 2.4-2.7m with standing water at 2.0m on completion.

All dimensions in metres Scale 1:25	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP12**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	10-12-12	33.96	E 490,490.1 N 410,202.6	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
0.30	ES1	PID 0.3ppm		33.26		(0.70) 0.70	MADE GROUND. Brown very clayey medium sand with occasional cobbles and polythene pieces (<5%).	
1.00	ES2	PID 2.7ppm				(1.90)	LANDFILL DEPOSITS (60% MATRIX 40% WASTE). MADE GROUND. Dark grey gravelly very clayey medium sand with some orange brown clayey sand inclusions and occasional boulders. Sand sized fraction is predominantly ash. Gravel is of angular fine to coarse coal, clinker, ash, concrete. Dominant waste fraction is polythene/plastic (20%) legible clumped newspapers (5%), wood of various sizes (15%). Minor glass/glass jars, metal, cloth, pottery and batteries.	
2.00	ES3	PID 0.7ppm					From 2.0m (WASTE 60% and MATRIX 40%). Dominant waste is plastic and polythene with minor wood. Roll carpet noted at 2.1m.	
2.40	ES4	PID 1.6ppm	↓	31.36		2.60	Water strike at 2.4m.	
							'The percentages of waste to matrix and waste composition are based on Geocores qualitative assessment of the visual observations made during the trial pit excavations'	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Trial pit terminated at 2.6m (beyond water strike at 2.4m).
Excavation unstable between 2.0-2.6m with standing water at 2.4m on completion.

All dimensions in metres Scale 1:25	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP13**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	12-12-12	33.19	E 490,547.5 N 410,167.6	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
						(0.30)	MADE GROUND. Brown very clayey medium sand.	
0.20	ES1	PID 0.1ppm		32.89		0.30		
						(1.50)	MADE GROUND. Brown very clayey medium sand with some cobbles and ~10% plastic and rope (metal sheet and trolley jack noted). (Slight water seepage at 1.0m).	
				31.39		1.80		
2.20	ES2	PID 0.5ppm				(1.50)	LANDFILL DEPOSITS (50% WASTE 50% MATRIX). Concrete surface noted in northern end of pit at 1.1m. MADE GROUND. Dark grey very clayey gravelly coarse sand with much decaying wood fragments and some cobbles. Sand size fraction is predominantly ash. Gravel is of angular fine to coarse ash, clinker, coal, concrete, limestone and sandstone. Dominant waste fraction is plastic and wood. Minor leather, glass, decomposed clumps of newspapers. From 3.0m 70% WASTE 30% MATRIX. Dominant waste is large wood and glass/glass bottles, minor plastic. Fast water strike at 3.2m.	
			⊻	29.89		3.30		
3.30	ES3	PID 7.8ppm					*'The percentages of waste to matrix and waste composition are based on Geocores qualitative assessment of the visual observations made during the trial pit excavations'*	

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											Trial pit terminated at 3.3m (beyond fast water strike at 3.2). Excavation exhibited reasonable stability with standing water at 3.2m on completion.

All dimensions in metres Scale 1:25	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP14**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	07-12-12	33.61	E 490,567.7 N 410,236.0	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				33.41		(0.20) 0.20	MADE GROUND. Brown very clayey medium sand with occasional fine plastic pieces.	
0.15	ES1	PID 0.0ppm		33.26		0.35	MADE GROUND. Concrete.	
				33.06		(0.20) 0.55	MADE GROUND. Brown clayey sandy gravel with some cobbles. Gravel is of angular fine to coarse concrete, brick, ash and sandstone. Cobbles are angular brick and concrete.	
0.50	ES2	PID 0.0ppm		32.86		(0.20) 0.75	MADE GROUND. Tarmac.	
1.00	ES3	PID 0.4ppm				(1.75)	LANDFILL DEPOSITS (MATRIX 60% WASTE 40%). (STRONG LANDFILL ODOUR). MADE GROUND. Dark grey gravelly coarse sand with abundant fine wood fragments/stems and occasional cobbles and fine to medium metal fragments. Sand sized fraction is predominantly ash. Gravel is of angular brick, concrete and tarmac. Cobbles are angular brick and tarmac. Dominant waste fraction is wood (20%) and polythene (20%). Metal sheet and shoe noted at 1.5m. From 1.7m WASTE 85% MATRIX 15%. Waste 60% wood 25% rubble. Plastic crate, springs and wire fence noted at 1.9m.	
2.00	ES4	PID 0.1ppm					Fast water strike at 1.9m.	
				31.11		2.50		
2.50	ES5	PID 0.9ppm					*'The percentages of waste to matrix and waste composition are based on Geocores qualitative assessment of the visual observations made during the trial pit excavations'*	

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											Trial pit terminated at 2.5m (beyond fast water strike at 1.9m). Excavation unstable with standing water at 1.9m on completion.

All dimensions in metres Scale 1:25	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP15**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	12-12-12	33.20	E 490,585.3 N 410,167.1	
Client				Sheet
North Lincolnshire Council				1 of 2

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
0.20	ES1	PID 0.0ppm		32.70		(0.50) 0.50	MADE GROUND. Brown very clayey medium sand.	
				32.20		(0.50) 1.00	LANDFILL DEPOSITS (20% WASTE 80% MATRIX). MADE GROUND. Brown very clayey silty gravelly medium sand with some cobbles. Gravel is of angular fine to coarse brick, mortar, concrete, quartz and sandstone. Cobbles are angular brick and concrete. Dominant waste fraction is plastic/polythene (15%) . Minor clinker, fine wood. Slight water seepage at 0.9m.	
1.50	ES2	PID 0.4ppm	⊻	31.20		(1.00) 2.00	LANDFILL DEPOSITS (WASTE 65% MATRIX 35%). (LANDFILL ODOUR). MADE GROUND. Dark grey clayey gravelly coarse sand with much decaying fine wood fragments. Sand size fraction is predominantly ash. Gravel is of angular fine to coarse ash, coal, clinker. Dominant waste fraction is polythene (45%) and wood (15%). Minor clinker, string, cloth, glass. Water strike 1.6m From 1.6m 85% waste. Dominant waste fraction glass bottles, large wood and leather. Mattress noted at 2.0m.	

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											Trial pit terminated at 2.0m (beyond water strike at 1.6m). Excavation unstable at 2.0m with standing water at 1.6m on completion.

All dimensions in metres Scale 1:18.75	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP15**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	12-12-12	33.20	E 490,585.3 N 410,167.1	
Client				Sheet
North Lincolnshire Council				2 of 2

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
							'The percentages of waste to matrix and waste composition are based on Geocores qualitative assessment of the visual observations made during the trial pit excavations'	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Trial pit terminated at 2.0m (beyond water strike at 1.6m).
Excavation unstable at 2.0m with standing water at 1.6m on completion.

All dimensions in metres Scale 1:18.75	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP16**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	11-12-12	32.52	E 490,620.5 N 410,144.2	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
0.20	ES1	PID 1.7ppm		32.07		(0.45) 0.45	MADE GROUND. Brown very clayey medium sand with abundant polythene bags 0.4-0.45m (90%). Slight water seepage 0.4m.	
0.50	ES2	PID 3.2ppm					LANDFILL DEPOSITS (MATRIX 70% WASTE 30%). MADE GROUND. Dark grey slightly clayey gravelly coarse sand with many fine decayed wood fragments. Sand sized fraction is predominantly ash. Gravel is of angular fine to coarse ash, coal, clinker, concrete, limestone. Dominant waste fraction is polythene (20%) and small wood (10%), minor cloth, wire, glass, polystyrene, and string.	
1.50	ES3	PID 4.9ppm				(2.55)		
2.50	ES4	PID 2.2ppm	↓				From 2.2m (75% WASTE 25% MATRIX). Dominant waste fraction polythene (35%), wood (25%) and clumped decomposed paper (10%). Minor shoe leather, bike springs, glass. Water strike 2.6m. From 2.7m large metal sheets, bikes and plastic tubs, glass bottles and large wood noted.	
3.00	ES5	PID 1.0ppm		29.52		3.00	*'The percentages of waste to matrix and waste composition are based on Geocores qualitative assessment of the visual observations made during the trial pit excavations'*	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Trial pit terminated at 3.0m (beyond water strike at 2.6m).
Excavation unstable at 2.6m and with standing water at 2.6m on completion.

All dimensions in metres Scale 1:25	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP17**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	07-12-12	32.31	E 490,708.7 N 410,169.1	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
0.30	ES1	PID 0.0ppm		31.81		(0.50) 0.50	MADE GROUND. Light brown/orange brown very clayey sand with occasional plastic/polythene pieces (<5%).	
				31.51		(0.30) 0.80	MADE GROUND. Tarmac/concrete.	
1.00	ES2	PID 0.1ppm				(2.00)	LANDFILL DEPOSITS. MADE GROUND. Dark brown slightly clayey slightly gravelly coarse sand with some cobbles (~20%) and occasional shoe leather and boulders (<5%). Gravel is of angular fine to coarse brick, concrete and mortar. Cobbles and boulders are angular brick and concrete.	
2.00	ES3	PID 0.4ppm					From 2.2m 85% brick and concrete rubble (15% MATRIX) occasional wooden posts, carpet and glass noted (<5%).	
				29.51		2.80		
2.80	ES4	PID 0.0ppm					*'The percentages of waste to matrix and waste composition are based on Geocores qualitative assessment of the visual observations made during the trial pit excavations'*	

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											Trial pit terminated at 2.8m due to high instability. Excavation was very unstable between 2.2-2.8m and remained dry on completion.

All dimensions in metres Scale 1:25	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP18**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	05-12-12	31.75	E 490,669.6 N 410,087.7	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				31.50		(0.25) 0.25	MADE GROUND. Brown very clayey medium sand (topsoil).	
0.20	ES1	PID 0.2ppm						
0.50	ES2	PID 1.5ppm	⊻	30.95		(0.55) 0.80	MADE GROUND. Brown very gravelly clayey coarse sand with many cobbles and occasional glass fragments. Gravel is of angular fine to coarse brick and concrete (builder's rubble). Void spaces apparent. Fast water infiltration at 0.7m.	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Trial pit terminated at 0.8m due to fast water infiltration.
Excavation was stable with standing water at 0.7m on completion.

All dimensions in metres Scale 1:25	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP19**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	05-12-12	31.50	E 490,757.8 N 410,143.5	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				31.25		(0.25) 0.25	MADE GROUND. Brown very clayey medium sand with occasional plastic pieces (topsoil).	
0.20	ES1	PID 0.0ppm						
0.50	ES2	PID 0.5ppm		30.80		(0.45) 0.70	LANDFILL DEPOSIT (MATRIX 65% WASTE 35%). MADE GROUND. Brown very clayey slightly gravelly coarse sand with abundant polythene and plastic pieces (35%) and occasional glass fragments. Gravel is of angular fine to coarse brick, sandstone and concrete.	
1.50	ES3	PID 3.1ppm				(2.30)	LANDFILL DEPOSITS (MATRIX 40% WASTE 60%). MADE GROUND. Dark grey very clayey slightly gravelly coarse sand with abundant fine wood fragments. Gravel is of angular fine to coarse brick, quartz, sandstone, glass (stong organic odour). Waste predominantly comprises wood (posts, branches, etc) and plastic/polythene with minor newspaper (illegible), rubble and net.	
2.50	ES4	PID 5.0ppm	↓				From 2.4m 40% WASTE 60% MATRIX. Water strike 2.4m.	
				28.50		3.00		
							'The percentages of waste to matrix and waste composition are based on Geocores qualitative assessment of the visual observations made during the trial pit excavations'	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Trial pit terminated at 3.0m (beyond water strike at 2.7m).
Excavation was stable with standing water at 2.7m on completion.

All dimensions in metres Scale 1:25	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP20**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	05-12-12	31.25	E 490,754.9 N 410,101.5	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
0.10	ES1	PID 0.1ppm		31.08		0.17	MADE GROUND. Brown clayey medium sand with occasional fine plastic pieces and angular fine to coarse brick and wood fragments (<6%).	
				30.90		0.35	MADE GROUND. Brown very clayey slighty gravelly coarse sand with abundant polythene and plastic pieces (35%) and occasional glass fragments. Gravel is of angular fine to coarse brick, sandstone and concrete. Netting encountered 0.25m.	
0.50	ES2	PID 0.5ppm				(0.50)	LANDFILL DEPOSITS (WASTE <10%). MADE GROUND. Dark brown gravelly coarse sand with occasional glass, plastic and wood fragments. Sand sized fraction is predominantly ash. Gravel is of angular fine to coarse ash, brick and concrete.	
				30.40		0.85	LANDFILL DEPOSITS (MATRIX 80% WASTE 20%). MADE GROUND. Dark grey/black very clayey gravelly medium sand with occasional fine wood fragments (twigs). Sand sized fraction is predominantly ash. Gravel is of angular fine to coarse brick, quartz stone, sandstone, ash, concrete, mortar.	
1.50	ES3	PID 0.8ppm				(1.35)	Dominant waste fraction is plastic with minor brick rubble, rope and cloth. Shoe and tyre noted.	
				29.05		2.20	LANDFILL DEPOSITS (MATRIX 50% WASTE 50%). MADE GROUND. Dark grey slightly clayey gravelly coarse sand. Sand sized fraction is predominantly ash. Gravel is of angular fine to coarse quartz, brick, ash and concrete/mortar.	
2.50	ES4	PID 2.3ppm	↓			(0.80)	Dominant waste fraction is wood (fence posts, panels and fine twigs branches) and brick rubble. Minor constituents comprise newspaper (decomposed almost legible) plastic/plywood tiles and glass.	
				28.25		3.00	From 2.7m waste deposits are dominated by plastic. Water strike 2.7m.	
3.00	ES5	PID 0.2ppm					*'The percentages of waste to matrix and waste composition are based on Geocores qualitative assessment of the visual observations made during the trial pit excavations'*	

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											Trial pit terminated at 3.0m (beyond water strike at 2.7m). Excavation unstable with standing water at 2.7m on completion.

All dimensions in metres Scale 1:25	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP21**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	07-12-12	34.22	E 490,607.2 N 410,272.7	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
0.20	ES1	PID 0.0ppm		33.32		(0.90) 0.90	MADE GROUND. Grey slightly sandy gravel (semi cemented) with many cobbles and occasional orange brown sandy clay inclusions. Gravel is of semi cemented angular fine to coarse slag. Cobbles are angular slag (occasional tarmac noted).	
1.00	ES2	PID 0.2ppm	↓	32.22		(1.10) 2.00	MADE GROUND. Dark grey sandy gravel with some cobbles and occasional fine glass, plastic and metal (<10%). Sand sized fraction is predominantly ash. Gravel is of angular fine to coarse slag. Cobbles are angular slag. Water strike at 1.2m. (Strong sulphurous odour below water strike).	
2.00	ES3	PID 0.7ppm						

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Trial pit terminated at 2.0m due to uncontrollable water ingress.
Excavation remained stable with standing water at 1.0m on completion.

All dimensions in metres Scale 1:25	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP22**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	07-12-12	33.60	E 490,721.8 N 410,317.0	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				33.50		0.10	MADE GROUND. Dark grey slightly sandy gravel comprising angular crushed tarmac.	
				33.35		0.25	MADE GROUND. Concrete.	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Trial pit terminated at 0.25m due to concrete surface. Attempts made to break out with hydraulic breaker (handheld) were unsuccessful.

All dimensions in metres Scale 1:25	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP23**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	06-12-12	29.56	E 490,873.9 N 410,015.4	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				29.36		(0.20) 0.20	MADE GROUND. Dark grey sandy gravel. Gravel is of angular fine to coarse slag and tarmac.	
				29.01		(0.35) 0.55	MADE GROUND. Light grey cemented gravels and cobbles. Gravel and cobbles are of angular slag.	
0.50	ES1	PID 1.4ppm		26.36		(2.65) 3.20	MADE GROUND. Light grey slightly sandy gravel with some cobbles. Gravel and cobbles are of angular slag.	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Trial pit terminated at 3.2m.
Excavation remained stable and dry on completion.

All dimensions in metres Scale 1:25	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP24**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	06-12-12	28.35	E 490,975.6 N 409,927.8	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				28.10		(0.25) 0.25	MADE GROUND crushed tarmac.	
0.25	ES1	PID 0.9ppm		27.45		(0.65) 0.90	MADE GROUND. Cobbles comprising angular brick and concrete with some finer material. Matrix comprising light brown gravelly clayey sand. Gravel is of angular fine to coarse brick, clinker, quartz and sandstone. Large concrete block uncovered at 0.5m.	
1.00	ES2	PID 23.0ppm		25.35		(2.10) 3.00	MADE GROUND. Dark grey very gravelly coarse sand with some angular glass fragments and light bulbs/jars (~15%) and occasional metal fragments, pottery and shoe leather. Sand sized fraction is predominantly ash. Gravel is of angular fine to coarse ash, coal, mudstone and clinker. Orange brown sand inclusions noted at 2.0m. From 2.7m glass fragments ~35%.	
3.00 3.00	ASB1 ES3	PID 0.8ppm					Possible ACM at 3.0m (tile).	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Trial pit terminated at 3.0m.
Excavation remained stable and dry on completion.

All dimensions in metres Scale 1:25	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP25**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	07-12-12	34.65	E 490,480.9 N 410,386.7	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				34.50		0.15	MADE GROUND. Dark grey slightly sandy gravel.	
				34.35		0.30	MADE GROUND. Concrete.	
0.35	ES1	PID 0.7ppm		33.95		(0.40) 0.70	MADE GROUND. Dark grey mottled orange brown clayey very sandy gravel with some cobbles. Sand sized fraction is predominantly ash. Gravel is of angular fine to coarse, ash, concrete, limestone, slag and brick. Cobbles are angular brick and concrete.	
1.00	ES2	PID 0.1ppm				(2.00)	LANDFILL DEPOSITS (75% MATRIX 25% WASTE). (STRONG LANDFILL ODOUR). MADE GROUND. Dark grey gravelly coarse sand with much fine wood fragments/stems. Sand sized fraction is predominantly ash. Gravel is of angular fine to coarse brick, ash, coal, clinker. Dominant waste fraction is small wood pieces (15%) and polythene (10%). From 1.45m 60% WASTE 40% MATRIX (45% wood 15% plastic/polythene).	
2.00	ES3	PID 1.3ppm	⊻				From 2.2m 75% WASTE 25% MATRIX. Water strike at 2.2m.	
				31.95		2.70		
2.70	ES4	PID 3.8ppm					*'The percentages of waste to matrix and waste composition are based on Geocores qualitative assessment of the visual observations made during the trial pit excavations'*	

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											Trial pit terminated at 2.7m (beyond water strike at 2.2m). Excavation unstable between 2.2m and 2.7m with standing water at 2.2m on completion.

All dimensions in metres Scale 1:25	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP26**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	05-12-12	34.34	E 490,771.6 N 410,397.7	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				33.94		(0.40) 0.40	MADE GROUND. Light grey sandy gravel with many cobbles Gravel is of angular fine to coarse slag, clinker and concrete. Cobbles are angular slag (compacted road surface). Tyre noted 0.15m.	
0.50	ES1	PID 0.1ppm		33.59		(0.35) 0.75	MADE GROUND. Orange brown slightly clayey, gravelly silty medium to fine sand with occasional angular glass fragments (<5%). Gravel is of angular fine to coarse quartz, sandstone and limestone.	
1.00	ES2	PID 0.3ppm		32.94		(0.65) 1.40	LANDFILL DEPOSITS (MATRIX 20% WASTE 80%). MADE GROUND. Orange brown slightly silty gravelly medium sand with occasional angular glass fragments (<5%). Gravel is of angular to sub angular fine to coarse quartz, sandstone and limestone. Dominant waste fraction is metals eg bicycles, box section steel bars, pipe work, mattress springs. Minor plastic and glass material (<10%).	
				32.44		(0.50) 1.90	MADE GROUND. Orange brown slightly clayey, gravelly silty medium to fine sand with occasional angular glass fragments (<5%). Gravel is of angular fine to coarse quartz, sandstone and limestone.	
2.00	ES3	PID 0.0ppm				(1.50)	MADE GROUND. Dark grey mottled brown gravelly silty medium sand with occasional organic inclusions (topsoil with roots and stems) and angular fine to coarse glass fragments (<10%). Gravel is of angular fine to coarse ash, coal, sandstone and shale. (Slight organic odour). Fibrous crushed cardboard noted at 2.5m.	
3.00	ES4	PID 0.4ppm		30.94		3.40		
							'The percentages of waste to matrix and waste composition are based on Geocores qualitative assessment of the visual observations made during the trial pit excavations'	

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											Trial pit terminated at 3.4m due to poor stability. Excavation unstable and dry on completion.

All dimensions in metres Scale 1:25	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP27**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	05-12-12	34.33	E 490,717.1 N 410,452.6	
Client				Sheet
North Lincolnshire Council				1 of 2

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				34.13		(0.20) 0.20	MADE GROUND. Light grey slightly sandy gravel with occasional fine plastic and pottery pieces (<5%). Gravel is of angular fine to coarse limestone (poorly compacted).	
0.30	ES1	PID 3.6ppm		33.88		(0.25) 0.45	MADE GROUND. Dark grey slightly clayey slightly gravelly medium sand with many angular fine to coarse glass fragments. (Slight hydrocarbon odour).	
0.50	ES2	PID 28.4ppm	▼	33.03		(0.85) 1.30	LANDFILL DEPOSITS (MATRIX 85% WASTE 15%). MADE GROUND. Dark grey very clayey sandy gravel with some glass and plastic pieces, occasional tile, brick and pottery. Dominant waste fraction glass (10%) plastic (5%). Fast water strike at 0.7m. (Hydrocarbon odour thereafter).	
				32.88		(0.15) 1.45	LANDFILL DEPOSITS (50% MATRIX 50% WASTE). (Strong hydrocarbon odour). MADE GROUND. Dark grey very clayey sandy gravel with some cobbles. Sand sized fraction is predominantly coal. Gravel is of angular fine to coarse ash, brick, clinker, concrete. Cobbles are angular brick.	
				32.83		1.50	Dominant waste fraction is wood and organic (garden waste) (25%) with minor glass/plastic (15%) rubble and rope (10%).	
1.50	ES3	PID 44.2ppm					Concrete surface.	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Trial pit terminated at 1.5m due to concrete surface and fast water ingress at 0.7m. Excavation remained stable with standing water at 0.7m on completion.

All dimensions in metres Scale 1:12.5	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP27**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	05-12-12	34.33	E 490,717.1 N 410,452.6	
Client				Sheet
North Lincolnshire Council				2 of 2

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
							'The percentages of waste to matrix and waste composition are based on Geocores qualitative assessment of the visual observations made during the trial pit excavations'	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Trial pit terminated at 1.5m due to concrete surface and fast water ingress at 0.7m. Excavation remained stable with standing water at 0.7m on completion.

All dimensions in metres Scale 1:12.5	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP28**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	06-12-12	35.09	E 490,726.6 N 410,577.8	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				34.94		0.15	MADE GROUND. Dark brown slightly gravelly silty medium sand (topsoil).	
0.10	ES1	PID 0.1ppm					MADE GROUND. Reddish brown gravelly coarse sand with many cobbles. Gravel is of angular fine to coarse concrete, cemented sand mortar and brick. Cobbles are angular brick. From 0.8m 85% rubble (bricks) with 15% matrix.	
0.20	PID	PID 0.2ppm						
0.50-1.00	No samples due to low matrix					(1.45)		
							Plastic and cloth pieces noted at 1.3m.	
				33.49		1.60		
1.65	ES2						MADE GROUND. Dark grey/orange brown gravelly coarse sand with many fine roots and occasional orange brown silty sand inclusions and occasional metal fragments. Gravel is of angular fine to coarse coal, ash and clinker.	
							Large roots noted at 2.0m and 2.5m.	
						(2.20)		
3.60	ES3	PID 0.0ppm						
				31.29		3.80		

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Trial pit terminated at 3.8m.
Excavation unstable and dry on completion.

All dimensions in metres Scale 1:25	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP29**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	11-12-12	36.49	E 490,645.0 N 410,673.0	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
0.30	ES1	PID 0.0ppm		35.94		(0.55) 0.55	MADE GROUND. Dark brown slightly gravelly very clayey medium sand with occasional cobbles. Gravel is of angular fine to coarse brick quartz, sandstone and concrete. Cobbles are angular brick.	
0.80	ES2	PID 0.3ppm		35.29		(0.65) 1.20	MADE GROUND. Grey/dark brown clayey very gravelly coarse sand with some cobbles (<15%), metal, plastic and tarmac (<5%).	
1.50	ES3	PID 0.1ppm		34.59		(0.70) 1.90	MADE GROUND. Very stiff dark grey very gravelly clay with some cobbles. Gravel is of angular fine to coarse brick, quartz, concrete, mortar, mudstone and coal. Cobbles are angular brick.	
2.00	ES4	PID 0.0ppm		34.29		(0.30) 2.20	MADE GROUND. Firm dark brown slightly organic slightly sandy slightly gravelly clay with some orange brown sandy clay inclusions. Gravel is angular fine to coarse limestone, brick, coal. (Possible relic topsoil).	
2.50	ES5	PID 0.4ppm		33.59		(0.70) 2.90	Firm orange brown fissured grey slightly sandy CLAY.	

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	Trial pit terminated at 2.9m. Excavation remained stable and dry on completion.

All dimensions in metres Scale 1:25	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**TP30**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	06-12-12	29.66	E 490,984.5 N 410,132.4	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				29.56		0.10	TARMAC.	
				29.31		(0.25) 0.35	MADE GROUND. Light orange brown silty medium sand.	
0.40	ES1	PID 2.9ppm					MADE GROUND. Dark grey very gravelly coarse sand with many angular glass fragments (30%), some ceramic fragments (~5%) and occasional bone fragments and shoe leather. Sand sized fraction is predominantly ash. Gravel is of angular fine to coarse ash, coal, mudstone and clinker.	
1.50	ES2	PID 1.6ppm				(2.75)		
				26.56		3.10		
						(0.50)	Orange brown silty medium SAND.	
3.50	D1	PID 7.7ppm	⊻	26.06		3.60		
3.50	ES3							

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											Trial pit terminated at 3.6m (beyond water strike at 3.5m). Excavation remained stable with standing water at 3.5m on completion. Trial pit in vicinity of empty diesel storage tank.

All dimensions in metres Scale 1:25	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX	Logged By E Lodge

Appendix C

Probehole Exploratory Hole Log Sheets

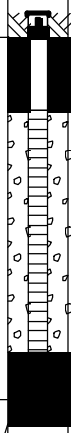
 © EPG LTD

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**PHA**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	11-12-12	35.31	E 490,196.6 N 410,336.1	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				35.11		0.20	MADE GROUND. Brown slightly clayey medium sand.	
0.50	ES1					(1.50)	MADE GROUND. Brown slightly clayey gravelly coarse sand with many plastic bags and plastic tubs. Gravel is of medium to coarse sub angular to sub rounded sandstone, coal, quartz, brick, slag, ash and clinker.	
1.00	ES2							
1.50	ES3			33.61		1.70		
				33.51		1.80	Crystalline grey calcareous LIMESTONE/IRONSTONE. Highly fossiliferous. Highly Weathered. (Probable Bedrock)	



Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Borehole terminated at 1.8m due to refusal. Excavation remained open and dry on completion.

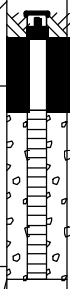
All dimensions in metres Scale 1:31.25	Client Engineer EPG Ltd	Method/ Plant Used Dando Terrier 2002	Logged By D Comer

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**PHB**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	11-12-12	34.96	E 490,388.5 N 410,206.6	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				34.91		0.05	MADE GROUND. Brown sandy slightly clayey sand.	
				34.56		(0.35) 0.40	MADE GROUND. Grey slightly sandy gravel. Gravel is of medium to coarse angular slag and concrete.	
0.50	ES1					(0.75)	Brown slightly gravelly medium SAND. Gravel is of fine to medium sub rounded coal, sandstone and quartz.	
				33.81		1.15		
				33.76		1.20	Crystalline grey calcareous LIMESTONE/IRONSTONE. Highly fossiliferous. Highly Weathered. (Probable Bedrock)	



Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											Borehole terminated at 1.2m due to refusal. Excavation remained open and dry on completion.

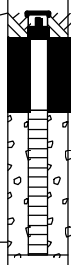
All dimensions in metres Scale 1:31.25	Client Engineer EPG Ltd	Method/ Plant Used Dando Terrier 2002	Logged By D Comer

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**PHC**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	11-12-12	33.52	E 490,500.7 N 410,137.2	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				33.42		0.10	MADE GROUND. Tarmac.	
0.50	ES1					(0.95)	MADE GROUND. Brown slightly gravelly medium to coarse sand. Gravel is of medium to coarse angular slag, concrete, sandstone, ash and mudstone.	
				32.47		1.05		
1.00	ES2			32.37		1.15	Crystalline grey calcareous LIMESTONE/IRONSTONE. Highly fossiliferous. Highly Weathered. (Probable Bedrock)	



Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Borehole terminated at 1.15 due to refusal. Excavation remained open and dry on completion.

All dimensions in metres Scale 1:31.25	Client Engineer EPG Ltd	Method/ Plant Used Dando Terrier 2002	Logged By D Comer

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**PHD**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	13-12-12	32.40	E 490,612.4 N 410,071.2	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				32.20		0.20	MADE GROUND. Brown very clayey medium sand.	
0.50	ES1			31.65		(0.55) 0.75	MADE GROUND. Light brown slightly clayey slightly gravelly very silty medium sand with some cobbles and occasional plastic and wood pieces. Gravel is of angular fine to coarse brick, quartz, ironstone. Cobbles are angular brick and slag.	
0.80	ES2			31.50		0.90	Light brown slightly gravelly very silty medium SAND. Gravel is of angular fine to coarse ironstone.	
0.95	ES3			31.45		0.95	Crystalline grey calcareous LIMESTONE/IRONSTONE. Highly fossiliferous. Highly Weathered. (Probable Bedrock)	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Borehole terminated at 0.95m.
Excavation remained open and dry on completion.

All dimensions in metres Scale 1:31.25	Client Engineer EPG Ltd	Method/ Plant Used Hand Tools	Logged By E Lodge

GEOCORE BH 55272.GPJ AUGUST 768.GPJ 6/6/13

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**PHE**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	13-12-12	30.27	E 490,731.8 N 410,002.7	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				30.02		(0.25) 0.25	MADE GROUND. Dark brown very clayey medium sand.	
				29.72		(0.30) 0.55	Orange brown very silty medium to coarse SAND.	
0.50 0.50	D1 ES1			29.27		(0.45) 1.00	Light grey slightly sandy GRAVEL. Gravel is of angular, tabular crystalline ironstone (highly weathered bedrock).	
0.95 0.95	D2 ES2			29.22		1.05	Crystalline grey calcareous LIMESTONE/IRONSTONE. Highly fossiliferous. Highly Weathered. (Probable Bedrock)	

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											Trial pit terminated at 1.05m. Excavation remained open and dry on completion.

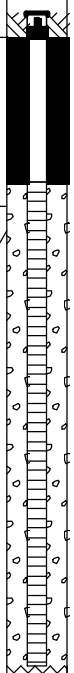
All dimensions in metres Scale 1:25	Client Engineer EPG Ltd	Method/ Plant Used Hand Tools	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**PHF**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	13-12-12	25.28	E 491,126.5 N 409,909.5	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				25.08		0.20	MADE GROUND. Brown slightly clayey sand.	
0.50	ES1			24.38		(0.70) 0.90	MADE GROUND. Dark brown gravelly medium sand. Sand size fraction is predominantly ash. Gravel is of medium to coarse angular brick, sandstone, concrete, slag and coal.	
				24.28		1.00	MADE GROUND. Light orange brown slightly silty medium sand.	
1.50	ES2					(1.90)	MADE GROUND. Dark grey slightly clayey gravelly coarse sand with occ angular fine metal fragments. Sand size fraction is predominantly ash. Gravel is of angular to sub angular slag, coal, brick, clinker, plastic, burnt colliery shale.	
2.50	ES3			22.38		2.90		
				22.23		3.05	MADE GROUND. Orange brown slightly clayey slightly gravelly medium sand. Gravel is of fine to medium angular slag and coal.	
				22.18		3.10	Crystalline grey/brown calcareous LIMESTONE/IRONSTONE. Highly fossiliferous. Highly Weathered. (Probable Bedrock)	



Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Borehole terminated at 3.1m due to refusal. Excavation collapsed to 2.8m with standing water at 2.8m on completion.

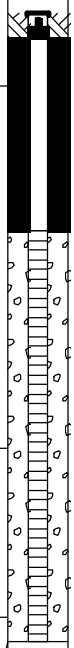
All dimensions in metres Scale 1:31.25	Client Engineer EPG Ltd	Method/ Plant Used Dando Terrier 2002	Logged By D Comer

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**PHG**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	13-12-12	28.95	E 490,865.9 N 409,902.7	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				28.55		(0.40) 0.40	MADE GROUND. Dark brown sandy gravel. Sand size fraction is predominantly ash. Gravel is of angular fine to coarse ash.	
0.50	ES1						MADE GROUND. Pale yellow slightly gravelly fine to medium sand. Gravel is of fine to medium angular coal and quartz.	
1.00	ES2					(1.50)		
1.50	ES3			27.05		1.90		
2.00	ES4					(0.70)	MADE GROUND. Reddish brown clayey slightly gravelly fine to medium sand. Gravel is of sub angular coal, quartz, ironstone and sandstone.	
2.50	ES5			26.35		2.60		
				26.25		2.70	Crystalline grey/brown calcareous LIMESTONE/IRONSTONE. Highly fossiliferous. Highly Weathered. (Probable Bedrock)	



Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											Borehole terminated at 2.7m. Excavation remained open and dry on completion.

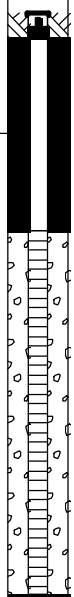
All dimensions in metres Scale 1:31.25	Client Engineer EPG Ltd	Method/ Plant Used Dando Terrier 2002	Logged By D Comer

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**PHH**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	12-12-12	30.13	E 490,969.2 N 410,142.9	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
						(0.60)	MADE GROUND. Dark grey gravelly coarse sand with many brick and concrete cobbles. Sand sized fraction is predominantly ash. Gravel is of medium to coarse angular brick, concrete, coal, ash and slag.	
0.50	ES1			29.53		0.60		
1.00	ES2					(2.00)	MADE GROUND. Orange brown/dark grey slightly clayey gravelly coarse sand with abundant glass bottles, paper bags, plastic bags and pottery. Sand size fraction is predominantly ash. Gravel is of medium to coarse angular brick, sandstone, quartz, coal, ash, clinker and slag.	
2.00	ES3			27.53		2.60		
						(0.70)	Light brown silty medium SAND.	
3.00	ES4			26.83		3.30		
				26.73		3.40	Crystalline grey/orange brown calcareous LIMESTONE/IRONSTONE. Highly fossiliferous. Highly Weathered. (Probable Bedrock)	



Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											Borehole terminated at 3.4m. Excavation remained open and dry on completion.

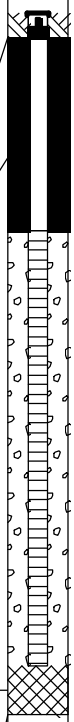
All dimensions in metres Scale 1:31.25	Client Engineer EPG Ltd	Method/ Plant Used Dando Terrier 2002	Logged By D Comer

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**PHI**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	12-12-12	31.75	E 490,797.3 N 410,219.8	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				31.55		0.20	MADE GROUND. Dark brown slightly gravelly medium sand. Gravel is of medium to coarse sub angular brick, sandstone, quartz and coal. Sand size fraction is predominantly quartz.	
0.50	ES1			31.05		(0.50) 0.70	MADE GROUND. Dark brown/grey gravelly coarse sand with occasional glass, pottery and plastic bag. Gravel is of medium to coarse angular brick, slag, sandstone, ash and clinker. Sand size fraction is predominantly ash.	
1.50	ES2					(2.20)	MADE GROUND. Dark brown/grey slightly sandy slightly clayey gravel with occasional plastic bag, pottery, cobbles and glass. Gravel is of medium to coarse angular brick, concrete, slag, ash, clinker and coal. Cobbles are angular concrete. Very poor recovery 2-3m.	
				28.85		2.90		
				28.75		3.00	Crystalline grey/brown calcareous LIMESTONE/IRONSTONE. Highly fossiliferous. Highly Weathered. (Probable Bedrock)	



Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Borehole terminated at 3.0m.
Excavation collapsed to 2.8m and remained dry on completion.

All dimensions in metres Scale 1:31.25	Client Engineer EPG Ltd	Method/ Plant Used Dando Terrier 2002	Logged By D Comer

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**PHJ**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	12-12-12	32.52	E 490,794.8 N 410,324.6	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				32.22		(0.30) 0.30	MADE GROUND. Grey slightly sandy gravel. Gravel is of medium to coarse angular flint and chalk.	
0.50	ES1			31.52		(0.70) 1.00	MADE GROUND. Brown gravelly medium sand with abundant glass, paper, cloth and pottery. Gravel is of fine to medium angular brick, concrete, slag, clinker and sandstone. Sand size fraction is predominantly quartz.	
1.50	ES2			29.82		(1.70) 2.70	MADE GROUND. Dark grey sandy gravel with abundant glass, pottery, plastic bag, rubber. Gravel is of angular brick, clay, ash, coal and clinker. Sand size fraction is predominantly ash.	
2.50	ES3			28.92		(0.90) 3.60	Light brown silty medium SAND.	
3.50	ES4			28.82		3.70	Crystalline grey/brown calcareous LIMESTONE/IRONSTONE. Highly fossiliferous. Highly Weathered. (Probable Bedrock)	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Borehole terminated at 3.7m due to refusal. Excavation collapsed to 3.3m and remained dry on completion.

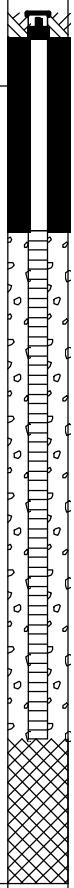
All dimensions in metres Scale 1:31.25	Client Engineer EPG Ltd	Method/ Plant Used Dando Terrier 2002	Logged By D Comer

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**PHK**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	12-12-12	34.88	E 490,529.5 N 410,393.3	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				34.48		(0.40) 0.40	MADE GROUND. Dark brown/grey gravelly coarse sand. Sand size fraction is predominantly ash. Gravel is of sub angular to sub rounded limestone. Sand size fraction is of quartz and ash.	
0.50	ES1						MADE GROUND. Dark grey slightly clayey sandy gravel with abundant, wood, plastic, metal pieces. Sand size fraction is predominantly ash. Gravel is of medium to coarse angular slag, sandstone, concrete, clinker, brick.	
1.50	ES2					(3.30)		
2.50	ES3		⊻				Water Strike at 2.6m.	
3.50	ES4			31.18		3.70		
				31.13		3.75	Crystalline grey calcareous LIMESTONE/IRONSTONE. Highly fossiliferous. Highly Weathered. (Probable Bedrock)	



Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											Borehole terminated at 3.7m due to refusal. Excavation collapsed to 3.1m with standing water at 2.6m on completion.

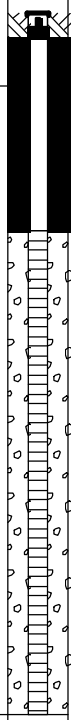
All dimensions in metres Scale 1:31.25	Client Engineer EPG Ltd	Method/ Plant Used Dando Terrier 2002	Logged By D Comer

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**PHL**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	12-12-12	35.11	E 490,727.9 N 410,501.3	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				34.71		(0.40) 0.40	MADE GROUND. Light brown gravelly coarse sand with many brick cobbles. Sand size fraction is predominantly ash. Gravel is of medium to coarse angular brick, sandstone, concrete, quartz, brick, ash. Cobbles are angular concrete.	
0.50	ES1						MADE GROUND. Dark grey slightly clayey gravelly coarse sand with abundant plastic bag, pottery, metal, glass and paper. Sand size fraction is predominantly ash. Gravel is of medium to coarse angular brick, coal, slag, sandstone, concrete.	
1.50	ES2					(2.60)		
2.50	ES3			32.11		3.00		



Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Borehole terminated at 3.0m due to refusal. Excavation remained open and dry on completion.

All dimensions in metres Scale 1:31.25	Client Engineer EPG Ltd	Method/ Plant Used Dando Terrier 2002	Logged By D Comer

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**PHM**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	11-12-12	34.60	E 490,427.9 N 410,273.1	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				34.45		0.15	MADE GROUND. Tarmac.	
				34.20		(0.25) 0.40	MADE GROUND. Grey slightly sandy gravel. Gravel is of medium to coarse angular to sub angular concrete and dolomite.	
0.50	ES1						Brown slightly gravelly medium to coarse SAND. Gravel is of fine to medium sub angular to rounded coal, quartz and sandstone.	
1.50	ES2					(2.80)		
2.50	ES3							
				31.40		3.20		
			1	31.20		3.40	Crystalline dark grey calcareous LIMESTONE/IRONSTONE. Highly fossiliferous. Highly Weathered. (Probable Bedrock)	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Borehole terminated at 3.4m due to refusal. Excavation remained open with standing water at 3.3m.

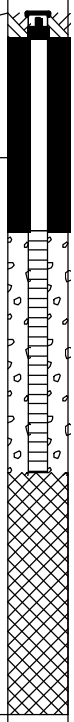
All dimensions in metres Scale 1:31.25	Client Engineer EPG Ltd	Method/ Plant Used Dando Terrier 2002	Logged By D Comer

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**PHN**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	13-12-12	35.18	E 490,554.0 N 410,691.2	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				35.08		0.10	MADE GROUND. Brown slightly sandy clay.	
						(0.60)	MADE GROUND. Light brown slightly clayey medium sand.	
0.50	ES1			34.48		0.70		
1.00	ES2		↓			(2.30)	LANDFILL DEPOSITS. MADE GROUND. Dark grey clayey slightly gravelly coarse sand. Sand size fraction is predominantly ash. Gravel is of medium to coarse sub angular brick, sandstone, concrete and ash. Dominant waste fraction is polythene. Minor paper, glass, metal, wood and cloth. Water Strike at 1.0m.	
2.00	ES3						Very poor recovery 2-3m.	
				32.18		3.00		



Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To
13-12-12	00.00	3.00	2.00	120	1					

GENERAL REMARKS

Borehole terminated at 3.0m due to refusal. Excavation collapse 2.0m with standing water at 1.0m on completion.

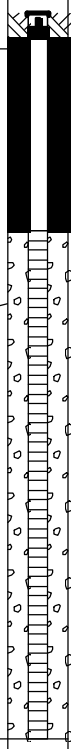
All dimensions in metres Scale 1:31.25	Client Engineer EPG Ltd	Method/ Plant Used Dando Terrier 2002	Logged By D Comer

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**PHO**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	13-12-12	32.08	E 490,666.1 N 410,112.3	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				31.83		(0.25) 0.25	MADE GROUND. Brown slightly clayey with occasional cobbles. Cobbles are angular brick and concrete.	
0.50	ES1					(1.05)	MADE GROUND. Brown gravelly coarse sand with some cobbles. Gravel is of fine to coarse angular slag, brick, concrete, coal, sandstone, quartz. Cobbles are of angular slag.	
				30.78		1.30	Very poor recovery 1.2-3.1m.	
						(1.80)	LANDFILL DEPOSITS. MADE GROUND. Dark grey slightly clayey gravelly coarse sand. Gravel is of medium to coarse angular slag, brick, coal and clinker. Dominant waste fraction is polythene. Minor constituent, wood, metal, glass.	
				28.98		3.10		



Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Borehole terminated at 3.1m.
Excavation remained open and dry on completion.

All dimensions in metres Scale 1:31.25	Client Engineer EPG Ltd	Method/ Plant Used Dando Terrier 2002	Logged By D Comer

Appendix D

Cable Percussive and Rotary Core Borehole Log Sheets

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BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**BH101**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	04-12-12 06-12-12	30.47	E 490,718.4 N 410,000.5	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				30.37		0.10	MADE GROUND. Brown very clayey slightly organic medium sand (topsoil).	
0.40-0.50	ES1						Orange brown slightly clayey medium SAND.	
1.00-1.10	ES2					(1.80)		
				28.57		1.90		
2.00-2.10	ES3			28.07		(0.50) 2.40	Slightly reddish brown silty medium to coarse SAND.	
						(4.00)	Rotary coring (Refer BH101R)	
				24.07		6.40		

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To
04-12-12	00.00	2.45	2.40	150	Dry	2.4	2.45	0.25		

GENERAL REMARKS

Cable percussive drilling 0.0-2.40m.
Rotary coring 2.40-6.4m (ref BH101R)

All dimensions in metres Scale 1:62.5	Client Engineer EPG Ltd	Method/ Plant Used Dando 2000/Comacchio 205	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**BH102**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	07-12-12 10-12-12	31.95	E 490,887.1 N 410,289.6	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				31.15		(0.80) 0.80	MADE GROUND. Concrete.	
0.90 1.50	ES1 ES2			30.05		(1.10) 1.90	MADE GROUND. Dark grey gravelly coarse sand with some angular fine to coarse glass and pottery fragments. Sand sized fraction is predominantly ash. Gravel is of angular fine to coarse ash, coal, clinker and slag.	
2.00	ES3			29.15		(0.90) 2.80	MADE GROUND. Grey mottled orange brown very clayey gravelly medium sand with some dark brown clayey sand inclusions. Gravel is of sub rounded fine to coarse quartz and sandstone.	
3.00	ES4			28.15		(1.00) 3.80	MADE GROUND. Dark brown silty slightly gravelly clay with some dark brown clayey sand inclusions and occasional angular wood and metal fragments. Gravel is of sub angular to angular fine to coarse slag, ash, quartz and limestone.	
				28.14		3.81	Impenetrable surface (probable bedrock).	
						(4.19)	Rotary drilling (refer BH102R)	
				23.95		8.00		

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
10-12-12	09.00	3.80	3.80	200	Dry	3.8	3.81	0.5			Cable percussive drilling 0.0-3.81m. Rotary Openhole 3.81-4.3m Rotary coring 4.3m-8.0m. (ref BH102R)
10-12-12	11.00	3.80	3.80	150	Dry						

All dimensions in metres Scale 1:62.5	Client Engineer EPG Ltd	Method/ Plant Used Dando 2000/Comacchio 205	Logged By E Lodge

GEOCORE BH 55272.GPJ AUGUST 768.GPJ 6/6/13

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**BH103**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	04-12-12 07-12-12	34.04	E 490,233.2 N 410,327.8	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
0.40-0.50	ES1			33.44		(0.60) 0.60	MADE GROUND. Dark brown slightly clayey sandy gravel with occasional cobbles. Gravel is of angular-sub angular fine to coarse concrete, limestone, brick and ironstone.	
0.70-0.80	ES2			32.94		(0.50) 1.10	Orange brown slightly clayey medium SAND.	
				32.84		1.20	Strong crystalline grey calcareous Limestone. Highly fossiliferous. Highly Weathered.	
							Rotary coring (Refer BH103R)	
						(4.80)		
				28.04		6.00		

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To
04-12-12	00.00	1.15	1.10	150	0.05	1.1	1.15	0.25		

GENERAL REMARKS

Cable percussive drilling 0.0-1.2m.
Rotary coring 1.20-6.0m (ref BH103R)

All dimensions in metres Scale 1:62.5	Client Engineer EPG Ltd	Method/ Plant Used Dando 2000/Comacchio 205	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**BH104**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	05-12-12 10-12-12	33.81	E 490,535.6 N 410,204.8	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
0.40-0.50	ES1			33.21		(0.60) 0.60	MADE GROUND. Light brown very clayey medium sand (topsoil).	
1.00-1.10	ES2			32.41		(0.80) 1.40	MADE GROUND. Brown very clayey very gravelly coarse sand with some plastic pieces. Gravel is of angular fine to coarse brick, concrete, slag, glass, pottery and ash.	
2.00-2.10	ES3	PID 1.1ppm				(2.20)	LANDFILL DEPOSITS. MADE GROUND. Dark grey/black very sandy gravel with some glass, plastic, brick, rope and occasional wood fragments. Sand sized fraction is predominantly ash. Gravel is of angular fine to coarse brick, ash, clinker, concrete and sandstone.	
3.00-3.10	ES4			30.21		3.60		
				30.11		3.70	Impenetrable obstruction, possible bedrock.	
						(4.30)	Rotary Coring (Refer BH104R)	
				25.81		8.00		

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
05-12-12	14.00	1.45	1.50	200	1.45	3.6	3.65	.5			Cable percussive drilling 0.0-3.7m. Rotary coring 3.7-8.0m (ref BH104R)
05-12-12	14.20	1.45	1.40	200	1.4						
05-12-12	16.00	3.60	3.60	200	1.41						
06-12-12	10.00	3.60	3.60	150	1.41						
06-12-12	11.00	3.60	3.60	150	1.41						

All dimensions in metres Scale 1:62.5	Client Engineer EPG Ltd	Method/ Plant Used Dando 2000/Comacchio 205	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**BH105**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	04-12-12 06-12-12	28.04	E 490,998.0 N 409,974.4	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
0.40-0.50	ES1						MADE GROUND. Brown mottled orange brown slightly clayey sandy gravel with some orange brown sandy clay inclusions and occasional clumped newspapers (legible text) and wood fragments. Sand sized fraction is predominantly ash. Gravel is of angular fine to coarse slag, brick, ash, concrete and clinker.	
1.00-1.10	ES2					(2.00)		
1.50-1.60	ES3			26.04		2.00		
2.00-2.10	ES4	PID 0.8ppm					MADE GROUND. Dark grey slightly clayey gravelly coarse sand with some cobbles and fibrous tile fragments. Gravel is of angular fine to coarse slag, mudstone, quartz, brick and concrete. Cobbles are angular concrete. Hydrocarbon odour 2.0-2.6m.	
3.00-3.10	ES5					(2.10)		
				23.94		4.10		
4.00-4.10	ES6			23.74		4.30	MADE GROUND. Stiff brown mottled orange brown slightly sandy slightly gravelly clay with occasional dark grey clayey sand inclusions. Gravel is of angular fine to coarse limestone.	
				23.64		4.40	Impenetrable obstruction, probable bedrock.	
							Rotary Coring. (refer BH105R)	
						(3.60)		
				20.04		8.00		

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
04-12-12	16.00	4.35	3.00	150	Dry	4.3	4.35	0.5	2	4.3	Cable percussive drilling 0.0-4.40m. Rotary coring 4.40-7.0m (ref BH105R)
05-12-12	10.30	4.35	4.35	200	Dry						
05-12-12	11.00	4.35	4.35	150	Dry						

All dimensions in metres Scale 1:62.5	Client Engineer EPG Ltd	Method/ Plant Used Dando 2000/Comacchio 205	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**BH106**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	06-12-12 07-12-12	35.38	E 490,526.9 N 410,584.6	
Client				Sheet
North Lincolnshire Council				1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				35.28		0.10	MADE GROUND. Tarmac.	
				35.08		0.30	MADE GROUND. Concrete.	
				34.93		0.45	MADE GROUND. Light grey gravelly coarse sand. Gravel is of sub rounded fine to coarse quartz.	
0.50	ES1						MADE GROUND. Dark brown/grey gravelly coarse sand. Sand sized fraction is predominantly ash. Gravel is of angular fine to coarse brick, clinker, limestone, concrete and slag. Light grey limestone gravel noted 1.9m-2.2m.	
1.00	ES2					(2.35)		
2.00	ES3							
				32.58		2.80		
3.00	ES4			31.98		(0.60) 3.40	Orange brown silty gravelly medium SAND. Gravel is of sub rounded to rounded quartz with occasional angular limestone.	
				31.88		3.50	Impenetrable surface, probable bedrock.	
							Rotary drilling. (refer BH106R)	
						(3.50)		
				28.38		7.00		

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
06-12-12	14.00	3.45	3.40	150	Dry	3	3.45	0.5			Cable percussive drilling 0.0-3.5m Rotary drilling 3.5-7.0m.

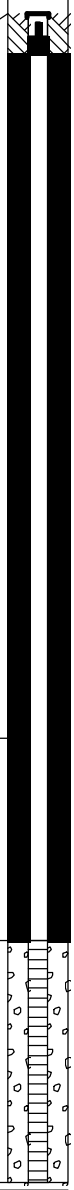
All dimensions in metres Scale 1:62.5	Client Engineer EPG Ltd	Method/ Plant Used JCB 3CX/Comacchio 205	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**BH101R**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	04-12-12 06-12-12	30.47	E 490,718.4 N 410,000.5	
Client				Sheet
North Lincolnshire Council				1 of 3

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				30.37		0.10	MADE GROUND. Brown very clayey slightly organic medium sand (topsoil).	
						(1.80)	Orange brown slightly clayey medium SAND.	
				28.57		1.90		
						(0.50)	Slightly reddish brown silty medium to coarse SAND.	
				28.07		2.40		
						(1.02)	Very strong grey, partially crystalline, partially oolitic fine grained calcareous LIMESTONE/IRONSTONE. Frequent recrystallised fossiliferous material and notable siderite content. Fresh to moderately weathered. Generally very strong but medium strong with penetrative orange brown discolouration where most intensely weathered. Fractures, sub horizontal, very closely spaced, stepped, rough and open to moderately wide with orange brown discolouration on fracture surface.	



Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Cable Precussive Drilling 0.0-2.4m
Rotary Coring (P) 2.4-6.4m.
Flushing Medium AirMist
PW Casing 0.0-2.3m

All dimensions in metres Scale 1:18.75	Client Engineer EPG Ltd	Method/ Plant Used Comacchio 205	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**BH101R**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	04-12-12 06-12-12	30.47	E 490,718.4 N 410,000.5	
Client				Sheet
North Lincolnshire Council				2 of 3

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				27.05		3.42		
				26.00		(1.05) 4.47	Weak to medium strong partially thinly laminated drk grey fine grained argillaceous MUDSTONE. Frequent partially fossilised shell fragments and micaceous material centred along bedding surfaces. Generally moderately weathered but highly weathered neighbouring sub vertical fractures. Strength reduced to very weak with dark grey clayey weathering products where most intensely weathered. 3.4m-3.69m - Fractures sub horizontal, closely spaced, stepped rough and open with slight orange brown clayey sand coatings. 3.69m-3.75m - One number sub vertical fracture (60mm) undulating, rough and tight with slight orange brown discolouration on fracture surface. 3.75m-4.12m - Fractures sub horizontal, closely spaced, undulating, rough and moderately wide with up to 10mm grey sandy clay infill.	
				25.47		(0.53) 5.00	4.12m-4.23m - One number sub vertical fracture (110mm), undulating, rough and tight with slight orange brown discolouration on fracture surface. 4.23m-4.4m - Fractures sub horizontal, undulating, smooth and tight. No infill.	
				24.52		(0.95) 5.95	Very strong light grey partially crystalline medium grained calcareous LIMESTONE. Frequent recrystallised fossiliferous material. Fresh. 4.47m-4.75m - Unfractured institu. 4.9m-5.0m - One number sub horizontal fracture combined with one number fracture dipping at 45°. Undulating, rough and open with dark grey/partially crystallized argillaceous infill. Weak partially thickly laminated dark grey slightly calcareous fine grained argillaceous MUDSTONE. Occasional partially fossilised shell fragments centred along bedding planes. Generally moderately weathered but occasional completely weathered neighbouring fractures where recovered as a dark grey sandy clay. Fractures closely spaced, sub horizontal. Undulating rough and tight with dark grey sandy clay infill.	

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	Cable Precussive Drilling 0.0-2.4m Rotary Coring (P) 2.4-6.4m. Flushing Medium AirMist PW Casing 0.0-2.3m

All dimensions in metres Scale 1:18.75	Client Engineer EPG Ltd	Method/ Plant Used Comacchio 205	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**BH101R**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	04-12-12 06-12-12	30.47	E 490,718.4 N 410,000.5	
Client				Sheet
North Lincolnshire Council				3 of 3

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				24.07		(0.45) 6.40	Very strong light grey partially crystalline medium grained calcareous LIMESTONE. Frequent recrystallised fossiliferous material. Fresh. Unfractured institu. *(continued)*	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Cable Precussive Drilling 0.0-2.4m
Rotary Coring (P) 2.4-6.4m.
Flushing Medium AirMist
PW Casing 0.0-2.3m

All dimensions in metres Scale 1:18.75	Client Engineer EPG Ltd	Method/ Plant Used Comacchio 205	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**BH102R**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	07-12-12 10-12-12	31.95	E 490,887.1 N 410,289.6	
Client				Sheet
North Lincolnshire Council				1 of 3

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				31.15		(0.80) 0.80	MADE GROUND. Concrete.	
				30.05		(1.10) 1.90	MADE GROUND. Dark grey gravelly coarse sand with some angular fine to coarse glass and pottery fragments. Sand sized fraction is predominantly ash. Gravel is of angular fine to coarse ash, coal, clinker and slag.	
				29.15		(0.90) 2.80	MADE GROUND. Grey mottled orange brown very clayey gravelly medium sand with some dark brown clayey sand inclusions. Gravel is of sub rounded fine to coarse quartz and sandstone.	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Cable Precussive Drilling 0.0-3.81m
Rotary Openhole 3.81-4.3m
Rotary Coring (P) 4.3-8.0m.
Flushing Medium AirMist
PW Casing 0.0-4.3m, 150mm Casing 0.0-3.8m (preinstalled)

All dimensions in metres Scale 1:18.75	Client Engineer EPG Ltd	Method/ Plant Used Comacchio 205	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**BH102R**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	07-12-12 10-12-12	31.95	E 490,887.1 N 410,289.6	
Client				Sheet
North Lincolnshire Council				2 of 3

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				28.15		(1.00) 3.80	MADE GROUND. Dark brown silty slightly gravelly clay with some dark brown clayey sand inclusions and occasional angular wood and metal fragments. Gravel is of sub angular to angular fine to coarse slag, ash, quartz and limestone. *(continued)*	
				27.65		(0.50) 4.30	Rotary openhole.	
				27.00		(0.65) 4.95	Strong grey crystalline particularly oolitic fine grained calcareous LIMESTONE/IRONSTONE. Frequent recrystallised fossiliferous material localised along bedding surfaces. 4.3m-4.7m - Fractures extremely closely spaced, sub horizontal, undulating/stepped, rough and moderately wide with penetrative orange brown discolouration. 4.7m-4.95m - 1No. sub vertical fracture (250mm). Undulating, rough and partially open with orange brown discolouration on fracture surface.	
						(1.40)	Medium strong, becoming weak with depth, partially thickly laminated dark grey fine grained argillaceous MUDSTONE. Frequent fossilized shell fragments centred along bedding planes. Generally moderately weathered but becoming highly weathered with depth. Strength reduced to very weak where most intensely weathered. Fractures closely spaced, sub horizontal, undulating, smooth and open with up to 2.5mm sandy clay infill and slight orange brown discolouration on fracture surface.	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Cable Precussive Drilling 0.0-3.81m
Rotary Openhole 3.81-4.3m
Rotary Coring (P) 4.3-8.0m.
Flushing Medium AirMist
PW Casing 0.0-4.3m,
150mm Casing 0.0-3.8m (preinstalled)

All dimensions in metres Scale 1:18.75	Client Engineer EPG Ltd	Method/ Plant Used Comacchio 205	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**BH102R**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	07-12-12 10-12-12	31.95	E 490,887.1 N 410,289.6	
Client				Sheet
North Lincolnshire Council				3 of 3

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				25.60		6.35		
				25.30		(0.30) 6.65	Strong light grey crystalline medium grained calcareous LIMESTONE. Frequent recrystallised fossiliferous material. Fresh. 6.35m-6.65m - 1 no sub vertical fracture (300mm). Undulating, rough and moderately wide with up to 10mm calcite mineralisation.	
				24.25		(1.05) 7.70	Very weak, becoming medium strong at 7.35m, slightly calcareous dark grey fine grained argillaceous MUDSTONE. Frequent fine shell fragments. Completely weathered 6.65m to 7.35m where strength is reduced and often recovered as very stiff clay. Moderately weathered from 7.35m. Fractures closely spaced, sub horizontal, stepped, smooth and open with up to 25mm sandy clay infill (possibly drilling induced).	
				23.95		(0.30) 8.00	Very strong grey thickly laminated partially oolitic calcareous LIMESTONE. Frequent interlaminated argillaceous material. Fresh. Unfractured insitu.	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Cable Precussive Drilling 0.0-3.81m
Rotary Openhole 3.81-4.3m
Rotary Coring (P) 4.3-8.0m.
Flushing Medium AirMist
PW Casing 0.0-4.3m,
150mm Casing 0.0-3.8m (preinstalled)

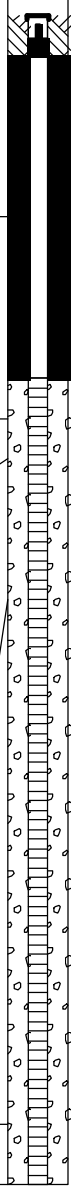
All dimensions in metres Scale 1:18.75	Client Engineer EPG Ltd	Method/ Plant Used Comacchio 205	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**BH103R**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	04-12-12 07-12-12	34.04	E 490,233.2 N 410,327.8	
Client				Sheet
North Lincolnshire Council				1 of 3

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
						(0.60)	MADE GROUND. Dark brown slightly clayey sandy gravel with occasional cobbles. Gravel is of angular-sub angular fine to coarse concrete, limestone, brick and ironstone.	
				33.44		0.60		
						(0.50)	Orange brown slightly clayey medium SAND.	
				32.94		1.10		
				32.84		1.20	Strong crystalline grey calcareous LIMESTONE. Highly fossiliferous.	
						(0.35)	Strong partially crystalline dark grey partially argillaceous fine grained calcareous LIMESTONE. Frequent recrystallised shell material. Moderately, partial recrystallisation calong former fracture surfaces. 1.2m-1.35m - One number sub vertical fracture (150mm) undulating, rough and partially open with slight orange brown discolouration on fracture surface. 1.35m-1.55m - Unfractured institu.	
				32.49		1.55		
						(1.30)	Weak partially thickly laminated dark grey fine grained argillaceous MUDSTONE. Generally moderately weathered but highly weathered neighbouring fractures and in non intact areas. Strength reduced to very weak and recovered as dark grey clayey gravel sized pieces where most intensely weathered. Fractures very closely spaced, stepped, rough and tight with slight orange brown discolouration on fracture surface.	
				31.19		2.85		



Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Cable Precussive Drilling 0.0-1.2m
Rotary Coring (P) 1.2-6.0m.
Flushing Medium AirMist
PW Casing 0.0-1.25m

All dimensions in metres Scale 1:18.75	Client Engineer EPG Ltd	Method/ Plant Used Comacchio 205	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**BH103R**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	04-12-12 07-12-12	34.04	E 490,233.2 N 410,327.8	
Client				Sheet
North Lincolnshire Council				2 of 3

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				30.81		(0.38) 3.23	Very strong crystalline grey medium grained calcareous LIMESTONE. Frequent recrystallised shell material and argillaceous interbeds. Fresh. Fractures sub horizontal, closely spaced, undulating, rough and partially open with orange brown discolouration on fracture surface. *(continued)*	
				28.74		(2.07) 5.30	Medium strong, weakening with depth partially laminated, dark grey, slightly calcareous fine grained argillaceous MUDSTONE. Frequent partially fossilised shell material centred along bedding planes. Occasional strong light grey fossiliferous limestone horizons (fresh) noted 4.0m-4.55m and 5.0m-5.15m. Generally fresh but moderately highly weathered immediately following limestone horizons. Strength reduced to weak where most intensely weathered. 3.23m-3.40m - Fractures very closely spaced, stepped, rough and tight with slight orange brown discolouration on fracture surface. 3.46m-3.92m - Unfractured institu. 3.92m-4.0m - Fractures extremely closely spaced, sub horizontal, undulating, rough and moderately wide with up to 8mm grey silty clay infill. 4.0m-4.07m - 1No. Sub vertical fracture (70mm), stepped, rough and tight. No infill. 4.07m-4.4m - Unfractured institu. 4.5m-4.55m - Fractures sub horizontal, undulating, rough and open with orange brown discolouration on fracture surface and dark grey clayey sand coatings. 4.55m-5.3m - Fractures sub horizontal, closely spaced, stepped and undulating , smooth and partially open. No infill (possibly drill induced).	
				28.04		(0.70) 6.00	Very strong light grey partially crystalline medium grained calcareous LIMESTONE. Frequent recrystallised fossiliferous material. Fresh. 5.3m-5.7m - Unfractured institu.	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Cable Precussive Drilling 0.0-1.2m
Rotary Coring (P) 1.2-6.0m.
Flushing Medium AirMist
PW Casing 0.0-1.25m

All dimensions in metres Scale 1:18.75	Client Engineer EPG Ltd	Method/ Plant Used Comacchio 205	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**BH103R**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	04-12-12 07-12-12	34.04	E 490,233.2 N 410,327.8	
Client				Sheet
North Lincolnshire Council				3 of 3

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Cable Precussive Drilling 0.0-1.2m
Rotary Coring (P) 1.2-6.0m.
Flushing Medium AirMist
PW Casing 0.0-1.25m

All dimensions in metres Scale 1:18.75	Client Engineer EPG Ltd	Method/ Plant Used Comacchio 205	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**BH104R**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	05-12-12 10-12-12	33.81	E 490,535.6 N 410,204.8	
Client				Sheet
North Lincolnshire Council				1 of 3

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				33.21		(0.60) 0.60	MADE GROUND. Light brown very clayey medium sand (topsoil).	
				32.41		(0.80) 1.40	MADE GROUND. Brown very clayey very gravelly coarse sand with some plastic pieces. Gravel is of angular fine to coarse brick, concrete, slag, glass, pottery and ash.	
						(2.30)	LANDFILL DEPOSITS. MADE GROUND. Dark grey/black very sandy gravel with some glass, plastic, brick, rope and occasional wood fragments. Sand sized fraction is predominantly ash. Gravel is of angular fine to coarse brick, ash, clinker, concrete and sandstone.	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Cable Precussive Drilling 0.0-3.7m
Rotary Coring (P) 3.7-8.0m.
Flushing Medium AirMist
PW Casing 0.0-3.7m, 150mm Casing 0.0-3.7m (preinstalled)

All dimensions in metres Scale 1:18.75	Client Engineer EPG Ltd	Method/ Plant Used Comacchio 205	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**BH104R**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	05-12-12 10-12-12	33.81	E 490,535.6 N 410,204.8	
Client				Sheet
North Lincolnshire Council				2 of 3

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				30.11		3.70	LANDFILL DEPOSITS. MADE GROUND. Dark grey/black very sandy gravel with some glass, plastic, brick, rope and occasional wood fragments. Sand sized fraction is predominantly ash. Gravel is of angular fine to coarse brick, ash, clinker, concrete and sandstone. *(continued)*	
				29.71		(0.40) 4.10	Strong partially crystalline grey fine grained calcareous LIMESTONE/IRONSTONE. Frequent recrystallised fossiliferous material notable siderite mineral content. Moderately weathered. Generally strong but medium strong where most intensely weathered Penetrative orange brown discolouration throughout.	
				28.26		(1.45) 5.55	3.7m-4.31m - 1No.sub vertical fracture (610mm). Undulating rough and open with dark orange brown discolouration on fracture surface, intersected 4 No. closely spaced sub horizontal fractures. Stepped, rough and open up to 1mm grey gravelly clay infill. Weak dark grey partially thickly laminated fine grained argillaceous MUDSTONE. Frequent fossilized shell fragments centred along bedding planes and micaceous material. Occasional very strong fine grained fossiliferous limestone horizons (notably 4.5m-4.6m and 5.02m-5.07m). Generally moderately weathered but highly weathered neighbouring fractures. Strength reduced to weak with dark grey, sandy clay weathery products where most intensely weathered. 4.31m-4.59m - Fractures very closely spaced, stepped, smooth and tight with slight orange brown discolouration. 4.75m-5.09m - Fractures closely spaced, undulating smooth and open with up to 2.5mm grey sandy clay infill. 5.32-5.55m- Unfractured insitu.	
				28.06		(0.20) 5.75	Strong light grey crystalline medium grained calcareous LIMESTONE. Frequent recrystallised fossiliferous material. Fresh. Unfractured insitu.	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Cable Precussive Drilling 0.0-3.7m
Rotary Coring (P) 3.7-8.0m.
Flushing Medium AirMist
PW Casing 0.0-3.7m, 150mm Casing 0.0-3.7m (preinstalled)

All dimensions in metres Scale 1:18.75	Client Engineer EPG Ltd	Method/ Plant Used Comacchio 205	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**BH104R**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	05-12-12 10-12-12	33.81	E 490,535.6 N 410,204.8	
Client				Sheet
North Lincolnshire Council				3 of 3

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				27.11		(0.95) 6.70	Weak dark grey slightly calcareous fine grained argillaceous MUDSTONE. Occasional fine shell fragments. Generally moderately weathered but completely weathered in non intact zones where recovered as stiff dark grey sandy clay. Fractures sub horizontal, stepped, rough and tight. No infill. *(continued)*	
				26.71		(0.40) 7.10	Strong crystalline light grey medium grained calcareous LIMESTONE. Frequent recrystallised fossiliferous material. Fresh. Fractures sub horizontal, undulating, rough and open with orange brown discolouration on fracture surface.	
				26.31		(0.40) 7.50	Very weak thickly laminated dark grey fine grained argillaceous MUDSTONE. Generally highly weathered but completely weathered neighbouring fractures. Strength reduced to very weak with extensive grey clay weathering product. Fractures closely spaced, sub horizontal undulating, smooth and tight, slight orange brown discolouration on fracture surface.	
				25.81		(0.50) 8.00	Very strong thickly laminated light grey partially oolitic calcareous LIMESTONE. Frequent interlaminated argillaceous material. Generally fresh but slight orange brown discolouration nieghbouring fractures. Fractures closely spaced, sub horizontal undulating, smooth and tight, slight orange brown discolouration on fracture surface.	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Cable Precussive Drilling 0.0-3.7m
Rotary Coring (P) 3.7-8.0m.
Flushing Medium AirMist
PW Casing 0.0-3.7m, 150mm Casing 0.0-3.7m (preinstalled)

All dimensions in metres Scale 1:18.75	Client Engineer EPG Ltd	Method/ Plant Used Comacchio 205	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**BH105R**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	04-12-12 06-12-12	28.04	E 490,998.0 N 409,974.4	
Client				Sheet
North Lincolnshire Council				1 of 3

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
						(2.00)	MADE GROUND. Brown mottled orange brown slightly clayey sandy gravel with some orange brown sandy clay inclusions and occasional clumped newspapers (legible text) and wood fragments. Sand sized fraction is predominantly ash. Gravel is of angular fine to coarse slag, brick, ash, concrete and clinker.	
				26.04		2.00	MADE GROUND. Dark grey slightly clayey gravelly coarse sand with some cobbles and fibrous tile fragments. Gravel is of angular fine to coarse slag, mudstone, quartz, brick and concrete. Cobbles are angular concrete. Hydrocarbon odour 2.0-2.6m.	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Cable Precussive Drilling 0.0-4.4m
Rotary Coring (P) 4.4-4.4m.
Flushing Medium AirMist
PW Casing 0.0-4.3m,
150mm Casing 0.0-4.3m

All dimensions in metres Scale 1:18.75	Client Engineer EPG Ltd	Method/ Plant Used	Comacchio 205	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**BH105R**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	04-12-12 06-12-12	28.04	E 490,998.0 N 409,974.4	
Client				Sheet
North Lincolnshire Council				2 of 3

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				23.94		(2.10) 4.10	MADE GROUND. Dark grey slightly clayey gravelly coarse sand with some cobbles and fibrous tile fragments. Gravel is of angular fine to coarse slag, mudstone, quartz, brick and concrete. Cobbles are angular concrete. Hydrocarbon odour 2.0-2.6m. *(continued)*	
				23.74		(0.20) 4.30	MADE GROUND. Stiff brown mottled orange brown slightly sandy slightly gravelly clay with occasional dark grey clayey sand inclusions. Gravel is of angular fine to coarse limestone.	
				23.64		4.40	Impenetrable obstruction, probable bedrock.	
				22.84		(0.80) 5.20	Very strong slightly crystalline light grey medium grained calcareous LIMESTONE/IRONSTONE. Highly fossiliferous. Multiple recrystallised large shell fragments. Notable siderite mineral content. Generally fresh but highly weathered where most intensely fractured. Reduction in strength to weak with extensive reddish brown penetrative discolouration and sandy clay weathering products. Fractures very closely spaced, sub horizontal, undulating rough and moderately wide with slight dark grey and orange brown discolouration on fracture surface.	
				22.64		(0.20) 5.40	No recovery. Suspected drill loss, no evidence of voiding.	
							Strong partially thickly laminated dark grey fine grained argillaceous MUDSTONE. Frequent fossilised shell fragments centred along bedding surfaces. Occasional very strong light grey calcareous limestone horizons (fresh) namely 5.87m-6.02m. Generally fresh but moderately weathered neighbouring fractures where slight reduction in strength is apparent. Fractures very closely spaced to closely spaced sub horizontal, stepped, rough and tight. No infill.	

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											Cable Precussive Drilling 0.0-4.4m Rotary Coring (P) 4.4-4.4m. Flushing Medium AirMist PW Casing 0.0-4.3m, 150mm Casing 0.0-4.3m

All dimensions in metres Scale 1:18.75	Client Engineer EPG Ltd	Method/ Plant Used Comacchio 205	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**BH105R**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	04-12-12 06-12-12	28.04	E 490,998.0 N 409,974.4	
Client				Sheet
North Lincolnshire Council				3 of 3

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
						(1.24)	5.62m-5.71m - 1No. sub vertical fracture (90mm). Planar, rough and partially open with slight reddish brown discolouration on fracture surface 5.87m-6.02m - Fractures very closely spaced, sub horizontal, undulating rough and open with slight orange brown discolouration. Strong partially thickly laminated dark grey fine grained argillaceous MUDSTONE. Frequent fossilised shell fragments centred along bedding surfaces. Occasional very strong light grey calcareous limestone horizons (fresh) namely 5.87m-6.02m. Generally fresh but moderately weathered neighbouring fractures where slight reduction in strength is apparent.	
				21.40		6.64		
						(0.36)	Fractures very closely spaced to closely spaced sub horizontal, stepped, rough and tight. No infill. *(continued)*	
				21.04		7.00	Very strong, crystalline grey fine grained calcareous LIMESTONE. Highly fossiliferous. Fresh. Fractures sub horizontal, undulating, rough and open with slight orange brown discolouration on fracture surface.	
						(0.92)	Weak partially laminated dark grey slightly calcareous fine grained argillaceous MUDSTONE. Abundant partially fossilised shell fragments centred along bedding surfaces, moderately weathered but occasional completely weathered neighbouring fractures where recovered as stiff dark grey slighty sandy clay. 7.21m-7.32m - Fractures very closely spaced, stepped, smooth and moderately wide with up to 10mm grey sandy clay infill. 7.32m-7.4m - One number fracture dipping at 45º. Undulating rough and partially open with slight orange brown discolouration.	
				20.12		7.92		
						(0.48)	7.4m-7.85m - Fractures medium spaced, stepped, rough and tight. No infill. 7.85m-7.92m - Fractures very closely spaced, undulating rough and open with up to 2.5mm dark grey sandy clay infill.	
				19.64		8.40	Strong grey partially crystalline fine grained calcareous LIMESTONE. Highly fossiliferous. Occasional argillaceous interlaminae. Limestone is fresh. Thick argilaceous layers (>20mm) showin moderate weathering. 7.92m-8.29m - One number fracture dipping at 45º, undulating, rough and open with slight light brown sandy coatings.	

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											Cable Precussive Drilling 0.0-4.4m Rotary Coring (P) 4.4-4.4m. Flushing Medium AirMist PW Casing 0.0-4.3m, 150mm Casing 0.0-4.3m

All dimensions in metres Scale 1:18.75	Client Engineer EPG Ltd	Method/ Plant Used Comacchio 205	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**BH106R**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	06-12-12 07-12-12	35.38	E 490,526.9 N 410,584.6	
Client				Sheet
North Lincolnshire Council				1 of 3

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				35.28		0.10	MADE GROUND. Tarmac.	
				35.08		(0.20) 0.30	MADE GROUND. Concrete.	
				34.93		(0.15) 0.45	MADE GROUND. Light grey gravelly coarse sand. Gravel is of sub rounded fine to coarse quartz.	
						(2.35)	MADE GROUND. Dark brown/grey gravelly coarse sand. Sand sized fraction is predominantly ash. Gravel is of angular fine to coarse brick, clinker, limestone, concrete and slag. Light grey limestone gravel noted 1.9m-2.2m.	
				32.58		2.80		
							Orange brown silty gravelly medium SAND. Gravel is of sub rounded to rounded quartz with occasional angular limestone.	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Cable Precussive Drilling 0.0-3.5m
Rotary Coring (P) 3.5-7.0m.
Flushing Medium AirMist
PW Casing 0.0-3.5m, 150mm casing 0.0-3.5m (preinstalled)

All dimensions in metres Scale 1:18.75	Client Engineer EPG Ltd	Method/ Plant Used Comacchio 205	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**BH106R**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	06-12-12 07-12-12	35.38	E 490,526.9 N 410,584.6	
Client				Sheet
North Lincolnshire Council				2 of 3

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				31.98		(0.60) 3.40	Orange brown silty gravelly medium SAND. Gravel is of sub rounded to rounded quartz with occasional angular limestone. *(continued)*	
				31.88		3.50	Impenetrable surface, probable bedrock.	
				30.88		(1.00) 4.50	Strong/very strong thinly bedded, partially crystalline, partially oolitic grey fine to medium grained calcareous LIMESTONE/IRONSTONE. Frequent interbedded argillaceous mudstone and recrystallised shell fragments. Generally moderately weathered but highly weathered neighbouring fractures. Strength reduced to medium strong where most intensely weathered. Extensive reddish brown iron oxide weathering products. Fractures very closely spaced, sub horizontal, undulating, rough and moderately wide with orange brown discolouration on fracture surface and dark grey clayey sand weathering product.	
				29.65		(1.23) 5.73	Medium strong partially thickly laminated dark grey fine grained argillaceous MUDSTONE. Frequent fossilised shell fragments centred along bedding planes. Generally moderately weathered but completely weathered neighbouring fractures and in non intact zones where recovered as dark grey very clayey gravel sized fragments. Fractures very closely spaced, stepped, rough and open with orange brown discolouration on fracture surface. 5.25m-5.63m - Unfractured institu.	
						(0.33)	Strong light grey crystalline medium grained calcareous LIMESTONE. Frequent recrystallised fossiliferous material. Fresh. Unfractured institu.	

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	Cable Precussive Drilling 0.0-3.5m Rotary Coring (P) 3.5-7.0m. Flushing Medium AirMist PW Casing 0.0-3.5m, 150mm casing 0.0-3.5m (preinstalled)

All dimensions in metres Scale 1:18.75	Client Engineer EPG Ltd	Method/ Plant Used Comacchio 205	Logged By E Lodge

BOREHOLE LOG

Geocore Site Investigations Ltd

Location				BOREHOLE No
Midland Road Industrial Estate, Scunthorpe				**BH106R**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
RT/12/55272	06-12-12 07-12-12	35.38	E 490,526.9 N 410,584.6	
Client				Sheet
North Lincolnshire Council				3 of 3

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				29.32		6.06		
				28.90		(0.42) 6.48	Medium strong dark grey slightly calcareous fine grained argillaceous MUDSTONE occasional fine shell fragments. Generally moderately weathered but highly weathered neighbouring fractures where reduction is strength is apparent. 6.06m-6.48m - One number sub horizontal fracture, stepped, rough and partially open with up to 2.5mm dark grey sandy clay infill.	
				28.38		(0.52) 7.00	No recovery. Drill loss, no evidence of voiding.	

Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

Cable Precussive Drilling 0.0-3.5m
Rotary Coring (P) 3.5-7.0m.
Flushing Medium AirMist
PW Casing 0.0-3.5m, 150mm casing 0.0-3.5m (preinstalled)

All dimensions in metres Scale 1:18.75	Client Engineer EPG Ltd	Method/ Plant Used Comacchio 205	Logged By E Lodge

Appendix E

Soil Chemical Test Data

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ALcontrol Laboratories

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: mkt@alcontrol.com
Website: www.alcontrol.com

Geocore Site Investigations Limited
Tralee Close
Kirkleatham Business Park
Redcar
TS10 5SG

Attention: Sarah Mortimer

CERTIFICATE OF ANALYSIS

Date:	28 December 2012
Customer:	H_GEOCORE_RDC
Sample Delivery Group (SDG):	121207-4
Your Reference:	RT/12/55272
Location:	Midland Industrial Estate
Report No:	207068

We received 28 samples on Thursday December 06, 2012 and 14 of these samples were scheduled for analysis which was completed on Friday December 28, 2012. 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.

Approved By:

Sonia McWhan

Operations Manager

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Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No.

CERTIFICATE OF ANALYSIS

SDG:	121207-4	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207068
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
6618356	BH101	ES1	0.40 - 0.50	04/12/2012
6618359	BH101	ES2	1.00 - 1.10	04/12/2012
6618357	BH101	ES3	2.00 - 2.10	04/12/2012
6618362	BH103	ES1	0.40 - 0.50	04/12/2012
6618360	BH103	ES2	0.70 - 0.80	04/12/2012
6618354	BH105	ES1	0.40 - 0.50	04/12/2012
6618355	BH105	ES2	1.00 - 1.10	04/12/2012
6618361	BH105	ES3	1.50 - 1.60	04/12/2012
6618353	BH105	ES4	2.00 - 2.10	04/12/2012
6618352	BH105	ES5	3.00 - 3.10	04/12/2012
6618374	TP18	ES1	0.20	05/12/2012
6618373	TP18	ES2	0.50	05/12/2012
6618376	TP19	ES1	0.20	05/12/2012
6618379	TP19	ES2	0.50	05/12/2012
6618377	TP19	ES3	1.50	05/12/2012
6618378	TP19	ES4	2.50	05/12/2012
6618367	TP20	ES1	0.10	05/12/2012
6618364	TP20	ES2	0.50	05/12/2012
6618363	TP20	ES3	1.50	05/12/2012
6618366	TP20	ES4	2.50	05/12/2012
6618368	TP20	ES5	3.00	05/12/2012
6618370	TP26	ES1	0.50	05/12/2012
6618375	TP26	ES2	1.00	05/12/2012
6618372	TP26	ES3	2.00	05/12/2012
6618381	TP26	ES4	3.00	05/12/2012
6618371	TP27	ES1	0.30	05/12/2012
6618383	TP27	ES2	0.50	05/12/2012
6618384	TP27	ES3	1.50	05/12/2012

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

ALcontrol Laboratories

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CERTIFICATE OF ANALYSIS

SDG:	121207-4	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207068
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			6618361			6618353			6618352			6618376			6618377			6618378			6618367			6618363			6618368			6618372			6618381			6618371			6618383			6618384		
Customer Sample Reference			BH105			BH105			BH105			TP19			TP19			TP19			TP20			TP20			TP20			TP26			TP26			TP27			TP27			TP27		
AGS Reference			ES3			ES4			ES5			ES1			ES3			ES4			ES1			ES3			ES5			ES3			ES4			ES1			ES2			ES3		
Depth (m)			1.50 - 1.60			2.00 - 2.10			3.00 - 3.10			0.20			1.50			2.50			0.10			1.50			3.00			2.00			3.00			0.30			0.50			1.50		
Container			1kg TUB	250g Amber Jar (AL		1kg TUB	250g Amber Jar (AL		1kg TUB	250g Amber Jar (AL	60g VOC (ALE215)	1kg TUB	250g Amber Jar (AL	60g VOC (ALE215)	1kg TUB	250g Amber Jar (AL		1kg TUB	250g Amber Jar (AL		1kg TUB	250g Amber Jar (AL	60g VOC (ALE215)	1kg TUB	250g Amber Jar (AL		1kg TUB	250g Amber Jar (AL		1kg TUB	250g Amber Jar (AL		1kg TUB	250g Amber Jar (AL		1kg TUB	250g Amber Jar (AL	60g VOC (ALE215)	1kg TUB	250g Amber Jar (AL	60g VOC (ALE215)	1kg TUB	250g Amber Jar (AL	60g VOC (ALE215)
Anions by Kone (soil)	All	NDPs: 0 Tests: 2											X									X																							
Asbestos Identification (Soil)	All	NDPs: 0 Tests: 7	X			X						X			X						X														X						X		
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 6								X			X									X														X			X			X		
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 6								X			X									X														X			X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 6									X			X									X														X			X				X
Metals by iCap-OES (Soil)	Arsenic	NDPs: 0 Tests: 2											X									X																							
	Cadmium	NDPs: 0 Tests: 2											X									X																							
	Chromium	NDPs: 0 Tests: 2											X									X																							
	Copper	NDPs: 0 Tests: 2											X									X																							
	Lead	NDPs: 0 Tests: 2											X									X																							
	Mercury	NDPs: 0 Tests: 2											X									X																							
	Nickel	NDPs: 0 Tests: 2											X									X																							
	Zinc	NDPs: 0 Tests: 2											X									X																							
PAH by GCMS	All	NDPs: 0 Tests: 2											X									X																							
pH	All	NDPs: 0 Tests: 12	X			X			X			X			X			X			X			X			X			X			X						X					

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CERTIFICATE OF ANALYSIS

SDG:	121207-4	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207068
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)	6618361	6618353	6618352	6618376	6618377	6618378	6618367	6618363	6618368	6618372	6618381	6618371	6618383	6618384
Customer Sample Reference	BH105	BH105	BH105	TP19	TP19	TP19	TP20	TP20	TP20	TP26	TP26	TP27	TP27	TP27
AGS Reference	ES3	ES4	ES5	ES1	ES3	ES4	ES1	ES3	ES5	ES3	ES4	ES1	ES2	ES3
Depth (m)	1.50 - 1.60	2.00 - 2.10	3.00 - 3.10	0.20	1.50	2.50	0.10	1.50	3.00	2.00	3.00	0.30	0.50	1.50
Container	1kg TUB / 250g Amber Jar (AL	1kg TUB / 250g Amber Jar (AL	1kg TUB / 250g Amber Jar (AL / 60g VOC (ALE215)	1kg TUB / 250g Amber Jar (AL / 60g VOC (ALE215)	1kg TUB / 250g Amber Jar (AL	1kg TUB / 250g Amber Jar (AL	1kg TUB / 250g Amber Jar (AL / 60g VOC (ALE215)	1kg TUB / 250g Amber Jar (AL	1kg TUB / 250g Amber Jar (AL	1kg TUB / 250g Amber Jar (AL	1kg TUB / 250g Amber Jar (AL	1kg TUB / 250g Amber Jar (AL / 60g VOC (ALE215)	1kg TUB / 250g Amber Jar (AL / 60g VOC (ALE215)	1kg TUB / 250g Amber Jar (AL / 60g VOC (ALE215)
Sample description — All — NDPs: 0, Tests: 14	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Semi Volatile Organic Compounds — All — NDPs: 0, Tests: 1													X	
Total Organic Carbon — All — NDPs: 2, Tests: 9	N	X	X	X	N	X	X	X	X	X	X			
Total Organic Carbon (Asb) — All — NDPs: 0, Tests: 2	X				X									
TPH CWG GC (S) — All — NDPs: 0, Tests: 6			X	X			X					X	X	X
VOC MS (S) — All — NDPs: 0, Tests: 1													X	

CERTIFICATE OF ANALYSIS

SDG:	121207-4	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207068
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Sample Descriptions

Grain Sizes

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

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
6618352	BH105	3.00 - 3.10	Black	Silty Clay Loam	0.1 - 2 mm	Glass & Stones	Vegetation
6618353	BH105	2.00 - 2.10	Dark Brown	Sandy Loam	0.1 - 2 mm	Fibres	Crushed Brick
6618361	BH105	1.50 - 1.60	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	Crushed Brick
6618376	TP19	0.20	Dark Brown	Silt Loam	0.063 - 0.1 mm	None	Vegetation
6618377	TP19	1.50	Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Plastic	Fibres
6618378	TP19	2.50	Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Paper	Glass & Stones
6618363	TP20	1.50	Dark Brown	Sandy Silt Loam	0.063 - 0.1 mm	Vegetation	Stones
6618367	TP20	0.10	Dark Brown	Sandy Loam	0.063 - 0.1 mm	Stones	Vegetation
6618368	TP20	3.00	Black	Silt Loam	0.063 - 0.1 mm	Stones	Vegetation
6618372	TP26	2.00	Light Brown	Sand	0.1 - 2 mm	None	None
6618381	TP26	3.00	Dark Brown	Sandy Loam	0.1 - 2 mm	Stones	Vegetation
6618371	TP27	0.30	Dark Brown	Sandy Loam	0.1 - 2 mm	Glass & Stones	Fibres
6618383	TP27	0.50	Black	Loamy Sand	0.1 - 2 mm	Stones	Vegetation
6618384	TP27	1.50	Black	Silty Clay Loam	0.1 - 2 mm	Oil/Petroleum	Fibres

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 ocurring 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.

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121207-4	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207068
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			BH105	BH105	BH105	TP19	TP19	TP19
Depth (m)			1.50 - 1.60	2.00 - 2.10	3.00 - 3.10	0.20	1.50	2.50
Sample Type			Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
Date Sampled			04/12/2012	04/12/2012	04/12/2012	05/12/2012	05/12/2012	05/12/2012
Sample Time			.	.	.	.	.	.
Date Received			06/12/2012	06/12/2012	06/12/2012	06/12/2012	06/12/2012	06/12/2012
SDG Ref			121207-4	121207-4	121207-4	121207-4	121207-4	121207-4
Lab Sample No.(s)			6618361	6618353	6618352	6618376	6618377	6618378
AGS Reference			ES3	ES4	ES5	ES1	ES3	ES4
Component	**LOD/Units**	**Method**						
Organic Carbon, Total	<0.2 %	TM132		6.16 #	19.8 #	2.74 #		3.76 #
pH	1 pH Units	TM133	8.45 M	7.95 M	7.93 M	8.43 M	8.47 M	7.74 M
Arsenic	<0.6 mg/kg	TM181				19.5 M		
Cadmium	<0.02 mg/kg	TM181				0.947 M		
Chromium	<0.9 mg/kg	TM181				27.7 M		
Copper	<1.4 mg/kg	TM181				30.8 M		
Lead	<0.7 mg/kg	TM181				63.8 M		
Mercury	<0.14 mg/kg	TM181				<0.14 M		
Nickel	<0.2 mg/kg	TM181				24.7 M		
Zinc	<1.9 mg/kg	TM181				150 M		
Water Soluble Sulphate as SO4 2:1 Extract	<0.008 g/l	TM243				<0.008 M		
Organic Carbon, Total (ASB)	<0.1 %	TM321	3.17				3.74	

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Validated

CERTIFICATE OF ANALYSIS

SDG:	121207-4	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207068
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method						
Customer Sample R			TP20	TP20	TP20	TP26	TP26	TP27
Depth (m)			0.10	1.50	3.00	2.00	3.00	0.50
Sample Type			Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
Date Sampled			05/12/2012	05/12/2012	05/12/2012	05/12/2012	05/12/2012	05/12/2012
Sample Time			.	.	.	.	.	.
Date Received			06/12/2012	06/12/2012	06/12/2012	06/12/2012	06/12/2012	06/12/2012
SDG Ref			121207-4	121207-4	121207-4	121207-4	121207-4	121207-4
Lab Sample No.(s)			6618367	6618363	6618368	6618372	6618381	6618383
AGS Reference			ES1	ES3	ES5	ES3	ES4	ES2
Organic Carbon, Total	<0.2 %	TM132	2.2 #	2.37 #	5.03 #	0.212 #	3.91 #	
pH	1 pH Units	TM133	8.44 M	7.49 M	7.9 M	7.85 M	7.69 M	7.71 M
Arsenic	<0.6 mg/kg	TM181	19.8 M					
Cadmium	<0.02 mg/kg	TM181	0.833 M					
Chromium	<0.9 mg/kg	TM181	24.7 M					
Copper	<1.4 mg/kg	TM181	29.8 M					
Lead	<0.7 mg/kg	TM181	47.7 M					
Mercury	<0.14 mg/kg	TM181	<0.14 M					
Nickel	<0.2 mg/kg	TM181	23 M					
Zinc	<1.9 mg/kg	TM181	140 M					
Water Soluble Sulphate as SO4 2:1 Extract	<0.008 g/l	TM243	0.0087 M					

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ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121207-4	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207068
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			TP19	TP20				
Depth (m)			0.20	0.10				
Sample Type			Soil/Solid	Soil/Solid				
Date Sampled			05/12/2012	05/12/2012				
Sample Time			.	.				
Date Received			06/12/2012	06/12/2012				
SDG Ref			121207-4	121207-4				
Lab Sample No.(s)			6618376	6618367				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	99	111				
Acenaphthene-d10 % recovery**	%	TM218	96.9	113				
Phenanthrene-d10 % recovery**	%	TM218	95.7	112				
Chrysene-d12 % recovery**	%	TM218	87.5	107				
Perylene-d12 % recovery**	%	TM218	89.9	108				
Naphthalene	<9 µg/kg	TM218	50.2 M	45.6 M				
Acenaphthylene	<12 µg/kg	TM218	59.8 M	40.3 M				
Acenaphthene	<8 µg/kg	TM218	210 M	23.2 M				
Fluorene	<10 µg/kg	TM218	338 M	22.7 M				
Phenanthrene	<15 µg/kg	TM218	2980 M	392 M				
Anthracene	<16 µg/kg	TM218	714 M	109 M				
Fluoranthene	<17 µg/kg	TM218	3730 M	1260 M				
Pyrene	<15 µg/kg	TM218	2850 M	1060 M				
Benz(a)anthracene	<14 µg/kg	TM218	1620 M	718 M				
Chrysene	<10 µg/kg	TM218	1210 M	538 M				
Benzo(b)fluoranthene	<15 µg/kg	TM218	1340 M	937 M				
Benzo(k)fluoranthene	<14 µg/kg	TM218	626 M	332 M				
Benzo(a)pyrene	<15 µg/kg	TM218	1270 M	744 M				
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	639 M	379 M				
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	200 M	107 M				
Benzo(g,h,i)perylene	<24 µg/kg	TM218	747 M	466 M				
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	18600	7170				

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CERTIFICATE OF ANALYSIS

SDG:	121207-4	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207068
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

		Customer Sample R	TP27
		Depth (m)	0.50
		Sample Type	Soil/Solid
		Date Sampled	05/12/2012
		Sample Time	.
		Date Received	06/12/2012
		SDG Ref	121207-4
		Lab Sample No.(s)	6618383
		AGS Reference	ES2
Component	**LOD/Units**	**Method**	
Phenol	<100 µg/kg	TM157	<200
Pentachlorophenol	<100 µg/kg	TM157	<200
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<200
Nitrobenzene	<100 µg/kg	TM157	<200
Isophorone	<100 µg/kg	TM157	<200
Hexachloroethane	<100 µg/kg	TM157	<200
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<200
Hexachlorobutadiene	<100 µg/kg	TM157	<200
Hexachlorobenzene	<100 µg/kg	TM157	<200
n-Dioctyl phthalate	<100 µg/kg	TM157	<200
Dimethyl phthalate	<100 µg/kg	TM157	<200
Diethyl phthalate	<100 µg/kg	TM157	<200
n-Dibutyl phthalate	<100 µg/kg	TM157	<200
Dibenzofuran	<100 µg/kg	TM157	2480
Carbazole	<100 µg/kg	TM157	2450
Butylbenzyl phthalate	<100 µg/kg	TM157	<200
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	359
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<200
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<200
Azobenzene	<100 µg/kg	TM157	<200
4-Nitrophenol	<100 µg/kg	TM157	<200
4-Nitroaniline	<100 µg/kg	TM157	<200
4-Methylphenol	<100 µg/kg	TM157	<200
4-Chlorophenylphenylether	<100 µg/kg	TM157	<200
4-Chloroaniline	<100 µg/kg	TM157	<200
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<200
4-Bromophenylphenylether	<100 µg/kg	TM157	<200
3-Nitroaniline	<100 µg/kg	TM157	<200
2-Nitrophenol	<100 µg/kg	TM157	<200
2-Nitroaniline	<100 µg/kg	TM157	<200
2-Methylphenol	<100 µg/kg	TM157	<200
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<200

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CERTIFICATE OF ANALYSIS

SDG:	121207-4	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207068
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

		Customer Sample R	TP27
		Depth (m)	0.50
		Sample Type	Soil/Solid
		Date Sampled	05/12/2012
		Sample Time	.
		Date Received	06/12/2012
		SDG Ref	121207-4
		Lab Sample No.(s)	6618383
		AGS Reference	ES2
Component	**LOD/Units**	**Method**	
2-Chlorophenol	<100 µg/kg	TM157	<200
2,6-Dinitrotoluene	<100 µg/kg	TM157	<200
2,4-Dinitrotoluene	<100 µg/kg	TM157	<200
2,4-Dimethylphenol	<100 µg/kg	TM157	<200
2,4-Dichlorophenol	<100 µg/kg	TM157	<200
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<200
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<200
1,4-Dichlorobenzene	<100 µg/kg	TM157	<200
1,3-Dichlorobenzene	<100 µg/kg	TM157	<200
1,2-Dichlorobenzene	<100 µg/kg	TM157	<200
2-Chloronaphthalene	<100 µg/kg	TM157	<200
2-Methylnaphthalene	<100 µg/kg	TM157	531
Acenaphthylene	<100 µg/kg	TM157	553
Acenaphthene	<100 µg/kg	TM157	3930
Anthracene	<100 µg/kg	TM157	12900
Benzo(a)anthracene	<100 µg/kg	TM157	38200
Benzo(b)fluoranthene	<100 µg/kg	TM157	28300
Benzo(k)fluoranthene	<100 µg/kg	TM157	29200
Benzo(a)pyrene	<100 µg/kg	TM157	34800
Benzo(g,h,i)perylene	<100 µg/kg	TM157	14100
Chrysene	<100 µg/kg	TM157	39200
Fluoranthene	<100 µg/kg	TM157	85100
Fluorene	<100 µg/kg	TM157	6290
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	11400
Phenanthrene	<100 µg/kg	TM157	55200
Pyrene	<100 µg/kg	TM157	70900
Naphthalene	<100 µg/kg	TM157	633
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	3800

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CERTIFICATE OF ANALYSIS

SDG:	121207-4	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207068
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			BH105	TP19	TP20	TP27	TP27	TP27
Depth (m)			3.00 - 3.10	0.20	0.10	0.30	0.50	1.50
Sample Type			Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
Date Sampled			04/12/2012	05/12/2012	05/12/2012	05/12/2012	05/12/2012	05/12/2012
Sample Time			.	.	.	.	.	.
Date Received			06/12/2012	06/12/2012	06/12/2012	06/12/2012	06/12/2012	06/12/2012
SDG Ref			121207-4	121207-4	121207-4	121207-4	121207-4	121207-4
Lab Sample No.(s)			6618352	6618376	6618367	6618371	6618383	6618384
AGS Reference			ES5	ES1	ES1	ES1	ES2	ES3
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	29	71	96	72	40	49
GRO >C5-C12	<44 µg/kg	TM089	533	<44	<44	234	14600	6050
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5 #	<5 #	<5 #	<5 #	<5 #	<5 #
Benzene	<10 µg/kg	TM089	<10 M	<10 M	<10 M	<10 M	<10 M	<10 M
Toluene	<2 µg/kg	TM089	7 M	<2 M	<2 M	2.54 M	<2 M	<2 M
Ethylbenzene	<3 µg/kg	TM089	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
m,p-Xylene	<6 µg/kg	TM089	<6 M	<6 M	<6 M	<6 M	<6 M	<6 M
o-Xylene	<3 µg/kg	TM089	<3 M	<3 M	<3 M	<3 M	<3 M	<3 M
sum of detected mpo xylene by GC	<9 µg/kg	TM089	<9	<9	<9	<9	<9	<9
sum of detected BTEX by GC	<24 µg/kg	TM089	<24	<24	<24	<24	<24	<24
Aliphatics >C5-C6	<10 µg/kg	TM089	14	<10	<10	11.4	15.7	19.8
Aliphatics >C6-C8	<10 µg/kg	TM089	30.8	<10	<10	30.5	78.6	113
Aliphatics >C8-C10	<10 µg/kg	TM089	105	<10	<10	25.4	1930	1040
Aliphatics >C10-C12	<10 µg/kg	TM089	178	<10	<10	85.1	6780	2510
Aliphatics >C12-C16	<100 µg/kg	TM173	10700	4410	2380	40500	236000	196000
Aliphatics >C16-C21	<100 µg/kg	TM173	23000	7970	2830	121000	601000	975000
Aliphatics >C21-C35	<100 µg/kg	TM173	72600	42500	22100	90700	480000	1420000
Aliphatics >C35-C44	<100 µg/kg	TM173	18900	18100	5960	22300	166000	367000
Total Aliphatics >C12-C44	<100 µg/kg	TM173	125000	73000	33300	275000	1480000	2950000
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10	<10	<10	<10	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089	75.6	<10	<10	21.6	1290	697
Aromatics >EC10-EC12	<10 µg/kg	TM089	119	<10	<10	57.2	4520	1670
Aromatics >EC12-EC16	<100 µg/kg	TM173	17900	5230	3480	29200	197000	80000
Aromatics >EC16-EC21	<100 µg/kg	TM173	97100	21900	10700	169000	788000	323000
Aromatics >EC21-EC35	<100 µg/kg	TM173	224000	81600	45300	341000	1460000	860000
Aromatics >EC35-EC44	<100 µg/kg	TM173	55600	28400	15800	123000	556000	285000
Aromatics >EC40-EC44	<100 µg/kg	TM173	19900	9510	5440	51500	208000	109000
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	394000	137000	75300	663000	3000000	1550000
Total Aliphatics >C5-35	<100 µg/kg	TM173	107000	54900	27400	253000	1330000	2590000
Total Aromatics >C5-35	<100 µg/kg	TM173	339000	109000	59500	540000	2450000	1270000
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173	446000	164000	86900	793000	3770000	3860000

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CERTIFICATE OF ANALYSIS

SDG:	121207-4	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207068
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			BH105	TP19	TP20	TP27	TP27	TP27
Depth (m)			3.00 - 3.10	0.20	0.10	0.30	0.50	1.50
Sample Type			Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
Date Sampled			04/12/2012	05/12/2012	05/12/2012	05/12/2012	05/12/2012	05/12/2012
Sample Time			.	.	.	.	.	.
Date Received			06/12/2012	06/12/2012	06/12/2012	06/12/2012	06/12/2012	06/12/2012
SDG Ref			121207-4	121207-4	121207-4	121207-4	121207-4	121207-4
Lab Sample No.(s)			6618352	6618376	6618367	6618371	6618383	6618384
AGS Reference			ES5	ES1	ES1	ES1	ES2	ES3
Component	**LOD/Units**	**Method**						
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	520000	210000	109000	938000	4490000	4510000

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CERTIFICATE OF ANALYSIS

SDG:	121207-4	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207068
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R	TP27
Depth (m)	0.50
Sample Type	Soil/Solid
Date Sampled	05/12/2012
Sample Time	.
Date Received	06/12/2012
SDG Ref	121207-4
Lab Sample No.(s)	6618383
AGS Reference	ES2

Component	LOD/Units	Method	TP27
Dibromofluoromethane**	%	TM116	97.4
Toluene-d8**	%	TM116	93.3
4-Bromofluorobenzene**	%	TM116	126
Dichlorodifluoromethane	<4 µg/kg	TM116	<8 M
Chloromethane	<7 µg/kg	TM116	<14
Vinyl Chloride	<10 µg/kg	TM116	<20
Bromomethane	<13 µg/kg	TM116	<26 M
Chloroethane	<14 µg/kg	TM116	<28 M
Trichlorofluorormethane	<6 µg/kg	TM116	<12 M
1,1-Dichloroethene	<10 µg/kg	TM116	<20 #
Carbon Disulphide	<7 µg/kg	TM116	81.7 M
Dichloromethane	<10 µg/kg	TM116	<20 #
Methyl Tertiary Butyl Ether	<11 µg/kg	TM116	<22 M
trans-1,2-Dichloroethene	<11 µg/kg	TM116	<22 M
1,1-Dichloroethane	<8 µg/kg	TM116	<16 M
cis-1,2-Dichloroethene	<5 µg/kg	TM116	<10 M
2,2-Dichloropropane	<12 µg/kg	TM116	<24 M
Bromochloromethane	<14 µg/kg	TM116	<28 M
Chloroform	<8 µg/kg	TM116	<16 M
1,1,1-Trichloroethane	<7 µg/kg	TM116	<14 M
1,1-Dichloropropene	<11 µg/kg	TM116	<22 M
Carbontetrachloride	<14 µg/kg	TM116	<28 M
1,2-Dichloroethane	<5 µg/kg	TM116	<10 M
Benzene	<9 µg/kg	TM116	<18 M
Trichloroethene	<9 µg/kg	TM116	<18 M
1,2-Dichloropropane	<12 µg/kg	TM116	<24 M
Dibromomethane	<9 µg/kg	TM116	<18 M
Bromodichloromethane	<7 µg/kg	TM116	<14 M
cis-1,3-Dichloropropene	<14 µg/kg	TM116	<28 M
Toluene	<5 µg/kg	TM116	<10 M
trans-1,3-Dichloropropene	<14 µg/kg	TM116	<28
1,1,2-Trichloroethane	<10 µg/kg	TM116	<20 M

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CERTIFICATE OF ANALYSIS

SDG:	121207-4	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207068
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R	TP27
Depth (m)	0.50
Sample Type	Soil/Solid
Date Sampled	05/12/2012
Sample Time	.
Date Received	06/12/2012
SDG Ref	121207-4
Lab Sample No.(s)	6618383
AGS Reference	ES2

Component	LOD/Units	Method	TP27
1,3-Dichloropropane	<7 µg/kg	TM116	<14 #
Tetrachloroethene	<5 µg/kg	TM116	<10 M
Dibromochloromethane	<13 µg/kg	TM116	<26 M
1,2-Dibromoethane	<12 µg/kg	TM116	<24 M
Chlorobenzene	<5 µg/kg	TM116	<10 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116	<20 M
Ethylbenzene	<4 µg/kg	TM116	<8 M
p/m-Xylene	<14 µg/kg	TM116	<28 #
o-Xylene	<10 µg/kg	TM116	<20 M
Styrene	<10 µg/kg	TM116	<20 M
Bromoform	<10 µg/kg	TM116	<20 M
Isopropylbenzene	<5 µg/kg	TM116	<10 M
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116	<20 #
1,2,3-Trichloropropane	<17 µg/kg	TM116	<34 M
Bromobenzene	<10 µg/kg	TM116	<20 M
Propylbenzene	<11 µg/kg	TM116	<22 M
2-Chlorotoluene	<9 µg/kg	TM116	<18 M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116	<16 #
4-Chlorotoluene	<12 µg/kg	TM116	<24 M
tert-Butylbenzene	<12 µg/kg	TM116	<24 #
1,2,4-Trimethylbenzene	<9 µg/kg	TM116	<18 #
sec-Butylbenzene	<10 µg/kg	TM116	<20 M
4-Isopropyltoluene	<11 µg/kg	TM116	<22 M
1,3-Dichlorobenzene	<6 µg/kg	TM116	<12 M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<10 M
n-Butylbenzene	<10 µg/kg	TM116	<20 M
1,2-Dichlorobenzene	<12 µg/kg	TM116	<24 M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116	<28 M
Tert-amyl methyl ether	<15 µg/kg	TM116	<30
1,2,4-Trichlorobenzene	<6 µg/kg	TM116	<12 #
Hexachlorobutadiene	<12 µg/kg	TM116	<24
Naphthalene	<13 µg/kg	TM116	<26 M

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CERTIFICATE OF ANALYSIS

SDG:	121207-4	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207068
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

			Customer Sample R	TP27
			Depth (m)	0.50
			Sample Type	Soil/Solid
			Date Sampled	05/12/2012
			Sample Time	.
			Date Received	06/12/2012
			SDG Ref	121207-4
			Lab Sample No.(s)	6618383
			AGS Reference	ES2
Component	**LOD/Units**	**Method**		
1,2,3-Trichlorobenzene	<6 µg/kg	TM116	<12 M	

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CERTIFICATE OF ANALYSIS

SDG:	121207-4	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207068
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH105 ES 3 1.50 - 1.60 SOLID 04/12/2012 00:00:00 121207-4 6618361 TM048	21/12/12	Kevin Bowron	Soil containing loose fibres and ACM debris	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH105 ES 4 2.00 - 2.10 SOLID 04/12/2012 00:00:00 121207-4 6618353 TM048	21/12/12	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP19 ES 1 0.20 SOLID 05/12/2012 00:00:00 121207-4 6618376 TM048	20/12/12	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP19 ES 3 1.50 SOLID 05/12/2012 00:00:00 121207-4 6618377 TM048	27/12/12	Kevin Bowron	Soil containing debris typical of asbestos cement	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP20 ES 1 0.10 SOLID 05/12/2012 00:00:00 121207-4 6618367 TM048	20/12/12	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121207-4	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207068
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP27 ES 1 0.30 SOLID 05/12/2012 00:00:00 121207-4 6618371 TM048	21/12/12	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP27 ES 3 1.50 SOLID 05/12/2012 00:00:00 121207-4 6618384 TM048	21/12/12	Kevin Bowron	Soil containing loose fibres and material typical of AIB	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	121207-4	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207068
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Notification of NDPs (No determination possible)

Date Received : 07/12/2012 07:55:41

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
6618361	BH105 ES3	1.50 - 1.60	Total Organic Carbon	Unsuitable for analysis due to potential Asbestos
6618377	TP19 ES3	1.50	Total Organic Carbon	Unsuitable for analysis due to potential Asbestos

CERTIFICATE OF ANALYSIS

SDG:	121207-4	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207068
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
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		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM243		Mixed Anions In Soils By Kone		
TM321		Organic matter Content of Soil By Titration		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121207-4	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207068
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	6618352	6618353	6618361	6618376	6618377	6618378	6618363	6618367	6618368	6618372
Customer Sample Ref.	BH105	BH105	BH105	TP19	TP19	TP19	TP20	TP20	TP20	TP26
AGS Ref.	ES5	ES4	ES3	ES1	ES3	ES4	ES3	ES1	ES5	ES3
Depth	3.00 - 3.10	2.00 - 2.10	1.50 - 1.60	0.20	1.50	2.50	1.50	0.10	3.00	2.00
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Anions by Kone (soil)				18-Dec-2012				18-Dec-2012		
Asbestos Identification (Soil)		27-Dec-2012	27-Dec-2012	20-Dec-2012	27-Dec-2012			20-Dec-2012		
EPH CWG (Aliphatic) GC (S)	13-Dec-2012			18-Dec-2012				18-Dec-2012		
EPH CWG (Aromatic) GC (S)	13-Dec-2012			18-Dec-2012				18-Dec-2012		
GRO by GC-FID (S)	17-Dec-2012			17-Dec-2012				17-Dec-2012		
Metals by iCap-OES (Soil)				18-Dec-2012				18-Dec-2012		
PAH by GCMS				17-Dec-2012				17-Dec-2012		
pH	13-Dec-2012	14-Dec-2012	14-Dec-2012	14-Dec-2012	14-Dec-2012	14-Dec-2012	14-Dec-2012	14-Dec-2012	13-Dec-2012	14-Dec-2012
Sample description	11-Dec-2012	11-Dec-2012	11-Dec-2012	13-Dec-2012	11-Dec-2012	11-Dec-2012	12-Dec-2012	13-Dec-2012	11-Dec-2012	12-Dec-2012
Total Organic Carbon	12-Dec-2012	28-Dec-2012		21-Dec-2012		14-Dec-2012	14-Dec-2012	21-Dec-2012	14-Dec-2012	14-Dec-2012
Total Organic Carbon (Asb)			28-Dec-2012		28-Dec-2012					
TPH CWG GC (S)	17-Dec-2012			18-Dec-2012				18-Dec-2012		

Lab Sample No(s)	6618381	6618371	6618383	6618384
Customer Sample Ref.	TP26	TP27	TP27	TP27
AGS Ref.	ES4	ES1	ES2	ES3
Depth	3.00	0.30	0.50	1.50
Type	SOLID	SOLID	SOLID	SOLID
Asbestos Identification (Soil)		27-Dec-2012		27-Dec-2012
EPH CWG (Aliphatic) GC (S)		18-Dec-2012	14-Dec-2012	18-Dec-2012
EPH CWG (Aromatic) GC (S)		18-Dec-2012	14-Dec-2012	18-Dec-2012
GRO by GC-FID (S)		17-Dec-2012	15-Dec-2012	17-Dec-2012
pH	13-Dec-2012		13-Dec-2012	
Sample description	11-Dec-2012	11-Dec-2012	11-Dec-2012	11-Dec-2012
Semi Volatile Organic Compounds			15-Dec-2012	
Total Organic Carbon	13-Dec-2012			
TPH CWG GC (S)		18-Dec-2012	15-Dec-2012	18-Dec-2012
VOC MS (S)			17-Dec-2012	

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICS and SVOC 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 all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples 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 analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

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. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

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 Dimethyphenol, 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 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. 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 C5-C12 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.

Sample Deviations

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk 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).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has 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).

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

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 HSG 264.

The identification of asbestos containing materials and soils 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.

ALcontrol Laboratories

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Geocore Site Investigations Limited
Tralee Close
Kirkleatham Business Park
Redcar
TS10 5SG

Attention: Sarah Mortimer

CERTIFICATE OF ANALYSIS

Date:	18 January 2013
Customer:	H_GEOCORE_RDC
Sample Delivery Group (SDG):	121208-2
Your Reference:	RT/12/55272
Location:	Midland Industrial Estate
Report No:	208932

This report has been revised and directly supersedes 207804 in its entirety.

We received 23 samples on Friday December 07, 2012 and 9 of these samples were scheduled for analysis which was completed on Friday January 18, 2013. 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.

Approved By:

Sonia McWhan

Operations Manager

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Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No.

CERTIFICATE OF ANALYSIS

SDG:	121208-2	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208932
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207804

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
6627486	BH104	ES1	0.40 - 0.50	05/12/2012
6627488	BH104	ES2	1.00 - 1.10	05/12/2012
6627491	BH104	ES3	2.00 - 2.10	05/12/2012
6627485	BH104	ES4	3.00 - 3.10	05/12/2012
6627494	BH105	ES6	4.00 - 4.10	05/12/2012
6627482	BH106	ES1	0.50	06/12/2012
6627484	BH106	ES2	1.00	06/12/2012
6627481	BH106	ES3	2.00	06/12/2012
6627483	BH106	ES4	3.00	06/12/2012
6627495	TP3	ES1	0.10	06/12/2012
6627505	TP3	ES2	2.70	06/12/2012
6627506	TP3	ES3	3.20	06/12/2012
6627499	TP23	ES1	0.50	06/12/2012
6627501	TP24	ES1	0.25	06/12/2012
6627498	TP24	ES2	1.00	06/12/2012
6627493	TP24	ES3	3.00	06/12/2012
6627497	TP28	ES1	0.10	06/12/2012
6627492	TP28	ES2	1.65	06/12/2012
6627504	TP28	ES3	3.60	06/12/2012
6627500	TP30	ES1	0.40	06/12/2012
6627502	TP30	ES2	1.50	06/12/2012
6627496	TP30	ES3	3.50	06/12/2012
6627503	TP24 (ASB)	ES1	3.00	06/12/2012

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

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121208-2	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208932
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207804

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			6627485	6627481	6627495	6627506	6627493	6627504	6627502	6627496	6627503
Customer Sample Reference			BH104	BH106	TP3	TP3	TP24	TP28	TP30	TP30	TP24 (ASB)
AGS Reference			ES4	ES3	ES1	ES3	ES3	ES3	ES2	ES3	ES1
Depth (m)			3.00 - 3.10	2.00	0.10	3.20	3.00	3.60	1.50	3.50	3.00
Container			1kg TUB 250g Amber Jar (AL	1kg TUB 250g Amber Jar (AL	1kg TUB 250g Amber Jar (AL	500gTUB 60g VOC (ALE215)	1kg TUB 60g VOC (ALE215)	1kg TUB 250g Amber Jar (AL	1kg TUB 250g Amber Jar (AL	1kg TUB 250g Amber Jar (AL	250g Amber Jar (AL
Anions by Kone (soil)	All	NDPs: 0 Tests: 1				X					
Asbestos Identification	All	NDPs: 0 Tests: 1									X
Asbestos Identification (Soil)	All	NDPs: 0 Tests: 4	X	X	X			X			
Asbestos Quantification - Full	All	NDPs: 0 Tests: 1	X								
Boron Water Soluble	All	NDPs: 0 Tests: 1				X					
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 2				X	X				
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 2				X	X				
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2				X	X				
Metals by iCap-OES (Soil)	Arsenic	NDPs: 0 Tests: 1				X					
	Barium	NDPs: 0 Tests: 1				X					
	Beryllium	NDPs: 0 Tests: 1				X					
	Cadmium	NDPs: 0 Tests: 1				X					
	Chromium	NDPs: 0 Tests: 1				X					
	Copper	NDPs: 0 Tests: 1				X					
	Lead	NDPs: 0 Tests: 1				X					

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121208-2	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208932
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207804

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)	6627485	6627481	6627495	6627506	6627493	6627504	6627502	6627496	6627503
Customer Sample Reference	BH104	BH106	TP3	TP3	TP24	TP28	TP30	TP30	TP24 (ASB)
AGS Reference	ES4	ES3	ES1	ES3	ES3	ES3	ES2	ES3	ES1
Depth (m)	3.00 - 3.10	2.00	0.10	3.20	3.00	3.60	1.50	3.50	3.00
Container	250g Amber Jar (AL 1kg TUB	250g Amber Jar (AL 1kg TUB	250g Amber Jar (AL 1kg TUB	60g VOC (ALE215) 500gTUB	250g Amber Jar (AL 1kg TUB	1kg TUB	250g Amber Jar (AL 1kg TUB	250g Amber Jar (AL 1kg TUB	250g Amber Jar (AL
Metals by iCap-OES (Soil) – Mercury – NDPs: 0 Tests: 1			X						
Metals by iCap-OES (Soil) – Nickel – NDPs: 0 Tests: 1			X						
Metals by iCap-OES (Soil) – Selenium – NDPs: 0 Tests: 1			X						
Metals by iCap-OES (Soil) – Vanadium – NDPs: 0 Tests: 1			X						
Metals by iCap-OES (Soil) – Zinc – NDPs: 0 Tests: 1			X						
PAH by GCMS – All – NDPs: 0 Tests: 1			X						
pH – All – NDPs: 0 Tests: 8	X	X	X	X	X	X	X	X	
Sample description – All – NDPs: 0 Tests: 8	X	X	X	X		X	X	X	X
Semi Volatile Organic Compounds – All – NDPs: 0 Tests: 1				X					
Total Organic Carbon – All – NDPs: 4 Tests: 4	N	N	X	X	N	N	X	X	
Total Organic Carbon (Asb) – All – NDPs: 0 Tests: 4	X	X			X	X			
TPH CWG GC (S) – All – NDPs: 0 Tests: 2			X	X					
VOC MS (S) – All – NDPs: 0 Tests: 1				X					

CERTIFICATE OF ANALYSIS

SDG:	121208-2	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208932
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207804

Sample Descriptions

Grain Sizes

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

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
6627485	BH104	3.00 - 3.10	Black	N/A	0.1 - 2 mm	Brick	Fibres
6627481	BH106	2.00	Light Brown	Loamy Sand	0.1 - 2 mm	Stones	Concrete/Aggregate
6627495	TP3	0.10	Dark Brown	Sandy Silt Loam	0.1 - 2 mm	Vegetation	Stones
6627506	TP3	3.20	Black	Sand	0.1 - 2 mm	Stones	Plastic
6627493	TP24	3.00	Dark Brown	Sandy Loam	0.063 - 0.1 mm	Stones	Vegetation
6627504	TP28	3.60	Dark Brown	Sand	0.1 - 2 mm	Stones	Brick
6627496	TP30	3.50	Dark Brown	Sand	0.1 - 2 mm	Stones	None
6627502	TP30	1.50	Dark Brown	Sand	0.1 - 2 mm	N/A	None

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 ocurring 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.

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121208-2	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208932
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207804

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			BH104	BH106	TP3	TP3	TP24	TP28
Depth (m)			3.00 - 3.10	2.00	0.10	3.20	3.00	3.60
Sample Type			Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid
Date Sampled			05/12/2012	06/12/2012	06/12/2012	06/12/2012	06/12/2012	06/12/2012
Sample Time			.	.	.	.	.	.
Date Received			07/12/2012	07/12/2012	07/12/2012	07/12/2012	07/12/2012	07/12/2012
SDG Ref			121208-2	121208-2	121208-2	121208-2	121208-2	121208-2
Lab Sample No.(s)			6627485	6627481	6627495	6627506	6627493	6627504
AGS Reference			ES4	ES3	ES1	ES3	ES3	ES3
Component	**LOD/Units**	**Method**						
Organic Carbon, Total	<0.2 %	TM132			1.82 #	2.52 #		
pH	1 pH Units	TM133	8.19 M	10.6 M	8.44 M	7.76 M	7.62 M	8.31 M
Arsenic	<0.6 mg/kg	TM181			29.7 M			
Barium	<0.6 mg/kg	TM181			164 #			
Beryllium	<0.01 mg/kg	TM181			2.32 M			
Cadmium	<0.02 mg/kg	TM181			1.02 M			
Chromium	<0.9 mg/kg	TM181			34.9 M			
Copper	<1.4 mg/kg	TM181			25.6 M			
Lead	<0.7 mg/kg	TM181			58.1 M			
Mercury	<0.14 mg/kg	TM181			<0.14 M			
Nickel	<0.2 mg/kg	TM181			33.7 M			
Selenium	<1 mg/kg	TM181			2.85 #			
Vanadium	<0.2 mg/kg	TM181			121 #			
Zinc	<1.9 mg/kg	TM181			182 M			
Boron, water soluble	<1 mg/kg	TM222			1.47 M			
Water Soluble Sulphate as SO4 2:1 Extract	<0.008 g/l	TM243			0.0823 M			
Organic Carbon, Total (ASB)	<0.1 %	TM321	1.22	0.992			2.14	1.26

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CERTIFICATE OF ANALYSIS

SDG:	121208-2	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208932
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207804

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			TP30	TP30				
Depth (m)			1.50	3.50				
Sample Type			Soil/Solid	Soil/Solid				
Date Sampled			06/12/2012	06/12/2012				
Sample Time			.	.				
Date Received			07/12/2012	07/12/2012				
SDG Ref			121208-2	121208-2				
Lab Sample No.(s)			6627502	6627496				
AGS Reference			ES2	ES3				
Component	**LOD/Units**	**Method**						
Organic Carbon, Total	<0.2 %	TM132	13.5 #	<0.2 #				
pH	1 pH Units	TM133	7.8 M	7.94 M				

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CERTIFICATE OF ANALYSIS

SDG:	121208-2	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208932
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207804

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			TP3					
Depth (m)			0.10					
Sample Type			Soil/Solid					
Date Sampled			06/12/2012					
Sample Time			.					
Date Received			07/12/2012					
SDG Ref			121208-2					
Lab Sample No.(s)			6627495					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	102					
Acenaphthene-d10 % recovery**	%	TM218	104					
Phenanthrene-d10 % recovery**	%	TM218	104					
Chrysene-d12 % recovery**	%	TM218	95.7					
Perylene-d12 % recovery**	%	TM218	98.6					
Naphthalene	<9 µg/kg	TM218	108 M					
Acenaphthylene	<12 µg/kg	TM218	393 M					
Acenaphthene	<8 µg/kg	TM218	6690 M					
Fluorene	<10 µg/kg	TM218	4740 M					
Phenanthrene	<15 µg/kg	TM218	106000 M					
Anthracene	<16 µg/kg	TM218	20600 M					
Fluoranthene	<17 µg/kg	TM218	103000 M					
Pyrene	<15 µg/kg	TM218	71600 M					
Benz(a)anthracene	<14 µg/kg	TM218	34900 M					
Chrysene	<10 µg/kg	TM218	26000 M					
Benzo(b)fluoranthene	<15 µg/kg	TM218	23900 M					
Benzo(k)fluoranthene	<14 µg/kg	TM218	12500 M					
Benzo(a)pyrene	<15 µg/kg	TM218	23700 M					
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	11400 M					
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	3750 M					
Benzo(g,h,i)perylene	<24 µg/kg	TM218	10900 M					
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	460000					

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CERTIFICATE OF ANALYSIS

SDG:	121208-2	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208932
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207804

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

		Customer Sample R	TP3
		Depth (m)	3.20
		Sample Type	Soil/Solid
		Date Sampled	06/12/2012
		Sample Time	.
		Date Received	07/12/2012
		SDG Ref	121208-2
		Lab Sample No.(s)	6627506
		AGS Reference	ES3
Component	**LOD/Units**	**Method**	
Phenol	<100 µg/kg	TM157	<100
Pentachlorophenol	<100 µg/kg	TM157	<100
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100
Nitrobenzene	<100 µg/kg	TM157	<100
Isophorone	<100 µg/kg	TM157	<100
Hexachloroethane	<100 µg/kg	TM157	<100
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100
Hexachlorobutadiene	<100 µg/kg	TM157	<100
Hexachlorobenzene	<100 µg/kg	TM157	<100
n-Dioctyl phthalate	<100 µg/kg	TM157	<100
Dimethyl phthalate	<100 µg/kg	TM157	<100
Diethyl phthalate	<100 µg/kg	TM157	<100
n-Dibutyl phthalate	<100 µg/kg	TM157	<100
Dibenzofuran	<100 µg/kg	TM157	1560
Carbazole	<100 µg/kg	TM157	1680
Butylbenzyl phthalate	<100 µg/kg	TM157	<100
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	388
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100
Azobenzene	<100 µg/kg	TM157	<100
4-Nitrophenol	<100 µg/kg	TM157	<100
4-Nitroaniline	<100 µg/kg	TM157	<100
4-Methylphenol	<100 µg/kg	TM157	<100
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100
4-Chloroaniline	<100 µg/kg	TM157	<100
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100
4-Bromophenylphenylether	<100 µg/kg	TM157	<100
3-Nitroaniline	<100 µg/kg	TM157	<100
2-Nitrophenol	<100 µg/kg	TM157	<100
2-Nitroaniline	<100 µg/kg	TM157	<100
2-Methylphenol	<100 µg/kg	TM157	<100
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100

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CERTIFICATE OF ANALYSIS

SDG:	121208-2	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208932
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207804

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

		Customer Sample R	TP3
		Depth (m)	3.20
		Sample Type	Soil/Solid
		Date Sampled	06/12/2012
		Sample Time	.
		Date Received	07/12/2012
		SDG Ref	121208-2
		Lab Sample No.(s)	6627506
		AGS Reference	ES3
Component	**LOD/Units**	**Method**	
2-Chlorophenol	<100 µg/kg	TM157	<100
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100
2,4-Dimethylphenol	<100 µg/kg	TM157	<100
2,4-Dichlorophenol	<100 µg/kg	TM157	<100
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100
1,4-Dichlorobenzene	<100 µg/kg	TM157	<100
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100
2-Chloronaphthalene	<100 µg/kg	TM157	<100
2-Methylnaphthalene	<100 µg/kg	TM157	311
Acenaphthylene	<100 µg/kg	TM157	159
Acenaphthene	<100 µg/kg	TM157	3520
Anthracene	<100 µg/kg	TM157	5600
Benzo(a)anthracene	<100 µg/kg	TM157	11300
Benzo(b)fluoranthene	<100 µg/kg	TM157	7700
Benzo(k)fluoranthene	<100 µg/kg	TM157	6890
Benzo(a)pyrene	<100 µg/kg	TM157	9750
Benzo(g,h,i)perylene	<100 µg/kg	TM157	3490
Chrysene	<100 µg/kg	TM157	9490
Fluoranthene	<100 µg/kg	TM157	22900
Fluorene	<100 µg/kg	TM157	3770
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	3000
Phenanthrene	<100 µg/kg	TM157	16800
Pyrene	<100 µg/kg	TM157	18600
Naphthalene	<100 µg/kg	TM157	257
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	1200

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CERTIFICATE OF ANALYSIS

SDG:	121208-2	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208932
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207804

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			TP3	TP3				
Depth (m)			0.10	3.20				
Sample Type			Soil/Solid	Soil/Solid				
Date Sampled			06/12/2012	06/12/2012				
Sample Time			.	.				
Date Received			07/12/2012	07/12/2012				
SDG Ref			121208-2	121208-2				
Lab Sample No.(s)			6627495	6627506				
AGS Reference			ES1	ES3				
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	92	73				
GRO >C5-C12	<44 µg/kg	TM089	<44	1670				
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5 #	<5 #				
Benzene	<10 µg/kg	TM089	<10 M	<10 M				
Toluene	<2 µg/kg	TM089	<2 M	4.02 M				
Ethylbenzene	<3 µg/kg	TM089	<3 M	12.1 M				
m,p-Xylene	<6 µg/kg	TM089	<6 M	<6 M				
o-Xylene	<3 µg/kg	TM089	<3 M	<3 M				
sum of detected mpo xylene by GC	<9 µg/kg	TM089	<9	<9				
sum of detected BTEX by GC	<24 µg/kg	TM089	<24	<24				
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	18.8				
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	38.9				
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	523				
Aliphatics >C10-C12	<10 µg/kg	TM089	<10	422				
Aliphatics >C12-C16	<100 µg/kg	TM173	3190	24300				
Aliphatics >C16-C21	<100 µg/kg	TM173	6920	59500				
Aliphatics >C21-C35	<100 µg/kg	TM173	56000	195000				
Aliphatics >C35-C44	<100 µg/kg	TM173	23900	88200				
Total Aliphatics >C12-C44	<100 µg/kg	TM173	90000	367000				
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10				
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10				
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	369				
Aromatics >EC10-EC12	<10 µg/kg	TM089	<10	281				
Aromatics >EC12-EC16	<100 µg/kg	TM173	6450	26500				
Aromatics >EC16-EC21	<100 µg/kg	TM173	64300	169000				
Aromatics >EC21-EC35	<100 µg/kg	TM173	201000	433000				
Aromatics >EC35-EC44	<100 µg/kg	TM173	84100	128000				
Aromatics >EC40-EC44	<100 µg/kg	TM173	30000	50200				
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	356000	756000				
Total Aliphatics >C5-35	<100 µg/kg	TM173	66100	280000				
Total Aromatics >C5-35	<100 µg/kg	TM173	271000	629000				
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173	338000	908000				

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CERTIFICATE OF ANALYSIS

SDG:	121208-2	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208932
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207804

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

		Customer Sample R	TP3	TP3				
		Depth (m)	0.10	3.20				
		Sample Type	Soil/Solid	Soil/Solid				
		Date Sampled	06/12/2012	06/12/2012				
		Sample Time	.	.				
		Date Received	07/12/2012	07/12/2012				
		SDG Ref	121208-2	121208-2				
		Lab Sample No.(s)	6627495	6627506				
		AGS Reference	ES1	ES3				
Component	**LOD/Units**	**Method**						
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	446000	1120000				

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CERTIFICATE OF ANALYSIS

SDG:	121208-2	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208932
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207804

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R	TP3
Depth (m)	3.20
Sample Type	Soil/Solid
Date Sampled	06/12/2012
Sample Time	.
Date Received	07/12/2012
SDG Ref	121208-2
Lab Sample No.(s)	6627506
AGS Reference	ES3

Component	LOD/Units	Method	TP3
Dibromofluoromethane**	%	TM116	100
Toluene-d8**	%	TM116	103
4-Bromofluorobenzene**	%	TM116	121
Dichlorodifluoromethane	<4 µg/kg	TM116	<4 M
Chloromethane	<7 µg/kg	TM116	<7
Vinyl Chloride	<10 µg/kg	TM116	<10
Bromomethane	<13 µg/kg	TM116	<13 M
Chloroethane	<14 µg/kg	TM116	<14 M
Trichlorofluorormethane	<6 µg/kg	TM116	<6 M
1,1-Dichloroethene	<10 µg/kg	TM116	<10 #
Carbon Disulphide	<7 µg/kg	TM116	855 M
Dichloromethane	<10 µg/kg	TM116	13.5 #
Methyl Tertiary Butyl Ether	<11 µg/kg	TM116	<11 M
trans-1,2-Dichloroethene	<11 µg/kg	TM116	<11 M
1,1-Dichloroethane	<8 µg/kg	TM116	<8 M
cis-1,2-Dichloroethene	<5 µg/kg	TM116	<5 M
2,2-Dichloropropane	<12 µg/kg	TM116	<12 M
Bromochloromethane	<14 µg/kg	TM116	<14 M
Chloroform	<8 µg/kg	TM116	<8 M
1,1,1-Trichloroethane	<7 µg/kg	TM116	<7 M
1,1-Dichloropropene	<11 µg/kg	TM116	<11 M
Carbontetrachloride	<14 µg/kg	TM116	<14 M
1,2-Dichloroethane	<5 µg/kg	TM116	<5 M
Benzene	<9 µg/kg	TM116	<9 M
Trichloroethene	<9 µg/kg	TM116	<9 M
1,2-Dichloropropane	<12 µg/kg	TM116	<12 M
Dibromomethane	<9 µg/kg	TM116	<9 M
Bromodichloromethane	<7 µg/kg	TM116	<7 M
cis-1,3-Dichloropropene	<14 µg/kg	TM116	<14 M
Toluene	<5 µg/kg	TM116	<5 M
trans-1,3-Dichloropropene	<14 µg/kg	TM116	<14
1,1,2-Trichloroethane	<10 µg/kg	TM116	<10 M

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CERTIFICATE OF ANALYSIS

SDG:	121208-2	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208932
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207804

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R	TP3
Depth (m)	3.20
Sample Type	Soil/Solid
Date Sampled	06/12/2012
Sample Time	.
Date Received	07/12/2012
SDG Ref	121208-2
Lab Sample No.(s)	6627506
AGS Reference	ES3

Component	LOD/Units	Method	TP3
1,3-Dichloropropane	<7 µg/kg	TM116	<7 #
Tetrachloroethene	<5 µg/kg	TM116	<5 M
Dibromochloromethane	<13 µg/kg	TM116	<13 M
1,2-Dibromoethane	<12 µg/kg	TM116	<12 M
Chlorobenzene	<5 µg/kg	TM116	<5 M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116	<10 M
Ethylbenzene	<4 µg/kg	TM116	<4 M
p/m-Xylene	<14 µg/kg	TM116	<14 #
o-Xylene	<10 µg/kg	TM116	<10 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	<11 M
2-Chlorotoluene	<9 µg/kg	TM116	<9 M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116	<8 #
4-Chlorotoluene	<12 µg/kg	TM116	<12 M
tert-Butylbenzene	<12 µg/kg	TM116	<12 #
1,2,4-Trimethylbenzene	<9 µg/kg	TM116	<9 #
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
Naphthalene	<13 µg/kg	TM116	<13 M

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CERTIFICATE OF ANALYSIS

SDG:	121208-2	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208932
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207804

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	TP3					
Customer Sample R			TP3					
Depth (m)			3.20					
Sample Type			Soil/Solid					
Date Sampled			06/12/2012					
Sample Time			.					
Date Received			07/12/2012					
SDG Ref			121208-2					
Lab Sample No.(s)			6627506					
AGS Reference			ES3					
1,2,3-Trichlorobenzene	<6 µg/kg	TM116	<6 M					

08:22:25 18/01/2013

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121208-2	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208932
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207804

Asbestos Identification - Bulk

		Date of Analysis	Analysed by	Comments	Actinolite, Fibrous	Anthophyllite, Fibrous	Asbestos, Amosite (brown)	Asbestos, Chrysotile (white)	Asbestos, Crocidolite (blue)	Non-asbestos fibre	Tremolite, Fibrous
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP24 (ASB) ES 1 3.00 SOLID 06/12/2012 00:00:00 17/12/2012 11:06:56 121208-2 6627503 TM048	18/12/12	Lauren Sargeant	Typical of asbestos cement	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected	Not Detected (#)

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121208-2	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208932
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207804

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH104 ES 4 3.00 - 3.10 SOLID 05/12/2012 00:00:00 121208-2 6627485 TM048	04/01/13	Chris Swindells	Loose fibres in soil	Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH106 ES 3 2.00 SOLID 06/12/2012 00:00:00 121208-2 6627481 TM048	04/01/13	Chris Swindells	Soil containing loose fibres and material typical of asbestos cement	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP3 ES 1 0.10 SOLID 06/12/2012 00:00:00 121208-2 6627495 TM048	18/12/12	Lauren Sargeant	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP28 ES 3 3.60 SOLID 06/12/2012 00:00:00 121208-2 6627504 TM048	04/01/13	Kevin Bowron	Loose fibres in soil	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

ALcontrol Laboratories

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CERTIFICATE OF ANALYSIS

SDG:	121208-2	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208932
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207804

Asbestos Quantification - Full

		Additional Asbestos Components (Using TM048)	Analysts Comments	Asbestos Quantification - Gravimetric - %	Asbestos Quantification - PCOM Evaluation - %	Asbestos Quantification - Total - %
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	BH104 ES 4 3.00 - 3.10 SOLID 05/12/2012 00:00:00 121208-2 6627485 TM 304	None (#)	n/c	0.1103 (#)	<0.001 (#)	0.1107 (#)

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CERTIFICATE OF ANALYSIS

SDG:	121208-2	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208932
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207804

Notification of NDPs (No determination possible)

Date Received : 08/12/2012 07:45:19

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
6627481	BH106 ES3	2.00	Total Organic Carbon	Unsuitable for analysis due to potential Asbestos
6627485	BH104 ES4	3.00 - 3.10	Total Organic Carbon	Unsuitable for analysis due to potential Asbestos
6627493	TP24 ES3	3.00	Total Organic Carbon	Unsuitable for analysis due to potential Asbestos
6627504	TP28 ES3	3.60	Total Organic Carbon	Unsuitable for analysis due to potential Asbestos

CERTIFICATE OF ANALYSIS

SDG:	121208-2	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208932
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207804

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM 304				
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
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		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer		
TM243		Mixed Anions In Soils By Kone		
TM321		Organic matter Content of Soil By Titration		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121208-2	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208932
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207804

Test Completion Dates

Lab Sample No(s)	6627485	6627481	6627495	6627506	6627493	6627504	6627496	6627502	6627503
Customer Sample Ref.	BH104	BH106	TP3	TP3	TP24	TP28	TP30	TP30	TP24 (ASB)
AGS Ref.	ES4	ES3	ES1	ES3	ES3	ES3	ES3	ES2	ES1
Depth	3.00 - 3.10	2.00	0.10	3.20	3.00	3.60	3.50	1.50	3.00
Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
Anions by Kone (soil)			19-Dec-2012						
Asbestos Identification									18-Dec-2012
Asbestos Identification (Soil)	07-Jan-2013	07-Jan-2013	18-Dec-2012			07-Jan-2013			
Asbestos Quantification - Full	18-Jan-2013								
Boron Water Soluble			20-Dec-2012						
EPH CWG (Aliphatic) GC (S)			19-Dec-2012	19-Dec-2012					
EPH CWG (Aromatic) GC (S)			19-Dec-2012	19-Dec-2012					
GRO by GC-FID (S)			19-Dec-2012	19-Dec-2012					
Metals by iCap-OES (Soil)			20-Dec-2012						
PAH by GCMS			19-Dec-2012						
pH	18-Dec-2012	18-Dec-2012	18-Dec-2012	17-Dec-2012	18-Dec-2012	18-Dec-2012	17-Dec-2012	17-Dec-2012	
Sample description	13-Dec-2012	13-Dec-2012	15-Dec-2012	14-Dec-2012	14-Dec-2012	14-Dec-2012	13-Dec-2012	14-Dec-2012	
Semi Volatile Organic Compounds				17-Dec-2012					
Total Organic Carbon			19-Dec-2012	18-Dec-2012			18-Dec-2012	18-Dec-2012	
Total Organic Carbon (Asb)	08-Jan-2013	08-Jan-2013			18-Dec-2012	08-Jan-2013			
TPH CWG GC (S)			19-Dec-2012	19-Dec-2012					
VOC MS (S)				18-Dec-2012					

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICS and SVOC 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 all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples 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 analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

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. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

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 Dimethyphenol, 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 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. 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 C5-C12 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.

Sample Deviations

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk 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).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has 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).

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

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 HSG 264.

The identification of asbestos containing materials and soils 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.

ALcontrol Laboratories

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Geocore Site Investigations Limited
Tralee Close
Kirkleatham Business Park
Redcar
TS10 5SG

Attention: Sarah Mortimer

CERTIFICATE OF ANALYSIS

Date:	04 January 2013
Customer:	H_GEOCORE_RDC
Sample Delivery Group (SDG):	121212-91
Your Reference:	RT/12/55272
Location:	Midland Industrial Estate
Report No:	207475

This report has been revised and directly supersedes 207433 in its entirety.

We received 9 samples on Tuesday December 11, 2012 and 4 of these samples were scheduled for analysis which was completed on Friday January 04, 2013. 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.

Approved By:

Sonia McWhan

Operations Manager

Alcontrol Laboratories is a trading division of ALcontrol UK Limited
Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No.

CERTIFICATE OF ANALYSIS

SDG:	121212-91	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207475
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207433

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
6650911	BH 102	ES1	0.90	07/12/2012
6650912	BH 102	ES2	1.50	07/12/2012
6650913	BH 102	ES3	2.00	07/12/2012
6650915	BH 102	ES4	3.00	07/12/2012
6650916	TP 3	ES2	2.70	06/12/2012
6650917	TP 12	ES1	0.30	10/12/2012
6650919	TP 12	ES2	1.00	10/12/2012
6650920	TP 12	ES3	2.00	10/12/2012
6650921	TP 12	ES4	2.40	10/12/2012

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

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121212-91	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207475
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207433

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			6650912	6650913	6650915	6650917			
Customer Sample Reference			BH 102	BH 102	BH 102	TP 12			
AGS Reference			ES2	ES3	ES4	ES1			
Depth (m)			1.50	2.00	3.00	0.30			
Container			1kg TUB	250g Amber Jar (AL	1kg TUB	250g Amber Jar (AL	1kg TUB	250g Amber Jar (AL	60g VOC (ALE215)
Anions by Kone (soil)	All	NDPs: 0 Tests: 1						X	
Asbestos Identification (Soil)	All	NDPs: 0 Tests: 1					X		
Boron Water Soluble	All	NDPs: 0 Tests: 1						X	
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 1						X	
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 1						X	
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1							X
Metals by iCap-OES (Soil)	Arsenic	NDPs: 0 Tests: 1						X	
	Barium	NDPs: 0 Tests: 1						X	
	Beryllium	NDPs: 0 Tests: 1						X	
	Cadmium	NDPs: 0 Tests: 1						X	
	Chromium	NDPs: 0 Tests: 1						X	
	Copper	NDPs: 0 Tests: 1						X	
	Lead	NDPs: 0 Tests: 1						X	
	Mercury	NDPs: 0 Tests: 1						X	
	Nickel	NDPs: 0 Tests: 1						X	

14:55:17 04/01/2013

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121212-91	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207475
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207433

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			6650912	6650913	6650915	6650917
Customer Sample Reference			BH 102	BH 102	BH 102	TP 12
AGS Reference			ES2	ES3	ES4	ES1
Depth (m)			1.50	2.00	3.00	0.30
Container			1kg TUB / 250g Amber Jar (AL	1kg TUB / 250g Amber Jar (AL	1kg TUB / 250g Amber Jar (AL	1kg TUB / 250g Amber Jar (AL / 60g VOC (ALE215)
Metals by iCap-OES (Soil)	Selenium	NDPs: 0 Tests: 1				X
	Vanadium	NDPs: 0 Tests: 1				X
	Zinc	NDPs: 0 Tests: 1				X
PAH by GCMS	All	NDPs: 0 Tests: 1				X
pH	All	NDPs: 0 Tests: 4	X	X	X	X
Sample description	All	NDPs: 0 Tests: 4	X	X	X	X
Total Organic Carbon	All	NDPs: 0 Tests: 4	X	X	X	X
TPH CWG GC (S)	All	NDPs: 0 Tests: 1				X

CERTIFICATE OF ANALYSIS

SDG:	121212-91	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207475
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207433

Sample Descriptions

Grain Sizes

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

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
6650912	BH 102	1.50	Dark Brown	Sand	0.1 - 2 mm	Stones	Coal fragments
6650913	BH 102	2.00	Dark Brown	Sandy Clay Loam	0.1 - 2 mm	None	None
6650915	BH 102	3.00	Dark Brown	Sandy Clay Loam	0.1 - 2 mm	None	None
6650917	TP 12	0.30	Dark Brown	Silty Clay Loam	0.063 - 0.1 mm	Stones	Vegetation

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 ocurring 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.

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121212-91	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207475
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207433

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R	BH 102	BH 102	BH 102	TP 12		
Depth (m)	1.50	2.00	3.00	0.30		
Sample Type	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
Date Sampled	07/12/2012	07/12/2012	07/12/2012	10/12/2012		
Sample Time	.	.	.	.		
Date Received	11/12/2012	11/12/2012	11/12/2012	11/12/2012		
SDG Ref	121212-91	121212-91	121212-91	121212-91		
Lab Sample No.(s)	6650912	6650913	6650915	6650917		
AGS Reference	ES2	ES3	ES4	ES1		

Component	LOD/Units	Method						
Organic Carbon, Total	<0.2 %	TM132	15.2 #	1.36 #	2.71 #	1 #		
pH	1 pH Units	TM133	10.8 M	8.17 M	8.25 M	8.4 M		
Arsenic	<0.6 mg/kg	TM181				12.2 M		
Barium	<0.6 mg/kg	TM181				57.5 #		
Beryllium	<0.01 mg/kg	TM181				0.456 M		
Cadmium	<0.02 mg/kg	TM181				0.472 M		
Chromium	<0.9 mg/kg	TM181				15.8 M		
Copper	<1.4 mg/kg	TM181				14.4 M		
Lead	<0.7 mg/kg	TM181				31.8 M		
Mercury	<0.14 mg/kg	TM181				<0.14 M		
Nickel	<0.2 mg/kg	TM181				12.9 M		
Selenium	<1 mg/kg	TM181				<1 #		
Vanadium	<0.2 mg/kg	TM181				29.9 #		
Zinc	<1.9 mg/kg	TM181				53.9 M		
Boron, water soluble	<1 mg/kg	TM222				<1 M		
Water Soluble Sulphate as SO4 2:1 Extract	<0.008 g/l	TM243				0.189 M		

14:55:17 04/01/2013

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121212-91	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207475
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207433

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			TP 12
Depth (m)			0.30
Sample Type			Soil/Solid
Date Sampled			10/12/2012
Sample Time			.
Date Received			11/12/2012
SDG Ref			121212-91
Lab Sample No.(s)			6650917
AGS Reference			ES1
Component	**LOD/Units**	**Method**	
Naphthalene-d8 % recovery**	%	TM218	103
Acenaphthene-d10 % recovery**	%	TM218	103
Phenanthrene-d10 % recovery**	%	TM218	103
Chrysene-d12 % recovery**	%	TM218	96.5
Perylene-d12 % recovery**	%	TM218	97.3
Naphthalene	<9 µg/kg	TM218	67.3 & M
Acenaphthylene	<12 µg/kg	TM218	18.1 & M
Acenaphthene	<8 µg/kg	TM218	17.1 & M
Fluorene	<10 µg/kg	TM218	16 & M
Phenanthrene	<15 µg/kg	TM218	234 & M
Anthracene	<16 µg/kg	TM218	69.5 & M
Fluoranthene	<17 µg/kg	TM218	713 & M
Pyrene	<15 µg/kg	TM218	610 & M
Benz(a)anthracene	<14 µg/kg	TM218	340 & M
Chrysene	<10 µg/kg	TM218	318 & M
Benzo(b)fluoranthene	<15 µg/kg	TM218	346 & M
Benzo(k)fluoranthene	<14 µg/kg	TM218	164 & M
Benzo(a)pyrene	<15 µg/kg	TM218	339 & M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	192 & M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	58.9 & M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	231 & M
Coronene	<24 µg/kg	TM218	<24
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	3730
PAH, Total Detected USEPA 16 + Coronene	<130 µg/kg	TM218	3730

14:55:17 04/01/2013

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121212-91	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207475
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207433

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			TP 12					
Depth (m)			0.30					
Sample Type			Soil/Solid					
Date Sampled			10/12/2012					
Sample Time			.					
Date Received			11/12/2012					
SDG Ref			121212-91					
Lab Sample No.(s)			6650917					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	100					
GRO >C5-C12	<44 µg/kg	TM089	<44					
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5 & #					
Benzene	<10 µg/kg	TM089	<10 & M					
Toluene	<2 µg/kg	TM089	2.46 & M					
Ethylbenzene	<3 µg/kg	TM089	<3 & M					
m,p-Xylene	<6 µg/kg	TM089	<6 & M					
o-Xylene	<3 µg/kg	TM089	<3 & M					
sum of detected mpo xylene by GC	<9 µg/kg	TM089	<9					
sum of detected BTEX by GC	<24 µg/kg	TM089	<24					
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					
Aliphatics >C12-C16	<100 µg/kg	TM173	3970					
Aliphatics >C16-C21	<100 µg/kg	TM173	4860					
Aliphatics >C21-C35	<100 µg/kg	TM173	18500					
Aliphatics >C35-C44	<100 µg/kg	TM173	3610					
Total Aliphatics >C12-C44	<100 µg/kg	TM173	30900					
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10					
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10					
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10					
Aromatics >EC10-EC12	<10 µg/kg	TM089	<10					
Aromatics >EC12-EC16	<100 µg/kg	TM173	<100					
Aromatics >EC16-EC21	<100 µg/kg	TM173	4920					
Aromatics >EC21-EC35	<100 µg/kg	TM173	24800					
Aromatics >EC35-EC44	<100 µg/kg	TM173	15600					
Aromatics >EC40-EC44	<100 µg/kg	TM173	6460					
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	45400					
Total Aliphatics >C5-35	<100 µg/kg	TM173	27300					
Total Aromatics >C5-35	<100 µg/kg	TM173	29800					
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173	57100					

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CERTIFICATE OF ANALYSIS

SDG:	121212-91	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207475
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207433

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

		Customer Sample R	TP 12
		Depth (m)	0.30
		Sample Type	Soil/Solid
		Date Sampled	10/12/2012
		Sample Time	.
		Date Received	11/12/2012
		SDG Ref	121212-91
		Lab Sample No.(s)	6650917
		AGS Reference	ES1
Component	**LOD/Units**	**Method**	
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	76300

14:55:17 04/01/2013

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CERTIFICATE OF ANALYSIS

SDG:	121212-91	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207475
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207433

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP 12 ES 1 0.30 SOLID 10/12/2012 00:00:00 121212-91 6650917 TM048	28/12/12	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	121212-91	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207475
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207433

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer		
TM243		Mixed Anions In Soils By Kone		
TM321		Organic matter Content of Soil By Titration		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

ALcontrol Laboratories

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CERTIFICATE OF ANALYSIS

SDG:	121212-91	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207475
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207433

Test Completion Dates

Lab Sample No(s)	6650912	6650913	6650915	6650917
Customer Sample Ref.	BH 102	BH 102	BH 102	TP 12
AGS Ref.	ES2	ES3	ES4	ES1
Depth	1.50	2.00	3.00	0.30
Type	SOLID	SOLID	SOLID	SOLID
Anions by Kone (soil)				28-Dec-2012
Asbestos Identification (Soil)				28-Dec-2012
Boron Water Soluble				29-Dec-2012
EPH CWG (Aliphatic) GC (S)				03-Jan-2013
EPH CWG (Aromatic) GC (S)				03-Jan-2013
GRO by GC-FID (S)				30-Dec-2012
Metals by iCap-OES (Soil)				28-Dec-2012
PAH by GCMS				04-Jan-2013
pH	27-Dec-2012	27-Dec-2012	27-Dec-2012	21-Dec-2012
Sample description	19-Dec-2012	19-Dec-2012	19-Dec-2012	22-Dec-2012
Total Organic Carbon	27-Dec-2012	27-Dec-2012	27-Dec-2012	28-Dec-2012
TPH CWG GC (S)				03-Jan-2013

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICS and SVOC 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 all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples 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 analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

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. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

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 Dimethyphenol, 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 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. 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 C5-C12 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.

Sample Deviations

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk 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).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has 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).

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

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 HSG 264.

The identification of asbestos containing materials and soils 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.

ALcontrol Laboratories

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Geocore Site Investigations Limited
Tralee Close
Kirkleatham Business Park
Redcar
TS10 5SG

Attention: Sarah Mortimer

CERTIFICATE OF ANALYSIS

Date:	02 January 2013
Customer:	H_GEOCORE_RDC
Sample Delivery Group (SDG):	121212-99
Your Reference:	RT/12/55272
Location:	Midland Industrial Estate
Report No:	207192

We received 10 samples on Tuesday December 11, 2012 and 4 of these samples were scheduled for analysis which was completed on Wednesday January 02, 2013. 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.

Approved By:

Sonia McWhan

Operations Manager

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121212-99	**Location:**	Midland Industrial Estate	**Order Number:**	
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207192
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
6651429	TP 10	ES1	0.20	10/12/2012
6651431	TP 10	ES2	0.50	10/12/2012
6651434	TP 10	ES3	1.00	10/12/2012
6651436	TP 10	ES4	2.00	10/12/2012
6651438	TP 10	ES5	2.80	10/12/2012
6651423	TP 11	ES1	0.20	10/12/2012
6651424	TP 11	ES2	0.50	10/12/2012
6651426	TP 11	ES3	1.00	10/12/2012
6651427	TP 11	ES4	2.00	10/12/2012
6651428	TP 11	ES5	2.70	10/12/2012

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

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121212-99	**Location:**	Midland Industrial Estate	**Order Number:**	
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207192
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			6651429	6651438	6651426	6651428
Customer Sample Reference			TP 10	TP 10	TP 11	TP 11
AGS Reference			ES1	ES5	ES3	ES5
Depth (m)			0.20	2.80	1.00	2.70
Container			1kg TUB / 250g Amber Jar (AL	1kg TUB / 250g Amber Jar (AL	1kg TUB / 250g Amber Jar (AL	1kg TUB / 250g Amber Jar (AL
Anions by Kone (soil)	All	NDPs: 0 Tests: 1		X		
Asbestos Identification (Soil)	All	NDPs: 0 Tests: 1	X			
Boron Water Soluble	All	NDPs: 0 Tests: 1		X		
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 1		X		
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 1		X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1		X		
Metals by iCap-OES (Soil)	Arsenic	NDPs: 0 Tests: 1		X		
	Barium	NDPs: 0 Tests: 1		X		
	Beryllium	NDPs: 0 Tests: 1		X		
	Cadmium	NDPs: 0 Tests: 1		X		
	Chromium	NDPs: 0 Tests: 1		X		
	Copper	NDPs: 0 Tests: 1		X		
	Lead	NDPs: 0 Tests: 1		X		
	Mercury	NDPs: 0 Tests: 1		X		
	Nickel	NDPs: 0 Tests: 1		X		

16:34:16 02/01/2013

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121212-99	**Location:**	Midland Industrial Estate	**Order Number:**	
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207192
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			6651429	6651438	6651426	6651428
Customer Sample Reference			TP 10	TP 10	TP 11	TP 11
AGS Reference			ES1	ES5	ES3	ES5
Depth (m)			0.20	2.80	1.00	2.70
Container			250g Amber Jar (AL 1kg TUB	250g Amber Jar (AL 1kg TUB	250g Amber Jar (AL 1kg TUB	250g Amber Jar (AL 1kg TUB
Metals by iCap-OES (Soil)	Selenium	NDPs: 0 Tests: 1	X			
	Vanadium	NDPs: 0 Tests: 1	X			
	Zinc	NDPs: 0 Tests: 1	X			
PAH by GCMS	All	NDPs: 0 Tests: 1	X			
pH	All	NDPs: 0 Tests: 4	X	X	X	X
Sample description	All	NDPs: 0 Tests: 3	X		X	X
Total Organic Carbon	All	NDPs: 3 Tests: 1	X	N	N	N
Total Organic Carbon (Asb)	All	NDPs: 0 Tests: 3		X	X	X
TPH CWG GC (S)	All	NDPs: 0 Tests: 1	X			

16:34:16 02/01/2013

CERTIFICATE OF ANALYSIS

SDG:	121212-99	**Location:**	Midland Industrial Estate	**Order Number:**	
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207192
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Sample Descriptions

Grain Sizes

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

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
6651429	TP 10	0.20	Dark Brown	Clay Loam	0.063 - 0.1 mm	Stones	Vegetation
6651438	TP 10	2.80	Black	Silt Loam	0.1 - 2 mm	Fibres	Crushed Brick
6651426	TP 11	1.00	Dark Brown	Sand	0.1 - 2 mm	Fibres	Brick
6651428	TP 11	2.70	Black	Sand	0.1 - 2 mm	Fibres	Brick

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 ocurring 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.

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121212-99	**Location:**	Midland Industrial Estate	**Order Number:**	
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207192
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			TP 10	TP 10	TP 11	TP 11		
Depth (m)			0.20	2.80	1.00	2.70		
Sample Type			Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
Date Sampled			10/12/2012	10/12/2012	10/12/2012	10/12/2012		
Sample Time			.	.	.	.		
Date Received			11/12/2012	11/12/2012	11/12/2012	11/12/2012		
SDG Ref			121212-99	121212-99	121212-99	121212-99		
Lab Sample No.(s)			6651429	6651438	6651426	6651428		
AGS Reference			ES1	ES5	ES3	ES5		
Component	**LOD/Units**	**Method**						
Organic Carbon, Total	<0.2 %	TM132	2.48 #					
pH	1 pH Units	TM133	8.14 M	7.95 M	7.25 M	7.89 M		
Arsenic	<0.6 mg/kg	TM181	16.4 M					
Barium	<0.6 mg/kg	TM181	85.5 #					
Beryllium	<0.01 mg/kg	TM181	0.921 M					
Cadmium	<0.02 mg/kg	TM181	0.737 M					
Chromium	<0.9 mg/kg	TM181	25.1 M					
Copper	<1.4 mg/kg	TM181	25.4 M					
Lead	<0.7 mg/kg	TM181	41.1 M					
Mercury	<0.14 mg/kg	TM181	0.21 M					
Nickel	<0.2 mg/kg	TM181	20.2 M					
Selenium	<1 mg/kg	TM181	1.12 #					
Vanadium	<0.2 mg/kg	TM181	44.5 #					
Zinc	<1.9 mg/kg	TM181	87.6 M					
Boron, water soluble	<1 mg/kg	TM222	<1 M					
Water Soluble Sulphate as SO4 2:1 Extract	<0.008 g/l	TM243	<0.008 M					
Organic Carbon, Total (ASB)	<0.1 %	TM321		3.27	6.79	3.66		

16:34:16 02/01/2013

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121212-99	**Location:**	Midland Industrial Estate	**Order Number:**	
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207192
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			TP 10
Depth (m)			0.20
Sample Type			Soil/Solid
Date Sampled			10/12/2012
Sample Time			.
Date Received			11/12/2012
SDG Ref			121212-99
Lab Sample No.(s)			6651429
AGS Reference			ES1
Component	**LOD/Units**	**Method**	
Naphthalene-d8 % recovery**	%	TM218	102
Acenaphthene-d10 % recovery**	%	TM218	100
Phenanthrene-d10 % recovery**	%	TM218	97.1
Chrysene-d12 % recovery**	%	TM218	91.1
Perylene-d12 % recovery**	%	TM218	95.3
Naphthalene	<9 µg/kg	TM218	50.1 M
Acenaphthylene	<12 µg/kg	TM218	25.3 M
Acenaphthene	<8 µg/kg	TM218	26.8 M
Fluorene	<10 µg/kg	TM218	25.5 M
Phenanthrene	<15 µg/kg	TM218	305 M
Anthracene	<16 µg/kg	TM218	80.9 M
Fluoranthene	<17 µg/kg	TM218	749 M
Pyrene	<15 µg/kg	TM218	632 M
Benz(a)anthracene	<14 µg/kg	TM218	397 M
Chrysene	<10 µg/kg	TM218	385 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	433 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	217 M
Benzo(a)pyrene	<15 µg/kg	TM218	446 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	255 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	68.6 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	352 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	4450

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SDG:	121212-99	**Location:**	Midland Industrial Estate	**Order Number:**	
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207192
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R					
			TP 10					
		Depth (m)	0.20					
		Sample Type	Soil/Solid					
		Date Sampled	10/12/2012					
		Sample Time	.					
		Date Received	11/12/2012					
		SDG Ref	121212-99					
		Lab Sample No.(s)	6651429					
		AGS Reference	ES1					
GRO Surrogate % recovery**	%	TM089	81	2				
GRO >C5-C12	<44 µg/kg	TM089	<44	2				
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5	2 & #				
Benzene	<10 µg/kg	TM089	<10	2 & M				
Toluene	<2 µg/kg	TM089	<2	2 & M				
Ethylbenzene	<3 µg/kg	TM089	<3	2 & M				
m,p-Xylene	<6 µg/kg	TM089	<6	2 & M				
o-Xylene	<3 µg/kg	TM089	<3	2 & M				
sum of detected mpo xylene by GC	<9 µg/kg	TM089	<9	2				
sum of detected BTEX by GC	<24 µg/kg	TM089	<24	2				
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	2				
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	2				
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	2				
Aliphatics >C10-C12	<10 µg/kg	TM089	<10	2				
Aliphatics >C12-C16	<100 µg/kg	TM173	5080					
Aliphatics >C16-C21	<100 µg/kg	TM173	4870					
Aliphatics >C21-C35	<100 µg/kg	TM173	41000					
Aliphatics >C35-C44	<100 µg/kg	TM173	24700					
Total Aliphatics >C12-C44	<100 µg/kg	TM173	75700					
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	2				
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	2				
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	2				
Aromatics >EC10-EC12	<10 µg/kg	TM089	<10	2				
Aromatics >EC12-EC16	<100 µg/kg	TM173	3640					
Aromatics >EC16-EC21	<100 µg/kg	TM173	18700					
Aromatics >EC21-EC35	<100 µg/kg	TM173	76600					
Aromatics >EC35-EC44	<100 µg/kg	TM173	41700					
Aromatics >EC40-EC44	<100 µg/kg	TM173	17200					
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	141000					
Total Aliphatics >C5-35	<100 µg/kg	TM173	51000					
Total Aromatics >C5-35	<100 µg/kg	TM173	99000					
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173	150000					

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CERTIFICATE OF ANALYSIS

SDG:	121212-99	**Location:**	Midland Industrial Estate	**Order Number:**	
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207192
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

			Customer Sample R	
			Depth (m)	0.20
			Sample Type	Soil/Solid
			Date Sampled	10/12/2012
			Sample Time	.
			Date Received	11/12/2012
			SDG Ref	121212-99
			Lab Sample No.(s)	6651429
			AGS Reference	ES1
Component	**LOD/Units**	**Method**		
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	216000	

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SDG:	121212-99	**Location:**	Midland Industrial Estate	**Order Number:**	
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207192
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP 10 ES 1 0.20 SOLID 10/12/2012 00:00:00 121212-99 6651429 TM048	28/12/12	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

ALcontrol Laboratories

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CERTIFICATE OF ANALYSIS

SDG:	121212-99	**Location:**	Midland Industrial Estate	**Order Number:**	
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207192
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Notification of NDPs (No determination possible)

Date Received : 12/12/2012 15:58:24

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
6651426	TP 11 ES3	1.00	Total Organic Carbon	Unsuitable for analysis due to potential Asbestos
6651428	TP 11 ES5	2.70	Total Organic Carbon	Unsuitable for analysis due to potential Asbestos
6651438	TP 10 ES5	2.80	Total Organic Carbon	Unsuitable for analysis due to potential Asbestos

CERTIFICATE OF ANALYSIS

SDG:	121212-99	**Location:**	Midland Industrial Estate	**Order Number:**	
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207192
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer		
TM243		Mixed Anions In Soils By Kone		
TM321		Organic matter Content of Soil By Titration		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

ALcontrol Laboratories

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CERTIFICATE OF ANALYSIS

SDG:	121212-99	**Location:**	Midland Industrial Estate	**Order Number:**	
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207192
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	6651429	6651438	6651426	6651428
Customer Sample Ref.	TP 10	TP 10	TP 11	TP 11
AGS Ref.	ES1	ES5	ES3	ES5
Depth	0.20	2.80	1.00	2.70
Type	SOLID	SOLID	SOLID	SOLID
Anions by Kone (soil)	28-Dec-2012			
Asbestos Identification (Soil)	28-Dec-2012			
Boron Water Soluble	28-Dec-2012			
EPH CWG (Aliphatic) GC (S)	28-Dec-2012			
EPH CWG (Aromatic) GC (S)	28-Dec-2012			
GRO by GC-FID (S)	30-Dec-2012			
Metals by iCap-OES (Soil)	28-Dec-2012			
PAH by GCMS	02-Jan-2013			
pH	28-Dec-2012	28-Dec-2012	28-Dec-2012	28-Dec-2012
Sample description	19-Dec-2012	19-Dec-2012	19-Dec-2012	19-Dec-2012
Total Organic Carbon	28-Dec-2012			
Total Organic Carbon (Asb)		02-Jan-2013	02-Jan-2013	02-Jan-2013
TPH CWG GC (S)	30-Dec-2012			

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICS and SVOC 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 all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples 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 analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

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. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

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 Dimethyphenol, 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 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. 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 C5-C12 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.

Sample Deviations

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk 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).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has 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).

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

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 HSG 264.

The identification of asbestos containing materials and soils 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.

ALcontrol Laboratories

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Geocore Site Investigations Limited
Tralee Close
Kirkleatham Business Park
Redcar
TS10 5SG

Attention: Sarah Mortimer

CERTIFICATE OF ANALYSIS

Date:	17 January 2013
Customer:	H_GEOCORE_RDC
Sample Delivery Group (SDG):	121212-112
Your Reference:	RT/12/55272
Location:	Midland Industrial Estate
Report No:	208837

We received 7 samples on Tuesday December 11, 2012 and 4 of these samples were scheduled for analysis which was completed on Thursday January 17, 2013. 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.

Approved By:

Sonia McWhan

Operations Manager

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Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No.

CERTIFICATE OF ANALYSIS

SDG:	121212-112	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208837
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
6651791	TP 21	ES1	0.20	07/12/2012
6651793	TP 21	ES2	1.00	07/12/2012
6651794	TP 21	ES3	2.00	07/12/2012
6651787	TP 25	ES1	0.35	07/12/2012
6651788	TP 25	ES2	1.00	07/12/2012
6651789	TP 25	ES3	2.00	07/12/2012
6651790	TP 25	ES4	2.70	07/12/2012

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

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121212-112	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208837
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			6651794	6651788	6651789	6651790
Customer Sample Reference			TP 21	TP 25	TP 25	TP 25
AGS Reference			ES3	ES2	ES3	ES4
Depth (m)			2.00	1.00	2.00	2.70
Container			1kg TUB / 250g Amber Jar (AL	1kg TUB / 250g Amber Jar (AL	1kg TUB / 250g Amber Jar (AL	1kg TUB / 250g Amber Jar (AL
Asbestos Identification (Soil)	All	NDPs: 0 Tests: 1			X	
pH	All	NDPs: 0 Tests: 4	X	X	X	X
Sample description	All	NDPs: 0 Tests: 4	X	X	X	X
Total Organic Carbon	All	NDPs: 1 Tests: 3	X	X	N	X
Total Organic Carbon (Asb)	All	NDPs: 0 Tests: 1			X	

CERTIFICATE OF ANALYSIS

SDG:	121212-112	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208837
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Sample Descriptions

Grain Sizes

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

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
6651794	TP 21	2.00	Dark Brown	Silty Clay Loam	0.063 - 0.1 mm	Stones	Stones
6651788	TP 25	1.00	Dark Brown	Silty Clay Loam	0.063 - 0.1 mm	Glass	Stones
6651789	TP 25	2.00	Dark Brown	Sandy Silt Loam	0.1 - 2 mm	Crushed Brick	Stones
6651790	TP 25	2.70	Dark Brown	Sandy Silt Loam	0.063 - 0.1 mm	Stones	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 ocurring 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.

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121212-112	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208837
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			TP 21	TP 25	TP 25	TP 25		
Depth (m)			2.00	1.00	2.00	2.70		
Sample Type			Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid		
Date Sampled			07/12/2012	07/12/2012	07/12/2012	07/12/2012		
Sample Time			.	.	.	.		
Date Received			11/12/2012	11/12/2012	11/12/2012	11/12/2012		
SDG Ref			121212-112	121212-112	121212-112	121212-112		
Lab Sample No.(s)			6651794	6651788	6651789	6651790		
AGS Reference			ES3	ES2	ES3	ES4		
Component	**LOD/Units**	**Method**						
Organic Carbon, Total	<0.2 %	TM132	1.97 #	1.74 #		1.95 #		
pH	1 pH Units	TM133	8.91 M	7.66 M	7.57 M	8.04 M		
Organic Carbon, Total (ASB)	<0.1 %	TM321			2.14			

13:28:36 17/01/2013

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121212-112	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208837
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP 25 ES 3 2.00 SOLID 07/12/2012 00:00:00 121212-112 6651789 TM048	16/01/13	Martin Cotterell	Loose fibres in soil	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121212-112	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208837
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Notification of NDPs (No determination possible)

Date Received : 12/12/2012 16:39:17

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
6651789	TP 25 ES3	2.00	Total Organic Carbon	Unsuitable for analysis due to potential Asbestos

CERTIFICATE OF ANALYSIS

SDG:	121212-112	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208837
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM321		Organic matter Content of Soil By Titration		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

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CERTIFICATE OF ANALYSIS

SDG:	121212-112	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208837
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	6651794	6651788	6651789	6651790
Customer Sample Ref.	TP 21	TP 25	TP 25	TP 25
AGS Ref.	ES3	ES2	ES3	ES4
Depth	2.00	1.00	2.00	2.70
Type	SOLID	SOLID	SOLID	SOLID
Asbestos Identification (Soil)			16-Jan-2013	
pH	27-Dec-2012	27-Dec-2012	28-Dec-2012	27-Dec-2012
Sample description	19-Dec-2012	19-Dec-2012	22-Dec-2012	19-Dec-2012
Total Organic Carbon	21-Dec-2012	27-Dec-2012		21-Dec-2012
Total Organic Carbon (Asb)			17-Jan-2013	

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICS and SVOC 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 all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples 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 analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

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. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

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 Dimethyphenol, 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 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. 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 C5-C12 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.

Sample Deviations

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk 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).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has 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).

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

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 HSG 264.

The identification of asbestos containing materials and soils 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.

ALcontrol Laboratories

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Website: www.alcontrol.com

Geocore Site Investigations Limited
Tralee Close
Kirkleatham Business Park
Redcar
TS10 5SG

Attention: Sarah Mortimer

CERTIFICATE OF ANALYSIS

Date:	14 January 2013
Customer:	H_GEOCORE_RDC
Sample Delivery Group (SDG):	121213-8
Your Reference:	RT/12/55272
Location:	Midland Industrial Estate
Report No:	208419

We received 11 samples on Tuesday December 11, 2012 and 5 of these samples were scheduled for analysis which was completed on Monday January 14, 2013. 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.

Approved By:

Sonia McWhan

Operations Manager

Alcontrol Laboratories is a trading division of ALcontrol UK Limited
Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No.

CERTIFICATE OF ANALYSIS

SDG:	121213-8	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208419
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
6652450	TP 7	ES1	0.20	10/12/2012
6652451	TP 7	ES2	0.50	10/12/2012
6652452	TP 7	ES3	1.50	10/12/2012
6652454	TP 7	ES4	2.00	10/12/2012
6652455	TP 7	ES5	3.00	10/12/2012
6652456	TP 7	ES6	3.40	10/12/2012
6652457	TP 8	ES1	0.10	10/12/2012
6652458	TP 8	ES2	0.50	10/12/2012
6652460	TP 8	ES3	1.50	10/12/2012
6652465	TP 8	ES4	2.50	10/12/2012
6652466	TP 8	ES5	3.00	10/12/2012

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

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121213-8	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208419
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			6652450	6652454	6652456	6652460	6652466
Customer Sample Reference			TP 7	TP 7	TP 7	TP 8	TP 8
AGS Reference			ES1	ES4	ES6	ES3	ES5
Depth (m)			0.20	2.00	3.40	1.50	3.00
Container			1kg TUB / 250g Amber Jar (AL	60g VOC (ALE215) / 1kg TUB	250g Amber Jar (AL / 1kg TUB	1kg TUB / 250g Amber Jar (AL	1kg TUB / 250g Amber Jar (AL
Anions by Kone (soil)	All	NDPs: 0 Tests: 1	X				
Asbestos Identification (Soil)	All	NDPs: 0 Tests: 5	X	X	X	X X	X
Boron Water Soluble	All	NDPs: 0 Tests: 1	X				
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 1	X				
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 1	X				
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1		X			
Metals by iCap-OES (Soil)	Arsenic	NDPs: 0 Tests: 1	X				
	Barium	NDPs: 0 Tests: 1	X				
	Beryllium	NDPs: 0 Tests: 1	X				
	Cadmium	NDPs: 0 Tests: 1	X				
	Chromium	NDPs: 0 Tests: 1	X				
	Copper	NDPs: 0 Tests: 1	X				
	Lead	NDPs: 0 Tests: 1	X				
	Mercury	NDPs: 0 Tests: 1	X				
	Nickel	NDPs: 0 Tests: 1	X				

16:02:45 14/01/2013

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121213-8	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208419
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

SOLID

Results Legend

X Test

N No Determination Possible

		Lab Sample No(s)	6652450	6652454	6652456	6652460	6652466		
		Customer Sample Reference	TP 7	TP 7	TP 7	TP 8	TP 8		
		AGS Reference	ES1	ES4	ES6	ES3	ES5		
		Depth (m)	0.20	2.00	3.40	1.50	3.00		
		Container	1kg TUB / 250g Amber Jar (AL	60g VOC (ALE215) / 1kg TUB	250g Amber Jar (AL / 1kg TUB	1kg TUB / 250g Amber Jar (AL	1kg TUB / 250g Amber Jar (AL		
Metals by iCap-OES (Soil)	Selenium	NDPs: 0 Tests: 1		X					
	Vanadium	NDPs: 0 Tests: 1		X					
	Zinc	NDPs: 0 Tests: 1		X					
PAH by GCMS	All	NDPs: 0 Tests: 1		X					
pH	All	NDPs: 0 Tests: 5	X		X	X	X	X	
Sample description	All	NDPs: 0 Tests: 5		X	X	X	X	X	X
Total Organic Carbon	All	NDPs: 2 Tests: 3		X	N	X	X		N
Total Organic Carbon (Asb)	All	NDPs: 0 Tests: 2			X				X
TPH CWG GC (S)	All	NDPs: 0 Tests: 1		X					

16:02:45 14/01/2013

CERTIFICATE OF ANALYSIS

SDG:	121213-8	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208419
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Sample Descriptions

Grain Sizes

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

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
6652450	TP 7	0.20	Dark Brown	Clay Loam	0.1 - 2 mm	Vegetation	N/A
6652454	TP 7	2.00	Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Stones	Fibres
6652456	TP 7	3.40	Black	Loamy Sand	0.1 - 2 mm	Plastic	Fibres
6652460	TP 8	1.50	Dark Brown	Sandy Clay Loam	0.1 - 2 mm	Plastic	Crushed Brick
6652466	TP 8	3.00	Black	Silt Loam	0.063 - 0.1 mm	Plastic	Fibres

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 ocurring 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.

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121213-8	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208419
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			TP 7	TP 7	TP 7	TP 8	TP 8	
Depth (m)			0.20	2.00	3.40	1.50	3.00	
Sample Type			Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	
Date Sampled			10/12/2012	10/12/2012	10/12/2012	10/12/2012	10/12/2012	
Sample Time			.	.	.	.	.	
Date Received			11/12/2012	11/12/2012	11/12/2012	11/12/2012	11/12/2012	
SDG Ref			121213-8	121213-8	121213-8	121213-8	121213-8	
Lab Sample No.(s)			6652450	6652454	6652456	6652460	6652466	
AGS Reference			ES1	ES4	ES6	ES3	ES5	
Component	**LOD/Units**	**Method**						
Organic Carbon, Total	<0.2 %	TM132	1.98 #		6.81 & #	11.4 & #		
pH	1 pH Units	TM133	8.47 M	7.94 M	7.6 M	7.64 M	7.98 M	
Arsenic	<0.6 mg/kg	TM181	23.6 M					
Barium	<0.6 mg/kg	TM181	71.3 #					
Beryllium	<0.01 mg/kg	TM181	0.812 M					
Cadmium	<0.02 mg/kg	TM181	0.173 M					
Chromium	<0.9 mg/kg	TM181	19.6 M					
Copper	<1.4 mg/kg	TM181	18 M					
Lead	<0.7 mg/kg	TM181	39.3 M					
Mercury	<0.14 mg/kg	TM181	<0.14 M					
Nickel	<0.2 mg/kg	TM181	18.3 M					
Selenium	<1 mg/kg	TM181	<1 #					
Vanadium	<0.2 mg/kg	TM181	69.7 #					
Zinc	<1.9 mg/kg	TM181	79.5 M					
Boron, water soluble	<1 mg/kg	TM222	<1 M					
Water Soluble Sulphate as SO4 2:1 Extract	<0.008 g/l	TM243	<0.008 M					
Organic Carbon, Total (ASB)	<0.1 %	TM321		1.71 &			3.24 &	

16:02:45 14/01/2013

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CERTIFICATE OF ANALYSIS

SDG:	121213-8	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208419
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R	TP 7
Depth (m)	0.20
Sample Type	Soil/Solid
Date Sampled	10/12/2012
Sample Time	.
Date Received	11/12/2012
SDG Ref	121213-8
Lab Sample No.(s)	6652450
AGS Reference	ES1

Component	LOD/Units	Method	TP 7
Naphthalene-d8 % recovery**	%	TM218	107
Acenaphthene-d10 % recovery**	%	TM218	112
Phenanthrene-d10 % recovery**	%	TM218	112
Chrysene-d12 % recovery**	%	TM218	107
Perylene-d12 % recovery**	%	TM218	115
Naphthalene	<9 µg/kg	TM218	32 M
Acenaphthylene	<12 µg/kg	TM218	27.3 M
Acenaphthene	<8 µg/kg	TM218	31.3 M
Fluorene	<10 µg/kg	TM218	33.8 M
Phenanthrene	<15 µg/kg	TM218	455 M
Anthracene	<16 µg/kg	TM218	108 M
Fluoranthene	<17 µg/kg	TM218	981 M
Pyrene	<15 µg/kg	TM218	794 M
Benz(a)anthracene	<14 µg/kg	TM218	571 M
Chrysene	<10 µg/kg	TM218	448 M
Benzo(b)fluoranthene	<15 µg/kg	TM218	512 M
Benzo(k)fluoranthene	<14 µg/kg	TM218	242 M
Benzo(a)pyrene	<15 µg/kg	TM218	563 M
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	323 M
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	93.3 M
Benzo(g,h,i)perylene	<24 µg/kg	TM218	387 M
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	5600

16:02:45 14/01/2013

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121213-8	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208419
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			TP 7					
Depth (m)			0.20					
Sample Type			Soil/Solid					
Date Sampled			10/12/2012					
Sample Time			.					
Date Received			11/12/2012					
SDG Ref			121213-8					
Lab Sample No.(s)			6652450					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	86					
GRO >C5-C12	<44 µg/kg	TM089	<44					
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5 & #					
Benzene	<10 µg/kg	TM089	<10 & M					
Toluene	<2 µg/kg	TM089	2.46 & M					
Ethylbenzene	<3 µg/kg	TM089	<3 & M					
m,p-Xylene	<6 µg/kg	TM089	<6 & M					
o-Xylene	<3 µg/kg	TM089	<3 & M					
sum of detected mpo xylene by GC	<9 µg/kg	TM089	<9					
sum of detected BTEX by GC	<24 µg/kg	TM089	<24					
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					
Aliphatics >C12-C16	<100 µg/kg	TM173	<100					
Aliphatics >C16-C21	<100 µg/kg	TM173	<100					
Aliphatics >C21-C35	<100 µg/kg	TM173	10400					
Aliphatics >C35-C44	<100 µg/kg	TM173	<100					
Total Aliphatics >C12-C44	<100 µg/kg	TM173	10400					
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10					
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10					
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10					
Aromatics >EC10-EC12	<10 µg/kg	TM089	<10					
Aromatics >EC12-EC16	<100 µg/kg	TM173	<100					
Aromatics >EC16-EC21	<100 µg/kg	TM173	8380					
Aromatics >EC21-EC35	<100 µg/kg	TM173	47300					
Aromatics >EC35-EC44	<100 µg/kg	TM173	15100					
Aromatics >EC40-EC44	<100 µg/kg	TM173	4780					
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	70700					
Total Aliphatics >C5-35	<100 µg/kg	TM173	10400					
Total Aromatics >C5-35	<100 µg/kg	TM173	55700					
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173	66000					

16:02:45 14/01/2013

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121213-8	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208419
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

		Customer Sample R	TP 7
		Depth (m)	0.20
		Sample Type	Soil/Solid
		Date Sampled	10/12/2012
		Sample Time	.
		Date Received	11/12/2012
		SDG Ref	121213-8
		Lab Sample No.(s)	6652450
		AGS Reference	ES1
Component	**LOD/Units**	**Method**	
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	81100

16:02:45 14/01/2013

CERTIFICATE OF ANALYSIS

SDG:	121213-8	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208419
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP 7 ES 1 0.20 SOLID 10/12/2012 00:00:00 121213-8 6652450 TM048	28/12/12	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP 7 ES 4 2.00 SOLID 10/12/2012 00:00:00 121213-8 6652454 TM048	10/01/13	Kevin Bowron	Soil containing loose fibres and debris typical of AIB	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP 7 ES 6 3.40 SOLID 10/12/2012 00:00:00 121213-8 6652456 TM048	10/01/13	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP 8 ES 3 1.50 SOLID 10/12/2012 00:00:00 121213-8 6652460 TM048	10/01/13	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP 8 ES 5 3.00 SOLID 10/12/2012 00:00:00 121213-8 6652466 TM048	10/01/13	Kevin Bowron	Soil containing loose fibres and material typical of asbestos cement	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121213-8	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208419
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Notification of NDPs (No determination possible)

Date Received : 13/12/2012 07:20:46

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
6652454	TP 7 ES4	2.00	Total Organic Carbon	Unsuitable for analysis due to potential Asbestos
6652466	TP 8 ES5	3.00	Total Organic Carbon	Unsuitable for analysis due to potential Asbestos

CERTIFICATE OF ANALYSIS

SDG:	121213-8	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208419
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer		
TM243		Mixed Anions In Soils By Kone		
TM321		Organic matter Content of Soil By Titration		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

ALcontrol Laboratories

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CERTIFICATE OF ANALYSIS

SDG:	121213-8	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208419
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	6652450	6652454	6652456	6652460	6652466
Customer Sample Ref.	TP 7	TP 7	TP 7	TP 8	TP 8
AGS Ref.	ES1	ES4	ES6	ES3	ES5
Depth	0.20	2.00	3.40	1.50	3.00
Type	SOLID	SOLID	SOLID	SOLID	SOLID
Anions by Kone (soil)	27-Dec-2012				
Asbestos Identification (Soil)	10-Jan-2013	10-Jan-2013	10-Jan-2013	10-Jan-2013	10-Jan-2013
Boron Water Soluble	27-Dec-2012				
EPH CWG (Aliphatic) GC (S)	28-Dec-2012				
EPH CWG (Aromatic) GC (S)	28-Dec-2012				
GRO by GC-FID (S)	27-Dec-2012				
Metals by iCap-OES (Soil)	27-Dec-2012				
PAH by GCMS	28-Dec-2012				
pH	20-Dec-2012	20-Dec-2012	28-Dec-2012	20-Dec-2012	20-Dec-2012
Sample description	20-Dec-2012	19-Dec-2012	19-Dec-2012	19-Dec-2012	19-Dec-2012
Total Organic Carbon	28-Dec-2012		11-Jan-2013	11-Jan-2013	
Total Organic Carbon (Asb)		14-Jan-2013			14-Jan-2013
TPH CWG GC (S)	28-Dec-2012				

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICS and SVOC 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 all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples 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 analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

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. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

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 Dimethyphenol, 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 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. 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 C5-C12 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.

Sample Deviations

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk 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).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has 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).

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

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 HSG 264.

The identification of asbestos containing materials and soils 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.

ALcontrol Laboratories

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Website: www.alcontrol.com

Geocore Site Investigations Limited
Tralee Close
Kirkleatham Business Park
Redcar
TS10 5SG

Attention: Sarah Mortimer

CERTIFICATE OF ANALYSIS

Date:	04 January 2013
Customer:	H_GEOCORE_RDC
Sample Delivery Group (SDG):	121213-14
Your Reference:	RT/12/55272
Location:	Midland Industrial Estate
Report No:	207491

We received 9 samples on Tuesday December 11, 2012 and 5 of these samples were scheduled for analysis which was completed on Friday January 04, 2013. 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.

Approved By:

Sonia McWhan

Operations Manager

Alcontrol Laboratories is a trading division of ALcontrol UK Limited
Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No.

CERTIFICATE OF ANALYSIS

SDG:	121213-14	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207491
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
6652832	TP 14	ES1	0.15	07/12/2012
6652834	TP 14	ES2	0.50	07/12/2012
6652835	TP 14	ES3	1.00	07/12/2012
6652837	TP 14	ES4	2.00	07/12/2012
6652838	TP 14	ES5	2.50	07/12/2012
6652839	TP 17	ES1	0.30	07/12/2012
6652841	TP 17	ES2	1.00	07/12/2012
6652842	TP 17	ES3	2.00	07/12/2012
6652843	TP 17	ES4	2.80	07/12/2012

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

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121213-14	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207491
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			6652832	6652835	6652838	6652839	6652843
Customer Sample Reference			TP 14	TP 14	TP 14	TP 17	TP 17
AGS Reference			ES1	ES3	ES5	ES1	ES4
Depth (m)			0.15	1.00	2.50	0.30	2.80
Container			1kg TUB / 250g Amber Jar (AL	60g VOC (ALE215) / 1kg TUB	250g Amber Jar (AL / 1kg TUB	1kg TUB / 250g Amber Jar (AL	60g VOC (ALE215) / 1kg TUB / 250g Amber Jar (AL
Anions by Kone (soil)	All	NDPs: 0 Tests: 2		X			X
Asbestos Identification (Soil)	All	NDPs: 0 Tests: 2	X			X	
Boron Water Soluble	All	NDPs: 0 Tests: 2		X			X
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 2		X			X
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 2		X			X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2			X			X
Metals by iCap-OES (Soil)	Arsenic	NDPs: 0 Tests: 2		X			X
	Barium	NDPs: 0 Tests: 2		X			X
	Beryllium	NDPs: 0 Tests: 2		X			X
	Cadmium	NDPs: 0 Tests: 2		X			X
	Chromium	NDPs: 0 Tests: 2		X			X
	Copper	NDPs: 0 Tests: 2		X			X
	Lead	NDPs: 0 Tests: 2		X			X
	Mercury	NDPs: 0 Tests: 2		X			X
	Nickel	NDPs: 0 Tests: 2		X			X

15:34:18 04/01/2013

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121213-14	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207491
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			6652832	6652835	6652838	6652839	6652843
Customer Sample Reference			TP 14	TP 14	TP 14	TP 17	TP 17
AGS Reference			ES1	ES3	ES5	ES1	ES4
Depth (m)			0.15	1.00	2.50	0.30	2.80
Container			1kg TUB / 250g Amber Jar (AL	60g VOC (ALE215) / 1kg TUB	250g Amber Jar (AL / 1kg TUB	1kg TUB / 250g Amber Jar (AL	60g VOC (ALE215) / 1kg TUB / 250g Amber Jar (AL
Metals by iCap-OES (Soil)	Selenium	NDPs: 0 Tests: 2		X			X
	Vanadium	NDPs: 0 Tests: 2		X			X
	Zinc	NDPs: 0 Tests: 2		X			X
PAH by GCMS	All	NDPs: 0 Tests: 2		X			X
pH	All	NDPs: 0 Tests: 5	X		X	X X		X
Sample description	All	NDPs: 0 Tests: 5		X	X X		X	X
Total Organic Carbon	All	NDPs: 3 Tests: 2	N		N N		X	X
Total Organic Carbon (Asb)	All	NDPs: 0 Tests: 3		X	X X		
TPH CWG GC (S)	All	NDPs: 0 Tests: 2		X			X

15:34:18 04/01/2013

CERTIFICATE OF ANALYSIS

SDG:	121213-14	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207491
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Sample Descriptions

Grain Sizes

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

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
6652832	TP 14	0.15	Dark Brown	Silt Loam	0.063 - 0.1 mm	Vegetation	Stones
6652835	TP 14	1.00	Black	Sandy Loam	0.1 - 2 mm	Plastic	Fibres
6652838	TP 14	2.50	Dark Brown	N/A	0.1 - 2 mm	Plastic	Tile
6652839	TP 17	0.30	Dark Brown	Sandy Clay	0.063 - 0.1 mm	None	Stones
6652843	TP 17	2.80	Dark Brown	Loamy Sand	0.1 - 2 mm	Stones	Vegetation

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 ocurring 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.

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121213-14	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207491
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			TP 14	TP 14	TP 14	TP 17	TP 17	
Depth (m)			0.15	1.00	2.50	0.30	2.80	
Sample Type			Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	
Date Sampled			07/12/2012	07/12/2012	07/12/2012	07/12/2012	07/12/2012	
Sample Time			.	.	.	.	.	
Date Received			11/12/2012	11/12/2012	11/12/2012	11/12/2012	11/12/2012	
SDG Ref			121213-14	121213-14	121213-14	121213-14	121213-14	
Lab Sample No.(s)			6652832	6652835	6652838	6652839	6652843	
AGS Reference			ES1	ES3	ES5	ES1	ES4	
Component	**LOD/Units**	**Method**						
Organic Carbon, Total	<0.2 %	TM132				1.46 #	1.63 #	
pH	1 pH Units	TM133	8.25 M	7.41 M	7.46 M	8.6 M	8.13 M	
Arsenic	<0.6 mg/kg	TM181	19.9 M			16.5 M		
Barium	<0.6 mg/kg	TM181	156 #			183 #		
Beryllium	<0.01 mg/kg	TM181	1.92 M			4.03 M		
Cadmium	<0.02 mg/kg	TM181	0.742 M			0.346 M		
Chromium	<0.9 mg/kg	TM181	28 M			36.4 M		
Copper	<1.4 mg/kg	TM181	28.2 M			13 M		
Lead	<0.7 mg/kg	TM181	69.9 M			55.5 M		
Mercury	<0.14 mg/kg	TM181	<0.14 M			0.227 M		
Nickel	<0.2 mg/kg	TM181	20.6 M			12.6 M		
Selenium	<1 mg/kg	TM181	<1 #			1.54 #		
Vanadium	<0.2 mg/kg	TM181	61.5 #			110 #		
Zinc	<1.9 mg/kg	TM181	126 M			88.8 M		
Boron, water soluble	<1 mg/kg	TM222	<1 M			<1 M		
Water Soluble Sulphate as SO4 2:1 Extract	<0.008 g/l	TM243	0.0966 M			0.907 M		
Organic Carbon, Total (ASB)	<0.1 %	TM321	2.7	2.41	1.98			

15:34:18 04/01/2013

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CERTIFICATE OF ANALYSIS

SDG:	121213-14	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207491
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

PAH by GCMS

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			TP 14	TP 17				
Depth (m)			0.15	0.30				
Sample Type			Soil/Solid	Soil/Solid				
Date Sampled			07/12/2012	07/12/2012				
Sample Time			.	.				
Date Received			11/12/2012	11/12/2012				
SDG Ref			121213-14	121213-14				
Lab Sample No.(s)			6652832	6652839				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	104	112				
Acenaphthene-d10 % recovery**	%	TM218	103	110				
Phenanthrene-d10 % recovery**	%	TM218	104	111				
Chrysene-d12 % recovery**	%	TM218	102	108				
Perylene-d12 % recovery**	%	TM218	105	109				
Naphthalene	<9 µg/kg	TM218	137 @ M	120 @ M				
Acenaphthylene	<12 µg/kg	TM218	384 @ M	540 @ M				
Acenaphthene	<8 µg/kg	TM218	304 @ M	1090 @ M				
Fluorene	<10 µg/kg	TM218	363 @ M	1180 @ M				
Phenanthrene	<15 µg/kg	TM218	6950 @ M	15100 @ M				
Anthracene	<16 µg/kg	TM218	2430 @ M	3820 @ M				
Fluoranthene	<17 µg/kg	TM218	20700 @ M	35900 @ M				
Pyrene	<15 µg/kg	TM218	17500 @ M	28700 @ M				
Benz(a)anthracene	<14 µg/kg	TM218	10500 @ M	15500 @ M				
Chrysene	<10 µg/kg	TM218	8110 @ M	12800 @ M				
Benzo(b)fluoranthene	<15 µg/kg	TM218	9990 @ M	14700 @ M				
Benzo(k)fluoranthene	<14 µg/kg	TM218	5030 @ M	8080 @ M				
Benzo(a)pyrene	<15 µg/kg	TM218	10700 @ M	15900 @ M				
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	5310 @ M	7690 @ M				
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	1580 @ M	2290 @ M				
Benzo(g,h,i)perylene	<24 µg/kg	TM218	5860 @ M	8530 @ M				
Coronene	<24 µg/kg	TM218	<24	<24				
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	106000	172000				

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CERTIFICATE OF ANALYSIS

SDG:	121213-14	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207491
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			TP 14	TP 17				
Depth (m)			0.15	0.30				
Sample Type			Soil/Solid	Soil/Solid				
Date Sampled			07/12/2012	07/12/2012				
Sample Time			.	.				
Date Received			11/12/2012	11/12/2012				
SDG Ref			121213-14	121213-14				
Lab Sample No.(s)			6652832	6652839				
AGS Reference			ES1	ES1				
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	65	80				
GRO >C5-C12	<44 µg/kg	TM089	<44	<44				
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5 @ #	<5 @ #				
Benzene	<10 µg/kg	TM089	<10 @ M	<10 @ M				
Toluene	<2 µg/kg	TM089	<2 @ M	<2 @ M				
Ethylbenzene	<3 µg/kg	TM089	<3 @ M	<3 @ M				
m,p-Xylene	<6 µg/kg	TM089	<6 @ M	<6 @ M				
o-Xylene	<3 µg/kg	TM089	<3 @ M	<3 @ M				
sum of detected mpo xylene by GC	<9 µg/kg	TM089	<9	<9				
sum of detected BTEX by GC	<24 µg/kg	TM089	<24	<24				
Aliphatics >C5-C6	<10 µg/kg	TM089	<10	<10				
Aliphatics >C6-C8	<10 µg/kg	TM089	<10	<10				
Aliphatics >C8-C10	<10 µg/kg	TM089	<10	<10				
Aliphatics >C10-C12	<10 µg/kg	TM089	<10	<10				
Aliphatics >C12-C16	<100 µg/kg	TM173	4590	7490				
Aliphatics >C16-C21	<100 µg/kg	TM173	7650	17500				
Aliphatics >C21-C35	<100 µg/kg	TM173	53600	50900				
Aliphatics >C35-C44	<100 µg/kg	TM173	17600	26800				
Total Aliphatics >C12-C44	<100 µg/kg	TM173	83400	103000				
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10				
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10				
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10	<10				
Aromatics >EC10-EC12	<10 µg/kg	TM089	<10	<10				
Aromatics >EC12-EC16	<100 µg/kg	TM173	16300	67800				
Aromatics >EC16-EC21	<100 µg/kg	TM173	134000	686000				
Aromatics >EC21-EC35	<100 µg/kg	TM173	352000	1220000				
Aromatics >EC35-EC44	<100 µg/kg	TM173	124000	362000				
Aromatics >EC40-EC44	<100 µg/kg	TM173	43100	128000				
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	627000	2340000				
Total Aliphatics >C5-35	<100 µg/kg	TM173	65900	75900				
Total Aromatics >C5-35	<100 µg/kg	TM173	502000	1970000				
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173	568000	2050000				

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CERTIFICATE OF ANALYSIS

SDG:	121213-14	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207491
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

			Customer Sample R	TP 14	TP 17				
			Depth (m)	0.15	0.30				
			Sample Type	Soil/Solid	Soil/Solid				
			Date Sampled	07/12/2012	07/12/2012				
			Sample Time	.	.				
			Date Received	11/12/2012	11/12/2012				
			SDG Ref	121213-14	121213-14				
			Lab Sample No.(s)	6652832	6652839				
			AGS Reference	ES1	ES1				
Component	**LOD/Units**	**Method**							
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173		710000	2440000				

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CERTIFICATE OF ANALYSIS

SDG:	121213-14	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207491
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP 14 ES 1 0.15 SOLID 07/12/2012 00:00:00 121213-14 6652832 TM048	27/12/12	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP 17 ES 1 0.30 SOLID 07/12/2012 00:00:00 121213-14 6652839 TM048	27/12/12	Chris Swindells	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121213-14	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207491
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Notification of NDPs (No determination possible)

Date Received : 13/12/2012 07:55:40

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
6652832	TP 14 ES1	0.15	Total Organic Carbon	Unsuitable for analysis due to potential Asbestos
6652835	TP 14 ES3	1.00	Total Organic Carbon	Unsuitable for analysis due to potential Asbestos
6652838	TP 14 ES5	2.50	Total Organic Carbon	Unsuitable for analysis due to potential Asbestos

CERTIFICATE OF ANALYSIS

SDG:	121213-14	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207491
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer		
TM243		Mixed Anions In Soils By Kone		
TM321		Organic matter Content of Soil By Titration		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

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CERTIFICATE OF ANALYSIS

SDG:	121213-14	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	207491
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	6652832	6652835	6652838	6652839	6652843
Customer Sample Ref.	TP 14	TP 14	TP 14	TP 17	TP 17
AGS Ref.	ES1	ES3	ES5	ES1	ES4
Depth	0.15	1.00	2.50	0.30	2.80
Type	SOLID	SOLID	SOLID	SOLID	SOLID
Anions by Kone (soil)	28-Dec-2012			28-Dec-2012	
Asbestos Identification (Soil)	27-Dec-2012			27-Dec-2012	
Boron Water Soluble	29-Dec-2012			02-Jan-2013	
EPH CWG (Aliphatic) GC (S)	03-Jan-2013			03-Jan-2013	
EPH CWG (Aromatic) GC (S)	03-Jan-2013			03-Jan-2013	
GRO by GC-FID (S)	28-Dec-2012			30-Dec-2012	
Metals by iCap-OES (Soil)	28-Dec-2012			29-Dec-2012	
PAH by GCMS	04-Jan-2013			04-Jan-2013	
pH	21-Dec-2012	21-Dec-2012	20-Dec-2012	21-Dec-2012	27-Dec-2012
Sample description	21-Dec-2012	19-Dec-2012	19-Dec-2012	21-Dec-2012	19-Dec-2012
Total Organic Carbon				28-Dec-2012	27-Dec-2012
Total Organic Carbon (Asb)	02-Jan-2013	02-Jan-2013	02-Jan-2013		
TPH CWG GC (S)	03-Jan-2013			03-Jan-2013	

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICS and SVOC 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 all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples 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 analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

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. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

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 Dimethyphenol, 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 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. 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 C5-C12 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.

Sample Deviations

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk 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).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has 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).

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

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 HSG 264.

The identification of asbestos containing materials and soils 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.

ALcontrol Laboratories

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Website: www.alcontrol.com

Geocore Site Investigations Limited
Tralee Close
Kirkleatham Business Park
Redcar
TS10 5SG

Attention: Sarah Mortimer

CERTIFICATE OF ANALYSIS

Date:	11 January 2013
Customer:	H_GEOCORE_RDC
Sample Delivery Group (SDG):	121213-145
Your Reference:	RT/12/55272
Location:	Midland Industrial Estate
Report No:	208303

We received 5 samples on Wednesday December 12, 2012 and 2 of these samples were scheduled for analysis which was completed on Friday January 11, 2013. 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.

Approved By:

Sonia McWhan

Operations Manager

CERTIFICATE OF ANALYSIS

SDG:	121213-145	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208303
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
6659223	TP2	ES1	0.20	11/12/2012
6659224	TP2	ES2	2.00	11/12/2012
6659225	TP2	ES3	3.50	11/12/2012
6659227	TP6	ES1	0.20	11/12/2012
6659228	TP6	ES2	1.15	11/12/2012

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

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121213-145	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208303
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			6659224	6659225
Customer Sample Reference			TP2	TP2
AGS Reference			ES2	ES3
Depth (m)			2.00	3.50
Container			1kg TUB / 250g Amber Jar (AL	1kg TUB / 250g Amber Jar (AL
Asbestos Identification (Soil)	All	NDPs: 0 Tests: 1	X	
pH	All	NDPs: 0 Tests: 2	X	X
Sample description	All	NDPs: 0 Tests: 2	X	X
Total Organic Carbon	All	NDPs: 0 Tests: 2	X	X

15:25:33 11/01/2013

CERTIFICATE OF ANALYSIS

SDG:	121213-145	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208303
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Sample Descriptions

Grain Sizes

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

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
6659224	TP2	2.00	Dark Brown	Silty Sand	0.1 - 2 mm	Vegetation	Brick
6659225	TP2	3.50	Dark Brown	Silty Sand	0.1 - 2 mm	Stones	None

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 ocurring 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.

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121213-145	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208303
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample R	TP2	TP2				
			Depth (m)	2.00	3.50				
			Sample Type	Soil/Solid	Soil/Solid				
			Date Sampled	11/12/2012	11/12/2012				
			Sample Time	.	.				
			Date Received	12/12/2012	12/12/2012				
			SDG Ref	121213-145	121213-145				
			Lab Sample No.(s)	6659224	6659225				
			AGS Reference	ES2	ES3				
Organic Carbon, Total	<0.2 %	TM132		1.41 & #	1.11 #				
pH	1 pH Units	TM133		7.62 M	7.68 M				

15:25:33 11/01/2013

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121213-145	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208303
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP2 ES 2 2.00 SOLID 11/12/2012 00:00:00 121213-145 6659224 TM048	09/01/13	Lauren Sargeant	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	121213-145	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208303
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM321		Organic matter Content of Soil By Titration		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

CERTIFICATE OF ANALYSIS

SDG:	121213-145	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208303
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	6659224	6659225
Customer Sample Ref.	TP2	TP2
AGS Ref.	ES2	ES3
Depth	2.00	3.50
Type	SOLID	SOLID
Asbestos Identification (Soil)	10-Jan-2013	
pH	20-Dec-2012	27-Dec-2012
Sample description	19-Dec-2012	19-Dec-2012
Total Organic Carbon	11-Jan-2013	27-Dec-2012

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICS and SVOC 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 all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples 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 analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

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. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

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 Dimethyphenol, 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 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. 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 C5-C12 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.

Sample Deviations

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk 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).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has 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).

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

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 HSG 264.

The identification of asbestos containing materials and soils 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.

ALcontrol Laboratories

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Website: www.alcontrol.com

Geocore Site Investigations Limited
Tralee Close
Kirkleatham Business Park
Redcar
TS10 5SG

Attention: Sarah Mortimer

CERTIFICATE OF ANALYSIS

Date:	11 January 2013
Customer:	H_GEOCORE_RDC
Sample Delivery Group (SDG):	121213-150
Your Reference:	RT/12/55272
Location:	Midland Industrial Estate
Report No:	208306

We received 8 samples on Thursday December 13, 2012 and 2 of these samples were scheduled for analysis which was completed on Friday January 11, 2013. 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.

Approved By:

Sonia McWhan

Operations Manager

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Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No.

CERTIFICATE OF ANALYSIS

SDG:	121213-150	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208306
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
6659576	PH - H		0.50	12/12/2012
6659577	PH - H		1.00	12/12/2012
6659578	PH - H		2.00	12/12/2012
6659579	PH - H		3.00	12/12/2012
6659572	PH - J		0.50	12/12/2012
6659573	PH - J		1.50	12/12/2012
6659574	PH - J		2.50	12/12/2012
6659575	PH - J		3.50	12/12/2012

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

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121213-150	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208306
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			6659578	6659574
Customer Sample Reference			PH - H	PH - J
AGS Reference				
Depth (m)			2.00	2.50
Container			1kg TUB / 250g Amber Jar (AL	1kg TUB / 250g Amber Jar (AL
Asbestos Identification (Soil)	All	NDPs: 0 Tests: 1	X	
pH	All	NDPs: 0 Tests: 2	X	X
Sample description	All	NDPs: 0 Tests: 2	X	X
Total Organic Carbon	All	NDPs: 0 Tests: 2	X	X

CERTIFICATE OF ANALYSIS

SDG:	121213-150	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208306
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Sample Descriptions

Grain Sizes

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

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
6659578	PH - H	2.00	Dark Brown	Loamy Sand	0.1 - 2 mm	Glass & Stones	Brick
6659574	PH - J	2.50	Dark Brown	Sandy Loam	0.1 - 2 mm	Vegetation	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 ocurring 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.

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121213-150	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208306
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			PH - H	PH - J				
Depth (m)			2.00	2.50				
Sample Type			Soil/Solid	Soil/Solid				
Date Sampled			12/12/2012	12/12/2012				
Sample Time			.	.				
Date Received			13/12/2012	13/12/2012				
SDG Ref			121213-150	121213-150				
Lab Sample No.(s)			6659578	6659574				
AGS Reference								
Component	**LOD/Units**	**Method**						
Organic Carbon, Total	<0.2 %	TM132	14.2 ♦ #	11 #				
pH	1 pH Units	TM133	7.61 M	7.27 M				

15:27:06 11/01/2013

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121213-150	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208306
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	PH - H 2.00 SOLID 12/12/2012 00:00:00 121213-150 6659578 TM048	09/01/13	Martin Cotterell	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	121213-150	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208306
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM321		Organic matter Content of Soil By Titration		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

CERTIFICATE OF ANALYSIS

SDG:	121213-150	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208306
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	6659578	6659574
Customer Sample Ref.	PH - H	PH - J
AGS Ref.		
Depth	2.00	2.50
Type	SOLID	SOLID
Asbestos Identification (Soil)	10-Jan-2013	
pH	21-Dec-2012	27-Dec-2012
Sample description	19-Dec-2012	19-Dec-2012
Total Organic Carbon	11-Jan-2013	27-Dec-2012

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICS and SVOC 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 all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples 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 analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

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. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

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 Dimethyphenol, 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 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. 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 C5-C12 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.

Sample Deviations

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk 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).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has 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).

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

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 HSG 264.

The identification of asbestos containing materials and soils 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.

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Kirkleatham Business Park
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TS10 5SG

Attention: Sarah Mortimer

CERTIFICATE OF ANALYSIS

Date:	18 January 2013
Customer:	H_GEOCORE_RDC
Sample Delivery Group (SDG):	121213-161
Your Reference:	RT/12/55272
Location:	Midland Industrial Estate
Report No:	209015

This report has been revised and directly supersedes 207760 in its entirety.

We received 10 samples on Wednesday December 12, 2012 and 2 of these samples were scheduled for analysis which was completed on Friday January 18, 2013. 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.

Approved By:

Sonia McWhan

Operations Manager

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CERTIFICATE OF ANALYSIS

SDG:	121213-161	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209015
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207760

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
6659836	TP16	ES1	0.20	11/12/2012
6659837	TP16	ES2	0.50	11/12/2012
6659838	TP16	ES3	1.50	11/12/2012
6659839	TP16	ES4	2.50	11/12/2012
6659840	TP16	ES5	3.00	11/12/2012
6659841	TP29	ES1	0.30	11/12/2012
6659842	TP29	ES2	0.80	11/12/2012
6659843	TP29	ES3	1.50	11/12/2012
6659844	TP29	ES4	2.00	11/12/2012
6659845	TP29	ES5	2.50	11/12/2012

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

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CERTIFICATE OF ANALYSIS

SDG:	121213-161	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209015
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207760

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			6659836			6659840
Customer Sample Reference			TP16			TP16
AGS Reference			ES1			ES5
Depth (m)			0.20			3.00
Container			1kg TUB	250g Amber Jar (AL	60g VOC (ALE215)	1kg TUB
Anions by Kone (soil)	All	NDPs: 0 Tests: 1		X		
Asbestos Identification (Soil)	All	NDPs: 0 Tests: 1	X			
Asbestos Quantification - Full	All	NDPs: 0 Tests: 1	X			
Boron Water Soluble	All	NDPs: 0 Tests: 1		X		
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 1		X		
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 1		X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1			X	
Metals by iCap-OES (Soil)	Arsenic	NDPs: 0 Tests: 1		X		
	Barium	NDPs: 0 Tests: 1		X		
	Beryllium	NDPs: 0 Tests: 1		X		
	Cadmium	NDPs: 0 Tests: 1		X		
	Chromium	NDPs: 0 Tests: 1		X		
	Copper	NDPs: 0 Tests: 1		X		
	Lead	NDPs: 0 Tests: 1		X		
	Mercury	NDPs: 0 Tests: 1		X		

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CERTIFICATE OF ANALYSIS

SDG:	121213-161	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209015
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207760

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			6659836			6659840
Customer Sample Reference			TP16			TP16
AGS Reference			ES1			ES5
Depth (m)			0.20			3.00
Container			1kg TUB	250g Amber Jar (AL	60g VOC (ALE215)	1kg TUB
Metals by iCap-OES (Soil)	Nickel	NDPs: 0 Tests: 1		X		
	Selenium	NDPs: 0 Tests: 1		X		
	Vanadium	NDPs: 0 Tests: 1		X		
	Zinc	NDPs: 0 Tests: 1		X		
PAH by GCMS	All	NDPs: 0 Tests: 1		X		
pH	All	NDPs: 0 Tests: 2	X			X
Sample description	All	NDPs: 0 Tests: 2		X		X
Total Organic Carbon	All	NDPs: 1 Tests: 1		N		X
TPH CWG GC (S)	All	NDPs: 0 Tests: 1		X		

CERTIFICATE OF ANALYSIS

SDG:	121213-161	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209015
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207760

Sample Descriptions

Grain Sizes

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

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
6659836	TP16	0.20	Dark Brown	Clay Loam	0.1 - 2 mm	Stones	Vegetation
6659840	TP16	3.00	Dark Brown	Sandy Silt Loam	0.063 - 0.1 mm	Vegetation	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 ocurring 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.

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CERTIFICATE OF ANALYSIS

SDG:	121213-161	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209015
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207760

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			TP16	TP16				
Depth (m)			0.20	3.00				
Sample Type			Soil/Solid	Soil/Solid				
Date Sampled			11/12/2012	11/12/2012				
Sample Time			.	.				
Date Received			12/12/2012	12/12/2012				
SDG Ref			121213-161	121213-161				
Lab Sample No.(s)			6659836	6659840				
AGS Reference			ES1	ES5				
Component	**LOD/Units**	**Method**						
Organic Carbon, Total	<0.2 %	TM132		4.62 #				
pH	1 pH Units	TM133	8.3 M	8.34 M				
Arsenic	<0.6 mg/kg	TM181	17.7 M					
Barium	<0.6 mg/kg	TM181	124 #					
Beryllium	<0.01 mg/kg	TM181	1.24 M					
Cadmium	<0.02 mg/kg	TM181	0.751 M					
Chromium	<0.9 mg/kg	TM181	24.9 M					
Copper	<1.4 mg/kg	TM181	49.2 M					
Lead	<0.7 mg/kg	TM181	82.6 M					
Mercury	<0.14 mg/kg	TM181	0.18 M					
Nickel	<0.2 mg/kg	TM181	21.7 M					
Selenium	<1 mg/kg	TM181	1.38 #					
Vanadium	<0.2 mg/kg	TM181	49.2 #					
Zinc	<1.9 mg/kg	TM181	143 M					
Boron, water soluble	<1 mg/kg	TM222	<1 M					
Water Soluble Sulphate as SO4 2:1 Extract	<0.008 g/l	TM243	0.149 M					

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CERTIFICATE OF ANALYSIS

SDG:	121213-161	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209015
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207760

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			TP16					
Depth (m)			0.20					
Sample Type			Soil/Solid					
Date Sampled			11/12/2012					
Sample Time			.					
Date Received			12/12/2012					
SDG Ref			121213-161					
Lab Sample No.(s)			6659836					
AGS Reference			ES1					
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	109					
Acenaphthene-d10 % recovery**	%	TM218	109					
Phenanthrene-d10 % recovery**	%	TM218	109					
Chrysene-d12 % recovery**	%	TM218	105					
Perylene-d12 % recovery**	%	TM218	109					
Naphthalene	<9 µg/kg	TM218	58.5 M					
Acenaphthylene	<12 µg/kg	TM218	82.5 M					
Acenaphthene	<8 µg/kg	TM218	197 M					
Fluorene	<10 µg/kg	TM218	156 M					
Phenanthrene	<15 µg/kg	TM218	2020 M					
Anthracene	<16 µg/kg	TM218	641 M					
Fluoranthene	<17 µg/kg	TM218	5650 M					
Pyrene	<15 µg/kg	TM218	4670 M					
Benz(a)anthracene	<14 µg/kg	TM218	2800 M					
Chrysene	<10 µg/kg	TM218	2320 M					
Benzo(b)fluoranthene	<15 µg/kg	TM218	2970 M					
Benzo(k)fluoranthene	<14 µg/kg	TM218	1250 M					
Benzo(a)pyrene	<15 µg/kg	TM218	2980 M					
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	1440 M					
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	403 M					
Benzo(g,h,i)perylene	<24 µg/kg	TM218	1680 M					
Coronene	<24 µg/kg	TM218	<24					
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	29300					
PAH, Total Detected USEPA 16 + Coronene	<130 µg/kg	TM218	29300					

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CERTIFICATE OF ANALYSIS

SDG:	121213-161	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209015
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207760

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R	TP16
Depth (m)	0.20
Sample Type	Soil/Solid
Date Sampled	11/12/2012
Sample Time	.
Date Received	12/12/2012
SDG Ref	121213-161
Lab Sample No.(s)	6659836
AGS Reference	ES1

Component	LOD/Units	Method	
GRO Surrogate % recovery**	%	TM089	107
GRO >C5-C12	<44 µg/kg	TM089	<44
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5 #
Benzene	<10 µg/kg	TM089	<10 M
Toluene	<2 µg/kg	TM089	2.6 M
Ethylbenzene	<3 µg/kg	TM089	<3 M
m,p-Xylene	<6 µg/kg	TM089	<6 M
o-Xylene	<3 µg/kg	TM089	<3 M
sum of detected mpo xylene by GC	<9 µg/kg	TM089	<9
sum of detected BTEX by GC	<24 µg/kg	TM089	<24
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
Aliphatics >C12-C16	<100 µg/kg	TM173	<100
Aliphatics >C16-C21	<100 µg/kg	TM173	2080
Aliphatics >C21-C35	<100 µg/kg	TM173	40100
Aliphatics >C35-C44	<100 µg/kg	TM173	9980
Total Aliphatics >C12-C44	<100 µg/kg	TM173	52100
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10
Aromatics >EC8-EC10	<10 µg/kg	TM089	<10
Aromatics >EC10-EC12	<10 µg/kg	TM089	<10
Aromatics >EC12-EC16	<100 µg/kg	TM173	5840
Aromatics >EC16-EC21	<100 µg/kg	TM173	57500
Aromatics >EC21-EC35	<100 µg/kg	TM173	166000
Aromatics >EC35-EC44	<100 µg/kg	TM173	67400
Aromatics >EC40-EC44	<100 µg/kg	TM173	25700
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	296000
Total Aliphatics >C5-35	<100 µg/kg	TM173	42200
Total Aromatics >C5-35	<100 µg/kg	TM173	229000
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173	271000

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CERTIFICATE OF ANALYSIS

SDG:	121213-161	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209015
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207760

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	TP16					
Customer Sample R			TP16					
Depth (m)			0.20					
Sample Type			Soil/Solid					
Date Sampled			11/12/2012					
Sample Time			.					
Date Received			12/12/2012					
SDG Ref			121213-161					
Lab Sample No.(s)			6659836					
AGS Reference			ES1					
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	349000					

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CERTIFICATE OF ANALYSIS

SDG:	121213-161	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209015
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207760

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP16 ES 1 0.20 SOLID 11/12/2012 00:00:00 121213-161 6659836 TM048	28/12/12	Kevin Bowron	Soil containing loose fibres and ACM debris	Not Detected (#)	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

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CERTIFICATE OF ANALYSIS

SDG:	121213-161	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209015
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207760

Asbestos Quantification - Full

		Additional Asbestos Components (Using TM048)	Analysts Comments	Asbestos Quantification - Gravimetric - %	Asbestos Quantification - PCOM Evaluation - %	Asbestos Quantification - Total - %
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP16 ES 1 0.20 SOLID 11/12/2012 00:00:00 121213-161 6659836 TM 304	None (#)	n/c	0.0035 (#)	<0.001 (#)	0.0039 (#)

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CERTIFICATE OF ANALYSIS

SDG:	121213-161	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209015
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207760

Notification of NDPs (No determination possible)

Date Received : 13/12/2012 16:31:05

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
6659836	TP16 ES1	0.20	Total Organic Carbon	Unsuitable for analysis due to potential Asbestos

CERTIFICATE OF ANALYSIS

SDG:	121213-161	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209015
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207760

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM 304				
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer		
TM243		Mixed Anions In Soils By Kone		
TM321		Organic matter Content of Soil By Titration		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

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CERTIFICATE OF ANALYSIS

SDG:	121213-161	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209015
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207760

Test Completion Dates

Lab Sample No(s)	6659836	6659840
Customer Sample Ref.	TP16	TP16
AGS Ref.	ES1	ES5
Depth	0.20	3.00
Type	SOLID	SOLID
Anions by Kone (soil)	28-Dec-2012	
Asbestos Identification (Soil)	28-Dec-2012	
Asbestos Quantification - Full	18-Jan-2013	
Boron Water Soluble	29-Dec-2012	
EPH CWG (Aliphatic) GC (S)	03-Jan-2013	
EPH CWG (Aromatic) GC (S)	03-Jan-2013	
GRO by GC-FID (S)	30-Dec-2012	
Metals by iCap-OES (Soil)	28-Dec-2012	
PAH by GCMS	08-Jan-2013	
pH	21-Dec-2012	27-Dec-2012
Sample description	21-Dec-2012	19-Dec-2012
Total Organic Carbon		27-Dec-2012
TPH CWG GC (S)	03-Jan-2013	

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICS and SVOC 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 all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples 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 analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

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. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

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 Dimethyphenol, 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 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. 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 C5-C12 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.

Sample Deviations

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk 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).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has 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).

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

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 HSG 264.

The identification of asbestos containing materials and soils 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.

ALcontrol Laboratories

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Website: www.alcontrol.com

Geocore Site Investigations Limited
Tralee Close
Kirkleatham Business Park
Redcar
TS10 5SG

Attention: Sarah Mortimer

CERTIFICATE OF ANALYSIS

Date:	18 January 2013
Customer:	H_GEOCORE_RDC
Sample Delivery Group (SDG):	121214-108
Your Reference:	RT/12/55272
Location:	Midland Industrial Estate
Report No:	209013

This report has been revised and directly supersedes 207473 in its entirety.

We received 17 samples on Thursday December 13, 2012 and 5 of these samples were scheduled for analysis which was completed on Friday January 18, 2013. 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.

Approved By:

Sonia McWhan

Operations Manager

Alcontrol Laboratories is a trading division of ALcontrol UK Limited
Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No.

CERTIFICATE OF ANALYSIS

SDG:	121214-108	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209013
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207473

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
6666322	PH-A		0.50	11/12/2012
6666323	PH-A		1.00	11/12/2012
6666324	PH-A		1.50	11/12/2012
6666330	PH-B		0.50	11/12/2012
6666325	PH-C		0.50	11/12/2012
6666326	PH-C		1.00	11/12/2012
6666327	PH-M		0.50	11/12/2012
6666328	PH-M		1.50	11/12/2012
6666329	PH-M		2.50	11/12/2012
6666334	TP9		0.15	12/12/2012
6666335	TP9		1.50	12/12/2012
6666337	TP9		2.50	12/12/2012
6666338	TP13		0.20	12/12/2012
6666339	TP13		2.20	12/12/2012
6666340	TP13		3.20	12/12/2012
6666341	TP15		0.20	12/12/2012
6666342	TP15		1.50	12/12/2012

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

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CERTIFICATE OF ANALYSIS

SDG:	121214-108	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209013
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207473

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			6666324	6666335		6666340	6666341			6666342
Customer Sample Reference			PH-A	TP9		TP13	TP15			TP15
AGS Reference										
Depth (m)			1.50	1.50		3.20	0.20			1.50
Container			1kg TUB / 250g Amber Jar (AL	1kg TUB / 250g Amber Jar (AL	60g VOC (ALE215)	1kg TUB / 250g Amber Jar (AL	1kg TUB / 250g Amber Jar (AL	60g VOC (ALE215)	1kg TUB	250g Amber Jar (AL
Anions by Kone (soil)	All	NDPs: 0 Tests: 1						X		
Asbestos Identification (Soil)	All	NDPs: 0 Tests: 1					X			
Asbestos Quantification - Full	All	NDPs: 0 Tests: 1					X			
Boron Water Soluble	All	NDPs: 0 Tests: 1						X		
EPH CWG (Aliphatic) GC (S)	All	NDPs: 0 Tests: 2			X			X		
EPH CWG (Aromatic) GC (S)	All	NDPs: 0 Tests: 2			X			X		
GRO by GC-FID (S)	All	NDPs: 0 Tests: 2				X			X	
Metals by iCap-OES (Soil)	Arsenic	NDPs: 0 Tests: 1						X		
	Barium	NDPs: 0 Tests: 1						X		
	Beryllium	NDPs: 0 Tests: 1						X		
	Cadmium	NDPs: 0 Tests: 1						X		
	Chromium	NDPs: 0 Tests: 1						X		
	Copper	NDPs: 0 Tests: 1						X		
	Lead	NDPs: 0 Tests: 1						X		
	Mercury	NDPs: 0 Tests: 1						X		

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Validated

CERTIFICATE OF ANALYSIS

SDG:	121214-108	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209013
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207473

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			6666324		6666335		6666340		6666341		6666342	
Customer Sample Reference			PH-A		TP9		TP13		TP15		TP15	
AGS Reference												
Depth (m)			1.50		1.50		3.20		0.20		1.50	
Container			1kg TUB	250g Amber Jar (AL	1kg TUB	250g Amber Jar (AL	1kg TUB	250g Amber Jar (AL	1kg TUB	250g Amber Jar (AL	60g VOC (ALE215)	1kg TUB	250g Amber Jar (AL
Metals by iCap-OES (Soil)	Nickel	NDPs: 0 Tests: 1								X			
	Selenium	NDPs: 0 Tests: 1								X			
	Vanadium	NDPs: 0 Tests: 1								X			
	Zinc	NDPs: 0 Tests: 1								X			
PAH by GCMS	All	NDPs: 0 Tests: 1								X			
pH	All	NDPs: 0 Tests: 5	X		X		X		X			X	
Sample description	All	NDPs: 0 Tests: 5		X		X		X		X			X
Semi Volatile Organic Compounds	All	NDPs: 0 Tests: 1				X							
Total Organic Carbon	All	NDPs: 1 Tests: 4		X		X		X		N			X
TPH CWG GC (S)	All	NDPs: 0 Tests: 2				X				X			
VOC MS (S)	All	NDPs: 0 Tests: 1					X						

CERTIFICATE OF ANALYSIS

SDG:	121214-108	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209013
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207473

Sample Descriptions

Grain Sizes

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

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
6666324	PH-A	1.50	Dark Brown	Loamy Sand	0.1 - 2 mm	Plastic	Glass
6666335	TP9	1.50	Dark Brown	Sandy Loam	0.1 - 2 mm	Plastic	Stones
6666340	TP13	3.20	Dark Brown	N/A	0.1 - 2 mm	Stones	Vegetation
6666341	TP15	0.20	Dark Brown	Clay Loam	<0.063 mm	Stones	Vegetation
6666342	TP15	1.50	Dark Brown	Loamy Sand	0.1 - 2 mm	Glass & Stones	Plastic

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 ocurring 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.

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CERTIFICATE OF ANALYSIS

SDG:	121214-108	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209013
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207473

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			PH-A	TP9	TP13	TP15	TP15	
Depth (m)			1.50	1.50	3.20	0.20	1.50	
Sample Type			Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	
Date Sampled			11/12/2012	12/12/2012	12/12/2012	12/12/2012	12/12/2012	
Sample Time			.	.	.	.	.	
Date Received			13/12/2012	13/12/2012	13/12/2012	13/12/2012	13/12/2012	
SDG Ref			121214-108	121214-108	121214-108	121214-108	121214-108	
Lab Sample No.(s)			6666324	6666335	6666340	6666341	6666342	
AGS Reference								
Component	**LOD/Units**	**Method**						
Organic Carbon, Total	<0.2 %	TM132	4.13 #	6 #	10.6 #		13 #	
pH	1 pH Units	TM133	8 M	7.53 M	7.62 #	8.35 M	8.17 M	
Arsenic	<0.6 mg/kg	TM181				13.5 M		
Barium	<0.6 mg/kg	TM181				90.3 #		
Beryllium	<0.01 mg/kg	TM181				0.707 M		
Cadmium	<0.02 mg/kg	TM181				0.607 M		
Chromium	<0.9 mg/kg	TM181				20.4 M		
Copper	<1.4 mg/kg	TM181				27.1 M		
Lead	<0.7 mg/kg	TM181				43.8 M		
Mercury	<0.14 mg/kg	TM181				0.216 M		
Nickel	<0.2 mg/kg	TM181				18.5 M		
Selenium	<1 mg/kg	TM181				<1 #		
Vanadium	<0.2 mg/kg	TM181				35 #		
Zinc	<1.9 mg/kg	TM181				88.3 M		
Boron, water soluble	<1 mg/kg	TM222				<1 M		
Water Soluble Sulphate as SO4 2:1 Extract	<0.008 g/l	TM243				<0.008 M		

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CERTIFICATE OF ANALYSIS

SDG:	121214-108	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209013
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207473

PAH by GCMS

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			TP15					
Depth (m)			0.20					
Sample Type			Soil/Solid					
Date Sampled			12/12/2012					
Sample Time			.					
Date Received			13/12/2012					
SDG Ref			121214-108					
Lab Sample No.(s)			6666341					
AGS Reference								
Component	**LOD/Units**	**Method**						
Naphthalene-d8 % recovery**	%	TM218	117					
Acenaphthene-d10 % recovery**	%	TM218	115					
Phenanthrene-d10 % recovery**	%	TM218	112					
Chrysene-d12 % recovery**	%	TM218	103					
Perylene-d12 % recovery**	%	TM218	110					
Naphthalene	<9 µg/kg	TM218	29.9 ♦ M					
Acenaphthylene	<12 µg/kg	TM218	<12 ♦ M					
Acenaphthene	<8 µg/kg	TM218	13 ♦ M					
Fluorene	<10 µg/kg	TM218	13.1 ♦ M					
Phenanthrene	<15 µg/kg	TM218	184 ♦ M					
Anthracene	<16 µg/kg	TM218	40.9 ♦ M					
Fluoranthene	<17 µg/kg	TM218	385 ♦ M					
Pyrene	<15 µg/kg	TM218	332 ♦ M					
Benz(a)anthracene	<14 µg/kg	TM218	212 ♦ M					
Chrysene	<10 µg/kg	TM218	188 ♦ M					
Benzo(b)fluoranthene	<15 µg/kg	TM218	227 ♦ M					
Benzo(k)fluoranthene	<14 µg/kg	TM218	108 ♦ M					
Benzo(a)pyrene	<15 µg/kg	TM218	229 ♦ M					
Indeno(1,2,3-cd)pyrene	<18 µg/kg	TM218	128 ♦ M					
Dibenzo(a,h)anthracene	<23 µg/kg	TM218	34.6 ♦ M					
Benzo(g,h,i)perylene	<24 µg/kg	TM218	158 ♦ M					
Coronene	<24 µg/kg	TM218	<24					
PAH, Total Detected USEPA 16	<118 µg/kg	TM218	2280					
PAH, Total Detected USEPA 16 + Coronene	<130 µg/kg	TM218	2280					

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Validated

CERTIFICATE OF ANALYSIS

SDG:	121214-108	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209013
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207473

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			TP9					
Depth (m)			1.50					
Sample Type			Soil/Solid					
Date Sampled			12/12/2012					
Sample Time			.					
Date Received			13/12/2012					
SDG Ref			121214-108					
Lab Sample No.(s)			6666335					
AGS Reference								
Component	**LOD/Units**	**Method**						
Phenol	<100 µg/kg	TM157	<100					
Pentachlorophenol	<100 µg/kg	TM157	<100					
n-Nitroso-n-dipropylamine	<100 µg/kg	TM157	<100					
Nitrobenzene	<100 µg/kg	TM157	<100					
Isophorone	<100 µg/kg	TM157	<100					
Hexachloroethane	<100 µg/kg	TM157	<100					
Hexachlorocyclopentadiene	<100 µg/kg	TM157	<100					
Hexachlorobutadiene	<100 µg/kg	TM157	<100					
Hexachlorobenzene	<100 µg/kg	TM157	<100					
n-Dioctyl phthalate	<100 µg/kg	TM157	1330					
Dimethyl phthalate	<100 µg/kg	TM157	<100					
Diethyl phthalate	<100 µg/kg	TM157	<100					
n-Dibutyl phthalate	<100 µg/kg	TM157	415					
Dibenzofuran	<100 µg/kg	TM157	<100					
Carbazole	<100 µg/kg	TM157	<100					
Butylbenzyl phthalate	<100 µg/kg	TM157	237					
bis(2-Ethylhexyl) phthalate	<100 µg/kg	TM157	33600					
bis(2-Chloroethoxy)methane	<100 µg/kg	TM157	<100					
bis(2-Chloroethyl)ether	<100 µg/kg	TM157	<100					
Azobenzene	<100 µg/kg	TM157	<100					
4-Nitrophenol	<100 µg/kg	TM157	<100					
4-Nitroaniline	<100 µg/kg	TM157	<100					
4-Methylphenol	<100 µg/kg	TM157	<100					
4-Chlorophenylphenylether	<100 µg/kg	TM157	<100					
4-Chloroaniline	<100 µg/kg	TM157	<100					
4-Chloro-3-methylphenol	<100 µg/kg	TM157	<100					
4-Bromophenylphenylether	<100 µg/kg	TM157	<100					
3-Nitroaniline	<100 µg/kg	TM157	<100					
2-Nitrophenol	<100 µg/kg	TM157	<100					
2-Nitroaniline	<100 µg/kg	TM157	<100					
2-Methylphenol	<100 µg/kg	TM157	<100					
1,2,4-Trichlorobenzene	<100 µg/kg	TM157	<100					

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CERTIFICATE OF ANALYSIS

SDG:	121214-108	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209013
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207473

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			TP9					
Depth (m)			1.50					
Sample Type			Soil/Solid					
Date Sampled			12/12/2012					
Sample Time			.					
Date Received			13/12/2012					
SDG Ref			121214-108					
Lab Sample No.(s)			6666335					
AGS Reference								
Component	**LOD/Units**	**Method**						
2-Chlorophenol	<100 µg/kg	TM157	<100					
2,6-Dinitrotoluene	<100 µg/kg	TM157	<100					
2,4-Dinitrotoluene	<100 µg/kg	TM157	<100					
2,4-Dimethylphenol	<100 µg/kg	TM157	<100					
2,4-Dichlorophenol	<100 µg/kg	TM157	<100					
2,4,6-Trichlorophenol	<100 µg/kg	TM157	<100					
2,4,5-Trichlorophenol	<100 µg/kg	TM157	<100					
1,4-Dichlorobenzene	<100 µg/kg	TM157	921					
1,3-Dichlorobenzene	<100 µg/kg	TM157	<100					
1,2-Dichlorobenzene	<100 µg/kg	TM157	<100					
2-Chloronaphthalene	<100 µg/kg	TM157	<100					
2-Methylnaphthalene	<100 µg/kg	TM157	<100					
Acenaphthylene	<100 µg/kg	TM157	<100					
Acenaphthene	<100 µg/kg	TM157	<100					
Anthracene	<100 µg/kg	TM157	423					
Benzo(a)anthracene	<100 µg/kg	TM157	1580					
Benzo(b)fluoranthene	<100 µg/kg	TM157	1100					
Benzo(k)fluoranthene	<100 µg/kg	TM157	1170					
Benzo(a)pyrene	<100 µg/kg	TM157	1500					
Benzo(g,h,i)perylene	<100 µg/kg	TM157	646					
Chrysene	<100 µg/kg	TM157	1520					
Fluoranthene	<100 µg/kg	TM157	3480					
Fluorene	<100 µg/kg	TM157	<100					
Indeno(1,2,3-cd)pyrene	<100 µg/kg	TM157	421					
Phenanthrene	<100 µg/kg	TM157	1680					
Pyrene	<100 µg/kg	TM157	3020					
Naphthalene	<100 µg/kg	TM157	202					
Dibenzo(a,h)anthracene	<100 µg/kg	TM157	<100					
TIC report	-	TM157	See Attached					
Bis(2-chloroisopropyl)ether (TIC)	-	TM157	No TICs identified					
Anthraquinone (TIC)	-	TM157	No TICs identified					
Aniline (TIC)	-	TM157	No TICs identified					

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Validated

CERTIFICATE OF ANALYSIS

SDG:	121214-108	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209013
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207473

Semi Volatile Organic Compounds

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

		Customer Sample R	TP9
		Depth (m)	1.50
		Sample Type	Soil/Solid
		Date Sampled	12/12/2012
		Sample Time	.
		Date Received	13/12/2012
		SDG Ref	121214-108
		Lab Sample No.(s)	6666335
		AGS Reference	
Component	**LOD/Units**	**Method**	
Biphenyl (TIC)	-	TM157	No TICs identified
2,6-Dichlorophenol (TIC)	-	TM157	No TICs identified
2,3,4,6-Tetrachlorophenol (TIC)	-	TM157	No TICs identified
Methyl methylethyl Phenanthrene	µg/kg	TM157	7620
Unknown	µg/kg	TM157	2230
Unknown High Matrix	µg/kg	TM157	10100

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CERTIFICATE OF ANALYSIS

SDG:	121214-108	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209013
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207473

TPH CWG (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			TP9	TP15				
Depth (m)			1.50	0.20				
Sample Type			Soil/Solid	Soil/Solid				
Date Sampled			12/12/2012	12/12/2012				
Sample Time			.	.				
Date Received			13/12/2012	13/12/2012				
SDG Ref			121214-108	121214-108				
Lab Sample No.(s)			6666335	6666341				
AGS Reference								
Component	**LOD/Units**	**Method**						
GRO Surrogate % recovery**	%	TM089	16	91				
GRO >C5-C12	<44 µg/kg	TM089	3670	<44				
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5 ♦ #	<5 #				
Benzene	<10 µg/kg	TM089	<10 ♦ M	<10 M				
Toluene	<2 µg/kg	TM089	<2 ♦ M	2.46 M				
Ethylbenzene	<3 µg/kg	TM089	<3 ♦ M	<3 M				
m,p-Xylene	<6 µg/kg	TM089	33 ♦ M	<6 M				
o-Xylene	<3 µg/kg	TM089	<3 ♦ M	<3 M				
sum of detected mpo xylene by GC	<9 µg/kg	TM089	33	<9				
sum of detected BTEX by GC	<24 µg/kg	TM089	33	<24				
Aliphatics >C5-C6	<10 µg/kg	TM089	56.5	<10				
Aliphatics >C6-C8	<10 µg/kg	TM089	80.1	<10				
Aliphatics >C8-C10	<10 µg/kg	TM089	739	<10				
Aliphatics >C10-C12	<10 µg/kg	TM089	1360	<10				
Aliphatics >C12-C16	<100 µg/kg	TM173	44500	3780				
Aliphatics >C16-C21	<100 µg/kg	TM173	104000	5030				
Aliphatics >C21-C35	<100 µg/kg	TM173	682000	35100				
Aliphatics >C35-C44	<100 µg/kg	TM173	139000	31800				
Total Aliphatics >C12-C44	<100 µg/kg	TM173	969000	75800				
Aromatics >EC5-EC7	<10 µg/kg	TM089	<10	<10				
Aromatics >EC7-EC8	<10 µg/kg	TM089	<10	<10				
Aromatics >EC8-EC10	<10 µg/kg	TM089	526	<10				
Aromatics >EC10-EC12	<10 µg/kg	TM089	907	<10				
Aromatics >EC12-EC16	<100 µg/kg	TM173	25000	<100				
Aromatics >EC16-EC21	<100 µg/kg	TM173	84100	5270				
Aromatics >EC21-EC35	<100 µg/kg	TM173	848000	45500				
Aromatics >EC35-EC44	<100 µg/kg	TM173	90900	48400				
Aromatics >EC40-EC44	<100 µg/kg	TM173	34200	23100				
Total Aromatics >EC12-EC44	<100 µg/kg	TM173	1050000	99200				
Total Aliphatics >C5-35	<100 µg/kg	TM173	833000	43900				
Total Aromatics >C5-35	<100 µg/kg	TM173	958000	50800				
Total Aliphatics & Aromatics >C5-35	<100 µg/kg	TM173	1790000	94700				

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CERTIFICATE OF ANALYSIS

SDG:	121214-108	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209013
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207473

TPH CWG (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

		Customer Sample R	TP9	TP15				
		Depth (m)	1.50	0.20				
		Sample Type	Soil/Solid	Soil/Solid				
		Date Sampled	12/12/2012	12/12/2012				
		Sample Time	.	.				
		Date Received	13/12/2012	13/12/2012				
		SDG Ref	121214-108	121214-108				
		Lab Sample No.(s)	6666335	6666341				
		AGS Reference						
Component	**LOD/Units**	**Method**						
Total Aliphatics & Aromatics >C5-C44	<100 µg/kg	TM173	2020000	175000				

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CERTIFICATE OF ANALYSIS

SDG:	121214-108	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209013
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207473

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R	TP9
Depth (m)	1.50
Sample Type	Soil/Solid
Date Sampled	12/12/2012
Sample Time	.
Date Received	13/12/2012
SDG Ref	121214-108
Lab Sample No.(s)	6666335
AGS Reference	

Component	LOD/Units	Method	TP9
Dibromofluoromethane**	%	TM116	103 ♦
Toluene-d8**	%	TM116	99 ♦
4-Bromofluorobenzene**	%	TM116	108 ♦
Dichlorodifluoromethane	<4 µg/kg	TM116	<80 ♦ M
Chloromethane	<7 µg/kg	TM116	<140 ♦
Vinyl Chloride	<10 µg/kg	TM116	<200 ♦
Bromomethane	<13 µg/kg	TM116	<260 ♦ M
Chloroethane	<14 µg/kg	TM116	<280 ♦ M
Trichlorofluorormethane	<6 µg/kg	TM116	<120 ♦ M
1,1-Dichloroethene	<10 µg/kg	TM116	<200 ♦ #
Carbon Disulphide	<7 µg/kg	TM116	319 ♦ M
Dichloromethane	<10 µg/kg	TM116	<200 ♦ #
Methyl Tertiary Butyl Ether	<11 µg/kg	TM116	<220 ♦ M
trans-1,2-Dichloroethene	<11 µg/kg	TM116	<220 ♦ M
1,1-Dichloroethane	<8 µg/kg	TM116	<160 ♦ M
cis-1,2-Dichloroethene	<5 µg/kg	TM116	<100 ♦ M
2,2-Dichloropropane	<12 µg/kg	TM116	<240 ♦ M
Bromochloromethane	<14 µg/kg	TM116	<280 ♦ M
Chloroform	<8 µg/kg	TM116	<160 ♦ M
1,1,1-Trichloroethane	<7 µg/kg	TM116	<140 ♦ M
1,1-Dichloropropene	<11 µg/kg	TM116	<220 ♦ M
Carbontetrachloride	<14 µg/kg	TM116	<280 ♦ M
1,2-Dichloroethane	<5 µg/kg	TM116	<100 ♦ M
Benzene	<9 µg/kg	TM116	<180 ♦ M
Trichloroethene	<9 µg/kg	TM116	<180 ♦ M
1,2-Dichloropropane	<12 µg/kg	TM116	<240 ♦ M
Dibromomethane	<9 µg/kg	TM116	<180 ♦ M
Bromodichloromethane	<7 µg/kg	TM116	<140 ♦ M
cis-1,3-Dichloropropene	<14 µg/kg	TM116	<280 ♦ M
Toluene	<5 µg/kg	TM116	<100 ♦ M
trans-1,3-Dichloropropene	<14 µg/kg	TM116	<280 ♦
1,1,2-Trichloroethane	<10 µg/kg	TM116	<200 ♦ M

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CERTIFICATE OF ANALYSIS

SDG:	121214-108	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209013
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207473

VOC MS (S)

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&♦§@	Sample deviation (see appendix)

Customer Sample R	TP9
Depth (m)	1.50
Sample Type	Soil/Solid
Date Sampled	12/12/2012
Sample Time	.
Date Received	13/12/2012
SDG Ref	121214-108
Lab Sample No.(s)	6666335
AGS Reference	

Component	LOD/Units	Method	TP9
1,3-Dichloropropane	<7 µg/kg	TM116	<140 ♦ #
Tetrachloroethene	<5 µg/kg	TM116	<100 ♦ M
Dibromochloromethane	<13 µg/kg	TM116	<260 ♦ M
1,2-Dibromoethane	<12 µg/kg	TM116	<240 ♦ M
Chlorobenzene	<5 µg/kg	TM116	<100 ♦ M
1,1,1,2-Tetrachloroethane	<10 µg/kg	TM116	<200 ♦ M
Ethylbenzene	<4 µg/kg	TM116	<80 ♦ M
p/m-Xylene	<14 µg/kg	TM116	<280 ♦ #
o-Xylene	<10 µg/kg	TM116	<200 ♦ M
Styrene	<10 µg/kg	TM116	<200 ♦ M
Bromoform	<10 µg/kg	TM116	<200 ♦ M
Isopropylbenzene	<5 µg/kg	TM116	<100 ♦ M
1,1,2,2-Tetrachloroethane	<10 µg/kg	TM116	<200 ♦ #
1,2,3-Trichloropropane	<17 µg/kg	TM116	<340 ♦ M
Bromobenzene	<10 µg/kg	TM116	<200 ♦ M
Propylbenzene	<11 µg/kg	TM116	<220 ♦ M
2-Chlorotoluene	<9 µg/kg	TM116	<180 ♦ M
1,3,5-Trimethylbenzene	<8 µg/kg	TM116	<160 ♦ #
4-Chlorotoluene	<12 µg/kg	TM116	<240 ♦ M
tert-Butylbenzene	<12 µg/kg	TM116	<240 ♦ #
1,2,4-Trimethylbenzene	<9 µg/kg	TM116	<180 ♦ #
sec-Butylbenzene	<10 µg/kg	TM116	<200 ♦ M
4-Isopropyltoluene	<11 µg/kg	TM116	<220 ♦ M
1,3-Dichlorobenzene	<6 µg/kg	TM116	<120 ♦ M
1,4-Dichlorobenzene	<5 µg/kg	TM116	<100 ♦ M
n-Butylbenzene	<10 µg/kg	TM116	<200 ♦ M
1,2-Dichlorobenzene	<12 µg/kg	TM116	<240 ♦ M
1,2-Dibromo-3-chloropropane	<14 µg/kg	TM116	<280 ♦ M
Tert-amyl methyl ether	<15 µg/kg	TM116	<300 ♦
1,2,4-Trichlorobenzene	<6 µg/kg	TM116	<120 ♦ #
Hexachlorobutadiene	<12 µg/kg	TM116	<240 ♦
Naphthalene	<13 µg/kg	TM116	<260 ♦ M

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CERTIFICATE OF ANALYSIS

SDG:	121214-108	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209013
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207473

VOC MS (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&♦§@	Sample deviation (see appendix)

Customer Sample R			TP9
Depth (m)			1.50
Sample Type			Soil/Solid
Date Sampled			12/12/2012
Sample Time			.
Date Received			13/12/2012
SDG Ref			121214-108
Lab Sample No.(s)			6666335
AGS Reference			
Component	**LOD/Units**	**Method**	
1,2,3-Trichlorobenzene	<6 µg/kg	TM116	<120 ♦ M
VOC TIC	-	TM116	See Attached
C8-C12 Aromatic Hydrocarbons	µg/kg	TM116	3900

13:04:50 18/01/2013

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CERTIFICATE OF ANALYSIS

SDG:	121214-108	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209013
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207473

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP15 0.20 SOLID 12/12/2012 00:00:00 121214-108 6666341 TM048	02/01/13	Martin Cotterell	Loose fibres in soil	Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	121214-108	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209013
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207473

Asbestos Quantification - Full

		Additional Asbestos Components (Using TM048)	Analysts Comments	Asbestos Quantification - Gravimetric - %	Asbestos Quantification - PCOM Evaluation - %	Asbestos Quantification - Total - %
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	TP15 0.20 SOLID 12/12/2012 00:00:00 121214-108 6666341 TM 304	Chrysotile. (#)	Loose chrysotile fibres found during gravimetric analysis.	<0.001 (#)	<0.001 (#)	0.0012 (#)

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CERTIFICATE OF ANALYSIS

SDG:	121214-108	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209013
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207473

Notification of NDPs (No determination possible)

Date Received : 14/12/2012 15:56:47

Sample No	Customer Sample Ref.	Depth (m)	Test	Comment
6666341	TP15	0.20	Total Organic Carbon	Unsuitable for analysis due to potential Asbestos

CERTIFICATE OF ANALYSIS

SDG:	121214-108	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209013
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207473

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM 304				
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
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		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM157	HP 6890 Gas Chromatograph (GC) system and HP 5973 Mass Selective Detector (MSD).	Determination of SVOC in Soils by GC-MS extracted by sonication in DCM/Acetone		
TM173	Analysis of Petroleum Hydrocarbons in Environmental Media – Total Petroleum Hydrocarbon Criteria	Determination of Speciated Extractable Petroleum Hydrocarbons in Soils by GC-FID		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM218	Microwave extraction – EPA method 3546	Microwave extraction - EPA method 3546		
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer		
TM243		Mixed Anions In Soils By Kone		
TM321		Organic matter Content of Soil By Titration		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

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CERTIFICATE OF ANALYSIS

SDG:	121214-108	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209013
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207473

Test Completion Dates

Lab Sample No(s)	6666324	6666335	6666340	6666341	6666342
Customer Sample Ref.	PH-A	TP9	TP13	TP15	TP15
AGS Ref.					
Depth	1.50	1.50	3.20	0.20	1.50
Type	SOLID	SOLID	SOLID	SOLID	SOLID
Anions by Kone (soil)				28-Dec-2012	
Asbestos Identification (Soil)				02-Jan-2013	
Asbestos Quantification - Full				18-Jan-2013	
Boron Water Soluble				02-Jan-2013	
EPH CWG (Aliphatic) GC (S)		28-Dec-2012		03-Jan-2013	
EPH CWG (Aromatic) GC (S)		28-Dec-2012		03-Jan-2013	
GRO by GC-FID (S)		28-Dec-2012		30-Dec-2012	
Metals by iCap-OES (Soil)				29-Dec-2012	
PAH by GCMS				04-Jan-2013	
pH	21-Dec-2012	21-Dec-2012	21-Dec-2012	28-Dec-2012	21-Dec-2012
Sample description	20-Dec-2012	19-Dec-2012	19-Dec-2012	22-Dec-2012	19-Dec-2012
Semi Volatile Organic Compounds		02-Jan-2013			
Total Organic Carbon	27-Dec-2012	27-Dec-2012	27-Dec-2012		27-Dec-2012
TPH CWG GC (S)		28-Dec-2012		03-Jan-2013	
VOC MS (S)		29-Dec-2012			

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICS and SVOC 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 all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples 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 analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

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. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

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 Dimethyphenol, 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 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. 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 C5-C12 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.

Sample Deviations

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk 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).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has 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).

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

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 HSG 264.

The identification of asbestos containing materials and soils 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.

ALcontrol Laboratories

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Geocore Site Investigations Limited
Tralee Close
Kirkleatham Business Park
Redcar
TS10 5SG

Attention: Sarah Mortimer

CERTIFICATE OF ANALYSIS

Date:	14 January 2013
Customer:	H_GEOCORE_RDC
Sample Delivery Group (SDG):	121215-3
Your Reference:	RT/12/55272
Location:	Midland Industrial Estate
Report No:	208378

We received 9 samples on Thursday December 13, 2012 and 2 of these samples were scheduled for analysis which was completed on Monday January 14, 2013. 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.

Approved By:

Sonia McWhan

Operations Manager

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Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No.

CERTIFICATE OF ANALYSIS

SDG:	121215-3	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208378
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
6667246	PH-I		0.50	12/12/2012
6667248	PH-I		1.50	12/12/2012
6667235	PH-K		0.50	12/12/2012
6667236	PH-K		1.50	12/12/2012
6667237	PH-K		2.50	12/12/2012
6667240	PH-K		3.50	12/12/2012
6667242	PH-L		0.50	12/12/2012
6667244	PH-L		1.50	12/12/2012
6667245	PH-L		2.50	12/12/2012

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

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CERTIFICATE OF ANALYSIS

SDG:	121215-3	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208378
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			6667248		6667245	
Customer Sample Reference			PH-I		PH-L	
AGS Reference						
Depth (m)			1.50		2.50	
Container			1kg TUB	250g Amber Jar (AL	1kg TUB	250g Amber Jar (AL
Asbestos Identification (Soil)	All	NDPs: 0 Tests: 1			X	
pH	All	NDPs: 0 Tests: 2	X		X	
Sample description	All	NDPs: 0 Tests: 2		X		X
Total Organic Carbon	All	NDPs: 0 Tests: 2		X		X

13:31:24 14/01/2013

CERTIFICATE OF ANALYSIS

SDG:	121215-3	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208378
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Sample Descriptions

Grain Sizes

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

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
6667248	PH-I	1.50	Dark Brown	Silt Loam	0.063 - 0.1 mm	Stones	Glass & Stones
6667245	PH-L	2.50	Dark Brown	Sandy Loam	0.063 - 0.1 mm	Stones	Brick

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 ocurring 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.

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121215-3	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208378
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			PH-I	PH-L				
Depth (m)			1.50	2.50				
Sample Type			Soil/Solid	Soil/Solid				
Date Sampled			12/12/2012	12/12/2012				
Sample Time			.	.				
Date Received			13/12/2012	13/12/2012				
SDG Ref			121215-3	121215-3				
Lab Sample No.(s)			6667248	6667245				
AGS Reference								
Component	**LOD/Units**	**Method**						
Organic Carbon, Total	<0.2 %	TM132	4.35 #	34.2 ♦ #				
pH	1 pH Units	TM133	8.14 M	7.36 M				

ALcontrol Laboratories

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CERTIFICATE OF ANALYSIS

SDG:	121215-3	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208378
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	PH-L 2.50 SOLID 12/12/2012 00:00:00 121215-3 6667245 TM048	10/01/13	Kevin Bowron	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected

CERTIFICATE OF ANALYSIS

SDG:	121215-3	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208378
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM321		Organic matter Content of Soil By Titration		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

CERTIFICATE OF ANALYSIS

SDG:	121215-3	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208378
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	6667248	6667245
Customer Sample Ref.	PH-I	PH-L
AGS Ref.		
Depth	1.50	2.50
Type	SOLID	SOLID
Asbestos Identification (Soil)		10-Jan-2013
pH	21-Dec-2012	28-Dec-2012
Sample description	19-Dec-2012	20-Dec-2012
Total Organic Carbon	27-Dec-2012	14-Jan-2013

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICS and SVOC 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 all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples 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 analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

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. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

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 Dimethyphenol, 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 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. 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 C5-C12 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.

Sample Deviations

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk 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).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has 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).

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

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 HSG 264.

The identification of asbestos containing materials and soils 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.

ALcontrol Laboratories

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email: mkt@alcontrol.com
Website: www.alcontrol.com

Geocore Site Investigations Limited
Tralee Close
Kirkleatham Business Park
Redcar
TS10 5SG

Attention: Sarah Mortimer

CERTIFICATE OF ANALYSIS

Date:	22 January 2013
Customer:	H_GEOCORE_RDC
Sample Delivery Group (SDG):	121217-58
Your Reference:	RT/12/55272
Location:	Midland Industrial Estate
Report No:	209323

This report has been revised and directly supersedes 207823 in its entirety.

We received 4 samples on Friday December 14, 2012 and 1 of these samples were scheduled for analysis which was completed on Tuesday January 22, 2013. 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.

Approved By:

Sonia McWhan

Operations Manager

Alcontrol Laboratories is a trading division of ALcontrol UK Limited
Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No.

CERTIFICATE OF ANALYSIS

SDG:	121217-58	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209323
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207823

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
6678619	PHE_0.5_ES1			13/12/2012
6678620	PHE_0.95_ES2			13/12/2012
6678622	PH2_0.95_ES2			13/12/2012
6678618	SKIP 1			13/12/2012

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

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121217-58	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209323
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207823

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			6678618	
Customer Sample Reference			SKIP 1	
AGS Reference				
Depth (m)				
Container			1 kg Glass	1kg TUB
ANC at pH4 and ANC at pH 6	All	NDPs: 0 Tests: 1	X	
Anions by Kone (w)	All	NDPs: 0 Tests: 1		X
Asbestos Identification (Soil)	All	NDPs: 0 Tests: 1		X
Boron Water Soluble	All	NDPs: 0 Tests: 1	X	
CEN 2:1 Readings	All	NDPs: 0 Tests: 1		X
CEN 8:1 Readings	All	NDPs: 0 Tests: 1		X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 1		X
Dissolved Organic/Inorganic Carbon	All	NDPs: 0 Tests: 1		X
Fluoride	All	NDPs: 0 Tests: 1		X
GRO by GC-FID (S)	All	NDPs: 0 Tests: 1	X	
Loss on Ignition in soils	All	NDPs: 0 Tests: 1	X	
Mercury Dissolved	All	NDPs: 0 Tests: 1		X
Metals by iCap-OES (Soil)	Arsenic	NDPs: 0 Tests: 1	X	
	Barium	NDPs: 0 Tests: 1	X	
	Beryllium	NDPs: 0 Tests: 1	X	

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121217-58	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209323
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207823

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			6678618	
Customer Sample Reference			SKIP 1	
AGS Reference				
Depth (m)				
Container			1 kg Glass	1kg TUB
Metals by iCap-OES (Soil)	Cadmium	NDPs: 0 Tests: 1	X	
	Chromium	NDPs: 0 Tests: 1	X	
	Copper	NDPs: 0 Tests: 1	X	
	Lead	NDPs: 0 Tests: 1	X	
	Mercury	NDPs: 0 Tests: 1	X	
	Nickel	NDPs: 0 Tests: 1	X	
	Selenium	NDPs: 0 Tests: 1	X	
	Vanadium	NDPs: 0 Tests: 1	X	
	Zinc	NDPs: 0 Tests: 1	X	
Mineral Oil	All	NDPs: 0 Tests: 1	X	
PAH Value of soil	All	NDPs: 0 Tests: 1	X	
PCBs by GCMS	All	NDPs: 0 Tests: 1	X	
pH	All	NDPs: 0 Tests: 1		X
Phenols by HPLC (W)	All	NDPs: 0 Tests: 1		X
Sample description	All	NDPs: 0 Tests: 1	X	

ALcontrol Laboratories

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Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209323
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207823

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			6678618	
Customer Sample Reference			SKIP 1	
AGS Reference				
Depth (m)				
Container			1 kg Glass	1kg TUB
Total Dissolved Solids	All	NDPs: 0 Tests: 1		X
Total Organic Carbon	All	NDPs: 0 Tests: 1	X	

10:52:34 22/01/2013

CERTIFICATE OF ANALYSIS

SDG:	121217-58	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209323
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207823

Sample Descriptions

Grain Sizes

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

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
6678618	SKIP 1		Dark Brown	N/A	0.1 - 2 mm	Stones	Vegetation

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.

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CERTIFICATE OF ANALYSIS

SDG:	121217-58	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209323
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207823

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R	SKIP 1
Depth (m)	.
Sample Type	Soil/Solid
Date Sampled	13/12/2012
Sample Time	.
Date Received	14/12/2012
SDG Ref	121217-58
Lab Sample No.(s)	6678618
AGS Reference	

Component	LOD/Units	Method	SKIP 1
Loss on ignition	<0.7 %	TM018	6.93 #
Mineral oil >C10-C40	<1 mg/kg	TM061	265 & #
Organic Carbon, Total	<0.2 %	TM132	2.17 #
pH	1 pH Units	TM133	10.9 #
PCB congener 28	<3 µg/kg	TM168	20.4 #
PCB congener 52	<3 µg/kg	TM168	16.2 #
PCB congener 101	<3 µg/kg	TM168	19.4 #
PCB congener 118	<3 µg/kg	TM168	14.9 #
PCB congener 138	<3 µg/kg	TM168	17.2 #
PCB congener 153	<3 µg/kg	TM168	13 #
PCB congener 180	<3 µg/kg	TM168	4.56 #
Sum of detected PCB 7 Congeners	<21 µg/kg	TM168	106
Arsenic	<0.6 mg/kg	TM181	66.4 #
Barium	<0.6 mg/kg	TM181	119 #
Beryllium	<0.01 mg/kg	TM181	1.34 #
Cadmium	<0.02 mg/kg	TM181	1.31 #
Chromium	<0.9 mg/kg	TM181	28.7 #
Copper	<1.4 mg/kg	TM181	24.2 #
Lead	<0.7 mg/kg	TM181	70.6 #
Mercury	<0.14 mg/kg	TM181	0.175 & #
Nickel	<0.2 mg/kg	TM181	34.1 #
Selenium	<1 mg/kg	TM181	<1 #
Vanadium	<0.2 mg/kg	TM181	128 #
Zinc	<1.9 mg/kg	TM181	232 #
ANC @ pH 4	<0.03 mol/kg	TM182	0.581
ANC @ pH 6	<0.03 mol/kg	TM182	0.421
Polyaromatic hydrocarbons, Total 17	<10 mg/kg	TM213	42.2
Boron, water soluble	<1 mg/kg	TM222	1.4 & #

10:52:34 22/01/2013

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Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209323
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207823

GRO by GC-FID (S)

Results Legend	
#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R	SKIP 1
Depth (m)	.
Sample Type	Soil/Solid
Date Sampled	13/12/2012
Sample Time	.
Date Received	14/12/2012
SDG Ref	121217-58
Lab Sample No.(s)	6678618
AGS Reference	

Component	LOD/Units	Method	SKIP 1
GRO Surrogate % recovery**	%	TM089	98 2
Methyl tertiary butyl ether (MTBE)	<5 µg/kg	TM089	<5 2 #
Benzene	<10 µg/kg	TM089	<10 2 #
Toluene	<2 µg/kg	TM089	<2 2 #
Ethylbenzene	<3 µg/kg	TM089	6.4 2 #
m,p-Xylene	<6 µg/kg	TM089	11.5 2 #
o-Xylene	<3 µg/kg	TM089	8.96 2 #
sum of detected mpo xylene by GC	<9 µg/kg	TM089	20.5 2
sum of detected BTEX by GC	<24 µg/kg	TM089	26.9 2

10:52:34 22/01/2013

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SDG:	121217-58	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209323
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207823

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	SKIP 1 SOLID 13/12/2012 00:00:00 121217-58 6678618 TM048	21/01/13	Martin Cotterell	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Detected

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121217-58	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209323
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207823

CEN 10:1 CUMULATIVE TWO STAGE BATCH TEST

WAC ANALYTICAL RESULTS

REF : BS EN 12457/3

Client Reference		**Site Location**	Midland Industrial Estate
Mass Sample taken (kg)	0.223	**Moisture Content Ratio (%)**	27.5
Mass of dry sample (kg)	0.175	**Dry Matter Content Ratio (%)**	78.4
Particle Size <4mm	>95%		

Case	
SDG	121217-58
Lab Sample Number(s)	6678618
Sampled Date	13-Dec-2012
Customer Sample Ref.	SKIP 1
Depth (m)	

Solid Waste Analysis		**Landfill Waste Acceptance Criteria Limits**		
		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Total Organic Carbon (%)	2.17	3	5	6
Loss on Ignition (%)	6.93	-	-	10
Sum of BTEX (mg/kg)	0.0269	6	-	-
Sum of 7 PCBs (mg/kg)	0.106	1	-	-
Mineral Oil (mg/kg)	265	500	-	-
PAH Sum of 17 (mg/kg)	42.2	100	-	-
pH (pH Units)	10.9	-	<6 or >9	-
ANC to pH 6 (mol/kg)	0.421	-	-	-
ANC to pH 4 (mol/kg)	0.581	-	-	-

Eluate Analysis	C_2 Concⁿ in 2:1 eluate	C_8 Concⁿ in 8:1 eluate	A_2 2:1 concⁿ leached	A_{2-10} Cumulative concⁿ leached	Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg		
	mg/l		mg/kg				
Arsenic	0.0471	0.0266	0.0943	0.293	0.5	2	25
Barium	0.014	0.00436	0.028	0.0563	20	100	300
Cadmium	0.000416	<0.0001	0.000832	<0.001	0.04	1	5
Chromium	0.0184	0.00259	0.0367	0.0466	0.5	10	70
Copper	0.101	0.0147	0.202	0.261	2	50	100
Mercury Dissolved (CVAF)	<0.00001	<0.00001	<0.00002	<0.0001	0.01	0.2	2
Molybdenum	0.235	0.0186	0.471	0.471	0.5	10	30
Nickel	0.346	0.027	0.692	0.689	0.4	10	40
Lead	0.000483	0.000086	0.000966	0.00138	0.5	10	50
Antimony	0.00762	0.00365	0.0152	0.0417	0.06	0.7	5
Selenium	0.0354	0.00185	0.0708	0.0626	0.1	0.5	7
Zinc	0.00316	0.000944	0.00633	0.0124	4	50	200
Chloride	143	20.2	285	363	800	15000	25000
Fluoride	1.92	0.807	3.85	9.54	10	150	500
Sulphate (soluble)	141	23.4	283	389	1000	20000	50000
Total Dissolved Solids	598	155	1200	2130	4000	60000	100000
Total Monohydric Phenols (W)	0.04	<0.016	0.08	<0.16	1	-	-
Dissolved Organic Carbon	103	15	206	266	500	800	1000

Leach Test Information	**2:1**	**8:1**
Date Prepared	19-Dec-2012	21-Dec-2012
pH (pH Units)	9.684	10.773
Conductivity (µS/cm)	769.00	242.00
Temperature (°C)	20.00	20.20
Volume Leachant (Litres)	0.302	1.400
Volume of Eluate VE1 (Litres)	0.230	

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
22/01/2013 10:53:02

10:52:34 22/01/2013

CERTIFICATE OF ANALYSIS

SDG:	121217-58	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209323
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207823

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM001		Preparation of Samples for Metals Analysis		
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
PM114		Leaching Procedure for CEN Two Stage BatchTest 2:1/8:1 Cumulative		
TM018	BS 1377: Part 3 1990	Determination of Loss on Ignition		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM061	Method for the Determination of EPH,Massachusetts Dept.of EP, 1998	Determination of Extractable Petroleum Hydrocarbons by GC-FID (C10-C40)		
TM089	Modified: US EPA Methods 8020 & 602	Determination of Gasoline Range Hydrocarbons (GRO) and BTEX (MTBE) compounds by Headspace GC-FID (C4-C12)		
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water		
TM104	Method 4500F, AWWA/APHA, 20th Ed., 1999	Determination of Fluoride using the Kone Analyser		
TM123	BS 2690: Part 121:1981	The Determination of Total Dissolved Solids in Water		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
TM168	EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography	Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Soils		
TM181	US EPA Method 6010B	Determination of Routine Metals in Soil by iCap 6500 Duo ICP-OES		
TM182	CEN/TC 292 - WI 292046-chacterization of waste-leaching Behaviour Tests- Acid and Base Neutralization Capacity Test	Determination of Acid Neutralisation Capacity (ANC) Using Autotitration in Soils		
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		
TM213	In-house Method	Rapid Determination of PAHs by GC-FID		
TM222	In-House Method	Determination of Hot Water Soluble Boron in Soils (10:1 Water:soil) by IRIS Emission Spectrometer		
TM259	by HPLC	Determination of Phenols in Waters and Leachates by HPLC		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121217-58	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	209323
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	207823

Test Completion Dates

Lab Sample No(s)	6678618
Customer Sample Ref.	SKIP 1
AGS Ref.	
Depth	
Type	SOLID
ANC at pH4 and ANC at pH 6	02-Jan-2013
Anions by Kone (w)	08-Jan-2013
Asbestos Identification (Soil)	22-Jan-2013
Boron Water Soluble	15-Jan-2013
CEN 2:1 Leachate (2 Stage)	20-Dec-2012
CEN 2:1 Readings	27-Dec-2012
CEN 8:1 Leachate (2 Stage)	27-Dec-2012
CEN 8:1 Readings	02-Jan-2013
Dissolved Metals by ICP-MS	07-Jan-2013
Dissolved Organic/Inorganic Carbon	04-Jan-2013
Fluoride	08-Jan-2013
GRO by GC-FID (S)	03-Jan-2013
Loss on Ignition in soils	03-Jan-2013
Mercury Dissolved	07-Jan-2013
Metals by iCap-OES (Soil)	15-Jan-2013
Mineral Oil	03-Jan-2013
PAH Value of soil	28-Dec-2012
PCBs by GCMS	03-Jan-2013
pH	03-Jan-2013
Phenols by HPLC (W)	07-Jan-2013
Sample description	22-Dec-2012
Total Dissolved Solids	03-Jan-2013
Total Organic Carbon	28-Dec-2012

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICS and SVOC 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 all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples 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 analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

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. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

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 Dimethyphenol, 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 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. 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 C5-C12 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.

Sample Deviations

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk 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).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has 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).

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

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 HSG 264.

The identification of asbestos containing materials and soils 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.

ALcontrol Laboratories

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Website: www.alcontrol.com

Geocore Site Investigations Limited
Tralee Close
Kirkleatham Business Park
Redcar
TS10 5SG

Attention: Sarah Mortimer

CERTIFICATE OF ANALYSIS

Date:	17 January 2013
Customer:	H_GEOCORE_RDC
Sample Delivery Group (SDG):	121217-61
Your Reference:	RT/12/55272
Location:	Midland Industrial Estate
Report No:	208905

We received 3 samples on Friday December 14, 2012 and 1 of these samples were scheduled for analysis which was completed on Thursday January 17, 2013. 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.

Approved By:

Sonia McWhan

Operations Manager

Alcontrol Laboratories is a trading division of ALcontrol UK Limited
Registered Office: Units 7 & 8 Hawarden Business Park, Manor Road, Hawarden, Deeside, CH5 3US. Registered in England and Wales No.

CERTIFICATE OF ANALYSIS

SDG:	121217-61	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208905
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
6678799	PH - F _0.5_ES1		0.50	13/12/2012
6678801	PH - F _1.5_ES2		1.50	13/12/2012
6678802	PH - F _2.5_ES3		2.50	13/12/2012

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

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121217-61	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208905
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

SOLID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			6678802	
Customer Sample Reference			PH - F _2.5_ES3	
AGS Reference				
Depth (m)			2.50	
Container			1kg TUB	250g Amber Jar (AL
Asbestos Identification (Soil)	All	NDPs: 0 Tests: 1	X	
pH	All	NDPs: 0 Tests: 1	X	
Sample description	All	NDPs: 0 Tests: 1		X
Total Organic Carbon	All	NDPs: 0 Tests: 1		X

16:22:17 17/01/2013

CERTIFICATE OF ANALYSIS

SDG:	121217-61	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208905
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Sample Descriptions

Grain Sizes

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

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Grain size	Inclusions	Inclusions 2
6678802	PH - F _2.5_ES3	2.50	Dark Brown	Loamy Sand	0.1 - 2 mm	Stones	Tile

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 ocurring 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.

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121217-61	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208905
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	PH - F _2.5_ES3
Customer Sample R			PH - F _2.5_ES3
Depth (m)			2.50
Sample Type			Soil/Solid
Date Sampled			13/12/2012
Sample Time			.
Date Received			14/12/2012
SDG Ref			121217-61
Lab Sample No.(s)			6678802
AGS Reference			
Organic Carbon, Total	<0.2 %	TM132	28.9 & #
pH	1 pH Units	TM133	7.72 M

16:22:17 17/01/2013

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	121217-61	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208905
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Asbestos Identification - Soil

		Date of Analysis	Analysed By	Comments	Amosite (Brown) Asbestos	Chrysotile (White) Asbestos	Crocidolite (Blue) Asbestos	Fibrous Actinolite	Fibrous Anthophyllite	Fibrous Tremolite	Non-Asbestos Fibre
Cust. Sample Ref. Depth (m) Sample Type Date Sampled Date Receieved SDG Original Sample Method Number	PH - F _2.5_ES3 2.50 SOLID 13/12/2012 00:00:00 121217-61 6678802 TM048	16/01/13	Lauren Sargeant	-	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected (#)	Not Detected

CERTIFICATE OF ANALYSIS

SDG:	121217-61	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208905
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
ASB_PREP				
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material		
TM048	HSG 248, Asbestos: The analysts' guide for sampling, analysis and clearance procedures	Identification of Asbestos in Bulk Material		
TM132	In - house Method	ELTRA CS800 Operators Guide		
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter		
TM321		Organic matter Content of Soil By Titration		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

CERTIFICATE OF ANALYSIS

SDG:	121217-61	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	208905
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	6678802
Customer Sample Ref.	PH - F _2.5_ES3
AGS Ref.	
Depth	2.50
Type	SOLID
Asbestos Identification (Soil)	16-Jan-2013
pH	03-Jan-2013
Sample description	21-Dec-2012
Total Organic Carbon	17-Jan-2013

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICS and SVOC 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 all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples 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.

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7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

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. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

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 Dimethyphenol, 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 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. 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 C5-C12 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.

Sample Deviations

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk 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).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has 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).

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

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 HSG 264.

The identification of asbestos containing materials and soils 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.

Appendix F

Water / Leachate Chemical Test Data

 © EPG LTD

ALcontrol Laboratories

Unit 7-8 Hawarden Business Park
Manor Road (off Manor Lane)
Hawarden
Deeside
CH5 3US
Tel: (01244) 528700
Fax: (01244) 528701
email: mkt@alcontrol.com
Website: www.alcontrol.com

Geocore Site Investigations Limited
Tralee Close
Kirkleatham Business Park
Redcar
TS10 5SG

Attention: Sarah Mortimer

CERTIFICATE OF ANALYSIS

Date:	15 February 2013
Customer:	H_GEOCORE_RDC
Sample Delivery Group (SDG):	130207-62
Your Reference:	RT/12/55272
Location:	Midland Industrial Estate
Report No:	212226

We received 5 samples on Thursday February 07, 2013 and 5 of these samples were scheduled for analysis which was completed on Friday February 15, 2013. 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.

Approved By:

Sonia McWhan

Operations Manager

ilac-MRA
UKAS TESTING 1291

CERTIFICATE OF ANALYSIS

SDG:	130207-62	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	212226
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
6878407	PHF		2.75	05/02/2013
6878408	PHI		2.73	05/02/2013
6878409	PHK		2.95	05/02/2013
6878410	PHN		2.50	05/02/2013
6878411	PHO		3.30	05/02/2013

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

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	130207-62	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	212226
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

LIQUID

Results Legend

X Test

N No Determination Possible

Lab Sample No(s)			6878407						6878408						6878409						6878410						6878411					
Customer Sample Reference			PHF						PHI						PHK						PHN						PHO					
AGS Reference																																
Depth (m)			2.75						2.73						2.95						2.50						3.30					
Container			1plastic (ALE221)	250ml Plastic	H2SO4 (ALE244)	Vial (ALE297)	1plastic (ALE221)	250ml Plastic	H2SO4 (ALE244)	Vial (ALE297)	1plastic (ALE221)	250ml Plastic	H2SO4 (ALE244)	Vial (ALE297)	1plastic (ALE221)	250ml Plastic	H2SO4 (ALE244)	Vial (ALE297)	1plastic (ALE221)	250ml Plastic	H2SO4 (ALE244)	Vial (ALE297)	1plastic (ALE221)	250ml Plastic	H2SO4 (ALE244)	Vial (ALE297)
Ammoniacal Nitrogen	All	NDPs: 0 Tests: 5			X				X				X				X				X				X	
Anions by Kone (w)	All	NDPs: 0 Tests: 5	X				X				X				X				X				X			
BOD True Total	All	NDPs: 0 Tests: 5		X				X				X				X				X				X		
Chlorine	All	NDPs: 0 Tests: 5	X				X				X				X				X				X			
COD Unfiltered	All	NDPs: 0 Tests: 5		X				X				X				X				X				X		
Determination of Dissolved Gases	All	NDPs: 0 Tests: 5				X				X				X				X				X				X
Dissolved Metals by ICP-MS	All	NDPs: 0 Tests: 5	X				X				X				X				X				X			
Mercury Dissolved	All	NDPs: 0 Tests: 5	X				X				X				X				X				X			
Metals by iCap-OES Dissolved (W)	All	NDPs: 0 Tests: 5	X				X				X				X				X				X			
pH Value	All	NDPs: 0 Tests: 5	X				X				X				X				X				X			
Total Organic and Inorganic Carbon	All	NDPs: 0 Tests: 5	X				X				X				X				X				X			
VFAs by GC-FID	All	NDPs: 0 Tests: 5	X				X				X				X				X				X			

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	130207-62	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	212226
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Customer Sample R			PHF	PHI	PHK	PHN	PHO
Depth (m)			2.75	2.73	2.95	2.50	3.30
Sample Type			Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
Date Sampled			05/02/2013	05/02/2013	05/02/2013	05/02/2013	05/02/2013
Sample Time			.	.	.	.	.
Date Received			07/02/2013	07/02/2013	07/02/2013	07/02/2013	07/02/2013
SDG Ref			130207-62	130207-62	130207-62	130207-62	130207-62
Lab Sample No.(s)			6878407	6878408	6878409	6878410	6878411
AGS Reference							
Component	**LOD/Units**	**Method**					
Chlorine, Total (Residual)	<0.01 mg/l	TM037	0.04	0.04	0.05	0.01	0.04
BOD, unfiltered	<1 mg/l	TM045	<2 #	5.45 #	<3.75 #	<2 #	12.2 #
Organic Carbon, Total	<3 mg/l	TM090	8.29 ♦ #	7.17 #	44.9 ♦ #	15.8 ♦ #	44.2 ♦ #
Ammoniacal Nitrogen as N	<0.2 mg/l	TM099	<0.2 #	2.06 #	51.9 #	0.929 #	88.4 #
COD, unfiltered	<7 mg/l	TM107	<7 #	76.4 #	107 #	27.8 #	177 #
Arsenic (diss.filt)	<0.12 µg/l	TM152	2.13 #	18.5 #	2.26 #	2.01 #	5.27 #
Barium (diss.filt)	<0.03 µg/l	TM152	37.9 #	172 #	275 #	82.4 #	99.4 #
Beryllium (diss.filt)	<0.07 µg/l	TM152	<0.07 #	<0.07 #	<0.07 #	<0.07 #	<0.07 #
Boron (diss.filt)	<9.4 µg/l	TM152	1180 #	474 #	1360 #	191 #	1510 #
Cadmium (diss.filt)	<0.1 µg/l	TM152	0.169 #	<0.1 #	<0.1 #	<0.1 #	<0.1 #
Chromium (diss.filt)	<0.22 µg/l	TM152	16.2 #	9.96 #	30 #	19.9 #	27.2 #
Copper (diss.filt)	<0.85 µg/l	TM152	5.46 #	<0.85 #	<0.85 #	1.98 #	1.59 #
Lead (diss.filt)	<0.02 µg/l	TM152	0.723 #	0.154 #	0.393 #	0.219 #	0.702 #
Manganese (diss.filt)	<0.04 µg/l	TM152	2.67 #	780 #	973 #	1490 #	1290 #
Nickel (diss.filt)	<0.15 µg/l	TM152	10.1 #	7.65 #	4.26 #	16.4 #	15.1 #
Selenium (diss.filt)	<0.39 µg/l	TM152	1.3 #	0.49 #	1.85 #	0.421 #	2.62 #
Vanadium (diss.filt)	<0.24 µg/l	TM152	6.4 #	3.36 #	8.98 #	5.85 #	8.08 #
Zinc (diss.filt)	<0.41 µg/l	TM152	188 #	8.39 #	2.9 #	180 #	17.3 #
Mercury (diss.filt)	<0.01 µg/l	TM183	<0.01 #	<0.01 #	<0.01 #	<0.01 #	<0.01 #
Phosphate (ortho) as PO4	<0.05 mg/l	TM184	<0.05 #	<0.05 #	<0.05 #	<0.05 #	<0.05 #
Nitrate as NO3	<0.3 mg/l	TM184	29.8 ♦ #	<0.3 ♦ #	<0.3 ♦ #	<0.3 ♦ #	0.445 ♦ #
Acetic acid	<10 mg/l	TM201	<10 #	<10 #	<10 #	<10 #	<10 #
Propionic acid	<10 mg/l	TM201	<10 #	<10 #	<10 #	<10 #	<10 #
Iso-butyric acid	<10 mg/l	TM201	<10 #	<10 #	<10 #	<10 #	<10 #
Butyric acid	<10 mg/l	TM201	<10 #	<10 #	<10 #	<10 #	<10 #
Iso-valeric acid	<10 mg/l	TM201	<10 #	<10 #	<10 #	<10 #	<10 #
Valeric acid	<10 mg/l	TM201	<10	<10	<10	<10	<10
Caproic acid	<10 mg/l	TM201	<10 #	<10 #	<10 #	<10 #	<10 #
Heptanoic acid	<11 mg/l	TM201	<11 #	<11 #	<11 #	<11 #	<11 #
Methane, dissolved	<1 µg/l	TM223	1.05	230	7530	19900	9770
Carbon dioxide, dissolved	<1.3 mg/l	TM223	139	124	125	200	104
Iron (diss.filt)	<0.019 mg/l	TM228	0.0568 #	15.8 #	0.083 #	0.0329 #	0.256 #

13:13:31 15/02/2013

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	130207-62	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	212226
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Results Legend

#	ISO17025 accredited.
M	*m*CERTS 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 individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4&+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	PHF	PHI	PHK	PHN	PHO
Customer Sample R			PHF	PHI	PHK	PHN	PHO
Depth (m)			2.75	2.73	2.95	2.50	3.30
Sample Type			Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)	Water(GW/SW)
Date Sampled			05/02/2013	05/02/2013	05/02/2013	05/02/2013	05/02/2013
Sample Time			.	.	.	.	.
Date Received			07/02/2013	07/02/2013	07/02/2013	07/02/2013	07/02/2013
SDG Ref			130207-62	130207-62	130207-62	130207-62	130207-62
Lab Sample No.(s)			6878407	6878408	6878409	6878410	6878411
AGS Reference							
Hardness, Total as CaCO3	<1 mg/l	TM228	955 #	410 #	913 #	691 #	840 #
pH	<1 pH Units	TM256	7.32 #	7.08 #	7.64 #	7.39 #	7.63 #

13:13:31 15/02/2013

CERTIFICATE OF ANALYSIS

SDG:	130207-62	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	212226
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Table of Results - Appendix

Method No	Reference	Description	Wet/Dry Sample [1]	Surrogate Corrected
TM037	MEWAM Chlorine demand HMSO 1988	Determination of Free, Combined and Total Chlorine in Waters and Wastewaters using Colourimetry		
TM045	MEWAM BOD5 2nd Ed.HMSO 1988 / Method 5210B, AWWA/APHA, 20th Ed., 1999; SCA Blue Book 130	Determination of BOD5 (ATU) Filtered by Oxygen Meter on liquids		
TM090	Method 5310, AWWA/APHA, 20th Ed., 1999 / Modified: US EPA Method 415.1 & 9060	Determination of Total Organic Carbon/Total Inorganic Carbon in Water and Waste Water		
TM099	BS 2690: Part 7:1968 / BS 6068: Part2.11:1984	Determination of Ammonium in Water Samples using the Kone Analyser		
TM107	ISO 6060-1989	Determination of Chemical Oxygen Demand using COD Dr Lange Kit		
TM152	Method 3125B, AWWA/APHA, 20th Ed., 1999	Analysis of Aqueous Samples by ICP-MS		
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		
TM201	In-house Method	Volatile Fatty Acids in Liquids		
TM223	ASTM D-1945-91	Determination of Dissolved C1-7 Hydrocarbon gases in waters		
TM228	US EPA Method 6010B	Determination of Major Cations in Water by iCap 6500 Duo ICP-OES		
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		

[1] Applies to Solid samples only. DRY indicates samples have been dried at 35°C. NA = not applicable.

ALcontrol Laboratories

Validated

CERTIFICATE OF ANALYSIS

SDG:	130207-62	**Location:**	Midland Industrial Estate	**Order Number:**	RT/12/55272
Job:	H_GEOCORE_RDC-1	**Customer:**	Geocore Site Investigations Limited	**Report Number:**	212226
Client Reference:	RT/12/55272	**Attention:**	Sarah Mortimer	**Superseded Report:**	

Test Completion Dates

Lab Sample No(s)	6878407	6878408	6878409	6878410	6878411
Customer Sample Ref.	PHF	PHI	PHK	PHN	PHO
AGS Ref.					
Depth	2.75	2.73	2.95	2.50	3.30
Type	LIQUID	LIQUID	LIQUID	LIQUID	LIQUID
Ammoniacal Nitrogen	15-Feb-2013	15-Feb-2013	15-Feb-2013	15-Feb-2013	15-Feb-2013
Anions by Kone (w)	12-Feb-2013	12-Feb-2013	12-Feb-2013	12-Feb-2013	12-Feb-2013
BOD True Total	12-Feb-2013	12-Feb-2013	12-Feb-2013	12-Feb-2013	12-Feb-2013
Chlorine	13-Feb-2013	13-Feb-2013	13-Feb-2013	13-Feb-2013	13-Feb-2013
COD Unfiltered	08-Feb-2013	08-Feb-2013	08-Feb-2013	08-Feb-2013	08-Feb-2013
Determination of Dissolved Gases	07-Feb-2013	07-Feb-2013	07-Feb-2013	07-Feb-2013	07-Feb-2013
Dissolved Metals by ICP-MS	11-Feb-2013	11-Feb-2013	11-Feb-2013	12-Feb-2013	12-Feb-2013
Mercury Dissolved	12-Feb-2013	12-Feb-2013	12-Feb-2013	12-Feb-2013	12-Feb-2013
Metals by iCap-OES Dissolved (W)	11-Feb-2013	11-Feb-2013	11-Feb-2013	11-Feb-2013	11-Feb-2013
Nitrite by Kone (w)	12-Feb-2013	12-Feb-2013	12-Feb-2013	12-Feb-2013	12-Feb-2013
pH Value	13-Feb-2013	13-Feb-2013	13-Feb-2013	13-Feb-2013	11-Feb-2013
Total Organic and Inorganic Carbon	14-Feb-2013	13-Feb-2013	14-Feb-2013	14-Feb-2013	13-Feb-2013
VFAs by GC-FID	12-Feb-2013	12-Feb-2013	12-Feb-2013	12-Feb-2013	12-Feb-2013

Appendix

General

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICS and SVOC 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 all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 2 months after the analysis date. All bulk samples 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 analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2005), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as "Not detected". If no asbestos fibre types are found all will be reported as "Not detected" and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible. The quantity of asbestos present is not determined unless specifically requested.

7. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

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. Results relate only to the items tested.

12. LODs for wet tests reported on a dry weight basis are not corrected for moisture content.

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 Dimethyphenol, 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 15).

17. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

18. 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 C5-C12 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.

Sample Deviations

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Holding time exceeded before sample received**
§	**Sampled on date not provided**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to sampled on date**
&	**Sample Holding Time exceeded - Late arrival of instructions.**

Asbestos

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials are obtained from supplied bulk 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).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has 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).

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

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 HSG 264.

The identification of asbestos containing materials and soils 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.

Appendix G

Gas / Vapour Chemical Test Data

 © EPG LTD

Jones Environmental Laboratory

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

Tel: +44 (0) 1244 833780
Fax: +44 (0) 1244 833781

Enitial
Enterprise Park
Four Ashes
Wolverhampton
WV10 7DE

No.4225

Attention :	Phil Sanders
Date :	26th February, 2013
Your reference :	
Our reference :	Test Report 13/1794 Batch 1
Location :	MIDLANDS ROAD INDUSTRIAL ESTATE,SCUNTORPE
Date samples received :	14th February, 2013
Status :	Final report
Issue :	1

Three samples were received for analysis on 14th February, 2013. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.
All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:

Jamie Williams B.Sc
Project Co-ordinator

Bob Millward B.Sc
Principal Chemist

Jones Environmental Laboratory

Client Name: Enitial **Report : Gas**

Reference:

Location: MIDLANDS ROAD INDUSTRIAL ESTATE,SCUNTORPE

Contact: Phil Sanders

JE Job No.: 13/1794

Please see attached notes for all abbreviations and acronyms

J E Sample No.	1	2	3								LOD	Units	Method No.
Sample ID	PHN	PHK	PHL										
Depth													
COC No / misc													
Containers	GC	GC	GC										
Sample Date	12/02/2013	12/02/2013	12/02/2013										
Sample Type	Gas	Gas	Gas										
Batch Number	1	1	1										
Date of Receipt	14/02/2013	14/02/2013	14/02/2013										
Volatile Gases TO15 TICs USEPA	See Attached	See Attached	See Attached									None	TM68/PM0
Carbon Dioxide	8.01	7.51	3.04								<0.05	%	TM69/PM0
Carbon Monoxide	<0.05	<0.05	<0.05								<0.05	%	TM69/PM0
Methane	68.80	13.70	18.64								<0.05	%	TM69/PM0
Nitrogen	20.0	75.8	74.6								<0.5	%	TM69/PM0
Oxygen	3.2	3.0	3.7								<0.5	%	TM69/PM0
Methane	720082	140730	209510								<5	ppmV	TM45/PM0
Ethane	8	7	18								<5	ppmV	TM45/PM0
Propane	<5	<5	6								<5	ppmV	TM45/PM0
Butane	<5	<5	<5								<5	ppmV	TM45/PM0
Pentane	<5	<5	<5								<5	ppmV	TM45/PM0
Hexane	<5	<5	<5								<5	ppmV	TM45/PM0
Heptane	<5	<5	<5								<5	ppmV	TM45/PM0
Total of 7 named gases	720090	140737	209534								<5	ppmV	TM45/PM0
Number of other gases	1	1	1										TM45/PM0
Total of other gases	<5	<5	<5								<5	ppmV	TM45/PM0
Grand Total C1-C7 Gases	720090	140737	209534								<5	ppmV	TM45/PM0

Please include all sections of this report if it is reproduced

All solid results are expressed on a dry weight basis unless stated otherwise.

Jones Environmental Laboratory

Client Name:	Enitial		
Reference:		***Sample Date:***	12 Feb 2013
Location:	MIDLANDS ROAD INDUSTRIAL ESTATE,SCUNTORPE	***Date of Receipt:***	14 Feb 2013
Contact:	Phil Sanders	***Date Analysed:***	14 Feb 2013
Sample ID:	PHN		
Depth:			
JE Job No:	13/1794		
JE Sample No:	1		
Matrix:	Air		
Method:	TM68 VOCs on gases (GC-MS)		
Initial Vaccum (inches Hg)	-30		
Final Pressure (psi)	-4		
Canister Serial number	CS.807		

Q - Qualifiers

B = ***Indicates analyte found in associated method blank***

++ = ***Indicates value exceeds calibration range***

Key

MDL = ***Method Detection Limit***

RL = ***Reporting Limit***

 # = ***UKAS Accredited***

Cas No	Molecular Weight		Compound	Q	Result	RL	MDL	Result	RL	MDL
					ppbv	ppbv	ppbv	ug/m^3	ug/m^3	ug/m^3
75-45-6	86.77		Chlorodifluoromethane (HCFC-22)		<2	2	2	<7	7	7
75-71-8	120.91		Dichlorodifluoromethane (F-12)		<2.5	2.5	2.5	<12.4	12.4	12.4
74-87-3	50.49		Chloromethane		<1.5	1.5	1.5	<3.1	3.1	3.1
76-14-2	170.92		1,2-Dichlorotetrafluoroethane (F-114)		<1.5	1.5	1.5	<10.5	10.5	10.5
75-01-4	62.5	#	Vinyl Chloride		<1.5	1.5	1.5	<3.8	3.8	3.8
115-11-7	56.12		Isobutene		<1.5	1.5	1.5	<3.4	3.4	3.4
106-99-0	54.09		1,3-Butadiene		<1.5	1.5	1.5	<3.3	3.3	3.3
74-83-9	94.95		Bromomethane		<1.5	1.5	1.5	<5.8	5.8	5.8
75-00-3	64.52	#	Chloroethane		<1.5	1.5	1.5	<4	4	4
64-17-5	46.07		Ethanol		<2.5	2.5	2.5	<4.7	4.7	4.7
75-05-8	41.05		Acetonitrile		<1.5	1.5	1.5	<2.5	2.5	2.5
107-02-8	56.06		Acrolein		<2.5	2.5	2.5	<5.7	5.7	5.7
	58.08		Acetone + Propanal		<6	6	6	<14	14	14
75-69-4	137.36	#	Trichlorofluoromethane (F-11)		<1.5	1.5	1.5	<8.4	8.4	8.4
67-63-0	60.09		2-Propanol		<6	6	6	<15	15	15
109-66-0	72.15		Pentane		<1.5	1.5	1.5	<4.4	4.4	4.4
78-79-5	68.12		Isoprene		<2	2	2	<6	6	6
74-88-4	141.94		Methyl Iodide		<1.5	1.5	1.5	<8.7	8.7	8.7
75-35-4	96.95	#	1,1-Dichloroethene (1,1 DCE)		<1.5	1.5	1.5	<5.9	5.9	5.9
75-09-2	84.94		Methylene Chloride		<10	10	10	<35	35	35
76-13-1	187.37	#	Trichlorotrifluoroethane		<1.5	1.5	1.5	<11.5	11.5	11.5
75-15-0	76.14		Carbon Disulfide		<1.5	1.5	1.5	<4.7	4.7	4.7
71-23-8	60.09		1-Propanol		<1.5	1.5	1.5	<3.7	3.7	3.7
78-85-3	70.09		Methylacrolein		<1.5	1.5	1.5	<4.3	4.3	4.3
75-34-3	98.97	#	1,1-Dichloroethane		<1.5	1.5	1.5	<6.1	6.1	6.1
287-92-3	70.14		Cyclopentane		<1.5	1.5	1.5	<4.3	4.3	4.3
78-94-4	70.09		Methyl Vinyl Ketone		<1.6	1.6	1.6	<4.6	4.6	4.6
1634-04-4	88.15		Methyl tertiary butyl ether		<1.5	1.5	1.5	<5.4	5.4	5.4
108-05-4	86.09		Vinyl Acetate		<1.5	1.5	1.5	<5.3	5.3	5.3
123-72-8	72.11		Butanal		<2	2	2	<6	6	6
78-93-3	72.1		2-Butanone (MEK)		<2	2	2	<6	6	6
156-59-2	96.94	#	cis-1,2-Dichloroethene		<1	1	1	<4	4	4
110-54-3	86.17		Hexane		<1.5	1.5	1.5	<5.3	5.3	5.3
67-66-3	119.39	#	Chloroform		<1.5	1.5	1.5	<7.3	7.3	7.3
107-06-2	98.96	#	1,2-Dichloroethane		<1.5	1.5	1.5	<6.1	6.1	6.1
71-55-6	133.42	#	1,1,1-Trichloroethane		<1.5	1.5	1.5	<8.2	8.2	8.2
71-36-3	74.12		1-Butanol		<3	3	3	<9	9	9
71-43-2	78.11	#	Benzene		10	1.5	1.5	31.9	4.8	4.8
56-23-5	153.84	#	Carbon Tetrachloride		<1.5	1.5	1.5	<9.4	9.4	9.4

Jones Environmental Laboratory

Client Name:	Enitial		
Reference:		***Sample Date:***	12 Feb 2013
Location:	MIDLANDS ROAD INDUSTRIAL ESTATE,SCUNTORPE	***Date of Receipt:***	14 Feb 2013
Contact:	Phil Sanders	***Date Analysed:***	14 Feb 2013
Sample ID:	PHN		
Depth:			
JE Job No:	13/1794		
JE Sample No:	1		
Matrix:	Air		
Method:	TM68 VOCs on gases (GC-MS)		
Initial Vaccum (inches Hg)	-30		
Final Pressure (psi)	-4		
Canister Serial number	CS.807		

Q - Qualifiers

B = ***Indicates analyte found in associated method blank***

++ = ***Indicates value exceeds calibration range***

Key

MDL = ***Method Detection Limit***

RL = ***Reporting Limit***

 # = ***UKAS Accredited***

Cas No	Molecular Weight		Compound	Q	Result	RL	MDL	Result	RL	MDL
					ppbv	ppbv	ppbv	ug/m^3	ug/m^3	ug/m^3
110-82-7	84.16		Cyclohexane		44	2	2	151	7	7
107-87-9	86.13		2-Pentanone		<1.5	1.5	1.5	<5.3	5.3	5.3
110-62-3	86.13		Pentanal		<1.5	1.5	1.5	<5.3	5.3	5.3
96-22-0	86.13		3-Pentanone		<1.5	1.5	1.5	<5.3	5.3	5.3
78-87-5	112.99	#	1,2-Dichloropropane		<1.5	1.5	1.5	<6.9	6.9	6.9
75-27-4	163.83		Bromodichloromethane		<1.5	1.5	1.5	<10.1	10.1	10.1
123-91-1	88.11		1,4-Dioxane		<2	2	2	<7	7	7
79-01-6	131.4	#	Trichloroethene (TCE)		<1.5	1.5	1.5	<8.1	8.1	8.1
10061-01-5	110.97	#	cis-1,3-Dichloropropene		<1.5	1.5	1.5	<6.8	6.8	6.8
108-10-1	100.16		4-Methyl-2-pentanone		<1.5	1.5	1.5	<6.1	6.1	6.1
10061-02-6	110.97		trans-1,3-Dichloropropene		<1.5	1.5	1.5	<6.8	6.8	6.8
79-00-5	133.4	#	1,1,2-Trichloroethane		<1.5	1.5	1.5	<8.2	8.2	8.2
108-88-3	92.13	#	Toluene		138.8	1.5	1.5	523	5.7	5.7
589-38-8	100.16		3-Hexanone		<1.5	1.5	1.5	<6.1	6.1	6.1
591-78-6	100.16		2-Hexanone		<1.5	1.5	1.5	<6.1	6.1	6.1
66-25-1	100.16		Hexanal		<1.5	1.5	1.5	<6.1	6.1	6.1
106-93-4	187.86	#	1,2-Dibromoethane		<1.5	1.5	1.5	<11.5	11.5	11.5
127-18-4	165.85	#	Tetrachloroethene (PCE)		<1.5	1.5	1.5	<10.2	10.2	10.2
108-90-7	112.56	#	Chlorobenzene		<1.5	1.5	1.5	<6.9	6.9	6.9
100-41-4	106.16	#	Ethylbenzene		15.8	1.5	1.5	68.6	6.5	6.5
	106.17	#	m&p - Xylenes		65.4	1.5	1.5	284	6.5	6.5
75-25-2	252.77		Bromoform		<1.5	1.5	1.5	<15.5	15.5	15.5
100-42-5	104.14	#	Styrene		<1.5	1.5	1.5	<6.4	6.4	6.4
79-34-5	167.85	#	1,1,2,2-Tetrachloroethane		<1.5	1.5	1.5	<10.3	10.3	10.3
95-47-6	106.17	#	o-Xylene		17.6	1.5	1.5	76.4	6.5	6.5
108-67-8	120.2	#	1,3,5-Trimethylbenzene		3.1	1.5	1.5	15.2	7.4	7.4
95-63-6	120.19	#	1,2,4-Trimethylbenzene		9.5	1.5	1.5	46.7	7.4	7.4
541-73-1	147.01	#	1,3-Dichlorobenzene		<1.5	1.5	1.5	<9	9	9
100-44-7	126.58		Benzyl Chloride		<1.5	1.5	1.5	<7.8	7.8	7.8
106-46-7	147.01	#	1,4-Dichlorobenzene		<1.5	1.5	1.5	<9	9	9
526-73-8	120.2		1,2,3-Trimethylbenzene		<1.5	1.5	1.5	<7.4	7.4	7.4
95-50-1	147	#	1,2-Dichlorobenzene		<1.5	1.5	1.5	<9	9	9
120-82-1	181.46	#	1,2,4-Trichlorobenzene		<1.5	1.5	1.5	<11.1	11.1	11.1
91-20-3	128.17		Naphthalene		1.09	0.32	0.32	5.7	1.7	1.7
460-00-4			4-Bromofluorobenzene Surrogate Recovery		107%	0%	0%			
	81		Aliphatic >C4-C6		795	10	10	2634	33	33
	100		Aliphatic >C6-C8		538	10	10	2200	41	41
	130		Aliphatic >C8-C10		2117	10	10	11256	53	53
	160		Aliphatic >C10-C12		<10	10	10	<65	65	65

Jones Environmental Laboratory

Client Name:	Enitial		
Reference:		***Sample Date:***	12 Feb 2013
Location:	MIDLANDS ROAD INDUSTRIAL ESTATE,SCUNTORPE	***Date of Receipt:***	14 Feb 2013
Contact:	Phil Sanders	***Date Analysed:***	14 Feb 2013
Sample ID:	PHN		
Depth:			
JE Job No:	13/1794		
JE Sample No:	1		
Matrix:	Air		
Method:	TM68 VOCs on gases (GC-MS)		
Initial Vaccum (inches Hg)	-30		
Final Pressure (psi)	-4		
Canister Serial number	CS.807		

Q - Qualifiers

B = ***Indicates analyte found in associated method blank***

++ = ***Indicates value exceeds calibration range***

Key

MDL = ***Method Detection Limit***

RL = ***Reporting Limit***

 # = ***UKAS Accredited***

Cas No	Molecular Weight	Compound	Q	Result	RL	MDL	Result	RL	MDL
				ppbv	ppbv	ppbv	ug/m^3	ug/m^3	ug/m^3
	78.11	Aromatic >C5-EC7 (Benzene)		10	10	10	<32	32	32
	92.14	Aromatic >EC7-EC8 (Toluene)		139	10	10	524	38	38
	120	Aromatic >EC8-EC10		99	10	10	486	49	49
	130	Aromatic >EC10-EC12		<10	10	10	<53	53	53

Jones Environmental Laboratory

Client Name:	Enitial		
Reference:		***Sample Date:***	12 Feb 2013
Location:	MIDLANDS ROAD INDUSTRIAL ESTATE,SCUNTORPE	***Date of Receipt:***	14 Feb 2013
Contact:	Phil Sanders	***Date Analysed:***	14 Feb 2013
Sample ID:	PHK		
Depth:			
JE Job No:	13/1794		
JE Sample No:	2		
Matrix:	Air		
Method:	TM68 VOCs on gases (GC-MS)		
Initial Vaccum (inches Hg)	-30		
Final Pressure (psi)	-5		
Canister Serial number	CS.650		

Q - Qualifiers

B = ***Indicates analyte found in associated method blank***

++ = ***Indicates value exceeds calibration range***

Key

MDL = ***Method Detection Limit***

RL = ***Reporting Limit***

 # = ***UKAS Accredited***

Cas No	Molecular Weight		Compound	Q	Result	RL	MDL	Result	RL	MDL
					ppbv	ppbv	ppbv	ug/m^3	ug/m^3	ug/m^3
75-45-6	86.77		Chlorodifluoromethane (HCFC-22)		<2	2	2	<7	7	7
75-71-8	120.91		Dichlorodifluoromethane (F-12)		<2.5	2.5	2.5	<12.4	12.4	12.4
74-87-3	50.49		Chloromethane		<1.5	1.5	1.5	<3.1	3.1	3.1
76-14-2	170.92		1,2-Dichlorotetrafluoroethane (F-114)		<1.5	1.5	1.5	<10.5	10.5	10.5
75-01-4	62.5	#	Vinyl Chloride		9.3	1.5	1.5	23.8	3.8	3.8
115-11-7	56.12		Isobutene		<1.5	1.5	1.5	<3.4	3.4	3.4
106-99-0	54.09		1,3-Butadiene		<1.5	1.5	1.5	<3.3	3.3	3.3
74-83-9	94.95		Bromomethane		<1.5	1.5	1.5	<5.8	5.8	5.8
75-00-3	64.52	#	Chloroethane		<1.5	1.5	1.5	<4	4	4
64-17-5	46.07		Ethanol		<2.5	2.5	2.5	<4.7	4.7	4.7
75-05-8	41.05		Acetonitrile		<1.5	1.5	1.5	<2.5	2.5	2.5
107-02-8	56.06		Acrolein		<2.5	2.5	2.5	<5.7	5.7	5.7
	58.08		Acetone + Propanal		<6	6	6	<14	14	14
75-69-4	137.36	#	Trichlorofluoromethane (F-11)		<1.5	1.5	1.5	<8.4	8.4	8.4
67-63-0	60.09		2-Propanol		<6	6	6	<15	15	15
109-66-0	72.15		Pentane		196.1	1.5	1.5	578.7	4.4	4.4
78-79-5	68.12		Isoprene		<2	2	2	<6	6	6
74-88-4	141.94		Methyl Iodide		<1.5	1.5	1.5	<8.7	8.7	8.7
75-35-4	96.95	#	1,1-Dichloroethene (1,1 DCE)		<1.5	1.5	1.5	<5.9	5.9	5.9
75-09-2	84.94		Methylene Chloride		<10	10	10	<35	35	35
76-13-1	187.37	#	Trichlorotrifluoroethane		<1.5	1.5	1.5	<11.5	11.5	11.5
75-15-0	76.14		Carbon Disulfide		<1.5	1.5	1.5	<4.7	4.7	4.7
71-23-8	60.09		1-Propanol		<1.5	1.5	1.5	<3.7	3.7	3.7
78-85-3	70.09		Methylacrolein		<1.5	1.5	1.5	<4.3	4.3	4.3
75-34-3	98.97	#	1,1-Dichloroethane		<1.5	1.5	1.5	<6.1	6.1	6.1
287-92-3	70.14		Cyclopentane		<1.5	1.5	1.5	<4.3	4.3	4.3
78-94-4	70.09		Methyl Vinyl Ketone		<1.6	1.6	1.6	<4.6	4.6	4.6
1634-04-4	88.15		Methyl tertiary butyl ether		<1.5	1.5	1.5	<5.4	5.4	5.4
108-05-4	86.09		Vinyl Acetate		<1.5	1.5	1.5	<5.3	5.3	5.3
123-72-8	72.11		Butanal		<2	2	2	<6	6	6
78-93-3	72.1		2-Butanone (MEK)		<2	2	2	<6	6	6
156-59-2	96.94	#	cis-1,2-Dichloroethene		<1	1	1	<4	4	4
110-54-3	86.17		Hexane		<1.5	1.5	1.5	<5.3	5.3	5.3
67-66-3	119.39	#	Chloroform		<1.5	1.5	1.5	<7.3	7.3	7.3
107-06-2	98.96	#	1,2-Dichloroethane		<1.5	1.5	1.5	<6.1	6.1	6.1
71-55-6	133.42	#	1,1,1-Trichloroethane		<1.5	1.5	1.5	<8.2	8.2	8.2
71-36-3	74.12		1-Butanol		<3	3	3	<9	9	9
71-43-2	78.11	#	Benzene		26.7	1.5	1.5	85.3	4.8	4.8
56-23-5	153.84	#	Carbon Tetrachloride		<1.5	1.5	1.5	<9.4	9.4	9.4

Jones Environmental Laboratory

Client Name:	Enitial		
Reference:		***Sample Date:***	12 Feb 2013
Location:	MIDLANDS ROAD INDUSTRIAL ESTATE,SCUNTORPE	***Date of Receipt:***	14 Feb 2013
Contact:	Phil Sanders	***Date Analysed:***	14 Feb 2013
Sample ID:	PHK		
Depth:			
JE Job No:	13/1794		
JE Sample No:	2		
Matrix:	Air		
Method:	TM68 VOCs on gases (GC-MS)		
Initial Vaccum (inches Hg)	-30		
Final Pressure (psi)	-5		
Canister Serial number	CS.650		

Q - Qualifiers

B = ***Indicates analyte found in associated method blank***

++ = ***Indicates value exceeds calibration range***

Key

MDL = ***Method Detection Limit***

RL = ***Reporting Limit***

 # = ***UKAS Accredited***

Cas No	Molecular Weight		Compound	Q	Result	RL	MDL	Result	RL	MDL
					ppbv	ppbv	ppbv	ug/m^3	ug/m^3	ug/m^3
110-82-7	84.16		Cyclohexane		<2	2	2	<7	7	7
107-87-9	86.13		2-Pentanone		<1.5	1.5	1.5	<5.3	5.3	5.3
110-62-3	86.13		Pentanal		<1.5	1.5	1.5	<5.3	5.3	5.3
96-22-0	86.13		3-Pentanone		<1.5	1.5	1.5	<5.3	5.3	5.3
78-87-5	112.99	#	1,2-Dichloropropane		<1.5	1.5	1.5	<6.9	6.9	6.9
75-27-4	163.83		Bromodichloromethane		<1.5	1.5	1.5	<10.1	10.1	10.1
123-91-1	88.11		1,4-Dioxane		<2	2	2	<7	7	7
79-01-6	131.4	#	Trichloroethene (TCE)		<1.5	1.5	1.5	<8.1	8.1	8.1
10061-01-5	110.97	#	cis-1,3-Dichloropropene		<1.5	1.5	1.5	<6.8	6.8	6.8
108-10-1	100.16		4-Methyl-2-pentanone		<1.5	1.5	1.5	<6.1	6.1	6.1
10061-02-6	110.97		trans-1,3-Dichloropropene		<1.5	1.5	1.5	<6.8	6.8	6.8
79-00-5	133.4	#	1,1,2-Trichloroethane		<1.5	1.5	1.5	<8.2	8.2	8.2
108-88-3	92.13	#	Toluene		149.5	1.5	1.5	563.3	5.7	5.7
589-38-8	100.16		3-Hexanone		<1.5	1.5	1.5	<6.1	6.1	6.1
591-78-6	100.16		2-Hexanone		<1.5	1.5	1.5	<6.1	6.1	6.1
66-25-1	100.16		Hexanal		<1.5	1.5	1.5	<6.1	6.1	6.1
106-93-4	187.86	#	1,2-Dibromoethane		<1.5	1.5	1.5	<11.5	11.5	11.5
127-18-4	165.85	#	Tetrachloroethene (PCE)		<1.5	1.5	1.5	<10.2	10.2	10.2
108-90-7	112.56	#	Chlorobenzene		<1.5	1.5	1.5	<6.9	6.9	6.9
100-41-4	106.16	#	Ethylbenzene		16.6	1.5	1.5	72.1	6.5	6.5
	106.17	#	m&p - Xylenes		67.5	1.5	1.5	293.1	6.5	6.5
75-25-2	252.77		Bromoform		<1.5	1.5	1.5	<15.5	15.5	15.5
100-42-5	104.14	#	Styrene		<1.5	1.5	1.5	<6.4	6.4	6.4
79-34-5	167.85	#	1,1,2,2-Tetrachloroethane		<1.5	1.5	1.5	<10.3	10.3	10.3
95-47-6	106.17	#	o-Xylene		18.4	1.5	1.5	79.9	6.5	6.5
108-67-8	120.2	#	1,3,5-Trimethylbenzene		3.3	1.5	1.5	16.2	7.4	7.4
95-63-6	120.19	#	1,2,4-Trimethylbenzene		9.7	1.5	1.5	47.7	7.4	7.4
541-73-1	147.01	#	1,3-Dichlorobenzene		<1.5	1.5	1.5	<9	9	9
100-44-7	126.58		Benzyl Chloride		<1.5	1.5	1.5	<7.8	7.8	7.8
106-46-7	147.01	#	1,4-Dichlorobenzene		<1.5	1.5	1.5	<9	9	9
526-73-8	120.2		1,2,3-Trimethylbenzene		2.8	1.5	1.5	13.8	7.4	7.4
95-50-1	147	#	1,2-Dichlorobenzene		<1.5	1.5	1.5	<9	9	9
120-82-1	181.46	#	1,2,4-Trichlorobenzene		<1.5	1.5	1.5	<11.1	11.1	11.1
91-20-3	128.17		Naphthalene		1.38	0.32	0.32	7.2	1.7	1.7
460-00-4			4-Bromofluorobenzene Surrogate Recovery		103%	0%	0%			
	81		Aliphatic >C4-C6		690	10	10	2286	33	33
	100		Aliphatic >C6-C8		177	10	10	724	41	41
	130		Aliphatic >C8-C10		449	10	10	2387	53	53
	160		Aliphatic >C10-C12		<10	10	10	<65	65	65

Jones Environmental Laboratory

Client Name:	Enitial		
Reference:		***Sample Date:***	12 Feb 2013
Location:	MIDLANDS ROAD INDUSTRIAL ESTATE,SCUNTORPE	***Date of Receipt:***	14 Feb 2013
Contact:	Phil Sanders	***Date Analysed:***	14 Feb 2013
Sample ID:	PHK		
Depth:			
JE Job No:	13/1794		
JE Sample No:	2		
Matrix:	Air		
Method:	TM68 VOCs on gases (GC-MS)		
Initial Vaccum (inches Hg)	-30		
Final Pressure (psi)	-5		
Canister Serial number	CS.650		

Q - Qualifiers

B = ***Indicates analyte found in associated method blank***

++ = ***Indicates value exceeds calibration range***

Key

MDL = ***Method Detection Limit***

RL = ***Reporting Limit***

 # = ***UKAS Accredited***

Cas No	Molecular Weight	Compound	Q	Result	RL	MDL	Result	RL	MDL
				ppbv	ppbv	ppbv	ug/m^3	ug/m^3	ug/m^3
	78.11	Aromatic >C5-EC7 (Benzene)		27	10	10	86	32	32
	92.14	Aromatic >EC7-EC8 (Toluene)		150	10	10	565	38	38
	120	Aromatic >EC8-EC10		103	10	10	506	49	49
	130	Aromatic >EC10-EC12		<10	10	10	<53	53	53

Jones Environmental Laboratory

Client Name:	Enitial		
Reference:		***Sample Date:***	12 Feb 2013
Location:	MIDLANDS ROAD INDUSTRIAL ESTATE,SCUNTORPE	***Date of Receipt:***	14 Feb 2013
Contact:	Phil Sanders	***Date Analysed:***	14 Feb 2013
Sample ID:	PHL		
Depth:			
JE Job No:	13/1794		
JE Sample No:	3		
Matrix:	Air		
Method:	TM68 VOCs on gases (GC-MS)		
Initial Vaccum (inches Hg)	-26		
Final Pressure (psi)	-5		
Canister Serial number	CS.645		

Q - Qualifiers

B = ***Indicates analyte found in associated method blank***

++ = ***Indicates value exceeds calibration range***

Key

MDL = ***Method Detection Limit***

RL = ***Reporting Limit***

 # = ***UKAS Accredited***

Cas No	Molecular Weight		Compound	Q	Result	RL	MDL	Result	RL	MDL
					ppbv	ppbv	ppbv	ug/m^3	ug/m^3	ug/m^3
75-45-6	86.77		Chlorodifluoromethane (HCFC-22)		<2	2	2	<7	7	7
75-71-8	120.91		Dichlorodifluoromethane (F-12)		<2.5	2.5	2.5	<12.4	12.4	12.4
74-87-3	50.49		Chloromethane		<1.5	1.5	1.5	<3.1	3.1	3.1
76-14-2	170.92		1,2-Dichlorotetrafluoroethane (F-114)		<1.5	1.5	1.5	<10.5	10.5	10.5
75-01-4	62.5	#	Vinyl Chloride		29.7	1.5	1.5	75.9	3.8	3.8
115-11-7	56.12		Isobutene		<1.5	1.5	1.5	<3.4	3.4	3.4
106-99-0	54.09		1,3-Butadiene		<1.5	1.5	1.5	<3.3	3.3	3.3
74-83-9	94.95		Bromomethane		<1.5	1.5	1.5	<5.8	5.8	5.8
75-00-3	64.52	#	Chloroethane		<1.5	1.5	1.5	<4	4	4
64-17-5	46.07		Ethanol		<2.5	2.5	2.5	<4.7	4.7	4.7
75-05-8	41.05		Acetonitrile		<1.5	1.5	1.5	<2.5	2.5	2.5
107-02-8	56.06		Acrolein		<2.5	2.5	2.5	<5.7	5.7	5.7
	58.08		Acetone + Propanal		<6	6	6	<14	14	14
75-69-4	137.36	#	Trichlorofluoromethane (F-11)		<1.5	1.5	1.5	<8.4	8.4	8.4
67-63-0	60.09		2-Propanol		<6	6	6	<15	15	15
109-66-0	72.15		Pentane		205.7	1.5	1.5	607	4.4	4.4
78-79-5	68.12		Isoprene		<2	2	2	<6	6	6
74-88-4	141.94		Methyl Iodide		<1.5	1.5	1.5	<8.7	8.7	8.7
75-35-4	96.95	#	1,1-Dichloroethene (1,1 DCE)		<1.5	1.5	1.5	<5.9	5.9	5.9
75-09-2	84.94		Methylene Chloride		<10	10	10	<35	35	35
76-13-1	187.37	#	Trichlorotrifluoroethane		<1.5	1.5	1.5	<11.5	11.5	11.5
75-15-0	76.14		Carbon Disulfide		<1.5	1.5	1.5	<4.7	4.7	4.7
71-23-8	60.09		1-Propanol		<1.5	1.5	1.5	<3.7	3.7	3.7
78-85-3	70.09		Methylacrolein		<1.5	1.5	1.5	<4.3	4.3	4.3
75-34-3	98.97	#	1,1-Dichloroethane		<1.5	1.5	1.5	<6.1	6.1	6.1
287-92-3	70.14		Cyclopentane		<1.5	1.5	1.5	<4.3	4.3	4.3
78-94-4	70.09		Methyl Vinyl Ketone		<1.6	1.6	1.6	<4.6	4.6	4.6
1634-04-4	88.15		Methyl tertiary butyl ether		<1.5	1.5	1.5	<5.4	5.4	5.4
108-05-4	86.09		Vinyl Acetate		<1.5	1.5	1.5	<5.3	5.3	5.3
123-72-8	72.11		Butanal		<2	2	2	<6	6	6
78-93-3	72.1		2-Butanone (MEK)		<2	2	2	<6	6	6
156-59-2	96.94	#	cis-1,2-Dichloroethene		<1	1	1	<4	4	4
110-54-3	86.17		Hexane		<1.5	1.5	1.5	<5.3	5.3	5.3
67-66-3	119.39	#	Chloroform		<1.5	1.5	1.5	<7.3	7.3	7.3
107-06-2	98.96	#	1,2-Dichloroethane		<1.5	1.5	1.5	<6.1	6.1	6.1
71-55-6	133.42	#	1,1,1-Trichloroethane		<1.5	1.5	1.5	<8.2	8.2	8.2
71-36-3	74.12		1-Butanol		<3	3	3	<9	9	9
71-43-2	78.11	#	Benzene		16.8	1.5	1.5	53.7	4.8	4.8
56-23-5	153.84	#	Carbon Tetrachloride		<1.5	1.5	1.5	<9.4	9.4	9.4

Jones Environmental Laboratory

Client Name:	Enitial		
Reference:		***Sample Date:***	12 Feb 2013
Location:	MIDLANDS ROAD INDUSTRIAL ESTATE,SCUNTORPE	***Date of Receipt:***	14 Feb 2013
Contact:	Phil Sanders	***Date Analysed:***	14 Feb 2013
Sample ID:	PHL		
Depth:			
JE Job No:	13/1794		
JE Sample No:	3		
Matrix:	Air		
Method:	TM68 VOCs on gases (GC-MS)		
Initial Vaccum (inches Hg)	-26		
Final Pressure (psi)	-5		
Canister Serial number	CS.645		

Q - Qualifiers

B = ***Indicates analyte found in associated method blank***

++ = ***Indicates value exceeds calibration range***

Key

MDL = ***Method Detection Limit***

RL = ***Reporting Limit***

 # = ***UKAS Accredited***

Cas No	Molecular Weight		Compound	Q	Result	RL	MDL	Result	RL	MDL
					ppbv	ppbv	ppbv	ug/m^3	ug/m^3	ug/m^3
110-82-7	84.16		Cyclohexane		18	2	2	62	7	7
107-87-9	86.13		2-Pentanone		<1.5	1.5	1.5	<5.3	5.3	5.3
110-62-3	86.13		Pentanal		<1.5	1.5	1.5	<5.3	5.3	5.3
96-22-0	86.13		3-Pentanone		<1.5	1.5	1.5	<5.3	5.3	5.3
78-87-5	112.99	#	1,2-Dichloropropane		<1.5	1.5	1.5	<6.9	6.9	6.9
75-27-4	163.83		Bromodichloromethane		<1.5	1.5	1.5	<10.1	10.1	10.1
123-91-1	88.11		1,4-Dioxane		<2	2	2	<7	7	7
79-01-6	131.4	#	Trichloroethene (TCE)		<1.5	1.5	1.5	<8.1	8.1	8.1
10061-01-5	110.97	#	cis-1,3-Dichloropropene		<1.5	1.5	1.5	<6.8	6.8	6.8
108-10-1	100.16		4-Methyl-2-pentanone		<1.5	1.5	1.5	<6.1	6.1	6.1
10061-02-6	110.97		trans-1,3-Dichloropropene		<1.5	1.5	1.5	<6.8	6.8	6.8
79-00-5	133.4	#	1,1,2-Trichloroethane		<1.5	1.5	1.5	<8.2	8.2	8.2
108-88-3	92.13	#	Toluene		120.6	1.5	1.5	454.4	5.7	5.7
589-38-8	100.16		3-Hexanone		<1.5	1.5	1.5	<6.1	6.1	6.1
591-78-6	100.16		2-Hexanone		<1.5	1.5	1.5	<6.1	6.1	6.1
66-25-1	100.16		Hexanal		<1.5	1.5	1.5	<6.1	6.1	6.1
106-93-4	187.86	#	1,2-Dibromoethane		<1.5	1.5	1.5	<11.5	11.5	11.5
127-18-4	165.85	#	Tetrachloroethene (PCE)		<1.5	1.5	1.5	<10.2	10.2	10.2
108-90-7	112.56	#	Chlorobenzene		<1.5	1.5	1.5	<6.9	6.9	6.9
100-41-4	106.16	#	Ethylbenzene		15	1.5	1.5	65.1	6.5	6.5
	106.17	#	m&p - Xylenes		61.6	1.5	1.5	267.5	6.5	6.5
75-25-2	252.77		Bromoform		<1.5	1.5	1.5	<15.5	15.5	15.5
100-42-5	104.14	#	Styrene		<1.5	1.5	1.5	<6.4	6.4	6.4
79-34-5	167.85	#	1,1,2,2-Tetrachloroethane		<1.5	1.5	1.5	<10.3	10.3	10.3
95-47-6	106.17	#	o-Xylene		16.3	1.5	1.5	70.8	6.5	6.5
108-67-8	120.2	#	1,3,5-Trimethylbenzene		2.7	1.5	1.5	13.3	7.4	7.4
95-63-6	120.19	#	1,2,4-Trimethylbenzene		7	1.5	1.5	34.4	7.4	7.4
541-73-1	147.01	#	1,3-Dichlorobenzene		<1.5	1.5	1.5	<9	9	9
100-44-7	126.58		Benzyl Chloride		<1.5	1.5	1.5	<7.8	7.8	7.8
106-46-7	147.01	#	1,4-Dichlorobenzene		<1.5	1.5	1.5	<9	9	9
526-73-8	120.2		1,2,3-Trimethylbenzene		<1.5	1.5	1.5	<7.4	7.4	7.4
95-50-1	147	#	1,2-Dichlorobenzene		<1.5	1.5	1.5	<9	9	9
120-82-1	181.46	#	1,2,4-Trichlorobenzene		<1.5	1.5	1.5	<11.1	11.1	11.1
91-20-3	128.17		Naphthalene		<0.32	0.32	0.32	<1.7	1.7	1.7
460-00-4			4-Bromofluorobenzene Surrogate Recovery		101%	0%	0%			
	81		Aliphatic >C4-C6		1212	10	10	4015	33	33
	100		Aliphatic >C6-C8		201	10	10	822	41	41
	130		Aliphatic >C8-C10		943	10	10	5014	53	53
	160		Aliphatic >C10-C12		<10	10	10	<65	65	65

Jones Environmental Laboratory

Client Name:	Enitial		
Reference:		***Sample Date:***	12 Feb 2013
Location:	MIDLANDS ROAD INDUSTRIAL ESTATE,SCUNTORPE	***Date of Receipt:***	14 Feb 2013
Contact:	Phil Sanders	***Date Analysed:***	14 Feb 2013
Sample ID:	PHL		
Depth:			
JE Job No:	13/1794		
JE Sample No:	3		
Matrix:	Air		
Method:	TM68 VOCs on gases (GC-MS)		
Initial Vaccum (inches Hg)	-26		
Final Pressure (psi)	-5		
Canister Serial number	CS.645		

Q - Qualifiers

B = ***Indicates analyte found in associated method blank***

++ = ***Indicates value exceeds calibration range***

Key

MDL = ***Method Detection Limit***

RL = ***Reporting Limit***

 # = ***UKAS Accredited***

Cas No	Molecular Weight	Compound	Q	Result	RL	MDL	Result	RL	MDL
				ppbv	ppbv	ppbv	ug/m^3	ug/m^3	ug/m^3
	78.11	Aromatic >C5-EC7 (Benzene)		17	10	10	54	32	32
	92.14	Aromatic >EC7-EC8 (Toluene)		121	10	10	456	38	38
	120	Aromatic >EC8-EC10		93	10	10	456	49	49
	130	Aromatic >EC10-EC12		<10	10	10	<53	53	53

Jones Environmental Laboratory

VOCs-Tentatively Identified Compounds (TICs)

Job number: 13/1794

Method: **VOC**

Sample number: 1

Matrix: **Gas**

Sample identity: PHN

Sample depth:

Sample Type: Gas

Units: ppbv

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
75-28-5	Isobutane	4.885	81	135
115-11-7	1-Propene, 2-methyl-	5.239 - 5.780	84,86,88	354
106-97-8	Butane	5.377	84	163
563-45-1	1-Butene, 3-methyl-	6.348	81	21
78-78-4	Butane, 2-methyl-	6.700	87	114
513-35-9	2-Butene, 2-methyl-	7.121 - 7.638	86,89	64
646-04-8	2-Pentene, (E)-	7.357	93	13
107-83-5	Pentane, 2-methyl-	8.738 - 8.805	81,87	43
96-14-0	Pentane, 3-methyl-	9.205	86	38
107-91-5	Acetamide, 2-cyano-	9.333 - 10.296	85,90,90	24
96-37-7	Cyclopentane, methyl-	10.611	85	24
565-59-3	Pentane, 2,3-dimethyl-	11.940	90	15
589-34-4	Hexane, 3-methyl-	12.132	93	36
2919-23-5	Cyclobutanol	12.480	90	12
594-82-1	Butane, 2,2,3,3-tetramethyl-	12.615	88	35
142-82-5	Heptane	12.948	83	41
108-87-2	Cyclohexane, methyl-	13.901	91	63
592-13-2	Hexane, 2,5-dimethyl-	14.063	91	10
589-43-5	Hexane, 2,4-dimethyl-	14.158 - 18.411	85,91	51
1640-89-7	Cyclopentane, ethyl-	14.255	81	10
2815-58-9	Cyclopentane, 1,2,4-trimethyl-	14.482	82	15
15890-40-1	Cyclopentane, 1,2,3-trimethyl-, (1.alpha.,2.alpha.,3.beta.)-	14.766	82	11
565-75-3	Pentane, 2,3,4-trimethyl-	14.805	92	20
560-21-4	Pentane, 2,3,3-trimethyl-	15.019	88	18
592-27-8	Heptane, 2-methyl-	15.248	93	42
589-53-7	Heptane, 4-methyl-	15.319	81	17
589-81-1	Heptane, 3-methyl-	15.530	91	47
619-99-8	Hexane, 3-ethyl-	15.588	94	10
638-04-0	Cyclohexane, 1,3-dimethyl-, cis-	15.826	91	38
75268-07-4	Acetaldehyde, 2-butenylhydrazone	15.884	82	18

Jones Environmental Laboratory

VOCs-Tentatively Identified Compounds (TICs)

Job number: 13/1794

Sample number: 1

Sample identity: PHN

Sample depth:

Sample Type: Gas

Units: ppbv

Method: **VOC**

Matrix: **Gas**

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
930-89-2	Cyclopentane, 1-ethyl-2-methyl-, cis-	16.138	94	17
3726-46-3	Cyclopentane, 1-ethyl-2-methyl-	16.266	87	15
111-65-9	Octane	16.379	90	35
583-57-3	Cyclohexane, 1,2-dimethyl-	16.529	94	40
07/04/2207	Cyclohexane, 1,4-dimethyl-, trans-	16.746	93	23
2213-23-2	Heptane, 2,4-dimethyl-	17.165	81	23
1072-05-5	Heptane, 2,6-dimethyl-	17.355	94	59
2216-30-0	Heptane, 2,5-dimethyl-	17.595 - 18.736	87,94	225
3073-66-3	Cyclohexane, 1,1,3-trimethyl-	17.840	91	147
7094-27-1	1,1,4-Trimethylcyclohexane	17.932	88	21
16789-46-1	Hexane, 3-ethyl-2-methyl-	18.024	83	13
3074-71-3	Heptane, 2,3-dimethyl-	18.301	84	143
2216-34-4	Octane, 4-methyl-	18.491	87	201
2613-61-8	Heptane, 2,4,6-trimethyl-	18.878	88	20
1678-81-5	Cyclohexane, 1,2,3-trimethyl-, (1.alpha.,2.beta.,3.alpha.)-	19.117	94	34
2234-75-5	Cyclohexane, 1,2,4-trimethyl-	19.234	94	18
3728-57-2	Cyclopentane, 1-methyl-2-propyl-	19.338 - 20.787	82,87	186
19489-10-2	cis-1-Ethyl-3-methyl-cyclohexane	19.442	94	62
6236-88-0	Cyclohexane, 1-ethyl-4-methyl-, trans-	19.535	87	27
932-40-1	trans-1,2-Diethyl cyclopentane	19.584	89	20
16491-15-9	Cyclopentene, 1,5-dimethyl-	19.731	87	14
13990-93-7	Trans-1,4-diethylcyclohexane	19.841	81	33
3728-56-1	1-Ethyl-4-methylcyclohexane	20.105	81	128
17301-24-5	Undecane, 2,7-dimethyl-	20.185	81	52
4926-90-3	Cyclohexane, 1-ethyl-1-methyl-	20.259	87	17
15869-89-3	Octane, 2,5-dimethyl-	20.400	87	36
15869-93-9	Octane, 3,5-dimethyl-	20.455 - 20.879	89,93	63
91531-45-2	1-Cyclobutanone,2-(2-methyl-1-propenyl)	20.529	86	39
2051-30-1	Octane, 2,6-dimethyl-	20.683	95	96
14676-29-0	Heptane, 3-ethyl-2-methyl-	20.971	94	76

Jones Environmental Laboratory

VOCs-Tentatively Identified Compounds (TICs)

Job number: 13/1794

Method: **VOC**

Sample number: 1

Matrix: **Gas**

Sample identity: PHN

Sample depth:

Sample Type: Gas

Units: ppbv

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
1124-27-2	Cyclohexane, 1-methyl-4-(1-methylethylidene)-	21.186	93	49
124-18-5	Decane	21.327	89	22
17301-94-9	Nonane, 4-methyl-	21.474	90	18
62960-76-3	4-Octene, 2,6-dimethyl-, [S-(E)]-	21.738	90	65
4126-78-7	Cycloheptane, methyl-	22.334	86	14

Jones Environmental Laboratory

VOCs-Tentatively Identified Compounds (TICs)

Job number: 13/1794

Method: VOC

Sample number: 2

Matrix: Gas

Sample identity: PHK

Sample depth:

Sample Type: Gas

Units: ppbv

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
107-91-5	Acetamide, 2-cyano-	3.693	89	231
75-28-5	Isobutane	4.897	89	184
115-11-7	1-Propene, 2-methyl-	5.245 - 5.786	84,86,88	179
106-97-8	Butane	5.386	88	197
1630-94-0	Cyclopropane, 1,1-dimethyl-	6.357	81	21
78-78-4	Butane, 2-methyl-	6.703	87	140
930-18-7	Cyclopropane, 1,2-dimethyl-, cis-	7.121	86	33
646-04-8	2-Pentene, (E)-	7.353	93	19
04/06/2402	Cyclopropane, 1,2-dimethyl-, trans-	7.528 - 7.635	85,89	38
79-29-8	Butane, 2,3-dimethyl-	8.734	86	29
107-83-5	Pentane, 2-methyl-	8.805	91	36
96-14-0	Pentane, 3-methyl-	9.205	88	64
504-01-8	1,3-Cyclohexanediol	10.290 - 11.319	86,86	12
96-37-7	Cyclopentane, methyl-	10.607	91	34
2919-23-5	Cyclobutanol	11.936 - 12.495	82,83,87	42
62183-79-3	2,2,4,4-Tetramethyloctane	12.612	82	10
6291-84-5	1,3-Propanediamine, N-methyl-	12.948	96	13
108-87-2	Cyclohexane, methyl-	13.901	87	28
589-43-5	Hexane, 2,4-dimethyl-	14.158 - 20.185	83,86	21
2815-58-9	Cyclopentane, 1,2,4-trimethyl-	14.478	82	13
565-75-3	Pentane, 2,3,4-trimethyl-	14.805	89	18
560-21-4	Pentane, 2,3,3-trimethyl-	15.022	84	11
6876-23-9	Cyclohexane, 1,2-dimethyl-, trans-	15.826 - 16.528	90,93	32
62199-06-8	Heptane, 5-ethyl-2,2,3-trimethyl-	15.881	89	22
590-66-9	Cyclohexane, 1,1-dimethyl-	16.137	81	11
10264-55-8	3-Ethylcyclopentanone	16.263	81	13
111-65-9	Octane	16.376	86	13
06/03/2207	Cyclohexane, 1,3-dimethyl-, trans-	16.745	84	14
1072-05-5	Heptane, 2,6-dimethyl-	17.355	81	13
2216-30-0	Heptane, 2,5-dimethyl-	17.594 - 18.736	84,88	59

Jones Environmental Laboratory

VOCs-Tentatively Identified Compounds (TICs)

Job number: 13/1794

Method: **VOC**

Sample number: 2

Matrix: **Gas**

Sample identity: PHK

Sample depth:

Sample Type: Gas

Units: ppbv

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
3073-66-3	Cyclohexane, 1,1,3-trimethyl-	17.834	87	36
7094-27-1	1,1,4-Trimethylcyclohexane	17.932	87	14
1000215-67-6	trans-2,4-Dimethylthiane, S,S-dioxide	18.159	87	13
28446-58-4	3-Butenamide	18.878	89	11
1678-81-5	Cyclohexane, 1,2,3-trimethyl-, (1.alpha.,2.beta.,3.alpha.)-	19.117	94	15
108-38-3	Benzene, 1,3-dimethyl-	19.326	95	72
19489-10-2	cis-1-Ethyl-3-methyl-cyclohexane	19.442 - 19.534	90,93	20
1000144-07-3	1R,2c,3t,4t-Tetramethyl-cyclohexane	19.841	88	13
4861-58-9	Thiophene, 2-pentyl-	20.259	87	13
15869-89-3	Octane, 2,5-dimethyl-	20.400	85	13
1000194-65-2	3-Methyl-4-propenyl-oxetan-2-one	20.529	81	23
2051-30-1	Octane, 2,6-dimethyl-	20.682	93	41
22461-89-8	Cyclohexanone, 3-ethyl-	20.787	84	19
1121-92-2	Azocine, octahydro-	20.879	81	25
14676-29-0	Heptane, 3-ethyl-2-methyl-	20.965	83	42
554-59-6	Bicyclo[4.1.0]heptane, 3,7,7-trimethyl-	21.186	88	26
620-14-4	Benzene, 1-ethyl-3-methyl-	21.407	90	22
611-14-3	Benzene, 1-ethyl-2-methyl-	21.480	84	17
62960-76-3	4-Octene, 2,6-dimethyl-, [S-(E)]-	21.732	81	43

Jones Environmental Laboratory

VOCs-Tentatively Identified Compounds (TICs)

Job number: 13/1794

Method: VOC

Sample number: 3

Matrix: Gas

Sample identity: PHL

Sample depth:

Sample Type: Gas

Units: ppbv

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
75-28-5	Isobutane	4.879	84	518
115-11-7	1-Propene, 2-methyl-	5.230 - 5.768	86,89	139
106-97-8	Butane	5.367	88	341
930-18-7	Cyclopropane, 1,2-dimethyl-, cis-	6.336	86	18
78-78-4	Butane, 2-methyl-	6.687	91	227
513-35-9	2-Butene, 2-methyl-	7.112	86	25
646-04-8	2-Pentene, (E)-	7.344 - 7.625	81,93	27
04/06/2402	Cyclopropane, 1,2-dimethyl-, trans-	7.521	81	<10
07/01/5145	2(3H)-Furanone, dihydro-3,5-dimethyl-	8.759	84	37
107-83-5	Pentane, 2-methyl-	8.795	92	54
96-14-0	Pentane, 3-methyl-	9.199	92	68
504-01-8	1,3-Cyclohexanediol	9.321 - 14.243	90,93	32
96-37-7	Cyclopentane, methyl-	10.601	90	46
565-59-3	Pentane, 2,3-dimethyl-	11.930	81	27
2919-23-5	Cyclobutanol	12.495	88	15
2452-99-5	Cyclopentane, 1,2-dimethyl-	12.667	81	18
6291-84-5	1,3-Propanediamine, N-methyl-	12.938	84	12
108-87-2	Cyclohexane, methyl-	13.898	87	29
2815-58-9	Cyclopentane, 1,2,4-trimethyl-	14.478	93	22
922-62-3	2-Pentene, 3-methyl-, (Z)-	15.334	88	14
06/03/2207	Cyclohexane, 1,3-dimethyl-, trans-	15.875 - 16.742	83,94	24
590-66-9	Cyclohexane, 1,1-dimethyl-	16.137 - 18.024	81,81	39
3726-46-3	Cyclopentane, 1-ethyl-2-methyl-	16.266	81	17
111-65-9	Octane	16.376	83	16
6876-23-9	Cyclohexane, 1,2-dimethyl-, trans-	16.528	94	63
1072-05-5	Heptane, 2,6-dimethyl-	17.355	93	39
2216-30-0	Heptane, 2,5-dimethyl-	17.594	85	46
3073-66-3	Cyclohexane, 1,1,3-trimethyl-	17.834	81	27
7094-27-1	1,1,4-Trimethylcyclohexane	17.932	88	35
2532-67-4	1.alpha.,2.beta.,3.alpha.,4.beta.-Tetramethylcyclopentane	18.153	81	24

Jones Environmental Laboratory

VOCs-Tentatively Identified Compounds (TICs)

Job number: 13/1794

Method: **VOC**

Sample number: 3

Matrix: **Gas**

Sample identity: PHL

Sample depth:

Sample Type: Gas

Units: ppbv

Note: Only samples with TICs (if requested) are reported. If TICs were requested but no compounds found they are not reported.

CAS No.	Tentative Compound Identification	Retention Time (minutes)	% Match	Concentration
7667-60-9	Cyclohexane, 1,2,4-trimethyl-, (1.alpha.,2.beta.,4.beta.)-	18.325	94	106
2234-75-5	Cyclohexane, 1,2,4-trimethyl-	18.411 - 19.234	82,92	36
25144-05-2	Cyclopentanol, 2-methyl-, cis-	18.736	90	35
50876-31-8	Cyclohexane, 1,1,3,5-tetramethyl-, trans-	18.877 - 19.375	81,85	189
61141-80-8	Cyclohexane, 1,2-diethyl-3-methyl-	19.025	87	11
1678-81-5	Cyclohexane, 1,2,3-trimethyl-, (1.alpha.,2.beta.,3.alpha.)-	19.117	96	52
21083-08-9	2-Butenal, 2-methyl-, dimethylhydrazone	19.590	85	29
591-47-9	Cyclohexene, 4-methyl-	19.731	83	19
13990-93-7	Trans-1,4-diethylcyclohexane	19.841	81	40
62108-23-0	Decane, 2,5,6-trimethyl-	20.185	90	24
4926-90-3	Cyclohexane, 1-ethyl-1-methyl-	20.259	87	20
10522-26-6	2-Methyl-1-undecanol	20.400	87	35
2182-55-0	Vinylcyclohexyl ether	20.523	89	77
2051-30-1	Octane, 2,6-dimethyl-	20.682	93	98
37769-62-3	Isooctane, (ethenyloxy)-	20.879	83	68
14676-29-0	Heptane, 3-ethyl-2-methyl-	20.971	87	112
55282-34-3	Cyclohexane, 1,3,5-trimethyl-2-octadecyl-	21.180	88	72
611-14-3	Benzene, 1-ethyl-2-methyl-	21.401	81	30
20000-80-0	1H-Pyrazole-1-ethanol, 3,5-dimethyl-	21.523	81	32
6783-92-2	Cyclohexane, 1,1,2,3-tetramethyl-	21.732	81	122
283-24-9	3-Azabicyclo[3.2.2]nonane	22.297	83	21
74646-37-0	1-Tridecyn-4-ol	22.506	88	39
928-01-8	2-Butenediamide, (Z)-	23.230	83	16

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 13/1794

SOILS

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

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

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

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

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

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

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

WATERS

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

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

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

DEVIATING SAMPLES

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

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

NOTE

Data is only accredited when all the requirements of our Quality System have been met. In certain circumstances where the requirements have not been met, the laboratory may issue the data in an interim report but will remove the accreditation, in this instance results should be considered indicative only. Where possible samples will be re-extracted and a final report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance.
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
CO	Suspected carry over
NFD	No Fibres Detected

JE Job No 13/1794

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Air Dried (AD)	Solid Results expressed on Dry/Wet basis
TM45	C1-C7 Gas Analysis by GC-FID	PM0	No Preparation				
TM68	VOCs on gases (GC-MS)	PM0	No Preparation				
TM68	VOCs on gases (GC-MS)	PM0	No Preparation	Yes			
TM69	Bulk gas by FID-TCD	PM0	No Preparation				
NONE	No Method Code	NONE	No Method Code				

Appendix H

Groundwater Sampling Data

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Groundwater Monitoring Low

Flow Sampling Record Sheet

CLIENT	Geocore	SITE	Midlands Road Industrial Estate, Scunthorpe
DATE	05/02/2013	TIME	On: 08:00 Off: 15:00
WEATHER	Clear with occassional snow and sleet showers	MONITORING PERSONNEL	P.Sanders

Monitoring Location	Time	DTL m	DTB m	NAPL thickness	EC uS/cm	Temp C	pH	DO %	Redox mV	Purge Volume litres	Description/Comments
PH O	08:15	1.06	3.60	-	-	-	-	-	-	-	Sample to be taken at 3.30m Depth.
	08:30	1.15	-	-	3724	7.55	6.98	23.7	-80.0	0.25	Very Turbid, Light Grey colour, Organic odour
	08:33	1.18	-	-	3592	7.59	7.01	18.6	-91.7	0.50	
	08:36	1.21	-	-	3481	7.62	7.02	18.0	-98.8	0.75	
	08:39	1.23	-	-	3427	7.61	7.02	15.9	-103.2	0.90	Reduced flow to minimum setting due to draw down
	08:42	1.25	-	-	3400	7.28	7.02	14.4	-105.1	1.10	
	08:45	1.27	-	-	3333	7.04	7.01	13.8	-106.3	1.25	Light grey colour, Clear of sediment, Organic odour
	08:48	1.29	-	-	3318	6.99	7.01	13.6	-105.4	1.45	
	08:51	1.31	-	-	3296	6.95	7.02	13.4	-103.9	1.60	
	08:54	1.33	-	-	3294	6.91	7.02	13.3	-103.0	1.70	Sample taken at 08:55, No Colour, Clear of sediment, Organic odour
PH N	09:40	2.35	2.52	-	-	-	-	-	-	-	Sample to be taken at 2.50m Depth
	10:00	2.37	-	-	1285	4.58	6.42	19.0	-21.4	0.20	Due to draw down pump set to minimum purge setting to stabilise water level
	10:03	2.37	-	-	1279	4.57	6.41	15.9	-23.0	0.30	Grey colour, no odour, Turbid
	10:06	2.37	-	-	1274	4.55	6.41	13.8	-26.2	0.40	
	10:09	2.38	-	-	1261	4.89	6.40	11.5	-28.9	0.50	
	10:12	2.38	-	-	1265	4.66	6.40	11.2	-31.6	0.60	Grey colour, no odour, Turbid
	10:15	2.38	-	-	1260	4.76	6.39	10.8	-31.9	0.70	
	10:19	2.38	-	-	1255	4.88	6.39	10.2	-31.8	0.80	
	10:22	2.38	-	-	1262	4.70	6.38	10.1	-31.6	0.90	Sample taken at 10:25, Light grey colour, low turbidity, no odour
PH F	11:10	2.60	2.84	-	-	-	-	-	-	-	Sample to be taken at 2.75m Depth
	11:32	2.60	-	-	2098	8.27	6.73	40.8	15.9	0.30	Draw down if purging increased above this setting
	11:35	2.60	-	-	2082	9.16	6.67	25.2	-4.9	0.55	Light brown colour, Low turbidity, No odour
	11:38	2.60	-	-	2077	9.90	6.62	19.4	-14.0	0.75	
	11:41	2.60	-	-	2071	10.26	6.60	15.4	-21.1	1.00	
	11:44	2.60	-	-	2073	10.37	6.59	13.6	-26.9	1.25	Sample clear
	11:47	2.60	-	-	2072	10.44	6.58	12.8	-29.8	1.50	
	11:50	2.60	-	-	2073	10.40	6.58	12.4	-32.2	1.75	
	11:53	2.60	-	-	2073	10.38	6.57	11.6	-33.9	2.00	
	11:56	2.60	-	-	2073	10.36	6.57	11.2	-35.0	2.25	
	11:59	2.60	-	-	2072	10.38	6.57	11.1	-35.8	2.50	Sample taken at 12:00, Sample clear
PH K	12:40	2.33	3.03	-	-	-	-	-	-	-	Sample to be taken at 2.95m Depth
	12:55	2.34	-	-	2444	8.34	7.05	14.2	-66.9	0.50	No draw down issues
	12:58	2.34	-	-	2455	8.53	7.05	11.3	-100.7	1.00	Black colour, Turbid, Hydrocarbon odour
	13:01	2.34	-	-	2476	8.59	7.04	10.5	-113.9	1.50	
	13:04	2.34	-	-	2484	8.68	7.03	8.5	-126.5	2.00	
	13:07	2.34	-	-	2485	8.67	7.04	8.2	-126.6	2.50	Slight black colour, Low turbidity, Hydrocarbon odour
	13:10	2.34	-	-	2480	8.72	7.04	7.3	-127.3	3.00	
	13:13	2.34	-	-	2476	8.77	7.03	6.6	-127.6	3.50	
	13:16	2.34	-	-	2474	8.78	7.03	6.2	-128.8	4.00	Slight black colour, Low turbidity, Low Hydrocarbon odour

Appendix I

Permanent Gas & Vapour Monitoring Data (inc. Groundwater Monitoring Data and Calibration Certificates)

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Site	Midland Road Industrial Estate, Scunthorpe
Date	8 January 2013
Visit Number	Visit 1
Attendees	EPG - Sarah Mortimer Geocore – Ed Lodge NLC – Liz Hamer Enitial – Ian Mayoh
Weather	Cloudy, largely dry with slight drizzle, sunny, slight breeze
Atm Pre	1020mb, falling to 1019mb
Equipment Utilised	EPG Gas Analyser – GFM430, Serial Number 10207, Calibrated November 2012 Enitial Gas Analyser – GEM2000+, Serial Number 08813, Calibrated October 2012 Enitial PID – Mini RAE Lite-PGM7300 Enitial Interface Meter – Solinst Interface Dipmeter Model 122 P1/M3/60m

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen			
PHA	0.0	0.0	0	<0.1	Rising	19.8	0.0	1.51	Base at 1.79mbTOC No LNAPL No DNAPL PID Reading 4.5ppm
			15	<0.1	0.8	19.3	0.0		
			30	<0.1	0.8	19.2	0.0		
			60	<0.1	0.8	19.1	0.0		
			90	<0.1	0.8	19.1	0.0		
			120	<0.1	0.8	19.1	0.0		
			180	<0.1	0.8	19.1	0.0		
			240	STEADY					

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen			
PHB	0.3	0.0	0	<0.1	Rising	20.2	0.0	Dry	Base at 1.13mbTOC Flow peak 0.3l/hr (0.1l/hr steady) PID Reading 1.5ppm
			15	<0.1	0.9	19.6	0.0		
			30	<0.1	0.9	19.6	0.0		
			60	<0.1	0.9	19.5	0.0		
			90	<0.1	1.0	19.5	0.0		
			120	<0.1	1.0	19.5	0.0		
			180	<0.1	1.0	19.4	0.0		
			240	STEADY					

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen			
PHC	-0.1	-1	0	<0.1	Rising	Falling	0.0	Dry	Base at 1.06mbTOC Flow fluctuating between -0.1l/hr and -0.3l/hr) PID Reading 2.8ppm Monitoring confirmed with Enitial' GA2000.
			15	<0.1	1.8	16.6	0.0		
			30	<0.1	1.8	16.4	0.0		
			60	<0.1	1.8	16.3	0.0		
			90	<0.1	1.9	16.3	0.0		
			120	<0.1	1.9	16.2	0.0		
			180	<0.1	1.9	16.2	0.0		
			240	STEADY					

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen			
PHD	0.1	0.0	0	<0.1	Rising	20.2	0.0	Dry	Base at 0.88mbTOC PID Reading 1.8ppm Monitoring confirmed with Enitial' GA2000.
			15	<0.1	0.5	19.9	0.0		
			30	<0.1	0.5	19.9	0.0		
			60	<0.1	0.5	19.8	0.0		
			90	<0.1	0.5	19.8	0.0		
			120	<0.1	0.5	19.8	0.0		
			180	<0.1	0.5	19.8	0.0		
			240	STEADY					

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen			
PHE	0.1	0	0	<0.1	Rising	Falling	0.0	Dry	Base at 1.44mbTOC Flow peak 0.1l/hr (fluctuating between -0.1l/hr and +0.1l/hr) PID Reading 2.4ppm
			15	<0.1	0.8	18.2	0.0		
			30	No reading obtained					
			60	<0.1	0.8	17.9	0.0		
			90	<0.1	0.8	17.9	0.0		
			120	<0.1	0.8	17.9	0.0		
			180	<0.1	0.8	17.9	0.0		
			240	STEADY					

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen			
PHF	0.1	1.0	0	<0.1	Rising	15.7	0.0	2.48	Base at 2.84mbTOC No LNAPL No DNAPL PID Reading 1.7ppm
			15	<0.1	7.0	14.6	0.0		
			30	<0.1	7.1	14.5	0.0		
			60	<0.1	7.1	14.4	0.0		
			90	<0.1	7.1	14.4	0.0		
			120	<0.1	7.1	14.4	0.0		
			180	<0.1	7.2	14.4	0.0		
			240	STEADY					

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen			
PHG	-0.2	-1.0	0	<0.1	1.2	19.0	0.0	Dry	Base at 2.52mbTOC PID Reading 2.2ppm Monitoring confirmed with Enitial' GA2000.
			15	<0.1	1.4	18.2	0.0		
			30	<0.1	1.4	18.1	0.0		
			60	<0.1	1.4	18.0	0.0		
			90	<0.1	1.4	18.0	0.0		
			120	<0.1	1.4	18.0	0.0		
			180	<0.1	1.4	18.0	0.0		
			240	STEADY					

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen			
PHH	-0.4	-1.0	0	<0.1	Rising	Falling	0.0	Dry	Base at 2.63mbTOC Flow fluctuating between 0.0l/hr and -0.4l/hr PID Reading 1.7ppm
			15	<0.1	10.4	8.1	0.0		
			30	<0.1	10.8	7.4	0.0		
			60	<0.1	11.0	7.1	0.0		
			90	<0.1	11.1	7.1	0.0		
			120	<0.1	11.1	7.1	0.0		
			180	<0.1	11.2	7.0	0.0		
			240	STEADY					

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen			
PHI	0.0	0.0	0	Rising				2.58	Base at 2.86mbTOC No LNAPL No DNAPL PID Reading 3.5ppm
			15	2.5	5.4	0.6	59.1		
			30	2.7	5.5	<0.1	63.3		
			60	2.8	5.5	<0.1	64.6		
			90	2.9	5.5	<0.1	66.5		
			120	2.9	5.6	<0.1	67.4		
			180	2.9	5.6	<0.1	68.1		
			240	STEADY					

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen			
PHJ	-0.3	0.0	0	Rising				Dry	Base at 2.46mbTOC Flow fluctuating between 0.0l/hr and -0.3l/hr PID Reading 6.1ppm Monitoring confirmed with Enitial' GA2000.
			15	0.5	11.7	2.6	12.2		
			30	0.5	11.9	1.1	12.4		
			60	0.5	12.1	0.8	13.4		
			90	0.6/7	12.4	0.4	16.2		
			120	0.8	12.6	0.1	19.3		
			180	0.9	12.8	0.0	23.2		
			240	STEADY					

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen			
PHK	0.1	0.02	0	RISING				2.26	Base at 3.12mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Odour evident when bung was removed to dip, CO and H2S readings were 0ppm
			15	21.9	8.4	14.6	>>>		
			30	22.1	8.8	2.1	>>>		
			60	22.0	8.9	0.4	>>>		
			90	22.1	8.9	0.1	>>>		
			120	22.1	8.9	0.0	>>>		
			180	22.1	8.9	0.0	>>>		
			240	STEADY					

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen			
PHL	0.2	0.09	0	RISING				Dry	Base at 3.08mbTOC PID Reading 0.0ppm
			15	20.7	3.6	10.4	>>>		
			30	21.0	3.6	2.4	>>>		
			60	20.9	3.6	0.3	>>>		
			90	20.9	3.6	0.2	>>>		
			120	21.0	3.6	0.0	>>>		
			180	21.0	3.6	0.0	>>>		
			240	STEADY					

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen			
PHM	0.0	0.01	0	<0.1	Rising	20.2	0.0	Dry	Base at 3.23mbTOC PID Reading 1.2ppm
			15	<0.1	1.0	19.7	0.0		
			30	<0.1	1.0	20.0	0.0		
			60	<0.1	1.0	20.0	0.0		
			90	<0.1	1.0	19.8	0.0		
			120	<0.1	1.0	19.8	0.0		
			180	<0.1	1.0	19.8	0.0		
			240	STEADY					

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen			
PHN	0.4	1.0	0	Rising				2.33	Base at 2.62mbTOC No LNAPL No DNAPL Flow peak 0.4l/hr (fluctuating between 0.1l/hr and 0.3l/hr) PID Reading 1.2ppm Monitoring confirmed with Enitial' GA2000.
			15	71.8	7.8	1.0	>>>		
			30	71..7	7.9	<0.1	>>>		
			60	75.8	8.0	<0.1	>>>		
			90	76.4	8.0	<0.1	>>>		
			120	75.8	8.0	<0.1	>>>		
			180	75.9	8.0	<0.1	>>>		
			240	STEADY					

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen			
PHO	45 (Peak)**	120 (Peak)**	0	Rising				1.23	Base at 3.62mbTOC No LNAPL No DNAPL **Flow reduced to zero within approximately 30secs. Gas tap closed for 30secs and flow re-measured, peak 20l/hr, steady at 3/4l/hr within 20secs. Gas tap closed for 30secs and flow re-measured, peak 1.2l/hr (3Pa). Flow rates most likely reflect high water table relative to ground level. No PID Reading.
			15	17.1	3.8	14.3	>>>		
			30	17.5	3.9	14.1	>>>		
			60-180	Loose pipework connection – data void					
			240	19.9	4.1	14.0	>>>		
			360	20.0	4.1	13.3	>>>		

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen			
BH101	-0.1	-1	0	<0.1	0.1	20.0	0.0	2.75	Base at 6.86mbTOC No LNAPL No DNAPL PID Reading 4.4ppm
			15	<0.1	1.2	16.9	0.0		
			30	<0.1	1.1	17.1	0.0		
			60	<0.1	1.0	17.0	0.0		
			90	<0.1	1.0	16.9	0.0		
			120	<0.1	1.1	16.9	0.0		
			180	<0.1	1.1	16.8	0.0		
			240	STEADY					

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen			
BH102	0.0	0.0	0	No reading obtained				4.00	Base at 6.70mbTOC No LNAPL No DNAPL PID Reading 1.5ppm
			15	<0.1	0.8	16.9	15.2		
			30	<0.1	0.7	17.3	12.9		
			60	0.1	0.6	18.1	3.6		
			90	0.1	0.5	18.4	2.4		
			120	<0.1	0.5	18.7	1.1		
			180	<0.1	0.4	19.0	0.0		
			240	STEADY					

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen			
BH103	-7.8	-35	0	<0.1	0.3	19.1	0.0	0.14	Base at 5.29mbTOC No LNAPL No DNAPL Flow peak -7.8l/hr, steady at 0.4l/hr PID Reading 1.1ppm NB: High water table relative to ground level, due to raised headwork groundwater effectively artesian.
			15	<0.1	0.1	19.7	0.0		
			30	<0.1	0.1	19.9	0.0		
			60	<0.1	0.1	20.0	0.0		
			90	<0.1	0.1	20.0	0.0		
			120	<0.1	<0.1	20.1	0.0		
			180	<0.1	<0.1	20.1	0.0		
			240	STEADY					

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen			
BH104	0.5	0.0	0	<0.1	Rising	Falling	0.0	1.63	Base at 7.44mbTOC No LNAPL No DNAPL Flow peak 0.5l/hr (fluctuating between 0.1l/hr and 0.3l/hr) PID Reading 2.2ppm Monitoring confirmed with Enitial' GA2000.
			15	<0.1	2.7	19.4	7.5		
			30	<0.1	2.3	19.5	0.0		
			60	0.1	2.1	19.8	0.0		
			90	<0.1	2.0	19.9	0.0		
			120	<0.1	1.7	19.8	0.0		
			180	<0.1	1.4	20.0	0.0		
			240	STEADY					

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen			
BH105	N/A	N/A	0	No gas monitoring possible – well damaged and gas tap full of mud. Position repaired and gas tap cleaned. New gas tap to be added next visit.				3.57	Base at 8.06mbTOC No LNAPL No DNAPL NB: Raised cover now pushed into ground, resulting in flush cover. Reflect on topographical Z-axis data.
			15						
			30						
			60						
			90						
			120						
			180						
			240						

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen			
BH106 (Shallow)	-0.2	-0.90	0	<0.1	Rising	20.6	0.0	Dry	Base at 2.51mbTOC Flow peak -0.2l/hr, steady -0.1l/hr, Rel Pressure peaked at -0.90mbar fluctuating to -0.36. PID Reading 6.2ppm
			15	<0.1	0.6	16.9	0.0		
			30	<0.1	0.7	16.8	0.0		
			60	<0.1	0.7	16.9	0.0		
			90	<0.1	0.7	16.7	0.0		
			120	<0.1	0.7	16.6	0.0		
			180	<0.1	0.7	16.7	0.0		
			240	STEADY					

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen			
BH106 (Deep)	-0.2	-1.55	0	<0.1	Rising	20.5	0.0	2.80	Base at 6.38mbTOC No LNAPL No DNAPL Flow peak -0.2l/hr Steady at -0.1l/hr, Rel Pressure stable at -1.54 PID Reading 5.9ppm
			15	<0.1	0.6	17.6	0.0		
			30	<0.1	0.6	17.4	0.0		
			60	<0.1	0.6	17.1	0.0		
			90	<0.1	0.6	17.0	0.0		
			120	<0.1	0.6	17.0	0.0		
			180	<0.1	0.6	17.1	0.0		
			240	STEADY					

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen			
BH1 (Historic)	0.0	0.03	0	<0.1	Rising	20.0	0.0		No dip, pooled liquid above BH bung inside ground level casing. PID reading 2.2ppm
			15	<0.1	4.8	15.4	0.0		
			30	<0.1	5.4	13.2	0.0		
			60	<0.1	5.4	12.8	0.0		
			90	<0.1	5.4	12.7	0.0		
			120	<0.1	5.4	12.7	0.0		
			180	<0.1	5.4	12.7	0.0		
			240	STEADY					

Site	Midland Road Industrial Estate, Scunthorpe
Date	14 January 2013
Visit Number	Visit 2
Attendees	Enitial – Ian Mayoh
Weather	Overcast, heavy snowfall, ground had thick snow covering, slight breeze
Atm Pre	1011mb, falling to 1004mb
Equipment Utilised	Enitial Gas Analyser – GEM2000+, Serial Number 08813, Calibrated October 2012 Enitial PID – Mini RAE Lite-PGM7300 Enitial Interface Meter – Solinst Interface Dipmeter Model 122 P1/M3/60m

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHA	0.0	0.0	0	<0.1	Rising	20.2	0.0	0	0	1.56	Base at 1.81mbTOC No LNAPL No DNAPL PID Reading 0.2ppm Raised Cover is 33cm above ground level (AGL)
			15	<0.1	1.1	19.9	0.0	0	0		
			30	<0.1	1.1	19.8	0.0	0	0		
			60	<0.1	1.1	19.6	0.0	0	0		
			90	<0.1	1.1	19.6	0.0	0	0		
			120	<0.1	1.1	19.5	0.0	0	0		
			180	<0.1	1.1	19.5	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHB	0.0	-0.02	0	<0.1	Rising	20.6	0.0	0	0	Dry	Base at 1.11mbTOC PID Reading 0.5ppm Flush Cover at Ground Level
			15	<0.1	1.3	20.6	0.0	0	0		
			30	<0.1	1.3	20.2	0.0	0	0		
			60	<0.1	1.3	19.8	0.0	0	0		
			90	<0.1	1.3	19.8	0.0	0	0		
			120	<0.1	1.3	19.9	0.0	0	0		
			180	<0.1	1.3	19.8	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHC	0.0	0.00	0	<0.1	Rising	20.4	0.0	0	0	Dry	Base at 1.06mbTOC PID Reading 1.0ppm Flush Cover at Ground Level
			15	<0.1	2.2	19.5	0.0	0	0		
			30	<0.1	2.2	17.5	0.0	0	0		
			60	<0.1	2.2	17.1	0.0	0	0		
			90	<0.1	2.2	16.8	0.0	0	0		
			120	<0.1	2.2	16.9	0.0	0	0		
			180	<0.1	2.2	16.9	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHD	0.0	0.00	0	<0.1	Rising	20.4	0.0	0	0	Dry	Base at 0.88mbTOC PID Reading 0.8ppm Flush Cover at Ground Level
			15	<0.1	0.4	20.5	0.0	0	0		
			30	<0.1	0.6	20.3	0.0	0	0		
			60	<0.1	0.6	20.3	0.0	0	0		
			90	<0.1	0.6	20.3	0.0	0	0		
			120	<0.1	0.6	20.4	0.0	0	0		
			180	<0.1	0.6	20.4	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHE	0.0	0.00	0	<0.1	Rising	20.8	0.0	0	0	Dry	Base at 1.46mbTOC PID Reading 0.2ppm Raised Cover is 47cm (AGL)
			15	<0.1	1.1	20.0	0.0	0	0		
			30	<0.1	1.1	19.2	0.0	0	0		
			60	<0.1	1.1	18.9	0.0	0	0		
			90	<0.1	1.1	18.6	0.0	0	0		
			120	<0.1	1.1	18.6	0.0	0	0		
			180	<0.1	1.1	18.6	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHF	0.0	0.01	0	<0.1	Rising	20.4	0.0	0	0	2.55	Base at 2.85mbTOC No LNAPL No DNAPL PID Reading 0.7ppm Flush Cover at Ground Level
			15	<0.1	6.6	19.6	0.0	0	0		
			30	<0.1	6.7	16.2	0.0	0	0		
			60	<0.1	6.7	15.5	0.0	0	0		
			90	<0.1	6.7	14.4	0.0	0	0		
			120	<0.1	6.7	14.4	0.0	0	0		
			180	<0.1	6.7	14.4	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHG	0.0	0.03	0	<0.1	Rising	20.2	0.0	0	0	Dry	Base at 2.52mbTOC PID Reading 0.4ppm Flush Cover at Ground Level
			15	<0.1	1.6	19.9	0.0	0	0		
			30	<0.1	1.7	19.0	0.0	0	0		
			60	<0.1	1.7	18.7	0.0	0	0		
			90	<0.1	1.7	18.6	0.0	0	0		
			120	<0.1	1.7	18.5	0.0	0	0		
			180	<0.1	1.7	18.5	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHH	0.0	-0.02	0	<0.1	Rising	20.4	0.0	0	0	Dry	Base at 2.63mbTOC PID Reading 0.6ppm Flush Cover at Ground Level
			15	<0.1	8.2	20.0	0.0	0	0		
			30	<0.1	9.6	12.6	0.0	0	0		
			60	<0.1	9.6	6.0	0.0	0	0		
			90	<0.1	9.6	5.5	0.0	0	0		
			120	<0.1	9.6	5.5	0.0	0	0		
			180	<0.1	9.6	5.5	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHI	0.0	0.01	0	Rising						2.60	Base at 2.86mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	2.9	5.1	12.1	57	0	0		
			30	2.9	5.1	5.4	57	0	0		
			60	3.0	5.1	0.8	60	0	0		
			90	3.0	5.1	0.3	60	0	0		
			120	3.0	5.1	0.0	60	0	0		
			180	3.0	5.1	0.0	60	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHJ			0	No Access to monitor PHJ in Easimix yard, Locked up at 15:00							Flush Cover at Ground Level
			15								
			30								
			60								
			90								
			120								
			180								
			240								

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHK	0.1	0.03	0	Rising						2.29	Base at 3.14mbTOC, No LNAPL, No DNAPL, PID Reading 0.0ppm, Flush Cover at Ground Level, Odour Emitting When Bung was Removed
			15	22.3	7.8	13.3	>>>	0	0		
			30	22.1	7.8	1.2	>>>	0	0		
			60	22.2	7.8	0.3	>>>	0	0		
			90	22.4	7.8	0.2	>>>	0	0		
			120	22.4	7.8	0.1	>>>	0	0		
			180	22.4	7.8	0.1	>>>	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHL	0.0	0.06 Peak	0	Rising						Dry	Base at 3.06mbTOC, PID Reading 0.0ppm, Flush Cover at Ground Level, Diff Pressure steady at 0.04mbar
			15	20.0	3.6	13.2	>>>	0	0		
			30	24.7	3.6	6.6	>>>	0	0		
			60	24.4	3.6	0.8	>>>	0	0		
			90	24.3	3.6	0.4	>>>	0	0		
			120	24.3	3.6	0.1	>>>	0	0		
			180	24.3	3.6	0.1	>>>	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHM	0.0	0.00	0	<0.1	Rising	20.0	0.0	0	0	Dry	Base at 3.23mbTOC PID Reading 0.3ppm Flush Cover at Ground Level
			15	<0.1	1.1	19.9	0.0	0	0		
			30	<0.1	1.2	19.6	0.0	0	0		
			60	<0.1	1.2	19.6	0.0	0	0		
			90	<0.1	1.2	19.6	0.0	0	0		
			120	<0.1	1.2	19.6	0.0	0	0		
			180	<0.1	1.2	19.6	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHN	0.8 Peak 0.5 Steady	0.34 Peak 0.31 Steady	0	Rising						2.36	Base at 2.61mbTOC No LNAPL No DNAPL Flow peak 0.8l/hr, steady at 0.5l/hr, PID Reading 0.0ppm Raised Cover is 50cm (AGL), Odour emitting when bung was removed
			15	79.2	6.8	19.3	>>>	0	0		
			30	86.8	7.0	5.6	>>>	0	0		
			60	87.4	7.1	0.9	>>>	0	0		
			90	88.2	7.1	0.4	>>>	0	0		
			120	87.6	7.1	0.2	>>>	0	0		
			180	87.4	7.1	0.0	>>>	0	0		
			240	87.5	7.1	0.0	>>>	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHO	3.1 Initial Peak 2.4 2nd Peak	2.74 Peak 0.29 Steady	0	Rising						1.15	Base at 3.64mbTOC No LNAPL No DNAPL Initial peak flow of 3.1l/hr reduced to 0 in 30secs, closed and retested at 2.4l/hr, steady at zero after 30secs again, Flow rates most likely reflect high water table relative to ground level. PID Reading 0.0ppm Raised Cover is 50cm (AGL)
			15	33.5	5.7	18.6	>>>	0	0		
			30	33.8	5.8	11.9	>>>	0	0		
			60	34.4	5.8	11.1	>>>	0	0		
			90	34.3	5.8	10.6	>>>	0	0		
			120	35.2	5.8	10.0	>>>	0	0		
			180	35.4	5.9	9.9	>>>	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH101	0.0	0.02	0	<0.1	Rising	20.0	0.0	0	0	2.80	Base at 6.86mbTOC No LNAPL No DNAPL PID Reading 0.9ppm Raised Cover is 46cm (AGL)
			15	<0.1	0.6	20.4	0.0	0	0		
			30	<0.1	0.8	20.3	0.0	0	0		
			60	<0.1	0.7	20.3	0.0	0	0		
			90	<0.1	0.5	20.4	0.0	0	0		
			120	<0.1	0.5	20.5	0.0	0	0		
			180	<0.1	0.5	20.5	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH102	0.0	0.02	0	Rising						4.02	Base at 6.69mbTOC No LNAPL No DNAPL PID Reading 0.4ppm Flush Cover at Ground Level Extended monitoring period-CH4 rising
			15	0.9	1.2	17.4	18	0	0		
			30	1.0	1.2	16.4	19	5	0		
			60	0.9	1.2	15.8	18	11	0		
			90	1.1	1.2	15.8	21	8	0		
			120	1.2	1.2	15.5	24	7	0		
			180	1.9	1.1	12.9	38	0	0		
			240	2.4	1.1	11.5	48	0	0		
			300	2.9	1.0	9.7	59	0	0		
			360	3.7	1.0	7.6	73	0	0		
			420	3.9	1.0	6.9	78	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH103	-2.7 Peak	-4.75	0	<0.1	Rising	20.0	0.0	0	0	0.15	Base at 5.18mbTOC No LNAPL No DNAPL 6cm of silt at bottom PID Reading 0.0ppm Raised Cover is 23cm (AGL) Flow peak -2.7l/hr, steady at -0.4l/hr NB: High water table relative to ground level, due to raised headwork groundwater effectively artesian.
			15	<0.1	0.8	19.3	0.0	0	0		
			30	<0.1	0.6	17.0	0.0	0	0		
			60	<0.1	0.2	19.9	0.0	0	0		
			90	<0.1	0.1	20.4	0.0	0	0		
			120	<0.1	0.1	20.8	0.0	0	0		
			180	<0.1	0.1	20.8	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH104	0.0	0.04	0	<0.1	Rising	20.4	0.0	0	0	1.65	Base at 7.44mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 37cm (AGL)
			15	<0.1	1.4	20.3	0.0	0	0		
			30	<0.1	1.0	20.4	0.0	0	0		
			60	<0.1	0.7	20.6	0.0	0	0		
			90	<0.1	0.6	20.7	0.0	0	0		
			120	<0.1	0.5	20.8	0.0	0	0		
			180	<0.1	0.5	20.6	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH105	0.0	0.00	0	<0.1	Rising	20.6	0.0	0	0	3.62	Base at 8.05mbTOC No LNAPL No DNAPL PID Reading 0.6ppm Flush Cover at Ground Level
			15	<0.1	4.4	17.9	0.0	0	0		
			30	<0.1	5.4	14.4	0.0	0	0		
			60	<0.1	5.4	8.3	0.0	0	0		
			90	<0.1	5.4	6.9	0.0	0	0		
			120	<0.1	5.4	6.8	0.0	0	0		
			180	<0.1	5.4	6.8	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH106 (Shallow)	0.4 Peak 0.0 Steady	0.45 Peak 0.0 Steady	0	<0.1	Rising	20.8	0.0	0	0	Dry	Base at 2.51mbTOC Flow and pressure had initial peaks which settled to zero after around 30secs PID Reading 0.9ppm Flush Cover at Ground Level
			15	<0.1	0.6	18.4	0.0	0	0		
			30	<0.1	0.9	18.1	0.0	0	0		
			60	<0.1	0.9	17.8	0.0	0	0		
			90	<0.1	0.9	17.4	0.0	0	0		
			120	<0.1	0.9	17.4	0.0	0	0		
			180	<0.1	0.9	17.4	0.0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH106 (Deep)	0.0	0.00	0	<0.1	Rising	20.0	0.0	0	0	2.82	Base at 6.38mbTOC No LNAPL No DNAPL PID Reading 0.6ppm Flush Cover at Ground Level
			15	<0.1	0.7	17.8	0.0	0	0		
			30	<0.1	0.7	17.2	0.0	0	0		
			60	<0.1	0.7	17.2	0.0	0	0		
			90	<0.1	0.7	16.8	0.0	0	0		
			120	<0.1	0.7	17.0	0.0	0	0		
			180	<0.1	0.7	17.0	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH1 (Existing) (Shallow)	0.0	-0.04	0	<0.1	Rising	Falling	0.0	0	0	2.93	Base at 3.23mbTOC No LNAPL No DNAPL PID Reading 0.2ppm Flush Cover at Ground Level
			15	<0.1	5.2	13.4	0.0	0	0		
			30	<0.1	5.1	12.9	0.0	0	0		
			60	<0.1	5.2	12.4	0.0	0	0		
			90	<0.1	5.2	12.4	0.0	0	0		
			120	<0.1	5.2	12.3	0.0	0	0		
			180	<0.1	5.2	12.4	0.0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH1 (Existing) (Deep)	0.0	0.09	0	<0.1	Rising	Falling	0.0	0	0		PID Reading 0.3ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	<0.1	4.9	19.9	0.0	0	0		
			30	<0.1	5.3	15.1	0.0	0	0		
			60	<0.1	5.4	12.8	0.0	0	0		
			90	<0.1	5.3	12.2	0.0	0	0		
			120	<0.1	5.3	12.2	0.0	0	0		
			180	<0.1	5.3	12.1	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH2 (Existing) (Shallow)	0.0	0.01	0	RISING						2.89	Base at 3.70mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	22.1	11.6	17.6	>>>	0	1		
			30	22.7	12.2	5.9	>>>	0	2		
			60	22.6	12.2	1.2	>>>	5	3		
			90	22.6	12.2	0.2	>>>	9	4		
			120	22.6	12.2	0.0	>>>	1	4		
			180	22.6	12.2	0.0	>>>	1	4		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH2 (Existing) (Deep)	0.1	0.19	0	RISING							PID Reading 0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	21.5	11.2	17.7	>>>	1	2		
			30	22.6	12.2	7.6	>>>	1	3		
			60	22.9	12.2	0.8	>>>	0	6		
			90	23.0	12.2	0.0	>>>	8	6		
			120	23.0	12.2	0.0	>>>	4	6		
			180	23.0	12.2	0.0	>>>	0	5		
			240	STEADY							

Site	Midland Road Industrial Estate, Scunthorpe
Date	22 January 2013
Visit Number	Visit 3
Attendees	Enitial – Ian Mayoh
Weather	Sunny but cold to start, becoming overcast, ground frozen with snow covering, slight breeze
Atm Pre	1001mb, rising to 1004mb
Equipment Utilised	Enitial Gas Analyser – GEM2000+, Serial Number 08813, Calibrated October 2012 Enitial PID – Mini RAE Lite-PGM7300 Enitial Interface Meter – Solinst Interface Dipmeter Model 122 P1/M3/60m

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHA	0.0	0.00	0	<0.1	Rising	20.4	0.0	0	0	1.61	Base at 1.80mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 33cm above ground level (AGL)
			15	<0.1	1.2	19.7	0.0	0	0		
			30	<0.1	1.3	19.1	0.0	0	0		
			60	<0.1	1.3	19.0	0.0	0	0		
			90	<0.1	1.3	18.9	0.0	0	0		
			120	<0.1	1.3	19.0	0.0	0	0		
			180	<0.1	1.3	19.0	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHB	0.0	0.01	0	<0.1	Rising	20.8	0.0	0	0	Dry	Base at 1.11mbTOC PID Reading 0.4ppm Flush Cover at Ground Level
			15	<0.1	1.1	20.8	0.0	0	0		
			30	<0.1	1.1	20.8	0.0	0	0		
			60	<0.1	1.1	20.8	0.0	0	0		
			90	<0.1	1.1	20.8	0.0	0	0		
			120	<0.1	1.1	20.7	0.0	0	0		
			180	<0.1	1.1	20.7	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHC	0.0	0.02	0	<0.1	Rising	20.6	0.0	0	0	Dry	Base at 1.06mbTOC PID Reading 0.4ppm Flush Cover at Ground Level
			15	<0.1	1.9	18.8	0.0	0	0		
			30	<0.1	2.0	16.9	0.0	0	0		
			60	<0.1	2.0	16.7	0.0	0	0		
			90	<0.1	2.0	16.5	0.0	0	0		
			120	<0.1	2.0	16.5	0.0	0	0		
			180	<0.1	2.0	16.6	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHD	0.0	0.04	0	<0.1	Rising	20.2	0.0	0	0	Dry	Base at 0.88mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.5	19.2	0.0	0	0		
			30	<0.1	0.5	18.9	0.0	0	0		
			60	<0.1	0.5	18.8	0.0	0	0		
			90	<0.1	0.5	18.7	0.0	0	0		
			120	<0.1	0.5	18.8	0.0	0	0		
			180	<0.1	0.5	18.8	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHE	0.0	0.06	0	<0.1	Rising	20.7	0.0	0	0	Dry	Base at 1.45mbTOC PID Reading 0.0ppm Raised Cover is 47cm (AGL)
			15	<0.1	1.0	17.5	0.0	0	0		
			30	<0.1	1.0	16.9	0.0	0	0		
			60	<0.1	1.0	16.6	0.0	0	0		
			90	<0.1	1.0	16.6	0.0	0	0		
			120	<0.1	1.0	16.6	0.0	0	0		
			180	<0.1	1.0	16.6	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHF	0.0	0.04	0	<0.1	Rising	20.4	0.0	0	0	2.57	Base at 2.87mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	6.8	19.7	0.0	0	0		
			30	<0.1	7.4	14.3	0.0	0	0		
			60	<0.1	7.4	13.0	0.0	0	0		
			90	<0.1	7.4	12.9	0.0	0	0		
			120	<0.1	7.4	12.9	0.0	0	0		
			180	<0.1	7.4	12.9	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHG	0.0	0.01	0	<0.1	Rising	20.3	0.0	0	0	Dry	Base at 2.52mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	1.5	19.9	0.0	0	0		
			30	<0.1	1.5	19.4	0.0	0	0		
			60	<0.1	1.5	18.9	0.0	0	0		
			90	<0.1	1.5	18.9	0.0	0	0		
			120	<0.1	1.5	18.9	0.0	0	0		
			180	<0.1	1.5	18.8	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHH	0.0	0.04	0	<0.1	Rising	20.4	0.0	0	0	Dry	Base at 2.64mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	10.1	18.0	0.0	0	0		
			30	<0.1	10.8	4.6	0.0	0	0		
			60	<0.1	10.8	3.2	0.0	0	0		
			90	<0.1	10.9	3.0	0.0	0	0		
			120	<0.1	10.8	2.8	0.0	0	0		
			180	<0.1	10.8	2.8	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHI	0.0	0.01	0	Rising						2.65	Base at 2.87mbTOC No LNAPL No DNAPL PID Reading 1.6ppm Flush Cover at Ground Level
			15	2.2	4.5	11.5	43	12	0		
			30	2.2	4.5	2.9	44	11	0		
			60	2.2	4.5	0.7	44	7	0		
			90	2.2	4.5	0.1	44	0	0		
			120	2.2	4.5	0.0	43	0	0		
			180	2.2	4.5	0.0	44	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHJ	-0.1 Peak 0.0 Steady	-0.04 Peak -0.01 Steady	0	<0.1	Rising	20.2	0	0	0	Dry	Base at 2.60mbTOC PID Reading 0.4ppm Flush Cover at Ground Level
			15	<0.1	7.2	19.2	0	0	0		
			30	0.1	8.8	7.9	2	0	0		
			60	0.1	8.8	6.7	2	1	0		
			90	0.1	8.8	6.3	2	6	0		
			120	0.1	8.8	6.7	2	0	0		
			180	0.1	8.8	6.8	2	5	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHK	0.0	0.00	0	Rising						2.34	Base at 3.15mbTOC, No LNAPL, No DNAPL, PID Reading 0.0ppm, Flush Cover at Ground Level, Odour Emitting When Bung was Removed
			15	14.7	7.9	18.1	>>>	0	0		
			30	16.1	8.4	4.8	>>>	0	0		
			60	16.1	8.4	0.9	>>>	12	1		
			90	15.8	8.4	0.0	>>>	11	1		
			120	15.8	8.4	0.0	>>>	16	1		
			180	15.8	8.4	0.0	>>>	11	1		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHL	0.0	0.01	0	Rising						Dry	Base at 3.08mbTOC, PID Reading 0.0ppm, Flush Cover at Ground Level
			15	18.6	4.1	15.9	>>>	6	0		
			30	19.0	4.1	2.7	>>>	4	0		
			60	18.8	4.1	0.3	>>>	12	0		
			90	18.8	4.1	0.1	>>>	9	0		
			120	18.8	4.1	0.0	>>>	0	0		
			180	18.8	4.1	0.0	>>>	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHM	0.0	-0.04	0	<0.1	Rising	20.6	0.0	0	0	Dry	Base at 3.23mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	1.0	19.7	0.0	0	0		
			30	<0.1	1.1	19.5	0.0	0	0		
			60	<0.1	1.1	19.4	0.0	0	0		
			90	<0.1	1.1	19.3	0.0	0	0		
			120	<0.1	1.1	19.3	0.0	0	0		
			180	<0.1	1.1	19.3	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHN	0.0	0.01	0	Rising						2.43	Base at 2.62mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 50cm (AGL), Odour emitting when bung was removed
			15	69.9	6.8	19.3	>>>	3	0		
			30	73.4	7.0	5.6	>>>	9	0		
			60	73.5	7.1	0.9	>>>	0	0		
			90	73.8	7.1	0.4	>>>	3	0		
			120	73.7	7.1	0.2	>>>	5	0		
			180	73.7	7.1	0.0	>>>	10	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHO	8.5 Peak	13.42 Peak 0.34 Steady	0	Rising						1.13	Base at 3.65mbTOC No LNAPL No DNAPL Initial peak flow of 8.5l/hr reduced to 0 in 2mins, closed and retested at 4.1l/hr, steady at zero after 30secs, Flow rates most likely reflect high water table relative to ground level. PID Reading 0.0ppm Raised Cover is 50cm (AGL), Extended monitoring period due to rising then falling gas levels.
			15	16.2	4.3	18.2	>>>	0	0		
			30	17.1	4.5	14.9	>>>	0	0		
			60	17.3	4.5	13.6	>>>	0	0		
			90	17.4	4.5	13.3	>>>	0	0		
			120	17.4	4.5	13.4	>>>	0	0		
			180	19.8	4.6	12.6	>>>	0	0		
			240	24.1	4.8	11.2	>>>	0	0		
			300	25.0	4.7	9.9	>>>	0	0		
			360	22.0	4.3	9.6	>>>	0	0		
			420	15.8	3.9	10.6	>>>	0	0		
			480	10.7	3.7	12.6	>>>	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH101	0.0	0.03	0	<0.1	Rising	20.4	0.0	0	0	2.89	Base at 6.86mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 46cm (AGL)
			15	<0.1	0.9	18.0	0.0	0	0		
			30	<0.1	0.8	17.5	0.0	0	0		
			60	<0.1	0.7	17.2	0.0	0	0		
			90	<0.1	0.6	17.6	0.0	0	0		
			120	<0.1	0.6	17.7	0.0	0	0		
			180	<0.1	0.5	17.8	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH102	0.0	0.01	0	Rising						4.03	Base at 6.70mbTOC No LNAPL No DNAPL PID Reading 0.ppm Flush Cover at Ground Level Extended monitoring period-CH4 rising
			15	1.4	1.0	18.5	28	0	0		
			30	1.5	1.1	15.1	30	0	0		
			60	1.5	1.1	14.1	29	0	0		
			90	1.5	1.1	14,.1	29	0	0		
			120	1.7	1.0	13.2	34	3	0		
			180	2.3	1.0	11.0	45	8	0		
			240	2.8	1.0	8.4	56	7	0		
			300	3.3	1.0	7.2	65	16	0		
			360	3.7	1.0	5.7	74	0	0		
			420	4.0	0.9	4.6	80	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH103	2.1 Peak	1.53 Peak 0.48 Steady	0	<0.1	Rising	20.4	0.0	0	0	0.22	Base at 5.26mbTOC No LNAPL No DNAPL 20cm of silt at bottom PID Reading 0.0ppm Raised Cover is 23cm (AGL) Flow peak 2.1l/hr, steady at 0.4l/hr NB: High water table relative to ground level, due to raised headwork groundwater effectively artesian.
			15	<0.1	0.8	19.7	0.0	0	0		
			30	<0.1	0.7	18.6	0.0	0	0		
			60	<0.1	0.5	18.8	0.0	0	0		
			90	<0.1	0.2	19.8	0.0	0	0		
			120	<0.1	0.2	20.0	0.0	0	0		
			180	<0.1	0.1	20.3	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH104	0.0	0.00	0	RISING						1.75	Base at 7.42mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 37cm (AGL)
			15	0.2	3.2	19.4	3.0	6	0		
			30	0.2	2.7	19.1	3.0	16	0		
			60	0.1	1.9	19.1	2.0	16	0		
			90	0.1	1.6	19.2	1.0	4	0		
			120	<0.1	1.3	19.3	0.0	1	0		
			180	<0.1	1.0	19.6	0.0	6	0		
			240	<0.1	0.8	19.8	0.0	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH105	0.1	0.06	0	<0.1	Rising	20.6	0.0	0	0	3.66	Base at 8.05mbTOC No LNAPL No DNAPL 5cm of silt Flow fluctuating between 0.1 and 0.0l/hr, PID Reading 0.6ppm Flush Cover at Ground Level
			15	<0.1	3.9	19.9	0.0	0	0		
			30	<0.1	4.9	11.0	0.0	0	0		
			60	<0.1	4.9	7.9	0.0	0	0		
			90	<0.1	4.9	7.5	0.0	0	0		
			120	<0.1	4.9	7.5	0.0	0	0		
			180	<0.1	4.9	7.4	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH106 (Shallow)	0.0	0.00	0	<0.1	Rising	20.6	0.0	0	0	Dry	Base at 2.51mbTOC PID Reading 0.2ppm Flush Cover at Ground Level
			15	<0.1	0.8	19.9	0.0	0	0		
			30	<0.1	0.8	18.7	0.0	0	0		
			60	<0.1	0.8	18.1	0.0	0	0		
			90	<0.1	0.8	18.2	0.0	0	0		
			120	<0.1	0.8	18.2	0.0	0	0		
			180	<0.1	0.8	18.2	0.0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH106 (Deep)	0.0	-0.02	0	<0.1	Rising	20.5	0.0	0	0	2.84	Base at 6.38mbTOC No LNAPL No DNAPL PID Reading 0.8ppm Flush Cover at Ground Level
			15	<0.1	0.6	19.9	0.0	0	0		
			30	<0.1	0.7	17.7	0.0	0	0		
			60	<0.1	0.7	17.1	0.0	0	0		
			90	<0.1	0.7	17.1	0.0	0	0		
			120	<0.1	0.7	17.0	0.0	0	0		
			180	<0.1	0.7	17.0	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH1 (Existing) (Shallow)	0.0	0.02	0	<0.1	Rising	Falling	0.0	0	0	3.00	Base at 3.23mbTOC No LNAPL No DNAPL PID Reading 0.3ppm Flush Cover at Ground Level
			15	<0.1	5.3	15.5	0.0	0	0		
			30	<0.1	5.5	12.5	0.0	0	0		
			60	<0.1	5.5	12.4	0.0	0	0		
			90	<0.1	5.5	12.4	0.0	0	0		
			120	<0.1	5.5	12.4	0.0	0	0		
			180	<0.1	5.5	12.4	0.0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH1 (Existing) (Deep)	0.0	0.07	0	<0.1	Rising	Falling	0.0	0	0		PID Reading 0.2ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	<0.1	5.0	19.8	0.0	0	0		
			30	<0.1	5.4	14.5	0.0	0	0		
			60	<0.1	5.4	12.5	0.0	0	0		
			90	<0.1	5.4	12.5	0.0	0	0		
			120	<0.1	5.4	12.6	0.0	0	0		
			180	<0.1	5.4	12.5	0.0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH2 (Existing) (Shallow)	0.0	-0.05	0	RISING						3.00	Base at 3.70mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	21.8	12.3	15.4	>>>	0	0		
			30	21.9	13.3	1.4	>>>	0	0		
			60	21.9	13.3	0.1	>>>	3	0		
			90	21.9	13.3	0.0	>>>	2	0		
			120	21.9	13.4	0.0	>>>	12	0		
			180	21.9	13.4	0.0	>>>	19	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH2 (Existing) (Deep)	0.0	-0.06	0	RISING							PID Reading 0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	21.4	12.7	14.1	>>>	0	0		
			30	21.9	13.3	1.9	>>>	0	0		
			60	21.8	13.3	0.2	>>>	0	0		
			90	21.8	13.3	0.1	>>>	2	0		
			120	21.8	13.4	0.0	>>>	16	0		
			180	21.8	13.4	0.0	>>>	17	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH3 (Existing) (Shallow)	0.0	0.06	0	<0.1	Rising	Falling	0.0	0	0	1.97	Base at 3.01mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	3.7	18.9	0.0	0	0		
			30	<0.1	3.8	15.5	0.0	0	0		
			60	<0.1	3.8	15.0	0.0	0	0		
			90	<0.1	3.8	14.8	0.0	0	0		
			120	<0.1	3.8	14.8	0.0	0	0		
			180	<0.1	3.8	14.8	0.0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH3 (Existing) (Deep)	-0.1	-0.04	0	<0.1	Rising	Falling	0.0	0	0		PID Reading 0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	<0.1	3.5	19.0	0.0	0	0		
			30	<0.1	3.8	15.6	0.0	0	0		
			60	<0.1	3.8	15.2	0.0	0	0		
			90	<0.1	3.8	15.1	0.0	0	0		
			120	<0.1	3.8	15.1	0.0	0	0		
			180	<0.1	3.8	15.1	0.0	0	0		
			240	STEADY							

Site	Midland Road Industrial Estate, Scunthorpe
Date	29 January 2013
Visit Number	Visit 4
Attendees	Enitial – Ian Mayoh
Weather	Overcast but dry, ground conditions-wet with pooling water in places, strong breeze
Atm Pre	998mb, falling to 993mb
Equipment Utilised	Enitial Gas Analyser – GEM2000+, Serial Number 08813, Calibrated October 2012 Enitial PID – Mini RAE Lite-PGM7300 Enitial Interface Meter – Solinst Interface Dipmeter Model 122 P1/M3/60m

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHA	0.0	0.03	0	<0.1	Rising	20.6	0	0	0	1.50	Base at 1.80mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 33cm above ground level (AGL)
			15	<0.1	1.1	20.0	0	0	0		
			30	<0.1	1.1	19.4	0	0	0		
			60	<0.1	1.2	19.0	0	0	0		
			90	<0.1	1.2	19.0	0	0	0		
			120	<0.1	1.2	19.0	0	0	0		
			180	<0.1	1.2	18.9	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHB	0.0	0.01	0	<0.1	Rising	20.8	0	0	0	Dry	Base at 1.11mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	1.1	20.0	0	0	0		
			30	<0.1	1.1	19.9	0	0	0		
			60	<0.1	1.1	19.9	0	0	0		
			90	<0.1	1.1	19.8	0	0	0		
			120	<0.1	1.1	19.8	0	0	0		
			180	<0.1	1.1	19.8	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHC	0.0	0.00	0	<0.1	Rising	20.8	0	0	0	Dry	Base at 1.05mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	1.6	20.2	0	0	0		
			30	<0.1	1.7	18.3	0	0	0		
			60	<0.1	1.7	18.1	0	0	0		
			90	<0.1	1.7	18.1	0	0	0		
			120	<0.1	1.7	18.1	0	0	0		
			180	<0.1	1.7	18.0	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHD	0.0	0.00	0	<0.1	Rising	20.8	0	0	0	Dry	Base at 0.88mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.5	20.4	0	0	0		
			30	<0.1	0.5	20.2	0	0	0		
			60	<0.1	0.5	20.1	0	0	0		
			90	<0.1	0.5	20.0	0	0	0		
			120	<0.1	0.5	20.0	0	0	0		
			180	<0.1	0.5	20.0	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHE	0.0	0.00	0	<0.1	Rising	20.6	0	0	0	Dry	Base at 1.45mbTOC PID Reading 0.0ppm Raised Cover is 47cm (AGL)
			15	<0.1	0.7	20.0	0	0	0		
			30	<0.1	0.7	19.8	0	0	0		
			60	<0.1	0.7	19.9	0	0	0		
			90	<0.1	0.7	19.8	0	0	0		
			120	<0.1	0.7	19.8	0	0	0		
			180	<0.1	0.7	19.8	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHF	0.0	0.05	0	<0.1	Rising	20.8	0	0	0	2.58	Base at 2.85mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	6.6	19.6	0	0	0		
			30	<0.1	7.2	14.5	0	0	0		
			60	<0.1	7.2	13.6	0	0	0		
			90	<0.1	7.2	13.4	0	0	0		
			120	<0.1	7.2	13.5	0	0	0		
			180	<0.1	7.2	13.6	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHG	0.0	-0.01	0	<0.1	Rising	20.6	0	0	0	Dry	Base at 2.52mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	1.3	19.7	0	0	0		
			30	<0.1	1.3	19.1	0	0	0		
			60	<0.1	1.3	18.5	0	0	0		
			90	<0.1	1.3	18.5	0	0	0		
			120	<0.1	1.3	18.5	0	0	0		
			180	<0.1	1.3	18.5	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHH	0.0	-0.01	0	<0.1	Rising	20.6	0	0	0	Dry	Base at 2.64mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	7.8	18.7	0	0	0		
			30	<0.1	9.3	8.0	0	0	0		
			60	<0.1	9.2	6.2	0	0	0		
			90	<0.1	9.3	6.0	0	0	0		
			120	<0.1	9.3	6.0	0	0	0		
			180	<0.1	9.3	6.0	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHI	0.0	0.03	0	Rising						2.51	Base at 2.86mbTOC **2mm LNAPL** No DNAPL PID Reading 0.8ppm Flush Cover at Ground Level
			15	2.4	3.0	13.5	48	0	0		
			30	2.6	3.0	2.4	52	0	0		
			60	2.6	3.0	0.2	51	0	0		
			90	2.6	3.1	0.2	51	0	0		
			120	2.6	3.0	0.0	52	0	0		
			180	2.6	3.0	0.0	52	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHJ	0.0	0.03	0	<0.1	Rising	20.6	0	0	0	2.43	Base at 2.47mbTOC No LNAPL No DNAPL PID Reading 1.4ppm Flush Cover at Ground Level Extended monitoring period-CH4 rising
			15	<0.1	7.8	18.5	0	0	0		
			30	0.1	9.4	6.5	2	0	0		
			60	0.1	9.5	3.0	2	0	0		
			90	0.2	9.5	2.6	3	0	0		
			120	0.2	9.5	2.6	4	0	0		
			180	0.3	9.7	2.4	6	0	0		
			240	0.7	10.2	1.2	13	0	0		
			300	0.8	10.4	1.2	16	0	0		
			360	0.9	10.5	0.9	18	0	0		
			420	1.0	10.6	0.3	19	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHK	0.0	0.03	0	Rising						2.31	Base at 3.13mbTOC, No LNAPL, No DNAPL, PID Reading 0.0ppm, Flush Cover at Ground Level, Odour Emitting When Bung was Removed
			15	15.8	7.6	16.2	>>>	0	0		
			30	16.7	8.0	3.0	>>>	0	0		
			60	16.7	8.0	0.1	>>>	0	0		
			90	16.6	8.0	0.0	>>>	0	1		
			120	16.5	8.0	0.0	>>>	0	0		
			180	16.5	8.0	0.0	>>>	0	1		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHL	0.0	0.05	0	Rising						2.88	Base at 3.08mbTOC, No LNAPL No DNAPL PID Reading 0.0ppm, Flush Cover at Ground Level
			15	20.8	3.2	17.0	>>>	0	0		
			30	21.4	3.3	2.9	>>>	0	0		
			60	21.4	3.3	0.1	>>>	0	0		
			90	21.4	3.3	0.0	>>>	0	0		
			120	21.3	3.3	0.0	>>>	0	0		
			180	21.3	3.3	0.0	>>>	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHM	0.0	0.02	0	<0.1	Rising	20.6	0	0	0	2.87	Base at 3.22mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.9	20.1	0	0	0		
			30	<0.1	1.0	19.6	0	0	0		
			60	<0.1	1.0	19.4	0	0	0		
			90	<0.1	1.0	19.3	0	0	0		
			120	<0.1	1.0	19.3	0	0	0		
			180	<0.1	1.0	19.3	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHN	0.2 Peak Retest 0.2	0.16 Peak Retest 0.11	0	Rising						2.39	Base at 2.63mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 50cm (AGL), Peak Flow 0.2l/hr, closed valve for 30secs and retested at 0.2l/hr.
			15	68.9	7.2	16.0	>>>	0	0		
			30	73.2	7.4	0.9	>>>	0	0		
			60	73.4	7.4	0.3	>>>	0	0		
			90	73.4	7.4	0.2	>>>	0	0		
			120	73.5	7.4	0.0	>>>	0	0		
			180	73.5	7.4	0.0	>>>	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHO	-0.4 Peak	-0.59 Peak	0	Rising						0.97	Base at 3.65mbTOC No LNAPL No DNAPL Initial peak flow of -0.4l/hr reduced to 0 in 1min, closed and retested at -0.2l/hr, steady at zero after 30secs, Flow rates most likely reflect high water table relative to ground level. PID Reading 0.0ppm Raised Cover is 50cm (AGL).
			15	1.5	0.8	19.9	30	0	0		
			30	1.7	0.8	20.0	34	0	0		
			60	1.8	0.8	19.8	36	0	0		
			90	1.8	0.8	19.6	36	0	0		
			120	1.8	0.8	19.7	35	0	0		
			180	1.8	0.8	19.6	35	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH101	0.0	0.00	0	<0.1	Rising	20.7	0	0	0	2.84	Base at 6.86mbTOC No LNAPL No DNAPL PID Reading 0.2ppm Raised Cover is 46cm (AGL)
			15	<0.1	1.6	20.0	0	0	0		
			30	<0.1	1.6	17.2	0	0	0		
			60	<0.1	1.5	16.7	0	0	0		
			90	<0.1	1.5	16.6	0	0	0		
			120	<0.1	1.6	16.6	0	0	0		
			180	<0.1	1.6	16.4	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH102	0.9 Peak 0.4 Steady	0.89 Peak 0.47 Steady	0	Rising						3.88	Base at 6.71mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level Extended monitoring period-CH4 rising
			15	1.8	0.9	16.6	36	0	0		
			30	1.9	0.9	13.0	37	0	0		
			60	1.9	0.9	12.8	37	0	0		
			90	1.9	0.9	13.0	38	0	0		
			120	1.9	0.9	12.8	38	0	0		
			180	2.5	0.8	10.9	50	0	0		
			240	2.9	0.7	9.1	58	0	0		
			300	3.4	0.6	7.8	67	0	0		
			360	3.9	0.5	6.3	76	0	0		
			420	4.1	0.4	5.4	82	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH103	2.7 Peak	4.82 Peak	0	<0.1	Rising	20.8	0	0	0	0.12	Base at 5.31mbTOC No LNAPL No DNAPL 16cm of silt at bottom PID Reading 0.0ppm Raised Cover is 23cm (AGL) Flow peak 2.7l/hr, steady at 0.8l/hr NB: High water table relative to ground level, due to raised headwork groundwater effectively artesian.
			15	<0.1	0.8	19.8	0	0	0		
			30	<0.1	0.3	18.6	0	0	0		
			60	<0.1	0.1	19.9	0	0	0		
			90	<0.1	0.0	20.4	0	0	0		
			120	<0.1	0.0	20.6	0	0	0		
			180	<0.1	0.0	20.8	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH104	0.0	0.05	0	RISING						1.70	Base at 7.46mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 37cm (AGL)
			15	0.3	2.8	20.4	6	0	0		
			30	0.4	2.8	19.7	8	0	0		
			60	0.4	2.4	19.7	8	0	0		
			90	0.3	2.0	19.7	6	0	0		
			120	0.3	1.7	19.8	6	0	0		
			180	0.2	1.3	19.8	3	0	0		
			240	0.1	0.9	20.2	2	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH105	-0.1	-0.14	0	<0.1	Rising	20.8	0	0	0	3.65	Base at 8.06mbTOC No LNAPL No DNAPL 10cm of silt PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	3.8	19.1	0	0	0		
			30	<0.1	4.4	10.2	0	0	0		
			60	<0.1	4.4	8.5	0	0	0		
			90	<0.1	4.4	7.9	0	0	0		
			120	<0.1	4.4	7.8	0	0	0		
			180	<0.1	4.4	7.9	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH106 (Shallow)	0.0	-0.05	0	<0.1	Rising	20.6	0	0	0	Dry	Base at 2.51mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.9	19.2	0	0	0		
			30	<0.1	0.8	17.6	0	0	0		
			60	<0.1	0.8	17.7	0	0	0		
			90	<0.1	0.8	17.7	0	0	0		
			120	<0.1	0.8	17.7	0	0	0		
			180	<0.1	0.8	17.7	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH106 (Deep)	0.0	-0.01	0	<0.1	Rising	20.6	0	0	0	2.74	Base at 6.39mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.6	19.6	0	0	0		
			30	<0.1	0.6	18.0	0	0	0		
			60	<0.1	0.6	17.7	0	0	0		
			90	<0.1	0.6	17.7	0	0	0		
			120	<0.1	0.6	17.7	0	0	0		
			180	<0.1	0.6	17.7	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH1 (Existing) (Shallow)	0.0	-0.02	0	<0.1	Rising	20.6	0	0	0	2.81	Base at 3.20mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	4.6	19.7	0	0	0		
			30	<0.1	5.5	12.6	0	0	0		
			60	<0.1	5.5	10.9	0	0	0		
			90	<0.1	5.5	10.4	0	0	0		
			120	<0.1	5.5	10.3	0	0	0		
			180	<0.1	5.5	10.3	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH1 (Existing) (Deep)	0.0	-0.01	0	<0.1	Rising	20.7	0	0	0		PID Reading 0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	<0.1	5.2	18.0	0	0	0		
			30	<0.1	5.4	11.9	0	0	0		
			60	<0.1	5.4	10.6	0	0	0		
			90	<0.1	5.4	10.6	0	0	0		
			120	<0.1	5.4	10.6	0	0	0		
			180	<0.1	5.4	10.6	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH2 (Existing) (Shallow)	0.0	-0.01	0	RISING						2.75	Base at 3.70mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	37.0	12.7	13.3	>>>	0	0		
			30	37.8	13.6	2.2	>>>	0	0		
			60	38.2	13.6	0.2	>>>	0	0		
			90	38.2	13.7	0.2	>>>	0	0		
			120	38.1	13.6	0.3	>>>	0	0		
			180	38.2	13.8	0.0	>>>	0	0		
			240	38.3	13.8	0.0	>>>	0	0		
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH2 (Existing) (Deep)	0.0	-0.01	0	RISING							PID Reading 0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	33.3	12.9	14.2	>>>	0	0		
			30	38.1	13.5	0.9	>>>	0	0		
			60	38.4	13.6	0.2	>>>	0	0		
			90	38.5	13.6	0.0	>>>	0	0		
			120	38.5	13.7	0.0	>>>	0	0		
			180	38.5	13.7	0.0	>>>	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH3 (Existing) (Shallow)	0.0	0.00	0	<0.1	Rising	20.8	0	0	0	1.90	Base at 3.01mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	3.2	19.4	0	0	0		
			30	<0.1	3.3	15.5	0	0	0		
			60	<0.1	3.3	15.3	0	0	0		
			90	<0.1	3.3	15.3	0	0	0		
			120	<0.1	3.3	15.2	0	0	0		
			180	<0.1	3.3	15.3	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH3 (Existing) (Deep)	0.3	0.80	0	<0.1	Rising	20.4	0	0	0		PID Reading 0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	<0.1	3.2	19.6	0	0	0		
			30	<0.1	3.3	16.1	0	0	0		
			60	<0.1	3.3	15.2	0	0	0		
			90	<0.1	3.3	14.9	0	0	0		
			120	<0.1	3.3	15.0	0	0	0		
			180	<0.1	3.3	15.0	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH4 (Existing) (Shallow)	0.0	0.00	0	<0.1	Rising	20.8	0	0	0	1.44	Base at 2.70mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	3.8	19.6	0	0	0		
			30	<0.1	4.3	15.8	0	0	0		
			60	<0.1	4.3	14.4	0	0	0		
			90	<0.1	4.3	14.4	0	0	0		
			120	<0.1	4.3	14.4	0	0	0		
			180	<0.1	4.3	14.4	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH4 (Existing) (Deep)			0	Tubing extended down into water, unable to gas monitor without sucking liquid up into gas analyser.							Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15								
			30								
			60								
			90								
			120								
			180								
			240								

Site	Midland Road Industrial Estate, Scunthorpe
Date	05 February 2013
Visit Number	Visit 5
Attendees	Enitial – Ian Mayoh
Weather	Clear but some snow showers, slight ground frost with pooling water in places, cold breeze.
Atm Pre	994mb, falling to 990mb
Equipment Utilised	Enitial Gas Analyser – GEM2000+, Serial Number 08813, Calibrated October 2012 Enitial PID – Mini RAE Lite-PGM7300 Enitial Interface Meter – Solinst Interface Dipmeter Model 122 P1/M3/60m

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHA	0.0	0.01	0	<0.1	Rising	20.8	0	0	0	1.51	Base at 1.81mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 33cm above ground level (AGL)
			15	<0.1	1.1	20.4	0	0	0		
			30	<0.1	1.1	20.0	0	0	0		
			60	<0.1	1.1	19.8	0	0	0		
			90	<0.1	1.1	19.8	0	0	0		
			120	<0.1	1.1	19.8	0	0	0		
			180	<0.1	1.1	19.8	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHB	0.0	-0.01	0	<0.1	Rising	20.8	0	0	0	Dry	Base at 1.11mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	1.3	19.2	0	0	0		
			30	<0.1	1.3	19.2	0	0	0		
			60	<0.1	1.3	19.0	0	0	0		
			90	<0.1	1.4	19.0	0	0	0		
			120	<0.1	1.4	19.0	0	0	0		
			180	<0.1	1.4	19.0	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHC	0.0	-0.01	0	<0.1	Rising	20.6	0	0	0	Dry	Base at 1.06mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	1.8	19.8	0	0	0		
			30	<0.1	1.9	18.4	0	0	0		
			60	<0.1	1.9	18.0	0	0	0		
			90	<0.1	1.9	17.8	0	0	0		
			120	<0.1	1.9	17.6	0	0	0		
			180	<0.1	1.9	17.6	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHD	0.0	-0.01	0	<0.1	Rising	20.4	0	0	0	Dry	Base at 0.88mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.5	19.6	0	0	0		
			30	<0.1	0.5	19.1	0	0	0		
			60	<0.1	0.5	19.2	0	0	0		
			90	<0.1	0.5	19.2	0	0	0		
			120	<0.1	0.5	19.2	0	0	0		
			180	<0.1	0.5	19.2	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHE	0.0	0.00	0	<0.1	Rising	20.8	0	0	0	Dry	Base at 1.45mbTOC PID Reading 0.0ppm Raised Cover is 47cm (AGL)
			15	<0.1	0.7	20.4	0	0	0		
			30	<0.1	0.7	20.1	0	0	0		
			60	<0.1	0.7	20.0	0	0	0		
			90	<0.1	0.7	19.8	0	0	0		
			120	<0.1	0.7	19.8	0	0	0		
			180	<0.1	0.7	19.8	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHF	0.0	0.01	0	<0.1	Rising	20.8	0	0	0	2.58	Base at 2.84mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	4.7	20.2	0	0	0		
			30	<0.1	5.4	18.0	0	0	0		
			60	<0.1	5.4	17.4	0	0	0		
			90	<0.1	5.4	17.4	0	0	0		
			120	<0.1	5.4	17.3	0	0	0		
			180	<0.1	5.4	17.4	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHG	0.0	0.01	0	<0.1	Rising	20.6	0	0	0	2.50	Base at 2.52mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	1.6	20.0	0	0	0		
			30	<0.1	1.6	19.1	0	0	0		
			60	<0.1	1.6	18.6	0	0	0		
			90	<0.1	1.6	18.3	0	0	0		
			120	<0.1	1.6	18.3	0	0	0		
			180	<0.1	1.6	18.3	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHH	0.0	0.00	0	<0.1	Rising	20.8	0	0	0	Dry	Base at 2.64mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	7.9	19.4	0	0	0		
			30	<0.1	8.8	12.9	0	0	0		
			60	<0.1	8.8	10.5	0	0	0		
			90	<0.1	8.8	10.3	0	0	0		
			120	<0.1	8.8	10.3	0	0	0		
			180	<0.1	8.8	10.3	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHI	0.0	0.05	0	Rising						2.57	Base at 2.86mbTOC **1mm LNAPL** No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	1.5	3.3	12.9	29	0	0		
			30	1.5	3.3	4.9	29	0	0		
			60	1.5	3.3	2.1	29	0	0		
			90	1.5	3.3	1.7	30	0	0		
			120	1.5	3.3	1.5	30	0	0		
			180	1.5	3.3	1.5	30	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHJ	0.0	0.04	0	Rising						2.41	Base at 2.46mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	1.7	11.0	11.9	34	0	0		
			30	1.9	11.2	3.4	37	0	0		
			60	1.9	11.2	0.4	38	0	0		
			90	1.9	11.2	0.1	38	0	0		
			120	1.9	11.2	0.0	37	0	0		
			180	1.9	11.2	0.0	37	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHK	0.1	0.08	0	Rising						2.31	Base at 3.15mbTOC, No LNAPL No DNAPL PID Reading 0.0ppm, Flush Cover at Ground Level, Odour Emitting When Bung was Removed
			15	15.3	7.8	15.7	>>>	0	0		
			30	15.4	8.1	3.9	>>>	0	0		
			60	15.4	8.1	0.4	>>>	0	0		
			90	15.3	8.1	0.1	>>>	0	0		
			120	15.3	8.2	0.0	>>>	0	0		
			180	15.3	8.2	0.0	>>>	0	1		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHL	0.0	0.04	0	Rising						Dry	Base at 3.08mbTOC, PID Reading 0.0ppm, Flush Cover at Ground Level
			15	21.4	3.3	19.0	>>>	0	0		
			30	22.6	3.5	3.0	>>>	0	0		
			60	22.4	3.5	0.5	>>>	0	0		
			90	22.4	3.5	0.0	>>>	0	0		
			120	22.4	3.5	0.0	>>>	0	0		
			180	22.4	3.5	0.0	>>>	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHM	0.0	-0.02	0	<0.1	Rising	20.8	0	0	0	Dry	Base at 3.22mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.9	20.3	0	0	0		
			30	<0.1	1.1	20.3	0	0	0		
			60	<0.1	1.1	20.3	0	0	0		
			90	<0.1	1.1	20.2	0	0	0		
			120	<0.1	1.1	20.2	0	0	0		
			180	<0.1	1.1	20.2	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHN	0.8 Peak Retest 0.7	0.21 Peak Retest 0.20	0	Rising						2.36	Base at 2.62mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 50cm (AGL), Peak Flow 0.8l/hr, closed valve for 30secs and retested at 0.7l/hr.
			15	70.8	7.4	16.6	>>>	0	0		
			30	72.4	7.6	6.3	>>>	0	0		
			60	72.4	7.6	0.6	>>>	0	0		
			90	72.6	7.6	0.1	>>>	0	0		
			120	72.7	7.6	0.0	>>>	0	0		
			180	72.6	7.6	0.0	>>>	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHO	6.6 Peak	7.93 Peak 0.69 Steady	0	Rising						1.06	Base at 3.60mbTOC No LNAPL No DNAPL Initial peak flow of 6.6l/hr reduced to 0 in 2mins, closed and retested at 4.1l/hr, steady at zero after 30secs, Flow rates most likely reflect high water table relative to ground level. PID Reading 0.0ppm Raised Cover is 50cm (AGL). Sucked up water after 240secs, stopped monitoring.
			15	2.0	1.0	20.1	40	0	0		
			30	2.2	1.0	19.7	43	0	0		
			60	2.0	1.0	19.7	40	0	0		
			90	2.1	1.0	19.5	42	0	0		
			120	2.3	1.0	19.4	46	0	0		
			180	3.8	1.2	19.2	76	0	0		
			240	7.9	1.5	18.2	>>>	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH101	0.0	-0.01	0	<0.1	Rising	20.8	0	0	0	2.83	Base at 6.86mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 46cm (AGL)
			15	<0.1	1.6	20.2	0	0	0		
			30	<0.1	1.6	18.3	0	0	0		
			60	<0.1	1.5	17.4	0	0	0		
			90	<0.1	1.4	17.7	0	0	0		
			120	<0.1	1.4	17.7	0	0	0		
			180	<0.1	1.3	17.5	0	0	0		
			240	<0.1	1.3	17.6	0	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH102	0.0	0.08	0	Rising						3.96	Base at 6.70mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level Extended monitoring period-CH4 rising
			15	1.8	0.5	18.5	35	0	0		
			30	1.7	0.5	13.4	34	0	0		
			60	1.8	0.5	12.9	36	0	0		
			90	1.8	0.5	12.7	36	0	0		
			120	1.9	0.5	12.2	37	0	0		
			180	2.4	0.5	10.4	48	0	0		
			240	2.7	0.5	8.8	54	0	0		
			300	3.1	0.6	7.6	62	0	0		
			360	3.6	0.6	5.8	72	0	0		
			420	3.9	0.6	4.7	77	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH103	1.7 Peak Retest 0.3	3.60 Peak Retest 0.86	0	<0.1	Rising	20.8	0	0	0	0.17	Base at 5.32mbTOC No LNAPL No DNAPL 21cm of silt at bottom PID Reading 0.0ppm Raised Cover is 23cm (AGL) Flow peak 1.7l/hr, steady at 0.0l/hr NB: High water table relative to ground level, due to raised headwork groundwater effectively artesian.
			15	<0.1	0.9	20.1	0	0	0		
			30	<0.1	0.4	17.4	0	0	0		
			60	<0.1	0.2	19.9	0	0	0		
			90	<0.1	0.1	20.6	0	0	0		
			120	<0.1	0.0	20.8	0	0	0		
			180	<0.1	0.0	20.9	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH104	0.0	0.00	0	RISING						1.67	Base at 7.41mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 37cm (AGL)
			15	0.2	2.6	19.6	2	0	0		
			30	0.2	2.6	19.5	2	0	0		
			60	0.1	2.4	19.4	2	0	0		
			90	0.1	2.2	19.4	2	0	0		
			120	0.1	1.8	19.5	1	0	0		
			180	<0.1	1.5	19.6	0	0	0		
			240	<0.1	1.2	20.0	0	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH105	-0.8 Peak 0.0 Steady	-0.77 Peak 0.04 Steady	0	<0.1	Rising	20.9	0	0	0	3.66	Base at 8.06mbTOC No LNAPL No DNAPL 10cm of silt PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	3.3	20.0	0	0	0		
			30	<0.1	3.5	11.7	0	0	0		
			60	<0.1	3.6	10.4	0	0	0		
			90	<0.1	3.6	10.2	0	0	0		
			120	<0.1	3.6	10.0	0	0	0		
			180	<0.1	3.6	10.1	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH106 (Shallow)	0.0	-0.04	0	<0.1	Rising	20.8	0	0	0	Dry	Base at 2.51mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.9	20.4	0	0	0		
			30	<0.1	0.9	19.2	0	0	0		
			60	<0.1	0.9	18.6	0	0	0		
			90	<0.1	0.9	18.6	0	0	0		
			120	<0.1	0.9	18.6	0	0	0		
			180	<0.1	0.9	18.6	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH106 (Deep)	0.0	0.01	0	<0.1	Rising	20.9	0	0	0	2.77	Base at 6.39mbTOC No LNAPL No DNAPL PID Reading 0.1ppm Flush Cover at Ground Level
			15	<0.1	0.6	20.5	0	0	0		
			30	<0.1	0.7	18.7	0	0	0		
			60	<0.1	0.7	18.5	0	0	0		
			90	<0.1	0.7	18.5	0	0	0		
			120	<0.1	0.7	18.5	0	0	0		
			180	<0.1	0.7	18.5	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH1 (Existing) (Shallow)	0.0	-0.01	0	<0.1	Rising	20.8	0	0	0	2.86	Base at 3.21mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	5.4	18.9	0	0	0		
			30	<0.1	5.9	12.8	0	0	0		
			60	<0.1	5.9	10.3	0	0	0		
			90	<0.1	5.9	10.1	0	0	0		
			120	<0.1	5.9	10.1	0	0	0		
			180	<0.1	5.9	10.2	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH1 (Existing) (Deep)	0.1	0.04	0	<0.1	Rising	20.5	0	0	0		PID Reading=0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level. Co-ordinates, Eastings=490261 Northings=410290 Height=38m
			15	<0.1	5.4	18.9	0	0	0		
			30	<0.1	5.9	13.4	0	0	0		
			60	<0.1	5.9	10.7	0	0	0		
			90	<0.1	5.9	10.1	0	0	0		
			120	<0.1	6.0	10.0	0	0	0		
			180	<0.1	6.0	10.0	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH2 (Existing) (Shallow)	0.0	0.02	0	RISING						2.83	Base at 3.74mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level, removed bung post monitoring to allow to vent for 2 weeks, at request of SM.
			15	37.9	13.4	16.9	>>>	0	2		
			30	38.3	14.2	5.9	>>>	0	6		
			60	38.9	14.2	0.8	>>>	0	9		
			90	38.4	14.1	0.0	>>>	0	10		
			120	38.3	14.1	0.0	>>>	0	11		
			180	38.5	14.2	0.0	>>>	0	11		
			240	38.6	14.2	0.0	>>>	0	12		
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH2 (Existing) (Deep)	0.2	0.26	0	RISING							PID Reading=0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level. Co-ordinates, Eastings=490337 Northings=410250 Height=40m
			15	36.3	13.3	17.2	>>>	0	2		
			30	38.8	14.3	4.9	>>>	0	8		
			60	38.7	14.1	0.3	>>>	0	12		
			90	38.7	14.1	0.2	>>>	0	12		
			120	38.7	14.1	0.0	>>>	0	12		
			180	38.8	14.1	0.0	>>>	0	12		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH3 (Existing) (Shallow)	0.0	-0.04	0	<0.1	Rising	20.5	0	0	0	1.97	Base at 3.01mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	2.9	19.5	0	0	0		
			30	<0.1	3.4	17.1	0	0	0		
			60	<0.1	3.4	15.8	0	0	0		
			90	<0.1	3.4	15.7	0	0	0		
			120	<0.1	3.4	15.7	0	0	0		
			180	<0.1	3.4	15.7	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH3 (Existing) (Deep)	0.2 Peak 0.0 Steady	0.61	0	<0.1	Rising	20.8	0	0	0		PID Reading=0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level. Co-ordinates, Eastings=490449 Northings=410182 Height=38m
			15	<0.1	3.2	19.0	0	0	0		
			30	<0.1	3.4	16.2	0	0	0		
			60	<0.1	3.4	16.1	0	0	0		
			90	<0.1	3.4	15.8	0	0	0		
			120	<0.1	3.4	15.8	0	0	0		
			180	<0.1	3.4	15.8	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH4 (Existing) (Shallow)	0.0	0.00	0	<0.1	Rising	20.8	0	0	0	1.50	Base at 2.71mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	3.3	20.0	0	0	0		
			30	<0.1	3.5	17.1	0	0	0		
			60	<0.1	3.5	16.3	0	0	0		
			90	<0.1	3.5	16.5	0	0	0		
			120	<0.1	3.5	16.4	0	0	0		
			180	<0.1	3.5	16.4	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH4 (Existing) (Deep)			0	Tubing extended down into water, unable to gas monitor without sucking liquid up into gas analyser.							Shallow and deep valves on same bung, deep is extended down with tubing to lower level. Co-ordinates, Eastings=490597 Northings=410094 Height=33m
			15								
			30								
			60								
			90								
			120								
			180								
			240								

Site	Midland Road Industrial Estate, Scunthorpe
Date	12 February 2013
Visit Number	Visit 6
Attendees	Enitial – Ian Mayoh
Weather	Low level cloud, slight ground frost with pooling water in places, cold breeze.
Atm Pre	1013mb, rising to 1016mb
Equipment Utilised	Enitial Gas Analyser – GEM2000+, Serial Number 08813, Calibrated October 2012 Enitial PID – Mini RAE Lite-PGM7300 Enitial Interface Meter – Solinst Interface Dipmeter Model 122 P1/M3/60m

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHA	0.0	0.01	0	<0.1	Rising	20.8	0	0	0	1.59	Base at 1.81mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 33cm above ground level (AGL)
			15	<0.1	1.4	19.6	0	0	0		
			30	<0.1	1.4	19.2	0	0	0		
			60	<0.1	1.4	18.7	0	0	0		
			90	<0.1	1.4	18.7	0	0	0		
			120	<0.1	1.4	18.7	0	0	0		
			180	<0.1	1.4	18.7	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHB	0.0	-0.02	0	<0.1	Rising	20.9	0	0	0	Dry	Base at 1.11mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	1.1	20.7	0	0	0		
			30	<0.1	1.2	20.3	0	0	0		
			60	<0.1	1.2	20.0	0	0	0		
			90	<0.1	1.2	20.1	0	0	0		
			120	<0.1	1.2	20.0	0	0	0		
			180	<0.1	1.2	20.0	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHC	0.0	0.01	0	<0.1	Rising	20.8	0	0	0	Dry	Base at 1.03mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	1.9	19.9	0	0	0		
			30	<0.1	1.9	18.7	0	0	0		
			60	<0.1	1.9	17.9	0	0	0		
			90	<0.1	2.0	18.1	0	0	0		
			120	<0.1	1.9	17.9	0	0	0		
			180	<0.1	1.9	17.9	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHD	0.0	0.00	0	<0.1	Rising	20.8	0	0	0	Dry	Base at 0.90mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.5	20.1	0	0	0		
			30	<0.1	0.5	20.1	0	0	0		
			60	<0.1	0.5	20.0	0	0	0		
			90	<0.1	0.5	20.0	0	0	0		
			120	<0.1	0.5	20.0	0	0	0		
			180	<0.1	0.5	20.0	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHE	0.0	-0.04	0	<0.1	Rising	20.8	0	0	0	Dry	Base at 1.44mbTOC PID Reading 0.0ppm Raised Cover is 47cm (AGL)
			15	<0.1	1.0	19.9	0	0	0		
			30	<0.1	1.0	19.2	0	0	0		
			60	<0.1	1.0	19.0	0	0	0		
			90	<0.1	1.0	18.9	0	0	0		
			120	<0.1	1.0	18.9	0	0	0		
			180	<0.1	1.0	18.9	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHF	0.0	0.01	0	<0.1	Rising	20.8	0	0	0	2.61	Base at 2.84mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	5.6	19.6	0	0	0		
			30	<0.1	6.1	16.4	0	0	0		
			60	<0.1	6.1	15.7	0	0	0		
			90	<0.1	6.1	15.7	0	0	0		
			120	<0.1	6.1	15.7	0	0	0		
			180	<0.1	6.1	15.7	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHG	0.0	-0.03	0	<0.1	Rising	20.8	0	0	0	2.53	Base at 2.54mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	1.5	19.6	0	0	0		
			30	<0.1	1.6	18.8	0	0	0		
			60	<0.1	1.6	18.5	0	0	0		
			90	<0.1	1.6	18.4	0	0	0		
			120	<0.1	1.6	18.4	0	0	0		
			180	<0.1	1.6	18.4	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHH	0.0	0.05	0	<0.1	Rising	20.9	0	0	0	Dry	Base at 2.64mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	9.2	18.9	0	0	0		
			30	<0.1	10.1	10.0	0	0	0		
			60	<0.1	10.1	6.5	0	0	0		
			90	<0.1	10.1	6.1	0	0	0		
			120	<0.1	10.0	6.1	0	0	0		
			180	<0.1	10.1	6.1	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHI	0.0	-0.01	0	Rising						2.68	Base at 2.87mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	1.3	4.5	16.7	29	0	0		
			30	1.4	4.7	4.9	29	0	0		
			60	1.4	4.7	2.1	29	0	0		
			90	1.4	4.7	1.7	30	0	0		
			120	1.4	4.7	1.5	30	0	0		
			180	1.4	4.7	1.5	30	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHJ	0.0	0.04	0	<0.1	Rising	20.9	0	0	0	Dry	Base at 2.47mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	6.9	19.3	0	0	0		
			30	<0.1	7.6	13.7	0	0	0		
			60	<0.1	7.6	10.8	0	0	0		
			90	<0.1	7.6	10.8	0	0	0		
			120	<0.1	7.6	10.8	0	0	0		
			180	<0.1	7.6	10.8	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHK	0.0	-0.02	0	Rising						2.35	Base at 3.14mbTOC, No LNAPL No DNAPL PID Reading 0.0ppm, Flush Cover at Ground Level, Odour Emitting When Bung was Removed. **Gas Sample Taken**
			15	12.5	7.7	17.1	>>>	0	0		
			30	13.6	8.4	5.4	>>>	0	0		
			60	13.7	8.4	0.6	>>>	0	0		
			90	13.5	8.4	0.1	>>>	0	0		
			120	13.6	8.4	0.0	>>>	0	0		
			180	13.6	8.4	0.0	>>>	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHL	0.0	0.04	0	Rising						3.07	Base at 3.08mbTOC, No LNAPL No DNAPL PID Reading 0.0ppm, Flush Cover at Ground Level, **Gas Sample Taken**
			15	17.9	3.8	16.2	>>>	0	0		
			30	18.9	4.0	4.2	>>>	0	0		
			60	18.7	4.0	0.4	>>>	0	0		
			90	18.7	4.0	0.1	>>>	0	0		
			120	18.5	4.0	0.0	>>>	0	0		
			180	18.5	3.9	0.0	>>>	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHM	0.0	-0.01	0	<0.1	Rising	20.8	0	0	0	Dry	Base at 3.23mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.9	20.5	0	0	0		
			30	<0.1	0.9	20.1	0	0	0		
			60	<0.1	0.9	20.0	0	0	0		
			90	<0.1	0.9	20.0	0	0	0		
			120	<0.1	0.9	20.0	0	0	0		
			180	<0.1	0.9	20.1	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHN	0.0	0.00	0	Rising						2.40	Base at 2.62mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 50cm (AGL), **Gas Sample Taken**
			15	61.1	7.8	18.4	>>>	0	0		
			30	63.8	8.2	5.8	>>>	0	0		
			60	64.0	8.2	2.7	>>>	0	0		
			90	64.0	8.2	2.4	>>>	0	0		
			120	64.1	8.2	2.4	>>>	0	0		
			180	64.7	8.3	2.1	>>>	0	0		
			240	65.3	8.4	1.9	>>>	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHO	6.7 Peak	9.95 Peak	0	Rising						1.31	Base at 3.62mbTOC No LNAPL No DNAPL Initial peak flow of 6.7l/hr reduced to 0 in 2mins, closed and retested at 1.3l/hr, steady at zero after 30secs, Flow rates most likely reflect high water table relative to ground level. PID Reading 0.0ppm Raised Cover is 50cm (AGL).
			15	8.0	3.2	19.3	>>>	0	0		
			30	8.9	3.3	17.2	>>>	0	0		
			60	8.9	3.3	16.9	>>>	0	0		
			90	9.2	3.3	16.6	>>>	0	0		
			120	10.6	3.5	16.1	>>>	0	0		
			180	11.1	3.5	15.7	>>>	0	0		
			240	11.4	3.6	15.7	>>>	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH101	0.0	-0.02	0	<0.1	Rising	20.8	0	0	0	2.92	Base at 6.85mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 46cm (AGL)
			15	<0.1	1.8	19.9	0	0	0		
			30	<0.1	1.8	17.8	0	0	0		
			60	<0.1	1.8	17.5	0	0	0		
			90	<0.1	1.8	17.6	0	0	0		
			120	<0.1	1.8	17.5	0	0	0		
			180	<0.1	1.8	17.5	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH102	-5.1 Peak Retest -1.5 Peak -0.2 Steady	-5.67 Peak Retest -0.41 Steady	0	Rising						3.96	Base at 6.71mbTOC No LNAPL No DNAPL PID Reading 0.0ppm, Initial peak flow of -5.1l/hr reduced to 0 in 2mins, closed and retested at -1.5l/hr, steady at -0.2 after 30secs, Flush Cover at Ground Level, Extended monitoring period-CH4 rising
			15	1.6	0.6	18.8	32	0	0		
			30	1.6	0.6	14.7	31	0	0		
			60	1.6	0.6	13.3	32	0	0		
			90	1.6	0.6	13.0	32	0	0		
			120	1.7	0.6	12.7	33	0	0		
			180	2.1	0.6	11.2	42	0	0		
			240	2.4	0.6	10.3	47	0	0		
			300	2.5	0.6	9.5	49	0	0		
			360	2.7	0.6	8.6	54	0	0		
			420	2.8	0.7	8.2	56	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH103	-4.4 Peak Retest -2.2 Steady 0.0	-6.53 Peak Retest -1.74 Steady 0.00	0	<0.1	Rising	20.8	0	0	0	0.21	Base at 5.28mbTOC No LNAPL No DNAPL 20cm of silt at bottom PID Reading 0.0ppm Raised Cover is 23cm (AGL) Flow peak -4.4l/hr, steady at 0.0l/hr NB: High water table relative to ground level, due to raised headwork groundwater effectively artesian.
			15	<0.1	0.6	19.8	0	0	0		
			30	<0.1	0.5	18.0	0	0	0		
			60	<0.1	0.3	18.9	0	0	0		
			90	<0.1	0.1	19.8	0	0	0		
			120	<0.1	0.0	20.8	0	0	0		
			180	<0.1	0.0	20.8	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH104	0.0	0.00	0	RISING						1.81	Base at 7.44mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 37cm (AGL)
			15	0.1	2.6	20.5	2	0	0		
			30	0.1	2.8	20.0	2	0	0		
			60	0.1	2.1	20.1	2	0	0		
			90	0.1	2.0	19.9	2	0	0		
			120	0.1	1.9	20.3	1	0	0		
			180	<0.1	1.5	20.3	0	0	0		
			240	<0.1	1.3	20.5	0	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH105	-8.3 Peak 0.0 Steady	-10.85 Peak 0.01 Steady	0	RISING						3.62	Base at 8.06mbTOC No LNAPL No DNAPL 15cm of silt PID Reading 0.0ppm Flush Cover at Ground Level
			15	0.4	2.2	19.1	7	0	0		
			30	0.4	2.5	14.7	7	0	0		
			60	0.1	2.9	12.1	2	0	0		
			90	<0.1	2.9	11.6	0	0	0		
			120	<0.1	3.0	11.3	0	0	0		
			180	<0.1	3.0	11.3	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH106 (Shallow)	0.0	0.00	0	<0.1	Rising	20.9	0	0	0	Dry	Base at 2.51mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.7	20.4	0	0	0		
			30	<0.1	0.8	19.6	0	0	0		
			60	<0.1	0.8	19.5	0	0	0		
			90	<0.1	0.8	19.5	0	0	0		
			120	<0.1	0.8	19.5	0	0	0		
			180	<0.1	0.8	19.5	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH106 (Deep)	0.0	0.00	0	<0.1	Rising	20.9	0	0	0	2.84	Base at 6.38mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.6	20.1	0	0	0		
			30	<0.1	0.6	19.0	0	0	0		
			60	<0.1	0.6	18.8	0	0	0		
			90	<0.1	0.6	18.8	0	0	0		
			120	<0.1	0.6	18.9	0	0	0		
			180	<0.1	0.6	18.8	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH1 (Existing) (Shallow)	0.0	0.03	0	<0.1	Rising	20.9	0	0	0	2.95	Base at 3.20mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	5.0	19.4	0	0	0		
			30	<0.1	5.5	13.4	0	0	0		
			60	<0.1	5.5	12.6	0	0	0		
			90	<0.1	5.5	12.3	0	0	0		
			120	<0.1	5.5	12.4	0	0	0		
			180	<0.1	5.5	12.4	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH1 (Existing) (Deep)	0.0	0.02	0	<0.1	Rising	20.8	0	0	0		PID Reading=0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	<0.1	5.3	19.4	0	0	0		
			30	<0.1	5.6	13.6	0	0	0		
			60	<0.1	5.6	12.5	0	0	0		
			90	<0.1	5.6	12.1	0	0	0		
			120	<0.1	5.6	12.2	0	0	0		
			180	<0.1	5.6	12.2	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH2 (Existing) (Shallow)			0							2.94	Base at 3.76mbTOC No LNAPL No DNAPL Flush Cover at Ground Level, No Gas Monitoring as bung has been removed to allow to vent, will replace next week.
			15								
			30								
			60								
			90								
			120								
			180								
			240								
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH2 (Existing) (Deep)			0								Shallow and deep valves on same bung, deep is extended down with tubing to lower level. No Gas Monitoring as bung has been removed to allow to vent, will replace next week.
			15								
			30								
			60								
			90								
			120								
			180								
			240								

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH3 (Existing) (Shallow)	0.0	0.00	0	<0.1	Rising	20.8	0	0	0	1.96	Base at 3.02mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	3.4	19.8	0	0	0		
			30	<0.1	3.6	17.2	0	0	0		
			60	<0.1	3.6	16.0	0	0	0		
			90	<0.1	3.5	16.0	0	0	0		
			120	<0.1	3.5	16.1	0	0	0		
			180	<0.1	3.5	16.0	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH3 (Existing) (Deep)	-0.4 Peak -0.1 Steady	-0.51 Peak -0.44 Steady	0	<0.1	Rising	20.6	0	0	0		PID Reading=0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	<0.1	3.5	19.6	0	0	0		
			30	<0.1	3.5	16.6	0	0	0		
			60	<0.1	3.5	16.1	0	0	0		
			90	<0.1	3.5	16.1	0	0	0		
			120	<0.1	3.5	16.1	0	0	0		
			180	<0.1	3.5	16.1	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH4 (Existing) (Shallow)	0.0	-0.02	0	<0.1	Rising	20.8	0	0	0	1.56	Base at 2.72mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.9	20.2	0	0	0		
			30	<0.1	0.9	20.0	0	0	0		
			60	<0.1	0.9	19.8	0	0	0		
			90	<0.1	0.9	19.8	0	0	0		
			120	<0.1	0.9	19.8	0	0	0		
			180	<0.1	0.9	19.8	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH4 (Existing) (Deep)	1.2 Peak Retest 0.0	0.81 Peak Retest 0.08	0	<0.1	Rising	20.9	0	0	0		PID Reading 0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	<0.1	1.5	20.0	0	0	0		
			30	<0.1	0.9	20.0	0	0	0		
			60	<0.1	0.9	19.6	0	0	0		
			90	<0.1	0.9	19.6	0	0	0		
			120	<0.1	0.9	19.5	0	0	0		
			180	<0.1	0.9	19.5	0	0	0		
			240	STEADY							

Site	Midland Road Industrial Estate, Scunthorpe
Date	21 February 2013
Visit Number	Visit 7
Attendees	Enitial – Ian Mayoh
Weather	Low level cloud, cold, very slight ground frost, damp ground otherwise, cold breeze.
Atm Pressure	1025mb, rising to 1028mb
Equipment Utilised	Enitial Gas Analyser – GEM2000+, Serial Number GM08813, Calibrated October 2012 Enitial PID – Mini RAE Lite-PGM7300 Enitial Interface Meter – Solinst Interface Dipmeter Model 122 P1/M3/60m

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHA	0.0	0.03	0	<0.1	Rising	20.8	0	0	0	1.57	Base at 1.81mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 33cm above ground level (AGL)
			15	<0.1	1.4	20.0	0	0	0		
			30	<0.1	1.5	19.2	0	0	0		
			60	<0.1	1.5	19.1	0	0	0		
			90	<0.1	1.5	19.0	0	0	0		
			120	<0.1	1.5	19.0	0	0	0		
			180	<0.1	1.5	18.9	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHB	0.0	0.03	0	<0.1	Rising	20.8	0	0	0	Dry	Base at 1.11mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	1.2	20.1	0	0	0		
			30	<0.1	1.2	20.0	0	0	0		
			60	<0.1	1.2	19.8	0	0	0		
			90	<0.1	1.2	19.8	0	0	0		
			120	<0.1	1.2	19.8	0	0	0		
			180	<0.1	1.2	19.8	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHC	0.0	0.00	0	<0.1	Rising	20.6	0	0	0	Dry	Base at 1.05mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	1.9	20.1	0	0	0		
			30	<0.1	2.0	18.3	0	0	0		
			60	<0.1	2.1	17.8	0	0	0		
			90	<0.1	2.1	17.3	0	0	0		
			120	<0.1	2.1	17.3	0	0	0		
			180	<0.1	2.1	17.4	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHD	0.0	0.01	0	<0.1	Rising	20.8	0	0	0	Dry	Base at 0.88mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.5	20.1	0	0	0		
			30	<0.1	0.6	20.0	0	0	0		
			60	<0.1	0.6	20.0	0	0	0		
			90	<0.1	0.6	20.0	0	0	0		
			120	<0.1	0.6	20.1	0	0	0		
			180	<0.1	0.6	20.0	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHE	0.0	0.02	0	<0.1	Rising	20.7	0	0	0	Dry	Base at 1.45mbTOC PID Reading 0.0ppm Raised Cover is 47cm (AGL)
			15	<0.1	1.0	20.2	0	0	0		
			30	<0.1	1.0	19.6	0	0	0		
			60	<0.1	1.0	19.4	0	0	0		
			90	<0.1	1.0	19.2	0	0	0		
			120	<0.1	1.0	19.2	0	0	0		
			180	<0.1	1.0	19.2	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHF	0.0	0.01	0	<0.1	Rising	20.7	0	0	0	2.62	Base at 2.84mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	5.8	19.4	0	0	0		
			30	<0.1	6.6	14.9	0	0	0		
			60	<0.1	6.6	14.3	0	0	0		
			90	<0.1	6.6	13.9	0	0	0		
			120	<0.1	6.6	14.0	0	0	0		
			180	<0.1	6.6	14.0	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHG	0.0	0.00	0	<0.1	Rising	20.8	0	0	0	2.49	Base at 2.50mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	1.6	19.9	0	0	0		
			30	<0.1	1.6	18.9	0	0	0		
			60	<0.1	1.6	18.7	0	0	0		
			90	<0.1	1.6	18.5	0	0	0		
			120	<0.1	1.6	18.5	0	0	0		
			180	<0.1	1.6	18.5	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHH	0.0	0.05	0	<0.1	Rising	20.8	0	0	0	2.63	Base at 2.64mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	8.9	19.3	0	0	0		
			30	<0.1	9.9	9.4	0	0	0		
			60	<0.1	10.1	5.8	0	0	0		
			90	<0.1	10.1	5.4	0	0	0		
			120	<0.1	10.1	5.4	0	0	0		
			180	<0.1	10.1	5.3	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHI	0.0	-0.01	0	<0.1	Rising	20.8	0	0	0	2.66	Base at 2.85mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	1.9	19.0	0	0	0		
			30	<0.1	2.0	12.0	0	0	0		
			60	<0.1	2.0	8.4	0	0	0		
			90	<0.1	2.0	8.1	0	0	0		
			120	<0.1	2.0	8.1	0	0	0		
			180	<0.1	2.0	8.1	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHJ	0.0	0.04	0	<0.1	Rising	20.7	0	0	0	Dry	Base at 2.47mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	7.0	18.7	0	0	0		
			30	<0.1	7.6	12.7	0	0	0		
			60	<0.1	7.6	10.5	0	0	0		
			90	<0.1	7.6	10.5	0	0	0		
			120	<0.1	7.6	10.4	0	0	0		
			180	<0.1	7.6	10.4	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHK	0.0	0.00	0	Rising						2.37	Base at 3.14mbTOC, No LNAPL No DNAPL PID Reading 0.0ppm, Flush Cover at Ground Level
			15	13.2	8.2	16.4	>>>	0	0		
			30	13.4	8.2	5.1	>>>	0	0		
			60	13.3	8.2	0.6	>>>	0	0		
			90	13.2	8.2	0.2	>>>	0	0		
			120	13.2	8.2	0.1	>>>	0	0		
			180	13.2	8.2	0.1	>>>	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHL	0.0	-0.03	0	Rising						3.06	Base at 3.08mbTOC, No LNAPL No DNAPL PID Reading 0.1ppm, Flush Cover at Ground Level
			15	20.2	3.8	15.8	>>>	0	0		
			30	20.4	3.8	2.1	>>>	0	0		
			60	20.4	3.8	0.5	>>>	0	0		
			90	20.2	3.8	0.2	>>>	0	0		
			120	20.2	3.8	0.0	>>>	0	0		
			180	20.2	3.8	0.0	>>>	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHM	0.0	-0.03	0	<0.1	Rising	20.6	0	0	0	Dry	Base at 3.23mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.9	20.4	0	0	0		
			30	<0.1	1.0	20.0	0	0	0		
			60	<0.1	1.0	19.9	0	0	0		
			90	<0.1	1.0	19.9	0	0	0		
			120	<0.1	1.0	19.9	0	0	0		
			180	<0.1	1.0	19.9	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHN	0.0	0.05	0	Rising						2.42	Base at 2.62mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 50cm (AGL).
			15	69.9	7.3	16.3	>>>	0	0		
			30	75.0	7.6	3.2	>>>	0	0		
			60	75.0	7.6	0.3	>>>	0	0		
			90	75.0	7.7	0.0	>>>	0	0		
			120	74.9	7.7	0.0	>>>	0	0		
			180	74.9	7.7	0.0	>>>	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHO	0.5 Peak	0.52 Peak 0.16 Steady	0	Rising						1.34	Base at 3.64mbTOC No LNAPL No DNAPL Initial peak flow of 0.5l/hr reduced to 0 in 30secs, closed and retested at 0.2l/hr, steady at zero after 10secs, Flow rates most likely reflect high water table relative to ground level. PID Reading 0.0ppm Raised Cover is 50cm (AGL).
			15	10.6	3.7	20.0	>>>	0	0		
			30	11.0	3.8	17.3	>>>	0	0		
			60	11.0	3.8	16.1	>>>	0	0		
			90	11.5	3.9	15.8	>>>	0	0		
			120	12.1	3.9	15.6	>>>	0	0		
			180	12.2	3.9	15.4	>>>	0	0		
			240	12.1	3.9	15.3	>>>	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH101	0.0	0.00	0	<0.1	Rising	20.8	0	0	0	2.92	Base at 6.86mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 46cm (AGL)
			15	<0.1	1.7	20.1	0	0	0		
			30	<0.1	1.6	19.0	0	0	0		
			60	<0.1	1.6	18.6	0	0	0		
			90	<0.1	1.6	18.3	0	0	0		
			120	<0.1	1.6	18.3	0	0	0		
			180	<0.1	1.6	18.3	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH102	-4.4 Peak Retest -2.1 Steady -0.2	-4.16 Peak Steady -0.56	0	Rising						3.94	Base at 6.70mbTOC No LNAPL No DNAPL PID Reading 0.0ppm, Initial peak flow of -4.4l/hr reduced to 0 in 2mins, closed and retested at -2.1l/hr, steady at -0.2 after 30secs, Flush Cover at Ground Level, Extended monitoring period-CH4 rising
			15	1.5	0.8	18.4	29	0	0		
			30	1.6	0.8	14.4	31	0	0		
			60	1.6	0.8	12.4	31	0	0		
			90	1.6	0.8	12.0	31	0	0		
			120	1.8	0.8	11.6	35	0	0		
			180	2.3	0.8	9.8	46	0	0		
			240	2.8	0.8	8.1	55	0	0		
			300	3.1	0.8	6.7	61	0	0		
			360	3.4	0.8	5.2	68	0	0		
			420	3.8	0.8	4.6	76	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH103	-3.8 Peak Retest -0.5 Steady 0.0	-6.77 Peak Steady -1.55	0	<0.1	Rising	20.6	0	0	0	0.21	Base at 5.31mbTOC No LNAPL No DNAPL 20cm of silt PID Reading 0.0ppm Raised Cover is 23cm (AGL) Flow peak -3.8l/hr, steady at 0.0l/hr NB: High water table relative to ground level, due to raised headwork groundwater effectively artesian.
			15	<0.1	0.9	19.8	0	0	0		
			30	<0.1	0.6	17.5	0	0	0		
			60	<0.1	0.4	19.2	0	0	0		
			90	<0.1	0.2	19.7	0	0	0		
			120	<0.1	0.0	20.2	0	0	0		
			180	<0.1	0.0	20.7	0	0	0		
			240	<0.1	0.0	20.7	0	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH104	0.0	0.04	0	RISING						1.74	Base at 7.42mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 37cm (AGL)
			15	0.1	3.5	19.8	2	0	0		
			30	0.1	3.4	19.7	2	0	0		
			60	0.1	3.2	19.4	2	0	0		
			90	0.1	3.0	19.5	1	0	0		
			120	<0.1	2.7	19.6	0	0	0		
			180	<0.1	2.0	20.0	0	0	0		
			240	<0.1	1.5	20.2	0	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH105	-7.8 Peak -0.1 Steady	-10.79 Peak -0.04 Steady	0	<0.1	Rising	20.4	0	0	0	3.62	Base at 8.06mbTOC No LNAPL No DNAPL 17cm of silt PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	1.9	19.4	0	0	0		
			30	<0.1	2.2	15.3	0	0	0		
			60	<0.1	2.3	13.3	0	0	0		
			90	<0.1	2.4	12.9	0	0	0		
			120	<0.1	2.4	12.5	0	0	0		
			180	<0.1	2.5	12.2	0	0	0		
			240	<0.1	2.5	12.2	0	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH106 (Shallow)	-0.1 Peak	-0.89 Peak -0.08 Peak on Retest	0	<0.1	Rising	20.8	0	0	0	Dry	Base at 2.51mbTOC Flow fluctuating between -0.1 and 0.0 l/hr, PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.8	20.4	0	0	0		
			30	<0.1	0.8	19.1	0	0	0		
			60	<0.1	0.8	18.9	0	0	0		
			90	<0.1	0.8	19.0	0	0	0		
			120	<0.1	0.8	19.1	0	0	0		
			180	<0.1	0.8	19.1	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH106 (Deep)	0.0	-0.03	0	<0.1	Rising	20.8	0	0	0	2.84	Base at 6.39mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.6	20.3	0	0	0		
			30	<0.1	0.7	18.9	0	0	0		
			60	<0.1	0.7	18.9	0	0	0		
			90	<0.1	0.7	18.8	0	0	0		
			120	<0.1	0.7	18.8	0	0	0		
			180	<0.1	0.7	18.8	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH1 (Existing) (Shallow)	0.0	0.01	0	<0.1	Rising	20.8	0	0	0	2.92	Base at 3.23mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	5.5	17.6	0	0	0		
			30	<0.1	5.6	14.0	0	0	0		
			60	<0.1	5.6	12.1	0	0	0		
			90	<0.1	5.6	11.9	0	0	0		
			120	<0.1	5.6	12.1	0	0	0		
			180	<0.1	5.6	11.9	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH1 (Existing) (Deep)	0.0	-0.02	0	<0.1	Rising	20.7	0	0	0		PID Reading=0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	<0.1	5.1	19.2	0	0	0		
			30	<0.1	5.6	12.7	0	0	0		
			60	<0.1	5.7	12.2	0	0	0		
			90	<0.1	5.7	11.7	0	0	0		
			120	<0.1	5.7	11.7	0	0	0		
			180	<0.1	5.7	11.7	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH2 (Existing) (Shallow)			0							2.92	Base at 3.76mbTOC No LNAPL No DNAPL Flush Cover at Ground Level, Replaced bung after dip, after 2 weeks of venting, will recommence gas monitoring next week.
			15								
			30								
			60								
			90								
			120								
			180								
			240								
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH2 (Existing) (Deep)			0								Shallow and deep valves on same bung, deep is extended down with tubing to lower level. Replaced bung after dip, after 2 weeks of venting, will recommence gas monitoring next week.
			15								
			30								
			60								
			90								
			120								
			180								
			240								

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH3 (Existing) (Shallow)	0.0	0.01	0	<0.1	Rising	20.9	0	0	0	1.95	Base at 3.01mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	3.2	19.8	0	0	0		
			30	<0.1	3.4	17.4	0	0	0		
			60	<0.1	3.4	16.0	0	0	0		
			90	<0.1	3.4	16.1	0	0	0		
			120	<0.1	3.4	16.1	0	0	0		
			180	<0.1	3.4	16.1	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH3 (Existing) (Deep)	0.0	-0.43 Peak 0.00 Steady	0	<0.1	Rising	20.8	0	0	0		PID Reading=0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	<0.1	3.2	19.1	0	0	0		
			30	<0.1	3.4	17.6	0	0	0		
			60	<0.1	3.4	16.3	0	0	0		
			90	<0.1	3.4	16.0	0	0	0		
			120	<0.1	3.4	16.0	0	0	0		
			180	<0.1	3.4	16.0	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH4 (Existing) (Shallow)	0.0	0.01	0	<0.1	Rising	20.8	0	0	0	1.56	Base at 2.69mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.7	20.4	0	0	0		
			30	<0.1	0.7	20.1	0	0	0		
			60	<0.1	0.7	20.2	0	0	0		
			90	<0.1	0.7	20.0	0	0	0		
			120	<0.1	0.7	20.0	0	0	0		
			180	<0.1	0.7	20.0	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH4 (Existing) (Deep)	0.0	-0.01	0	<0.1	Rising	20.8	0	0	0		PID Reading 0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	<0.1	0.9	20.2	0	0	0		
			30	<0.1	0.8	19.9	0	0	0		
			60	<0.1	0.8	20.0	0	0	0		
			90	<0.1	0.8	20.0	0	0	0		
			120	<0.1	0.8	20.0	0	0	0		
			180	<0.1	0.8	20.0	0	0	0		
			240	STEADY							

Site	Midland Road Industrial Estate, Scunthorpe
Date	28 February 2013
Visit Number	Visit 8
Attendees	Enitial – Ian Mayoh
Weather	Clear, sunny, cold at start (-1DegC), morning ground frost, damp ground otherwise, warming up to 10DegC at end of visit.
Atm Pressure	1030mb, rising to 1033mb
Equipment Utilised	EPG Gas Analyser – GFM430, Serial Number 10207, Calibrated November 2012 Enitial Gas Analyser – GEM2000+, Serial Number GM08813, Calibrated October 2012 Enitial PID – Mini RAE Lite-PGM7300 Enitial Interface Meter – Solinst Interface Dipmeter Model 122 P1/M3/60m

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHA	-0.1	-1	0	<0.1	Rising	20.2	0	0	0	Dry	Base at 1.81mbTOC PID Reading 0.0ppm Raised Cover is 33cm above ground level (AGL) Used GFM for flow and pressure, bulk gas done on GEM
			15	<0.1	1.4	19.4	0	0	0		
			30	<0.1	1.4	19.0	0	0	0		
			60	<0.1	1.4	18.8	0	0	0		
			90	<0.1	1.4	18.9	0	0	0		
			120	<0.1	1.4	18.8	0	0	0		
			180	<0.1	1.4	18.8	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHB	0.0	1	0	<0.1	Rising	19.7	0	0	0	Dry	Base at 1.11mbTOC PID Reading 0.0ppm Flush Cover at Ground Level Used GFM Monitor
			15	<0.1	0.9	19.0	0	0	0		
			30	<0.1	0.9	18.8	0	0	0		
			60	<0.1	0.9	18.8	0	0	0		
			90	<0.1	0.9	18.8	0	0	0		
			120	<0.1	0.9	18.8	0	0	0		
			180	<0.1	0.9	18.8	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHC	0.1	1	0	<0.1	Rising	20.1	0	0	0	Dry	Base at 1.06mbTOC PID Reading 0.0ppm Flush Cover at Ground Level Used GFM Monitor
			15	<0.1	1.6	17.8	0	0	0		
			30	<0.1	1.7	17.5	0	0	0		
			60	<0.1	1.7	17.4	0	0	0		
			90	<0.1	1.7	17.4	0	0	0		
			120	<0.1	1.7	17.4	0	0	0		
			180	<0.1	1.7	17.4	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHD	0.0	0	0	<0.1	Rising	20.0	0	0	0	Dry	Base at 0.88mbTOC PID Reading 0.0ppm Flush Cover at Ground Level Used GFM Monitor
			15	<0.1	0.3	19.8	0	0	0		
			30	<0.1	0.3	19.7	0	0	0		
			60	<0.1	0.4	19.7	0	0	0		
			90	<0.1	0.4	19.7	0	0	0		
			120	<0.1	0.4	19.7	0	0	0		
			180	<0.1	0.4	19.7	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHE	0.0	0	0	<0.1	Rising	19.6	0	0	0	Dry	Base at 1.45mbTOC PID Reading 0.0ppm Raised Cover is 47cm (AGL) Used GFM Monitor
			15	<0.1	0.7	19.1	0	0	0		
			30	<0.1	0.7	18.9	0	0	0		
			60	<0.1	0.7	18.8	0	0	0		
			90	<0.1	0.8	18.9	0	0	0		
			120	<0.1	0.8	18.9	0	0	0		
			180	<0.1	0.8	18.9	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHF	0.1 Peak 0.0 Steady	1 Peak 0 Steady	0	<0.1	Rising	20.2	0	0	0	2.64	Base at 2.85mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level Used GFM for flow and pressure, bulk gas done on GEM
			15	<0.1	6.4	19.1	0	0	0		
			30	<0.1	7.1	13.1	0	0	0		
			60	<0.1	7.0	12.0	0	0	0		
			90	<0.1	7.0	12.0	0	0	0		
			120	<0.1	7.0	12.0	0	0	0		
			180	<0.1	7.0	12.0	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHG	0.3 Peak 0.0 Steady	1 Peak 0 Steady	0	<0.1	Rising	20.4	0	0	0	2.49	Base at 2.50mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level Used GFM for flow and pressure, bulk gas done on GEM
			15	<0.1	1.4	19.5	0	0	0		
			30	<0.1	1.4	19.0	0	0	0		
			60	<0.1	1.4	18.8	0	0	0		
			90	<0.1	1.4	18.8	0	0	0		
			120	<0.1	1.4	18.8	0	0	0		
			180	<0.1	1.4	18.7	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHH	0.5 Peak Retest 0.1	2 Peak Retest 1	0	<0.1	Rising	20.4	0	0	0	Dry	Base at 2.64mbTOC PID Reading 0.0ppm Flush Cover at Ground Level Used GFM for flow and pressure, bulk gas done on GEM
			15	<0.1	9.4	18.8	0	0	0		
			30	<0.1	10.5	7.1	0	0	0		
			60	<0.1	10.4	3.0	0	0	0		
			90	<0.1	10.4	2.7	0	0	0		
			120	<0.1	10.4	2.7	0	0	0		
			180	<0.1	10.4	2.7	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHI	0.0	0	0	RISING						2.70	Base at 2.85mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level Used GFM for flow and pressure, bulk gas done on GEM
			15	1.0	7.2	12.8	0	0	0		
			30	1.2	7.4	2.7	0	0	0		
			60	1.2	7.4	0.3	0	0	0		
			90	1.2	7.4	0.2	0	0	0		
			120	1.2	7.4	0.0	0	0	0		
			180	1.2	7.5	0.0	0	0	0		
			240	1.2	7.6	0.0	0	0	0		

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHJ	0.0	0	0	RISING						Dry	Base at 2.47mbTOC PID Reading 0.0ppm Flush Cover at Ground Level Extended monitoring-CH4 rising, Used GFM for flow and pressure, bulk gas done on GEM
			15	0.2	8.6	6.4	0	0	0		
			30	0.2	8.6	4.3	0	0	0		
			60	0.2	8.7	4.2	0	0	0		
			90	0.2	8.7	4.0	0	0	0		
			120	0.3	8.7	3.8	0	0	0		
			180	0.5	9.3	2.8	0	0	0		
			240	0.6	9.8	2.1	0	0	0		
			300	1.1	10.4	0.5	0	0	0		
			360	1.2	10.5	0.2	0	0	0		
			420	1.2	10.6	0.2	0	0	0		

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHK	0.0	0	0	Rising						2.40	Base at 3.11mbTOC, No LNAPL No DNAPL PID Reading 0.0ppm, Flush Cover at Ground Level Used GFM for flow and pressure, bulk gas done on GEM
			15	10.2	7.5	14.5	>>>	0	0		
			30	10.3	7.7	2.2	>>>	0	0		
			60	10.5	7.8	0.5	>>>	0	0		
			90	10.5	7.8	0.0	>>>	0	0		
			120	10.5	7.8	0.0	>>>	0	0		
			180	10.5	7.8	0.0	>>>	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHL	0.9 Peak 0.8 Steady	4 Peak 3 Steady	0	Rising						3.09	Base at 3.11mbTOC, No LNAPL No DNAPL PID Reading 0.0ppm, Flush Cover at Ground Level Used GFM for flow and pressure, bulk gas done on GEM
			15	19.9	3.4	11.4	>>>	0	0		
			30	20.7	3.5	1.8	>>>	0	0		
			60	20.5	3.5	0.1	>>>	0	0		
			90	20.5	3.5	0.1	>>>	0	0		
			120	20.5	3.5	0.0	>>>	0	0		
			180	20.5	3.5	0.0	>>>	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHM	0.1	1	0	<0.1	Rising	19.8	0	0	0	2.98	Base at 3.23mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level Used GFM Monitor
			15	<0.1	0.8	19.3	0	0	0		
			30	<0.1	0.8	19.3	0	0	0		
			60	<0.1	0.8	19.3	0	0	0		
			90	<0.1	0.8	19.3	0	0	0		
			120	<0.1	0.8	19.3	0	0	0		
			180	<0.1	0.8	19.3	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHN	0.0	1 Peak 0 Steady	0	Rising						2.47	Base at 2.61mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 50cm (AGL). CH4 reading very unstable, ranging from 87% to 69%, fluctuating inside this range, Used GFM Monitor
			15	83.7	12.3	1.0	>>>	0	0		
			30	81.6	12.5	0.0	>>>	0	0		
			60	81.6	12.7	0.0	>>>	0	0		
			90	81.2	12.5	0.0	>>>	0	0		
			120	82.0	12.5	0.0	>>>	0	0		
			180	87.0	12.8	0.0	>>>	0	0		
			240	81.9	12.9	0.0	>>>	0	0		

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHO	-0.1 Fluct 0.0	-1 Fluct 0	0	Rising						1.44	Base at 3.64mbTOC No LNAPL No DNAPL Flow and pressure fluctuating at given levels, water level 10cm down on last visit, pressures more stable. PID Reading 0.0ppm Raised Cover is 50cm (AGL). CH4 reading very unstable, ranging from 8.8% to 5.6%, fluctuating around inside this range, Used GFM Monitor
			15	6.7	4.8	13.0	>>>	0	0		
			30	7.6	4.6	12.5	>>>	0	0		
			60	8.5	4.8	12.1	>>>	0	0		
			90	7.0	4.8	12.0	>>>	0	0		
			120	7.6	4.8	12.0	>>>	0	0		
			180	7.7	4.8	12.1	>>>	0	0		
			240	7.7	4.7	12.3	>>>	0	0		

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH101	0.0	0	0	<0.1	Rising	19.8	0	0	0	2.94	Base at 6.85mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 46cm (AGL) Used GFM Monitor
			15	<0.1	1.2	18.9	0	0	0		
			30	<0.1	1.2	18.7	0	0	0		
			60	<0.1	1.2	18.7	0	0	0		
			90	<0.1	1.1	18.7	0	0	0		
			120	<0.1	1.1	18.7	0	0	0		
			180	<0.1	1.1	18.7	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH102	-4.3 Peak Retest -4.0 Steady -0.6	-15 Peak Retest -10 Steady -2	0	Rising						4.00	Base at 6.70mbTOC No LNAPL No DNAPL PID Reading 0.0ppm, Initial peak flow of -4.3l/hr reduced to 0 in 1min, closed and retested at -4.0l/hr, steady at -0.6 after 30secs, Flush Cover at Ground Level, Extended monitoring period-CH4 rising Used GFM for flow and pressure, bulk gas done on GEM
			15	1.8	0.7	15.9	35	0	0		
			30	1.8	0.7	12.9	36	0	0		
			60	1.8	0.7	12.4	35	0	0		
			90	1.8	0.7	12.1	35	0	0		
			120	2.0	0.8	11.9	39	0	0		
			180	2.2	0.8	10.8	42	0	0		
			240	2.4	0.8	9.6	48	0	0		
			300	2.8	0.8	8.7	55	0	0		
			360	3.1	0.8	8.0	61	0	0		
			420	3.3	0.8	6.7	66	0	0		

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH103	0.4 Peak Retest 0.0 Steady 0.0	2 Peak Steady 0	0	<0.1	Rising	20.8	0	0	0	0.36	Base at 5.30mbTOC No LNAPL No DNAPL 17cm of silt PID Reading 0.0ppm Raised Cover is 23cm (AGL) Flow peak 0.4l/hr, steady at 0.0l/hr NB: Water level lowered by 15cm since last visit now below ground level, no longer artesian, reflecting slightly more stable flows. Used GFM for flow and pressure, bulk gas done on GEM.
			15	<0.1	0.5	19.9	0	0	0		
			30	<0.1	0.4	20.0	0	0	0		
			60	<0.1	0.3	19.9	0	0	0		
			90	<0.1	0.3	19.8	0	0	0		
			120	<0.1	0.2	20.2	0	0	0		
			180	<0.1	0.0	20.4	0	0	0		
			240	<0.1	0.0	20.5	0	0	0		

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH104	0.0	0	0	<0.1	Rising	19.4	0	0	0	1.77	Base at 7.39mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 37cm (AGL) Used GFM Monitor
			15	<0.1	2.0	18.9	0	0	0		
			30	<0.1	2.1	18.9	0	0	0		
			60	<0.1	2.1	18.8	0	0	0		
			90	<0.1	1.9	18.9	0	0	0		
			120	<0.1	1.7	18.9	0	0	0		
			180	<0.1	1.5	19.0	0	0	0		
			240	<0.1	1.2	19.0	0	0	0		

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH105	-0.7 Peak Retest -0.4 Steady 0.0	-3 Peak Retest -1 Steady -1	0	<0.1	Rising	20.4	0	0	0	3.63	Base at 8.05mbTOC No LNAPL No DNAPL 15cm of silt PID Reading 0.0ppm Flush Cover at Ground Level Used GFM for flow and pressure, bulk gas done on GEM
			15	<0.1	1.8	19.4	0	0	0		
			30	<0.1	1.9	15.3	0	0	0		
			60	<0.1	1.9	13.3	0	0	0		
			90	<0.1	2.0	12.9	0	0	0		
			120	<0.1	2.0	12.5	0	0	0		
			180	<0.1	2.0	12.2	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH106 (Shallow)	0.0	0	0	<0.1	Rising	19.7	0	0	0	Dry	Base at 2.51mbTOC PID Reading 0.0ppm Flush Cover at Ground Level Used GFM Monitor
			15	<0.1	0.5	18.7	0	0	0		
			30	<0.1	0.5	18.6	0	0	0		
			60	<0.1	0.5	18.6	0	0	0		
			90	<0.1	0.5	18.6	0	0	0		
			120	<0.1	0.5	18.6	0	0	0		
			180	<0.1	0.5	18.6	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (Pa)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH106 (Deep)	0.0	0	0	<0.1	Rising	19.6	0	0	0	2.88	Base at 6.38mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level Used GFM Monitor
			15	<0.1	0.5	18.0	0	0	0		
			30	<0.1	0.5	17.8	0	0	0		
			60	<0.1	0.5	17.7	0	0	0		
			90	<0.1	0.5	17.7	0	0	0		
			120	<0.1	0.5	17.7	0	0	0		
			180	<0.1	0.5	17.7	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH1 (Existing) (Shallow)	0.0	0	0	<0.1	Rising	19.5	0	0	0	3.01	Base at 3.23mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level Used GFM Monitor
			15	<0.1	4.8	14.3	0	0	0		
			30	<0.1	4.9	13.6	0	0	0		
			60	<0.1	5.0	13.5	0	0	0		
			90	<0.1	5.0	13.5	0	0	0		
			120	<0.1	5.0	13.5	0	0	0		
			180	<0.1	5.0	13.5	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (Pa)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH1 (Existing) (Deep)	0.2 Peak 0.0 Steady	1	0	<0.1	Rising	19.4	0	0	0		PID Reading=0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level. Used GFM Monitor
			15	<0.1	4.8	14.7	0	0	0		
			30	<0.1	5.0	13.5	0	0	0		
			60	<0.1	5.1	13.3	0	0	0		
			90	<0.1	5.1	13.3	0	0	0		
			120	<0.1	5.1	13.3	0	0	0		
			180	<0.1	5.1	13.3	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH2 (Existing) (Shallow)	0.0	1	0	RISING						3.02	Base at 3.76mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level, Used GFM Monitor
			15	9.8	15.2	1.5	>>>	0	0		
			30	9.9	15.4	0.0	>>>	0	0		
			60	10.0	15.6	0.0	>>>	0	0		
			90	10.1	15.7	0.0	>>>	0	0		
			120	10.1	15.7	0.0	>>>	0	0		
			180	10.1	15.8	0.0	>>>	0	0		
			240	10.2	15.8	0.0	>>>	0	0		
Location	**Flow (l/hr)**	**DP (Pa)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH2 (Existing) (Deep)	-0.1	0	0	RISING							Shallow and deep valves on same bung, deep is extended down with tubing to lower level. PID Reading 0.0ppm Used GFM Monitor
			15	9.2	15.4	2.3	>>>	0	0		
			30	10.5	15.5	0.0	>>>	0	0		
			60	10.4	15.7	0.0	>>>	0	0		
			90	10.4	15.8	0.0	>>>	0	0		
			120	10.4	15.9	0.0	>>>	0	0		
			180	10.4	16.0	0.0	>>>	0	0		
			240	10.4	16.0	0.0	>>>	0	0		

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH3 (Existing) (Shallow)	-0.1	-1	0	<0.1	Rising	20.1	0	0	0	1.99	Base at 3.01mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level Used GFM for flow and pressure, bulk gas done on GEM
			15	<0.1	2.9	16.8	0	0	0		
			30	<0.1	3.0	15.9	0	0	0		
			60	<0.1	3.0	15.8	0	0	0		
			90	<0.1	3.0	15.8	0	0	0		
			120	<0.1	3.0	15.8	0	0	0		
			180	<0.1	3.0	15.8	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (Pa)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH3 (Existing) (Deep)	-0.4 Peak Retest -0.2 Steady -0.1	-2 Peak Retest -1 Steady -1	0	<0.1	Rising	20.1	0	0	0		PID Reading=0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level. Used GFM for flow and pressure, bulk gas done on GEM
			15	<0.1	2.8	16.4	0	0	0		
			30	<0.1	3.0	15.8	0	0	0		
			60	<0.1	3.0	15.8	0	0	0		
			90	<0.1	3.0	15.8	0	0	0		
			120	<0.1	3.0	15.7	0	0	0		
			180	<0.1	3.0	15.7	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (Pa)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH4 (Existing) (Shallow)	0.0	0	0	<0.1	Rising	19.5	0	0	0	1.62	Base at 2.69mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level Used GFM Monitor
			15	<0.1	0.9	18.1	0	0	0		
			30	<0.1	0.9	17.7	0	0	0		
			60	<0.1	0.9	17.7	0	0	0		
			90	<0.1	0.9	17.7	0	0	0		
			120	<0.1	0.9	17.7	0	0	0		
			180	<0.1	0.9	17.7	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (Pa)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH4 (Existing) (Deep)	-0.1 Fluct 0.0	-1 Fluct 0	0	<0.1	Rising	19.6	0	0	0		PID Reading 0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level. Used GFM Monitor
			15	<0.1	0.9	18.3	0	0	0		
			30	<0.1	0.9	17.7	0	0	0		
			60	<0.1	0.9	17.7	0	0	0		
			90	<0.1	0.9	17.7	0	0	0		
			120	<0.1	0.9	17.7	0	0	0		
			180	<0.1	0.9	17.7	0	0	0		
			240	STEADY							

Site	Midland Road Industrial Estate, Scunthorpe
Date	12 March 2013
Visit Number	Visit 9
Attendees	Enitial – Ian Mayoh
Weather	Clear, Sunny but cold, heavy ground frost, -2DegC to start, warming to 5DegC.
Atm Pressure	1012mb, falling to 1010mb
Equipment Utilised	Enitial Gas Analyser – GEM2000+, Serial Number GM08813, Calibrated October 2012 Enitial PID – Mini RAE Lite-PGM7300 Enitial Interface Meter – Solinst Interface Dipmeter Model 122 P1/M3/60m

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHA	0.0	0.00	0	<0.1	Rising	20.9	0	0	0	1.63	Base at 1.81mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 33cm above ground level (AGL)
			15	<0.1	2.1	20.4	0	0	0		
			30	<0.1	2.3	19.5	0	0	0		
			60	<0.1	2.3	19.1	0	0	0		
			90	<0.1	2.2	19.2	0	0	0		
			120	<0.1	2.2	19.1	0	0	0		
			180	<0.1	2.2	19.1	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHB	0.1	0.04	0	<0.1	Rising	20.9	0	0	0	Dry	Base at 1.13mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	1.2	20.4	0	0	0		
			30	<0.1	1.3	20.4	0	0	0		
			60	<0.1	1.3	20.3	0	0	0		
			90	<0.1	1.3	20.3	0	0	0		
			120	<0.1	1.3	20.3	0	0	0		
			180	<0.1	1.3	20.3	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHC	0.0	0.02	0	<0.1	Rising	20.7	0	0	0	Dry	Base at 1.08mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	2.0	20.1	0	0	0		
			30	<0.1	2.2	18.3	0	0	0		
			60	<0.1	2.2	18.1	0	0	0		
			90	<0.1	2.2	18.0	0	0	0		
			120	<0.1	2.2	18.0	0	0	0		
			180	<0.1	2.2	18.0	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHD	0.0	0.03	0	<0.1	Rising	20.8	0	0	0	Dry	Base at 0.89mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.5	19.8	0	0	0		
			30	<0.1	0.5	19.7	0	0	0		
			60	<0.1	0.5	19.7	0	0	0		
			90	<0.1	0.5	19.5	0	0	0		
			120	<0.1	0.5	19.5	0	0	0		
			180	<0.1	0.5	19.7	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHE	0.0	0.00	0	<0.1	Rising	20.6	0	0	0	Dry	Base at 1.45mbTOC PID Reading 0.0ppm Raised Cover is 47cm (AGL)
			15	<0.1	1.1	19.7	0	0	0		
			30	<0.1	1.1	19.1	0	0	0		
			60	<0.1	1.1	18.9	0	0	0		
			90	<0.1	1.1	18.8	0	0	0		
			120	<0.1	1.1	18.9	0	0	0		
			180	<0.1	1.1	18.9	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHF	0.0	0.03	0	<0.1	Rising	20.9	0	0	0	2.68	Base at 2.85mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	7.9	20.1	0	0	0		
			30	<0.1	8.4	13.5	0	0	0		
			60	<0.1	8.5	11.0	0	0	0		
			90	<0.1	8.5	11.0	0	0	0		
			120	<0.1	8.5	10.9	0	0	0		
			180	<0.1	8.5	10.9	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHG	0.0	0.07	0	<0.1	Rising	20.6	0	0	0	Dry	Base at 2.50mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	1.4	19.4	0	0	0		
			30	<0.1	1.4	18.6	0	0	0		
			60	<0.1	1.4	18.6	0	0	0		
			90	<0.1	1.4	18.7	0	0	0		
			120	<0.1	1.4	18.7	0	0	0		
			180	<0.1	1.4	18.7	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHH	0.0	0.04	0	<0.1	Rising	20.8	0	0	0	Dry	Base at 2.64mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	10.1	18.8	0	0	0		
			30	<0.1	11.4	4.1	0	0	0		
			60	<0.1	11.4	2.6	0	0	0		
			90	<0.1	11.5	2.0	0	0	0		
			120	<0.1	11.5	2.0	0	0	0		
			180	<0.1	11.5	2.0	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHI	0.0	0.02	0	RISING						2.68	Base at 2.85mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	1.5	3.8	16.4	29	0	0		
			30	1.8	3.9	3.5	35	0	0		
			60	1.8	3.9	0.4	35	0	0		
			90	1.8	3.9	0.0	35	0	0		
			120	1.8	3.9	0.0	35	0	0		
			180	1.8	3.9	0.0	35	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHJ	-0.4 Peak Retest -0.2 Steady 0.0	-0.67 Peak Retest 0.0	0	<0.1	Rising	20.6	0	0	0	2.44	Base at 2.47mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	8.8	18.7	0	0	0		
			30	<0.1	10.0	6.0	0	0	0		
			60	<0.1	10.0	4.6	0	0	0		
			90	<0.1	10.0	4.2	0	0	0		
			120	<0.1	10.0	4.2	0	0	0		
			180	<0.1	10.0	4.2	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHK	0.1 Fluct 0.0	0.07	0	Rising						2.44	Base at 3.11mbTOC, No LNAPL No DNAPL Flow fluctuating between 0.1l/hr to 0.0l/hr, PID Reading 0.0ppm, Flush Cover at Ground Level
			15	6.0	8.7	14.6	>>>	0	0		
			30	6.0	8.8	3.0	>>>	0	0		
			60	6.0	8.8	0.2	>>>	0	0		
			90	6.0	8.7	0.2	>>>	0	0		
			120	6.0	8.6	0.0	>>>	0	0		
			180	6.0	8.6	0.0	>>>	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHL	0.0	0.01	0	Rising						Dry	Base at 3.08mbTOC, PID Reading 0.0ppm, Flush Cover at Ground Level
			15	20.2	3.8	17.8	>>>	0	0		
			30	21.0	3.9	6.2	>>>	0	0		
			60	20.7	3.9	0.3	>>>	0	0		
			90	20.7	3.9	0.2	>>>	0	0		
			120	20.7	3.9	0.0	>>>	0	0		
			180	20.7	3.9	0.0	>>>	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHM	0.0	0.06	0	<0.1	Rising	20.9	0	0	0	3.00	Base at 3.23mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.9	20.5	0	0	0		
			30	<0.1	1.0	20.2	0	0	0		
			60	<0.1	1.0	20.0	0	0	0		
			90	<0.1	1.0	20.0	0	0	0		
			120	<0.1	1.0	20.1	0	0	0		
			180	<0.1	1.0	20.1	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHN	0.2	0.10	0	Rising						2.51	Base at 2.61mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 50cm (AGL).
			15	74.5	8.3	14.9	>>>	0	0		
			30	77.8	8.7	2.4	>>>	0	0		
			60	78.2	8.7	0.3	>>>	0	0		
			90	78.1	8.7	0.1	>>>	0	0		
			120	78.0	8.6	0.1	>>>	0	0		
			180	78.0	8.6	0.0	>>>	0	0		
			240	78.0	8.7	0.0	>>>	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHO	2.1 Peak Retest 0.5 Steady 0.0	2.04 Peak Steady 1.38	0	Rising						1.27	Base at 3.64mbTOC No LNAPL No DNAPL Initial peak flow of 2.1l/hr reduced to 0 in 1min, closed and retested at 0.5l/hr, steady at zero after 10secs, Flow rates most likely reflect high water table relative to ground level. PID Reading 0.0ppm Raised Cover is 50cm (AGL).
			15	37.9	7.6	17.1	>>>	0	0		
			30	39.2	8.0	8.2	>>>	0	0		
			60	38.7	8.0	5.3	>>>	0	0		
			90	38.8	8.0	5.4	>>>	0	0		
			120	38.8	8.0	5.1	>>>	0	0		
			180	39.1	8.0	4.8	>>>	0	0		
			240	39.1	7.9	5.0	>>>	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH101	0.1	0.05	0	<0.1	Rising	20.6	0	0	0	3.00	Base at 6.85mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 46cm (AGL)
			15	<0.1	1.5	19.9	0	0	0		
			30	<0.1	1.4	19.5	0	0	0		
			60	<0.1	1.4	19.4	0	0	0		
			90	<0.1	1.4	19.4	0	0	0		
			120	<0.1	1.4	19.3	0	0	0		
			180	<0.1	1.5	19.3	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH102	0.0	0.05	0	Rising						4.10	Base at 6.71mbTOC No LNAPL No DNAPL PID Reading 0.0ppm, , Flush Cover at Ground Level, Extended monitoring period-CH4 rising
			15	1.9	1.4	16.6	37	0	0		
			30	2.0	1.4	11.2	39	0	0		
			60	2.0	1.4	10.2	39	0	0		
			90	2.0	1.4	10.1	39	0	0		
			120	2.2	1.4	9.6	43	0	0		
			180	2.5	1.4	8.1	50	0	0		
			240	3.0	1.4	6.5	60	0	0		
			300	3.3	1.3	4.5	69	0	0		
			360	3.6	1.3	4.1	71	0	0		
			420	3.8	1.3	3.3	75	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH103	0.2 Peak Steady 0.0	0.03	0	<0.1	Rising	20.9	0	0	0	0.32	Base at 5.21mbTOC No LNAPL No DNAPL 15cm of silt PID Reading 0.0ppm Raised Cover is 23cm (AGL) NB: High water table relative to ground level, no longer artesian, water below ground level
			15	<0.1	0.4	20.8	0	0	0		
			30	<0.1	0.4	20.7	0	0	0		
			60	<0.1	0.3	20.8	0	0	0		
			90	<0.1	0.3	20.8	0	0	0		
			120	<0.1	0.2	20.9	0	0	0		
			180	<0.1	0.0	20.9	0	0	0		
			240	<0.1	0.0	20.9	0	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH104	0.0	0.00	0	<0.1	Rising	20.4	0	0	0	1.86	Base at 7.41mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 37cm (AGL)
			15	<0.1	2.4	19.3	0	0	0		
			30	<0.1	2.4	19.1	0	0	0		
			60	<0.1	2.4	19.2	0	0	0		
			90	<0.1	2.2	19.3	0	0	0		
			120	<0.1	1.9	19.3	0	0	0		
			180	<0.1	1.5	19.4	0	0	0		
			240	<0.1	1.3	19.6	0	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH105	-5.9 Peak Retest 0.0	-6.72 Peak Retest 0.04	0	<0.1	Rising	20.4	0	0	0	3.62	Base at 8.06mbTOC No LNAPL No DNAPL 12cm of silt Initial peak of -5.9l/hr reduced to 0 after 30secs, shut for 30secs and retested at 0.0l/hr. PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	1.9	19.4	0	0	0		
			30	<0.1	2.1	15.3	0	0	0		
			60	<0.1	2.1	13.3	0	0	0		
			90	<0.1	2.1	12.9	0	0	0		
			120	<0.1	2.1	12.5	0	0	0		
			180	<0.1	2.1	12.2	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH106 (Shallow)	0.0	-0.02	0	<0.1	Rising	20.9	0	0	0	Dry	Base at 2.53mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.5	20.7	0	0	0		
			30	<0.1	0.5	20.3	0	0	0		
			60	<0.1	0.6	20.1	0	0	0		
			90	<0.1	0.6	20.1	0	0	0		
			120	<0.1	0.6	20.0	0	0	0		
			180	<0.1	0.6	20.0	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH106 (Deep)	0.0	0.03	0	<0.1	Rising	20.9	0	0	0	2.84	Base at 6.38mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.6	20.4	0	0	0		
			30	<0.1	0.6	19.4	0	0	0		
			60	<0.1	0.6	19.1	0	0	0		
			90	<0.1	0.6	19.0	0	0	0		
			120	<0.1	0.6	19.0	0	0	0		
			180	<0.1	0.6	19.0	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH1 (Existing) (Shallow)	0.2	6.74 Peak Retest 4.32 Falling Slowly	0	<0.1	Rising	20.6	0	0	0	3.05	Base at 3.24mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level Water up to top of bung inside casing
			15	<0.1	4.7	19.1	0	0	0		
			30	<0.1	4.8	17.1	0	0	0		
			60	<0.1	4.8	16.4	0	0	0		
			90	<0.1	4.8	16.5	0	0	0		
			120	<0.1	4.8	16.4	0	0	0		
			180	<0.1	4.8	16.4	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH1 (Existing) (Deep)	0.1	-0.04	0	<0.1	Rising	20.6	0	0	0		PID Reading=0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	<0.1	4.6	19.6	0	0	0		
			30	<0.1	4.9	17.0	0	0	0		
			60	<0.1	4.9	16.2	0	0	0		
			90	<0.1	4.9	16.2	0	0	0		
			120	<0.1	4.9	16.3	0	0	0		
			180	<0.1	4.9	16.3	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH2 (Existing) (Shallow)	0.0	0.00	0	RISING						3.11	Base at 3.75mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	3.7	11.1	11.8	74	0	0		
			30	4.0	11.8	4.8	79	0	0		
			60	4.0	11.9	3.4	79	0	0		
			90	3.9	11.9	3.1	78	0	0		
			120	3.9	11.9	3.3	78	0	0		
			180	3.9	11.8	3.2	78	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH2 (Existing) (Deep)	0.4	2.09	0	RISING							PID Reading=0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	6.4	11.9	11.9	>>>	0	0		
			30	4.4	12.1	3.3	87	0	0		
			60	4.4	12.1	3.0	87	0	0		
			90	4.3	12.0	2.7	86	0	0		
			120	4.3	12.0	2.8	86	0	0		
			180	4.3	12.1	2.7	86	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH3 (Existing) (Shallow)	0.0	0.00	0	<0.1	Rising	20.6	0	0	0	2.06	Base at 3.02mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	3.4	19.6	0	0	0		
			30	<0.1	3.6	16.6	0	0	0		
			60	<0.1	3.6	15.9	0	0	0		
			90	<0.1	3.6	15.8	0	0	0		
			120	<0.1	3.6	15.8	0	0	0		
			180	<0.1	3.6	15.8	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH3 (Existing) (Deep)	0.0	0.88	0	<0.1	Rising	20.4	0	0	0		PID Reading=0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	<0.1	3.4	19.2	0	0	0		
			30	<0.1	3.6	16.3	0	0	0		
			60	<0.1	3.6	15.9	0	0	0		
			90	<0.1	3.6	15.9	0	0	0		
			120	<0.1	3.6	16.0	0	0	0		
			180	<0.1	3.6	15.9	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH4 (Existing) (Shallow)	0.0	0.00	0	<0.1	Rising	20.8	0	0	0	1.64	Base at 2.72mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.6	20.0	0	0	0		
			30	<0.1	0.6	19.9	0	0	0		
			60	<0.1	0.6	19.7	0	0	0		
			90	<0.1	0.6	19.7	0	0	0		
			120	<0.1	0.6	19.7	0	0	0		
			180	<0.1	0.6	19.7	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH4 (Existing) (Deep)	0.0	0.02	0	<0.1	Rising	20.4	0	0	0		PID Reading 0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	<0.1	0.7	19.7	0	0	0		
			30	<0.1	0.6	19.8	0	0	0		
			60	<0.1	0.6	19.7	0	0	0		
			90	<0.1	0.6	19.8	0	0	0		
			120	<0.1	0.6	19.8	0	0	0		
			180	<0.1	0.6	19.8	0	0	0		
			240	STEADY							

Site	Midland Road Industrial Estate, Scunthorpe
Date	19 March 2013
Visit Number	Visit 10
Attendees	Enitial – Ian Mayoh
Weather	Sunny but cold, slight ground frost, water pooling in places, 1DegC to start, warming to 6DegC.
Atm Pressure	995mb rising to 996mb
Equipment Utilised	Enitial Gas Analyser – GEM2000+, Serial Number GM08813, Calibrated October 2012 Enitial PID – Mini RAE Lite-PGM7300 Enitial Interface Meter – Solinst Interface Dipmeter Model 122 P1/M3/60m

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHA	0.0	0.03	0	<0.1	Rising	20.4	0	0	0	1.48	Base at 1.81mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 33cm above ground level (AGL)
			15	<0.1	1.3	19.9	0	0	0		
			30	<0.1	1.4	18.8	0	0	0		
			60	<0.1	1.4	18.6	0	0	0		
			90	<0.1	1.4	18.6	0	0	0		
			120	<0.1	1.4	18.7	0	0	0		
			180	<0.1	1.4	18.7	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHB	0.0	-0.04	0	<0.1	Rising	20.4	0	0	0	Dry	Base at 1.11mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	1.3	19.8	0	0	0		
			30	<0.1	1.3	19.3	0	0	0		
			60	<0.1	1.3	19.2	0	0	0		
			90	<0.1	1.3	19.2	0	0	0		
			120	<0.1	1.3	19.2	0	0	0		
			180	<0.1	1.3	19.2	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHC	0.0	0.00	0	<0.1	Rising	20.6	0	0	0	Dry	Base at 1.05mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	2.1	19.4	0	0	0		
			30	<0.1	2.1	18.3	0	0	0		
			60	<0.1	2.1	18.1	0	0	0		
			90	<0.1	2.1	17.7	0	0	0		
			120	<0.1	2.1	17.7	0	0	0		
			180	<0.1	2.1	17.7	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHD	0.0	0.06	0	<0.1	Rising	21.1	0	0	0	Dry	Base at 0.88mbTOC
			15	<0.1	0.4	20.8	0	0	0		
			30	<0.1	0.4	20.8	0	0	0		
			60	<0.1	0.4	20.8	0	0	0		PID Reading 0.0ppm
			90	<0.1	0.4	20.8	0	0	0		
			120	<0.1	0.4	20.7	0	0	0		
			180	<0.1	0.4	20.7	0	0	0		Flush Cover at Ground Level
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHE	0.0	0.01	0	<0.1	Rising	20.8	0	0	0	Dry	Base at 1.45mbTOC
			15	<0.1	1.0	20.5	0	0	0		
			30	<0.1	1.0	19.8	0	0	0		
			60	<0.1	1.0	19.1	0	0	0		PID Reading 0.0ppm
			90	<0.1	1.0	19.0	0	0	0		
			120	<0.1	1.0	19.1	0	0	0		
			180	<0.1	1.0	19.1	0	0	0		Raised Cover is 47cm (AGL)
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHF	0.0	0.03	0	<0.1	Rising	20.6	0	0	0	2.66	Base at 2.84mbTOC No LNAPL No DNAPL
			15	<0.1	6.9	18.3	0	0	0		
			30	<0.1	7.6	11.6	0	0	0		
			60	<0.1	7.6	11.5	0	0	0		
			90	<0.1	7.6	11.5	0	0	0		PID Reading 0.0ppm
			120	<0.1	7.6	11.5	0	0	0		
			180	<0.1	7.6	11.5	0	0	0		Flush Cover at Ground Level
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHG	0.0	-0.03	0	<0.1	Rising	20.7	0	0	0	2.48	Base at 2.50mbTOC No LNAPL No DNAPL
			15	<0.1	1.2	20.0	0	0	0		
			30	<0.1	1.3	18.9	0	0	0		
			60	<0.1	1.3	18.9	0	0	0		
			90	<0.1	1.3	18.8	0	0	0		PID Reading 0.0ppm
			120	<0.1	1.3	18.8	0	0	0		
			180	<0.1	1.3	18.7	0	0	0		Flush Cover at Ground Level
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHH	0.0	0.03	0	<0.1	Rising	20.7	0	0	0	Dry	Base at 2.64mbTOC
			15	<0.1	8.6	17.6	0	0	0		
			30	<0.1	10.4	4.2	0	0	0		
			60	<0.1	10.5	3.1	0	0	0		PID Reading 0.0ppm
			90	<0.1	10.4	3.0	0	0	0		
			120	<0.1	10.5	3.1	0	0	0		
			180	<0.1	10.5	3.1	0	0	0		Flush Cover at Ground Level
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHI	0.1 Fluct 0.0	0.04	0	RISING						2.49	Base at 2.85mbTOC No LNAPL No DNAPL Flow fluctuating between 0.1 and 0.0l/hr. PID Reading 0.0ppm Flush Cover at Ground Level
			15	1.8	1.4	11.0	37	0	0		
			30	2.1	1.4	0.8	41	0	0		
			60	1.9	1.4	0.1	39	0	0		
			90	1.9	1.4	0.1	39	0	0		
			120	1.9	1.4	0.1	38	0	0		
			180	1.9	1.4	0.0	37	0	0		
			240	1.9	1.4	0.0	37	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHJ	0.0	0.00	0	<0.1	Rising	20.8	0	0	0	2.42	Base at 2.46mbTOC No LNAPL No DNAPL
			15	<0.1	7.9	12.8	0	0	0		
			30	<0.1	8.1	7.6	0	0	0		
			60	<0.1	8.2	6.3	0	0	0		
			90	<0.1	8.2	6.5	0	0	0		PID Reading 0.0ppm
			120	<0.1	8.2	6.4	0	0	0		
			180	<0.1	8.2	6.4	0	0	0		Flush Cover at Ground Level
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHK	0.0	0.06	0	Rising						2.41	Base at 3.11mbTOC, No LNAPL No DNAPL
			15	9.4	7.8	9.9	>>>	0	0		
			30	9.6	8.1	1.5	>>>	0	0		
			60	9.6	8.1	0.2	>>>	0	0		
			90	9.4	8.1	0.2	>>>	0	0		PID Reading 0.0ppm,
			120	9.4	8.1	0.0	>>>	0	0		
			180	9.4	8.1	0.0	>>>	0	0		Flush Cover at Ground Level
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHL	0.0	0.04	0	Rising						2.85	Base at 3.08mbTOC, No LNAPL No DNAPL PID Reading 0.0ppm, Flush Cover at Ground Level
			15	20.9	3.0	13.7	>>>	0	0		
			30	21.3	3.1	0.9	>>>	0	0		
			60	21.1	3.1	0.2	>>>	0	0		
			90	21.1	3.1	0.2	>>>	0	0		
			120	21.2	3.1	0.0	>>>	0	0		
			180	21.2	3.1	0.0	>>>	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHM	0.0	-0.02	0	<0.1	Rising	20.9	0	0	0	Dry	Base at 3.23mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	1.0	20.0	0	0	0		
			30	<0.1	1.0	20.0	0	0	0		
			60	<0.1	1.0	20.1	0	0	0		
			90	<0.1	1.0	20.0	0	0	0		
			120	<0.1	1.0	20.0	0	0	0		
			180	<0.1	1.0	20.0	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHN	0.0	0.02	0	Rising						2.44	Base at 2.61mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 50cm (AGL).
			15	71.9	8.7	17.1	>>>	0	0		
			30	75.4	8.6	3.1	>>>	0	0		
			60	75.2	8.6	0.1	>>>	0	0		
			90	75.0	8.5	0.0	>>>	0	0		
			120	75.4	8.5	0.0	>>>	0	0		
			180	75.0	8.5	0.0	>>>	0	0		
			240	74.9	8.5	0.0	>>>	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHO	>15.0 Initial Peak Retest 0.5 Steady 0.0	39.06 Initial Peak Steady 0.77	0	Rising						1.01	Base at 3.64mbTOC No LNAPL No DNAPL Initial peak flow of over 15l/hr reduced to 0 in 5mins, closed and retested at 0.5l/hr, steady at zero after 10secs, Flow rates most likely reflect high water table relative to ground level. PID Reading 0.0ppm Raised Cover is 50cm (AGL). Sucked up water after 240secs, would've extended monitoring.
			15	19.6	4.6	17.4	>>>	0	0		
			30	19.8	4.6	12.6	>>>	0	0		
			60	19.7	4.6	12.0	>>>	0	0		
			90	19.7	4.6	12.0	>>>	0	0		
			120	19.8	4.6	12.0	>>>	0	0		
			180	19.5	4.6	12.0	>>>	0	0		
			240	18.5	4.6	12.4	>>>	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH101	0.1	0.02	0	<0.1	Rising	20.9	0	0	0	2.95	Base at 6.85mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 46cm (AGL)
			15	<0.1	1.5	20.4	0	0	0		
			30	<0.1	1.7	20.0	0	0	0		
			60	<0.1	1.6	20.0	0	0	0		
			90	<0.1	1.6	20.1	0	0	0		
			120	<0.1	1.6	19.8	0	0	0		
			180	<0.1	1.6	19.8	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH102	0.0	0.03	0	Rising						4.12	Base at 6.71mbTOC No LNAPL No DNAPL PID Reading 0.0ppm, , Flush Cover at Ground Level,
			15	1.7	1.1	16.1	34	0	0		
			30	1.8	1.1	12.0	35	0	0		
			60	1.6	1.1	12.4	32	0	0		
			90	1.4	1.0	13.2	28	0	0		
			120	1.5	1.0	12.8	29	0	0		
			180	1.4	0.8	13.7	28	0	0		
			240	1.5	0.7	13.6	29	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH103	0.5 Peak Retest 0.3 Steady 0.1	1.57 Peak Steady 0.42	0	<0.1	Rising	20.3	0	0	0	0.12	Base at 5.33mbTOC No LNAPL No DNAPL 16cm of silt PID Reading 0.0ppm Raised Cover is 23cm (AGL) NB: High water table relative to ground level, due to raised headwork groundwater effectively artesian
			15	<0.1	0.4	19.9	0	0	0		
			30	<0.1	0.1	20.1	0	0	0		
			60	<0.1	0.0	20.4	0	0	0		
			90	<0.1	0.0	20.3	0	0	0		
			120	<0.1	0.0	20.4	0	0	0		
			180	<0.1	0.0	20.4	0	0	0		
			240	<0.1	0.0	20.5	0	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH104	0.0	0.00	0	<0.1	Rising	20.7	0	0	0	1.79	Base at 7.39mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 37cm (AGL)
			15	<0.1	2.9	19.5	0	0	0		
			30	<0.1	3.1	18.7	0	0	0		
			60	<0.1	2.6	18.7	0	0	0		
			90	<0.1	2.3	19.0	0	0	0		
			120	<0.1	2.0	19.3	0	0	0		
			180	<0.1	1.5	19.4	0	0	0		
			240	<0.1	1.2	19.6	0	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH105	-0.6 Peak Retest -0.1 Steady 0.0	-0.88 Peak Retest -0.10 Steady 0.03	0	<0.1	Rising	20.6	0	0	0	3.74	Base at 8.04mbTOC No LNAPL No DNAPL 14cm of silt Initial peak of -0.6l/hr reduced to 0 after 30secs, shut for 30secs and retested at -0.1l/hr. PID Reading 0.0ppm Flush Cover at Ground Level, Extended monitoring CO2 falling.
			15	<0.1	1.5	19.0	0	0	0		
			30	<0.1	1.6	15.1	0	0	0		
			60	<0.1	1.6	15.1	0	0	0		
			90	<0.1	1.4	15.9	0	0	0		
			120	<0.1	1.1	16.8	0	0	0		
			180	<0.1	0.8	18.1	0	0	0		
			240	<0.1	0.6	19.1	0	0	0		
			300	<0.1	0.5	19.3	0	0	0		
			360	<0.1	0.4	19.7	0	0	0		
			420	<0.1	0.3	20.0	0	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH106 (Shallow)	0.0	-0.04	0	<0.1	Rising	20.9	0	0	0	Dry	Base at 2.52mbTOC
			15	<0.1	0.6	20.5	0	0	0		
			30	<0.1	0.6	19.8	0	0	0		
			60	<0.1	0.6	19.8	0	0	0		
			90	<0.1	0.6	19.8	0	0	0		PID Reading 0.0ppm
			120	<0.1	0.6	19.8	0	0	0		
			180	<0.1	0.6	19.8	0	0	0		Flush Cover at Ground Level
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH106 (Deep)	0.0	0.00	0	<0.1	Rising	20.9	0	0	0	2.74	Base at 6.39mbTOC No LNAPL No DNAPL
			15	<0.1	0.6	20.7	0	0	0		
			30	<0.1	0.6	19.9	0	0	0		
			60	<0.1	0.6	19.8	0	0	0		
			90	<0.1	0.6	19.6	0	0	0		PID Reading 0.0ppm
			120	<0.1	0.6	19.6	0	0	0		
			180	<0.1	0.6	19.6	0	0	0		Flush Cover at Ground Level
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH1 (Existing) (Shallow)	0.0	0.00	0	<0.1	Rising	20.2	0	0	0	2.90	Base at 3.24mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level Water up to top of bung inside casing
			15	<0.1	4.9	19.8	0	0	0		
			30	<0.1	5.2	13.8	0	0	0		
			60	<0.1	5.2	12.9	0	0	0		
			90	<0.1	5.2	12.7	0	0	0		
			120	<0.1	5.2	12.7	0	0	0		
			180	<0.1	5.2	12.7	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH1 (Existing) (Deep)	0.0	-0.02	0	<0.1	Rising	20.6	0	0	0		PID Reading=0.0ppm
			15	<0.1	4.9	19.1	0	0	0		
			30	<0.1	5.2	13.9	0	0	0		Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			60	<0.1	5.2	12.6	0	0	0		
			90	<0.1	5.2	12.6	0	0	0		
			120	<0.1	5.2	12.6	0	0	0		
			180	<0.1	5.2	12.6	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH2 (Existing) (Shallow)	0.0	0.00	0	RISING						2.91	Base at 3.76mbTOC No LNAPL No DNAPL PID = 0.1ppm Peak PID = 0.0ppm Steady Flush Cover at Ground Level
			15	30.4	13.8	12.8	>>>	0	2		
			30	29.9	14.1	1.9	>>>	0	6		
			60	29.9	14.1	0.4	>>>	0	8		
			90	29.9	14.1	0.1	>>>	0	9		
			120	30.0	14.2	0.0	>>>	0	10		
			180	30.0	14.1	0.0	>>>	0	11		
			240	30.0	14.0	0.0	>>>	0	11		
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH2 (Existing) (Deep)	0.3 Peak 0.0 Retest	1.03 Peak 0.28 Retest	0	RISING							PID = 0.2ppm Peak PID = 0.0ppm Steady Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	10.2	13.2	15.9	>>>	0	2		
			30	29.6	14.1	4.7	>>>	0	3		
			60	30.3	14.2	0.5	>>>	0	7		
			90	29.5	14.0	0.0	>>>	0	9		
			120	29.8	14.1	0.0	>>>	0	10		
			180	29.8	14.0	0.0	>>>	0	11		
			240	30.1	14.1	0.0	>>>	0	11		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH3 (Existing) (Shallow)	0.0	0.00	0	<0.1	Rising	20.5	0	0	0	1.99	Base at 3.01mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	2.7	19.2	0	0	0		
			30	<0.1	2.8	15.9	0	0	0		
			60	<0.1	2.8	14.9	0	0	0		
			90	<0.1	2.8	14.9	0	0	0		
			120	<0.1	2.8	14.7	0	0	0		
			180	<0.1	2.8	14.8	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH3 (Existing) (Deep)	0.2 Peak 0.0 Steady	0.57	0	<0.1	Rising	20.8	0	0	0		PID Reading=0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	<0.1	2.8	19.1	0	0	0		
			30	<0.1	2.8	16.1	0	0	0		
			60	<0.1	2.8	15.1	0	0	0		
			90	<0.1	2.8	15.0	0	0	0		
			120	<0.1	2.8	15.0	0	0	0		
			180	<0.1	2.8	15.0	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH4 (Existing) (Shallow)	0.0	0.00	0	<0.1	Rising	20.8	0	0	0	1.60	Base at 2.72mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	2.0	19.4	0	0	0		
			30	<0.1	2.2	16.4	0	0	0		
			60	<0.1	2.3	16.2	0	0	0		
			90	<0.1	2.3	16.1	0	0	0		
			120	<0.1	2.3	15.8	0	0	0		
			180	<0.1	2.3	15.8	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH4 (Existing) (Deep)	0.1	0.02	0	<0.1	Rising	20.4	0	0	0		PID Reading 0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	<0.1	2.2	19.1	0	0	0		
			30	<0.1	2.3	16.0	0	0	0		
			60	<0.1	2.3	16.0	0	0	0		
			90	<0.1	2.3	15.9	0	0	0		
			120	<0.1	2.3	15.8	0	0	0		
			180	<0.1	2.3	15.8	0	0	0		
			240	STEADY							

Site	Midland Road Industrial Estate, Scunthorpe
Date	27 March 2013
Visit Number	Visit 11
Attendees	Enitial – Ian Mayoh
Weather	Overcast/Cold/Snow Showers, 0degC to 3degC, ground very wet, water pooling in places
Atm Pressure	1012mb rising to 1014mb
Equipment Utilised	Enitial Gas Analyser – GEM2000+, Serial Number GM08813, Calibrated October 2012 Enitial PID – Mini RAE Lite-PGM7300 Enitial Interface Meter – Solinst Interface Dipmeter Model 122 P1/M3/60m

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHA	0.0	0.04	0	<0.1	Rising	20.9	0	0	0	1.53	Base at 1.81mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 33cm above ground level (AGL)
			15	<0.1	1.7	19.9	0	0	0		
			30	<0.1	1.7	19.2	0	0	0		
			60	<0.1	1.7	18.8	0	0	0		
			90	<0.1	1.8	19.0	0	0	0		
			120	<0.1	1.8	18.8	0	0	0		
			180	<0.1	1.8	18.8	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHB	-0.1 Peak 0.0 Steady	-0.01	0	<0.1	Rising	20.9	0	0	0	Dry	Base at 1.11mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	1.3	20.2	0	0	0		
			30	<0.1	1.3	20.0	0	0	0		
			60	<0.1	1.3	20.0	0	0	0		
			90	<0.1	1.3	20.0	0	0	0		
			120	<0.1	1.3	20.1	0	0	0		
			180	<0.1	1.3	20.1	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHC	0.0	0.01	0	<0.1	Rising	20.9	0	0	0	Dry	Base at 1.06mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	2.1	19.9	0	0	0		
			30	<0.1	2.2	18.0	0	0	0		
			60	<0.1	2.2	17.9	0	0	0		
			90	<0.1	2.2	17.9	0	0	0		
			120	<0.1	2.2	17.9	0	0	0		
			180	<0.1	2.2	17.9	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHD	0.0	0.00	0	<0.1	Rising	20.9	0	0	0	Dry	Base at 0.88mbTOC
			15	<0.1	0.5	20.4	0	0	0		
			30	<0.1	0.5	20.4	0	0	0		
			60	<0.1	0.5	20.4	0	0	0		PID Reading 0.0ppm
			90	<0.1	0.5	20.3	0	0	0		
			120	<0.1	0.5	20.3	0	0	0		
			180	<0.1	0.5	20.3	0	0	0		Flush Cover at Ground Level
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHE	0.0	0.06	0	<0.1	Rising	20.8	0	0	0	Dry	Base at 1.45mbTOC
			15	<0.1	1.1	19.3	0	0	0		
			30	<0.1	1.1	19.2	0	0	0		
			60	<0.1	1.1	19.1	0	0	0		PID Reading 0.0ppm
			90	<0.1	1.1	19.2	0	0	0		
			120	<0.1	1.1	19.4	0	0	0		
			180	<0.1	1.1	19.2	0	0	0		Raised Cover is 47cm (AGL)
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHF	0.0	0.05	0	<0.1	Rising	20.8	0	0	0	2.66	Base at 2.85mbTOC No LNAPL No DNAPL
			15	<0.1	8.1	18.4	0	0	0		
			30	<0.1	8.5	15.1	0	0	0		
			60	<0.1	8.5	13.4	0	0	0		
			90	<0.1	8.5	13.0	0	0	0		PID Reading 0.0ppm
			120	<0.1	8.5	13.0	0	0	0		
			180	<0.1	8.5	13.0	0	0	0		Flush Cover at Ground Level
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHG	0.0	0.05	0	<0.1	Rising	20.6	0	0	0	Dry	Base at 2.50mbTOC
			15	<0.1	1.3	19.9	0	0	0		
			30	<0.1	1.4	19.5	0	0	0		
			60	<0.1	1.4	19.1	0	0	0		
			90	<0.1	1.4	19.0	0	0	0		PID Reading 0.0ppm
			120	<0.1	1.4	19.0	0	0	0		
			180	<0.1	1.4	19.1	0	0	0		Flush Cover at Ground Level
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHH	0.0	0.05	0	<0.1	Rising	20.9	0	0	0	Dry	Base at 2.64mbTOC
			15	<0.1	10.5	18.4	0	0	0		
			30	<0.1	11.1	11.6	0	0	0		
			60	<0.1	11.3	8.0	0	0	0		PID Reading 0.0ppm
			90	<0.1	11.2	7.9	0	0	0		
			120	<0.1	11.2	7.7	0	0	0		
			180	<0.1	11.2	7.6	0	0	0		Flush Cover at Ground Level
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHI	0.2 Peak 0.0 Steady	0.13	0	RISING						2.66	Base at 2.85mbTOC No LNAPL No DNAPL
			15	1.5	7.2	17.4	28	0	0		
			30	1.4	7.3	4.0	28	0	0		
			60	1.4	7.3	0.5	28	0	0		
			90	1.4	7.3	0.1	27	0	0		.PID Reading 0.0ppm
			120	1.4	7.3	0.0	28	0	0		
			180	1.4	7.3	0.0	28	0	0		Flush Cover at Ground Level
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHJ	0.0	0.00	0	<0.1	Rising	20.8	0	0	0	2.42	Base at 2.46mbTOC No LNAPL No DNAPL
			15	<0.1	7.9	12.8	0	0	0		
			30	<0.1	8.1	7.6	0	0	0		
			60	<0.1	8.2	6.3	0	0	0		
			90	<0.1	8.2	6.5	0	0	0		PID Reading 0.0ppm
			120	<0.1	8.2	6.4	0	0	0		
			180	<0.1	8.2	6.4	0	0	0		Flush Cover at Ground Level
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHK	0.0	-0.04	0	Rising						2.40	Base at 3.11mbTOC, No LNAPL No DNAPL
			15	3.7	8.2	13.6	74	0	0		
			30	3.8	8.5	1.9	75	0	0		
			60	3.8	8.5	0.3	76	0	0		
			90	3.9	8.6	0.2	78	0	0		PID Reading 0.0ppm,
			120	3.8	8.6	0.0	76	0	0		
			180	3.8	8.6	0.0	76	0	0		Flush Cover at Ground Level
			240	3.8	8.6	0.0	76	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHL	0.0	0.06	0	Rising						3.06	Base at 3.08mbTOC, No LNAPL No DNAPL PID=0.1ppm Peak, PID=0.0ppm Steady, Flush Cover at Ground Level
			15	19.9	3.3	16.9	>>>	0	0		
			30	21.7	3.4	3.4	>>>	0	0		
			60	21.5	3.4	0.2	>>>	0	0		
			90	21.4	3.4	0.0	>>>	0	0		
			120	21.3	3.4	0.0	>>>	0	0		
			180	21.4	3.4	0.0	>>>	0	0		
			240	21.5	3.4	0.0	>>>	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHM	0.0	-0.06	0	<0.1	Rising	20.8	0	0	0	2.95	Base at 3.23mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.9	20.7	0	0	0		
			30	<0.1	1.0	20.2	0	0	0		
			60	<0.1	1.0	20.1	0	0	0		
			90	<0.1	1.0	20.1	0	0	0		
			120	<0.1	1.0	20.1	0	0	0		
			180	<0.1	1.0	20.1	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHN	0.0	0.00	0	Rising						2.43	Base at 2.61mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 50cm (AGL).
			15	69.1	7.1	19.0	>>>	0	0		
			30	75.5	7.4	5.0	>>>	0	0		
			60	75.5	7.5	0.3	>>>	0	0		
			90	75.6	7.5	0.0	>>>	0	0		
			120	75.2	7.5	0.0	>>>	0	0		
			180	75.7	7.5	0.0	>>>	0	0		
			240	75.6	7.5	0.0	>>>	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHO	-8.5 Initial Peak Retest -1.3 Steady 0.0	-13.11 Initial Peak Steady -0.54	0	Rising						1.23	Base at 3.61mbTOC No LNAPL No DNAPL Initial peak flow of -8.5/hr reduced to 0 in 3mins, closed and retested at -1.3l/hr, steady at zero after 30secs, Flow rates most likely reflect high water table relative to ground level. PID Reading 0.0ppm Raised Cover is 50cm (AGL). Extended monitoring changeable CH4.
			15	4.8	1.8	19.4	98	0	0		
			30	4.9	1.8	18.4	98	0	0		
			60	5.2	1.9	18.3	>>>	0	0		
			90	5.3	1.9	18.0	>>>	0	0		
			120	7.5	2.2	17.7	>>>	0	0		
			180	11.7	2.6	16.1	>>>	0	0		
			240	12.3	3.1	15.4	>>>	0	0		
			300	12.6	3.1	15.2	>>>	0	0		
			360	12.9	3.3	15.2	>>>	0	0		
			420	7.7	3.9	15.9	>>>	0	0		
			480	4.7	3.7	16.7	93	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH101	0.1 Fluct 0.0	0.00	0	<0.1	Rising	20.9	0	0	0	2.92	Base at 6.86mbTOC No LNAPL No DNAPL Flow fluctuating between 0.1 and 0.0l/hr, PID Reading 0.0ppm Raised Cover is 46cm (AGL)
			15	<0.1	1.5	19.9	0	0	0		
			30	<0.1	1.5	19.8	0	0	0		
			60	<0.1	1.4	19.8	0	0	0		
			90	<0.1	1.5	19.9	0	0	0		
			120	<0.1	1.5	20.0	0	0	0		
			180	<0.1	1.5	20.0	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH102	-0.3 Peak Retest -0.1	6.02 Peak Retest 0.05	0	Rising						4.06	Base at 6.72mbTOC No LNAPL No DNAPL Initial peak flow of -0.3/hr reduced to 0 in 30secs, closed and retested at -0.1l/hr, steady at zero after 30secs, PID Reading 0.0ppm, Flush Cover at Ground Level
			15	0.9	1.3	19.2	19	0	0		
			30	1.1	1.4	15.4	22	0	0		
			60	1.1	1.5	13.1	22	0	0		
			90	1.3	1.5	12.5	25	0	0		
			120	1.4	1.5	11.7	27	0	0		
			180	2.0	1.5	9.6	40	0	0		
			240	2.5	1.4	8.2	49	0	0		
			300	2.9	1.3	6.9	58	0	0		
			360	3.3	1.3	5.5	66	0	0		
			420	3.7	1.2	4.5	74	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH103	0.0	0.05	0	<0.1	Rising	20.3	0	0	0	0.28	Base at 5.33mbTOC No LNAPL No DNAPL 17cm of silt PID Reading 0.0ppm Raised Cover is 23cm (AGL) NB: High water table relative to ground level, due to raised headwork groundwater no longer artesian
			15	<0.1	0.2	19.9	0	0	0		
			30	<0.1	0.2	20.1	0	0	0		
			60	<0.1	0.1	20.4	0	0	0		
			90	<0.1	0.0	20.3	0	0	0		
			120	<0.1	0.0	20.4	0	0	0		
			180	<0.1	0.0	20.4	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH104	0.0	0.07	0	<0.1	Rising	20.9	0	0	0	1.76	Base at 7.40mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 37cm (AGL)
			15	<0.1	1.5	20.8	0	0	0		
			30	<0.1	1.5	20.6	0	0	0		
			60	<0.1	1.5	20.2	0	0	0		
			90	<0.1	1.0	20.4	0	0	0		
			120	<0.1	0.8	20.6	0	0	0		
			180	<0.1	0.7	21.0	0	0	0		
			240	<0.1	0.5	20.9	0	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH105	-4.7 Peak Retest -0.3 Steady 0.0	-5.06 Peak Retest 0.04	0	<0.1	Rising	20.8	0	0	0	3.71	Base at 8.02mbTOC No LNAPL No DNAPL 13cm of silt Initial peak of -4.7l/hr reduced to 0 after 1min, shut for 30secs and retested at -0.3l/hr. PID Reading 0.0ppm Flush Cover at Ground Level,
			15	<0.1	1.5	19.2	0	0	0		
			30	<0.1	1.6	16.8	0	0	0		
			60	<0.1	1.6	15.3	0	0	0		
			90	<0.1	1.7	14.9	0	0	0		
			120	<0.1	1.7	14.7	0	0	0		
			180	<0.1	1.7	114.7	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH106 (Shallow)	0.0	-0.01	0	<0.1	Rising	20.6	0	0	0	Dry	Base at 2.53mbTOC
			15	<0.1	0.5	20.1	0	0	0		
			30	<0.1	0.5	19.5	0	0	0		
			60	<0.1	0.5	19.6	0	0	0		
			90	<0.1	0.5	19.6	0	0	0		PID Reading 0.0ppm
			120	<0.1	0.5	19.6	0	0	0		
			180	<0.1	0.5	19.6	0	0	0		Flush Cover at Ground Level
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH106 (Deep)	0.0	-0.01	0	<0.1	Rising	20.6	0	0	0	2.82	Base at 6.39mbTOC No LNAPL No DNAPL
			15	<0.1	0.6	20.2	0	0	0		
			30	<0.1	0.6	19.2	0	0	0		
			60	<0.1	0.6	18.9	0	0	0		
			90	<0.1	0.6	18.9	0	0	0		PID Reading 0.0ppm
			120	<0.1	0.6	19.0	0	0	0		
			180	<0.1	0.6	18.9	0	0	0		Flush Cover at Ground Level
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH1 (Existing) (Shallow)	0.0	0.01	0	<0.1	Rising	20.9	0	0	0	2.84	Base at 3.23mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level Water up to top of bung inside casing
			15	<0.1	4.7	20.3	0	0	0		
			30	<0.1	5.0	16.0	0	0	0		
			60	<0.1	5.0	15.4	0	0	0		
			90	<0.1	5.0	15.3	0	0	0		
			120	<0.1	5.0	15.4	0	0	0		
			180	<0.1	5.0	15.4	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH1 (Existing) (Deep)	0.0	0.04	0	<0.1	Rising	20.8	0	0	0		PID Reading=0.0ppm
			15	<0.1	4.8	20.6	0	0	0		
			30	<0.1	5.1	16.9	0	0	0		Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			60	<0.1	5.1	15.6	0	0	0		
			90	<0.1	5.1	15.3	0	0	0		
			120	<0.1	5.1	15.5	0	0	0		
			180	<0.1	5.1	15.5	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH2 (Existing) (Shallow)	0.0	0.02	0	RISING						2.86	Base at 3.76mbTOC No LNAPL No DNAPL PID = 0.0ppm Flush Cover at Ground Level
			15	15.6	14.1	7.9	>>>	0	1		
			30	15.5	14.0	2.2	>>>	0	2		
			60	15.5	14.1	0.2	>>>	0	3		
			90	15.5	14.1	0.1	>>>	0	4		
			120	15.5	14.1	0.0	>>>	0	4		
			180	15.5	14.1	0.0	>>>	0	4		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH2 (Existing) (Deep)	-0.1 Peak 0.0 Steady	-1.01 Peak 0.06 Retest	0	RISING							PID = 0.1ppm Peak PID = 0.0ppm Steady Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	24.8	13.2	15.3	>>>	0	1		
			30	15.4	14.1	4.7	>>>	0	3		
			60	15.5	14.2	0.3	>>>	0	5		
			90	15.4	14.1	0.0	>>>	0	6		
			120	15.4	14.1	0.0	>>>	0	6		
			180	15.4	14.1	0.0	>>>	0	6		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH3 (Existing) (Shallow)	0.0	0.04	0	<0.1	Rising	20.9	0	0	0	1.95	Base at 3.01mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	2.9	20.4	0	0	0		
			30	<0.1	3.1	18.0	0	0	0		
			60	<0.1	3.1	17.1	0	0	0		
			90	<0.1	3.1	16.7	0	0	0		
			120	<0.1	3.1	16.7	0	0	0		
			180	<0.1	3.1	16.7	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH3 (Existing) (Deep)	0.0	-0.47 Peak 0.02 Steady	0	<0.1	Rising	20.8	0	0	0		PID Reading=0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	<0.1	3.0	19.9	0	0	0		
			30	<0.1	3.1	17.1	0	0	0		
			60	<0.1	3.1	16.7	0	0	0		
			90	<0.1	3.1	16.6	0	0	0		
			120	<0.1	3.1	16.3	0	0	0		
			180	<0.1	3.1	16.3	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH4 (Existing) (Shallow)	0.0	0.05	0	<0.1	Rising	20.8	0	0	0	1.60	Base at 2.68mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	1.1	20.1	0	0	0		
			30	<0.1	1.1	19.7	0	0	0		
			60	<0.1	1.1	19.5	0	0	0		
			90	<0.1	1.1	19.4	0	0	0		
			120	<0.1	1.1	19.4	0	0	0		
			180	<0.1	1.1	19.5	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH4 (Existing) (Deep)	0.0	0.06	0	<0.1	Rising	20.8	0	0	0		PID Reading 0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	<0.1	1.2	19.8	0	0	0		
			30	<0.1	1.2	19.6	0	0	0		
			60	<0.1	1.2	19.6	0	0	0		
			90	<0.1	1.2	19.4	0	0	0		
			120	<0.1	1.2	19.4	0	0	0		
			180	<0.1	1.2	19.4	0	0	0		
			240	STEADY							

Site	Midland Road Industrial Estate, Scunthorpe
Date	03 April 2013
Visit Number	Visit 12
Attendees	Enitial – Ian Mayoh
Weather	Sunny, clear, slight ground frost to start, 0degC to 10degC, strong gusty wind around 10-15mph
Atm Pressure	1022mb falling to 1017mb
Equipment Utilised	Enitial Gas Analyser – GEM2000+, Serial Number GM08813, Calibrated October 2012 Enitial PID – Mini RAE Lite-PGM7300 Enitial Interface Meter – Solinst Interface Dipmeter Model 122 P1/M3/60m

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHA	0.0	0.06	0	<0.1	Rising	20.9	0	0	0	1.61	Base at 1.81mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 33cm above ground level (AGL)
			15	<0.1	1.3	20.3	0	0	0		
			30	<0.1	1.4	19.7	0	0	0		
			60	<0.1	1.4	19.7	0	0	0		
			90	<0.1	1.4	19.6	0	0	0		
			120	<0.1	1.4	19.5	0	0	0		
			180	<0.1	1.4	19.5	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHB	0.0	0.00	0	<0.1	Rising	20.8	0	0	0	Dry	Base at 1.11mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	1.3	20.5	0	0	0		
			30	<0.1	1.4	20.1	0	0	0		
			60	<0.1	1.4	20.0	0	0	0		
			90	<0.1	1.4	20.0	0	0	0		
			120	<0.1	1.4	20.0	0	0	0		
			180	<0.1	1.4	20.0	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHC	0.0	-0.02	0	<0.1	Rising	20.6	0	0	0	Dry	Base at 1.05mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	2.0	19.6	0	0	0		
			30	<0.1	2.1	18.2	0	0	0		
			60	<0.1	2.1	17.9	0	0	0		
			90	<0.1	2.1	17.9	0	0	0		
			120	<0.1	2.1	18.0	0	0	0		
			180	<0.1	2.1	18.0	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHD	0.0	0.02	0	<0.1	Rising	20.6	0	0	0	Dry	Base at 0.88mbTOC
			15	<0.1	0.3	20.2	0	0	0		
			30	<0.1	0.4	20.1	0	0	0		
			60	<0.1	0.4	20.4	0	0	0		PID Reading 0.0ppm
			90	<0.1	0.4	20.3	0	0	0		
			120	<0.1	0.4	20.3	0	0	0		
			180	<0.1	0.4	20.3	0	0	0		Flush Cover at Ground Level
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHE	0.0	0.00	0	<0.1	Rising	20.3	0	0	0	Dry	Base at 1.45mbTOC
			15	<0.1	0.9	19.4	0	0	0		
			30	<0.1	1.0	19.2	0	0	0		
			60	<0.1	1.0	19.2	0	0	0		PID Reading 0.0ppm
			90	<0.1	1.0	19.1	0	0	0		
			120	<0.1	1.0	19.2	0	0	0		
			180	<0.1	1.0	19.1	0	0	0		Raised Cover is 47cm (AGL)
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHF	0.1	0.09	0	<0.1	Rising	20.9	0	0	0	2.68	Base at 2.84mbTOC No LNAPL No DNAPL
			15	<0.1	7.3	18.7	0	0	0		
			30	<0.1	8.2	12.4	0	0	0		
			60	<0.1	8.3	11.4	0	0	0		
			90	<0.1	8.3	11.4	0	0	0		PID Reading 0.0ppm
			120	<0.1	8.3	11.4	0	0	0		
			180	<0.1	8.3	11.4	0	0	0		Flush Cover at Ground Level
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHG	0.0	-0.01	0	<0.1	Rising	20.8	0	0	0	2.49	Base at 2.50mbTOC No LNAPL No DNAPL
			15	<0.1	1.1	20.5	0	0	0		
			30	<0.1	1.2	19.8	0	0	0		
			60	<0.1	1.2	19.7	0	0	0		
			90	<0.1	1.2	19.7	0	0	0		PID Reading 0.0ppm
			120	<0.1	1.2	19.7	0	0	0		
			180	<0.1	1.2	19.7	0	0	0		Flush Cover at Ground Level
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHH	0.2 Peak 0.0 Steady	0.29 Peak 0.09 Steady	0	<0.1	Rising	20.8	0	0	0	Dry	Base at 2.64mbTOC
			15	<0.1	9.0	18.1	0	0	0		
			30	<0.1	10.2	8.5	0	0	0		
			60	<0.1	10.2	7.5	0	0	0		PID Reading 0.0ppm
			90	<0.1	10.2	7.4	0	0	0		
			120	<0.1	10.2	7.6	0	0	0		
			180	<0.1	10.2	7.4	0	0	0		Flush Cover at Ground Level
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHI	0.0	0.03	0	RISING						2.72	Base at 2.85mbTOC No LNAPL No DNAPL
			15	0.9	6.9	12.8	19	0	0		
			30	1.0	7.2	1.4	20	0	0		
			60	1.0	7.2	0.4	20	0	0		
			90	1.0	7.2	0.3	20	0	0		PID Reading 0.0ppm
			120	1.0	7.2	0.3	20	0	0		
			180	1.0	7.2	0.4	20	0	0		Flush Cover at Ground Level
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHJ	0.0	0.00	0	<0.1	Rising	20.6	0	0	0	Dry	Base at 2.46mbTOC
			15	<0.1	6.2	19.2	0	0	0		
			30	<0.1	7.1	8.5	0	0	0		
			60	<0.1	7.3	7.6	0	0	0		
			90	<0.1	7.3	7.4	0	0	0		PID Reading 0.0ppm
			120	<0.1	7.4	7.3	0	0	0		
			180	<0.1	7.4	7.3	0	0	0		Flush Cover at Ground Level
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHK	0.0	-0.05	0	Rising						2.43	Base at 3.11mbTOC, No LNAPL No DNAPL
			15	5.8	7.7	9.9	>>>	0	0		
			30	6.5	7.9	1.1	>>>	0	0		
			60	6.6	7.9	0.2	>>>	0	0		
			90	6.5	7.9	0.1	>>>	0	0		PID Reading 0.0ppm,
			120	6.4	7.9	0.1	>>>	0	0		
			180	6.5	8.0	0.1	>>>	0	0		Flush Cover at Ground Level
			240	6.5	8.0	0.1	>>>	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHL	0.0	0.05	0	Rising						Dry	Base at 3.08mbTOC,
			15	20.4	3.3	9.8	>>>	0	0		
			30	20.6	3.3	1.2	>>>	0	0		
			60	20.8	3.3	0.3	>>>	0	0		
			90	21.0	3.3	0.3	>>>	0	0		PID Reading 0.0ppm
			120	21.0	3.3	0.1	>>>	0	0		
			180	21.0	3.3	0.1	>>>	0	0		Flush Cover at Ground Level
			240	21.0	3.3	0.0	>>>	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHM	0.0	0.00	0	<0.1	Rising	20.9	0	0	0	2.99	Base at 3.23mbTOC No LNAPL No DNAPL
			15	<0.1	1.1	20.6	0	0	0		
			30	<0.1	1.1	20.6	0	0	0		
			60	<0.1	1.1	20.4	0	0	0		
			90	<0.1	1.1	20.4	0	0	0		PID Reading 0.0ppm
			120	<0.1	1.1	20.2	0	0	0		
			180	<0.1	1.1	20.3	0	0	0		Flush Cover at Ground Level
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHN	0.0	0.04	0	Rising						2.52	Base at 2.62mbTOC No LNAPL No DNAPL
			15	74.1	8.4	19.1	>>>	0	0		
			30	78.2	8.9	6.2	>>>	0	0		
			60	78.1	8.8	0.4	>>>	0	0		
			90	78.4	8.8	0.0	>>>	0	0		PID 0.2ppm Peak PID 0.0ppm Steady Raised Cover is 50cm (AGL).
			120	78.3	8.8	0.0	>>>	0	0		
			180	78.4	8.9	0.0	>>>	0	0		
			240	78.2	8.9	0.0	>>>	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
PHO	0.0	0.00	0	Rising						1.42	Base at 3.60mbTOC No LNAPL No DNAPL
			15	16.0	6.0	16.9	>>>	0	0		
			30	17.8	6.3	13.4	>>>	0	0		
			60	17.8	6.3	12.1	>>>	0	0		
			90	17.7	6.3	12.3	>>>	0	0		PID Reading 0.0ppm
			120	18.2	6.3	12.2	>>>	0	0		
			180	18.0	6.2	11.9	>>>	0	0		Raised Cover is 50cm (AGL)..
			240	18.1	6.2	12.0	>>>	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH101	0.0	-0.05	0	<0.1	Rising	20.8	0	0	0	2.97	Base at 6.85mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 46cm (AGL)
			15	<0.1	1.3	19.8	0	0	0		
			30	<0.1	1.4	19.7	0	0	0		
			60	<0.1	1.3	19.4	0	0	0		
			90	<0.1	1.3	19.4	0	0	0		
			120	<0.1	1.3	19.4	0	0	0		
			180	<0.1	1.3	19.5	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH102	-5.7 Peak Retest -1.2	-6.39 Peak Retest -0.48	0	Rising						4.10	Base at 6.71mbTOC No LNAPL No DNAPL Initial peak flow of -5.7l/hr reduced to 0 in 5mins, closed and retested at -1.2l/hr, PID Reading 0.0ppm, Flush Cover at Ground Level Extended monitoring period-CH4 rising.
			15	1.2	1.2	18.2	23	0	0		
			30	1.3	1.1	14.0	25	0	0		
			60	1.1	1.0	14.5	22	0	0		
			90	1.1	0.9	14.8	21	0	0		
			120	1.0	1.1	13.9	20	0	0		
			180	1.5	1.1	12.4	29	0	0		
			240	1.6	1.0	12.8	32	0	0		
			300	1.9	0.9	11.9	38	0	0		
			360	2.0	0.9	11.1	39	0	0		
			420	2.0	0.8	11.0	40	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH103	-2.8 Peak Retest -0.7 Peak 0.0 Steady	-3.68 Peak Retest -0.98	0	<0.1	Rising	20.8	0	0	0	0.36	Base at 5.21mbTOC No LNAPL No DNAPL 10cm of silt PID Reading 0.0ppm Raised Cover is 23cm (AGL) NB: High water table relative to ground level, due to raised headworks, groundwater no longer artesian
			15	<0.1	0.5	20.6	0	0	0		
			30	<0.1	0.5	20.1	0	0	0		
			60	<0.1	0.3	20.3	0	0	0		
			90	<0.1	0.2	20.5	0	0	0		
			120	<0.1	<0.1	20.7	0	0	0		
			180	<0.1	<0.1	20.8	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH104	0.0	-0.04	0	<0.1	Rising	20.4	0	0	0	1.82	Base at 7.39mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Raised Cover is 37cm (AGL)
			15	<0.1	1.8	19.4	0	0	0		
			30	<0.1	1.7	19.2	0	0	0		
			60	<0.1	1.7	19.0	0	0	0		
			90	<0.1	1.6	19.2	0	0	0		
			120	<0.1	1.5	19.3	0	0	0		
			180	<0.1	1.1	19.5	0	0	0		
			240	<0.1	0.9	19.7	0	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH105	-5.1 Peak Retest 0.0	-5.50 Peak Retest 0.00	0	<0.1	Rising	20.9	0	0	0	3.70	Base at 8.03mbTOC No LNAPL No DNAPL 7cm of silt Initial peak of -5.1l/hr reduced to 0 after 1min, shut for 30secs and retested at 0.0l/hr. PID Reading 0.0ppm Flush Cover at Ground Level,
			15	<0.1	1.1	20.0	0	0	0		
			30	<0.1	1.3	16.5	0	0	0		
			60	<0.1	1.3	16.2	0	0	0		
			90	<0.1	1.4	16.1	0	0	0		
			120	<0.1	1.4	16.0	0	0	0		
			180	<0.1	1.4	16.0	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH106 (Shallow)	0.0	0.00	0	<0.1	Rising	20.8	0	0	0	Dry	Base at 2.51mbTOC PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.5	20.4	0	0	0		
			30	<0.1	0.6	20.4	0	0	0		
			60	<0.1	0.6	20.3	0	0	0		
			90	<0.1	0.6	20.3	0	0	0		
			120	<0.1	0.6	20.3	0	0	0		
			180	<0.1	0.6	20.3	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH106 (Deep)	0.1 Peak 0.0 Steady	0.02	0	<0.1	Rising	20.8	0	0	0	2.88	Base at 6.39mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.6	20.7	0	0	0		
			30	<0.1	0.7	19.6	0	0	0		
			60	<0.1	0.7	19.7	0	0	0		
			90	<0.1	0.7	19.7	0	0	0		
			120	<0.1	0.7	19.6	0	0	0		
			180	<0.1	0.7	19.6	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH1 (Existing) (Shallow)	0.0	0.01	0	<0.1	Rising	20.9	0	0	0	2.99	Base at 3.23mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level Water up to top of bung inside casing
			15	<0.1	4.6	19.7	0	0	0		
			30	<0.1	4.8	16.4	0	0	0		
			60	<0.1	4.8	15.3	0	0	0		
			90	<0.1	4.8	15.2	0	0	0		
			120	<0.1	4.8	15.2	0	0	0		
			180	<0.1	4.8	15.2	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH1 (Existing) (Deep)	0.0	0.00	0	<0.1	Rising	20.9	0	0	0		PID Reading=0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	<0.1	4.4	19.8	0	0	0		
			30	<0.1	4.8	16.6	0	0	0		
			60	<0.1	4.8	15.6	0	0	0		
			90	<0.1	4.9	15.2	0	0	0		
			120	<0.1	4.8	15.2	0	0	0		
			180	<0.1	4.8	15.2	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH2 (Existing) (Shallow)	0.0	-0.04	0	RISING						3.01	Base at 3.76mbTOC No LNAPL No DNAPL PID = 0.0ppm Flush Cover at Ground Level
			15	3.2	11.5	17.6	63	0	0		
			30	3.3	11.8	8.7	65	0	0		
			60	3.2	12.0	5.2	64	0	0		
			90	3.2	11.9	4.9	64	0	0		
			120	3.2	11.9	4.5	64	0	0		
			180	3.2	12.0	4.6	65	0	0		
			240	3.3	11.9	4.5	66	0	0		
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH2 (Existing) (Deep)	0.1	0.09	0	RISING							PID = 0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	3.7	12.1	9.9	73	0	0		
			30	3.7	12.1	6.9	74	0	0		
			60	3.6	12.1	4.1	73	0	0		
			90	3.7	12.2	4.0	73	0	0		
			120	3.6	12.2	3.8	72	0	0		
			180	3.7	12.2	3.8	73	0	0		
			240	3.7	12.2	3.8	73	0	0		

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH3 (Existing) (Shallow)	0.0	0.00	0	<0.1	Rising	20.5	0	0	0	2.00	Base at 3.01mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	2.8	19.5	0	0	0		
			30	<0.1	3.1	17.2	0	0	0		
			60	<0.1	3.1	16.4	0	0	0		
			90	<0.1	3.1	16.2	0	0	0		
			120	<0.1	3.1	16.2	0	0	0		
			180	<0.1	3.1	16.3	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH3 (Existing) (Deep)	0.1 Peak 0.0 Steady	0.72 Peak 0.52 Steady	0	<0.1	Rising	20.8	0	0	0		PID Reading=0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	<0.1	2.9	19.7	0	0	0		
			30	<0.1	3.0	17.3	0	0	0		
			60	<0.1	3.1	16.3	0	0	0		
			90	<0.1	3.1	16.1	0	0	0		
			120	<0.1	3.0	16.2	0	0	0		
			180	<0.1	3.0	16.2	0	0	0		
			240	STEADY							

Location	Flow (l/hr)	DP (mbar)	Time (secs)	% by volume in air			LEL (%)	CO (ppm)	H2S (ppm)	Depth to water (mbTOC)	Notes
				Methane	Carbon Dioxide	Oxygen					
BH4 (Existing) (Shallow)	0.0	0.01	0	<0.1	Rising	20.7	0	0	0	1.62	Base at 2.64mbTOC No LNAPL No DNAPL PID Reading 0.0ppm Flush Cover at Ground Level
			15	<0.1	0.9	19.9	0	0	0		
			30	<0.1	0.9	19.7	0	0	0		
			60	<0.1	0.9	19.7	0	0	0		
			90	<0.1	0.9	19.7	0	0	0		
			120	<0.1	0.9	19.6	0	0	0		
			180	<0.1	0.9	19.7	0	0	0		
			240	STEADY							
Location	**Flow (l/hr)**	**DP (mbar)**	**Time (secs)**	**% by volume in air**			**LEL (%)**	**CO (ppm)**	**H2S (ppm)**	**Depth to water (mbTOC)**	**Notes**
				Methane	**Carbon Dioxide**	**Oxygen**					
BH4 (Existing) (Deep)	0.0	0.04	0	<0.1	Rising	20.7	0	0	0		PID Reading 0.0ppm Shallow and deep valves on same bung, deep is extended down with tubing to lower level.
			15	<0.1	0.9	20.2	0	0	0		
			30	<0.1	0.9	19.8	0	0	0		
			60	<0.1	0.9	19.5	0	0	0		
			90	<0.1	0.9	19.6	0	0	0		
			120	<0.1	0.9	19.6	0	0	0		
			180	<0.1	0.9	19.6	0	0	0		
			240	STEADY							

Gas & Environmental Services Ltd

British Gas approved test house — *Repair and maintenance of electronic equipment*

Unit 1, Little Ridge Industrial Estate
WELWYN GARDEN CITY
Hertfordshire, AL7 2BH

Telephone: 01707 373751
Fax: 01707 373752
E-mail: Katie@gesuk.com
Website: www.gesuk.com

Certificate of test and calibration

Calibration date 7th March 2013

Instrument details Gastec

Serial number 8217

Customer Enitial

The above instrument has been serviced in accordance with the manufacturers and British Gas recommended procedures for recalibration and checking of Gastec gas detectors.

The instrument was calibrated using gas standards that are traceable to national standards.

The instrument meets the requirements of British Gas standards, provided it is used and maintained in accordance with the manufacturers instructions

Recalibration is recommended to be carried out at six months from the date on this certificate.

Methane Gas standard	Range	Readings	Cylinder number
80 ppm	One	80ppm	APLA003683
500 ppm	One	490ppm	APLPT04308
800 ppm	One	800ppm	APE576028
80 ppm	Two	80ppm	APLA003683
500 ppm	Two	510ppm	APLPT04308
800 ppm	Two	800ppm	APE576028
8000 ppm	Two	8000ppm	FA003847

Cliff Smith
Gas & Environmental Services Ltd

GES

Gas & Environmental Services Ltd

British Gas approved test house

Repair and maintenance of electronic equipment

Unit 1, Little Ridge Industrial Estate
WELWYN GARDEN CITY
Hertfordshire, AL7 2BH

Telephone: 01707 373751
Fax: 01707 373752
E-mail: Cliff@gesuk.com
Website: www.gesuk.com

Certificate of test and calibration

Calibration date 21st November 2012

Instrument details Gastec

Serial number 250712.0002

Customer Enitial

The above instrument has been serviced in accordance with the manufacturers and British Gas recommended procedures for recalibration and checking of Gastec Autofim gas detectors.

The instrument was calibrated using gas standards that are traceable to national standards.

The instrument meets the requirements of British Gas standards, provided it is used and maintained in accordance with the manufacturers instructions

Recalibration is recommended to be carried out at six months from the date on this certificate.

Methane Gas standard	Range	Readings	Cylinder number
80 ppm	One	78ppm	APLA003683
500 ppm	One	490ppm	APLPT04308
800 ppm	One	750ppm	APE576028
80 ppm	Two	80ppm	APLA003683
500 ppm	Two	510ppm	APLPT04308
800 ppm	Two	800ppm	APE576028
8000 ppm	Two	7500ppm	FA003847

Cliff Smith
Gas & Environmental Services Ltd

CERTIFICATION OF CALIBRATION

Geotech
A subsidiary of LANDTEC

ISSUED BY: GEOTECH LABORATORY

Date Of Calibration: 24-Apr-2013

Certificate Number: GM08813_1/10894

Approved by Signatory

M. Moloney

Martin Moloney

Laboratory Inspection

GEOTECHNICAL INSTRUMENTS (UK) LTD
Sovereign House, Queensway, Leamington Spa, WarwickShire, CV31 3JR United Kingdom
Tel: +44 (0) 1926 338111 Fax: +44 (0) 1926 338110
E-mail: service@geotech.co.uk www.geotechuk.com

Customer: ***Enitial Projects Limited***
Enterprise Drive
Four Ashes
WOLVERHAMPTON
WV10 7DE
UNITED KINGDOM

Description: Gas Analyser

Model: GEM2000Plus

Serial Number: GM08813

Methane (CH4)	
Certified Gas (%)	Instrument Reading (%)
50.0	49.6
15.0	15.2
5.1	5.2

Carbon Dioxide (CO2)	
Certified Gas (%)	Instrument Reading (%)
50.0	50.3
15.0	14.7
5.0	4.9

Oxygen (O2)	
Certified Gas (%)	Instrument Reading (%)
20.9	21.0

Barometer (mbar)	
Reference	Reading
1016	1016

Additional Gas Cells		
Gas	Certified Gas (ppm)	Instrument Reading (ppm)
H^2	1012.0	LOW
CO	500.0	501.0
H^2S	51.3	51.2

All concentrations are molar.

CH4, CO2 readings recorded at : 30.6 °C

O2 readings recorded at : 22.3 °C

Barometric Pressure : 1016 mbar

Method of Test: The analyser is calibrated in a temperature controlled chamber using reference gases, providing traceability of measurement to recognised international standards.

End of Certificate

Geotech
A subsidiary of LANDTEC

Instrument Service Report

Unit Type: GEM2000Plus	Part Number:	Date:	Next Service Due:	Customer Name:
Serial Number: GM08813	GM2KPSCO001	29-Apr-2013	01-Nov-2013	Enitial Projects Limited

Actions/Investigation Description	Result	Comments
Serial Number Check	Yes	
Serial Comms Test	Pass	
Unit Updated To Latest Hardware Status	Yes	
Latest Firmware (Software)	Yes	Software version is V2.40
O2 Sensor Require Replacing	No	
Chemical Sensor Require Replacing	Yes	CO/H2(compensated) sensor replaced
Battery Requires Replacing	No	
Filters Replaced	Yes	
Memory Cleared	Yes	
Backlight Operation	Yes	
Instrument Charges Correctly	Yes	Clients charger not returned
Relevant Accessory Recognition	Yes	Anemometer channel calibrated
Pump Flow Test	Pass	Pump flow greater than 300ml/min
Pump Vacuum Test	Pass	Pump vacuum greater than -350mBar
Instrument Flow Fails Correctly	Yes	Flow fail point calibrated to less than 30 seconds
Pressure Systems Test	Pass	
Pressure Transducer Tests	Pass	Recalibrated transducers

Service Details:	Service Engineer:	Calibration Engineer:	Approved By:	Signature:
Service Scheme ✓	David Edwards	Graham Ingles	Martin Moloney	M. Moloney
Standard Service ☐				

Registered in England and Wales: 1898734
Geotechnical Instruments (UK) Ltd
Sovereign House, Queensway, Leamington Spa, Warwickshire, CV31 3JR, England. Tel: +44 (0)1926 338111 Fax: +44 (0)1926 338110 E-mail: service@geotech.co.uk Web: wwwgeotech.co.uk

CERTIFICATION OF CALIBRATION

ISSUED BY: GEOTECH LABORATORY

Geotech
A subsidiary of LANDTEC

Date Of Calibration: 12 October, 2012
Certificate Number: GM08813_1/9799

Approved by Signatory

Dawn Hemings
Laboratory Inspection

GEOTECHNICAL INSTRUMENTS (UK) LTD
Sovereign House, Queensway, Leamington Spa, WarwickShire, CV31 3JR United Kingdom
Tel: +44 (0) 1926 338111 Fax: +44 (0) 1926 338110
E-mail: service@geotech.co.uk www.geotechuk.com

Customer: ***Enitial Projects Limited***
Enterprise Drive
Four Ashes
WOLVERHAMPTON
WV10 7DE
UNITED KINGDOM

Description: Gas Analyser

Model: GEM2000Plus
Serial Number: GM08813

Methane (CH4)	
Certified Gas (%)	Instrument Reading (%)
50.0	49.2
15.0	15.0
5.1	5.0

Carbon Dioxide (CO2)	
Certified Gas (%)	Instrument Reading (%)
50.0	49.5
15.0	14.5
5.0	4.8

Oxygen (O2)	
Certified Gas (%)	Instrument Reading (%)
21.1	21.0

Barometer (mb)	
Reference	Reading
0999mb	0998mb

Additional Gas Cells		
Gas	Certified Gas (ppm)	Instrument Reading (ppm)
H^2	1012.0	LOW
CO	500.0	510.0
H^2S	51.3	51.5

All concentrations are molar.
CH4, CO2 readings recorded at: 30.6°C
O2 readings recorded at : 20.1°C
Barometric Pressure : 0999mb

Method of Test: The analyser is calibrated in a temperature controlled chamber using reference gases, providing traceability of measurement to recognised international standards.

End of Certificate

Geotech
A subsidiary of LANDTEC

Instrument Service Report

Unit Type: GEM2000Plus	Part Number:	Date:	Next Service Due:	Customer Name:
Serial Number: GM08813	GM2KPSCO001	15-Oct-2012	01-Apr-2013	Enitial Projects Limited

Actions/Investigation Description	Result	Comments
Serial Number Check	Yes	
Serial Comms Test	Pass	
Unit Updated To Latest Hardware Status	Yes	
Latest Firmware (Software)	Yes	Software version is V2.40
O2 Sensor Require Replacing	No	
Chemical Sensor Require Replacing	Yes	CO/H2(compensated) and H2S sensor replaced.
Battery Requires Replacing	No	
Filters Replaced	Yes	
Memory Cleared	Yes	
Backlight Operation	Yes	
Instrument Charges Correctly	Yes	
Relevant Accessory Recognition	Yes	Anemometer channel calibrated.
Pump Flow Test	Pass	Pump flow greater than 300ml/min.
Pump Vacuum Test	Pass	Pump vacuum greater than -350mBar.
Instrument Flow Fails Correctly	Yes	Flow fail point calibrated to less than 30 seconds.
Pressure Systems Test	Pass	
Pressure Transducer Tests	Pass	Recalibrated transducers.

Service Details:	Service Engineer:	Calibration Engineer:	Approved By:	Signature:
Service Scheme ✓ Standard Service ☐	Matthew Welch	Graham Ingles	Dawn Hemings	

Registered in England and Wales: 1898734
Geotechnical Instruments (UK) Ltd
Sovereign House, Queensway, Leamington Spa, Warwickshire, CV31 3JR, England. Tel: +44 (0)1926 338111 Fax: +44 (0)1926 338110 E-mail: service@geotech.co.uk Web: wwwgeotech.co.uk

Waterra UK Ltd, Unit 4, r/o 179 –189 Stratford Road, Shirley, Solihull, West Midlands, B90 3AU
Tel: 0121 733 7743 Fax: 0121 733 7746 email: sales@WaterraUK.com

MINIRAE LITE HIRE CHECKLIST

SERIAL NUMBER :- 590-001181

VISUAL CHECK	✓
CLEANED	✓
BATTERY CHARGED	✓
CALIBRATED AT ZERO	✓
CALIBRATED WITH ISOBUTYLENE @ 100PPM	✓
FILTER REPLACED	✓
CHARGER PAT TEST IN DATE	✓
MANUAL	✓

DATE CHECKED	2/11/12
INITIALS	DJW.

The Peristaltic Pump has been tested before shipping by Waterra. If you experience problems with the Reader on delivery or anytime during the hire period please contact Waterra immediately. Please remember to read 'Conditions of Hire' found on the 'Confirmation of Hire' form signed by your company. Copy attached to delivery note.

Waterra use only

Confirmation of Hire form ☐

Date Out: 4/1/13.

Initials: DJW

Customer Name: Enitial. Ian Matoy Chesterfield

Del Note No: 46681

Created 14th October 2011

Appendix J

Internal Space Monitoring Data

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Midlands Park Industrial Estate Building FID survey

Plot No:	1
Address:	Cottage Beck Road Depot, Cottage Beck Road, DN16 1TS

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	26/02/2013	No	0	
G02	26/02/2013	No	0	
G03	26/02/2013	No	0	
G04	26/02/2013	No	0	
G05	26/02/2013	No	0	
G06	26/02/2013	No	0	
G07	26/02/2013	No	0	
G08	26/02/2013	No	0	
G09	26/02/2013	No	0	
G10	26/02/2013	No	0	
G11	26/02/2013	No	0	
G12	26/02/2013	No	0	
G13	26/02/2013	No	0	
G14	26/02/2013	No	0	
G15	26/02/2013	No	0	
G16	26/02/2013	No	0	
G17	26/02/2013	No	0	
G18	26/02/2013	No	0	
G19	26/02/2013	No	0	
G20	26/02/2013	No	0	
G21	26/02/2013	No	0	
G22	26/02/2013	No	0	
G23	26/02/2013	No	0	
G24	26/02/2013	No	0	
G25	26/02/2013	No	0	
G26	26/02/2013	No	0	
G27	26/02/2013	No	0	
G28	26/02/2013	No	0	
G29	26/02/2013	No	0	
G30	26/02/2013	No	0	
G31	26/02/2013	No	0	
G32	26/02/2013	No	0	
G33	26/02/2013	No	0	
G34	26/02/2013	No	0	
G35	26/02/2013	No	0	
G36	26/02/2013	Yes	8	No specific point source, but suspected to be coming from the gas boiler in room
G37	26/02/2013	Yes	8	Adjoining room to room with boiler, door open
G38	26/02/2013	Yes	8	Adjoining room to room with boiler, door open
G39	26/02/2013	No	0	
G40	26/02/2013	No	0	
G41	26/02/2013	No	0	
G42	26/02/2013	No	0	
G43	26/02/2013	No	0	
G44	26/02/2013	No	0	
G45	26/02/2013	No	0	
G46	26/02/2013	No	0	
G47	26/02/2013	No	0	
G48	26/02/2013	No	0	
G49	26/02/2013	No	0	
G50	26/02/2013	No	0	
G51	26/02/2013	No	0	
G52	26/02/2013	No	0	
G53	26/02/2013	No	0	
G54	26/02/2013	No	0	
G54a	26/02/2013	No	0	
G55	26/02/2013	No	0	
G56	26/02/2013	No	0	
G57	26/02/2013	No	0	
G58	26/02/2013	No	0	
G59	26/02/2013	No	0	
G60	26/02/2013	No	0	
G61	26/02/2013	No	0	
G62	26/02/2013	No	0	
G63	26/02/2013	No	0	
G64	26/02/2013	No	0	
G65	26/02/2013	No	0	
G66	26/02/2013	No	0	
G67	26/02/2013	No	0	
G68	26/02/2013	No	0	
G69	26/02/2013	No	0	
G70	26/02/2013	No	0	
G71	26/02/2013	No	0	
G72	26/02/2013	No	0	
G73	26/02/2013	No	0	
G74	26/02/2013	No	0	
G75	26/02/2013	No	0	
G76	26/02/2013	No	0	
G77	26/02/2013	No	0	
G78	26/02/2013	No	0	
G79	26/02/2013	No	0	
G80	26/02/2013	No	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	2
Address:	NLC Depot, 53-55 Midland Road DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	26/02/2013	No	0	
G02	26/02/2013	No	0	
G03	26/02/2013	No	0	
G04	26/02/2013	No	0	
G05	26/02/2013	No	0	
G06	26/02/2013	No	0	
G06a	26/02/2013			No Access to shed, stilted off ground anyway
G07	26/02/2013	Yes	10	From surface water gully near roller shutter, oily film in gully
G08	26/02/2013	No	0	
G09	26/02/2013	No	0	
G10	26/02/2013	No	0	
G11	26/02/2013	No	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	3
Address:	Automech Ltd, 49 - 51 Midland Road DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	26/02/2013	Yes	80 to 90	General atmospheric, no point source, car workshop, drums, containers etc.
G02	26/02/2013	Yes	8	General atmospheric, no point source, front office
G03	26/02/2013	Yes	20	General atmospheric, no point source
G04	26/02/2013	Yes	40	General atmospheric, toilet full of cleaning products
G05	26/02/2013	Yes	40	General atmospheric, possibly air freshener, aerosol spray
G06	26/02/2013	Yes	40 to 50	General atmospheric, no point source, included cracks, inside car workshop
G07	26/02/2013	Yes	20	General atmospheric, no point source, office adjoining workshop
G08	26/02/2013	Yes	30	General atmospheric, no point source
G09	26/02/2013	Yes	30	General atmospheric, no point source
G10	26/02/2013	Yes	40	General atmospheric, no point source

Midlands Park Industrial Estate Building FID survey

Plot No:	4
Address:	Viking Hardware, Warehouse and Dan Page Car Repairs 39-41 Midland Road DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments	
G01	26/02/2013	Yes	4	General atmospheric, no point source	
G02	26/02/2013	Yes	5	General atmospheric, no point source	
G03	26/02/2013	Yes	10	General atmospheric, no point source	
G04	26/02/2013	Yes	10	General atmospheric, no point source	
G05	26/02/2013	Yes	10	General atmospheric, no point source	
G06	26/02/2013	Yes	10	General atmospheric, no point source	
G07	26/02/2013	Yes	20	General atmospheric, no point source	
G08	26/02/2013	Yes	20	General atmospheric, no point source	
G09	26/02/2013	Yes	20	General atmospheric, no point source	
G10	26/02/2013	Yes	8	General atmospheric, no point source, including cracks	
G11	26/02/2013	Yes	20	General atmospheric, no point source	
G12	26/02/2013	Yes	20	General atmospheric, no point source	
G13	26/02/2013	Yes	20	General atmospheric, no point source	
G14	27/02/2013	Yes	10 to 20	General atm, 10ppm at front roller door to 20ppm at back wall, paint odour possibly from car repair works next door	
G15	27/02/2013	Yes	5	General atm, slight paint odour, possibly from car repairs next door	
G16	27/02/2013	Yes	5	General atm, slight paint odour, possibly from car repairs next door	
G17	27/02/2013	Yes	5	General atm, slight paint odour, possibly from car repairs next door	
G18	27/02/2013	Yes	5	General atm, slight paint odour, possibly from car repairs next door	
G19	27/02/2013	Yes	5	General atm, slight paint odour, possibly from car repairs next door	
G20	27/02/2013	Yes	5	General atm, slight paint odour, possibly from car repairs next door	
G21	26/02/2013	Yes	100	Inside electricity cupboard, need to inspect duct next visit, in corner of office behind owners desk	
G22	26/02/2013	Yes	8	General Atm, no point source, paint odour	
G23	26/02/2013	Yes	40	General Atm, no point source, strong paint odour	
G24	26/02/2013	Yes	40	General Atm, no point source, strong paint odour	
G25	26/02/2013	Yes	30	General Atm, no point source, strong paint odour	
G26	26/02/2013	Yes	40	General Atm, no point source, strong paint odour	
G27	26/02/2013	Yes	40 to 90	General Atm, paint odour and readings getting stronger further back into unit, could not access far wall as fumes became unbearable	Reports from worker in car spray centre of strong landfill gas smell under stairs of main workshop, during summer months
G28	26/02/2013	Yes	80	General Atm, paint spraying room, sealed unit	
G29	26/02/2013	Yes	500	General Atm, paint mixing room, extremely strong paint odour	
G30	26/02/2013	Yes	100	General Atm, paint stripping room, sealed unit	

Midlands Park Industrial Estate Building FID survey

Plot No:	5
Address:	35 Midland Road (Formerly BJW Crane Hire)

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	27/02/2013	No	0	
G02	27/02/2013	No	0	
G03	27/02/2013	No	0	
G04	27/02/2013	No	0	
G05	27/02/2013	No	0	
G06	27/02/2013	No	0	
G07	27/02/2013	No	0	
G08	27/02/2013	No	0	
G09	27/02/2013	No	0	
G10	27/02/2013	No	0	
G11	27/02/2013	No	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	6
Address:	R Pogson & Brumby Wood Motors, 25 Midland Road DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	27/02/2013	Yes	5	General Atm, slight paint/solvent odour
G02	27/02/2013	Yes	5	General Atm, slight paint/solvent odour
G03	27/02/2013	Yes	5	General Atm, slight paint/solvent odour
G04	27/02/2013	Yes		No Access-Owners Office, Locked, no keys on site
G05	27/02/2013	Yes	5	General Atm, slight paint/solvent odour
G06	27/02/2013	Yes	5	General Atm, slight paint/solvent odour
G07	27/02/2013	Yes	5	General Atm, slight paint/solvent odour
G08	27/02/2013	Yes	5	General Atm, slight paint/solvent odour
G09	27/02/2013	Yes	5	General Atm, slight paint/solvent odour
G10	27/02/2013	Yes	5	General Atm, slight paint/solvent odour
G11	27/02/2013	Yes	7	Paint store, increased odour
G12	27/02/2013	Yes	5	General Atm, slight paint/solvent odour
G13	27/02/2013	Yes	10 to 20	General Atm, 20ppm around corner of work bench, open paint tins and thinner on bench
G14	27/02/2013	Yes	3	General Atm, car workshop, no point source
G15	27/02/2013	Yes	2	General Atm, car workshop, no point source
G16	27/02/2013	Yes	2	General Atm, car workshop, no point source
G17	27/02/2013	Yes	2	General Atm, car workshop, no point source, cracks in concrete floor included
G18	27/02/2013	Yes	2	General Atm, car workshop, no point source

Midlands Park Industrial Estate Building FID survey

Plot No:	6a
Address:	Easimix, 23 Midland Road DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	27/02/2013	No	0	
G02	27/02/2013	No	0	
G03	27/02/2013	No	0	
G04	27/02/2013	No	0	
G05	27/02/2013	No	0	
G06	27/02/2013	No	0	
G07	27/02/2013	No	0	
G08	27/02/2013	No	0	
G09	27/02/2013	No	0	
G10	27/02/2013	No	0	
G11	27/02/2013	No	0	
G12	27/02/2013	No	0	
G13	27/02/2013	No	0	
G14	27/02/2013	No	0	
G15	27/02/2013	Yes	3	Not on floor plan, mess room (opposite G11), General atm, no point source, cleaning products
G16	27/02/2013	Yes	5	Not on floor plan, shower room adjoining mess room (opposite G12), General atm, no point source, cleaning products
G17	27/02/2013	Yes	10	Not on floor plan, Acid Store (opposite G13), General atm, no point source, paints, thinners and chemicals kept in room

Midlands Park Industrial Estate Building FID survey

Plot No:	7
Address:	Murphy Ltd, 36 Midland Road DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	27/02/2013	No	0	Photo taken (Murphy's Site Office), portable container
G02	27/02/2013	No	0	Portable container, changing room
G03	27/02/2013	No	0	Portable container, canteen
G04	27/02/2013	No	0	Portable container, toilet block
G05	27/02/2013	No	0	Portable container, toilet block
G06	27/02/2013	No	0	
G07	27/02/2013	No	0	No access inside portable cabin, no keys on site, photo taken (Murphy's Container), 0ppm underneath container, no services going in
G08	27/02/2013	No	0	
G09	27/02/2013	No	0	
G10	27/02/2013	No	0	
G11	27/02/2013	Yes	10	Not on floor plan, photo taken (Murphy's Small Container), Paint/Chemical store, odour inside

Midlands Park Industrial Estate Building FID survey

Plot No:	8
Address:	P&H Construction and GPS Crushing, 36-38 Midland Road DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	27/02/2013	No	0	
G02	27/02/2013	No	0	
G03	27/02/2013	Yes	4	General atm, no point source, toilet cubicle, odour of cleaning products
G04	27/02/2013	No	0	
G05	27/02/2013	No	0	
G06	27/02/2013	No	0	
G07	27/02/2013	No	0	
G08	27/02/2013	No	0	
G09	27/02/2013	No	0	
G10	27/02/2013	No	0	
G11	27/02/2013	No	0	
G12	27/02/2013	No	0	
G13	27/02/2013	No	0	
G14	27/02/2013	Yes	4	General atm, no access to back of garage due to storage of lawn mowers/engines, oily/solvent odour

Midlands Park Industrial Estate Building FID survey

Plot No:	9
Address:	LAS Metals, 44 Midland Road DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	26/02/2013	No	0	No access to over half of scrap sorting yard, due to mounds of scrap metal
G02	26/02/2013	No	0	
G03	26/02/2013	No	0	
G04	26/02/2013	No	0	
G05	26/02/2013	Yes	2	General atm, no point source
G06	26/02/2013	No	0	
G07	26/02/2013	No	0	
G08	26/02/2013	No	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	10
Address:	M Gould, 46 Midland Road DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	26/02/2013	No	0	
G02	26/02/2013	No	0	
G03	26/02/2013	No	0	
G04	26/02/2013	No	0	
G05	26/02/2013	No	0	
G06	26/02/2013	Yes	4	General atm, along corridor outside toilet doors, no point source but still slight air freshener odour
G07	26/02/2013	No	0	
G08	26/02/2013	No	0	
G09	26/02/2013	Yes	80	General atmospheric, no point source, strong air freshener odour in ladies W.C.
G10	26/02/2013	Yes	40	adjoining room to ladies W.C., no point source, still similar odour to above
G11	26/02/2013	Yes	8	General atmospheric, no point source, slight fresener odour in gents W.C.
G12	26/02/2013	Yes	8	adjoining room to gents W.C., no point source, still similar odour to above
G13	26/02/2013	No	0	
G14	26/02/2013	No	0	
G15	26/02/2013	No	0	
G16	26/02/2013	No	0	
G17	26/02/2013	No	0	
G18	26/02/2013	No	0	
G19	26/02/2013	No	0	
G20	26/02/2013	No	0	
G21	26/02/2013	No	0	
G22	26/02/2013	No	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	11
Address:	D Beacroft Joinery, 7 Colin Road, DN16 1TT

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	26/02/2013	Yes	2	General atm, no specific point source
G02	26/02/2013	Yes	3	General atm, no specific point source
G03	26/02/2013	Yes	2	General atm, no specific point source
G04	26/02/2013	Yes	4 to 5	General atm, no specific point source
G05	26/02/2013	Yes	5	General atm, no specific point source
G06	26/02/2013	Yes	4 to 5	General atm, no specific point source
G07	26/02/2013	Yes	5	General atm, no specific point source

Midlands Park Industrial Estate Building FID survey

Plot No:	12
Address:	NL Components, 6 Colin Road, DN16 1TT

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	26/02/2013	Yes	4	General atm, no point specific point source
G02	26/02/2013	Yes	4	General atm, no point specific point source
G03	26/02/2013	Yes	3	General atm, no point specific point source
G04	26/02/2013	Yes	4	General atm, no point specific point source
G05	26/02/2013	Yes	4	General atm, no point specific point source
G06	26/02/2013	Yes	4	General atm, no point specific point source
G07	26/02/2013	Yes	4	General atm, no point specific point source
G08	26/02/2013	Yes	4	General atm, no point specific point source
G09	26/02/2013	Yes	4	General atm, no point specific point source
G10	26/02/2013			Upstiars landing, no need to monitor
G11	26/02/2013	Yes	5	General atm, no point specific point source
G12	26/02/2013	No	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	13
Address:	Compart 2011 Ltd, 10+11 Albion Park, Midland Road, DN16 1DJ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	26/02/2013	No	0	
G02	26/02/2013	Yes	2	Around painting area, paint odour
G03	26/02/2013	No	0	
G04	26/02/2013	No	0	
G05	26/02/2013	No	0	
G06	26/02/2013	No	0	
G07	26/02/2013	No	0	
G08	26/02/2013	Yes	2	General atm, no point source in front office

Midlands Park Industrial Estate Building FID survey

Plot No:	14
Address:	Scunthorpe Radiators, 4 Albion Park, Midland Road, DN16 1DJ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	26/02/2013	Yes	20	Gas fire in small room, readings generally concentrated around top of room
G02	26/02/2013	No	0	
G03	26/02/2013	No	0	
G04	26/02/2013	No	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	15
Address:	Peters Garage, 7 Albion Park, Midland Road, DN16 1DJ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	26/02/2013	Yes	4	General atm, no specific point source in oily car workshop
G02	26/02/2013	Yes	4	General atm, no specific point source in oily car workshop
G03	26/02/2013	Yes	10	General atm, no specific point source, in utility room
G04	26/02/2013	Yes	20	General atm, no specific point source, in toilet block

Midlands Park Industrial Estate Building FID survey

Plot No:	16
Address:	Engineering and Welding Supplies Ltd, Nostell Road DN16 1DL

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	27/02/2013	No	0	
G02	27/02/2013	No	0	
G03	27/02/2013	No	0	
G04	27/02/2013	No	0	
G05	27/02/2013	No	0	
G06	27/02/2013	Yes	4	General atm, cleaning products odour in kitchen
G07	27/02/2013	No	0	
G08	27/02/2013	No	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	17
Address:	Maseys Cafe, East Common Lane, DN16 1DA

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	27/02/2013	Yes	0 to 4	4ppm around two separate kitchen areas, general atm, no specific point source
G02	27/02/2013	Yes	5	General atm, no specific point source
G03	27/02/2013	No	0	
G04	27/02/2013	No	0	
G05	27/02/2013	No	0	
G06	27/02/2013	No	0	
G07	27/02/2013	No	0	
G08	27/02/2013	Yes	4 to 7	7ppm from fridge motor, general atm of 4ppm possibly from motor
G09	27/02/2013	No	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	18
Address:	Jack Tighe, East Common Lane, DN16 1DF

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	27/02/2013	No	0	
G02	27/02/2013	No	0	
G03	27/02/2013	No	0	
G04	27/02/2013	No	0	
G05	27/02/2013	No	0	
G06	27/02/2013	No	0	
G07	27/02/2013	No	0	
G08	27/02/2013	No	0	
G09	27/02/2013	No	0	
G10	27/02/2013	No	0	
G11	27/02/2013	No	0	
G12	27/02/2013	No	0	
G13	27/02/2013	Yes	200	General atm, very strong paint odour, paint store, lots of paint tins and chemicals
G14	27/02/2013	Yes	100	General atm, strong paint odour, open tins on floor
G15	27/02/2013	Yes	200	General atm, very strong paint odour, paint blasting room, walls coated with wet paint
G16	27/02/2013	No	0	
G17	27/02/2013	No	0	
G18	27/02/2013	Yes	3	General atm, no specific point source, locker room
G19	27/02/2013	Yes	3	General atm, no specific point source, locker room
G20	27/02/2013	Yes	3	General atm, no specific point source, gents W.C.
G21	27/02/2013	Yes	3	General atm, no specific point source, gents W.C.
G22	27/02/2013	Yes	3	General atm, no specific point source, gents W.C.
G23	27/02/2013	Yes	2	General atm, no specific point source, storage unit
G24	27/02/2013	Yes	70	General atm, strong paint/solvent odour inside shot blasting chamber
G25	27/02/2013	Yes	30 to 50	General atm, no specific point source, strong paint odour getting stronger closer to shot blasting chamber
G26	27/02/2013	Yes	5 to 9	General atm, no specific point source, paint odour
G27	27/02/2013	No	0	
G28	27/02/2013	No	0	
G29	27/02/2013	Yes	5	General atm, paint pots in corner, included crack in concrete slab floor
G30	27/02/2013	No	0	
G31	27/02/2013	No	0	
G32	27/02/2013	No	0	
G33	27/02/2013	No	0	
G34	27/02/2013	No	0	

Field Log

Meteorological Conditions

Date and Time	Plot Number	Weather Conditions	Temp (°C)	Atm (mbar)
Start: 26/02/2013 at 9:30	Plot 1	Cloudy/Dry	4.0	1030
Finish: 26/02/2013 at 11:20	Plot 1	Cloudy/Dry	5.0	1030
Start: 26/02/2013 at 11:30	Plot 2	Cloudy/Dry	5.0	1030
Finish: 26/02/2013 at 11:50	Plot 2	Cloudy/Dry	5.0	1030
Start: 26/02/2013 at 12:30	Plot 3	Cloudy/Dry	5.0	1030
Finish: 26/02/2013 at 12:50	Plot 3	Cloudy/Dry	5.0	1030
Start: 26/02/2013 at 13:10	Plot 4	Cloudy/Dry	6.0	1030
Finish: 27/02/2013 at 10:45	Plot 4	Cloudy/Dry	4.0	1034
Start: 27/02/2013 at 8:30	Plot 5	Clear/Dry	2.0	1034
Finish: 27/02/2013 at 8:55	Plot 5	Clear/Dry	2.0	1034
Start: 27/02/2013 at 11:35	Plot 6	Clear/Dry	7.0	1034
Finish: 27/02/2013 at 12:00	Plot 6	Clear/Dry	7.0	1034
Start: 27/02/2013 at 9:00	Plot 6a	Clear/Dry	2.0	1034
Finish: 27/02/2013 at 9:30	Plot 6a	Clear/Dry	2.0	1034
Start: 27/02/2013 at 12:30	Plot 7	Clear/Dry	10.0	1034
Finish: 27/02/2013 at 13:30	Plot 7	Clear/Dry	10.0	1034
Start: 27/02/2013 at 12:10	Plot 8	Clear/Dry	9.0	1034
Finish: 27/02/2013 at 12:25	Plot 8	Clear/Dry	9.0	1034
Start: 26/02/2013 at 12:50	Plot 9	Cloudy/Dry	7.0	1030
Finish: 26/02/2013 at 13:20	Plot 9	Cloudy/Dry	7.0	1030
Start: 26/02/2013 at 11:55	Plot 10	Cloudy/Dry	6.0	1030
Finish: 26/02/2013 at 12:25	Plot 10	Cloudy/Dry	6.0	1030
Start: 26/02/2013 at 13:40	Plot 11	Cloudy/Dry	8.0	1030
Finish: 26/02/2013 at 13:55	Plot 11	Cloudy/Dry	8.0	1030
Start: 26/02/2013 at 14:00	Plot 12	Cloudy/Dry	9.0	1030
Finish: 26/02/2013 at 14:30	Plot 12	Cloudy/Dry	9.0	1030
Start: 26/02/2013 at 14:40	Plot 13	Cloudy/Dry	9.0	1030
Finish: 26/02/2013 at 14:55	Plot 13	Cloudy/Dry	9.0	1030
Start: 26/02/2013 at 14:20	Plot 14	Cloudy/Dry	8.0	1030
Finish: 26/02/2013 at 14:35	Plot 14	Cloudy/Dry	8.0	1030
Start: 26/02/2013 at 13:30	Plot 15	Cloudy/Dry	8.0	1030
Finish: 26/02/2013 at 13:40	Plot 15	Cloudy/Dry	8.0	1030
Start: 27/02/2013 at 11:00	Plot 16	Clear/Dry	6.0	1034
Finish: 27/02/2013 at 11:20	Plot 16	Clear/Dry	6.0	1034
Start: 27/02/2013 at 10:40	Plot 17	Clear/Dry	5.0	1034
Finish: 27/02/2013 at 11:00	Plot 17	Clear/Dry	5.0	1034
Start: 27/02/2013 at 9:30	Plot 18	Clear/Dry	5.0	1034
Finish: 27/02/2013 at 10:40	Plot 18	Clear/Dry	5.0	1034

Personnel and Equipment

Date	Personnel	Instrument Serial Number	Calibration Due
26/02/2013	I Mayoh/S Mortimer	250712-0002	21/05/2013
27/02/2013	I Mayoh/P Sanders	250712-0002	21/05/2013

Midlands Park Industrial Estate Building FID survey

Plot No:	19
Address:	Tayto, Banbury Road, DN16 1UN

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	07/03/2013	N	0	
GO2	07/03/2013	N	0	
GO3	07/03/2013	N	0	
GO4	07/03/2013	N	0	
GO5	07/03/2013	N	0	
GO6	07/03/2013	N	0	
GO7	07/03/2013	N	0	
GO8	07/03/2013	N	0	
GO9	07/03/2013	N	0	
GO10	07/03/2013	N	0	
GO11	07/03/2013	N	0	
GO12	07/03/2013	N	0	
GO13	07/03/2013	N	2	Ambient Reading
GO14	07/03/2013	N	0	
GO15	07/03/2013	N	0	
GO16	07/03/2013	N	0	
GO17	07/03/2013	N	0	
GO18	07/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	20
Address:	PD Logistics, 21 Midlands Road, DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	07/03/2013	Y	8	Storage Cabinet
GO1	07/03/2013	Y	8	Ambient Reading in workshop
GO1	07/03/2013	Y	8 to 10	Ambient Reading in raised workshop
GO1 REF C	07/03/2013	Y	1000	Along base of workshop wall where new and old Tarmac meet
GO1 REF D	07/03/2013	Y	600	Around supporting steel pillar
GO1 REF E	07/03/2013	Y	400	Edge of new Tarmac in corner of warehouse
GO1 REF F	07/03/2013	Y	2000	Crack in edge of concrete floor slab
GO1 REF G	07/03/2013	Y	8000	Crack in edge of concrete floor slab
GO1 REF H	07/03/2013	Y	800	Dip at base of wall
GO1 REF I	07/03/2013	Y	100	Along base of raised workshop wall adjacent to GO2
GO2	07/03/2013	Y	2	Workshop Ambient Reading
GO2 REF A	07/03/2013	Y	>10000	Dip between new and old tarmac. Waste and gas odour
GO2 REF B	07/03/2013	Y	1000	Hole punched in tarmac
GO3	07/03/2013	Y	2	Ambient Reading
GO4	07/03/2013	N	0	
GO5	07/03/2013	N	0	
GO6	07/03/2013	N	0	
GO7	07/03/2013	N	0	
GO8	07/03/2013	N	0	
GO9	07/03/2013	N	0	
GO10	07/03/2013	N	0	
GO11	07/03/2013	N	0	
GO12	07/03/2013	N	0	
GO13	07/03/2013	N	0	
GO14	07/03/2013	N	0	
GO15	07/03/2013	N	0	
GO16	07/03/2013	N	0	
GO17	07/03/2013	N	0	
GO18	07/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	21
Address:	B & K Recycling, Colin Road, DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	07/03/2013	N	0	
GO2	07/03/2013	N	0	
GO3	07/03/2013	N	0	
GO4	07/03/2013	N	0	
GO5	07/03/2013	N	0	
GO6	07/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	22
Address:	Bernand XH Ltd, Unit 1-3, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	07/03/2013	Y	10	Ambient reading
GO2	07/03/2013	Y	10	Ambient reading
GO2	07/03/2013	Y	1000	Edge of wall in corner of office
GO2	07/03/2013	Y	200	Edge of office wall adjacent to door
GO3	07/03/2013	Y	200	Ambient reading
GO3	07/03/2013	Y	2000	Exposed plug socket
GO4	07/03/2013	Y	9 to 10	Ambient reading
GO4	07/03/2013	Y	10 to 30	Ambient reading
GO4	07/03/2013	Y	500	Crack below roller door entrance
GO4	07/03/2013	Y	400	Small cracks a long joints in floor
GO4	07/03/2013	Y	5000	Concrete slab joint
GO4	07/03/2013	Y	4000	Small cracks a long joints in floor
GO5	07/03/2013	Y	20	Ambient reading
GO5	07/03/2013	Y	300	Ridge in floor adjacent to wall in toilet

Midlands Park Industrial Estate Building FID survey

Plot No:	23
Address:	Global Motorcycles, Unit 4, Trinity Park, DN16 1 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	07/03/2013			No access to unit
GO3	07/03/2013			No access to unit
GO4	07/03/2013			No access to unit

Midlands Park Industrial Estate Building FID survey

Plot No:	24
Address:	Product Design Ltd, Unit 5, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	07/03/2013	Y	1	Ambient reading
GO2	07/03/2013	Y	1	Ambient reading, fresh paint odour
GO3	07/03/2013	Y	2	Ambient reading, fresh paint odour

Midlands Park Industrial Estate Building FID survey

Plot No:	25
Address:	Yew Tree Engineering, Unit 6, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	07/03/2013			No access to unit
GO2	07/03/2013			No access to unit
GO3	07/03/2013			No access to unit

Midlands Park Industrial Estate Building FID survey

Plot No:	26
Address:	Body Torque, Unit 7, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	07/03/2013	Y	1	Ambient reading
GO2	07/03/2013	N	0	
GO3	07/03/2013	Y	2	Air freshener odour

Midlands Park Industrial Estate Building FID survey

Plot No:	28
Address:	103 Warwick Road, DN16 1ES

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	07/03/2013	N	0	
GO2	07/03/2013	N	0	
GO3	07/03/2013	Y	3	Ambient reading
GO4	07/03/2013	Y	2	Ambient reading
GO5	07/03/2013	Y	20	Mains gas odour
GO6	07/03/2013	Y	30	Mains gas odour
GO7	07/03/2013	Y	30	Mains gas odour
GO8	07/03/2013	N	0	
GO9	07/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	27
Address:	Myers Tyres, Unit 8/9, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	07/03/2013			No access to unit
GO2	07/03/2013			No access to unit
GO3	07/03/2013			No access to unit
GO4	07/03/2013			No access to unit

Midlands Park Industrial Estate Building FID survey

Plot No:	29
Address:	105 Warwick Road, DN16 1ES

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	07/03/2013	N	0	
GO2	07/03/2013	N	0	
GO3	07/03/2013	N	0	
GO4	07/03/2013	N	0	
GO5	07/03/2013	N	0	
GO6	07/03/2013	N	0	
GO7	07/03/2013	N	0	
GO8	07/03/2013	Y	2	Ambient Odour

Midlands Park Industrial Estate Building FID survey

Plot No:	20
Address:	PD Logistics, 21 Midlands Road, DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	11/03/2013	Y	3	Ambient reading workshop.
GO1	11/03/2013	N	0	Ambient reading raised workshop.
GO1 REF1	11/03/2013	Y	800	Point Source. At base of 3rd pillar.
GO1 REF2	11/03/2013	Y	2000	Point source only. Adjacent to 4th pillar.
GO1 REF3	11/03/2013	Y	500	Point source only. Crack at base of wall.
GO1 REF4	11/03/2013	Y	2000	Point source only. Crack in concrete slab.
GO1 REF5	11/03/2013	Y	700	Point source only. Adjacent to pillar.
GO1 REF6	11/03/2013	Y	2000	Point source only. Adjacent to last pillar in workshop.
GO1 REF7	11/03/2013	Y	1000	Point source only. Crack in concrete slab a long wall.
GO1 REF8	11/03/2013	Y	2000	Point source only. Crack in concrete slab.
GO1 REF9	11/03/2013	Y	1000	Point source only. Dip below wall.
GO2 REF10	11/03/2013	Y	1000	Point source only. In small hole in concrete slab.
GO2 REF11	11/03/2013	Y	1000	Point source only. Crack in concrete slab.
GO2 REF12	11/03/2013	Y	2000	Point source only. At base of down pipe.
GO3	11/03/2013	N	0	
GO4	11/03/2013	N	0	
GO5	11/03/2013	N	0	
GO6	11/03/2013	N	0	
GO7	11/03/2013	N	0	
GO8	11/03/2013	N	0	
GO9	11/03/2013	N	0	
GO10	11/03/2013	N	0	
GO12	11/03/2013	Y	1	Ambient reading
GO13	11/03/2013	Y	4	Ambient reading
GO14	11/03/2013	N	0	
GO15	11/03/2013	N	0	
GO16	11/03/2013	N	0	
GO17	11/03/2013	Y	15	
GO18	11/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	22
Address:	Bernand XH Ltd, Unit 1-3, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	11/03/2013	N	0	
GO2	11/03/2013	N	0	
GO3	11/03/2013	Y	25	Ambient reading
GO4	11/03/2013	Y	1	Crack in floor
GO4	11/03/2013	Y	50	Crack in floor
GO5	11/03/2013	Y	20	Crack in floor adjacent to toilet
Vent	11/03/2013	N	0	
Vent	11/03/2013	Y	100	External vent
Vent	11/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	23
Address:	Global Motorcycles, Unit 4, Trinity Park, DN16 1 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	11/03/2013	N	0	
GO2	11/03/2013	Y	5	Degreaser odour
GO3	11/03/2013	N	0	
VENT	11/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	24
Address:	Product Design Ltd, Unit 5, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	11/03/2013	N	0	
GO2	11/03/2013	N	0	
GO3	11/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	25
Address:	Yew Tree Engineering, Unit 6, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	11/03/2013			No access to unit
GO2	11/03/2013			No access to unit
GO3	11/03/2013			No access to unit

Midlands Park Industrial Estate Building FID survey

Plot No:	26
Address:	Body Torque, Unit 7, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	11/03/2013	N	0	
GO2	11/03/2013	N	0	
GO3	11/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	27
Address:	Myers Tyres, Unit 8/9, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	11/03/2013	N	0	
GO2	11/03/2013	N	0	
GO3	11/03/2013	Y	4	In corner adjacent to new tyres
GO4	11/03/2013	N	0	
VENT	11/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	20
Address:	PD Logistics, 21 Midlands Road, DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	12/03/2013	Y	1 to 3	Ambient reading workshop.
GO1	12/03/2013	Y	1 to 3	Ambient reading raised workshop.
GO1 REFA	12/03/2013	Y	300	At base of wall. 100cmx20cm gas bubble
GO1 REFB	12/03/2013	Y	200	Point source only. Edge of concrete a long wall
GO1 REFC	12/03/2013	Y	100	Absorbant matt at base of wall
GO1 REFD	12/03/2013	Y	2	Ambient reading in corner of workshop
GO1 REFE	12/03/2013	Y	2	Ambient reading inside cupboard
GO1 REFF	12/03/2013	Y	300	Point source only. Inside hole adjacent to concrete slab.
GO1 REFG	12/03/2013	Y	1000	Point source only. At base of wall. Vehicle moving in adjacent warehouse.
GO1 REFH	12/03/2013	Y	1000	Point source only. At base of wall. Vehicle moving in adjacent warehouse.
GO1 REFI	12/03/2013	Y	5000	Base of down pipe. 10cm away reading 100ppm
GO2 REFJ	12/03/2013	Y	200	At base of wall in corner of warehouse. Around rubbish.
GO2 REFK	12/03/2013	Y	5000	Hole (possibly rodent) 10cm - 1000ppm, 12cm - 500ppm, 20cm, 100ppm & 100cm - 0ppm.
GO3	12/03/2013	N	0	
GO4	12/03/2013	N	0	
GO5	12/03/2013	N	0	
GO6	12/03/2013	Y	2	Ambient reading
GO7	12/03/2013	Y	2	Ambient reading
GO8	12/03/2013	Y	2	Ambient reading
GO9	12/03/2013	Y	2	Ambient reading
GO10	12/03/2013	Y	2	Ambient reading
GO12	12/03/2013	Y	5	Ambient reading
GO13	12/03/2013	Y	5	Ambient reading
GO14	12/03/2013	Y	5	Ambient reading
GO15	12/03/2013	Y	5	Ambient reading
GO16	12/03/2013	Y	5	Ambient reading
GO17	12/03/2013	Y	5	Ambient reading
GO18	12/03/2013	Y	2	Ambient reading

Midlands Park Industrial Estate Building FID survey

Plot No:	22
Address:	Bernand XH Ltd, Unit 1-3, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	12/03/2013	Y	11	Ambient reading
GO2	12/03/2013	Y	10	Ambient reading
GO2 REF5	12/03/2013	Y	150	Point source only. Corner of office adjacent to door
GO3 REF1	12/03/2013	Y	4000	Socket hanging of wall. 2000ppm at ground level.
GO3 REF2	12/03/2013	Y	200	Ambient reading at head height. 100ppm at ground level
GO4	12/03/2013	Y	5 (11)	Ambient reading
GO4	12/03/2013	Y	3(10)	Ambient reading
GO4 REF3	12/03/2013	Y	5000	Point sorce only. Cracks in floor joint 2cm away 11ppm
GO4 REF4	12/03/2013	Y	>10000	Crack in floor joint. 2cm - 100ppm & 2.5cm - 11ppm
GO5	12/03/2013	Y	5	Ambient reading
Vent	12/03/2013	N	0	
Vent	12/03/2013	N	0	
Vent	12/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	23
Address:	Global Motorcycles, Unit 4, Trinity Park, DN16 1 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	12/03/2013	Y	5	Ambient reading
GO2	12/03/2013	Y	7	Ambient reading
GO3	12/03/2013	Y	2	Ambient reading
VENT	12/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	24
Address:	Product Design Ltd, Unit 5, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	12/03/2013	Y	2	Ambient reading
GO2	12/03/2013	Y	3	Ambient reading
GO3	12/03/2013	Y	2	Ambient reading
Vent	12/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	25
Address:	Yew Tree Engineering, Unit 6, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	12/03/2013			No access to unit
GO2	12/03/2013			No access to unit
GO3	12/03/2013			No access to unit

Midlands Park Industrial Estate Building FID survey

Plot No:	26
Address:	Body Torque, Unit 7, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	12/03/2013	Y	1	Ambient reading
GO2	12/03/2013	Y	1	Ambient reading
GO3	12/03/2013	Y	2	Ambient reading
Vent	12/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	27
Address:	Myers Tyres, Unit 8/9, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	12/03/2013	Y	7	Ambient reading
GO2	12/03/2013	Y	7	Ambient reading
GO3	12/03/2013	Y	7	Ambient reading
GO4	12/03/2013	Y	7	Ambient reading
VENT	12/03/2013	N	0	

Plot No:	28
Address:	105 Warwick Road, DN16 1ES

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	12/03/2013	N	0	
GO2	12/03/2013	Y	2	Ambient Odour
GO3	12/03/2013	Y	2	Ambient Odour
GO4	12/03/2013	Y	5	Ambient Odour
GO5	12/03/2013	Y	2	Ambient Odour
GO6	12/03/2013	Y	3	Ambient Odour
GO7	12/03/2013	Y	2	Ambient Odour
GO8	12/03/2013	Y	3	Ambient Odour

Midlands Park Industrial Estate Building FID survey

Plot No:	29
Address:	103 Warwick Road, DN16 1ES

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	12/03/2013	N	0	
GO2	12/03/2013	N	0	Ambient reading
GO3	12/03/2013	Y	4	Ambient reading
GO4	12/03/2013	Y	4	Ambient reading
GO5	12/03/2013	Y	4	Ambient reading
GO6	12/03/2013	Y	4	Ambient reading
GO7	12/03/2013	Y	20	Ambient reading
GO7	12/03/2013	Y	200	No odour but problem with gas main
GO8	12/03/2013	Y	2	Ambient reading
GO9	12/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	20
Address:	PD Logistics, 21 Midlands Road, DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	13/03/2013	Y	3	Ambient reading in workshop
GO1	13/03/2013	Y	3	Ambient reading in raised workshop
GO1 REFA	13/03/2013	Y	2	Edge of concrete a long wall
GO1 REFB	13/03/2013	Y	5	Edge of concrete a long wall
GO1 REFC	13/03/2013	Y	2	Edge of concrete a long wall
GO1 REFD	13/03/2013	Y	5	Ambient reading in corner
GO1 REFE	13/03/2013	Y	5	inside cupboard. Ambient reading
GO1 REFF	13/03/2013	Y	2	Inside hole adjacent to concrete slab
GO1 REFG	13/03/2013	Y	2	Edge of concrete a long wall
GO1 REFH	13/03/2013	Y	150	Point source. Edge of concrete a long wall. Vehicle moving in adjacent warehouse
GO1 REFI	13/03/2013	Y	2	Edge of concrete a long wall
GO2 REFJ	13/03/2013	Y	200 (peak) 100 (stable)	In corner of warehouse. Adjacent to rubbish
GO2 REFK	13/03/2013	Y	150	Point source. Pillar a long wall
GO2 REFL	13/03/2013	Y	40 to 50 fluctuating	Hole (possibly rodent)
GO2 REFM	13/03/2013	Y	70	Edge of concrete a long wall
GO2 REFN	13/03/2013	Y	2500	Point source. Base of down pipe
GO2 REFO	13/03/2013	Y	100	Point source. Base of down pipe
GO3	13/03/2013	N	0	
GO4	13/03/2013	N	0	
GO6	13/03/2013	Y	2	Ambient reading
GO7	13/03/2013	N	0	
GO8	13/03/2013	N	0	
GO9	13/03/2013	N	0	
GO10	13/03/2013	N	0	
GO12	13/03/2013	Y	5	Ambient reading
GO13	13/03/2013	Y	5	Ambient reading
GO14	13/03/2013	Y	5	Ambient reading
GO14	13/03/2013	Y	60	A long wall in office
GO15	13/03/2013	Y	5	Ambient reading
GO16	13/03/2013	Y	5	Ambient reading
GO17	13/03/2013	Y	5	Ambient reading
GO18	13/03/2013	Y	5	Ambient reading

Midlands Park Industrial Estate Building FID survey

Plot No:	22
Address:	Bernand XH Ltd, Unit 1-3, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	13/03/2013	Y	8	Ambient reading
GO2	13/03/2013	Y	10	Ambient reading
GO2 REF5	13/03/2013	Y	150 (peak) 100 (stable)	Corner of room adjacent to door
GO3 REF1	13/03/2013	Y	5000	At ground level below socket. 3000ppm at socket
GO3 REF2	13/03/2013	Y	200	Head height ambient reading. 100ppm at ground level
GO4	13/03/2013	N	0	Ambient reading
GO4	13/03/2013	N	0	Ambient reading
GO4 REF3	13/03/2013	Y	3000	Joints in floor. 2cm - 300ppm & 30cm - 30ppm
GO4 REF4	13/03/2013	Y	8000	Joints in floor. 2cm - 80ppm
GO5	13/03/2013	Y	10	Ambient reading
Vent	13/03/2013	N	0	
Vent	13/03/2013	Y	200	External vent
Vent	13/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	23
Address:	Global Motorcycles, Unit 4, Trinity Park, DN16 1 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	13/03/2013	Y	20	Ambient reading
GO2	13/03/2013	Y	20	Ambient reading
GO2	13/03/2013	Y	250	Point source from degreaser
GO3	13/03/2013	Y	200	Ambient reading. Cleaning product odour
VENT	13/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	24
Address:	Product Design Ltd, Unit 5, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	13/03/2013	Y	3	Ambient reading
GO2	13/03/2013	Y	2	Ambient reading
GO2	13/03/2013	Y	30	Point source on skirting board
GO2	13/03/2013	Y	30	Point source on skirting board
GO3	13/03/2013	Y	3	Ambient reading
GO3	13/03/2013	Y	30	Point source on skirting board
Vent	13/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	25
Address:	Yew Tree Engineering, Unit 6, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	13/03/2013			No access to unit
GO2	13/03/2013			No access to unit
GO3	13/03/2013			No access to unit

Midlands Park Industrial Estate Building FID survey

Plot No:	26
Address:	Body Torque, Unit 7, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	13/03/2013	Y	1	Ambient reading
GO2	13/03/2013	Y	2	Ambient reading
GO2	13/03/2013	Y	30	Point source a long skirting board
GO3	13/03/2013	Y	5	Ambient reading
GO3	13/03/2013	Y	30	Point source a long skirting board
Vent	13/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	27
Address:	Myers Tyres, Unit 8/9, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	13/03/2013			No access to unit
GO2	13/03/2013			No access to unit
GO3	13/03/2013			No access to unit
GO4	13/03/2013			No access to unit
VENT	13/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	20
Address:	PD Logistics, 21 Midlands Road, DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	14/03/2013	Y	2 to 50	Ambient reading in workshop
GO1	14/03/2013	Y	2 to 50	Ambient reading in raised workshop
GO1 REFA	14/03/2013	Y	1000	Point source. Edge of concrete a long wall. 2cm - 0ppm
GO1 REFB	14/03/2013	Y	100	Point source. Edge of concrete a long wall.
GO1 REFC	14/03/2013	Y	10	Edge of concrete a long wall
GO1 REFD	14/03/2013	Y	20	Ambient reading in corner of room. Musty odour
GO1 REFE	14/03/2013	Y	4	Inside cupboard. Ambient reading
GO1 REFF	14/03/2013	Y	6	Inside hole adjacent to concrete slab
GO1 REFG	14/03/2013	Y	10	Edge of concrete a long wall
GO1 REFH	14/03/2013	Y	500	From propane heater in adjacent workshop
GO1 REFI	14/03/2013	Y	10	Edge of concrete a long wall
GO2 REFJ	14/03/2013	Y	80	In corner of warehouse at base of wall. Around rubbish
GO2 REFK	14/03/2013	Y	100	Point source. Pillar a long wall
GO2 REFL	14/03/2013	Y	40 to 50 fluctuating	Point source. Hole (possibly rodent)
GO2 REFM	14/03/2013	Y	1500	Point source only. Base of down pipe
GO2 REFN	14/03/2013	Y	10	Base of down pipe
GO3	14/03/2013	N	0	
GO4	14/03/2013	N	0	
GO6	14/03/2013	N	0	
GO7	14/03/2013	N	0	
GO8	14/03/2013	N	0	
GO9	14/03/2013	N	0	
GO10	14/03/2013	N	0	
GO12	14/03/2013	Y	5	Ambient reading
GO13	14/03/2013	Y	5	Ambient reading
GO14	14/03/2013	Y	5	Ambient reading
GO14	14/03/2013	Y	10	A long wall in office
GO15	14/03/2013	Y	5	Ambient reading
GO16	14/03/2013	Y	5	Ambient reading
GO17	14/03/2013	Y	5	Ambient reading
GO18	14/03/2013	Y	2	Ambient reading

Midlands Park Industrial Estate Building FID survey

Plot No:	22
Address:	Bernand XH Ltd, Unit 1-3, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	14/03/2013	Y	5	Ambient reading
GO2	14/03/2013	Y	10	Ambient reading
GO2 REF5	14/03/2013	Y	150	Point source. In corner of office adjacent to door.
GO3 REF1	14/03/2013	Y	2500	At ground level below socket. 300ppm from socket
GO3 REF2	14/03/2013	Y	300	Ambient reading at head height and ground level
GO4	14/03/2013	Y	6	Ambient reading
GO4	14/03/2013	Y	20	Ambient reading
GO4 REF3	14/03/2013	Y	1200	Joints in floor. 2cm - 50ppm, 30cm - 30ppm
GO4 REF4	14/03/2013	Y	1000	Joints in floor. 2cm - 5ppm
GO5	14/03/2013	Y	15	Ambient reading
GO5	14/03/2013	Y	30	Joint in floor
Vent	14/03/2013	N	0	
Vent	14/03/2013	Y	20	External vent
Vent	14/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	23
Address:	Global Motorcycles, Unit 4, Trinity Park, DN16 1 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	14/03/2013	Y	10	Ambient reading
GO2	14/03/2013	Y	30	Ambient reading
GO2	14/03/2013	Y	30	Point source from degreaser
GO2	14/03/2013	Y	30	In corner of room
GO3	14/03/2013	Y	60	Ambient reading. Musty odour
VENT	14/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	24
Address:	Product Design Ltd, Unit 5, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	14/03/2013	Y	20	Ambient reading
GO2	14/03/2013	Y	15	Ambient reading
GO2	14/03/2013	Y	30	Crack a long skirting board
GO3	14/03/2013	Y	11	Ambient reading
GO3	14/03/2013	Y	11	A long skirting board
Vent	14/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	25
Address:	Yew Tree Engineering, Unit 6, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	14/03/2013			No access to unit
GO2	14/03/2013			No access to unit
GO3	14/03/2013			No access to unit

Midlands Park Industrial Estate Building FID survey

Plot No:	26
Address:	Body Torque, Unit 7, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	14/03/2013	Y	8	Ambient reading
GO2	14/03/2013	Y	10	Ambient reading
GO2	14/03/2013	Y	30	Point source a long skirting board
GO2	14/03/2013	Y	30	Point source a long skirting board
GO3	14/03/2013	Y	20	Ambient reading. Strong cleaning fluid odour
GO3	14/03/2013	Y	100	Point source only. A long skirting board
GO3	14/03/2013	Y	60	Point source. A long skirting board
Vent	14/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	27
Address:	Myers Tyres, Unit 8/9, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	14/03/2013			No access to unit
GO2	14/03/2013			No access to unit
GO3	14/03/2013			No access to unit
GO4	14/03/2013			No access to unit
VENT	14/03/2013	Y	100	External vent
VENT	14/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	S&E Mechanical and Fabrication services
Address:	

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
REF A	14/03/2013	Y	10	Ambient reading
REF B	14/03/2013	Y	10	Ambient reading
REF C	14/03/2013	Y	1000	Propane heater
REF D	14/03/2013	Y	1000	Ambient reading at head height. 1m - 5ppm and 200ppm at floor
REF E	14/03/2013	Y	5000	point source only a long joint. 2cm - 0ppm
REF F	14/03/2013	Y	10	Ambient reading
REF G	14/03/2013	Y	5	Ambient reading
REF H	14/03/2013	Y	5	Ambient reading
REF I	14/03/2013	Y	10	Ambient reading
REF J	14/03/2013	Y	30	Ambient reading
REF K	14/03/2013	Y	3	Ambient reading
REF L	14/03/2013	Y	3	Ambient reading
REF M	14/03/2013	Y	5	Ambient reading
REF N	14/03/2013	Y	15	Oil odour
REF O	14/03/2013	Y	4	Crack in floor
REF P	14/03/2013	Y	4	Crack in floor
REF Q	14/03/2013	Y	5	Ambient reading
REF R	14/03/2013	Y	5	Ambient reading
REF S1	14/03/2013	Y	2	Soil pipe
REF S2	14/03/2013	Y	2	Soil pipe
REF S3	14/03/2013	N	0	
REF S4	14/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	20
Address:	PD Logistics, 21 Midlands Road, DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	15/03/2013	Y	0 to 12	Ambient reading in workshop
GO1	15/03/2013	Y	0 to 12	Ambient reading in raised workshop
GO1 REFA	15/03/2013	Y	60	Next to door in corner of room
GO1 REFB	15/03/2013	Y	3000	Point source only. Edge of concrete a long wall
GO1 REFC	15/03/2013	Y	1000	Point source only. Edge of concrete a long wall
GO1 REFD	15/03/2013	Y	8	Edge of concrete a long wall
GO1 REFE	15/03/2013	Y	2000	Point source only. Edge of concrete a long wall
GO1 REFF	15/03/2013	Y	10	Ambient reading in corner of room
GO1 REFG	15/03/2013	Y	2	Inside cupboard. Ambient reading
GO1 REFH	15/03/2013	Y	500	Point source only. Inside hole adjacent to concrete slab
GO1 REFI	15/03/2013	Y	100 to 200	Point source only. Edge of concrete a long wall
GO1 REFJ	15/03/2013	Y	100	Point source only. Adjacent to pillar
GO2 REFK	15/03/2013	Y	8	In corner of warehouse around rubbish
GO2 REFL	15/03/2013	Y	20	Hole (possibly rodent)
GO2 REFM	15/03/2013	Y	100	Point source only. Base of down pipe
GO3	15/03/2013	N	0	
GO4	15/03/2013	N	0	
GO6	15/03/2013	Y	2	Ambient reading
GO7	15/03/2013	Y	2	Ambient reading
GO8	15/03/2013	Y	2	Ambient reading
GO9	15/03/2013	Y	2	Ambient reading
GO10	15/03/2013	Y	2	Ambient reading
GO12	15/03/2013	Y	8	Ambient reading
GO13	15/03/2013	Y	5	Ambient reading
GO14	15/03/2013	Y	8	Ambient reading
GO14	15/03/2013	Y	80	Point a long wall in office
GO15	15/03/2013	Y	5	Ambient reading
GO16	15/03/2013	Y	8	Ambient reading
GO17	15/03/2013	Y	8	Ambient reading
GO18	15/03/2013	Y	10	Ambient reading

Midlands Park Industrial Estate Building FID survey

Plot No:	22
Address:	Bernand XH Ltd, Unit 1-3, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	15/03/2013	Y	5	Ambient reading
GO2	15/03/2013	Y	8	Ambient reading
GO2 REF5	15/03/2013	Y	10	In corner of office adjacent to door
GO3 REF1	15/03/2013	Y	1500	At ground level below socket. At socket 1000ppm
GO3 REF2	15/03/2013	Y	150	Ambient reading
GO4	15/03/2013	Y	6	Ambient reading
GO4	15/03/2013	Y	6	Ambient reading
GO4	15/03/2013	Y	10	Along skirting
GO4	15/03/2013	Y	20	Goods packaging
GO4 REF3	15/03/2013	Y	800 to 1500	joint in floor. 2cm - 140ppm, 30cm - 10ppm
GO4 REF4	15/03/2013	Y	500	Point source only. In floor joint
GO4 REF6	15/03/2013	Y	5000	Point source only. In floor joint
GO4 REF7	15/03/2013	Y	100	Point source only. Underneath racking
GO5	15/03/2013	Y	30	Ambient reading
GO5 REF 5	15/03/2013	Y	200 to 750	Crack in joint adjacent to toilet. Point source only
Vent	15/03/2013	Y	1500	External vent
Vent	15/03/2013	N	0	
Vent	15/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	23
Address:	Global Motorcycles, Unit 4, Trinity Park, DN16 1 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	15/03/2013	Y	1	Ambient reading
GO2	15/03/2013	N	0	Ambient reading
GO2	15/03/2013	Y	10	Point source from degreaser
GO2	15/03/2013	Y	3	In corner of room
GO3	15/03/2013	Y	2	Ambient reading.
VENT	15/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	24
Address:	Product Design Ltd, Unit 5, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	15/03/2013	Y	3	Ambient reading
GO2	15/03/2013	Y	3	Ambient reading
GO2	15/03/2013	Y	20	Point source. Joint seal
GO2	15/03/2013	Y	8	A long skirting board
GO2	15/03/2013	Y	8	A long skirting board
GO2	15/03/2013	Y	8	A long skirting board
GO3	15/03/2013	Y	4	Ambient reading
Vent	15/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	25
Address:	Yew Tree Engineering, Unit 6, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	15/03/2013			No access to unit
GO2	15/03/2013			No access to unit
GO3	15/03/2013			No access to unit

Midlands Park Industrial Estate Building FID survey

Plot No:	26
Address:	Body Torque, Unit 7, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	15/03/2013	Y	2	Ambient reading
GO2	15/03/2013	Y	2	Ambient reading
GO2	15/03/2013	Y	10	Along skirting board
GO2	15/03/2013	Y	20	Along skirting board
GO2	15/03/2013	Y	30	Along skirting board
GO3	15/03/2013	Y	3	Ambient reading
GO3	15/03/2013	Y	3	Along skirting board in corner
GO3	15/03/2013	Y	4	Along skirting board
Vent	15/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	27
Address:	Myers Tyres, Unit 8/9, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	15/03/2013			No access to unit
GO2	15/03/2013			No access to unit
GO3	15/03/2013			No access to unit
GO4	15/03/2013			No access to unit
VENT	15/03/2013	N	0	
VENT	15/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	H & L Engineering
Address:	

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
Office 1	15/03/2013	Y	30	Ambient reading
Office 2	15/03/2013	Y	30	Ambient reading
Reception	15/03/2013	Y	20	Ambient reading
Store room	15/03/2013	Y	8	Ambient reading
Store Area	15/03/2013	Y	8	Ambient reading
Passage	15/03/2013	Y	30	Ambient reading
Mess room	15/03/2013	Y	30	Ambient reading
Toilet	15/03/2013	Y	40	Ambient reading
Wash room	15/03/2013	Y	30	Ambient reading
Shower	15/03/2013	Y	30	Ambient reading
Stairway	15/03/2013	Y	10	Ambient reading
Toilet	15/03/2013	Y	40	Ambient reading
Kitchen	15/03/2013	Y	40	Ambient reading
Fridge	15/03/2013	Y	100	Ambient reading
Boilers	15/03/2013	Y	30	Ambient reading
REF A	15/03/2013	Y	200	Point source only. Joint in floor
REF B	15/03/2013	Y	5	Point source only. Joint in floor
REF C	15/03/2013	Y	5	Point source only. Joint in floor
REF D	15/03/2013	Y	5	Point source only. Joint in floor
REF E	15/03/2013	Y	200	Ambient readng. Diesel odour
REF F	15/03/2013	Y	50	Ambient reading
REF G	15/03/2013	Y	1000	Point source only. Hole to pit
REF H	15/03/2013	Y	800	Point source only. Hole to pit
REF I	15/03/2013	Y	400	Point source only. Joint in floor
REF J	15/03/2013	Y	200	Propane cylinders
REF K	15/03/2013	Y	10	Ambient reading
REF L	15/03/2013	Y	10	Under cupboard
REF M	15/03/2013	Y	300	Diesel odour from heater
REF N	15/03/2013	Y	5	Under scrap
REF O	15/03/2013	Y	4	Under stock
REF P	15/03/2013	Y	6	Adjacent to conveyor
REF Q	15/03/2013	Y	5	Wall/floor junction
REF R	15/03/2013	Y	8	Wall/floor junction
REF S	15/03/2013	Y	10	Wall/floor junction
REF T	15/03/2013	Y	10 to 200	Ambient reading

Midlands Park Industrial Estate Building FID survey

Plot No:	28
Address:	105 Warwick Road, DN16 1ES

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	19/03/2013	N	0	
GO2	19/03/2013	N	0	
GO3	19/03/2013	N	0	
GO4	19/03/2013	N	0	
GO5	19/03/2013	N	0	
GO6	19/03/2013	N	0	
GO7	19/03/2013	Y	2	Ambient reading
GO8	19/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	29
Address:	103 Warwick Road, DN16 1ES

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	19/03/2013	N	0	
GO2	19/03/2013	N	0	
GO3	19/03/2013	Y	5	Ambient reading
GO4	19/03/2013	Y	2	Ambient reading
GO5	19/03/2013	Y	2	Ambient reading
GO6	19/03/2013	Y	6	Ambient reading
GO7	19/03/2013	Y	30	Ambient reading
GO7	19/03/2013	Y	200	No odour but problem with joint on gas main
GO8	19/03/2013	N	0	
GO9	19/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	28
Address:	105 Warwick Road, DN16 1ES

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	27/03/2013	N	0	
GO2	27/03/2013	Y	5	Ambient reading, general air freshener odour
GO3	27/03/2013	Y	5	Ambient reading, general air freshener odour
GO4	27/03/2013	Y	5	Ambient reading, general air freshener odour
GO5	27/03/2013	Y	2	Ambient reading, general air freshener odour
GO6	27/03/2013	Y	2	Ambient reading, general air freshener odour
GO7	27/03/2013	Y	7	Ambient reading, general air freshener odour
GO8	27/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	29
Address:	103 Warwick Road, DN16 1ES

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	27/03/2013	N	0	
GO2	27/03/2013	N	0	
GO3	27/03/2013	Y	3	Ambient reading
GO4	27/03/2013	Y	4	Ambient reading
GO5	27/03/2013	Y	4	Ambient reading
GO6	27/03/2013	Y	5	Ambient reading
GO7	27/03/2013	Y	30	Ambient reading
GO7	27/03/2013	Y	200	No odour but problem with joint on gas main
GO8	27/03/2013	N	0	
GO9	27/03/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	28
Address:	105 Warwick Road, DN16 1ES

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	03/04/2013	N	0	
GO2	03/04/2013	Y	2	Ambient reading
GO3	03/04/2013	Y	2	Ambient reading
GO4	03/04/2013	Y	8	Ambient reading
GO5	03/04/2013	Y	4	Ambient reading
GO6	03/04/2013	Y	6	Ambient reading
GO7	03/04/2013	Y	8	Ambient reading, general air freshener odour
GO8	03/04/2013	Y	10	Ambient reading, general air freshener odour

Midlands Park Industrial Estate Building FID survey

Plot No:	29
Address:	103 Warwick Road, DN16 1ES

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	03/04/2013	N	0	
GO2	03/04/2013	N	0	
GO3	03/04/2013	N	0	
GO4	03/04/2013	N	0	
GO5	03/04/2013	N	0	
GO6	03/04/2013	N	0	
GO7	03/04/2013	N	0	
GO7	03/04/2013	N	0	
GO8	03/04/2013	Y	2	Oily odour
GO9	03/04/2013	N	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	1
Address:	Cottage Beck Road Depot, Cottage Beck Road, DN16 1TS

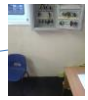
Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	11/04/2013	No	0	
G02	11/04/2013	No	0	
G03	11/04/2013	No	0	
G04	11/04/2013	No	0	
G05	11/04/2013	No	0	
G06	11/04/2013	No	0	
G07	11/04/2013	No	0	
G08	11/04/2013	No	0	
G09	11/04/2013	No	0	
G10	11/04/2013	No	0	
G11	11/04/2013	No	0	
G12	11/04/2013	No	0	
G13	11/04/2013	No	0	
G14	11/04/2013	No	0	
G15	11/04/2013	No	0	
G16	11/04/2013	No	0	
G17	11/04/2013	No	0	
G18	11/04/2013	No	0	
G19	11/04/2013	No	0	
G20	11/04/2013	No	0	
G21	11/04/2013	No	0	
G22	11/04/2013	No	0	
G23	11/04/2013	No	0	
G24	11/04/2013	No	0	
G25	11/04/2013	No	0	
G26	11/04/2013	No	0	
G27	11/04/2013	No	0	
G28	11/04/2013	No	0	
G29	11/04/2013	No	0	
G30	11/04/2013	No	0	
G31	11/04/2013	No	0	
G32	11/04/2013	No	0	
G33	11/04/2013	No	0	
G34	11/04/2013	Yes	4	Adjoining room to room with boiler, door open
G35	11/04/2013	Yes	4	Adjoining room to room with boiler, door open
G36	11/04/2013	Yes	4	No specific point source, but suspected to be coming from the gas boiler in room
G37	11/04/2013	No	0	
G38	11/04/2013	No	0	
G39	11/04/2013	No	0	
G40	11/04/2013	No	0	
G41	11/04/2013	No	0	
G42	11/04/2013	No	0	
G43	11/04/2013	No	0	
G44	11/04/2013	No	0	
G45	11/04/2013	No	0	
G46	11/04/2013	No	0	
G47	11/04/2013	No	0	
G48	11/04/2013	No	0	
G49	11/04/2013	No	0	
G50	11/04/2013	No	0	
G51	11/04/2013	No	0	
G52	11/04/2013	No	0	
G53	11/04/2013	No	0	
G54	11/04/2013	No	0	
G54a	11/04/2013	No	0	

G55	11/04/2013	No	0	
G56	11/04/2013	No	0	
G57	11/04/2013	No	0	
G58	11/04/2013	No	0	
G59	11/04/2013	No	0	
G60	11/04/2013	No	0	
G61	11/04/2013	No	0	
G62	11/04/2013	No	0	
G62	11/04/2013	Yes	60	From manhole keyhole, possibly sewer manhole, in gents toilet, **Photo taken**
G63	11/04/2013	No	0	
G64	11/04/2013	No	0	
G65	11/04/2013	No	0	
G66	11/04/2013	No	0	
G67	11/04/2013	No	0	
G68	11/04/2013	No	0	
G69	11/04/2013	No	0	
G70	11/04/2013	No	0	
G71	11/04/2013	No	0	
G72	11/04/2013	No	0	
G73	11/04/2013	No	0	
G74	11/04/2013	No	0	
G75	11/04/2013	No	0	
G76	11/04/2013	No	0	
G77	11/04/2013	No	0	
G78	11/04/2013	No	0	
G79	11/04/2013	No	0	
G80	11/04/2013	No	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	2
Address:	NLC Depot, 53-55 Midland Road DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	10/04/2013	No	0	
G02	10/04/2013	Yes	1	Ambient in gents toilet
G03	10/04/2013	Yes	4	Ambient in office
G03	10/04/2013	Yes	200	From bottom of skirting board at ground level, other side of wall from 50ppm reading in G04, **Photo taken**
G04	10/04/2013	Yes	2	Ambient in office
G04	10/04/2013	Yes	50	From bottom of skirting board at ground level, other side of wall from 200ppm reading in G03
G04	10/04/2013	Yes	20	From bottom of skirting board, at point at which slab joint runs into room under carpet
G05	10/04/2013	Yes	3	Ambient reading
G05	10/04/2013	Yes	1500	From bottom of skirting board, at point at which slab joint runs into room under carpet, below key locker, **Photo taken**
G06	10/04/2013	No	0	Ambient reading in minibus garage
G06	10/04/2013	Yes	5000	From slab joint at ground level, 0ppm at 1-2cm, **Photo taken**
G06	10/04/2013	Yes	up to 200	From slab joint next to office G04
G06	10/04/2013	Yes	up to 200	From slab joint, same joint as above but closer to main office
G06	10/04/2013	Yes	200	From crack running away from main joint towards central roller door, **Photo taken**
G06	10/04/2013	Yes	200	From slab joint at ground level, other side of wall from 1500ppm reading in G05 (mess room)
G06	10/04/2013	Yes	200	From slab joint, same joint as above but further along
G06	10/04/2013	Yes	50	From crack running away from above joint towards wall
G06a	10/04/2013	Yes	2	Ambient, Cleaning products kept in shed
G07	10/04/2013	No	0	Ambient reading
G07	10/04/2013	Yes	50	From slab joint at ground level, 0ppm at 1cm
G07	10/04/2013	Yes	50 to 100	Along slab joint generally for around 20m
G08	10/04/2013	No	0	
G09	10/04/2013	No	0	
G10	10/04/2013	No	0	
G11	10/04/2013	No	0	



Midlands Park Industrial Estate Building FID survey

Plot No:	3
Address:	Automech Ltd, 49 - 51 Midland Road DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	09/04/2013	Yes	up to 10	General atmospheric, no point source, car workshop, drums, containers etc.
G02	09/04/2013	No	0	
G03	09/04/2013	Yes	3	General atmospheric, no point source
G04	09/04/2013	Yes	4	General atmospheric, toilet full of cleaning products
G05	09/04/2013	Yes	4	General atmospheric, possibly air freshener, aerosol spray
G06	09/04/2013	Yes	2	General atmospheric, no point source, included cracks, inside car workshop
G07	09/04/2013	No	0	
G08	09/04/2013	No	0	
G09	09/04/2013	No	0	
G10	09/04/2013	No	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	4
Address:	Viking Hardware, Warehouse and Dan Page Car Repairs 39-41 Midland Road DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments	
G01	11/04/2013	No	0		
G02	11/04/2013	No	0		
G03	11/04/2013	Yes	15	Ambient in store warehouse	
G03	11/04/2013	Yes	500	From slab joint near end of office block	
G03	11/04/2013	Yes	200	From same slab joint as above running away from offices	
G03	11/04/2013	Yes	500	From step at roller door, reading from base of step	
G03	11/04/2013	Yes	200	From step at roller door, reading from base of step	
G04	11/04/2013	Yes	20	Ambient in gents toilet	
G04	11/04/2013	Yes	100	From slab joint in gents toilet	
G05	11/04/2013	Yes	10	General atmospheric, no point source	
G06	11/04/2013	Yes	10	General atmospheric, no point source	
G07	11/04/2013	Yes	20	General atmospheric, no point source	
G08	11/04/2013	Yes	20	General atmospheric, no point source	
G09	11/04/2013	Yes	20	General atmospheric, no point source	
G10	11/04/2013	Yes	10	General atmospheric, no point source, including cracks	
G11	11/04/2013	Yes	20	General atmospheric, no point source	
G12	11/04/2013	Yes	30	General atmospheric, in boiler room	
G13	11/04/2013	Yes	30	General atmospheric, in electric room	
G14	11/04/2013	Yes	4 to 6	General atm, 4ppm at front roller door to 6ppm at back wall, paint odour possibly from car repair works next door	
G15	11/04/2013	Yes	2	General atm, slight paint odour, possibly from car repairs next door	
G16	11/04/2013	Yes	3	General atm, slight paint odour, possibly from car repairs next door	
G17	11/04/2013	Yes	3	General atm, slight paint odour, possibly from car repairs next door	
G18	11/04/2013	Yes	2	General atm, slight paint odour, possibly from car repairs next door	
G19	11/04/2013	Yes	2	General atm, slight paint odour, possibly from car repairs next door	
G20	11/04/2013	Yes	1	General atm, slight paint odour, possibly from car repairs next door	
G21	11/04/2013	Yes	8000	managed to get better access to this on this visit, 8000ppm from point at which mains electric comes through the floor, drops to 1000ppm 5cm off ground and ambient of around 100ppm at top of cupboard	
G22	11/04/2013	Yes	100	Ambient in reception	
G22	11/04/2013	Yes	3000	At ground level, from point at which water pipe comes into room	
G23	11/04/2013	Yes	50	General Atm, no point source, strong paint odour	
G24	11/04/2013	Yes	50	General Atm, no point source, strong paint odour	
G25	11/04/2013	Yes	50	General Atm, no point source, strong paint odour	
G25	11/04/2013	Yes	500	From joint in slab in ladies toilet, ridge on floor	
G26	11/04/2013	Yes	50	General Atm, no point source, strong paint odour	
G27	11/04/2013	Yes	50-1000	General Atm, paint odour and readings getting stronger further back into unit, very strong along far wall, solvent storage	Reports from worker in car spray centre of strong landfill gas smell under stairs of main workshop, during summer months
G28	11/04/2013			No access-paint spraying in progress	
G29	11/04/2013	Yes	100	General Atm, paint mixing room, extremely strong paint odour	
G30	11/04/2013	Yes	100	General Atm, paint stripping room, sealed unit	

Midlands Park Industrial Estate Building FID survey

Plot No:	5
Address:	35 Midland Road (Formerly BJW Crane Hire)

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	09/04/2013	No	0	
G02	09/04/2013	No	0	
G03	09/04/2013	No	0	
G04	09/04/2013	No	0	
G05	09/04/2013	No	0	
G06	09/04/2013	No	0	
G07	09/04/2013	No	0	
G08	09/04/2013	No	0	
G09	09/04/2013	No	0	
G10	09/04/2013	No	0	
G11	09/04/2013	No	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	6
Address:	R Pogson & Brumby Wood Motors, 25 Midland Road DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	10/04/2013	Yes	7	General Atm, slight paint/solvent odour
G02	10/04/2013	Yes	7	General Atm, slight paint/solvent odour
G03	10/04/2013	Yes	8	General Atm, slight paint/solvent odour
G04	10/04/2013	Yes		No Access-Owners Office, Locked, no keys on site
G05	10/04/2013	Yes	7	General Atm, slight paint/solvent odour
G06	10/04/2013	Yes	7	General Atm, slight paint/solvent odour
G07	10/04/2013	Yes	8	General Atm, slight paint/solvent odour
G08	10/04/2013	Yes	8	General Atm, slight paint/solvent odour
G09	10/04/2013	Yes	8	General Atm, slight paint/solvent odour
G10	10/04/2013	Yes	8	General Atm, slight paint/solvent odour
G11	10/04/2013	Yes	8	Paint store, increased odour
G12	10/04/2013	Yes	8	General Atm, slight paint/solvent odour
G13	10/04/2013	Yes	30 to 50	General Atm, 50ppm around corner workbench, open paint tins and thinner on bench
G14	10/04/2013	Yes	0	
G15	10/04/2013	Yes	0	
G16	10/04/2013	Yes	0	
G17	10/04/2013	Yes	0	Car workshop, cracks in concrete floor included
G18	10/04/2013	Yes	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	6a
Address:	Easimix, 23 Midland Road DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	10/04/2013	No	0	
G02	10/04/2013	No	0	
G03	10/04/2013	No	0	
G04	10/04/2013	No	0	
G05	10/04/2013	No	0	
G06	10/04/2013	No	0	
G07	10/04/2013	No	0	
G08	10/04/2013	No	0	
G09	10/04/2013	No	0	
G10	10/04/2013	No	0	
G11	10/04/2013	No	0	
G12	10/04/2013	No	0	
G13	10/04/2013	No	0	
G14	10/04/2013	No	0	
G15	10/04/2013	No	0	Not on floor plan, mess room (opposite G11)
G16	10/04/2013	Yes	2	Not on floor plan, shower room adjoining mess room (opposite G12), General atm, no point source, cleaning products
G17	10/04/2013	Yes	3	Not on floor plan, Acid Store (opposite G13), General atm, no point source, paints, thinners and chemicals kept in room

Midlands Park Industrial Estate Building FID survey

Plot No:	7
Address:	Murphy Ltd, 36 Midland Road DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	10/04/2013	No	0	(Murphy's Site Office), portable container
G02	10/04/2013	No	0	Portable container, changing room
G03	10/04/2013	No	0	Portable container, canteen
G04	10/04/2013	No	0	Portable container, toilet block
G05	10/04/2013	No	0	Portable container, toilet block
G06	10/04/2013	No	0	
G07	10/04/2013			Portakabin has been removed since last visit
G08	10/04/2013	No	0	
G09	10/04/2013	No	0	
G10	10/04/2013	No	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	8
Address:	P&H Construction and GPS Crushing, 36-38 Midland Road DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	09/04/2013	No	0	
G02	09/04/2013	No	0	
G03	09/04/2013	Yes	4	General atm, no point source, toilet cubicle, odour of cleaning products
G04	09/04/2013	No	0	
G05	09/04/2013	No	0	
G06	09/04/2013	Yes	1	No specific point source
G07	09/04/2013	Yes	2	No specific point source
G08	09/04/2013	Yes	2	No specific point source
G09	09/04/2013	No	0	
G10	09/04/2013	No	0	
G11	09/04/2013	No	0	
G12	09/04/2013	Yes	2	No specific point source
G13	09/04/2013	Yes	2	No specific point source
G14	09/04/2013	Yes	3	General atm, no access to back of garage due to storage of lawn mowers/engines, oily/solvent odour

Midlands Park Industrial Estate Building FID survey

Plot No:	9
Address:	LAS Metals, 44 Midland Road DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	09/04/2013	No	0	No access to over half of scrap sorting yard, due to mounds of scrap metal
G02	09/04/2013	No	0	
G03	09/04/2013	No	0	
G04	09/04/2013	No	0	
G05	09/04/2013	No	0	
G06	09/04/2013	No	0	
G07	09/04/2013	No	0	
G08	09/04/2013	No	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	10
Address:	M Gould, 46 Midland Road DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	09/04/2013	No	0	
G02	09/04/2013	No	0	
G03	09/04/2013	No	0	
G04	09/04/2013	No	0	
G05	09/04/2013	No	0	
G06	09/04/2013	Yes	2	General atm, along corridor outside toilet doors, no point source but still slight air freshener odour
G07	09/04/2013	No	0	
G08	09/04/2013	Yes	2	General atm, gas boiler in corner cabinet of kitchen
G09	09/04/2013	Yes	4	General atmospheric, no point source, slight air freshener odour in ladies W.C.
G10	09/04/2013	Yes	4	Adjoining room to ladies W.C., no point source, still similar odour to above
G11	09/04/2013	Yes	3	General atmospheric, no point source, slight fresener odour in gents W.C.
G12	09/04/2013	Yes	3	Adjoining room to gents W.C., no point source, still similar odour to above
G13	09/04/2013	No	0	
G14	09/04/2013	No	0	
G15	09/04/2013	No	0	
G16	09/04/2013	No	0	
G17	09/04/2013	Yes	30	General atmospheric, oils, paints and tools stored in room
G18	09/04/2013	No	0	
G19	09/04/2013	No	0	
G20	09/04/2013	No	0	
G21	09/04/2013	No	0	
G22	09/04/2013	No	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	11
Address:	D Beacroft Joinery, 7 Colin Road, DN16 1TT

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	09/04/2013	No	0	
G02	09/04/2013	No	0	
G03	09/04/2013	No	0	
G04	09/04/2013	No	0	
G05	09/04/2013	No	0	
G06	09/04/2013	No	0	
G07	09/04/2013	No	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	12
Address:	NL Components, 6 Colin Road, DN16 1TT

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	09/04/2013	Yes	10	General atm, no specific point source
G02	09/04/2013	Yes	8	General atm, no specific point source
G03	09/04/2013	Yes	8	General atm, no specific point source
G04	09/04/2013	Yes	10	General atm, cleaning products in toilet block
G05	09/04/2013	Yes	10	General atm, cleaning products in toilet block
G06	09/04/2013	Yes	8	General atm, cleaning products next to toilet block
G07	09/04/2013	Yes	10	General atm, cleaning products in toilet block
G09	09/04/2013	Yes	10	General atm, corridor adjoining toilet block and oil store
G10	09/04/2013			Upstairs landing, no need to monitor
G11	09/04/2013	Yes	10	General atm, oils and paints stored in room
G12	09/04/2013	No	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	13
Address:	Compart 2011 Ltd, 10+11 Albion Park, Midland Road, DN16 1DJ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	09/04/2013	No	0	
G02	09/04/2013	No	0	
G03	09/04/2013	No	0	
G04	09/04/2013	No	0	
G05	09/04/2013	No	0	
G06	09/04/2013	No	0	
G07	09/04/2013	No	0	
G08	09/04/2013	No	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	14
Address:	Scunthorpe Radiators, 4 Albion Park, Midland Road, DN16 1DJ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	09/04/2013	Yes	up to 100	Gas fire in small room, readings generally concentrated around top of room
G02	09/04/2013	Yes	10 to 20	General atm, paint odour from corner spraying area, up to 20 in spraying area
G03	09/04/2013	Yes	20	General atm, paint odour
G04	09/04/2013	Yes	20	General atm, paint odour

Midlands Park Industrial Estate Building FID survey

Plot No:	15
Address:	Peters Garage, 7 Albion Park, Midland Road, DN16 1DJ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	09/04/2013	Yes	2	General atm, no specific point source in oily car workshop
G02	09/04/2013	No	0	
G03	09/04/2013	No	0	
G04	09/04/2013	No	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	16
Address:	Engineering and Welding Supplies Ltd, Nostell Road DN16 1DL

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	10/04/2013	No	0	
G02	10/04/2013	Yes	5	General Atm, gas heater running in room
G03	10/04/2013	No	0	
G04	10/04/2013	No	0	
G05	10/04/2013	No	0	
G06	10/04/2013	No	0	
G07	10/04/2013	Yes	6	General Atm, gas heater running in adjoining room, slight heating gas odour
G08	10/04/2013	No	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	17
Address:	Maseys Cafe, East Common Lane, DN16 1DA

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	10/04/2013	Yes	0 to 4	4ppm around two separate kitchen areas, general atm, no specific point source
G02	10/04/2013	Yes	4	General atm, no specific point source
G02	10/04/2013	Yes	20	From gas pipes in corner of room below sink, maybe slight leak
G03	10/04/2013	Yes	3	General atm, no specific point source
G04	10/04/2013	No	0	
G05	10/04/2013	No	0	
G06	10/04/2013	No	0	
G07	10/04/2013	No	0	
G08	10/04/2013	No	0	
G09	10/04/2013	No	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	18
Address:	Jack Tighe, East Common Lane, DN16 1DF

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	10/04/2013	No	0	
G02	10/04/2013	No	0	
G03	10/04/2013	No	0	
G04	10/04/2013	No	0	
G05	10/04/2013	No	0	
G06	10/04/2013	No	0	
G07	10/04/2013	No	0	
G08	10/04/2013	No	0	
G09	10/04/2013	No	0	
G10	10/04/2013	No	0	
G11	10/04/2013	No	0	
G12	10/04/2013	No	0	
G13	10/04/2013	Yes	20	General atm, paint odour, paint store, lots of paint tins and chemicals
G14	10/04/2013	Yes	100	General atm, strong paint odour, open tins on floor
G15	10/04/2013	Yes	200	General atm, very strong paint odour, paint blasting room, walls coated with wet paint
G16	10/04/2013	Yes	4	General atm, no specific point source, mess room
G17	10/04/2013	Yes	3	General atm, no specific point source, locker room
G18	10/04/2013	Yes	2	General atm, no specific point source, locker room
G19	10/04/2013	Yes	2	General atm, no specific point source, locker room
G20	10/04/2013	Yes	2	General atm, no specific point source, gents W.C.
G21	10/04/2013	Yes	2	General atm, no specific point source, gents W.C.
G22	10/04/2013	Yes	2	General atm, no specific point source, gents W.C.
G23	10/04/2013	Yes	2	General atm, no specific point source, storage unit
G24	10/04/2013			No Access, working in shot blasting chamber
G25	10/04/2013	Yes	20 to 30	General atm, no specific point source, strong paint odour getting stronger closer to shot blasting chamber
G26	10/04/2013	Yes	100	General atm at entrance, paint spraying further in to workshop, no access to 75% of room without face mask
G27	10/04/2013	No	0	
G28	10/04/2013	Yes	20	Ambient from paint area just inside door to right
G29	10/04/2013	Yes	4	General atm, paint pots in corner, included crack in concrete slab floor
G30	10/04/2013	No	0	
G31	10/04/2013	Yes	3	Ambient, paint solvent odour, slight spillage on floor of workshop
G32	10/04/2013	No	0	
G33	10/04/2013	No	0	
G34	10/04/2013	No	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	19
Address:	Tayto, Banbury Road, DN16 1UN

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	10/04/2013	No	0	
GO2	10/04/2013	No	0	
GO3	10/04/2013	No	0	
GO4	10/04/2013	No	0	
GO5	10/04/2013	No	0	
GO6	10/04/2013	No	0	
GO7	10/04/2013	No	0	
GO8	10/04/2013	Yes	20	General atm, adjoining room to gas boiler
GO9	10/04/2013	Yes	8	General atm, no specific point source
G10	10/04/2013	Yes	6	General atm, no specific point source
G11	10/04/2013	Yes	6	General atm, no specific point source
G12	10/04/2013	Yes	30	General atm, gas boiler in small room
G13	10/04/2013	Yes	10	General atm, no specific point source, in electrics room
G14	10/04/2013	No	0	
G15	10/04/2013	No	0	
G16	10/04/2013	No	0	
G17	10/04/2013	No	0	
G18	10/04/2013	No	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	20
Address:	PD Logistics, 21 Midlands Road, DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	11/04/2013	Yes	8 to 10	Ambient Reading 8ppm at front end to 10ppm at far end of building
GO1	11/04/2013	Yes	300	Edge of new Tarmac in corner of warehouse
GO1	11/04/2013	Yes	300	Edge of 3rd post concrete
GO1	11/04/2013	Yes	7000	Slab joint near gas horn 7
GO1	11/04/2013	Yes	8000	Along edge of slab near middle wall and ramp
GO1	11/04/2013	Yes	20	In electric cupboard
GO1	11/04/2013	Yes	300	Along edge of slab near middle wall and electric cupboard
GO1	11/04/2013	Yes	2000	Slab joint on raised level, past ramp
GO1	11/04/2013	Yes	2000	Along edge of slab near middle wall and far end of building
GO2	11/04/2013	No	0	Workshop Ambient Reading
GO2	11/04/2013	Yes	5000	From ground just inside left of front roller door, lift 1cm off the ground and reading zeros
GO2	11/04/2013	Yes	80	From conrete surround of post QR
GO2	11/04/2013	Yes	300	From cracked tarmac near post D4N
GO2	11/04/2013	Yes	400	From cracked tarmac near post EF
GO2	11/04/2013	Yes	up to 700	Hole punched in tarmac
GO2	11/04/2013	Yes	200	Base of brick to tarmac near post BA
GO2	11/04/2013	Yes	800	Base of brick to tarmac near post HG
GO2	11/04/2013	Yes	1000	From cracked tarmac along from HG
GO2	11/04/2013	Yes	2000	From base of drainpipe near gas horn 12
GO2	11/04/2013	Yes	200	From base of drainpipe next along
GO3	11/04/2013	No	0	
GO4	11/04/2013	No	0	
GO5	11/04/2013	No	0	
GO6	11/04/2013	Yes	1	Painting and renovating currently being undertaken
GO7	11/04/2013	Yes	2	Painting and renovating currently being undertaken
GO8	11/04/2013	Yes	2	Painting and renovating currently being undertaken
GO9	11/04/2013	Yes	8	General atm, in gents toilet
GO10	11/04/2013	Yes	0	
GO11	11/04/2013	Yes	0	
GO12	11/04/2013	Yes	0	
GO13	11/04/2013	Yes	0	
GO14	11/04/2013	Yes	0	
GO15	11/04/2013	Yes	0	
GO16	11/04/2013	Yes	0	
GO17	11/04/2013	Yes	0	
GO18	11/04/2013	Yes	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	21
Address:	B & K Recycling, Colin Road, DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	09/04/2013	No	0	
GO2	09/04/2013	No	0	
GO3	09/04/2013	No	0	
GO4	09/04/2013	No	0	
GO5	09/04/2013	No	0	
GO6	09/04/2013	No	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	22
Address:	Bernand XH Ltd, Unit 1-3, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	09/04/2013	No	0	
GO2	09/04/2013	No	0	
GO3	09/04/2013	Yes	10	Ambient reading
GO3	09/04/2013	Yes	10	Exposed plug socket
GO4	09/04/2013	No	0	Ambient reading (70ppm from gas vent outside door of office)
GO4	09/04/2013	Yes	up to 100	Small cracks along joints in floor unit 2 to 3 joint
GO4	09/04/2013	Yes	up to 100	Small cracks a long joints in floor towards toilet
GO5	09/04/2013	Yes	1	Ambient reading
GO5	09/04/2013	Yes	up to 50	Ridge in floor adjacent to wall in toilet

Midlands Park Industrial Estate Building FID survey

Plot No:	23
Address:	Global Motorcycles, Unit 4, Trinity Park, DN16 1 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	10/04/2013	Yes	40	General atm, strong solvent odour
GO2	10/04/2013	Yes	100	General atm, strong solvent odour
GO2	10/04/2013	Yes	8000	General atm, near toilet, very strong solvent odour near man working with turpentine
GO3	10/04/2013	Yes	100	General atm, strong solvent odour

Midlands Park Industrial Estate Building FID survey

Plot No:	24
Address:	Product Design Ltd, Unit 5, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	09/04/2013	No	0	
GO2	09/04/2013	No	0	
GO3	09/04/2013	No	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	25
Address:	Yew Tree Engineering, Unit 6, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	09/04/2013			No access to unit
GO2	09/04/2013			No access to unit
GO3	09/04/2013			No access to unit

Midlands Park Industrial Estate Building FID survey

Plot No:	26
Address:	Body Torque, Unit 7, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	09/04/2013	No	0	
GO2	09/04/2013	No	0	
GO3	09/04/2013	No	0	

Midlands Park Industrial Estate Building FID survey

Plot No:	27
Address:	Myers Tyres, Unit 8/9, Trinity Park, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
GO1	09/04/2013	Yes	4	General atm, rubber/oil odour from tyres in storage in warehouse
GO2	09/04/2013	Yes	4	General atm, rubber/oil odour from tyres in storage in warehouse
GO3	09/04/2013	Yes	4	General atm, rubber/oil odour from tyres in storage in warehouse
GO4	09/04/2013	Yes	4	General atm, rubber/oil odour from tyres in storage in warehouse

Field Log

Meteorological Conditions

Date and Time	Plot Number	Weather Conditions	Temp (°C)	Atm (mbar)
Start: 11/04/2013 at 9:20	Plot 1	Cloudy/Dry	5.0	998
Finish: 11/04/2013 at 11:25	Plot 1	Cloudy/Dry	7.0	997
Start: 10/04/2013 at 9:00	Plot 2	Clear/Dry	5.0	1004
Finish: 10/04/2013 at 10:00	Plot 2	Clear/Dry	7.0	1004
Start: 09/04/2013 at 12:35	Plot 3	Sunny/Dry	10.0	997
Finish: 09/04/2013 at 12:50	Plot 3	Sunny/Dry	10.0	997
Start: 11/04/2013 at 11:30	Plot 4	Cloudy/Dry	9.0	998
Finish: 11/04/2013 at 12:30	Plot 4	Cloudy/Dry	9.0	998
Start: 09/04/2013 at 8:20	Plot 5	Clear/Dry	4.0	999
Finish: 09/04/2013 at 8:35	Plot 5	Clear/Dry	4.0	999
Start: 10/04/2013 at 11:50	Plot 6	Sunny/Dry	10.0	1004
Finish: 10/04/2013 at 12:15	Plot 6	Sunny/Dry	10.0	1004
Start: 10/04/2013 at 8:00	Plot 6a	Clear/Dry	5.0	1004
Finish: 10/04/2013 at 8:20	Plot 6a	Clear/Dry	5.0	1004
Start: 10/04/2013 at 8:25	Plot 7	Clear/Dry	5.0	1004
Finish: 10/04/2013 at 8:40	Plot 7	Clear/Dry	5.0	1004
Start: 09/04/2013 at 8:40	Plot 8	Clear/Dry	4.0	999
Finish: 09/04/2013 at 9:00	Plot 8	Clear/Dry	4.0	999
Start: 09/04/2013 at 12:10	Plot 9	Sunny/Dry	10.0	997
Finish: 09/04/2013 at 12:30	Plot 9	Sunny/Dry	10.0	997
Start: 09/04/2013 at 12:50	Plot 10	Sunny/Dry	10.0	997
Finish: 09/04/2013 at 13:20	Plot 10	Sunny/Dry	10.0	997
Start: 09/04/2013 at 10:25	Plot 11	Sunny/Dry	8.0	998
Finish: 09/04/2013 at 10:40	Plot 11	Sunny/Dry	8.0	998
Start: 09/04/2013 at 10:40	Plot 12	Sunny/Dry	9.0	998
Finish: 09/04/2013 at 10:55	Plot 12	Sunny/Dry	9.0	998
Start: 09/04/2013 at 11:30	Plot 13	Sunny/Dry	9.0	997
Finish: 09/04/2013 at 11:50	Plot 13	Sunny/Dry	9.0	997
Start: 09/04/2013 at 11:15	Plot 14	Sunny/Dry	9.0	997
Finish: 09/04/2013 at 11:30	Plot 14	Sunny/Dry	9.0	997
Start: 09/04/2013 at 11:00	Plot 15	Sunny/Dry	9.0	997
Finish: 09/04/2013 at 11:15	Plot 15	Sunny/Dry	9.0	997
Start: 10/04/2013 at 11:30	Plot 16	Sunny/Dry	11.0	1004
Finish: 10/04/2013 at 11:50	Plot 16	Sunny/Dry	11.0	1004
Start: 10/04/2013 at 7:40	Plot 17	Clear/Dry	5.0	1004
Finish: 10/04/2013 at 8:00	Plot 17	Clear/Dry	5.0	1004
Start: 10/04/2013 at 10:30	Plot 18	Sunny intervals	10.0	1004
Finish: 10/04/2013 at 11:30	Plot 18	Sunny intervals	10.0	1004
Start: 10/04/2013 at 12:30	Plot 19	Sunny/Dry	11.0	1002
Finish: 10/04/2013 at 13:15	Plot 19	Sunny/Dry	11.0	1002
Start: 11/04/2013 at 12:35	Plot 20	Cloudy/Dry	9.0	998
Finish: 11/04/2013 at 14:05	Plot 20	Cloudy/Dry	10.0	996
Start: 09/04/2013 at 10:05	Plot 21	Sunny/Dry	7.0	998
Finish: 09/04/2013 at 10:20	Plot 21	Sunny/Dry	7.0	998
Start: 09/04/2013 at 9:15	Plot 22	Clear/Dry	6.0	999
Finish: 09/04/2013 at 9:40	Plot 22	Clear/Dry	6.0	999
Start: 10/04/2013 at 10:05	Plot 23	Clear/Dry	8.0	1004
Finish: 10/04/2013 at 10:25	Plot 23	Clear/Dry	8.0	1004
Start: 09/04/2013 at 13:40	Plot 24	Sunny/Dry	11.0	998
Finish: 09/04/2013 at 14:00	Plot 24	Sunny/Dry	11.0	998
Start: No Access	Plot 25			
Finish: No Access	Plot 25			
Start: 09/04/2013 at 9:45	Plot 26	Clear/Dry	6.0	999
Finish: 09/04/2013 at 10:00	Plot 26	Clear/Dry	6.0	999
Start: 09/04/2013 at 9:00	Plot 27	Clear/Dry	6.0	999
Finish: 09/04/2013 at 9:15	Plot 27	Clear/Dry	6.0	999

Personnel and Equipment

Date	Personnel	Instrument Serial Number	Calibration Due
09/04/2013	I Mayoh	250712-0002	21/05/2013
10/04/2013	I Mayoh	250712-0002	21/05/2013
11/04/2013	I Mayoh	250712-0002	21/05/2013

Midlands Park Industrial Estate Building FID survey

Business Park:	Albion Park
Address:	Cordy's Café, Units 1 and 2, Midland Road, DN16 1DJ

Readings:	No elevated readings found throughout property-No map required

Midland Park Industrial Estate Building FID survey

Business Park:	Albion Park
Address:	Bon Apetite and Horse Treats, Unit 3, Midland Road, DN16 1DJ

Readings:	No access to unit, unable to contact, no elevated readings in units either side of this-No map

Midland Park Industrial Estate Building FID survey

Business Park:	Albion Park
Address:	Scunthorpe Radiators, Unit 4, Midland Road, DN16 1DJ

Readings:	20-30ppm ambient reading found in main unit due to fresh spray paint-No map required

Midland Park Industrial Estate Building FID survey

Business Park:	Albion Park
Address:	NS Motor Engineers, Unit 5, Midland Road, DN16 1DJ

Readings:	No elevated readings found throughout property-No map required

Midland Park Industrial Estate Building FID survey

Business Park:	Albion Park
Address:	One Click Studio's, Unit 6, Midland Road, DN16 1DJ

Readings:	No elevated readings found throughout property-No map required

Midland Park Industrial Estate Building FID survey

Business Park:	Albion Park
Address:	Peters Garage, Unit 7, Midland Road, DN16 1DQ

Readings:	2ppm found in front office due to air freshener, otherwise 0ppm throughout-No map required

Midland Park Industrial Estate Building FID survey

Business Park:	Albion Park
Address:	Jaymek Engineering Ltd, Unit 8, Midland Road, DN16 1DQ

Readings:	No elevated readings found throughout property-No map required

Midlands Park Industrial Estate Building FID survey

Business Park:	Albion Park
Address:	Compart 2011 Ltd, Units 10+11, Midland Road, DN16 1DJ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	27/06/2013	No	0	
G02	27/06/2013	Yes	8	Around painting area, paint odour
G03	27/06/2013	Yes	4	Paint odour
G04	27/06/2013	Yes	5	Paint odour
G05	27/06/2013	No	0	
G06	27/06/2013	No	0	
G07	27/06/2013	Yes	5	From bottom of pillar
G07	27/06/2013	Yes	5	From edge of slab
G08	27/06/2013	No	0	

Comments: Workers reported waste odour in mornings when opening up unit-revisited on morning of 28th-see next tab

Midlands Park Industrial Estate Building FID survey

Business Park:	Albion Park
Address:	Compart 2011 Ltd, Units 10+11, Midland Road, DN16 1DJ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Gas Bubble/PPM	Source of reading and Comments
G01	28/06/2013	Yes	4		Ambient level in front sales room, no odour
G02	28/06/2013	Yes	5 to 8		Ambient level in unit, higher readings near paint area
G03	28/06/2013	Yes	4		Ambient, no point source
G04	28/06/2013	Yes	5		Ambient, no point source in toilet
G05	28/06/2013	Yes	2		Ambient, no point source
G06	28/06/2013	Yes	2		Ambient, no point source in toilet
G07	28/06/2013	Yes	3		Ambient level in unit
G07	28/06/2013	Yes	10		From bottom of pillar
G07	28/06/2013	Yes	200	0 at 1cm	From corner wall/slab joint
G08	28/06/2013	Yes	4		Ambient, no point source in front office

Comments: Workers reported waste odour in mornings when opening up unit-this is the revisit at opening time on 28th (7:50am)

Midlands Park Industrial Estate Building FID survey

Business Park:	Albion Park
Address:	Scunthorpe Computers (OBS PC's), Unit 12, Midland Road, DN16 1DJ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	27/06/2013	Yes	4	Ambient in front office
G01	27/06/2013	Yes	80	From base of wall just inside door
G02	27/06/2013	Yes	8	Ambient reading in warehouse, no access to much of wall on either side of unit due to stock
G03	27/06/2013	Yes	8	
G04	27/06/2013	Yes	8	Ambient in toilet
G04	27/06/2013	Yes	10	From base of wall

Midlands Park Industrial Estate Building FID survey

Business Park:	Albion Park
Address:	Scunthorpe Computers (OBS PC's), Unit 12, Midland Road, DN16 1DJ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Gas Bubble/PPM	Source of reading and Comments
G01	28/06/2013	Yes	4		Ambient in front office
G01	28/06/2013	Yes	500	10 at 1cm, 0 at 2cm	From base of wall behind door
G01	28/06/2013	Yes	300	0 at 1cm	From base of wall
G02	28/06/2013	Yes	1		Ambient reading in warehouse, no access to some of wall on either side due to building materials
G03	28/06/2013	No	0		
G04	28/06/2013	No	0		

Midland Park Industrial Estate Building FID survey

Business Park:	Albion Park
Address:	John Espin Signs, Unit 14 and 15, Midland Road, DN16 1DJ

Readings:	No elevated readings found throughout property-No map required

Midlands Park Industrial Estate Building FID survey

Business Park:	Albion Park
Address:	Scunthorpe Boxing Club, Unit 16, Midland Road, DN16 1DJ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Gas Bubble/PPM	Source of reading and Comments
G01	28/06/2013	Yes	30		Ambient in front office
G01	28/06/2013	Yes	800	20 at 1cm, 0 at 2cm	From base of wall
G01	28/06/2013	Yes	30		From base of wall
G02	28/06/2013	Yes	30		Ambient in men's changing room, no point source
G03	28/06/2013	Yes	30		Ambient in women's changing room, no point source
G04	28/06/2013	Yes	20		Ambient in main gym, no access to quarter of room due to boxing ring in corner, foam matting on much of gym floor
G04	28/06/2013	Yes	3000	800 at 1cm, 30 at 5cm, 0 at 10cm	From base of building post into ground
G04	28/06/2013	Yes	200	0 at 1cm	From
G05	28/06/2013	Yes	20		Ambient in toilet
G06	28/06/2013	Yes	20		Ambient in toilet

Comments: Rubber or chemical odour throughout unit, ambient levels possibly being increased by this

Midlands Park Industrial Estate Building FID survey

Business Park:	Trinity Park
Address:	Burnand XH Ltd, Unit 1 to 3, Midland Road, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Gas Bubble/PPM	Source of reading and Comments
G01	26/06/2013	No	0		
G02	26/06/2013	No	0		
G03	26/06/2013	Yes	2		Ambient in large warehouse, reading found in unit 3 end of warehouse
G03	26/06/2013	Yes	500		From slab joint along join of unit 2 to 3
G03	26/06/2013	Yes	2000	0 at 1cm	From slab joint along join of unit 2 to 3
G04	26/06/2013	Yes	5		Ambient in toilet, no point source
G05	26/06/2013	Yes	300		Ambient in small office (unused), door was closed on arrival, advised workers to leave open to vent
G05	26/06/2013	Yes	10,000+	500 at 1cm, 0 at 2cm	From base of wall behind desk

Comments: 2000ppm from gas vent outside small office, 0ppm from gas vent outside large office

Midlands Park Industrial Estate Building FID survey

Business Park:	Trinity Park
Address:	Global Motorcycles, Unit 4, Midland Road, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Gas Bubble/PPM	Source of reading and Comments
G01	28/06/2013	Yes	80 to 10		Ambient in front office dropping during visit, front door open, solvent odour
G02	28/06/2013	Yes	50		Ambient in main warehouse, no access to some of wall on either side due to engine part storage, strong solvent odour
G03	28/06/2013	Yes	100		Ambient in toilet, strong solvent odour, oil/paints stored in here

Comments: Owner came to open unit especially for me to monitor, had been shut for 2 days prior to visit - high ambient readings could be affected by this. Gas Vent outside door of unit showed 200ppm

Midlands Park Industrial Estate Building FID survey

Business Park:	Trinity Park
Address:	Product Design, Unit 5, Midland Road, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Gas Bubble/PPM	Source of reading and Comments
G01	26/06/2013	No	0		
G01	26/06/2013	Yes	100		From electric main at ground level
G01	26/06/2013	Yes	1000	0 at 1cm	From base of wall behind desk
G02	26/06/2013	Yes	10		Ambient in main warehouse,
G02	26/06/2013	Yes	8000	0 at 1cm	From slab joint surrounding post
G02	26/06/2013	Yes	8000	0 at 1cm	From slab joint surrounding post
G03	26/06/2013	No	0		

Comments:

Midland Park Industrial Estate Building FID survey

Business Park:	Trinity Park
Address:	Yew Tree Engineering, Unit 6, Midland Road, DN16 1BG

Readings:	No access to unit, unable to contact-No map

Midlands Park Industrial Estate Building FID survey

Business Park:	Trinity Park
Address:	Body Torque, Unit 7, Midland Road, DN16 1BG

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Gas Bubble/PPM	Source of reading and Comments
G01	27/06/2013	Yes	1		Ambient in tanning room, no point source
G02	27/06/2013	Yes	2		Ambient in main warehouse,
G02	27/06/2013	Yes	10 to 50		From base of wall along right hand side of gym
G02	27/06/2013	Yes	800	10 at 1cm, 0 at 2cm	From slab joint surrounding post
G03	27/06/2013	Yes	30		Ambient in toilet
G03	27/06/2013	Yes	2000	800 at 1cm, 100 at 5cm, 10ppm at 10cm	From crack in floor/wall
G03	27/06/2013	Yes	300		From base of wall

Comments: Rubber matting covering most of the gym floor, making it hard to monitor ground level of gym

Midland Park Industrial Estate Building FID survey

Business Park:	Trinity Park
Address:	Myres Tyres, Unit 8, Midland Road, DN16 1BG

Readings:	No access to unit, unable to contact-No map

Midland Park Industrial Estate Building FID survey

Business Park:	Bedford Park
Address:	Essence Flowers, Unit 1, Banbury Road, DN16 1UN

Readings:	No elevated readings found throughout property, no access to much of warehouse due to stock/storage-No map required

Midland Park Industrial Estate Building FID survey

Business Park:	Bedford Park
Address:	Woodworx, Unit 2, Banbury Road, DN16 1UN

Readings:	No elevated readings found throughout property-No map required

Midland Park Industrial Estate Building FID survey

Business Park:	Bedford Park
Address:	Scunthorpe Foodbank, Unit 3, Banbury Road, DN16 1UN

Readings:	No elevated readings found throughout property-No map required

Midland Park Industrial Estate Building FID survey

Business Park:	Bedford Park
Address:	Rubie Gates, Units 4 and 5, Banbury Road, DN16 1UN

Readings:	No elevated readings found throughout property, no access to unit 5 owner on holiday, no keys-No map required

Midland Park Industrial Estate Building FID survey

Business Park:	Banbury Road
Address:	PRP Ltd (Tayto), Plot 8, Banbury Road, DN16 1UN

Readings:	No elevated readings found throughout property-No map required

Midland Park Industrial Estate Building FID survey

Business Park:	Banbury Road
Address:	Kaths Cabs, Plot 5 and 7, Banbury Road, DN16 1UL

Readings:	No elevated readings found throughout property-No map required

Midland Park Industrial Estate Building FID survey

Business Park:	Banbury Road
Address:	Queensway Engineering, Plot 3A and 3B, Banbury Road, DN16 1UL

Readings:	No elevated readings found throughout property-No map required

Midland Park Industrial Estate Building FID survey

Business Park:	Banbury Road
Address:	Brumby Gymnastic Club, Plot 1, Banbury Road, DN16 1UL

Readings:	No access to unit, unable to contact-No map

Midland Park Industrial Estate Building FID survey

Business Park:	Midland/Banbury Road
Address:	T/A Bass Tyre Services, Corner Plot, Midland/Banbury Road, DN16 1DQ

Readings:	2ppm ambient found in sunken room, rubber odour-No other elevated readings found throughout property-No map required

Midland Park Industrial Estate Building FID survey

Business Park:	Midland Road
Address:	M Gould (Scunthorpe) Ltd, Plot 46, Midland Road, DN16 1DQ

Readings:	20ppm ambient found in workshop store, strong petrol odour-No other elevated readings found throughout property-No map required

Midlands Park Industrial Estate Building FID survey

Business Park:	Midland Road
Address:	LAS Metals, Plot 44 Midland Road DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	28/06/2013	No	0	No access to over half of scrap sorting yard, due to mounds of scrap metal-General ambient
G01	28/06/2013	Yes	50	From slab joint
G01	28/06/2013	Yes	20	From slab joint
G02	28/06/2013	No	0	
G03	28/06/2013	No	0	
G04	28/06/2013	No	0	
G05	28/06/2013	No	0	
G06	28/06/2013	No	0	
G07	28/06/2013	No	0	
G08	28/06/2013	No	0	

Midland Park Industrial Estate Building FID survey

Business Park:	Midland Road
Address:	Corridians Ltd, Plot 40 and 41, Midland Road, DN16 1DQ

Readings:	No elevated readings found throughout property (building and shed), no access to one office (locked)-No map required

Midland Park Industrial Estate Building FID survey

Business Park:	Midland Road
Address:	P & H Construction, Plot 38, Midland Road, DN16 1DQ

Readings:	No elevated readings found throughout property-No map required

Midland Park Industrial Estate Building FID survey

Business Park:	Midland Road
Address:	PPH Commercial (Formerly Murphy's Yard), Plot 36, Midland Road, DN16 1DQ

Readings:	No elevated readings found throughout property-No map required

Midland Park Industrial Estate Building FID survey

Business Park:	Midland Road
Address:	Mal Bradley Diesel, Plot 34, Midland Road, DN16 1DQ

Readings:	No access to unit, unable to contact-No map

Midland Park Industrial Estate Building FID survey

Business Park:	Midland Road
Address:	Tractor Refurbishment Shed, Plot 34A, Midland Road, DN16 1DQ

Readings:	No elevated readings found throughout property, attached to Mal Bradley Diesel Shed-No map required

Midland Park Industrial Estate Building FID survey

Business Park:	Midland Road
Address:	Newey and Eyre, Plot S28, Midland Road, DN16 1DQ

Readings:	No elevated readings found throughout property-No map required

Midlands Park Industrial Estate Building FID survey

Business Park:	Midland Road
Address:	PD Ports Logistics, Plot 21, Midland Road, DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Gas Bubble/PPM	Source of reading and Comments
G01	26/06/2013	No	0		
G02	26/06/2013	No	0		
G03	26/06/2013	No	0		
G04	26/06/2013	No	0		
G05	26/06/2013	No	0		
G06	26/06/2013	No	0		
G07	26/06/2013	No	0		
G08	26/06/2013	No	0		
G09	26/06/2013	No	0		
G10	26/06/2013	No	0		
G11	26/06/2013	No	0		
G12	26/06/2013	No	0		
G13	26/06/2013	No	0		
G14	26/06/2013	No	0		
G15	26/06/2013	No	0		
G16	26/06/2013	No	0		
G17	26/06/2013	No	0		Ambient
G17	26/06/2013	Yes	4000	2000 at 1cm, 100 at 2cm, 0 at 5cm	From edge of slab
G17	26/06/2013	Yes	100		From edge of slab next to roller door
G18	26/06/2013	No	0		Ambient
G18	26/06/2013	Yes	40		From base of drain pipe
G18	26/06/2013	Yes	2000	100 at 1cm, 0 at 2cm	From edge of slab
G18	26/06/2013	Yes	100		From dip in tarmac
G18	26/06/2013	Yes	1000	100 at 1cm, 0 at 2cm	From slab joint

Midland Park Industrial Estate Building FID survey

Business Park:	Midland Road
Address:	Easimix Floor and Wall Ltd, Plot 23, Midland Road, DN16 1DQ

Readings:	Some ambient readings (peak 10ppm) around offices, strong air freshener odour, No other elevated readings-No map required

Midland Park Industrial Estate Building FID survey

Business Park:	Midland Road
Address:	Brumby Wood Motors, Plot 25, Midland Road, DN16 1DQ

Readings:	No elevated readings found throughout property-No map required

Midland Park Industrial Estate Building FID survey

Business Park:	Midland Road
Address:	R Pogson, Plot 25, Midland Road, DN16 1DQ

Readings:	General paint odour throughout, peak ambient of 5ppm, no point sources found-No map required

Midland Park Industrial Estate Building FID survey

Business Park:	Midland Road
Address:	Midland Fabrication, Plot 27, Midland Road, DN16 1DQ

Readings:	No elevated readings found throughout property-No map required

Midlands Park Industrial Estate Building FID survey

Business Park:	Midland Road
Address:	Scunthorpe Power Tools, Plot 29, Midland Road, DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Gas Bubble/PPM	Source of reading and Comments
G01	27/06/2013	Yes	30		Ambient paint/solvent odour
G02	27/06/2013	Yes	30		Ambient paint/solvent odour
G03	27/06/2013	Yes	10		Ambient paint/solvent odour
G04	27/06/2013	Yes	20		Ambient paint/solvent odour
G05	27/06/2013	Yes	20		Ambient paint/solvent odour
G06	27/06/2013	Yes	20		Ambient paint/solvent odour
G07	27/06/2013	Yes	10		Ambient paint/solvent odour
G08	27/06/2013	Yes	30		Ambient paint/solvent odour
G09	27/06/2013	Yes	30		Ambient paint/solvent odour

Comments: General paint/solvent or petrol odour throughout property, power tools and machinery sales

Midlands Park Industrial Estate Building FID survey

Business Park:	Midland Road
Address:	HL Engineering, Plot 33, Midland Road, DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Gas Bubble/PPM	Source of reading and Comments
G01	26/06/2013	Yes	20		Ambient no point source identified
G02	26/06/2013	Yes	30		Ambient no point source identified
G03	26/06/2013	Yes	30		Ambient no point source identified
G04	26/06/2013	Yes	10		Ambient no point source identified
G05	26/06/2013	Yes	20		Ambient no point source identified
G06	26/06/2013	Yes	50		Ambient no point source identified
G07	26/06/2013	Yes	20		Ambient no point source identified
G08	26/06/2013	Yes	20		Ambient no point source identified
G09	26/06/2013	Yes	3		Ambient no point source identified
G10	26/06/2013	Yes	2		Ambient no point source identified
G11	26/06/2013	Yes	3		Ambient no point source identified
G12	26/06/2013	Yes	3		Ambient no point source identified
G13	26/06/2013	Yes	10		Ambient no point source identified
G13	26/06/2013	Yes	1000	0 at 5cm	From entire length of slab joint
G13	26/06/2013	Yes	2000	500 at 1cm, 0 at 2cm	From slab joint
G13	26/06/2013	Yes	1000	500 at 2cm, 0 at 5cm	From slab joint
G14	26/06/2013	No	0		
G15	26/06/2013	No	0		

Comments: Peak ambient readings found in smaller rooms and front offices, point sources found on slab joint in connecting room between workshop and offices

Midland Park Industrial Estate Building FID survey

Business Park:	Midland Road
Address:	Empty (Formerly BJW Crane Hire), Plot 35, Midland Road, DN16 1DQ

Readings:	No elevated readings found throughout property-No map required

Midlands Park Industrial Estate Building FID survey

Business Park:	Midland Road
Address:	S&E Mechanical and Fabrication Ltd, Plot 37, Midland Road, DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Gas Bubble/PPM	Source of reading and Comments
G01	26/06/2013	No	0		
G02	26/06/2013	No	0		
G03	26/06/2013	No	0		
G04	26/06/2013	No	0		
G05	26/06/2013	No	0		
G06	26/06/2013	No	0		
G07	26/06/2013	No	0		
G08	26/06/2013	No	0		
G09	26/06/2013	Yes	1		Ambient in workshop
G09	26/06/2013	Yes	20		From slab joint
G09	26/06/2013	Yes	50		From slab joint

Comments: Ambient reading found in workshop, well ventilated, point sources found on slab joint in workshop

Midlands Park Industrial Estate Building FID survey

Business Park:	Midland Road
Address:	Viking Hardware, Fed Ex Warehouse and Dan Page Car Repairs Plots 39-45 Midland Road DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Source of reading and Comments
G01	26/06/2013	No	0	
G02	26/06/2013	No	0	
G03	26/06/2013	No	0	Ambient
G03	26/06/2013	Yes	200	From slab joint in Viking warehouse
G04	26/06/2013	No	0	
G05	26/06/2013	No	0	
G06	26/06/2013	No	0	
G07	26/06/2013	No	0	
G08	26/06/2013	Yes	5	General atmospheric, no point source
G09	26/06/2013	Yes	5	General atmospheric, no point source
G10	26/06/2013	No	0	
G11	26/06/2013	Yes	5	General atmospheric, no point source
G12	26/06/2013	Yes	10	General atmospheric, no point source, in gas and electric cupboard
G13	26/06/2013	No	10	General atmospheric, no point source, in gas and electric cupboard
G14	26/06/2013	No	0	
G15	26/06/2013	No	0	
G16	26/06/2013	No	0	
G17	26/06/2013	No	0	
G18	26/06/2013	No	0	
G19	26/06/2013	No	0	
G20	26/06/2013	No	0	
G21	26/06/2013	No	0	Electric cupboard had been left open to vent as requested
G22	26/06/2013	No	0	
G23	26/06/2013	No	0	
G24	26/06/2013	No	0	
G25	26/06/2013	No	0	
G26	26/06/2013	No	0	
G27	26/06/2013	No	0	No access to end portion of workshop, spraying rooms sealed
G28	26/06/2013	No	0	
G29	26/06/2013	No	0	
G30	26/06/2013	No	0	

Midland Park Industrial Estate Building FID survey

Business Park:	Midland Road
Address:	Fed Ex warehouse, Plot 47, Midland Road, DN16 1DQ

Readings:	No elevated readings found throughout property-No map required

Midland Park Industrial Estate Building FID survey

Business Park:	Midland Road
Address:	Automech, Plot 49 and 51, Midland Road, DN16 1DQ

Readings:	No elevated readings found throughout property-No map required

Midlands Park Industrial Estate Building FID survey

Business Park:	Midland Road
Address:	NLC Depot, Plot 53 and 55 Midland Road DN16 1DQ

Room ID	Date	Positive Reading Y/N	Concentration/PPM	Gas Bubble/PPM	Source of reading and Comments
G01	26/02/2013	No	0		
G02	26/02/2013	Yes	3		Ambient, no point source
G03	26/02/2013	Yes	8		Ambient, no point source
G04	26/02/2013	Yes	8		Ambient
G04	26/02/2013	Yes	500	0 at 1cm	From base of wall in office, slab joint runs under wall from garage at this point
G05	26/02/2013	No	0		Ambient in garage
G05	26/02/2013	Yes	10		From base of wall in mess room, slab joint runs under wall from garage at this point
G06	26/02/2013	No	0		Ambient in garage, well ventilated, big roller door open
G06	26/02/2013	No	100		Other side of wall from point source in office on slab joint
G06	26/02/2013	Yes	3000	0 at 1cm	Other side of wall from point source in mess room on slab joint
G06	26/02/2013	Yes	2000	0 at 1cm	From main slab joint running straight down middle of garage
G06	26/02/2013	Yes	4000	0 at 1cm	From main slab joint running straight down middle of garage
G06	26/02/2013	Yes	8000	0 at 1cm	From main slab joint running straight down middle of garage
G06	26/02/2013	Yes	2000	0 at 1cm	From main slab joint running straight down middle of garage
G06a	26/02/2013	No	0		
G07	26/02/2013	No	0		Ambient in garage
G07	26/02/2013	Yes	500	0 at 1cm	From slab joint to right hand side of garage
G07	26/02/2013	Yes	500	0 at 1cm	From slab joint near toilets
G08	26/02/2013	No	0		
G09	26/02/2013	No	0		
G10	26/02/2013	No	0		
G11	26/02/2013	No	0		

Field Log

Meteorological Conditions

Business Name	Street Name	Unit/Plot Number	Business Park	Date	Start Time	Finish Time	Atmospheric Pressure (mbar)	Weather Conditions
Cordy's Cafe	Midland Road	Unit 1 And 2	Albion Park	28/06/2013	07:15	07:40	1013	Heavy Rain
Bon Apetite and Horse Treats	Midland Road	Unit 3	Albion Park	No Access				
Scunthorpe Radiators	Midland Road	Unit 4	Albion Park	27/06/2013	11:10	11:20	1019	Clear/Dry
NS Motors Engineers	Midland Road	Unit 5	Albion Park	27/06/2013	11:45	12:00	1019	Clear/Dry
One Click Studio's	Midland Road	Unit 6	Albion Park	27/06/2013	11:00	11:10	1019	Clear/Dry
Peters Garage	Midland Road	Unit 7	Albion Park	27/06/2013	11:20	11:30	1019	Clear/Dry
Jeymek Engineering Ltd	Midland Road	Unit 8	Albion Park	27/06/2013	12:00	12:15	1019	Clear/Dry
Compart 2011 Ltd	Midland Road	Unit 10 And 11	Albion Park	27/06/2013	10:00	10:20	1021	Clear/Dry
Compart 2011 Ltd	Midland Road	Unit 10 And 11	Albion Park	28/06/2013	07:50	08:10	1013	Heavy Rain
Scunthorpe Computers	Midland Road	Unit 12	Albion Park	27/06/2013	10:20	10:40	1021	Clear/Dry
MS Brickwork	Midland Road	Unit 12A	Albion Park	28/06/2013	11:40	12:00	1010	Overcast
John Espin Signs Ltd	Midland Road	Unit 14 and 15	Albion Park	27/06/2013	10:40	10:50	1021	Clear/Dry
Scunthorpe Boxing Club	Midland Road	Unit 16	Albion Park	28/06/2013	13:20	13:50	1009	Overcast
Burnand XH Ltd	Midland Road	Unit 1 To 3	Trinity Park	26/06/2013	13:00	13:30	1023	Clear/Dry
Global Motorcycles	Midland Road	Unit 4	Trinity Park	28/06/2013	09:15	09:35	1013	Heavy Rain
Product Design Limited	Midland Road	Unit 5	Trinity Park	26/06/2013	12:45	13:00	1023	Clear/Dry
Yew tree Engineering Services Ltd	Midland Road	Unit 6	Trinity Park	No Access				
Body Torque	Midland Road	Unit 7	Trinity Park	27/06/2013	07:35	08:10	1021	Clear/Dry
Myres Tyres	Midland Road	Unit 8 And 9	Trinity Park	No Access				
Essence Flowers	Banbury Road	Units 1	Bedford Park	27/06/2013	14:10	14:20	1019	Clear/Dry
Woodworx	Banbury Road	Unit 2	Bedford Park	26/06/2013	11:10	11:20	1024	Clear/Dry
Scunthorpe Foodbank	Banbury Road	Unit 3	Bedford Park	26/06/2013	09:45	09:55	1024	Clear/Dry
Rubie Gates	Banbury Road	Unit 4 And 5	Bedford Park	28/06/2013	14:05	14:15	1009	Overcast
Prp Ltd	Banbury Road	Plot 8 ?		28/06/2013	12:15	12:40	1009	Overcast
Kath's Cabs	Banbury Road	Plot 5 and 7		26/06/2013	10:50	11:10	1024	Clear/Dry
Queensway Engineering	Banbury Road	Plot 3A and 3B		28/06/2013	10:00	10:20	1013	Heavy Rain
Brumby Gymnastics Club	Banbury Road	Plot 1		No Access				
T/A Bass Tyre Services Ltd	Midland Road	Corner Plot		27/06/2013	09:25	09:50	1021	Clear/Dry
M Gould (Scunthorpe) Ltd	Midland Road	Plot 46		27/06/2013	12:50	13:20	1019	Clear/Dry
LAS Metals Ltd	Midland Road	Plot 44		28/06/2013	09:45	10:00	1013	Heavy Rain
Corridians Ltd	Midland Road	Plot 40 To 41		28/06/2013	08:40	09:00	1013	Overcast
P H Construction	Midland Road	Plot 38		26/06/2013	08:15	08:40	1026	Clear/Dry
PPH Commercial (Ex Murphys Yard)	Midland Road	Plot 36		28/06/2013	14:20	14:40	1009	Overcast
Mal Bradley Diesel	Midland Road	Plot 34		No Access				
Tractor Workshop Behind Mal Bradley	Midland Road	Plot 34A ?		28/06/2013	12:00	12:10	1009	Overcast
Newey & Eyre Ltd	Midland Road	Plot S27		28/06/2013	10:25	10:50	1013	Heavy Rain
PD Ports Logistics	Midland Road	Plot 21		26/06/2013	13:40	15:00	1026	Clear/Dry
Easimix Floor & Wall Ltd	Midland Road	Plot 23		27/06/2013	08:15	08:35	1021	Clear/Dry
Brumby Wood Motors	Midland Road	Plot 25		27/06/2013	12:35	12:45	1019	Clear/Dry
R Pogson	Midland Road	Plot 25		27/06/2013	12:20	12:35	1019	Clear/Dry
K E Joinery	Midland Road	Plot 25		No Longer There				
Midland Fabrication	Midland Road	Plot 27		27/06/2013	08:50	09:00	1021	Clear/Dry
Scunthorpe Power Tools	Midland Road	Plot 29		27/06/2013	08:40	08:50	1021	Clear/Dry
HL Engineering	Midland Road	Plot 33		26/06/2013	09:05	09:40	1026	Clear/Dry
Formerly BJW crane Hire	Midland Road	Plot 35		26/06/2013	07:30	08:00	1026	Clear/Dry
S&E Mechanical & Fabrication Services	Midland Road	Plot 37		26/06/2013	08:40	09:05	1026	Clear/Dry
Viking Hardware	Midland Road	Plot 39 and 41		26/06/2013	12:25	12:40	1023	Clear/Dry
Fed Ex	Midland Road	Plot 43		26/06/2013	11:50	12:05	1023	Clear/Dry
Dan Page accident repair	Midland Road	Plot 45		26/06/2013	12:15	12:25	1023	Clear/Dry
Fed Ex	Midland Road	Plot 47		26/06/2013	12:05	12:15	1023	Clear/Dry
Automech	Midland Road	Plot 49 and 51		26/06/2013	11:30	11:45	1026	Clear/Dry
NLC Fleet Management	Midland Road	Plot 53 and 55		26/06/2013	10:00	10:50	1024	Clear/Dry
J Jackson Transport Ltd	Midland Road			Not Found				

Personnel and Equipment

Date	Personnel	Instrument Serial Number	Calibration Due
26/02/2013	I Mayoh	FID13	17/10/2013
27/02/2013	I Mayoh	FID13	17/10/2013
28/02/2013	I Mayoh	FID13	17/10/2013

Appendix K

Gas DQRA Data Input Sheets

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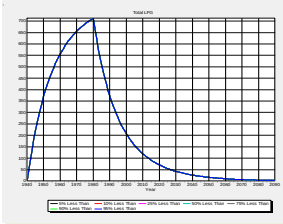
Midland Road, Scunthorpe - GAS RISK ASSESSMENT

Gas production and migration potential
Off-site Residential Receptors

Gas production limiting values
Data for GASSIM generation model

Length of area	900	900	900	m	From plan of site
Width of area	700	700	700	m	From plan of site
Depth of fill	4	4	4	m	From SI
Volume of fill	2520000	2520000	2520000	m^3	Assumes rectangular shaped deposition area
Density of fill	0.8	0.8	0.8	t/m^3	Assumes non-compacted waste body
Total weight of fill	2016000	2016000	2016000	t	
Assume all fill placed and decomposition starts at end of operation period (worst case)					
Operation period	40	40	40	y	
Generation rate	N/A	N/A	N/A		
Total gas production in 2013 (31 years from end of filling - using GASSIM equation for gas generation) from graph below	100	100	100	m^3/h	



Migration routes - proportions					
Vertical	99	90	80	%	No engineered cap and landfill covers large surface area in proportion to depth so gas can easily migrate vertically as a preferential pathway
Horizontal per side	0.25	2.5	5	%	Assume evenly distributed to each of four sides
Migration routes - volumes					
Vertical	99	90	80	m^3/h	
Horizontal per side	0.25	2.5	5	m^3/h	
Surface emission rate in landfill	1.57E-04	1.43E-04	1.27E-04	$m^3/h/m^2$	
Equivalent borehole flow rate	1.57	1.43	1.27	l/h	Total flow of landfill gas assuming Peckeen correlation
Horizontal migration from each side (maximum based on generation rate)	8.93E-05	8.93E-04	1.79E-03	$m^3/h/m^2$	Short side assumed to be worse case
Length of typical house	8	8	8	m	
Width of typical house	8	8	8	m	
Plan area of typical house	64	64	64	m	Assume 8m by 8m house
Maximum vertical migration rate if gas moves upwards outside the site over plan area of house	1.79E-05	1.79E-04	3.57E-04	$m^3/h/m^2$	Assuming gas migrating along moves up into house into house at same rate per m^2 but is buffered due to difference in vertical permeability by factor of 5
Equivalent borehole flow rate at point of emission outside landfill	0.18	1.79	3.57	l/h	Total flow of landfill gas assuming Peckeen correlation - this is the maximmum being generated and thus migration cannot exceed this value

Ventilation in buildings on site
Assessed in a separate sheet - industrial units

Horizontal gas migration by advection - limiting values in Bedrock
Approach from Local Authority Guide to Ground Gas

K_{Sorrey} of soil migration pathway	1.00E-07	1.00E-07	1.00E-06	m/s	Permeability of Limestone based on RQD and empirical relationships
Intrinsic permeability K,	1.02E-14	1.02E-14	1.02E-13	m^2	Intrinsic permeability - $K_{Sorrey} \times 1.02 \times 10^{-7}$
Unit weight of methane	7.2	7.2	7.2	N/m^3	
Viscosity of methane	1.03E-05	1.03E-05	1.03E-05	Ns/m^2	
Pressure within source	10	10	10	Pa	based on flow rate monitoring there is negligible pressure in the landfill
Thickness of rock migration pathway	3	3	3	m	Thickness of rock migration pathway, excluding Blown Sand
Width of gas migration front	900	900	900	m	
Therefore area of migration , A	2700	2700	2700	m^2	
Migration pathway length	20	20	20	m	Typical distance of landfill to houses on Warwick Road
Methane concentration	87.5	87.5	87.5	%	Highest concentrations of LFG as recorded on POS
i= pressure gradient along migration route (as a fluid gradient)	0.069	0.069	0.069	Dimensionless	Fluid gradient = (gas pressure/unit weight)/length
Q = flow of methane in m^3/h through area A x methane concentration	4.21E-03	4.21E-03	4.21E-02	m^3/h	$= \left[\frac{K_{Sorrey} \gamma_{CH4} A}{\mu}\right]$ x concentration

Note this assumes that there are no changes to the chemical composition of the gas during migration (eg oxidation of methane).

Maximum vertical migration rate if this moves upwards outside the site over plan area of house	3.12E-07	3.12E-07	3.12E-06	$m^3/h/m^2$	Assuming gas migrating along moves up into house into house at same rate per m^2 but is buffered due to difference in vertical permeability by factor of 5
Equivalent borehole flow rate at point of emission outside site	0.00	0.00	0.03	l/h	

Vertical gas migration by advection outside site - limiting values in Blown Sand
Approach from Local Authority Guide to Ground Gas

K_{Sorrey} of soil migration pathway	6.00E-05	6.00E-05	6.00E-05	m/s	As per CLEA Briefing Note 2, Table 3 for sandy soils
Intrinsic permeability K,	6.12E-12	6.12E-12	6.12E-12	m^2	Intrinsic permeability - $K_{Sorrey} \times 1.02 \times 10^{-7}$
Unit weight of methane	7.2	7.2	7.2	N/m^3	
Viscosity of methane	1.03E-05	1.03E-05	1.03E-05	Ns/m^2	
Pressure within ground	5.4	5.4	5.4	Pa	Assume pressure is reduced outside landfill site and main driving force is stack effect inside buildings
Length of soil migration pathway	1	1	1	m	Look at emission in $1m^2$ column of soil
Width of gas migration front	1	1	1	m	Look at emission in $1m^2$ column of soil
Therefore area of migration , A	1	1	1	m^2	
Migration pathway depth	2.5	2.5	2.5	m	Assumes flow of LFG through centre of bedrock, taking into account 1m of Blown Sand drift
Methane concentration	0.1	0.1	0.1	%	Boreholes outside landfill consistently record <0.1%v/v CH4
i= pressure gradient along migration route (as a fluid gradient)	0.30	0.30	0.30	Dimensionless	Fluid gradient = (gas pressure/unit weight)/length
Q = flow of methane in m^3/h throuah area A x methane concentration	4.62E-06	4.62E-06	4.62E-06	m^3/h	$= \left[\frac{K_{Sorrey} \gamma_{CH4} A}{\mu}\right]$ x concentration

Note this assumes that there are no changes to the chemical composition of the gas during migration (eg oxidation of methane).

Vertical migration rate	4.62E-06	4.62E-06	4.62E-06	$m^3/h/m^2$	
Equivalent borehole flow rate	0.05	0.05	0.05	l/h	

Ventilation in buildings off site

Maximum likely surface emission rate of gas	4.62E-06	4.62E-06	4.62E-06	$m^3/h/m^2$	Use values that allow for buffering during migration
Height of occupied space	2	2	2	m	
Length of occupied space	8	8	8	m	
Width of occupied space	8	8	8	m	
Ventilation rate in building	0.5	0.5	0.5	Air change per hour	From CLEA Briefing Note 3, Page 9
Equilibrium gas concentration in the building	4.62E-04	4.62E-04	4.62E-04	%	Less than 0.1% Ignores presence of ground bearing floor slab, also ignores any competence of vent trench

Carbon dioxide from occupants and appliances
Consider humans only - cooking and heating appliances will add to CO2 generation within the building

Humans breath out carbon dioxide.

Typically the average human will exhale 420 l of CO_2 per day.

If we say a typical house is occupied for 9 hours per day by 2 people then the total CO_2 emitted is

315 l per day

Say area of house is 64 m^2

Equivalent surface emission rate from ground would be 0.205078125 $l/h/m^2$

Equivalent surface emission rate from ground would be 0.000205078 $m^3/h/m^2$

Ventilation in buildings off site

Height of occupied space	2	m	
Length of occupied space	8	m	
Width of occupied space	8	m	
Ventilation rate in building	0.5	Air change per hour	From BN3 - Residential dwelling
Equilibrium gas concentration in the building	2.05E-02	%	

Midland Road, Scunthorpe - GAS RISK ASSESSMENT

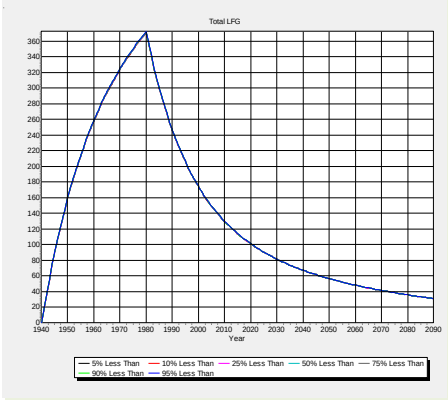
Gas production and migration potential
Industrial Estate - PRE 1960'S WASTE BODY

Gas production limiting values
Data for GASSIM generation model

Length of area	900	900	900	m	From plan of site
Width of area	700	700	700	m	From plan of site
Depth of fill	4	4	4	m	From SI
Volume of fill	2520000	2520000	2520000	m^3	Assumes rectangular shaped deposition area
Density of fill	0.8	0.8	0.8	t/m^3	Assumes non-compacted waste body
Total weight of fill	2016000	2016000	2016000	t	

Assume all fill placed and decomposition starts at end of operation period (worst case)

Operation period	40	40	40	y	
Generation rate	N/A	N/A	N/A		
Total gas production in 2013 (33 years from end of filling - using GASSIM equation for gas generation) from graph below	120	120	120	m^3/h	



Migration routes - proportions					
Vertical	60	50	40	%	Poor quality surfacing across much of POS, tarmac/concrete cracked and rough ground regularly present
Horizontal per side	10	12.5	15	%	Assume evenly distributed to each of four sides
Migration routes - volumes					
Vertical	72	60	48	m^3/h	
Horizontal per side	12	15	18	m^3/h	
Surface emission rate in landfill	1.14E-04	9.52E-05	7.62E-05	$m^3/h/m^2$	
Equivalent borehole flow rate	1.14	0.95	0.76	l/h	Total flow of landfill gas assuming Pecksen correlation

Ventilation in buildings on site
Approach from Local Authority Guide to Ground Gas

K_{Darcy} of soil migration pathway	1.00E-05	1.00E-05	1.00E-05	m/s	Permeability of landfill waste - see GBC expert witness report
Intrinsic permeability K_i	1.02E-12	1.02E-12	1.02E-12	m^2	Intrinsic permeability - $K_{Darcy} \times 1.02 \times 10^{-7}$
Unit weight of methane	7.2	7.2	7.2	N/m^3	
Viscosity of methane	1.03E-05	1.03E-05	1.03E-05	Ns/m^2	
Pressure within ground	10	10	10	Pa	Allow increased ground pressure as sat on landfill
Length of soil migration pathway	1	1	1	m	Look at emission in $1m^2$ column of soil
Width of gas migration front	1	1	1	m	Look at emission in $1m^2$ column of soil
Therefore area of migration , A	1	1	1	m^2	
Migration pathway depth	2	2	2	m	Mid way in LF waste soil profile
Methane concentration	3	3	3	%	Maximum concentration in BH's as monitoring on industrial estate
i= pressure gradient along migration route (as a fluid gradient)	0.69	0.69	0.69	Dimensionless	Fluid gradient = (gas pressure/unit weight)/length
Q = flow of methane in m^3/h through area A x methane concentration	5.35E-05	5.35E-05	5.35E-05	m^3/h	x concentration

Note this assumes that there are no changes to the chemical composition of the gas during migration (eg oxidation of methane).

Vertical migration rate	5.35E-05	5.35E-05	5.35E-05	$m^3/h/m^2$	
Equivalent borehole flow rate	0.53	0.53	0.53	l/h	

Ventilation in buildings off site

Maximum likely surface emission rate of gas	1.14E-04	9.52E-05	7.62E-05	$m^3/h/m^2$	Use values that allow for buffering during migration
Height of occupied space	2	2	2	m	Offices noted at ground floor level
Length of occupied space	27	27	27	m	Typical building footprint
Width of occupied space	15	15	15	m	Typical building footprint
Ventilation rate in building	1	1	1	Air change per hour	From BN3 - commercial buildings
Equilibrium gas concentration in the building	5.71E-03	4.76E-03	3.81E-03	%	Less than 0.1% Ignores presence of ground bearing floor slab

Carbon dioxide from occupants and appliances
Consider humans only - cooking and heating appliances will add to CO2 generation within the building

Humans breath out carbon dioxide.

Typically the aerage human will exhale 420 l of CO_2 per day.

If we say a typical unit is occupied for 8 hours per day by 4 people then the total CO_2 emitted is

560 l per day

Say area of house is 405 m^2

Equivalent surface emission rate from ground would be 0.057613169 $l/h/m^2$

Equivalent surface emission rate from ground would be 5.76132E-05 $m^3/h/m^2$

Ventilation in buildings off site

Height of occupied space	2	m	
Length of occupied space	27	m	
Width of occupied space	15	m	
Ventilation rate in building	1	Air change per hour	From BN3 - commeercial property
Equilibrium gas concentration in the building	2.88E-03	%	

Midland Road, Scunthorpe - GAS RISK ASSESSMENT

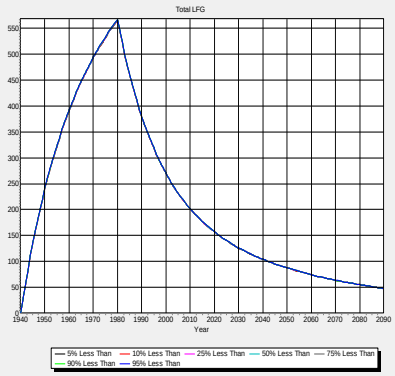
Gas production and migration potential
Industrial Estate - POST 1960'S WASTE BODY

Gas production limiting values
Data for GASSIM generation model

Length of area	900	900	900	m	From plan of site
Width of area	700	700	700	m	From plan of site
Depth of fill	4	4	4	m	From SI
Volume of fill	2520000	2520000	2520000	m^3	Assumes rectangular shaped deposition area
Density of fill	1	1	1	t/m^3	Assumes some compaction of waste body may have occurred
Total weight of fill	2520000	2520000	2520000	t	

Assume all fill placed and decomposition starts at end of operation period (worst case)

Operation period	40	40	40	y	
Generation rate	N/A	N/A	N/A		
Total gas production in 2013 (33 years from end of filling - using GASSIM equation for gas generation) from graph below	185	185	185	m^3/h	



Migration routes - proportions					
Vertical	60	50	40	%	Poor quality surfacing across much of POS, tarmac/concrete cracked and rough ground regularly present
Horizontal per side	10	12.5	15	%	Assume evenly distributed to each of four sides
Migration routes - volumes					
Vertical	111	92.5	74	m^3/h	
Horizontal per side	18.5	23.125	27.75	m^3/h	
Surface emission rate in landfill	1.76E-04	1.47E-04	1.17E-04	$m^3/h/m^2$	
Equivalent borehole flow rate	1.76	1.47	1.17	l/h	Total flow of landfill gas assuming Pecksen correlation

Ventilation in buildings on site
Approach from Local Authority Guide to Ground Gas

K_{Darcy} of soil migration pathway	1.00E-05	1.00E-05	1.00E-05	m/s	Permeability of landfill waste - see GBC expert witness report
Intrinsic permeability K_i	1.02E-12	1.02E-12	1.02E-12	m^2	Intrinsic permeability - $K_{Darcy} \times 1.02 \times 10^{-7}$
Unit weight of methane	7.2	7.2	7.2	N/m^3	
Viscosity of methane	1.03E-05	1.03E-05	1.03E-05	Ns/m^2	
Pressure within ground	10	10	10	Pa	Allow increased ground pressure as sat on landfill
Length of soil migration pathway	1	1	1	m	Look at emission in $1m^2$ column of soil
Width of gas migration front	1	1	1	m	Look at emission in $1m^2$ column of soil
Therefore area of migration , A	1	1	1	m^2	
Migration pathway depth	2	2	2	m	Mid way in LF waste soil profile
Methane concentration	25	25	25	%	Maximum concentration in BH's as monitoring on industrial estate
i= pressure gradient along migration route (as a fluid gradient)	0.69	0.69	0.69	Dimensionless	Fluid gradient = (gas pressure/unit weight)/length
Q = flow of methane in m^3/h through area A x methane concentration	4.46E-04	4.46E-04	4.46E-04	m^3/h	$\left[\frac{K_{Darcy}A}{\mu}\right]$ x concentration

Note this assumes that there are no changes to the chemical composition of the gas during migration (eg oxidation of methane).

Vertical migration rate	4.46E-04	4.46E-04	4.46E-04	$m^3/h/m^2$
Equivalent borehole flow rate	4.46	4.46	4.46	l/h

Ventilation in buildings off site

Maximum likely surface emission rate of gas	4.46E-04	4.46E-04	4.46E-04	$m^3/h/m^2$	Use values that allow for buffering during migration
Height of occupied space	2	2	2	m	Offices noted at ground floor level
Length of occupied space	27	27	27	m	Typical building footprint
Width of occupied space	15	15	15	m	Typical building footprint
Ventilation rate in building	1	1	1	Air change per hour	From BN3 - commercial buildings
Equilibrium gas concentration in the building	2.23E-02	2.23E-02	2.23E-02	%	Less than 0.1% Ignores presence of ground bearing floor slab

Carbon dioxide from occupants and appliances
Consider humans only - cooking and heating appliances will add to CO2 generation within the building

Humans breath out carbon dioxide.

Typically the aerage human will exhale 420 l of CO_2 per day.

If we say a typical unit is occupied for 8 hours per day by 4 people then the total CO_2 emitted is

560 l per day

Say area of house is 405 m^2

Equivalent surface emission rate from ground would be 0.057613169 $l/h/m^2$

Equivalent surface emission rate from ground would be 5.76132E-05 $m^3/h/m^2$

Ventilation in buildings off site

Height of occupied space	2	m	
Length of occupied space	27	m	
Width of occupied space	15	m	
Ventilation rate in building	1	Air change per hour	From BN3 - commeercial property
Equilibrium gas concentration in the building	2.88E-03	%	

Appendix L

Landfill Gas and SPOSH (V1.0, May 2011)

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Landfill gas technical discussion note 1 V1.0 May 2011

Landfill gas and SPOSH

Part 2A of the Environmental Protection Act 1990 was introduced by the Environment Act 1995. It came into force on 1 April 2000. Contaminated land is defined in Part 2A as follows:

"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 the land that:

(a) significant harm is being caused or there is a significant possibility of such harm being caused; or
(b) pollution of controlled waters is being, or is likely to be caused".

Local Authorities have a duty under the act to identify land within their area that is likely to fall under this definition. If following investigation, the land is formally determined as being contaminated, the Local Authority must ensure that it is remediated to an acceptable standard. Formal determination that land is contaminated is based on identifying what are known as significant pollutant linkages between sources of contamination and receptors via an existing migration pathway (ie the pollution can reach someone or something and cause them or it harm). It should be noted that Part 2A only considers current land use and existing migration pathways. The authority must demonstrate that there is a *significant possibility of significant harm* (SPOSH) being caused to a receptor, or that actual harm is occurring.

The presence of gas in the ground at high concentrations alone does not constitute SPOSH. There must be a credible pathway for it to reach a receptor and sufficient volumes of gas must be generated to allow it to migrate in sufficient quantities to pose a hazard. The gas screening values (GSV's) in CIRIA C665 cannot be used to determine whether a site is considered to be a significant risk of significant harm (although they can be used in a preliminary screening assessment to identify where further risk assessment may be required).

The guidance on SPOSH does not really address the issue of landfill or ground gas. The following framework is proposed by EPG for the definition of SPOSH on gassing sites:

1. The site investigation must have identified with reasonable confidence that there are credible and realistic pathways for gas to reach a receptor. Examples of things that need to be considered are provided below.

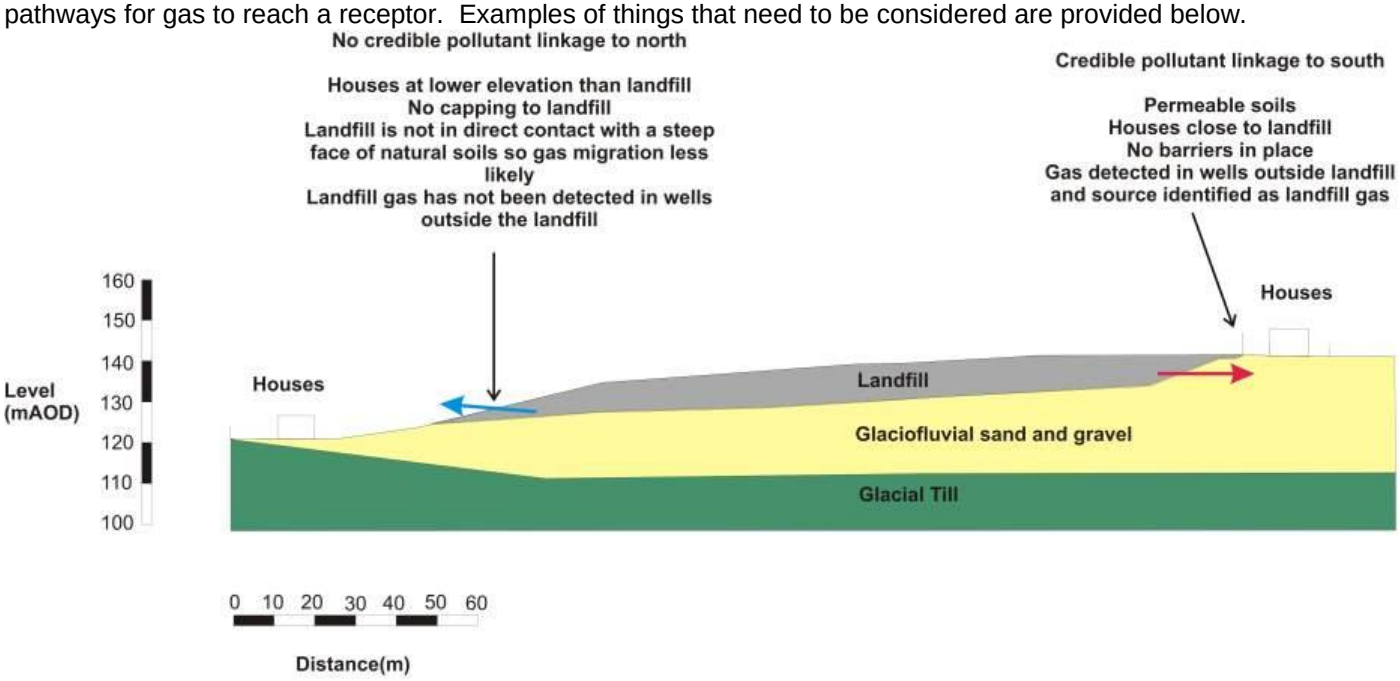

Figure 1 Site with credible pollutant linkages in one area and none in another

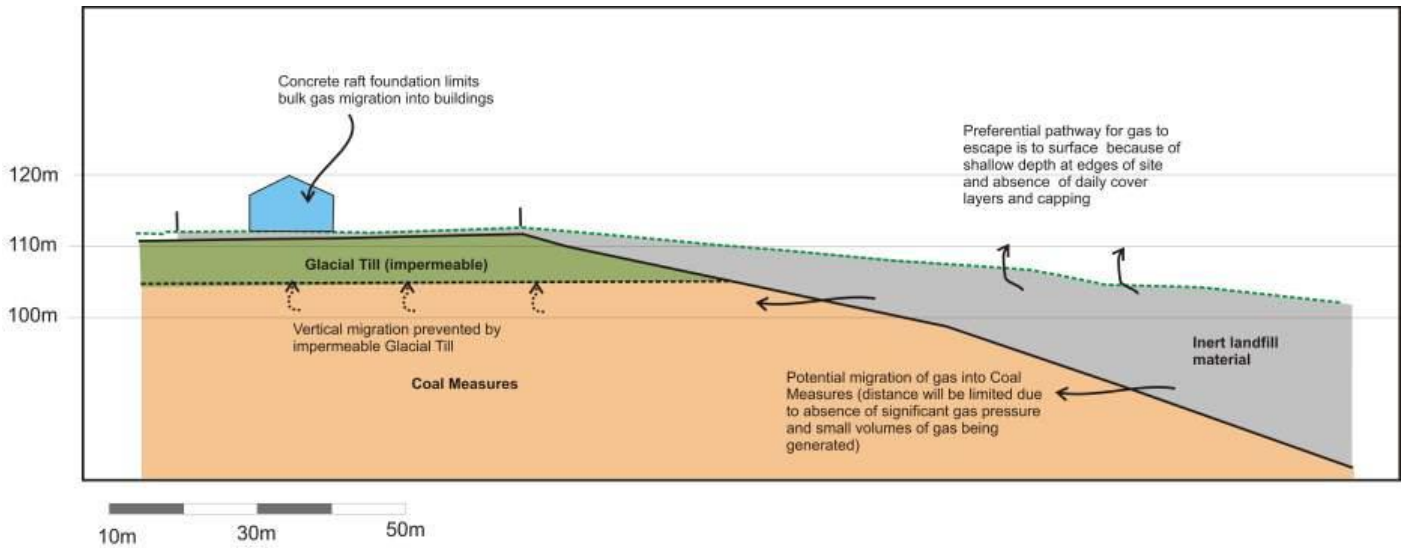

Figure 2 Site with potential gas migration in rock below a site but no credible pollutant linkage

The assessment of credible pathways should consider geology, topography, nature of soils and rocks and distance to potential receptors. It should always consider preferential pathways via more permeable layers in the ground, services, etc. Usually it is gas migration via these pathways that causes problems rather than bulk migration through the whole ground mass. A Part IIA investigation should always include collection of buried service plans.

2. Once credible pathways have been identified an analysis and/or measurement of methane or other gas concentrations inside the occupied parts of buildings (or unoccupied parts where there may be an ignition source) will be necessary. The results can be used with the table below to assist in defining the level of risk. The flow of gas into the building for Part IIA assessments should be based on analysis of gas migration through the ground and into the building by advection or diffusion. Simple assessments using the gas screening value and Pecksen's correlation of borehole flow to surface emission rate should be avoided. The assessment should be based on driving pressures and the permeability and effective diffusion coefficients for the soils/rocks below a site. The assessment should consider internal pressure inside a house and, if appropriate, atmospheric pressure variations.

The table below considers the estimated risk of adverse health effects occurring and the confidence in the available data. The shading of each cell in the table denotes whether a site is considered to be contaminated land, possibly contaminated land or not contaminated land. Within each cell is a statement on whether further assessment is required. Further assessment may comprise risk analysis and/or collection of further data. This should be targeted to remove identified uncertainty in the risk assessment and gas flow modelling. Quite often the most crucial data is NOT gas monitoring but details of floor slab construction and the ground conditions below buildings.

Examples of good, reasonable and poor confidence

Examples of what is required for good, reasonable and poor confidence are provided below. The final decision should be agreed jointly by all those involved in the assessment. The requirements should not be seen as prescriptive, but rather an aid to judgement.

Good confidence

Nature of source material is well characterised, potential pathways well characterised and understood, likely volume of gas generation is characterised, impact of ground gas relationships/variations is understood, building foundation and floor slab construction known. Multiple lines of evidence available.

Reasonable confidence

Nature of source material is well characterised, potential pathways are understood and reasonable parameters can be assigned, likely volume of gas generation can be estimated, building foundation and floor slab construction is known with reasonable certainty. Multiple lines of evidence available.

Poor confidence

Limited information/understanding of source material, pathways, volume of gas generation, building foundations and floor slab construction. Many assumptions and limited lines of evidence.

	Risk of adverse health effect	Confidence/certainty: Good	Reasonable	Poor	
Category 4	**Minimal** Estimated or measured methane concentration in confined space within occupied part of building < 0.2% LEL (0.01% by volume or 100ppm)	No further assessment required	No further assessment required	May need further assessment	Contaminated land
Category 3	**Medium** Estimated or measured methane concentration in confined space within occupied part of building > 0.2% LEL (0.01% by volume or 100ppm)but < 1% LEL (0.05% by volume or 500ppm)	No further assessment required	No further assessment required	May need further assessment	Not contaminated land
Category 2	**Elevated** Estimated or measured methane concentration in confined space within occupied part of building exceeds 1% LEL (0.05% or 500ppm) but is less than 10% LEL (0.5% by volume)	No further assessment required	May need further assessment	May need further assessment	May or may not be contaminated land
Category 1	**Unacceptable** Estimated or measured methane concentration in confined space within occupied part of building exceeds 10% LEL (0.5% or 5000ppm) but is less than 20% LEL (1% by volume)	No further assessment required	No further assessment required	May need further assessment	
	Serious Estimated or measured methane concentration in confined space in occupied space in building exceeds 20% LEL (1% by volume or 10,000ppm)	No further assessment required	No further assessment required	May need further assessment	

Note the base table, definitions of risk and requirements for further assessment were developed by Rob Ivens and Judith Lowe. EPG has only added the specific values for landfill gas.

Multiple lines of evidence (MLOE) is using different information to determine the likely risk associated with ground gas. The lines of evidence have to use different information or assessment methods. For ground gas the following are considered separate lines of evidence:

1. Desk study identifying age and nature of gas source – whether it is likely to be producing large volumes of gas.
2. Desk study to identify how long receptors have been exposed to source and whether there have been any reported issues (odours, drowsiness, etc).
3. Site investigation to give visual assessment of gas source together with gas generation modelling.
4. Flow modelling of gas migration through the ground and into buildings.
5. Confirmation that gas migration is occurring by gas monitoring in the ground.
6. Flux chamber testing of surface emissions
7. Confirmation of gas ingress into buildings by internal gas monitoring.

Note
This is a living document and will be subject to updating based on experience and comments. We would be grateful for any comments on the framework, especially from local authority contaminated land officers.