



**Phase II
Geo Environmental Site Assessment**

A11057

Kenavon Drive
Reading
RG1 3HS

Prepared for

Berkeley Homes (Western) Ltd
200 Longwater Avenue
Green Park
Reading
Berkshire
RG2 6GB

**Omnia ref: A11057/2.0 Draft
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Quality Assurance

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Executive Summary	
Site Address	Kenavon Drive, Reading, RG1 3HS
National Grid Reference	SU 7227 7357
Site Area	2.8ha
Current Site Use	At the time of the investigation, the site was undergoing demolition activities and the former retail units were demolished to slab level. The site area was used for the storage of plant with portacabins serving as staff welfare and offices located close to the north-eastern boundary of the site. The site was surfaced by hardstanding comprising asphalt and concrete cover under the former building footprints.
Revised Conceptual Site Model	
Following completion of the Tier 1 risk assessment, elevated concentrations were encountered within the near surface which are considered to have the potential to present a significant risk to future site users. The presence of asbestos within two locations above the adopted screening criteria were also considered to have the potential to present a significant risk to both future site users and construction workers. Ground gas concentrations identified during previous rounds of monitoring, alongside results from the current phase of works were deemed to pose a risk to the development, albeit that current readings did not highlight elevated concentrations. Given this it was recommended that gas protection measures in line with a CS-3 classification should be adopted for the development.	
Recommendations	
This document forms a supplementary Geo-Environmental assessment of the site, providing information on areas not previously investigated during earlier phases of works. It is recommended that this document is read alongside the reports prepared by others, as listed in Section 1.1 of this document. The current phase of works has identified concentrations within near surface soils that are considered to have the potential to present a significant risk to human health, which is generally in line with previous phases of investigation, therefore remedial works will be required. This aspect, alongside the risk assessment set out in earlier phases of work should be presented within a separate Remediation Method Statement post finalisation of development layout, and final site levels. Consideration should be given to any basement car parking, and the impact this may have on mitigation measures. The Remediation Method Statement should be produced and submitted to the Local Authority post acceptance of all phases of reporting by the regulator. Currently, and assuming development of the existing ground surface it is likely that remedial measures will involve placement of a clean soil capping system and gas protection measures in line with a CS-3 classification. Reference should be made to the previous reports for the scheme, with all phases of works considered in the final Remediation Method Statement. As necessary a gas protection measures specification should be produced for the development, although it may be possible to include this within the Remediation Method Statement. In order to assess the risk to construction workers it is recommended that a risk assessment is undertaken in accordance with the Control of Asbestos Regulations (2012) for tasks scheduled to be undertaken in the area affected by asbestos impact. Should a piled solution be sought for foundations it is recommended that a Piling Risk Assessment is produced, given the classification of the underlying chalk as a Principal Aquifer. Contact should be made with the water supply provider to determine their requirements for water supply pipework given the presence of elevated concentrations within the near surface made ground. Should any previously unidentified obvious visual or olfactory evidence of contamination be encountered in areas of the site during site clearance and/or ground works, then site works should be halted, and contact made with a	

suitably qualified environmental consultant. As determined appropriate by the Consultant, further investigation and sampling may be required to determine the appropriate actions. Upon completion contact should be made with the relevant regulatory authority to achieve signoff of the works.

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1.0 INTRODUCTION

1.1 Background

Omnia Environmental Consulting (OEC) were commissioned by Berkeley Homes (Western) Ltd to undertake a Supplementary Phase II Geo-Environmental Site Investigation at the site of Kenavon Drive, Reading, RG1 3HS.

A site location plan is presented as Figure 1.0, Appendix III.

Previous ground investigation works have been undertaken by others, as presented within the documents ref:

- Geotechnical and geoenvironmental interpretative report, Kenavon Drive Reading. Card Geotechnical Ltd (2016).
- Environmental Assessment, Forbury Retail Park, Kenavon Drive, Reading. Project reference 13-0258.01. Delta Simons Environmental Consultants (2013).
- Ground Investigation Interpretative Report, Kenavon Drive, Reading. Project reference 13-0258.01. Delta Simons Environmental Consultants (2013).

It has been assumed that Berkeley Homes (Western) Ltd hold full reliance on the above report.

This report acts to provide information to further characterise the site in order to assist with discharge of Planning Condition 25, detailed within Planning Application ref 170509. The extent of ground investigation works are set out within proposal reference A11057/181214/L1, under which works were instructed. Intrusive locations were based on the drawing produced by Peter Brett Associates (PBA) provided in document reference 37454/3500/SP01/rev1.

In summary works comprised:

- Further investigation within areas that were inaccessible at the time of previous works, including below building footprints;
- Assessment of groundwater concentrations below building footprints;
- Assessment of free cyanide concentrations within selected existing monitoring wells;
- Return ground gas monitoring;
- WAC sampling for the assessment of soils for off site disposal.

This report is limited to a GeoEnvironmental assessment of the aspects set out within the above cost proposal. Geotechnical aspects of the investigation are presented separately within the Factual report entitled '*Ground Investigation Factual Report, Kenavon Drive, Reading, RG1 3HS*', reference A11057/1.0, dated March 2019. Interpretation of geotechnical results is outside the scope of works, with no further commentary on geotechnical aspects, or laboratory testing provided within this

document. Items deemed to form geotechnical aspects of the investigation are annotated with 'G' within Section 1.3 below.

1.2 Proposed Development

From the information provided to OEC it is understood that Berkeley Homes are proposing to construct multi-storey residential blocks at the site.

A proposed development plan is presented as Figure 2.0, Appendix III.

1.3 Scope

The cost proposal under which works were instructed (ref A11057/181214/L1), produced by OEC outlines works as follows:

- 1) Drilling of two (2no.) boreholes to 40.0m bgl (one in each former retail unit) using cable percussion techniques and a single borehole to 20m bgl using cable percussion methods with standard penetration testing to assist with piled foundation design in the footprint of the existing units; (G)
- 2) The excavation of twenty (20no.) trial pits within the existing units to examine the near surface ground conditions and the construction details of the existing floor slabs and foundations including the recovery of samples of the soils encountered;
- 3) The excavation of four (4no.) trial pits to examine the near surface ground conditions and the construction details of the river wall tie rods including the recovery of samples of the soils encountered;
- 4) The excavation of six (6no.) trial pits in the Forbury Road embankment to examine near surface ground conditions including the recovery of samples of the soils encountered;
- 5) The installation of gas and groundwater monitoring wells in each borehole together with the monitoring of water levels, groundwater levels and concentrations of ground gases in each well and previously installed, by others, well installations over the course of three visits at nominal bi-weekly intervals;
- 6) Surface water sampling for geochemical testing in 2 selected locations within the River Kennet;
- 7) Geotechnical analysis of selected soil samples to determine appropriate geotechnical parameter for the design of foundations, retaining structures, pavements and other geotechnical elements of the proposed development; (G)
- 8) Chemical analysis of soil, groundwater and surface water samples for a range of typically encountered potential brownfield contaminants including WAC testing for the assessment of waste disposal.

Items fulfilling a predominantly geotechnical brief are annotated with a 'G' above.

1.4 Sources of Information

Background information was sought from the following sources:

- The British Geological Survey (BGS) Sheet 268, Reading, 1978, Solid and Drift Edition at a scale of 1:50,000.
- *Geotechnical and geoenvironmental interpretative report, Kenavon Drive Reading*. Card Geotechnics Ltd (2016).

- *Environmental Assessment, Forbury Retail Park, Kenavon Drive, Reading*. Project reference 13-0258.01. Delta Simons Environmental Consultants (2013).
- *Ground Investigation Interpretative Report, Kenavon Drive, Reading*. Project reference 13-0258.01. Delta Simons Environmental Consultants (2013).

1.5 Limitations

The limitations of this report are presented in Appendix I.

1.6 Confidentiality

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

2.0 SITE SETTING

2.1 Site Details

Site Address	Kenavon Drive, Reading, RG1 3HS
National Grid Reference	SU 7227 7357
Site Area	2.8ha

All acronyms used within this report are defined in the Glossary presented in Appendix II.

A site location map is presented as Figure 1.0 (Appendix III).

2.2 Current Site Use

Site Description

The area of investigation comprised an irregular plot of land approximately 240m in length and 125m in width located immediately south of Kenavon Drive, Reading. The site was formerly occupied by a retail park which included Homebase and Toys 'R' Us units with associated car parking and limited soft landscaping around the perimeter of the site. The northern boundaries were bounded by Kenavon Drive coinciding with wooden hoarding around the perimeter of the site. Forbury Road follows the western boundary of the site converging with Kenavon Drive to the north. The southern boundary of the site was denoted by a pedestrian footpath named 'Blake's Wharf' with the course of the River Kennet immediately beyond. Residential properties were to the east of the site.

The site was accessed via Kenavon Drive and at the time of the site investigation was used as a vehicular access for site demolition plant and groundworkers.

At the time of the investigation, the site was undergoing demolition activities and the former retail units were demolished to slab level. The site area was used for the storage of plant with portacabins serving as staff welfare and offices located close to the north-eastern boundary of the site.

The site was surfaced by hardstanding comprising asphalt and concrete cover under the former building footprints.

2.3 Surrounding Area

The surrounding land uses are summarised below:

Direction	Land Use
North	Kenavon Drive and Forbury Retail Park beyond
East	Residential Development comprising high rise housing
South	Pedestrian footpath with River Kennet beyond
West	Forbury Road

2.4 Geology & Hydrogeology

Data set out below is based on a review of information from the sources of information set out in Section 1.4, which include reference to previous reports undertaken by others.

The British Geological Survey (BGS) map for the site (Reading Sheet 268, Solid and Drift Edition at a scale of 1: 50,000) indicates that the site is underlain by the following geological sequence:

Geological Unit	Classification	Description	Aquifer Classification
Superficial	Taplow Gravel Member	Sand and Gravel	Secondary A Aquifer
Bedrock	Seaford and Newhaven Chalk Formation	Chalk	Principal Aquifer

The site is located within a Source Protection Zone 3 – Total Catchment.

2.5 Hydrology & Flooding

The closest water feature to the site is the River Kennet, which is located adjacent to the southern site boundary. The Kennet is noted to be canalised along the stretch adjacent to the south of the site, however it is unknown if the canal is lined, or in continuity with the groundwater beneath the site. The River Thames is located 400m to the north and east of the site.

The southern and eastern extents of the site are noted to be within an Environment Agency Zone 2 Flood Plain relating to the River Kennet.

3.0 PREVIOUS INVESTIGATIONS

As set out in Section 1.1, the site has been subject to a series of previous investigations, as detailed in the following documents:

- Geotechnical and geoenvironmental interpretative report, Kenavon Drive Reading. Card Geotechnics Ltd (2016).
- Environmental Assessment, Forbury Retail Park, Kenavon Drive, Reading. Project reference 13-0258.01. Delta Simons Environmental Consultants (2013).
- Ground Investigation Interpretative Report, Kenavon Drive, Reading. Project reference 13-0258.01. Delta Simons Environmental Consultants (2013).

A brief summary of each document is set out below each heading below.

- **Environmental Assessment, Forbury Retail Park, Kenavon Drive, Reading. Project reference 13-0258.01. Delta Simons Environmental Consultants (2013).**
- **Ground Investigation Interpretative Report, Kenavon Drive, Reading. Project reference 13-0258.01. Delta Simons Environmental Consultants (2013).**

The above reports relate to a single phase of investigation. The reports identified the following specific items:

Soil

- Elevated concentrations identified within near surface made ground, including lead, PAHs and TPH concentrations, leading to a recommendation for a clean soil capping layer within areas of proposed landscaping. It was also recommended that discussions were held with the local water authority to determine requirements for water supply pipes.

Groundwater

- Marginal exceedance of chromium and copper were encountered within groundwater above the adopted screening criteria, however as these were less than alternative Drinking Water Values were not considered to pose a significant risk to identified receptors.

Ground Gas

- Carbon Dioxide concentrations were recorded with a maximum value of 5.2% with a low flow, leading to a recommendation for basic gas protection measures within buildings.

Summary:

Overall the ground investigation considered that the site represented a low risk to receptors, with identified risks mitigated through capping layers in areas of landscaping, and basic ground gas protection measures. An asbestos survey for the buildings was recommended alongside discussion with the local water authority with regard to their requirements for pipework infrastructure.

Further ground investigation was recommended post demolition works in order to establish conditions below the existing buildings.

- **Geotechnical and geoenvironmental interpretative report, Kenavon Drive Reading. Card Geotechnics Ltd (2016).**

The report identified the following:

Soil

- Elevated lead and asbestos within the made ground alongside PAHs which have been attributed to clinker and tarmac fragments.
- Phytotoxic elements were present in the made ground that were considered to pose a risk to vegetation growth.
- No elevated concentrations were recorded within natural soils.

To mitigate against the above a barrier layer or clean soil capping thickness was considered appropriate, however there was comment on the potential need to excavate impacted made ground within a contamination hotspot should it be within an area of permeable soft landscaping.

Groundwater

- Elevated lead, mercury, cyanide and PAHs were encountered within groundwater, however it was noted that there was not a source of cyanide on site and therefore it was considered that the elevated concentrations are indicative of wider regional groundwater contamination. The impact in the groundwater is considered to be residual from the former gas works located off site to the south and east.

The report recommended that further samples are obtained during a future phase of works in order to allow testing of free cyanide. This was due to the risk assessment completed by CGL being based on a total cyanide figure rather than free cyanide which would provide a suitable assessment in line with best practice. If a future round of works identified free cyanide within groundwater a Detail Quantitative Risk Assessment (DQRA) may be required, which as necessary may then lead to a requirement for groundwater remediation.

Ground Gas

- Gas monitoring was completed over six visits with elevated flow rates and the presence of Carbon Dioxide concentrations leading to a CS-3 gas classification.

Summary:

Generally the site is considered to pose a low to medium risk to receptors, with identified risk mitigated through a barrier layer and possible localised remediation within a contamination hotspot if within an area of permeable soft landscaping. Gas protection measures in line with CS-3 were proposed. Additional groundwater monitoring with analysis for free cyanide and as necessary if an elevated free cyanide result a DQRA also proposed pending on the results of additional monitoring.

Both phases of works recommended the following works should take place:

- Further investigation below areas of building footprint post demolition;
- Additional groundwater monitoring with subsequent testing for Free Cyanide.

4.0 CONCEPTUAL SITE MODEL (CSM)

4.1 Initial CSM

In accordance with Environment Agency, CLR 11 (2004) and BSI 10175 (Code of Practice for Investigation of Potentially Contaminated Land), Omnia Environmental Consulting have developed an initial CSM to identify potential contamination sources, migration pathways and receptors within the study area.

The Conceptual Site Model is based on the recommendations of the previous report, rather than a full revision of all pollution linkages which were associated with the historical site setting, given that the site has been assessed by others ahead of this report. A residential end use has been adopted, given the proposed site development.

On-site Potential Sources

- Made Ground within portions of the site not previously investigated – including below building footprints.

Off-site Potential Sources

- Former Gas works and surrounding industrial land uses, with particular regard to lateral migration via groundwater.

Potential Pathways

- Ingestion of impacted soils and vegetables;
- Dermal contact with impacted soil;
- Vertical and lateral migration;
- Inhalation of fibres;
- Inhalation of vapours; and,
- Migration of ground gas into confined spaces.

Potential Receptors

- Future Site Users; and,
- Controlled Waters.

Construction workers are not considered to be a plausible receptor due to management of their exposure through the use of suitable PPE and hygienic working practices as required under HSE/CDM regulations. Furthermore, the length of any exposure is considered to be very short in comparison to the criteria for which the adopted end use has been derived.

An Initial Conceptual Site Model has been prepared for the site and is presented overleaf within Table 4.1.

Table 4.1 Initial Conceptual Site Model

Source	Contaminant	Potential Migration Pathway	Potential Receptors	Likelihood of Occurrence	Magnitude of Occurrence	Overall Risk Rating	Active/Inactive
On Site Potential Sources							
Made Ground within portions of the site not previously investigated including below building footprints.	Metals (As, B, Cd, Cr, Pb, Hg, Se, Ni, Zn)	Ingestion of Impacted Soils & Vegetables	Future site users	Moderate	Moderate	Moderate	Potentially Active – Further Investigation Required.
		Dermal contact with Impacted Soils		Moderate	Moderate	Moderate	
		Vertical & Lateral Migration	Controlled Waters	Moderate	Moderate	Moderate	
	Polycyclic Aromatic Hydrocarbons (PAH)	Ingestion of Impacted Soils & Vegetables	Future site users	Moderate	Moderate	Moderate	
		Dermal contact with Impacted Soils		Moderate	Moderate	Moderate	
		Vertical & Lateral Migration	Controlled Waters	Moderate	Moderate	Moderate	
	Total Petroleum Hydrocarbons (TPH)	Ingestion of Impacted Soils & Vegetables	Future site users	Moderate	Moderate	Moderate	
		Dermal contact with Impacted Soils		Moderate	Moderate	Moderate	
		Vertical & Lateral Migration	Controlled Waters	Moderate	Moderate	Moderate	
		Inhalation of vapours	Future Site Users	Moderate	Moderate	Moderate	
	Asbestos Fibres	Inhalation of Fibres	Future Site Users	Moderate	Moderate	Moderate	

	Ground Gas (CO ₂ and CH ₄)	Lateral Migration	Future Site Users	Moderate	Severe	High	Potentially Active – Further Investigation Required.
Off Site Potential Sources							
Former Gas Works and surrounding industrial land use	Metals (As, B, Cd, Cr, Pb, Hg, Se, Ni, Zn)	Lateral Migration	Future Site User	Low	Moderate	Low/Moderate	Inactive – Previous ground investigation has not identified a risk on site. Where concentrations were identified in the groundwater this has been attributed to general groundwater quality.
	Total Petroleum Hydrocarbons (TPH)	Lateral Migration	Future Site User	Low	Moderate	Low/Moderate	Inactive – Previous ground investigation has not identified a risk on site. Where concentrations were identified in the groundwater this has been attributed to general groundwater quality.
	PAH	Lateral Migration	Future Site User	Low	Moderate	Low/Moderate	Inactive – Previous ground investigation has not identified a risk on site. Where concentrations were identified in the groundwater this has been attributed to general groundwater quality.
	Free Cyanide	Lateral Migration	Future Site User	Low	Moderate	Low/Moderate	Potentially Active – Further Investigation required through testing of underlying groundwater for Free Cyanide.
	VOCs	Lateral Migration	Future Site User	Low	Moderate	Low/Moderate	Inactive – Previous ground investigation has not identified a risk on site.
	Ground Gas (CO ₂ and CH ₄)	Lateral Migration	Future Site Users	Moderate	Severe	High	Potentially Active – Further Investigation Required.

5.0 SITE INVESTIGATION

5.1 General

The required ground investigation works were based on review of scopes provided by others and formalised within proposal reference A11057/181214/L1, under which works were instructed. Intrusive locations were based on the drawing produced by Peter Brett Associates (PBA) provided in document reference 37454/3500/SP01/rev1.

Exploratory fieldwork was conducted between 15th January 2019 – 13th February 2019. Works are summarised in Table 5.1 with deviations set out in Table 5.2:

Table 5.1 Summary of Fieldwork

Potential Source/Rationale	Location Hole	Type	Maximum Depth (m bgl)	Monitoring Well Response Zone (m bgl)
Drilling of boreholes to facilitate outline recommendations for piled foundation design in the locations of the proposed building footprints. Installation of monitoring points for follow on gas and groundwater monitoring.	BH1001a& BH1003	Cable Percussive	40.00	1.00-7.00
	BH1002		20.00	
Excavation of trial pits within the existing units to examine the near surface ground conditions and the construction details of the existing floor slabs to shallow soil sampling.	TP1005 – TP1024	Trial Pit	4.00	N/A
Trial trenches to examine the near surface ground conditions and the construction details of the river wall tie rods including the recovery of samples of the soils encountered.	TT1001 – TT1004	Trial Pit	3.00	N/A
The excavation of trial pits in the Forbury Road embankment to examine near surface ground conditions and the testing of shallow surface samples.	TP1001 – TP1004, TP1025 – TP1026	Trial Pit	4.00	N/A
The collection of surface water samples from the River Kennet to the south of the site to undertake geochemical analysis.	SW1001 – SW1002	Water sample	N/A	N/A
Serviceable monitoring wells for collection of groundwater samples for Free Cyanide.	WS03	Water sample	n/a	0.2-2.0
	WS05	Water sample	n/a	1.0-5.5
	WS06	Water sample	n/a	1.0-3.0
	CP03	Water sample	n/a	5.0-12.0

Table 5.2 Deviations from proposed scope of works

Hole Reference	Scheduled Depth (mbgl)	Final Depth (mbgl)	Comments
BH1001	40.00	0.70	Obstruction – multiple slabs. Relocated to BH1001a.
TT1004	3.00	-	Abandoned due to tree protection area.
TT004	4.00	-	Relocated to the north of the proposed location due to access restrictions and services.
TP1006	4.00	-	Abandoned due to service in vicinity of proposed location
TP1023	4.00	-	Abandoned due to service in vicinity of proposed location

The exploratory hole locations are illustrated on Figure 3.0 (Appendix III), with coordinates presented as Appendix VIII. A geo referenced diagram is currently awaited from the Client which will issued in the Final report.

The ground conditions encountered are indicated on the exploratory hole logs, which are provided in Appendix V.

5.2 Laboratory Testing

5.2.1 Chemical Analysis

Selected soil samples were submitted for a range of chemical analysis. Analytical work was undertaken by Exova Jones in accordance with their UKAS accreditation where applicable.

Selected soil samples were scheduled for a range of chemical analysis including:

- CLEA Metals suite;
- Asbestos ID;
- Asbestos Quantification;
- Speciated Polycyclic Aromatic Hydrocarbons (PAH);
- Banded Total Petroleum Hydrocarbons (TPH);
- Waste Acceptance Criteria (WAC) and,
- pH & Soluble Sulphate 2:1.

Selected water samples were submitted for a range of chemical analysis including:

- CLEA Metals suite;
- Free Cyanide;
- Speciated Polycyclic Aromatic Hydrocarbons (PAH);
- Speciated Total Petroleum Hydrocarbons (TPH);
- Semi-Volatile Organic Compound Testing (SVOCs); and,
- Volatile Organic Compound Testing (VOCs)

Testing results are included within Appendix VI.

5.2.2 Geotechnical Testing

Reference should be made to OEC Report A11057/1.0 for details of geotechnical testing.

5.3 Ground Gas and Groundwater Monitoring

Concentrations of methane (CH₄), carbon dioxide (CO₂) and oxygen (O₂) were measured using an infrared gas analyser (GA5000) and gas flow rates were measured using an internal flow pod. Gas measurements were recorded for a minimum of ninety seconds at each location or until recorded concentrations stabilised for three (3no.) consecutive readings, at which point the maximum concentration of CH₄ and CO₂ together with the lowest concentration of O₂ were recorded.

Groundwater monitoring was undertaken using an electronic dip tape to record the depth to groundwater.

Groundwater sampling was undertaken utilising the low flow (micro-purging) sampling methodology, as preferred by the Environment Agency, to ensure the collection of the highest quality samples, which are most representative of formation water. This technique allows for a sample to be collected directly from formation water without overt agitation of the water column present within the monitoring pipe and therefore minimises the mobilisation of either product residue adhered to the well casing, or of suspended fines with sorbed contaminants and therefore provides a reliable estimate of dissolved-phase contaminants.

Monitoring wells were developed one week post monitoring well installation with wells left to stabilise for one week post sampling. Historic monitoring wells were re developed given the time since first installed in 2016.

Three rounds of ground gas and groundwater results completed during the current phase of works are presented in Appendix VII.

6.0 GROUND AND GROUNDWATER CONDITIONS

6.1 Ground Conditions

6.1.1 Summary of Ground Conditions

The ground investigation generally confirms the published geology with ground conditions encountered summarised below and detailed within the exploratory hole logs in Appendix V.

Co-ordinates and levels of all intrusive locations are summarised in Appendix VIII.

6.1.2 Made Ground

Made Ground was encountered at all locations (BH1001-BH1003, TP1001-TP1026 and TT1001-TT1004) between ground level and a maximum depth of 3.85m bgl (BH1002).

An initial layer of reinforced concrete slab cover was encountered within all intrusive locations to a maximum depth of 0.40m bgl which was progressed through within locations BH1001-BH1003, TP1005-TP1026 and TT1001-TT1004, with further detailing and shown in Appendix V. This was underlain by a variable sequence of strata generally described as a brown and grey gravelly fine to coarse SAND. Gravel is sub angular to angular fine to coarse flint and anthropogenic material comprising brick, concrete, and metal with occasional to frequent cobble sized gravels of brick and concrete. Made Ground also comprised grey and black angular to subrounded fine to coarse sandy GRAVEL of flint and chalk with anthropogenic material comprising of brick, concrete and clay pipe. Sand is medium to coarse grained.

A presumed brick fill was encountered within BH1002 and TP1001 below the units described above from a minimum depth of 0.10 m bgl to a maximum depth of 2.50 m bgl.

6.1.3 Superficial Deposits – Taplow Gravel Member

Superficial deposits of the Taplow Gravel Member were encountered within TP1010, TP1026 and TT1001. Deposits were encountered beneath Made Ground to a maximum depth of 3.10m bgl. Deposits comprised a granular strata summarised below:

The Taplow Gravel Member comprised a dark brownish grey, very gravelly, fine to coarse SAND. Gravel is angular to subrounded, fine to coarse of flint. This was encountered within TP1010, TP1026 and TT1001.

6.1.4 Superficial Deposits – Alluvium

Alluvium was encountered within locations TP1021, TP1022, TT1003 and TT1004 to a maximum depth of 4.00m bgl. Alluvium comprised cohesive strata described as a soft, dark greyish brown, slightly sandy slightly, gravelly CLAY. Sand is fine to coarse. Gravel is subangular to angular of flint.

Superficial deposits were generally encountered in the east of the site.

6.1.5 Bedrock Deposits – Seaford and Newhaven Chalk Formation

Bedrock deposits attributed to the Seaford and Newhaven Chalk Formation were encountered within all Cable Percussive intrusive locations (BH1001-BH1003), TP1001-TP1003, TP1007, TP1011 and TP1013-TP1016 below the Made Ground and superficial deposits. This unit, within trial pit locations, was generally recovered as structureless CHALK composed of slightly sandy GRAVEL and cobbles. Clasts are very weak, low and medium density white with occasional black specks with occasional angular gravels of flint (Grade Dc). Within Cable Percussive locations bedrock was recovered as a structureless CHALK composed of creamish white slightly gravelly SILT. Gravel is weak low-density white with frequent black specks with occasional gravels of flint (Grade Dm). Grade Dm CHALK was encountered to a depth of 40.0m bgl.

It should be noted that SPT N values of $N \geq 25$ were recorded from depths of approximately 17.00m bgl within BH1001a and BH1003. It is therefore considered that the structureless nature of the chalk described from borehole locations (Grade Dm and Grade Dc), within Appendix V, is the result of the percussive drilling technique. SPT N values of $N \geq 25$ are commonly interpreted as being indicative of the presence of structural Chalk, and it is therefore considered that structural Chalk is also present within all borehole locations advanced across the site.

The base of this unit was not encountered during this investigation.

6.2 Groundwater Conditions

Groundwater was encountered as strikes within all Cable Percussive locations, and one trial hole locations close to the River Kennet. Details of the water strikes encountered are summarised in the table below.

Table 6.2 Groundwater Strikes

Location	Strike (m bgl)	Standing (m bgl)*
BH1001a	5.00	4.50
BH1002	4.50 8.00	3.50 6.00
BH1003	4.50	4.00
TT1004	3.00	3.00

*Standing level of water after 20 minutes of groundwater strike as set out within BS5930:2015.

7.0 TIER 1 QUALITATIVE CONTAMINATED LAND RISK ASSESSMENT

OEC has undertaken a Tier 1 qualitative risk assessment to determine if any potential contaminants within the underlying soils in the areas investigated pose an unacceptable level of risk to the identified receptors.

7.1 Human Health Risk Assessment

At a Tier 1 stage the long term (chronic) human health toxicity of the soil has been assessed by comparing the on-site concentrations of organic and inorganic compounds with reference values published by the EA (Contaminated Land Exposure Assessment (CLEA) Soil Guideline Values (SGV)) and where absent, Generic Assessment Criteria (GACs) published by LQM/CIEH Suitable for Use Levels (S4UL) 2015. Based on the proposed residential end use without private gardens, OEC has adopted screening values for a residential end use without home grown produce.

As set out within the Conceptual Site Model assessment of areas below building footprints and limited coverage of areas where further intrusive works were proposed was required. Therefore the risk assessment has been split into the two separate areas within Table 7.1 and 7.2 covering building footprints and areas of embankments, advanced to address geotechnical requirements allowing for the collection of further environmental samples. This is set out below:

Table 7.1 Tier 1 Risk Assessment - Soils Summary of Inorganic and Hydrocarbon Soil Exceedances for a Residential End Use without Homegrown Produce – Building Footprints

Determinant	Units	GAC	n	MC	Loc. of Ex	Pathway	Assessment
Inorganics							
Metals							
Arsenic	mg/kg	40	19	48.2	TP1016 at 0.4-0.6m bgl	1	Further assessment required
Beryllium	mg/kg	1.7	19	5.4	TP1016 at 0.4-0.6m bgl TP1017 at 0.8-1.0m bgl TP1018 at 0.8-1.2m bgl TP1021 at 1.0-1.4m bgl TP1024 at 0.4-0.8m bgl TP1024 at 1.0-1.4m bgl	1	Further assessment required
Lead	mg/kg	310	19	3771	TP1018 at 0.8-1.2m bgl TP1024 at 0.4-0.8m bgl TP1024 at 1.0-1.4m bgl	1	Further assessment required
General Inorganics							
Asbestos	%	0.001 ¹⁾	19	0.848	TP1010 at 0.4-0.6m bgl TP1024 at 0.4-0.8m bgl	4	Further assessment required

					TP1024 at 1.0-1.4m bgl		
Organics							
PAH							
Benzo(b)Fluoranthene ⁽ⁱ⁾	mg/kg	3.9	19	5.49	TP1016 at 0.4-0.6m bgl	3	Further assessment required
Benzo(a)Pyrene	mg/kg	3.2	19	4.12	TP1016 at 0.4-0.6m bgl	3	Further assessment required
Dibenzo(a,h)Anthracene	mg/kg	0.31	19	1.03	TP1017 0.3-0.6 TP1017 0.8-1.0 TP1018 0.8-1.2 TP1024 0.4-0.8 TP1024 1.0-1.4 TP1016 0.4-0.6	3	Further assessment required

Table 7.2 Tier 1 Risk Assessment - Soils Summary of Inorganic and Hydrocarbon Soil Exceedances for a Residential End Use without Homegrown Produce – Embankment

Determinant	Units	GAC	n	MC	Loc. of Ex	Pathway	Assessment
Inorganics							
Metals							
Beryllium	mg/kg	1.7	6	2.1	TP1002 at 0.1-0.5m bgl	1	Further assessment required
Organics							
PAH							
Benzo(b)Fluoranthene ⁽ⁱ⁾	mg/kg	3.9	6	7.52	TP1004 at 0.1-0.5m bgl	3	Further assessment required
Benzo(a)Pyrene	mg/kg	3.2	6	5.17	TP1004 at 0.1-0.5m bgl	3	Further assessment required
Dibenzo(a,h)Anthracene	mg/kg	0.31	6	1.43	TP1002 at 0.1-0.5m bgl TP1003 at 0.1-0.5m bgl TP1004 at 0.1-0.5m bgl	3	Further assessment required

Notes

Main Exposure Pathways: 1 = Ingestion of Soil & Homegrown Produce, 2 = Inhalation of Indoor Vapour, 3 = Dermal Contact & Ingestion of Soil & Homegrown Produce, 4 = Inhalation of Dust, 5 = Inhalation of Indoor Vapour and Ingestion of Soil & Homegrown Produce.

Abbreviations: GAC = General Assessment Criteria, n = number of samples, MC = Maximum Concentration; Loc of Ex = Location of Exceedance.

(i) Benzo (b) Fluoranthene (2.6mg/kg) Benzo (k) Fluoranthene (77mg/kg)

Referring to the Table 7.1 and 7.2 above the results of this direct comparison indicates that there have been exceedances of the adopted Tier I screening criteria as follows:

Building footprints:

Metals:

- Arsenic
- Beryllium
- Lead

General Inorganics:

- Asbestos

PAHs:

- Benzo(b)Fluoranthene
- Benzo(a)Pyrene
- Dibenzo(a,h)Anthracene

Within Embankments:

Metals:

- Beryllium

PAHs:

- Benzo(b)Fluoranthene
- Benzo(a)Pyrene
- Dibenzo(a,h)Anthracene

Each item is further discussed below:

Metals and PAHs

At the encountered concentrations it is considered that soils within the near surface will have the potential to present a significant risk to future site users within areas of soft landscaping where an active pollution pathway would be present.

Therefore it will be necessary to set out suitable mitigation measures within a standalone Remediation Method Statement. Works are likely to involve the incorporation of a clean soil capping system within areas of proposed soft landscaping alongside the outline remedial recommendations set out with the previous reports, as detailed in Section 3.0 of this report.

It is of note that the identified concentrations, with the exception of TPH, reflect impact identified in the previous phase of works summarised in Section 3.0.

We understand that a 2m reduced dig may be proposed for the scheme, therefore it is likely that this aspect will sever a number of pollution linkages negating the requirement for a clean cover system. This aspect should be fully considered within the Remediation Method Statement once final development levels are known.

Asbestos

A total of 25 samples for asbestos screening have been collected from across the site during the current phase of investigation. Results noted to require quantification, and therefore at or above the laboratory Limit of Detection (LoD) are set out within Table 7.3:

Table 7.3 – Asbestos in Soil Results

Sample Location	Result	Tier 1 Criteria	Note
TP1002 0.1-0.5m bgl	<0.001%	<0.001%	No Further Assessment
TP1004 at 0.1-0.5m bgl	<0.001%		No Further Assessment
TP1010 at 0.4-0.6m bgl	0.007%		Further Assessment
TP1013 at 0.4-0.6m bgl	<0.001%		No Further Assessment
TP1014 at 0.5-0.8m bgl	<0.001%		No Further Assessment
TP1016 at 0.4-0.6m bgl	<0.001%		No Further Assessment
TP1026 at 0.2-0.6m bgl	<0.001%		No Further Assessment
TP1017 at 0.3-0.6m bgl	<0.001%		No Further Assessment
TP1017 at 0.8-1.0m bgl	<0.001%		No Further Assessment
TP1018 at 0.3-0.6m bgl	<0.001%		No Further Assessment
TP1018 at 0.8-1.0m bgl	<0.001%		No Further Assessment
TP1021 at 1.0-1.4m bgl	<0.001%		No Further Assessment
TP1024 at 0.4-0.8m bgl	0.004%		Exceeds Tier 1 Human Health Criteria
TP1024 at 1.0-1.4m bgl	0.848%		Exceeds Tier 1 Human Health Criteria and Hazardous Waste Classification

With reference to the above table it is evident that three samples exceed the Tier 1 assessment, with one sample also exceeding the Hazardous Waste Threshold. Waste assessment is considered further within Section 7.4

It is considered that the encountered asbestos results have the potential to present a significant risk to Human Health where an active pollution pathway is present, for example within areas of proposed soft landscaping. Given the presence of elevated asbestos content it is considered that the concentrations are likely to present a significant risk to construction workers where suitable mitigation measures are not in place. It is recommended that reference is made to the Control of Asbestos Regulations 2012 to mitigate the risks to site worker, as set out in Section 8.0.

7.2 Controlled Waters

As set out within Section 3.0 controlled waters beneath the site have been assessed as part of the previous investigation. The scope of the current works was to obtain samples from below the existing building footprints not previously screened, and to obtain further samples from accessible historic monitoring wells (WS03, WS05, WS06 and CP03) to assess the risk to groundwater posed by Free Cyanide.

For the purpose of the Tier 1 assessment, laboratory data has been compared directly to the Freshwater Environmental Quality Standards (EQS), given the proximity of the Canalised River Kennet and potential for hydraulic conductivity with the site. This is as completed previously for the site by earlier phases of investigation.

Table 7.3 – Tier 1 waters assessment - Groundwater

Determinant	Units	Freshwater EQS	No	Max concentration	Location of Exceedances	Assessment
Arsenic	ug/l	50	9	4.4	-	N/A
Boron	ug/l	2000	9	328	-	N/A
Cadmium	ug/l	0.25	9	<0.5	BH1001A BH1002 BH1003	Further Assessment
Chromium (III)	ug/l	4.7	9	<6	BH1001A BH1002 BH1003	Further Assessment
Chromium (VI)	ug/l	3.4	9	12	BH1001A BH1002 BH1003	Further Assessment
Copper	ug/l	10	9	<7	-	N/A
Lead	ug/l	7.2	9	<5	-	N/A
Mercury	ug/l	0.05	9	1	BH1001A BH1002 BH1003	Further Assessment
Nickel	ug/l	20	9	11	-	N/A
Selenium	ug/l	10	9	<3	-	N/A
Sulphate	mg/l	400	9	142	-	N/A
Zinc	ug/l	75	9	49	-	N/A
Cyanide (Free)	ug/l	1	13	<0.001	-	N/A
Organics						
Phenol (total)	ug/l	7.7	9	<0.15	-	N/A
TPH Aliphatic						
Aliphatic C5-C6	ug/l	15,000	9	<10	-	N/A
Aliphatic C6-C8	ug/l	15,000	9	<10	-	N/A
Aliphatic C8-C10	ug/l	300	9	<10	-	N/A
Aliphatic C10-C12	ug/l	300	9	<5	-	N/A
Aliphatic C12-C16	ug/l	30	9	<10	-	N/A
Aliphatic C16-C21	ug/l	90	9	<10	-	N/A
Aliphatic C21-C35	ug/l	90	9	<10	-	N/A
TPH Aromatic						
Aromatic C5-C7	ug/l	10	9	<10	-	N/A
Aromatic C7-C8	ug/l	10	9	<10	-	N/A
Aromatic C8-C10	ug/l	300	9	<10	-	N/A
Aromatic C10-C12	ug/l	100	9	<5	-	N/A
Aromatic C12-C16	ug/l	100	9	<10	-	N/A
Aromatic C16-C21	ug/l	90	9	<10	-	N/A
Aromatic C21-C35	ug/l	90	9	<10	-	N/A
BTEX						
Benzene	ug/l	10	9	<5	-	N/A
Toluene	ug/l	50	9	<5	-	N/A

Ethylbenzene	ug/l	20	9	<5	-	N/A
Xylenes	ug/l	30	9	<5	-	N/A
MTBE	ug/l	15	9	<5	-	N/A
PAH						
Anthracene	ug/l	0.1	9	<0.01	-	N/A
Benzo(a)Pyrene	ug/l	0.05	9	0.03	-	N/A
Fluoranthene	ug/l	0.1	9	0.05	-	N/A
Naphthalene	ug/l	2.4	9	<0.1	-	N/A

Hardness sensitive metal screening values based on an average groundwater hardness of 244.8mg/l

Review of Table 7.3 indicates that the following determinants were encountered above the adopted screening criteria (Environmental Quality Standards):

- Cadmium
- Chromium VI
- Mercury

It is of note that the above samples, whilst categorised as failing the Tier 1 assessment, were actually below the respective laboratory limits of detection with the exception of Chromium VI which was detected above the adopted screening criteria in a single sample on one occasion. However, consideration is given to the site settings, and known historical development in the surrounding area, which would be associated with lower groundwater quality. Reference is also given to the Drinking Water Standard, and it is noted that all concentrations would pass this criteria. Given the site setting with granular deposits immediately overlying the principal chalk aquifer consideration should be given as to whether the DWS is more appropriate. This assessment is in line with the previous phases of investigation where marginal exceedances were encountered, however not considered to pose a significant risk to controlled waters given compliance with DWS and an anticipated regional groundwater concentrations with limited quality.

7.2.1 Free Cyanide:

Review of Table 7.3 indicates that all thirteen groundwater samples, from both historical and newly installed boreholes fall below the Tier 1 screen for Free Cyanide. It is therefore considered that Free Cyanide concentrations are not present at concentrations that have the potential to present a significant risk to Controlled Waters.

7.2.2 Surface Water Samples:

Samples were collected from the River Kennet, both upstream and downstream of the site, with samples screened for a broad screen of determinants, followed by further sampling for free cyanide. The findings of this assessment did not identify any concentrations above the adopted EQS standards, other than being at or below the laboratory Limit of Detection for three metal concentrations. Therefore it is considered that the site is not presenting a risk to surface water features.

Summary of Controlled Waters Risk:

Based on review of the encountered concentrations and the available historic information it is considered that the site does not have the potential to present a significant risk to Controlled Waters.

7.3 Ground Gas Assessment

The potential impact on the development from ground gases has been assessed with reference to standards and guidelines published in CIRIA Report 665 (*Assessing risks posed by hazardous ground gases to buildings*, 2007). It is recommended that the full ground gas assessment and any recommended protection measures are agreed with the local authority prior to their adoption on-site. Furthermore, any potential protection measures should be validated by a suitably qualified engineer.

The results of ground gas monitoring undertaken as part of the current phase of works together with calculated Gas Screening Values are presented within Appendix VII.

Three consecutive visits were undertaken from February to March 2019 within locations BH1001a, BH1002 and BH1003. Four historic boreholes (WS3, WS5, WS6 and CP03), from a previous investigation, was monitored on a single visit on the 26th February 2019. No concentrations of methane (CH₄) greater than the equipment limit of detection (LOD) of 0.1% v/v were recorded during monitoring. However, carbon dioxide (CO₂) concentrations were encountered to a maximum of 4.5% v/v within WS5 in February 2019.

Reference is made to the findings of previous ground gas monitoring undertaken at the site during works completed in 2016. This previous phase of works encountered elevated carbon dioxide results with a maximum of 14.3% and maximum methane result of 3.1% alongside a maximum flow rate of 11.4l/hr.

Whilst significantly lower gas concentrations have been recorded during the current phase of works it is considered that the six visits by CGL cannot be discounted, therefore the recommendations set out within the previous report for a **CS-3** gas classification should be adopted for the development.

Reference should be made to Section 7, Tables 5, 6 & 7 of BS8485:2015 for suitable control measures, which should be set out within a Gas Specification document or presented within a Remediation Method Statement.

7.4 Waste Acceptance Classification

Four composite soil samples were collected from the site, and scheduled for Waste Acceptance Criteria (WAC) testing.

The results of the laboratory testing are presented in Table 7.4 below and certificates are presented within Appendix VI. The origin of WAC samples are presented within Table 7.5.

Table 7.4 Waste Acceptance Criteria (WAC) Summary

Sample Location	Classification	Exceedances	Note
WAC1	Stable Non-reactive	Chromium	Cr – 0.567mg/kg compared to 0.5mg/kg Inert criteria

Sample Location	Classification	Exceedances	Note
	Hazardous Waste in Non-Hazardous Landfill	Total Dissolved Solids	TDS – 4082mg/kg compared to 4000mg/kg Inert criteria
WAC2	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Antimony	Antimony - 0.10mg/kg compared to 0.06mg/kg Inert criteria.
WAC3	Hazardous	Total Organic Carbon Sulphate as SO4 Total Dissolved Solids	TOC – 7.18 % compared to 6% Haz criteria Sulphate – 4003mg/kg compared to 1000mg/kg inert criteria. TDS - 7042mg/kg compared to 4000mg/kg inert criteria.
WAC4	Hazardous	Total Organic Carbon Sulphate as SO4 Total Dissolved Solids	TOC – 13.24% compared to 6% Haz criteria Sulphate - 3253mg/kg compared to 1000mg/kg inert criteria TDS – 5779mg/kg compared to 4000mg/kg inert criteria.

Table 7.5 Origin of WAC samples

Sample Location	Depth	Sample Locations
WAC1	0.3-0.8m bgl	TP1001 - TP1004
WAC2		TP1005, BH1001, BH1001a, TP1012, TP1015, TP1011 and TP1013
WAC3		TP1017- TP1022 ,TP1024 and BH1004
WAC4		TT1004, TT1003, TT1002, TT1001

As set out in Section 7.3, asbestos impact was identified within three of twenty five samples from the current round of works with values above the limit of detection of <0.001%. It is of note that a single sample yielded an exceedance of the hazardous threshold, with a content of 0.848% compared to a hazardous waste threshold of 0.1%. This result was recorded within a sample from TP1024 at a depth of 1.0-1.4m bgl. Soils in this area with an asbestos content of >0.1% will be classified as Hazardous material.

Please note that OEC have provided an anticipated Waste Classification of soil derived from values presented within the laboratory results. However, the acceptance criteria for materials are dependent on the license held by the individual landfill site. As a result, waste classifications may vary between landfill sites and it is therefore recommended that the test results are submitted to the preferred waste disposal site.

7.5 Supply Pipe Infrastructure

Contact should be made with the water supply provider to determine their requirements for water supply pipework given the presence of elevated concentrations within the near surface made ground. It is considered that barrier pipework will be required where pipework infrastructure will be in contact with made ground, however this should be assessed inline with UKWIR guidance.

8.0 REVISED CONCEPTUAL SITE MODEL

Following completion of the Tier 1 risk assessment the following active pollution pathway was identified based on a residential end use without homegrown produce.

Source	Potential Receptors	Likelihood of Occurrence	Discussion of Pollutant Linkage
Elevated concentrations of metals and PAHs within areas of the site not investigated previously.	Future Site Users	Likely	Identified concentrations are considered to have the potential to present a significant risk to human health within areas of proposed soft landscaping, and therefore remedial works will be required through the placement of a clean soil capping system across the site. The details of which should be set out within a standalone RMS and submitted to the Local Authority for approval.
Asbestos concentrations within locations TP1010, TP1024 0.4-0.8m bgl and 1.0-1.4m bgl	Future Site Users	Likely	Identified concentrations are considered to have the potential to present a significant risk to human health, and therefore remedial works will be required through the placement of a clean soil capping system. The details of which should be set out within a standalone RMS and submitted to the Local Authority for approval.
	Construction workers	Likely	Asbestos fibres identified in near surface Made Ground, are considered to have the potential to present a significant risk to human health during the construction phase of development. It is recommended that a risk assessment is undertaken in accordance with the Control of Asbestos Regulations (2012) for tasks scheduled to be undertaken in the affected area.
Ground Gas	Future Site Users	Likely	Ground gas protection measures in line with CS-3 should be adopted for the site. Reference should be made to Section 7, Tables 5, 6 & 7 of BS8485:2015 for suitable control measures, which should be set out within a Gas Specification document.

The above Revised Conceptual Model relates to the current round of works only. The previous reports set out in Section 1.1 should be reviewed and a Remediation Method Statement prepared to address the active pollution linkages identified by all rounds of investigation. The Remediation Method Statement should be produced and submitted to the Local Authority post acceptance of all phases of reporting by the regulator.

9.0 CONCLUSIONS & RECOMMENDATIONS

Revised Conceptual Site Model

Following completion of the Tier 1 risk assessment, elevated concentrations were encountered within the near surface which are considered to have the potential to present a significant risk to future site users.

The presence of asbestos within two locations above the adopted screening criteria were also considered to have the potential to present a significant risk to both future site users and construction workers.

Ground gas concentrations identified during previous rounds of monitoring, alongside results from the current phase of works were deemed to pose a risk to the development, albeit that current readings did not highlight elevated concentrations. Given this it was recommended that gas protection measures in line with a CS-3 classification should be adopted for the development.

Recommendations

This document forms a supplementary Geo-Environmental assessment of the site, providing information on areas not previously investigated during earlier phases of works. It is recommended that this document is read alongside the reports prepared by others, as listed in Section 1.1 of this document.

The current phase of works has identified concentrations within near surface soils that are considered to have the potential to present a significant risk to human health, which is generally in line with previous phases of investigation, therefore remedial works will be required. This aspect, alongside the risk assessment set out in earlier phases of work should be presented within a separate Remediation Method Statement post finalisation of development layout, and final site levels. Consideration should be given to any basement car parking, and the impact this may have on mitigation measures. The Remediation Method Statement should be produced and submitted to the Local Authority post acceptance of all phases of reporting by the regulator.

Currently, and assuming development of the existing ground surface it is likely that remedial measures will involve placement of a clean soil capping system and gas protection measures in line with a CS-3 classification. Reference should be made to the previous reports for the scheme, with all phases of works considered in the final Remediation Method Statement. As necessary a gas protection measures specification should be produced for the development, although it may be possible to include this within the Remediation Method Statement.

In order to assess the risk to construction workers it is recommended that a risk assessment is undertaken in accordance with the Control of Asbestos Regulations (2012) for tasks scheduled to be undertaken in the area affected by asbestos impact.

Should a piled solution be sought for foundations it is recommended that a Piling Risk Assessment is produced, given the classification of the underlying chalk as a Principal Aquifer. Contact should be made with the water supply provider to determine their requirements for water supply pipework given the presence of elevated concentrations within the near surface made ground.

Should any previously unidentified obvious visual or olfactory evidence of contamination be encountered in areas of the site during site clearance and/or ground works, then site works should be halted, and contact made with a suitably qualified environmental consultant. As determined appropriate by the Consultant, further investigation and sampling may be required to determine the appropriate actions. Upon completion contact should be made with the relevant regulatory authority to achieve signoff of the works.

APPENDIX I

LIMITATIONS

-
1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between OE Ltd and the Client as indicated in Section 1.2.
 2. For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. When using the information, it has been assumed it is correct. No attempt has been made to verify the information.
 3. This report has been produced in accordance with current UK policy and legislative requirements for land and groundwater contamination, which are enforced, by the local authority and the Environment Agency. Liabilities associated with land contamination are complex and requires advice from legal professionals.
 4. During the site walkover reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not been made known or accessible.
 5. Access considerations, the presence of services and the activities being carried out on the site limited the locations where sampling locations could be installed and the techniques that could be used.
 6. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.
 7. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials this is for indicative purposes only and do not constitute or replace full and proper surveys.
 8. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.
 9. OE cannot be held responsible for any use of the report or its contents for any purpose other than that for which it was prepared. The copyright in this report and other plans and documents prepared by OE is owned by them and no such plans or documents may be reproduced, published or adapted without written consent. Complete copies of this may, however, be made and distributed by the client as is expected in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied, but no professional liability or warranties shall be extended to other parties by OE in this connection without their explicit written agreement there to by OE.
 10. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.
-

APPENDIX II

GLOSSARY

AST	ABOVE GROUND STORAGE TANK
BGS	BRITISH GEOLOGICAL SURVEY
BSI	BRITISH STANDARDS INSTITUTE
BTEX	BENZENE, TOLUENE, ETHYLBENZENE, XYLENES
CIEH	CHARTERED INSTITUTE OF ENVIRONMENTAL HEALTH
CIRIA	CONSTRUCTION INDUSTRY RESEARCH ASSOCIATION
CLEA	CONTAMINATED LAND EXPOSURE ASSESSMENT
CSM	CONCEPTUAL SITE MODEL
DNAPL	DENSE NON-AQUEOUS PHASE LIQUID (CHLORINATED SOLVENTS, PCB)
DWS	DRINKING WATER STANDARD
EA	ENVIRONMENT AGENCY
EQS	ENVIRONMENTAL QUALITY STANDARD
GAC	GENERAL ASSESSMENT CRITERIA
GL	GROUND LEVEL
GSV	GAS SCREENING VALUE
HCV	HEALTH CRITERIA VALUE
ICSM	INITIAL CONCEPTUAL SITE MODEL
LNAPL	LIGHT NON-AQUEOUS PHASE LIQUID (PETROL, DIESEL, KEROSENE)
ND	NOT DETECTED
LMRL	LOWER METHOD REPORTING LIMIT
NR	NOT RECORDED
PAH	POLY AROMATIC HYDROCARBON
PCB	POLY-CHLORINATED BIPHENYL
PID	PHOTO IONISATION DETECTOR
QA	QUALITY ASSURANCE
SGV	SOIL GUIDELINE VALUE
SPH	SEPARATE PHASE HYDROCARBON
SP.TPH (CWG)	TOTAL PETROLEUM HYDROCARBON (CRITERIA WORKING GROUP)
SPT	STANDARD PENETRATION TEST
SVOC	SEMI VOLATILE ORGANIC COMPOUND
UST	UNDERGROUND STORAGE TANK
VCCS	VIBRO CONCRETE COLUMNS
VOC	VOLATILE ORGANIC COMPOUND
WTE	WATER TABLE ELEVATION

UNITS

M	METRES
KM	KILOMETRES
%	PERCENT
%V/V	PERCENT VOLUME IN AIR
MB	MILLI BARS (ATMOSPHERIC PRESSURE)
L/HR	LITRES PER HOUR
µG/L	MICROGRAMS PER LITRE (PARTS PER BILLION)
PPB	PARTS PER BILLION
MG/KG	MILLIGRAMS PER KILOGRAM (PARTS PER MILLION)
PPM	PARTS PER MILLION
MG/M ³	MILLIGRAM PER METRE CUBED
M BGL	METRES BELOW GROUND LEVEL
M BCL	METRE BELOW COVER LEVEL

MAOD	METRES ABOVE ORDNANCE DATUM (SEA LEVEL)
KN/M ²	KILO NEWTONS PER METRE SQUARED
μM	MICRO METRE

APPENDIX III

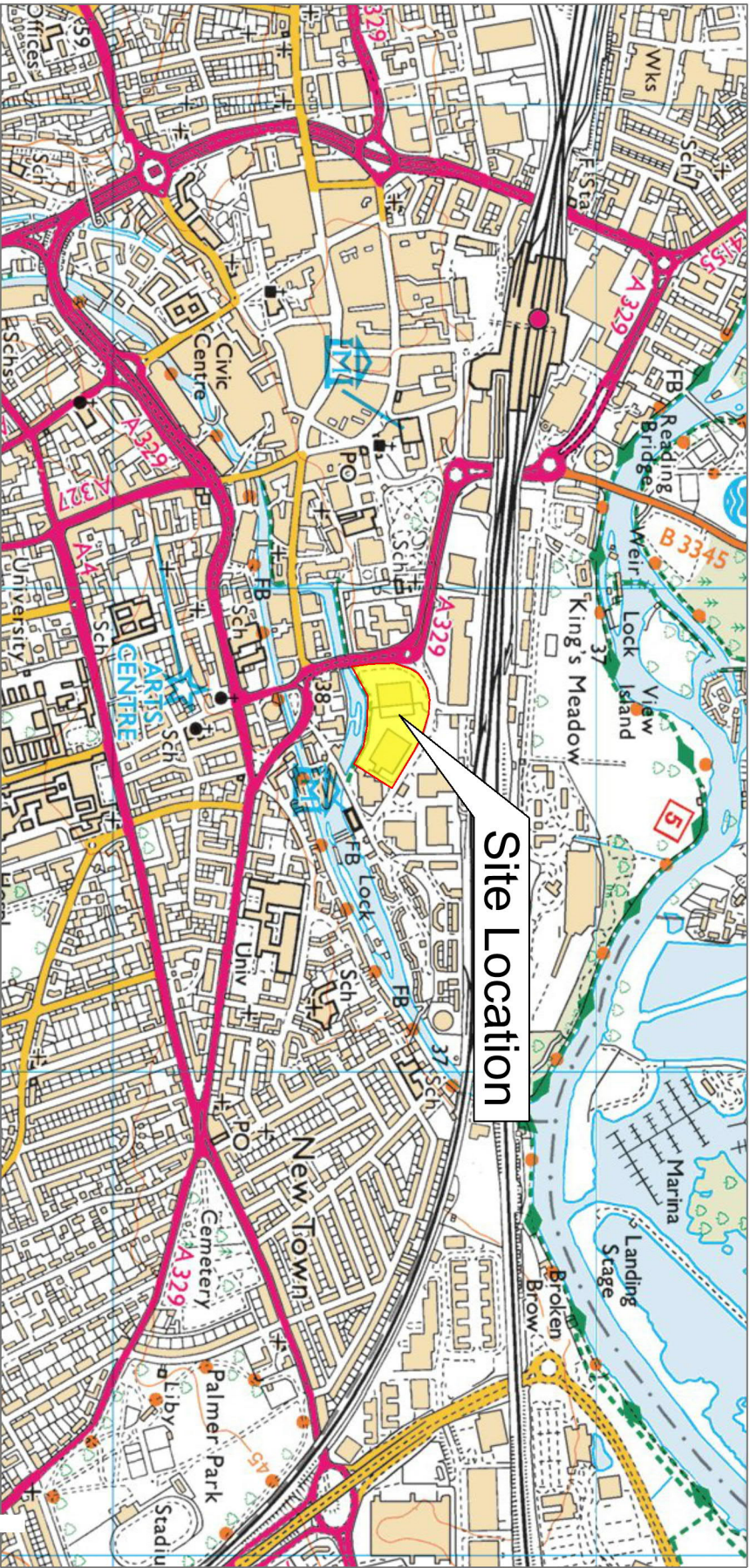
DRAWINGS

Key



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Job Title:

Kenavon Drive, Reading

Client:

Berkeley Homes (Western) Ltd

Project No:

A11057

Date:

06/03/2019

Drawing Title:

Figure 1.0 - Site Location Plan

Drawn By:

G.Larcombe

Authorised By:

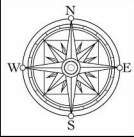
T.Mitchell

Scale:

1 Square = 1km

Notes:

Key



The contractor is responsible for checking dimensions, distances and volumes. Any discrepancy to be verified with the architect before proceeding with the work. Where all three are covered by drawings to different scales the larger scale drawing is to be worked to.
Do not scale drawing. Figure dimensions to be worked to in all cases.
CSM REGULA 47/2016 2016. All current drawings and specifications for the project must be read in conjunction with the Design's Impact and Environment Assessment Record.
All intellectual property rights reserved.

Revisions

1. Entrance steps and kerb realigned, 4no relocated cycle stands, 1no relocated parking bay. Door opening inwardly.
2. Access amended in response for refuse vehicle loading.
3. Riverside ramp to replace proposed steps.

Rev	Date	Description	By	Chk
-----	------	-------------	----	-----

Kenavon Drive Landscape
Illustrative Landscape Masterplan

AL6086-2010
Planning Addendum
Drawn: MS Checked: AJ Date: Feb 2017 Scale: @ A1 500

PRP
PRP-00.uk
London
020 7653 1205

The client must not amend any drawing, design or other intellectual property produced by Omnia Environmental Consulting (OEC) without permission in writing from OEC in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made OEC shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or intellectual property.

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Sewage Works,
Fareham,
PO15 5TH
T: 01489 808088
E: info@omnia-consulting.co.uk
W: www.omnia-consulting.co.uk



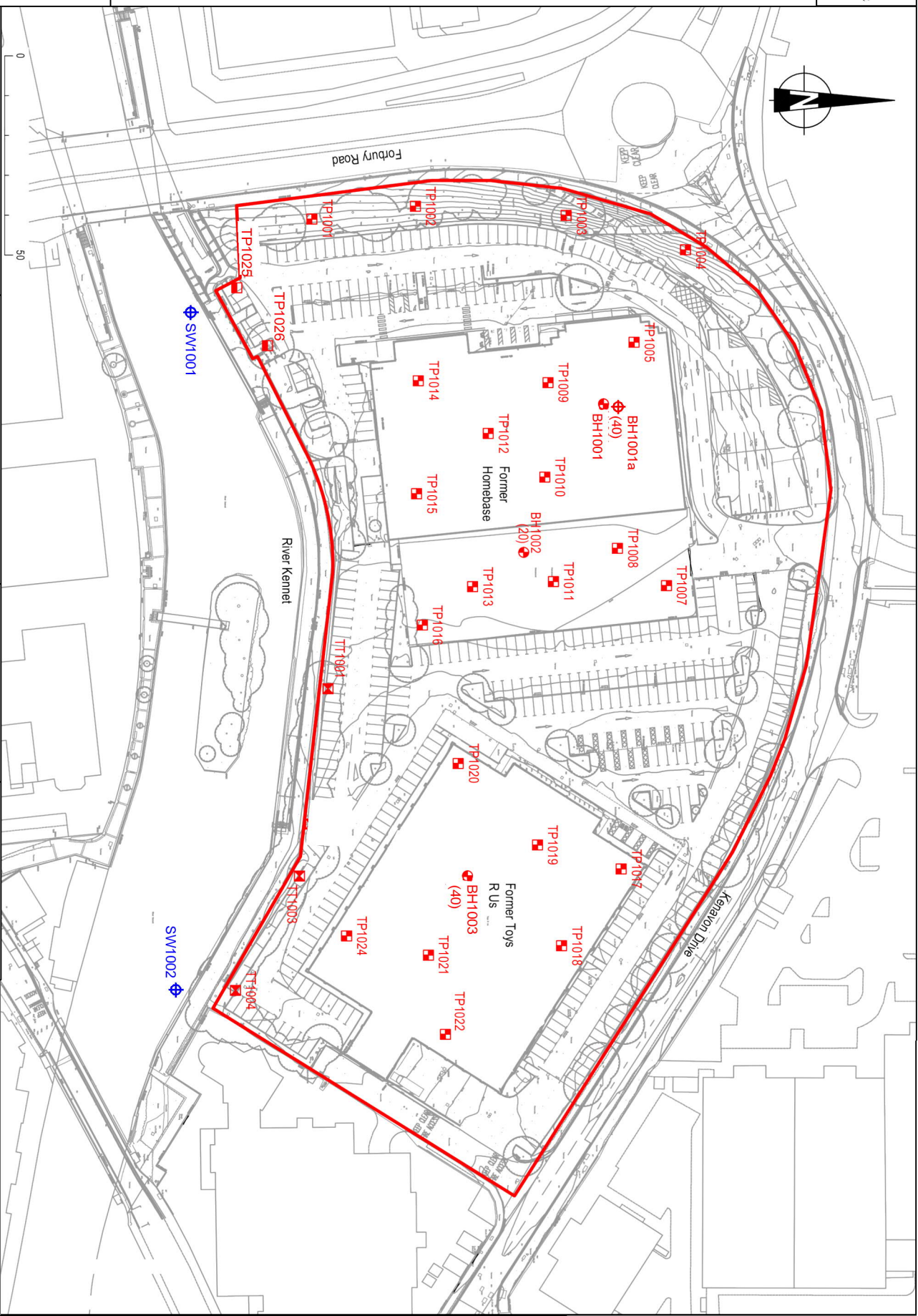
Job Title:	Client:	Project No:	Date:	Drawing Title:
Kenavon Drive, Reading	Berkeley Homes (Western) Ltd	A11057	06/03/2019	Figure 2.0 - Proposed Development Plan
		Drawn By:	Authorised By:	
		G.Larcombe	T.Mitchell	
		Scale:	Notes:	
		NTS		

Key



Approximate locations of intrusive boreholes.

Final version of borehole location plan to be issued once a geo-referenced map is obtained and the input of the location co-ordinates.



The client will not amend any drawing, design or other intellectual property produced by Orma Environmental Consulting (OEC) without permission in writing from OEC in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made OEC shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or intellectual property.

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ENVIRONMENTAL CONSULTING

Job Title:

Client:

Kenavon Drive, Reading

Berkeley Homes (Western) Ltd

Project No: A11057

Date: 06/03/2019

Drawing Title:

0.5
1
1.5
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3
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6.5
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7.5
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8.5
9
9.5
10

Figure 3.0 - Intrusive Location

Drawn By:

G.Larcombe

Authorised By:

T.N

Scale:

Notes:

APPENDIX IV
PHOTOGRAPHS



Photograph 1 Site entrance from Kenavon Drive.



Photograph 2 Facing north-west showing northern extent of site, site compound and site parking area.



Photograph 3 Site compound area.



Photograph 4 Facing south-west showing stockpile of demolition material.



Photograph 5 Facing north-east showing extent of site at slab level.



Photograph 6 Tree protection zone in the south of the site near the River Kennet.

APPENDIX V
EXPLORATORY HOLE LOGS



10 Manor Court
2 Barnes Wallis Road
Segensworth
Fareham
PO15 5TH

Borehole Log

Borehole No.

BH1001

Sheet 1 of 1

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472214.25 - 173599.36

Hole Type
CP

Location: Reading, RG1 3HS

Level: 39.33

Scale
1:50

Client: Berkeley Homes (Western) Ltd

Dates: 30/01/2019 - 30/01/2019

Logged By
SS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30	39.03		Concrete Slab - reinforced with steel rebar approximately 12mm diameter. (MADE GROUND)	
					0.70	38.63		Recovered as red angular to subangular medium to coarse GRAVEL of brick and concrete with frequent cobbles of brick. Presumed intact relic brick foundation (MADE GROUND) End of borehole at 0.70 m	1
									2
									3
									4
									5
									6
									7
									8
									9
									10

Remarks

Cleared by Cable Avoidance Tool and utilities clearance.

Hole terminated due to concrete obstruction.





10 Manor Court
2 Barnes Wallis Road
Segensworth
Fareham
PO15 5TH

Borehole Log

Borehole No.

BH1001a

Sheet 1 of 4

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472215.31 - 173591.54

Hole Type
CP

Location: Reading, RG1 3HS

Level: 39.31

Scale
1:50

Client: Berkeley Homes (Western) Ltd

Dates: 04/02/2019 - 06/02/2019

Logged By
SS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.50 - 0.60	D		0.40	38.91		Concrete Slab - reinforced with steel rebar approximately 12mm diameter. (MADE GROUND)	
		0.50 - 1.00	B					Brown gravelly fine to coarse SAND. Gravel is subangular to angular fine to coarse of flint brick and concrete (MADE GROUND)	1
		1.00 - 1.10	D						
		1.30 - 1.40	D						
		1.30 - 1.70	B						
		2.00		N=14 (2,3/3,3,4,4)					2
		2.00 - 2.45	D		2.40	36.91			
		2.50 - 2.60	D						
		2.50 - 3.00	B						
		3.00		N=3 (1,1/1,0,1,1)				Recovered as structureless CHALK composed of cream slightly gravelly sandy SILT. Gravel is very weak low density white with frequent black specks and rounded - Grade Dm. (SEAFORD AND NEWHAVEN CHALK FORMATION)	3
		3.00 - 3.45	D						
		3.50 - 3.60	D						
		4.00		N=2 (1,0/1,0,1,0)					4
		4.00 - 4.45	D						
		4.50 - 4.60	D						
		5.00		N=5 (1,1/2,1,1,1)					5
		5.00 - 5.45	D						
		6.00 - 6.10	D						6
		6.50		N=6 (2,2/1,2,1,2)					
		6.50 - 6.95	D						7
		7.50 - 7.60	D						
		8.00		N=15 (3,3/4,4,3,4)					8
		8.00 - 8.45	D						
		9.00 - 9.45	D						9
		9.50		N=15 (3,3/4,4,3,4)					
		9.50 - 9.95	D						10

Continued on next sheet

Remarks

Cleared by Cable Avoidance Tool and utilities clearance.

Groundwater strike at 5.00m bgl rising to 4.50m bgl after 20 minutes.





10 Manor Court
2 Barnes Wallis Road
Segensworth
Fareham
PO15 5TH

Borehole Log

Borehole No.

BH1001a

Sheet 2 of 4

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472215.31 - 173591.54

Hole Type
CP

Location: Reading, RG1 3HS

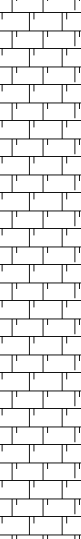
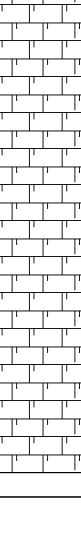
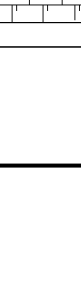
Level: 39.31

Scale
1:50

Client: Berkeley Homes (Western) Ltd

Dates: 04/02/2019 - 06/02/2019

Logged By
SS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		11.00 11.00 - 11.45	D	N=17 (5,5/6,3,4,4)					11
		12.50 12.50 - 12.95	D	N=20 (4,5/4,5,5,6)					12
		14.00 14.00 - 14.45	D	N=19 (4,4/5,4,5,5)					13
		15.50 15.50 - 15.95	D	N=15 (6,8/3,3,4,5)					14
		17.00 17.00 - 17.45	D	N=34 (5,5/6,8,8,12)					15
		18.50 18.50 - 18.95	D	N=25 (5,6/6,6,7,6)					16
		20.00		N=23 (4,4/5,5,6,7)					17
								Continued on next sheet	18

Remarks

Cleared by Cable Avoidance Tool and utilities clearance.

Groundwater strike at 5.00m bgl rising to 4.50m bgl after 20 minutes.





10 Manor Court
2 Barnes Wallis Road
Segensworth
Fareham
PO15 5TH

Borehole Log

Borehole No.

BH1001a

Sheet 3 of 4

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472215.31 - 173591.54

Hole Type
CP

Location: Reading, RG1 3HS

Level: 39.31

Scale
1:50

Client: Berkeley Homes (Western) Ltd

Dates: 04/02/2019 - 06/02/2019

Logged By
SS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		20.00 - 20.45	D						
		21.50 21.50 - 21.95	D	N=23 (5,5/6,6,5,6)					21
		23.00 23.00 - 23.45	D	N=29 (4,5/6,7,8,8)					22
		24.50 24.50 - 24.95	D	100 (20,5/100 for 225mm)					23
		26.00 26.00 - 26.45	D	N=29 (6,6/6,7,8,8)					24
		27.50 27.50 - 27.95	D	N=50 (6,6/20,20,8,2)					25
		29.00 29.00 - 29.45	D	N=41 (8,9/9,10,11,11)					26
					30.00	9.31			27
									28
									29
									30

Continued on next sheet

Remarks

Cleared by Cable Avoidance Tool and utilities clearance.

Groundwater strike at 5.00m bgl rising to 4.50m bgl after 20 minutes.





10 Manor Court
2 Barnes Wallis Road
Segensworth
Fareham
PO15 5TH

Borehole Log

Borehole No.

BH1001a

Sheet 4 of 4

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472215.31 - 173591.54

Hole Type
CP

Location: Reading, RG1 3HS

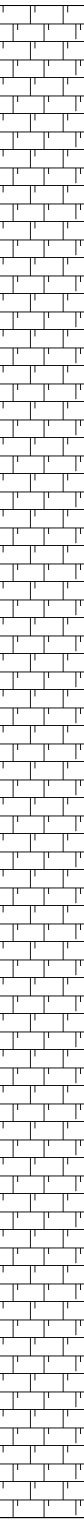
Level: 39.31

Scale
1:50

Client: Berkeley Homes (Western) Ltd

Dates: 04/02/2019 - 06/02/2019

Logged By
SS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description						
		Depth (m)	Type	Results										
		30.50 30.50 - 30.95	D	N=52 (8,10/10,12,14,16)	40.00	-0.69		Recovered as soft to firm white CHALK with flints (Drillers description) (SEAFORD AND NEWHAVEN CHALK FORMATION)	31					
		32.00 32.00 - 32.45							D	N=50 (9,10/12,16,18,4)	32			
		33.50 33.50 - 33.95	D	50 (9,11/50 for 225mm)							33			
		35.00 35.00 - 35.45							D	N=125 (12,13/125 for 225mm)	34			
		36.00 36.00 - 36.45	D	50 (14,11/50 for 225mm)							35			
		37.50 37.50 - 37.95							D	50 (20,5/50 for 150mm)	36			
		39.00 39.00 - 39.45	D	50 (20,5/50 for 225mm)							37			
												38		
											39			
													40	

Remarks

Cleared by Cable Avoidance Tool and utilities clearance.

Groundwater strike at 5.00m bgl rising to 4.50m bgl after 20 minutes.





10 Manor Court
2 Barnes Wallis Road
Segensworth
Fareham
PO15 5TH

Borehole Log

Borehole No.

BH1002

Sheet 1 of 3

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472246.85 - 173568.97

Hole Type
CP

Location: Reading, RG1 3HS

Level: 39.17

Scale
1:50

Client: Berkeley Homes (Western) Ltd

Dates: 22/01/2019 - 23/01/2019

Logged By
SS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20 - 0.50	ES	N=24 (2,3/5,5,6,8)	0.10	39.07		Concrete Slab - reinforced with steel rebar approximately 12mm diameter. (MADE GROUND)	1
		0.50 - 0.60	D					Recovered as red angular to subangular medium to coarse GRAVEL of brick and concrete with frequent cobbles of brick. Presumed intact relic brick foundation (MADE GROUND)	
		0.50 - 1.00	B						
		0.80 - 1.20	ES						
		1.00 - 1.10	D						
		1.20							
		1.20 - 1.70	B	N=14 (3,3/3,4,4,3)				Recovered as structureless CHALK composed of slightly sandy silty subangular to rounded GRAVEL. Clasts are weak low to medium density white with frequent black specks. Matrix is creamish white. Frequent angular to subangular medium to coarse of flint. (Grade Dc) (SEAFORD AND NEWHAVEN CHALK FORMATION)	2
		1.50 - 1.60	D						
		3.50	B						
		3.50	D						
		3.50 - 3.80	ES	N=13 (2,2/3,3,4,3)	3.85	35.32		Recovered as structureless CHALK composed of cream slightly gravelly sandy SILT. Gravel is very weak low density white with frequent black specks and rounded - Grade Dm. (SEAFORD AND NEWHAVEN CHALK FORMATION)	3
		4.00	D						
		4.00		N=15 (4,4/5,3,3,4)					4
		4.50	D						
		4.50 - 5.00	ES	N=16 (4,4/4,3,4,5)	4.50	34.67			5
		5.00	D						
		5.00		N=10 (4,3/2,2,3,3)					6
		6.00	D						
		6.50	D	N=16 (4,4/4,3,4,5)					7
		6.50							
		7.50	D	N=10 (4,3/2,2,3,3)					8
		8.00	D						
		8.00		N=10 (4,3/2,2,3,3)					9
		9.00	D						
		9.50	D	N=10 (4,3/2,2,3,3)					10
		9.50							
Continued on next sheet									

Continued on next sheet

Remarks

Cleared by Cable Avoidance Tool and utilities clearance.

Groundwater strike at 4.50m bgl rising to 3.50m bgl after 20 minutes. Groundwater strike at 8.00m bgl rising to 6.00m bgl after 20 minutes.



Borehole Log

Borehole No.

BH1002

Sheet 2 of 3

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472246.85 - 173568.97

Hole Type
CP

Location: Reading, RG1 3HS

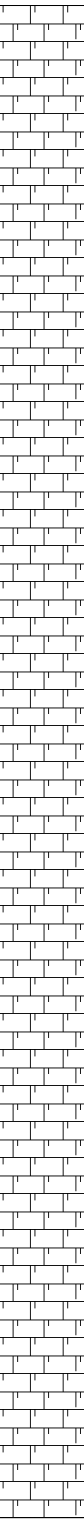
Level: 39.17

Scale
1:50

Client: Berkeley Homes (Western) Ltd

Dates: 22/01/2019 - 23/01/2019

Logged By
SS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		10.50	D	N=10 (4,3/2,2,3,3)						
		11.00 11.00	D							
		12.00	D							N=18 (3,4/4,4,5,5)
		12.50 12.50	D							
		13.50	D	N=21 (3,5/5,4,6,6)						
		14.00 14.00	D							
		15.00	D							N=16 (3,4/4,4,3,5)
		15.50 15.50	D							
		17.00 17.00	D	N=21 (4,4/5,5,6,5)						
		18.50 18.50	D							
		20.00	D							Continued on next sheet

Remarks

Cleared by Cable Avoidance Tool and utilities clearance.

Groundwater strike at 4.50m bgl rising to 3.50m bgl after 20 minutes. Groundwater strike at 8.00m bgl rising to 6.00m bgl after 20 minutes.





10 Manor Court
2 Barnes Wallis Road
Segensworth
Fareham
PO15 5TH

Borehole Log

Borehole No.

BH1002

Sheet 3 of 3

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472246.85 - 173568.97

Hole Type
CP

Location: Reading, RG1 3HS

Level: 39.17

Scale
1:50

Client: Berkeley Homes (Western) Ltd

Dates: 22/01/2019 - 23/01/2019

Logged By
SS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		20.00		50 (20,5/50 for 150mm)				End of borehole at 20.00 m	
									21
									22
									23
									24
									25
									26
									27
									28
									29
									30

Remarks

Cleared by Cable Avoidance Tool and utilities clearance.

Groundwater strike at 4.50m bgl rising to 3.50m bgl after 20 minutes. Groundwater strike at 8.00m bgl rising to 6.00m bgl after 20 minutes.





10 Manor Court
2 Barnes Wallis Road
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Fareham
PO15 5TH

Borehole Log

Borehole No.

BH1003

Sheet 1 of 4

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472339.38 - 173570.77

Hole Type
CP

Location: Reading, RG1 3HS

Level: 38.52

Scale
1:50

Client: Berkeley Homes (Western) Ltd

Dates: 06/02/2019 - 08/02/2019

Logged By
SS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
		0.40 - 0.80	ES	N=1 (1,0/0,1,0,0)	0.30	38.22		Concrete Slab - reinforced with steel rebar approximately 12mm diameter. (MADE GROUND)	1	
		0.50 - 0.60	D		1.00	37.52		Brown gravelly fine to coarse SAND. Gravel is subangular to angular fine to coarse flint concrete and brick. (MADE GROUND)		
		0.50 - 1.00	B					Dark greyish brown gravelly fine to coarse SAND. Gravel is subangular to angular fine to coarse of flint brick and concrete. (MADE GROUND)		
		1.00 - 1.10	D	N=4 (1,0/0,2,1,1)	2.50	36.02		Soft greyish brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to angular fine to coarse flint and brick. (MADE GROUND)	2	
		1.00 - 1.40	ES							
		1.20	D							
		1.20 - 1.65	D	N=10 (2,2/2,3,3,2)	3.50	35.02		Recovered as structureless CHALK composed of cream slightly gravelly sandy SILT. Gravel is very weak low density white with frequent black specks and rounded - Grade Dm. (SEAFORD AND NEWHAVEN CHALK FORMATION)	3	
		1.50 - 1.60	D							
		2.00	D							
		2.00 - 2.45	D	N=6 (1,2/1,1,2,2)	5.00	5.00 - 5.45			4	
		2.50 - 2.60	D							
		2.60 - 2.80	ES							
		3.00	D	N=2 (1,0/0,1,0,1)	6.00	6.00 - 6.10			5	
		3.00 - 3.45	D							
		3.50 - 3.60	D							
		3.50 - 4.00	B	N=19 (3,5/5,4,5,5)	7.00	7.00 - 7.45			6	
		3.60 - 3.80	ES							
		4.00	D							
		4.00 - 4.45	D	N=2 (1,0/0,1,0,1)	8.00	8.00 - 8.45			7	
		4.50 - 4.60	D							
		5.00	D							
		5.00 - 5.45	D	N=19 (3,5/5,4,5,5)	9.00	9.00 - 9.10			8	
		6.00 - 6.10	D							
		6.50 - 6.95	B							
		7.00 - 7.45	B	N=19 (3,5/5,4,5,5)	9.50	9.50 - 9.95			9	
		8.00	D							
		8.00 - 8.45	D							
		9.00 - 9.10	D	N=19 (3,5/5,4,5,5)	10.00	10.00 - 10.45			10	
		9.50 - 9.95	B							
10.00 - 10.45	B	Continued on next sheet								

Continued on next sheet

Remarks

Cleared by Cable Avoidance Tool and utilities clearance.
Groundwater strike at 4.50m bgl rising to 4.00m bgl after 20 minutes.





10 Manor Court
2 Barnes Wallis Road
Segensworth
Fareham
PO15 5TH

Borehole Log

Borehole No.

BH1003

Sheet 2 of 4

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472339.38 - 173570.77

Hole Type
CP

Location: Reading, RG1 3HS

Level: 38.52

Scale
1:50

Client: Berkeley Homes (Western) Ltd

Dates: 06/02/2019 - 08/02/2019

Logged By
SS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		11.00 11.00 - 11.45	D	N=20 (4,5/5,6,5,4)					11
		12.50 - 12.95	B						12
		13.00 - 13.45	B						13
		14.00 14.00 - 14.45	D	N=20 (10,12/5,5,6,4)					14
		15.50 15.50 - 15.95	D	N=25 (5,6/6,7,6,6)					15
		17.00 17.00 - 17.45	D	N=22 (4,5/5,6,5,6)					16
		18.50 18.50 - 18.65	D	N=50 (25 for 60mm/50 for 90mm)					17
		20.00		N=21 (10,12/5,5,5,6)					18
								Continued on next sheet	19
									20

Remarks

Cleared by Cable Avoidance Tool and utilities clearance.
Groundwater strike at 4.50m bgl rising to 4.00m bgl after 20 minutes.





10 Manor Court
2 Barnes Wallis Road
Segensworth
Fareham
PO15 5TH

Borehole Log

Borehole No.

BH1003

Sheet 3 of 4

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472339.38 - 173570.77

Hole Type
CP

Location: Reading, RG1 3HS

Level: 38.52

Scale
1:50

Client: Berkeley Homes (Western) Ltd

Dates: 06/02/2019 - 08/02/2019

Logged By
SS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		20.00 - 20.45	D						
		21.50 21.50 - 21.95	D	N=28 (6,6/6,7,7,8)					21
		23.00 23.00 - 23.40	D	N=54 (8,12/54 for 250mm)					22
		24.50 24.50 - 24.95	D	N=32 (6,6/7,8,8,9)					23
		26.00 26.00 - 26.45	D	N=32 (25,0/7,8,8,9)					24
		27.50 27.50 - 27.95	D	N=38 (8,8/9,10,10,9)					25
		29.00 29.00 - 29.45	D	N=43 (6,7/9,9,12,13)					26
									27
					30.00	8.52		Continued on next sheet	28
									29
									30

Remarks

Cleared by Cable Avoidance Tool and utilities clearance.
Groundwater strike at 4.50m bgl rising to 4.00m bgl after 20 minutes.





10 Manor Court
2 Barnes Wallis Road
Segensworth
Fareham
PO15 5TH

Borehole Log

Borehole No.

BH1003

Sheet 4 of 4

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472339.38 - 173570.77

Hole Type
CP

Location: Reading, RG1 3HS

Level: 38.52

Scale
1:50

Client: Berkeley Homes (Western) Ltd

Dates: 06/02/2019 - 08/02/2019

Logged By
SS

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		30.50 30.50 - 30.95	D	N=50 (8,9/9, 11, 14, 16)				Recovered as structureless CHALK composed of slightly sandy silty subangular to rounded GRAVEL. Clasts are weak low to medium density white with frequent black specks. Matrix is creamish white. Frequent angular to subangular medium to coarse of flint. (Grade Dc) (SEAFORD AND NEWHAVEN CHALK FORMATION)	31
		32.00 32.00 - 32.33	D	N=60 (15, 10/15, 18, 22, 5)					32
		33.50 33.50 - 33.80	D	N=60 (25 for 140mm/60 for 160mm)					33
		35.00 35.00 - 35.13	D	N=50 (25 for 50mm/50 for 80mm)					34
		36.50 36.50 - 36.68	D	N=60 (25 for 80mm/60 for 100mm)					35
		38.00 38.00 - 38.21	D	N=50 (25 for 78mm/50 for 135mm)					36
		39.50 39.50 - 39.65	D	N=50 (25 for 60mm/50 for 90mm)					37
									38
									39
									40
			40						

Remarks

Cleared by Cable Avoidance Tool and utilities clearance.
Groundwater strike at 4.50m bgl rising to 4.00m bgl after 20 minutes.





10 Manor Court
2 Barnes Wallis Road
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PO15 5TH

Trial Pit Log

Trialpit No

TP1001

Sheet 1 of 1

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472161.97 - 173535.31
Level: 39.89

Date
17/01/2019

Location: Reading, RG1 3HS

Dimensions (m): 2.2

Client: Berkeley Homes (Western) Ltd

Depth
3.00

0.7

Scale
1:20
Logged
SS

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10 - 0.50	ES					Dark brownish grey gravelly fine to coarse SAND. Gravel is subangular to angular fine to coarse of flint and brick with frequent rootlets. (MADE GROUND)	1
	0.50 - 1.50	B						
	0.80 - 1.20	ES						
	1.90 - 2.50	B		1.80	38.09		Recovered as red angular to subangular medium to coarse GRAVEL of brick and concrete with frequent cobbles of brick. Presumed intact relic brick foundation (MADE GROUND)	2
	2.00	D						
				2.50	37.39		Recovered as structureless CHALK composed of slightly gravelly silty subangular to rounded SAND. Clasts are weak low to medium density white with frequent black specks. Matrix is creamish white - Grade Dc. (SEAFORD AND NEWHAVEN CHALK FORMATION)	
				3.00	36.89		End of pit at 3.00 m	3
								4

Remarks: Cleared by Cable Avoidance Tool and utilities clearance.

No groundwater encountered.

Stability: Stable



Trial Pit Log

Trialpit No

TP1002

Sheet 1 of 1

Project Name:	Kenavon Drive, Reading
---------------	------------------------

Project No.
A11057

Co-ords: 472162.97 - 173557.05
Level: 39.76

Date
17/01/2019

Location: Reading, RG1 3HS

Dimensions
(m):

22

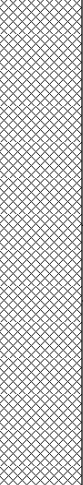
Scale
1:20

Client: Berkeley Homes (Western) Ltd

Depth
2.90

0.8

Logged
SS

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.10 - 0.50	ES					Dark grey gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of flint and brick with frequent rootlets. (MADE GROUND)
	0.50 - 1.00	B					
	0.80 - 1.20	ES					Between 0.60-0.80m bgl brick fill.
	1.50 - 2.00	B		1.30	38.46		Recovered as structureless CHALK composed of slightly sandy silty subangular to rounded GRAVEL. Clasts are weak low to medium density white with frequent black specks. Matrix is creamish white - Grade Dc. (SEAFORD AND NEWHAVEN CHALK FORMATION)
	2.90	D		2.90	36.86		End of pit at 2.90 m

Remarks:	Cleared by Cable Avoidance Tool and utilities clearance.
----------	--

No groundwater encountered.

Stability: Stable





10 Manor Court
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Trial Pit Log

Trialpit No

TP1003

Sheet 1 of 1

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472161.46 - 173582.05
Level: 40.07

Date
18/01/2019

Location: Reading, RG1 3HS

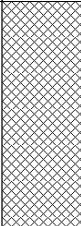
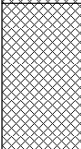
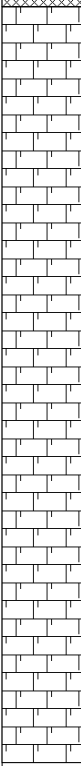
Dimensions (m): 2.1

Client: Berkeley Homes (Western) Ltd

Depth
3.00

0.8

Scale
1:20
Logged
SS

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10 - 0.50	ES					Dark grey gravelly fine to coarse SAND. Gravel is subangular to angular fine to coarse of flint and brick (MADE GROUND).	
	0.50 - 1.00	B		0.60	39.47		Brown gravelly fine to coarse SAND. Gravel is subangular to angular fine to coarse of flint and brick. (MADE GROUND)	
	0.80 - 1.20	ES		1.00	39.07		Recovered as structureless CHALK composed of slightly sandy silty subangular to rounded GRAVEL. Clasts are weak low to medium density white with frequent black specks. Matrix is creamish white. (Grade Dc) (SEAFORD AND NEWHAVEN CHALK FORMATION)	1
	1.50 - 2.00	B						2
	3.00	D		3.00	37.07		End of pit at 3.00 m	3
								4

Remarks: Cleared by Cable Avoidance Tool and utilities clearance.

No groundwater encountered.

Stability: Stable



Trial Pit Log

Trialpit No

TP1004

Sheet 1 of 1

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords:	472170.04 - 173612.68
Level:	39.89

Date
18/01/2019

Location: Reading, RG1 3HS

Dimensions
(m):

2.2

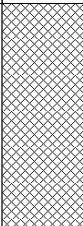
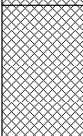
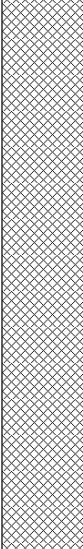
Scale
1:20

Client: Berkeley Homes (Western) Ltd

Depth
2.40

0.7

Logged
SS

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10 - 0.50	ES		0.60	39.29		Dark grey slightly gravelly fine to coarse SAND. Gravel is subangular to angular fine to coarse of flint and brick. (MADE GROUND)	1
	0.80 - 1.20	ES					Brown gravelly fine to coarse SAND. Gravel is subangular to angular fine to coarse of flint and brick. (MADE GROUND)	
	1.00 - 1.50	B				2		
	2.00	D						
				2.40	37.49		End of pit at 2.40 m	3
								4

Remarks:	Cleared by Cable Avoidance Tool and utilities clearance. Pit terminated at 2.4m bgl due to possible drainage . No groundwater encountered.
----------	---

Stability: Stable





10 Manor Court
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Trial Pit Log

Trialpit No

TP1005

Sheet 1 of 1

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472196.31 - 173603.18
Level: 39.27

Date
01/02/2019

Location: Reading, RG1 3HS

Dimensions (m): 2.1

Client: Berkeley Homes (Western) Ltd

Depth
1.00

0.8

Scale
1:20

Logged
SS

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.40 - 0.80	ES		0.40	38.87		Concrete Slab - reinforced. (MADE GROUND)	
				0.60	38.67		Cream gravelly fine to coarse SAND. Gravel is subangular to angular fine to coarse of flint and concrete. (MADE GROUND)	
	1.00	B		1.00	38.27		Brown gravelly fine to coarse SAND. Gravel is subangular to angular fine to coarse of flint and concrete (MADE GROUND)	
							----- End of pit at 1.00 m -----	1
								2
								3
								4

Remarks: Cleared by Cable Avoidance Tool and utilities clearance.
Pit terminated at 1.00m bgl due to a very dense concrete. No groundwater encountered.

Stability: Stable





10 Manor Court
2 Barnes Wallis Road
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PO15 5TH

Trial Pit Log

Trialpit No
TP1007
Sheet 1 of 1

Project Name: Kenavon Drive, Reading

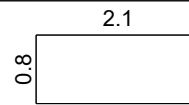
Project No.
A11057

Co-ords: 472256.81 - 173607.68
Level: 38.84

Date
24/01/2019

Location: Reading, RG1 3HS

Dimensions (m):
Depth 2.60



Scale
1:20
Logged
RD

Client: Berkeley Homes (Western) Ltd

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.20	38.64		Concrete Slab - reinforced (MADE GROUND)	
	0.40 - 0.60 0.40 - 0.60 0.50 - 1.00	D ES B					Brown slightly silty slightly gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of brick concrete and flint. (MADE GROUND) <i>At 0.40m bgl tree root encountered on northern face of pit.</i>	
							<i>At 0.80m bgl pockets of clayey fie to medium SAND.</i>	
	1.00 - 1.40 1.00 - 1.40 1.00 - 1.40	B D ES		1.00	37.84		Brown slightly gravelly clayey fine to coarse SAND. Gravel is angular to subangular fine to coarse of brick and flint. (MADE GROUND)	1
	2.00 - 2.40 2.00 - 2.40 2.00 - 2.50	D ES B		2.00	36.84		Recovered as structureless CHALK composed of slightly sandy silty subangular to rounded GRAVEL. Clasts are weak low to medium density white with frequent black specks. Matrix is creamish white - Grade Dc (SEAFORD AND NEWHAVEN CHALK FORMATION)	2
				2.60	36.24		End of pit at 2.60 m	3
								4

Remarks: Cleared by Cable Avoidance Tool and utilities clearance.

No groundwater encountered.

Stability: Stable



Trial Pit Log

Trialpit No

TP1008

Sheet 1 of 1

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords:	472245.03 - 173594.97
Level:	39.11

Date
23/01/2019

Location: Reading, RG1 3HS

Diagram of a rectangular pond with dimensions: Depth 1.10 m, Width 2.1 m.

Scale
1:20

Logged
RD

Client: Berkeley Homes (Western) Ltd

[illegible]

Remarks:	Cleared by Cable Avoidance Tool and utilities clearance.
----------	--

Pit terminated at 1.10m bgl due to unknown service. No groundwater encountered.

Stability: Stable





10 Manor Court
2 Barnes Wallis Road
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Trial Pit Log

Trialpit No

TP1009

Sheet 1 of 1

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472202.79 - 173588.73
Level: 39.27

Date
23/01/2019

Location: Reading, RG1 3HS

Dimensions (m): 2.1

Client: Berkeley Homes (Western) Ltd

Depth
2.50

0.85

Scale
1:20

Logged
RD

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.40 - 0.60	ES		0.25	39.02		Concrete Slab - reinforced (MADE GROUND)	
							Brown slightly silty slightly gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of brick concrete and flint. (MADE GROUND)	
	1.00 - 1.50 1.00 - 1.50	B D		1.00	38.27		Reddish brown gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of flint brick with occasional cobbles of brick and concrete. (MADE GROUND)	1
	2.00 - 2.50 2.00 - 2.50 2.00 - 2.50	B D ES						2
				2.50	36.77		End of pit at 2.50 m	3
								4

Remarks: Cleared by Cable Avoidance Tool and utilities clearance.
Pit terminated at 2.50m bg due to very dense gravels. No groundwater encountered.

Stability: Stable





10 Manor Court
2 Barnes Wallis Road
Segensworth
Fareham
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Trial Pit Log

Trialpit No
TP1010
Sheet 1 of 1

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472225.06 - 173587.64
Level: 39.28

Date
22/01/2019

Location: Reading, RG1 3HS

Dimensions
(m):

2

Depth
3.10

0.8

Scale
1:20

Logged
RD

Client: Berkeley Homes (Western) Ltd

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.40 - 0.60	ES		0.30	38.98		Concrete Slab - reinforced with steel rebar approximately 12mm diameter. (MADE GROUND)	
	0.80 - 1.30	B					Brown and grey gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse flint brick concrete and metal fragments. (MADE GROUND)	1
	1.10 - 1.30	ES						
	1.50 - 2.00 1.50 - 2.00	B ES		1.30	37.98		Dark brownish grey sandy angular to subrounded fine to coarse of flint GRAVEL. SAND is fine to coarse. (TAPLOW GRAVEL MEMBER)	2
	2.50 - 3.00	B						3
				3.10	36.18		End of pit at 3.10 m	4

Remarks: Cleared by Cable Avoidance Tool and utilities clearance.
Pit terminated at 3.10m bg due to very dense gravels. No groundwater encountered.

Stability: Stable





10 Manor Court
2 Barnes Wallis Road
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PO15 5TH

Trial Pit Log

Trialpit No

TP1011

Sheet 1 of 1

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472254.97 - 173578.26
Level: 38.96

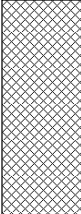
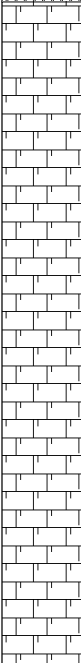
Date
24/01/2019

Location: Reading, RG1 3HS

Dimensions (m): 2.1
Depth 2.60

Scale
1:20
Logged
RD

Client: Berkeley Homes (Western) Ltd

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.20	38.76		Concrete Slab - reinforced with steel rebar approximately 12mm diameter. (MADE GROUND)	
	0.40 - 0.60 0.40 - 0.80 0.40 - 0.80	ES B D					Brown slightly clayey slightly gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse of flint brick concrete and chalk. (MADE GROUND)	
	1.00 - 1.40	ES		0.80	38.16		Recovered as structureless CHALK composed of slightly sandy silty subangular to rounded GRAVEL. Clasts are weak low to medium density white with frequent black specks. Matrix is creamish white. (Grade Dc) (SEAFORD AND NEWHAVEN CHALK FORMATION)	1
	1.50 - 2.00	D						
	2.00 - 2.50 2.00 - 2.50 2.00 - 2.50	B D ES						2
				2.60	36.36		End of pit at 2.60 m	3
								4

Remarks: Cleared by Cable Avoidance Tool and utilities clearance.

No groundwater encountered.

Stability: Stable





10 Manor Court
2 Barnes Wallis Road
Segensworth
Fareham
PO15 5TH

Trial Pit Log

Trialpit No

TP1012

Sheet 1 of 1

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472213.42 - 173576.10
Level: 39.28

Date
19/01/2019

Location: Reading, RG1 3HS

Dimensions (m): 2.5

Client: Berkeley Homes (Western) Ltd

Depth
2.40

0.8

Scale
1:20

Logged
SS

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.40 - 0.60	ES		0.40	38.88		Concrete Slab - reinforced with steel rebar approximately 12mm diameter. (MADE GROUND)	
				0.60	38.67		Cream gravelly fine to coarse SAND. Gravel is subangular to angular fine to coarse of flint and concrete. (MADE GROUND)	
	0.80 - 1.20	ES					Brown gravelly fine to coarse SAND. Gravel is subangular to angular fine to coarse of flint and concrete (MADE GROUND)	1
	1.00	B						
	2.00	D						2
				2.40	36.88		End of pit at 2.40 m	3
								4

Remarks: Cleared by Cable Avoidance Tool and utilities clearance.

Terminated due to brick slab. No groundwater encountered.

Stability: Stable





10 Manor Court
2 Barnes Wallis Road
Segensworth
Fareham
PO15 5TH

Trial Pit Log

Trialpit No

TP1013

Sheet 1 of 1

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472252.52 - 173559.45
Level: 39.04

Date
21/01/2019

Location: Reading, RG1 3HS

Dimensions
(m):

2

Depth
2.80

0.8

Scale
1:20

Logged
RD

Client: Berkeley Homes (Western) Ltd

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.30	38.74		Concrete Slab - reinforced with steel rebar approximately 12mm diameter. (MADE GROUND)	
	0.40 - 0.60 0.50 - 1.00	ES D					Grey slightly silty sandy angular to subrounded fine to coarse GRAVEL of flint, concrete brick ceramic with frequent boulders of concrete. Sand is medium to coarse. (MADE GROUND)	
	1.00 - 1.40 1.00 - 1.50	ES D						1
	1.50 - 2.50	B						2
	2.50 - 2.80 2.50 - 2.80	B ES		2.60	36.44			
	2.80	ES		2.80	36.24		Recovered as structureless chalk composed of white slightly gravelly slightly silty SAND. Gravel is weak low density CHALK with frequent black specks. Frequent cobbles of angular flint - Grade Dc. (SEAFORD AND NEWHAVEN CHALK FORMATION) End of pit at 2.80 m	3
								4

Remarks: Cleared by Cable Avoidance Tool and utilities clearance.

No groundwater encountered.

Stability: Stable





10 Manor Court
2 Barnes Wallis Road
Segensworth
Fareham
PO15 5TH

Trial Pit Log

Trialpit No
TP1014
Sheet 1 of 1

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472209.01 - 173557.18
Level: 39.29

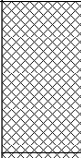
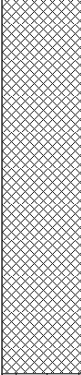
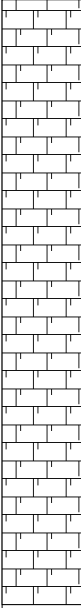
Date
22/01/2019

Location: Reading, RG1 3HS

Dimensions (m): 2.1
Depth 3.00

Scale
1:20
Logged
RD

Client: Berkeley Homes (Western) Ltd

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.50 - 0.80 0.50 - 1.00 0.50 - 1.00	ES B D		0.40	38.89		Concrete Slab - reinforced with steel rebar approximately 12mm diameter. (MADE GROUND)
							Brown and grey slightly clayey gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse brick concrete and chalk. (MADE GROUND)
	1.50 - 1.80 1.50 - 2.00 1.50 - 2.00	ES B D		1.40	37.89		Recovered as structureless chalk composed of white slightly gravelly slightly silty SAND. Gravel is weak low density CHALK with frequent black specks. Frequent cobbles of angular flint - Grade Dc. (SEAFORD AND NEWHAVEN CHALK FORMATION)
	2.50 - 3.00	D		3.00	36.29		End of pit at 3.00 m

Remarks: Cleared by Cable Avoidance Tool and utilities clearance.

No groundwater encountered.

Stability: Stable





10 Manor Court
2 Barnes Wallis Road
Segensworth
Fareham
PO15 5TH

Trial Pit Log

Trialpit No
TP1015
Sheet 1 of 1

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472234.65 - 173552.20
Level: 39.53

Date
18/01/2019

Location: Reading, RG1 3HS

Dimensions
(m):

2.2

Depth
3.30

0.7

Scale
1:20

Logged
SS

Client: Berkeley Homes (Western) Ltd

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.20 - 0.60	ES		0.20	39.33		Concrete Slab - reinforced with steel rebar approximately 12mm diameter. (MADE GROUND)	
	0.50 - 1.00	B		0.60	38.93		Cream gravelly fine to coarse SAND. Gravel is subangular to angular fine to coarse of flint and concrete. (MADE GROUND)	
	0.80 - 1.20	ES					Brown gravelly fine to coarse SAND. Gravel is subangular to angular fine to coarse of flint and concrete (MADE GROUND)	1
	2.00	D						2
	2.80 - 3.00 2.80 - 3.30	ES B		2.60	36.93		Recovered as structureless CHALK composed of slightly sandy silty subangular to rounded GRAVEL. Clasts are weak low to medium density white with frequent black specks. Matrix is creamish white - Grade Dc (SEAFORD AND NEWHAVEN CHALK FORMATION)	3
	3.00	D		3.30	36.23		End of pit at 3.30 m	4

Remarks: Cleared by Cable Avoidance Tool and utilities clearance.

No groundwater encountered.

Stability: Stable





10 Manor Court
2 Barnes Wallis Road
Segensworth
Fareham
PO15 5TH

Trial Pit Log

Trialpit No

TP1016

Sheet 1 of 1

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472261.82 - 173559.88
Level: 38.92

Date
21/01/2019

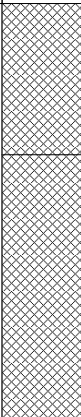
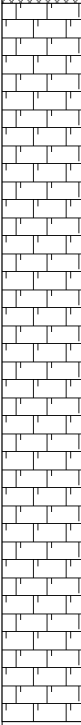
Location: Reading, RG1 3HS

Dimensions (m):
Depth 3.00
2.1
0.7

Scale
1:20

Logged
RD

Client: Berkeley Homes (Western) Ltd

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.40 - 0.60 0.40 - 0.80 0.40 - 0.80	ES B D		0.40	38.52		Concrete Slab - reinforced with steel rebar approximately 12mm diameter. (MADE GROUND)
							Grey and black angular to subrounded fine to coarse sandy GRAVEL of brick concrete clay pipe chalk and flint. Sand is medium to coarse. (MADE GROUND)
	1.20 - 1.40	ES		1.10	37.82		Recovered as structureless chalk composed of white slightly gravelly slightly silty SAND. Gravel is weak low density CHALK with frequent black specks. Frequent cobbles of angular flint - Grade Dc. (SEAFORD AND NEWHAVEN CHALK FORMATION)
	1.50 - 2.00 1.50 - 2.00	B D					
	2.50 - 3.00	D					
				3.00	35.92		End of pit at 3.00 m

Remarks: Cleared by Cable Avoidance Tool and utilities clearance.

No groundwater encountered.

Stability: Stable





10 Manor Court
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Segensworth
Fareham
PO15 5TH

Trial Pit Log

Trialpit No

TP1017

Sheet 1 of 1

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472331.02 - 173605.43
Level: 38.51

Date
12/02/2019

Location: Reading, RG1 3HS

Dimensions (m): 2.1
Depth 1.30

0.8

Scale
1:20

Logged
SS

Client: Berkeley Homes (Western) Ltd

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.30 - 0.60	ES		0.30	38.21		Concrete Slab - reinforced with steel rebar approximately 12mm diameter. (MADE GROUND)
	0.50 - 1.00	B		0.60	37.91		Reddish brown gravelly fine to coarse SAND. Gravel is subangular to angular fine to coarse of flint concrete and brick. (MADE GROUND)
	0.80 - 1.00	ES					Dark grey gravelly SAND. Gravel is subangular to angular fine to coarse of flint brick and concrete. (MADE GROUND)
	1.00	D		1.30	37.21		End of pit at 1.30 m

1

2

3

4

Remarks: Cleared by Cable Avoidance Tool and utilities clearance.
Pit terminated at 1.30m bg due to very dense brick slab. No groundwater encountered.

Stability: Stable



Trial Pit Log

Trialpit No

TP1018

Sheet 1 of 1

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472347.49 - 173589.63
Level: 38.52

Date
12/02/2019

Location: Reading, RG1 3HS

Dimensions
(m):

2.5

Scale

Client: Berkeley Homes (Western) Ltd

Depth
1.30

0.7

Logged
SS

[illegible]

Remarks:	Cleared by Cable Avoidance Tool and utilities clearance. Pit terminated at 1.30m bg due to concrete slab. No groundwater encountered.
----------	--

Stability: Stable



Trial Pit Log

Trialpit No

TP1020

Sheet 1 of 1

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472304.11 - 173563.56

Level: 38.51

Date _____

12/02/2019

Location: Reading, RG1 3HS

Dimensions

2.2

Depth	1.20
-------	------

2.0

Scale

1:20

Logged
SS

Client: Berkeley Homes (Western) Ltd

[illegible]

Remarks:	Cleared by Cable Avoidance Tool and utilities clearance.
----------	--

Pit terminated at 1.20m bgl due to unknown service. No groundwater encountered.

Stability: Stable





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Trial Pit Log

Trialpit No

TP1021

Sheet 1 of 1

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472350.18 - 173560.67
Level: 38.52

Date
13/02/2019

Location: Reading, RG1 3HS

Dimensions (m): 2.4
Depth 4.00

0.8

Scale
1:20

Logged
SS

Client: Berkeley Homes (Western) Ltd

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.30	38.22		Concrete Slab - reinforced with steel rebar approximately 12mm diameter. (MADE GROUND)	
	0.40 - 0.80 0.50 - 1.00	ES B		0.60	37.92		Reddish brown gravelly fine to coarse SAND. Gravel is subangular to angular fine to coarse of flint concrete and brick. (MADE GROUND)	
	1.00 - 1.40	ES					Dark grey gravelly SAND. Gravel is subangular to angular fine to coarse of flint brick and concrete. (MADE GROUND)	1
	2.00	D						2
	3.00 - 3.40 3.00 - 3.50	ES B		3.00	35.52		Greyish brown silty clayey very gravelly SAND. Gravel is subangular to angular. (ALLUVIUM)	3
	4.00	D		4.00	34.52		End of pit at 4.00 m	4

Remarks: Cleared by Cable Avoidance Tool and utilities clearance.

No groundwater encountered.

Stability: Stable





10 Manor Court
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Trial Pit Log

Trialpit No

TP1022

Sheet 1 of 1

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472364.96 - 173567.46
Level: 58.50

Date
13/02/2019

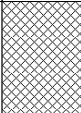
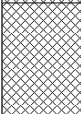
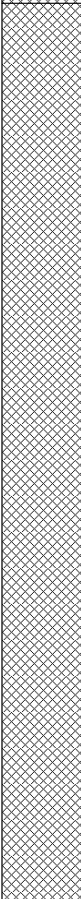
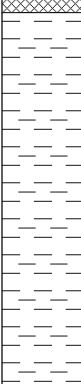
Location: Reading, RG1 3HS

Dimensions (m):
Depth 4.00
2.5
0.7

Scale
1:20

Logged
SS

Client: Berkeley Homes (Western) Ltd

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.40 - 0.80 0.50 - 1.00	ES B		0.30 0.60	58.20 57.90	  	Concrete Slab - reinforced with steel rebar approximately 12mm diameter. (MADE GROUND) Reddish brown gravelly fine to coarse SAND. Gravel is subangular to angular fine to coarse of flint concrete and brick. (MADE GROUND) Dark grey gravelly SAND. Gravel is subangular to angular fine to coarse of flint brick and concrete. (MADE GROUND)
	2.00	D					
	3.00 - 3.40 3.00 - 3.50	ES B		3.00	55.50		Soft yellowish brown slightly gravelly clayey very sandy SILT. Sand is fine to coarse. Gravel is subangular to angular. (ALLUVIUM)
	4.00	D		4.00	54.50		End of pit at 4.00 m

Remarks: Cleared by Cable Avoidance Tool and utilities clearance.

No groundwater encountered.

Stability: Stable





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Trial Pit Log

Trialpit No

TP1024

Sheet 1 of 1

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472345.78 - 173538.14
Level: 38.50

Date
13/02/2019

Location: Reading, RG1 3HS

Dimensions (m): 2.4

Client: Berkeley Homes (Western) Ltd

Depth
2.10

0.8

Scale
1:20

Logged
SS

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.40 - 0.80 0.50 - 1.00	ES B		0.30 0.60	38.20 37.90		Concrete Slab - reinforced with steel rebar approximately 12mm diameter. (MADE GROUND) Reddish brown gravelly fine to coarse SAND. Gravel is subangular to angular fine to coarse of flint concrete and brick. (MADE GROUND) Dark grey gravelly SAND. Gravel is subangular to angular fine to coarse of flint brick and concrete. (MADE GROUND)	1
	1.00 1.00 - 1.40	D ES						
	2.00	D		2.10	36.40		End of pit at 2.10 m	2
								3
								4

Remarks: Cleared by Cable Avoidance Tool and utilities clearance.
Pit terminated at 2.10m bg due to concrete slab. No groundwater encountered.

Stability: Stable





10 Manor Court
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Trial Pit Log

Trialpit No

TP1025

Sheet 1 of 1

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472185.27 - 173512.78
Level: 38.82

Date
17/01/2019

Location: Reading, RG1 3HS

Dimensions (m): 2.1
0.7

Scale
1:20

Client: Berkeley Homes (Western) Ltd

Depth
2.30

Logged
SS

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.20 - 0.60	ES		0.10	38.72		Concrete Slab - reinforced with steel rebar approximately 12mm diameter. (MADE GROUND)
	0.50 - 1.00	B		0.40	38.42		Brown gravelly fine to coarse SAND. Gravel is subangular to angular fine to coarse of flint and brick. (MADE GROUND)
	0.80 - 1.50	ES					Dark brownish grey sandy angular to subrounded fine to coarse of flint GRAVEL. SAND is fine to coarse. (TAPLOW GRAVEL MEMBER)
	2.00	D					
				2.30	36.52		End of pit at 2.30 m

Remarks: Cleared by Cable Avoidance Tool and utilities clearance.
Pit terminated at 2.30m bg due to very dense obstruction. No groundwater encountered.

Stability: Stable





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Trial Pit Log

Trialpit No

TP1026

Sheet 1 of 1

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472190.48 - 173517.62
Level: 38.79

Date
19/01/2019

Location: Reading, RG1 3HS

Dimensions (m): 2.4

Client: Berkeley Homes (Western) Ltd

Depth
2.00

0.8

Scale
1:20

Logged
RD

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.20 - 0.60	ES		0.10	38.68		Concrete Slab - reinforced with steel rebar approximately 12mm diameter. (MADE GROUND)
	0.50 - 1.50	B		0.40	38.38		Brown gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of flint and brick. (MADE GROUND)
	0.80 - 1.50	ES					Dark brownish grey sandy angular to subrounded fine to coarse of flint GRAVEL. SAND is fine to coarse. (TAPLOW GRAVEL MEMBER)
	2.00	D		2.00	36.78		
							End of pit at 2.00 m

1

2

3

4

Remarks: Cleared by Cable Avoidance Tool and utilities clearance.
Hole terminated at 2.00m bgl due to concrete slab. No groundwater encountered.

Stability: Stable





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Trial Pit Log

Trialpit No

TT1001

Sheet 1 of 1

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472274.45 - 173536.76
Level: 38.84

Date
17/01/2019

Location: Reading, RG1 3HS

Dimensions
(m):

5

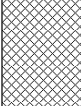
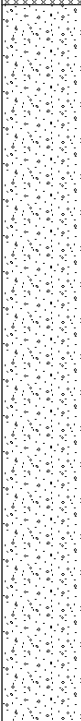
Depth
2.30

0.7

Scale
1:20

Logged
SS

Client: Berkeley Homes (Western) Ltd

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.20 - 0.60	ES		0.10	38.74		Concrete Slab - reinforced with steel rebar approximately 12mm diameter. (MADE GROUND)
							Dark brownish grey gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of flint and brick. (MADE GROUND)
	0.50 - 1.50	B		0.40	38.44		Dark brownish grey sandy angular to subrounded fine to coarse of flint GRAVEL. SAND is fine to coarse. (TAPLOW GRAVEL MEMBER)
	0.80 - 1.50	ES					
	2.00	D					
				2.30	36.54		End of pit at 2.30 m

Remarks: Cleared by Cable Avoidance Tool and utilities clearance.
Pit terminated at 2.30m bg due to possible foundation slab. No groundwater encountered.

Stability: Stable





10 Manor Court
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Trial Pit Log

Trialpit No

TT1003

Sheet 1 of 1

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472332.26 - 173527.85
Level: 38.18

Date
18/01/2019

Location: Reading, RG1 3HS

Dimensions (m):
Depth 4.00
3.1
1.4

Scale
1:20

Logged
RD

Client: Berkeley Homes (Western) Ltd

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.20 - 0.60	ES		0.10	38.08		Concrete Slab - reinforced with steel rebar approximately 12mm diameter. (MADE GROUND)	
				0.40	37.78		Brown sandy subangular to angular fine to coarse GRAVEL of flint and brick. Sand is fine to coarse. (MADE GROUND)	
	0.80 - 1.50	ES					Dark brownish grey gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of flint and brick. (MADE GROUND)	1
	1.00	D						
	2.00	D		2.00	36.18		Soft mottled brown slightly gravelly clayey very sandy SILT. Sand is fine to coarse. Gravel is subangular to angular. (ALLUVIUM)	2
	3.00	D						3
	4.00	D		4.00	34.18		End of pit at 4.00 m	4

Remarks: Cleared by Cable Avoidance Tool and utilities clearance.

No groundwater encountered.

Stability: Stable





10 Manor Court
2 Barnes Wallis Road
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Fareham
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Trial Pit Log

Trialpit No

TT1004

Sheet 1 of 2

Project Name: Kenavon Drive, Reading

Project No.
A11057

Co-ords: 472359.86 - 173516.43
Level: 38.11

Date
16/01/2019

Location: Reading, RG1 3HS

Dimensions (m): 5.5

Scale
1:20

Client: Berkeley Homes (Western) Ltd

Depth
4.00

0.8

Logged
SS

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.20 - 0.60	ES		0.10	38.01		Concrete Slab - reinforced with steel rebar approximately 12mm diameter. (MADE GROUND)	
				0.40	37.71		Brown sandy subangular to angular fine to coarse GRAVEL of flint and brick. Sand is fine to coarse. (MADE GROUND)	
	0.80 - 1.50	ES					Dark brownish grey gravelly fine to coarse SAND. Gravel is angular to subangular fine to coarse of flint and brick. (MADE GROUND)	
	1.00	D						1
	2.00	D		2.00	36.11		Soft mottled brown slightly gravelly clayey very sandy SILT. Sand is fine to coarse. Gravel is subangular to angular. (ALLUVIUM)	2
	3.00	D						3
	4.00	D		4.00	34.11			4

Continued on next sheet

Remarks: Cleared by Cable Avoidance Tool and utilities clearance.

Groundwater strike at 3.00m bgl and measured at 3.00m bgl after 20 minutes.

Stability: Stable



APPENDIX VI

CHEMICAL ANALYSIS RESULTS



Exova Jones Environmental

Registered Office: Exova Environmental UK Limited, 10 Lower Grosvenor Place, London, SW1W 0EN. Reg No. 11371415

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

Omnia
10 Manor Court
2 Barnes Wallis Road
Segensworth
Fareham
PO15 5TH

Tel: +44 (0) 1244 833780

Fax: +44 (0) 1244 833781



Attention :	Grace Larcombe
Date :	6th February, 2019
Your reference :	A11057
Our reference :	Test Report 19/1281 Batch 1
Location :	Kenavon Drive
Date samples received :	26th January, 2019
Status :	Final report
Issue :	1

Seventeen samples were received for analysis on 26th January, 2019 of which three were scheduled for analysis. 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:

Lucas Halliwell
Project Co-ordinator

Client Name: Omnia
Reference: A11057
Location: Kenavon Drive
Contact: Grace Larcombe
JE Job No.: 19/1281

Report : Solid

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

J E Sample No.	7-8	15-16	19-20								Please see attached notes for all abbreviations and acronyms		
Sample ID	TP1007	TP1009	BH1002										
Depth	0.4-0.6	0.4-0.6	0.2-0.5										
COC No / misc													
Containers	V J	V J	V J										
Sample Date	23/01/2019	23/01/2019	23/01/2019										
Sample Type	Soil	Soil	Soil										
Batch Number	1	1	1										
Date of Receipt	26/01/2019	26/01/2019	26/01/2019								LOD/LOR	Units	Method No.
PAH MS													
Naphthalene #	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.09	0.04	0.07								<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05	<0.05								<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04	<0.04								<0.04	mg/kg	TM4/PM8
Phenanthrene #	0.15	0.58	0.33								<0.03	mg/kg	TM4/PM8
Anthracene #	0.18	0.10	0.13								<0.04	mg/kg	TM4/PM8
Fluoranthene #	1.10	0.88	0.86								<0.03	mg/kg	TM4/PM8
Pyrene #	0.99	0.69	0.75								<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.89	0.42	0.57								<0.06	mg/kg	TM4/PM8
Chrysene #	0.77	0.44	0.50								<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	1.51	0.71	1.14								<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	0.85	0.26	0.59								<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	0.40	0.20	0.42								<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	0.16	0.05	0.17								<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.38	0.21	0.48								<0.04	mg/kg	TM4/PM8
PAH 16 Total	7.5	4.6	6.0								<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	1.09	0.51	0.82								<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.42	0.20	0.32								<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	99	99	99								<0	%	TM4/PM8
EPH >C8-C10 #	<5	<5	<5								<5	mg/kg	TM5/PM8
EPH >C10-C12 #	<10	<10	<10								<10	mg/kg	TM5/PM8
EPH >C12-C16 #	<10	<10	<10								<10	mg/kg	TM5/PM8
EPH >C16-C21 #	<10	19	19								<10	mg/kg	TM5/PM8
EPH >C21-C40	<10	176	705								<10	mg/kg	TM5/PM8
EPH >C8-C40	<30	195	724								<30	mg/kg	TM5/PM8
GRO (>C4-C6)	<100	<100	<100								<100	ug/kg	TM36/PM12
GRO (>C6-C8) #	<100	<100	<100								<100	ug/kg	TM36/PM12
GRO (>C4-C8)	<100	<100	<100								<100	ug/kg	TM36/PM12
Total Phenols HPLC	<0.15	<0.15	<0.15								<0.15	mg/kg	TM26/PM21
Natural Moisture Content	21.7	9.9	11.6								<0.1	%	PM4/PM0
Hexavalent Chromium #	<0.3	<0.3	<0.3								<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) #	0.0757	-	-								<0.0015	g/l	TM38/PM20
Sulphate as SO4 (2:1 Ext)	-	<0.0015	0.1513								<0.0015	g/l	TM38/PM60
Chromium III	32.3	NDP	NDP								<0.5	mg/kg	NONE/NONE
Chromium III	-	16.9	9.9								<0.5	mg/kg	NONE/NONE
Total Cyanide #	<0.5	<0.5	<0.5								<0.5	mg/kg	TM89/PM45

Client Name: Omnia
Reference: A11057
Location: Kenavon Drive
Contact: Grace Larcombe

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level less than 0.1%, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:



Ryan Butterworth
 Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
19/1281	1	TP1007	0.4-0.6	8	01/02/2019	General Description (Bulk Analysis)	chalk-stones
					01/02/2019	Asbestos Fibres	NAD
					01/02/2019	Asbestos ACM	NAD
					01/02/2019	Asbestos Type	NAD
					01/02/2019	Asbestos Level Screen	NAD
19/1281	1	TP1009	0.4-0.6	16	01/02/2019	General Description (Bulk Analysis)	soil-stones
					01/02/2019	Asbestos Fibres	Fibre Bundles
					01/02/2019	Asbestos Fibres (2)	Fibre Bundles
					01/02/2019	Asbestos ACM	NAD
					01/02/2019	Asbestos ACM (2)	NAD
					01/02/2019	Asbestos Type	Amosite
					01/02/2019	Asbestos Type (2)	Chrysotile
					01/02/2019	Asbestos Level Screen	less than 0.1%
					06/02/2019	Total ACM Gravimetric Quantification (% Asb)	<0.001 (mass %)
					06/02/2019	Total Detailed Gravimetric Quantification (% Asb)	<0.001 (mass %)
					06/02/2019	Total Gravimetric Quantification (ACM + Detailed) (% Asb)	<0.001 (mass %)
					06/02/2019	Asbestos PCOM Quantification (Fibres)	<0.001 (mass %)
					06/02/2019	Asbestos Gravimetric & PCOM Total	<0.001 (mass %)
19/1281	1	BH1002	0.2-0.5	20	01/02/2019	General Description (Bulk Analysis)	soil-stones
					01/02/2019	Asbestos Fibres	Fibre Bundles
					01/02/2019	Asbestos Fibres (2)	Fibre Bundles
					01/02/2019	Asbestos ACM	NAD
					01/02/2019	Asbestos ACM (2)	NAD
					01/02/2019	Asbestos Type	Amosite
					01/02/2019	Asbestos Type (2)	Chrysotile
					01/02/2019	Asbestos Level Screen	less than 0.1%
					06/02/2019	Total ACM Gravimetric Quantification (% Asb)	<0.001 (mass %)
					06/02/2019	Total Detailed Gravimetric Quantification (% Asb)	<0.001 (mass %)
					06/02/2019	Total Gravimetric Quantification (ACM + Detailed) (% Asb)	<0.001 (mass %)
					06/02/2019	Asbestos PCOM Quantification (Fibres)	<0.001 (mass %)
					06/02/2019	Asbestos Gravimetric & PCOM Total	<0.001 (mass %)

Matrix : Solid

[illegible]

Client Name: Omnia
Reference: A11057
Location: Kenavon Drive
Contact: Grace Larcombe

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 19/1281

SOILS

Please note we are only MCERTS accredited (UK soils only) 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 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.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually 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.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

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.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised 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.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Please include all sections of this report if it is reproduced

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
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 an Exova Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 19/1281

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21	As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.			AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM62	Acid digestion of as received solid samples using Aqua Regia refluxed at 112.5 °C.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

JE Job No: 19/1281

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM60	As received solid samples are extracted with deionised water in a 2:1 ratio of water to solid.			AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM61	As received solid samples are extracted with hot water in a 20:1 ratio of water to soil ready for analysis by ICP.			AR	Yes
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis.	Yes		AR	Yes
TM131	Quantification of Asbestos Fibres and ACM, based on HSG248 and SCA method.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	Yes

JE Job No: 19/1281

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
NONE	No Method Code	NONE	No Method Code			AR	Yes



Exova Jones Environmental

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Attention :	Grace Larcombe
Date :	22nd February, 2019
Your reference :	A11057
Our reference :	Test Report 19/2350 Batch 1
Location :	Kenavon Drive, Reading
Date samples received :	14th February, 2019
Status :	Final report
Issue :	1

Fifteen samples were received for analysis on 14th February, 2019 of which ten were scheduled for analysis. 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:

Bruce Leslie
Project Co-ordinator

Please see attached notes for all abbreviations and acronyms

Client Name: Omnia
Reference: A11057
Location: Kenavon Drive, Reading
Contact: Grace Larcombe
JE Job No.: 19/2350

Report : Solid

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

J E Sample No.	1-2	3-4	5-6	7-8	11-12	15-16	19-20	21-22	27-28	29-30	Please see attached notes for all abbreviations and acronyms		
Sample ID	TP1017 ES1	TP1017 ES2	TP1018 ES1	TP1018 ES2	TP1019 ES1	TP1020 ES2	TP1021 ES2	TP1021 ES3	TP1024 ES1	TP1024 ES2			
Depth	0.30-0.60	0.80-1.00	0.30-0.60	0.80-1.20	0.30-0.60	0.80-1.20	1.00-1.40	3.00-3.40	0.40-0.80	1.00-1.40			
COC No / misc													
Containers	V J	V J	V J	V J	V J	V J	V J	V J	V J	V J			
Sample Date	12/02/2019	12/02/2019	12/02/2019	12/02/2019	12/02/2019	12/02/2019	13/02/2019	13/02/2019	13/02/2019	13/02/2019			
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil			
Batch Number	1	1	1	1	1	1	1	1	1	1			
Date of Receipt	14/02/2019	14/02/2019	14/02/2019	14/02/2019	14/02/2019	14/02/2019	14/02/2019	14/02/2019	14/02/2019	14/02/2019	LOD/LOR	Units	Method No.
PAH MS													
Naphthalene [#]	<0.04	0.15	<0.04	0.08	<0.04	<0.40 _{AB}	0.08	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.15	0.24	<0.03	0.23	<0.03	<0.30 _{AB}	0.06	<0.03	0.07	0.09	<0.03	mg/kg	TM4/PM8
Acenaphthene [#]	<0.05	<0.05	<0.05	<0.05	<0.05	<0.50 _{AB}	0.13	<0.05	0.06	0.08	<0.05	mg/kg	TM4/PM8
Fluorene [#]	<0.04	0.08	<0.04	0.06	<0.04	<0.40 _{AB}	0.07	<0.04	0.05	0.07	<0.04	mg/kg	TM4/PM8
Phenanthrene [#]	0.43	0.92	0.09	0.74	<0.03	0.57 _{AB}	1.35	<0.03	0.91	1.21	<0.03	mg/kg	TM4/PM8
Anthracene [#]	0.23	0.41	<0.04	0.43	<0.04	<0.40 _{AB}	0.38	<0.04	0.28	0.34	<0.04	mg/kg	TM4/PM8
Fluoranthene [#]	1.67	2.66	0.26	2.88	<0.03	1.85 _{AB}	1.62	<0.03	2.12	2.57	<0.03	mg/kg	TM4/PM8
Pyrene [#]	1.51	2.51	0.25	2.66	<0.03	1.65 _{AB}	1.29	<0.03	1.96	2.34	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene [#]	1.06	1.57	0.20	1.83	<0.06	1.38 _{AB}	0.73	<0.06	1.27	1.53	<0.06	mg/kg	TM4/PM8
Chrysene [#]	1.07	1.64	0.16	1.91	<0.02	1.12 _{AB}	0.76	<0.02	1.34	1.57	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene [#]	2.32	3.56	0.37	4.12	<0.07	2.23 _{AB}	1.41	<0.07	2.92	3.37	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene [#]	1.30	1.99	0.21	2.22	<0.04	1.17 _{AB}	0.73	<0.04	1.64	1.84	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene [#]	0.95	1.29	0.18	1.55	<0.04	0.80 _{AB}	0.48	<0.04	1.19	1.22	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene [#]	0.32	0.42	0.05	0.54	<0.04	<0.40 _{AB}	0.15	<0.04	0.35	0.39	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene [#]	1.03	1.27	0.18	1.44	<0.04	0.78 _{AB}	0.46	<0.04	1.17	1.27	<0.04	mg/kg	TM4/PM8
PAH 16 Total	12.0	18.7	2.0	20.7	<0.6	11.6 _{AB}	9.7	<0.6	15.3	17.9	<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	1.67	2.56	0.27	2.97	<0.05	1.61 _{AB}	1.02	<0.05	2.10	2.43	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.65	1.00	0.10	1.15	<0.02	0.62 _{AB}	0.39	<0.02	0.82	0.94	<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	96	92	90	92	97	98 _{AB}	92	89	90	94	<0	%	TM4/PM8
EPH >C8-C10 [#]	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	mg/kg	TM5/PM8
EPH >C10-C12 [#]	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	mg/kg	TM5/PM8
EPH >C12-C16 [#]	<10	<10	<10	<10	<10	<10	<10	<10	<10	17	<10	mg/kg	TM5/PM8
EPH >C16-C21 [#]	11	28	<10	17	<10	25	<10	<10	26	100	<10	mg/kg	TM5/PM8
EPH >C21-C40	240	264	190	247	<10	206	150	<10	266	486	<10	mg/kg	TM5/PM8
EPH >C8-C40	251	292	190	264	<30	231	150	<30	292	603	<30	mg/kg	TM5/PM8
GRO (>C4-C6)	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM36/PM12
GRO (>C6-C8) [#]	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM36/PM12
GRO (>C4-C8)	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	ug/kg	TM36/PM12
Total Phenols HPLC	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	mg/kg	TM26/PM21
Natural Moisture Content	7.3	16.6	9.8	13.1	3.1	14.4	18.2	24.2	17.8	18.6	<0.1	%	PM4/PM0
Hexavalent Chromium [#]	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) [#]	-	-	-	-	0.0684	0.0928	-	0.0279	-	-	<0.0015	g/l	TM38/PM20
Sulphate as SO4 (2:1 Ext)	0.4146	0.2686	0.0449	0.1519	-	-	1.2958	-	0.8589	0.8022	<0.0015	g/l	TM38/PM60
Chromium III	-	-	-	-	10.3	72.6	-	59.1	-	-	<0.5	mg/kg	NONE/NONE
Chromium III	19.7	20.4	19.0	41.7	-	-	21.2	-	16.7	18.4	<0.5	mg/kg	NONE/NONE
Total Cyanide [#]	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.9	<0.5	<0.5	mg/kg	TM89/PM45

Please see attached notes for all abbreviations and acronyms

Client Name: Omnia
Reference: A11057
Location: Kenavon Drive, Reading
Contact: Grace Larcombe

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Samples are retained for not less than 6 months from the date of analysis unless specifically requested.

Opinions, including ACM type and Asbestos level less than 0.1%, lie outside the scope of our UKAS accreditation.

Where the sample is not taken by a Jones Environmental Laboratory consultant, Jones Environmental Laboratory cannot be responsible for inaccurate or unrepresentative sampling.

Signed on behalf of Jones Environmental Laboratory:



Ryan Butterworth
 Asbestos Team Leader

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
19/2350	1	TP1017 ES1	0.30-0.60	2	19/02/2019	General Description (Bulk Analysis)	Soil/Stone
					19/02/2019	Asbestos Fibres	Fibre Bundles
					19/02/2019	Asbestos ACM	NAD
					19/02/2019	Asbestos Type	Chrysotile
					19/02/2019	Asbestos Level Screen	less than 0.1%
					22/02/2019	Total ACM Gravimetric Quantification (% Asb)	<0.001 (mass %)
					22/02/2019	Total Detailed Gravimetric Quantification (% Asb)	<0.001 (mass %)
					22/02/2019	Total Gravimetric Quantification (ACM + Detailed) (% Asb)	<0.001 (mass %)
					22/02/2019	Asbestos PCOM Quantification (Fibres)	<0.001 (mass %)
					22/02/2019	Asbestos Gravimetric & PCOM Total	<0.001 (mass %)
19/2350	1	TP1017 ES2	0.80-1.00	4	19/02/2019	General Description (Bulk Analysis)	Soil/Stone
					19/02/2019	Asbestos Fibres	Fibre Bundles
					19/02/2019	Asbestos Fibres (2)	Fibre Bundles
					19/02/2019	Asbestos ACM	NAD
					19/02/2019	Asbestos ACM (2)	NAD
					19/02/2019	Asbestos Type	Chrysotile
					19/02/2019	Asbestos Type (2)	Amosite
					19/02/2019	Asbestos Level Screen	Asbestos level cannot be determined from Screen. Quantification required.
					22/02/2019	Total ACM Gravimetric Quantification (% Asb)	<0.001 (mass %)
					22/02/2019	Total Detailed Gravimetric Quantification (% Asb)	0.001 (mass %)
					22/02/2019	Total Gravimetric Quantification (ACM + Detailed) (% Asb)	0.001 (mass %)
19/2350	1	TP1018 ES1	0.30-0.60	6	19/02/2019	General Description (Bulk Analysis)	Soil/Stone
					19/02/2019	Asbestos Fibres	Fibre Bundles
					19/02/2019	Asbestos ACM	NAD
					19/02/2019	Asbestos Type	Chrysotile
					19/02/2019	Asbestos Level Screen	less than 0.1%
					22/02/2019	Total ACM Gravimetric Quantification (% Asb)	<0.001 (mass %)
					22/02/2019	Total Detailed Gravimetric Quantification (% Asb)	<0.001 (mass %)
					22/02/2019	Total Gravimetric Quantification (ACM + Detailed) (% Asb)	<0.001 (mass %)
					22/02/2019	Asbestos PCOM Quantification (Fibres)	<0.001 (mass %)
					22/02/2019	Asbestos Gravimetric & PCOM Total	<0.001 (mass %)
19/2350	1	TP1018 ES2	0.80-1.20	8	19/02/2019	General Description (Bulk Analysis)	soil/stones
					19/02/2019	Asbestos Fibres	Fibre Bundles
					19/02/2019	Asbestos ACM	NAD

Client Name: Omnia
Reference: A11057
Location: Kenavon Drive, Reading
Contact: Grace Larcombe

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Date Of Analysis	Analysis	Result
19/2350	1	TP1018 ES2	0.80-1.20	8	19/02/2019	Asbestos Type	Chrysotile
					19/02/2019	Asbestos Level Screen	less than 0.1%
					22/02/2019	Total ACM Gravimetric Quantification (% Asb)	<0.001 (mass %)
					22/02/2019	Total Detailed Gravimetric Quantification (% Asb)	<0.001 (mass %)
					22/02/2019	Total Gravimetric Quantification (ACM + Detailed) (% Asb)	<0.001 (mass %)
					22/02/2019	Asbestos PCOM Quantification (Fibres)	<0.001 (mass %)
					22/02/2019	Asbestos Gravimetric & PCOM Total	<0.001 (mass %)
19/2350	1	TP1019 ES1	0.30-0.60	12	19/02/2019	General Description (Bulk Analysis)	soil/stones
					19/02/2019	Asbestos Fibres	NAD
					19/02/2019	Asbestos ACM	NAD
					19/02/2019	Asbestos Type	NAD
					19/02/2019	Asbestos Level Screen	NAD
19/2350	1	TP1020 ES2	0.80-1.20	16	19/02/2019	General Description (Bulk Analysis)	soil/stones
					19/02/2019	Asbestos Fibres	NAD
					19/02/2019	Asbestos ACM	NAD
					19/02/2019	Asbestos Type	NAD
					19/02/2019	Asbestos Level Screen	NAD
19/2350	1	TP1021 ES2	1.00-1.40	20	19/02/2019	General Description (Bulk Analysis)	soil/stones
					19/02/2019	Asbestos Fibres	Fibre Bundles
					19/02/2019	Asbestos Fibres (2)	Fibre Bundles
					19/02/2019	Asbestos ACM	NAD
					19/02/2019	Asbestos ACM (2)	NAD
					19/02/2019	Asbestos Type	Crocidolite
					19/02/2019	Asbestos Type (2)	Chrysotile
					19/02/2019	Asbestos Level Screen	Asbestos level cannot be determined from Screen. Quantification required.
					22/02/2019	Total ACM Gravimetric Quantification (% Asb)	<0.001 (mass %)
					22/02/2019	Total Detailed Gravimetric Quantification (% Asb)	<0.001 (mass %)
					22/02/2019	Total Gravimetric Quantification (ACM + Detailed) (% Asb)	<0.001 (mass %)
					22/02/2019	Asbestos PCOM Quantification (Fibres)	<0.001 (mass %)
					22/02/2019	Asbestos Gravimetric & PCOM Total	<0.001 (mass %)
19/2350	1	TP1021 ES3	3.00-3.40	22	19/02/2019	General Description (Bulk Analysis)	soil/stones
					19/02/2019	Asbestos Fibres	NAD
					19/02/2019	Asbestos ACM	NAD
					19/02/2019	Asbestos Type	NAD
					19/02/2019	Asbestos Level Screen	NAD
19/2350	1	TP1024 ES1	0.40-0.80	28	19/02/2019	General Description (Bulk Analysis)	soil/stones
					19/02/2019	Asbestos Fibres	Fibre Bundles
					19/02/2019	Asbestos Fibres (2)	Fibre Bundles
					19/02/2019	Asbestos ACM	NAD
					19/02/2019	Asbestos ACM (2)	NAD
					19/02/2019	Asbestos Type	Amosite
					19/02/2019	Asbestos Type (2)	Chrysotile
					19/02/2019	Asbestos Level Screen	Asbestos level cannot be determined from Screen. Quantification required.
					22/02/2019	Total ACM Gravimetric Quantification (% Asb)	<0.001 (mass %)
					22/02/2019	Total Detailed Gravimetric Quantification (% Asb)	0.004 (mass %)
					22/02/2019	Total Gravimetric Quantification (ACM + Detailed) (% Asb)	0.004 (mass %)
					22/02/2019	Asbestos PCOM Quantification (Fibres)	<0.001 (mass %)
					22/02/2019	Asbestos Gravimetric & PCOM Total	0.004 (mass %)

Client Name: Omnia
Reference: A11057
Location: Kenavon Drive, Reading
Contact: Grace Larcombe

[illegible]

Matrix : Solid

[illegible]

Client Name: Omnia
Reference: A11057
Location: Kenavon Drive, Reading
Contact: Grace Larcombe

[illegible]

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NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 19/2350

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

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The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

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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.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised 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.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Please include all sections of this report if it is reproduced

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
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 an Exova Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range
AA	x5 Dilution
AB	x10 Dilution

JE Job No: 19/2350

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21	As received solid or water samples are extracted in Methanol: Sodium Hydroxide (0.1M NaOH) (60:40) by orbital shaker.			AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes		AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM62	Acid digestion of as received solid samples using Aqua Regia refluxed at 112.5 °C.			AR	Yes
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes

JE Job No: 19/2350

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
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TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM60	As received solid samples are extracted with deionised water in a 2:1 ratio of water to solid.			AR	Yes
TM65	Asbestos Bulk Identification method based on HSG 248.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes		AD	Yes
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM61	As received solid samples are extracted with hot water in a 20:1 ratio of water to soil ready for analysis by ICP.			AR	Yes
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide and Thiocyanate analysis.	Yes		AR	Yes
TM131	Quantification of Asbestos Fibres and ACM, based on HSG248 and SCA method.	PM42	Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	Yes

JE Job No: 19/2350

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
NONE	No Method Code	NONE	No Method Code			AR	Yes



Exova Jones Environmental

Registered Office: Exova Environmental UK Limited, 10 Lower Grosvenor Place, London, SW1W 0EN. Reg No. 11371415

Unit 3 Deeside Point
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Deeside Industrial Park
Deeside
CH5 2UA

Omnia
10 Manor Court
2 Barnes Wallis Road
Segensworth
Fareham
PO15 5TH

Tel: +44 (0) 1244 833780

Fax: +44 (0) 1244 833781



Attention :	Grace Larcombe
Date :	8th February, 2019
Your reference :	A11057
Our reference :	Test Report 19/1533 Batch 1
Location :	Kenavon Drive
Date samples received :	1st February, 2019
Status :	Final report
Issue :	1

Four samples were received for analysis on 1st February, 2019 of which one was scheduled for analysis. 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:

Bruce Leslie
Project Co-ordinator

Client Name: Omnia
Reference: A11057
Location: Kenavon Drive
Contact: Grace Larcombe
JE Job No.: 19/1533

Report : Solid

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

J E Sample No.	3-4												
Sample ID	WAC2												
Depth	0.00-0.60												
COC No / misc													
Containers	V J												
Sample Date	30/01/2019												
Sample Type	Soil												
Batch Number	1												
Date of Receipt	01/02/2019												
											Please see attached notes for all abbreviations and acronyms		
											LOD/LOR	Units	Method No.
PAH MS													
Naphthalene #	0.07										<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.13										<0.03	mg/kg	TM4/PM8
Acenaphthene #	0.06										<0.05	mg/kg	TM4/PM8
Fluorene #	0.04										<0.04	mg/kg	TM4/PM8
Phenanthrene #	1.34										<0.03	mg/kg	TM4/PM8
Anthracene #	0.41										<0.04	mg/kg	TM4/PM8
Fluoranthene #	2.86										<0.03	mg/kg	TM4/PM8
Pyrene #	2.47										<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	1.65										<0.06	mg/kg	TM4/PM8
Chrysene #	1.55										<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	2.68										<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	1.31										<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	1.18										<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	0.43										<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	1.22										<0.04	mg/kg	TM4/PM8
Coronene	0.21										<0.04	mg/kg	TM4/PM8
PAH 17 Total	17.61										<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	1.93										<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.75										<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	100										<0	%	TM4/PM8
Mineral Oil (C10-C40)	45										<30	mg/kg	TM5/PM8/PM16
MTBE #	<5										<5	ug/kg	TM31/PM12
Benzene #	<5										<5	ug/kg	TM31/PM12
Toluene #	<5										<5	ug/kg	TM31/PM12
Ethylbenzene #	<5										<5	ug/kg	TM31/PM12
m/p-Xylene #	<5										<5	ug/kg	TM31/PM12
o-Xylene #	<5										<5	ug/kg	TM31/PM12
PCB 28 #	<5										<5	ug/kg	TM17/PM8
PCB 52 #	<5										<5	ug/kg	TM17/PM8
PCB 101 #	7										<5	ug/kg	TM17/PM8
PCB 118 #	7										<5	ug/kg	TM17/PM8
PCB 138 #	9										<5	ug/kg	TM17/PM8
PCB 153 #	6										<5	ug/kg	TM17/PM8
PCB 180 #	<5										<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35										<35	ug/kg	TM17/PM8
Natural Moisture Content	5.5										<0.1	%	PM4/PM0
Total Organic Carbon #	0.26										<0.02	%	TM21/PM24

Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	15.3					
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	86.7					
Particle Size <4mm =	>95%							
JEFL Job No	19/1533		Landfill Waste Acceptance Criteria Limits					
Sample No	4							
Client Sample No	WAC2							
Depth/Other	0.00-0.60							
Sample Date	30/01/2019							
Batch No	1							
Solid Waste Analysis			Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill			
Total Organic Carbon (%)	0.26					3	5	6
Loss on Ignition (%)	1.6					-	-	10
Sum of BTEX (mg/kg)	<0.025					6	-	-
Sum of 7 PCBs (mg/kg)	<0.035					1	-	-
Mineral Oil (mg/kg)	45					500	-	-
PAH Sum of 17(mg/kg)	17.61					100	-	-
pH (pH Units)	10.72					-	>6	-
ANC to pH 7 (mol/kg)	0.17					-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	1.75					-	to be evaluated	to be evaluated
Eluate Analysis	10:1 conc ⁿ leached		Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg					
	C ₁₀	A ₁₀						
	mg/l	mg/kg						
Arsenic	<0.0025	<0.025	0.5	2	25			
Barium	0.022	0.22	20	100	300			
Cadmium	<0.0005	<0.005	0.04	1	5			
Chromium	0.0303	0.303	0.5	10	70			
Copper	<0.007	<0.07	2	50	100			
Mercury	<0.001	<0.01	0.01	0.2	2			
Molybdenum	0.003	0.03	0.5	10	30			
Nickel	<0.002	<0.02	0.4	10	40			
Lead	<0.005	<0.05	0.5	10	50			
Antimony	0.010	0.10	0.06	0.7	5			
Selenium	<0.003	<0.03	0.1	0.5	7			
Zinc	<0.003	<0.03	4	50	200			
Chloride	4.5	45	800	15000	25000			
Fluoride	<0.3	<3	10	150	500			
Sulphate as SO4	59.6	596	1000	20000	50000			
Total Dissolved Solids	284	2839	4000	60000	100000			
Phenol	<0.01	<0.1	1	-	-			
Dissolved Organic Carbon	4	40	500	800	1000			

Client Name: Omnia
Reference: A11057
Location: Kenavon Drive
Contact: Grace Larcombe

[illegible]

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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.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised 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.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Please include all sections of this report if it is reproduced

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
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 an Exova Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 19/1533

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM17	Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM20	Modified BS 1377-3: 1990/USEPA 160.3 Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.			AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO ₂ generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM22	Modified BS1377-3:1990 Gravimetric determination of Loss on Ignition by temperature controlled Muffle Furnace (35C-440C). On request modified ASTM D2974-00 LOI (105C-440C)	PM0	No preparation is required.	Yes		AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM17	Modified method EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes

JE Job No: 19/1533

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM31	Modified USEPA 8015B. Determination of Methylterbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methylterbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM0	No preparation is required.	Yes		AR	Yes
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060, APHA Standard Methods for Examination of Water and Wastewater 5310B, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.			AR	Yes
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM77	Modified DDCEN/TS method 15364:2006. Determination of Acid Neutralization Capacity by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	No
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.			AR	



Exova Jones Environmental

Registered Office: Exova Environmental UK Limited, 10 Lower Grosvenor Place, London, SW1W 0EN. Reg No. 11371415

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Tel: +44 (0) 1244 833780

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Attention :	Grace Larcombe
Date :	8th February, 2019
Your reference :	A11057
Our reference :	Test Report 19/1615 Batch 1
Location :	Kenavon Drive
Date samples received :	2nd February, 2019
Status :	Final report
Issue :	1

Two samples were received for analysis on 2nd February, 2019 of which one were scheduled for analysis. 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:

Lucas Halliwell
Project Co-ordinator

Client Name: Omnia
Reference: A11057
Location: Kenavon Drive
Contact: Grace Larcombe
JE Job No.: 19/1615

Report : Solid

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

J E Sample No.	1-3										Please see attached notes for all abbreviations and acronyms		
Sample ID	WAC 1												
Depth	0.0-0.6												
COC No / misc													
Containers	V J T												
Sample Date	02/02/2019												
Sample Type	Soil												
Batch Number	1												
Date of Receipt	02/02/2019										LOD/LOR	Units	Method No.
PAH MS													
Naphthalene #	0.12										<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.24										<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05										<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04										<0.04	mg/kg	TM4/PM8
Phenanthrene #	1.50										<0.03	mg/kg	TM4/PM8
Anthracene #	0.49										<0.04	mg/kg	TM4/PM8
Fluoranthene #	4.01										<0.03	mg/kg	TM4/PM8
Pyrene #	3.50										<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	1.99										<0.06	mg/kg	TM4/PM8
Chrysene #	2.21										<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	4.19										<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	2.24										<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	1.70										<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	0.46										<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	1.67										<0.04	mg/kg	TM4/PM8
Coronene	0.37										<0.04	mg/kg	TM4/PM8
PAH 17 Total	24.69										<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	3.02										<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	1.17										<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	103										<0	%	TM4/PM8
Mineral Oil (C10-C40)	50										<30	mg/kg	TM5/PM8/PM16
MTBE #	<5										<5	ug/kg	TM31/PM12
Benzene #	<5										<5	ug/kg	TM31/PM12
Toluene #	<5										<5	ug/kg	TM31/PM12
Ethylbenzene #	<5										<5	ug/kg	TM31/PM12
m/p-Xylene #	<5										<5	ug/kg	TM31/PM12
o-Xylene #	<5										<5	ug/kg	TM31/PM12
PCB 28 #	<5										<5	ug/kg	TM17/PM8
PCB 52 #	<5										<5	ug/kg	TM17/PM8
PCB 101 #	<5										<5	ug/kg	TM17/PM8
PCB 118 #	<5										<5	ug/kg	TM17/PM8
PCB 138 #	<5										<5	ug/kg	TM17/PM8
PCB 153 #	<5										<5	ug/kg	TM17/PM8
PCB 180 #	<5										<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35										<35	ug/kg	TM17/PM8
Natural Moisture Content	11.1										<0.1	%	PM4/PM0
Total Organic Carbon #	0.77										<0.02	%	TM21/PM24

Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	8.2
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	92.4
Particle Size <4mm =	>95%		
JEFL Job No	19/1615	Landfill Waste Acceptance Criteria Limits	
Sample No	3		
Client Sample No	WAC 1		
Depth/Other	0.0-0.6		
Sample Date	02/02/2019		
Batch No	1		
Solid Waste Analysis		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non- Hazardous Landfill
Total Organic Carbon (%)	0.77	3	5
Loss on Ignition (%)	4.9	-	10
Sum of BTEX (mg/kg)	<0.025	6	-
Sum of 7 PCBs (mg/kg)	<0.035	1	-
Mineral Oil (mg/kg)	50	500	-
PAH Sum of 17(mg/kg)	24.69	100	-
pH (pH Units)	11.80	-	>6
ANC to pH 7 (mol/kg)	0.68	-	to be evaluated
ANC to pH 4 (mol/kg)	1.67	-	to be evaluated
Eluate Analysis	10:1 conc ⁿ leached		Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg
	C ₁₀ mg/l	A ₁₀ mg/kg	
Arsenic	<0.0025	<0.025	0.5
Barium	0.091	0.91	20
Cadmium	<0.0005	<0.005	0.04
Chromium	0.0567	0.567	0.5
Copper	<0.007	<0.07	2
Mercury	<0.001	<0.01	0.01
Molybdenum	0.003	0.03	0.5
Nickel	<0.002	<0.02	0.4
Lead	<0.005	<0.05	0.5
Antimony	0.002	0.02	0.06
Selenium	<0.003	<0.03	0.1
Zinc	<0.003	<0.03	4
Chloride	2.4	24	800
Fluoride	<0.3	<3	10
Sulphate as SO ₄	15.8	158	1000
Total Dissolved Solids	408	4082	4000
Phenol	<0.01	<0.1	1
Dissolved Organic Carbon	3	30	500

Client Name: Omnia
Reference: A11057
Location: Kenavon Drive
Contact: Grace Larcombe

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 19/1615

SOILS

Please note we are only MCERTS accredited (UK soils only) 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 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.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually 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.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

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.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised 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.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

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ABBREVIATIONS and ACRONYMS USED

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CO	Suspected carry over
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ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
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JE Job No: 19/1615

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
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TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM17	Modified method EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes

JE Job No: 19/1615

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
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TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM0	No preparation is required.	Yes		AR	Yes
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060, APHA Standard Methods for Examination of Water and Wastewater 5310B, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.			AR	Yes
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
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TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.			AR	



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Attention :	Grace Larcombe
Date :	22nd February, 2019
Your reference :	A11057
Our reference :	Test Report 19/2508 Batch 1
Location :	Kenavon Drive, Reading
Date samples received :	16th February, 2019
Status :	Final report
Issue :	1

Two samples were received for analysis on 16th February, 2019 of which two were scheduled for analysis. 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:

Phil Sommerton BSc

Project Manager

Client Name: Omnia
Reference: A11057
Location: Kenavon Drive, Reading
Contact: Grace Larcombe
JE Job No.: 19/2508

Report : Solid

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

J E Sample No.	1-3	4-6									Please see attached notes for all abbreviations and acronyms		
Sample ID	WAC3	WAC4											
Depth	0.30-0.80	0.30-0.80											
COC No / misc													
Containers	V J T	V J T											
Sample Date	13/02/2019	13/02/2019											
Sample Type	Soil	Soil											
Batch Number	1	1											
Date of Receipt	16/02/2019	16/02/2019									LOD/LOR	Units	Method No.
PAH MS													
Naphthalene #	<0.04	0.06									<0.04	mg/kg	TM4/PM8
Acenaphthylene	0.11	0.13									<0.03	mg/kg	TM4/PM8
Acenaphthene #	<0.05	<0.05									<0.05	mg/kg	TM4/PM8
Fluorene #	<0.04	<0.04									<0.04	mg/kg	TM4/PM8
Phenanthrene #	0.39	0.37									<0.03	mg/kg	TM4/PM8
Anthracene #	0.18	0.18									<0.04	mg/kg	TM4/PM8
Fluoranthene #	1.17	1.23									<0.03	mg/kg	TM4/PM8
Pyrene #	1.21	1.22									<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene #	0.84	0.82									<0.06	mg/kg	TM4/PM8
Chrysene #	0.67	0.84									<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene #	1.59	1.82									<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene #	0.90	0.92									<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene #	0.63	0.70									<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene #	0.12	0.13									<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene #	0.61	0.66									<0.04	mg/kg	TM4/PM8
Coronene	0.12	0.15									<0.04	mg/kg	TM4/PM8
PAH 17 Total	8.54	9.23									<0.64	mg/kg	TM4/PM8
Benzo(b)fluoranthene	1.14	1.31									<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.45	0.51									<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	91	94									<0	%	TM4/PM8
Mineral Oil (C10-C40)	<30	<30									<30	mg/kg	TM5/PM8/PM16
MTBE #	<5 ^{SV}	<5 ^{SV}									<5	ug/kg	TM31/PM12
Benzene #	<5 ^{SV}	<5 ^{SV}									<5	ug/kg	TM31/PM12
Toluene #	<5 ^{SV}	<5 ^{SV}									<5	ug/kg	TM31/PM12
Ethylbenzene #	<5 ^{SV}	<5 ^{SV}									<5	ug/kg	TM31/PM12
m/p-Xylene #	<5 ^{SV}	<5 ^{SV}									<5	ug/kg	TM31/PM12
o-Xylene #	<5 ^{SV}	<5 ^{SV}									<5	ug/kg	TM31/PM12
PCB 28 #	<5	<5									<5	ug/kg	TM17/PM8
PCB 52 #	<5	<5									<5	ug/kg	TM17/PM8
PCB 101 #	<5	<5									<5	ug/kg	TM17/PM8
PCB 118 #	<5	<5									<5	ug/kg	TM17/PM8
PCB 138 #	<5	<5									<5	ug/kg	TM17/PM8
PCB 153 #	<5	<5									<5	ug/kg	TM17/PM8
PCB 180 #	<5	<5									<5	ug/kg	TM17/PM8
Total 7 PCBs #	<35	<35									<35	ug/kg	TM17/PM8
Natural Moisture Content	17.0	18.5									<0.1	%	PM4/PM0
Total Organic Carbon #	7.18	13.24									<0.02	%	TM21/PM24

Please see attached notes for all abbreviations and acronyms

Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	6.9					
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	93.5					
Particle Size <4mm =	>95%							
JEFL Job No	19/2508		Landfill Waste Acceptance Criteria Limits					
Sample No	3							
Client Sample No	WAC3							
Depth/Other	0.30-0.80							
Sample Date	13/02/2019							
Batch No	1							
Solid Waste Analysis			Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill			
Total Organic Carbon (%)	7.18					3	5	6
Loss on Ignition (%)	8.2					-	-	10
Sum of BTEX (mg/kg)	<0.025					6	-	-
Sum of 7 PCBs (mg/kg)	<0.035					1	-	-
Mineral Oil (mg/kg)	<30					500	-	-
PAH Sum of 17(mg/kg)	8.54					100	-	-
pH (pH Units)	9.11					-	>6	-
ANC to pH 7 (mol/kg)	0.04					-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	2.27					-	to be evaluated	to be evaluated
Eluate Analysis	10:1 conc ⁿ leached		Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg					
	C ₁₀	A ₁₀						
	mg/l	mg/kg						
Arsenic	0.0066	0.066	0.5	2	25			
Barium	0.020	0.20	20	100	300			
Cadmium	<0.0005	<0.005	0.04	1	5			
Chromium	0.0121	0.121	0.5	10	70			
Copper	<0.007	<0.07	2	50	100			
Mercury	<0.001	<0.01	0.01	0.2	2			
Molybdenum	0.013	0.13	0.5	10	30			
Nickel	<0.002	<0.02	0.4	10	40			
Lead	<0.005	<0.05	0.5	10	50			
Antimony	<0.002	<0.02	0.06	0.7	5			
Selenium	<0.003	<0.03	0.1	0.5	7			
Zinc	<0.003	<0.03	4	50	200			
Chloride	1.4	14	800	15000	25000			
Fluoride	<0.3	<3	10	150	500			
Sulphate as SO4	400.2	4003	1000	20000	50000			
Total Dissolved Solids	704	7042	4000	60000	100000			
Phenol	<0.01	<0.1	1	-	-			
Dissolved Organic Carbon	7	70	500	800	1000			

Mass of sample taken (kg)	-	Moisture Content Ratio (%) =	23.2		
Mass of dry sample (kg) =	0.09	Dry Matter Content Ratio (%) =	81.2		
Particle Size <4mm =	>95%				
JEFL Job No	19/2508		Landfill Waste Acceptance Criteria Limits		
Sample No	6				
Client Sample No	WAC4		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Depth/Other	0.30-0.80				
Sample Date	13/02/2019				
Batch No	1				
Solid Waste Analysis					
Total Organic Carbon (%)	13.24		3	5	6
Loss on Ignition (%)	7.9		-	-	10
Sum of BTEX (mg/kg)	<0.025		6	-	-
Sum of 7 PCBs (mg/kg)	<0.035		1	-	-
Mineral Oil (mg/kg)	<30		500	-	-
PAH Sum of 17(mg/kg)	9.23		100	-	-
pH (pH Units)	8.62		-	>6	-
ANC to pH 7 (mol/kg)	NDP		-	to be evaluated	to be evaluated
ANC to pH 4 (mol/kg)	2.82		-	to be evaluated	to be evaluated
Eluate Analysis	10:1 conc ⁿ leached		Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg		
	C ₁₀	A ₁₀			
	mg/l	mg/kg			
Arsenic	0.0066	0.066	0.5	2	25
Barium	0.016	0.16	20	100	300
Cadmium	<0.0005	<0.005	0.04	1	5
Chromium	0.0276	0.276	0.5	10	70
Copper	0.008	0.08	2	50	100
Mercury	<0.001	<0.01	0.01	0.2	2
Molybdenum	0.019	0.19	0.5	10	30
Nickel	<0.002	<0.02	0.4	10	40
Lead	<0.005	<0.05	0.5	10	50
Antimony	<0.002	<0.02	0.06	0.7	5
Selenium	<0.003	<0.03	0.1	0.5	7
Zinc	<0.003	<0.03	4	50	200
Chloride	1.4	14	800	15000	25000
Fluoride	0.3	<3	10	150	500
Sulphate as SO4	325.3	3253	1000	20000	50000
Total Dissolved Solids	578	5779	4000	60000	100000
Phenol	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	7	70	500	800	1000

Matrix : Solid

[illegible]

Client Name: Omnia
Reference: A11057
Location: Kenavon Drive, Reading
Contact: Grace Larcombe

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 19/2508

SOILS

Please note we are only MCERTS accredited (UK soils only) 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 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.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually 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.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

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.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised 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.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Please include all sections of this report if it is reproduced

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
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 an Exova Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 19/2508

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM17	Modified US EPA method 8270. Determination of specific Polychlorinated Biphenyl congeners by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM20	Modified BS 1377-3: 1990/USEPA 160.3 Gravimetric determination of Total Dissolved Solids/Total Solids	PM0	No preparation is required.			AR	Yes
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO ₂ generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil, March 2012 v4.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.	Yes		AD	Yes
TM22	Modified BS1377-3:1990 Gravimetric determination of Loss on Ignition by temperature controlled Muffle Furnace (35C-440C). On request modified ASTM D2974-00 LOI (105C-440C)	PM0	No preparation is required.	Yes		AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.			AR	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM17	Modified method EN12457-2 As received solid samples are leached with water in a 10:1 water to soil ratio for 24 hours, the moisture content of the sample is included in the ratio.	Yes		AR	Yes

JE Job No: 19/2508

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM31	Modified USEPA 8015B. Determination of Methylterbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.			AR	Yes
TM31	Modified USEPA 8015B. Determination of Methylterbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes		AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM0	No preparation is required.	Yes		AR	Yes
TM60	TC/TOC analysis of Waters by High Temperature Combustion followed by NDIR detection. Based on the following modified standard methods: USEPA 9060, APHA Standard Methods for Examination of Water and Wastewater 5310B, ASTM D 7573, and USEPA 415.1.	PM0	No preparation is required.			AR	Yes
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes		AR	No
TM77	Modified DDCEN/TS method 15364:2006. Determination of Acid Neutralization Capacity by Metrohm automated probe analyser.	PM0	No preparation is required.			AR	No
TM173	Analysis of fluoride by ISE (Ion Selective Electrode) using modified ISE method 340.2	PM0	No preparation is required.			AR	Yes
NONE	No Method Code	PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.			AR	



Exova Jones Environmental

Registered Office: Exova Environmental UK Limited, 10 Lower Grosvenor Place, London, SW1W 0EN. Reg No. 11371415

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Attention :	Grace Larcombe
Date :	20th February, 2019
Your reference :	A11057
Our reference :	Test Report 19/2118 Batch 1
Location :	Kenavon Drive, Reading
Date samples received :	11th February, 2019
Status :	Final report
Issue :	1

Two samples were received for analysis on 11th February, 2019 of which two were scheduled for analysis. 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:

Bruce Leslie
Project Co-ordinator

Client Name: Omnia
Reference: A11057
Location: Kenavon Drive, Reading
Contact: Grace Larcombe
JE Job No.: 19/2118

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H₂SO₄, Z=ZnAc, N=NaOH, HN=HN0₃

J E Sample No.	1-3	4-6										
Sample ID	SW 1001	SW 1002										
Depth												
COC No / misc												
Containers	V P G	V P G										
Sample Date	07/01/2019	07/01/2019										
Sample Type	Surface Water	Surface Water										
Batch Number	1	1										
Date of Receipt	11/02/2019	11/02/2019										
										LOD/LOR	Units	Method No.
Dissolved Arsenic #	<2.5	<2.5								<2.5	ug/l	TM30/PM14
Dissolved Barium #	23	23								<3	ug/l	TM30/PM14
Dissolved Beryllium	<0.5	<0.5								<0.5	ug/l	TM30/PM14
Dissolved Boron	21	20								<12	ug/l	TM30/PM14
Dissolved Cadmium #	<0.5	<0.5								<0.5	ug/l	TM30/PM14
Total Dissolved Chromium #	<1.5	<1.5								<1.5	ug/l	TM30/PM14
Dissolved Copper #	<7	<7								<7	ug/l	TM30/PM14
Dissolved Lead #	<5	<5								<5	ug/l	TM30/PM14
Dissolved Mercury #	<1	<1								<1	ug/l	TM30/PM14
Dissolved Nickel #	<2	2								<2	ug/l	TM30/PM14
Dissolved Selenium #	<3	<3								<3	ug/l	TM30/PM14
Dissolved Vanadium #	2.2	2.6								<1.5	ug/l	TM30/PM14
Dissolved Zinc #	4	4								<3	ug/l	TM30/PM14
Total Hardness Dissolved (as CaCO3)	220	218								<1	mg/l	TM30/PM14
PAH MS												
Naphthalene	<0.1	<0.1								<0.1	ug/l	TM4/PM30
Acenaphthylene	<0.01	<0.01								<0.01	ug/l	TM4/PM30
Acenaphthene	<0.01	<0.01								<0.01	ug/l	TM4/PM30
Fluorene	<0.01	<0.01								<0.01	ug/l	TM4/PM30
Phenanthrene	<0.01	<0.01								<0.01	ug/l	TM4/PM30
Anthracene	<0.01	<0.01								<0.01	ug/l	TM4/PM30
Fluoranthene	0.03	0.08								<0.01	ug/l	TM4/PM30
Pyrene	0.03	0.07								<0.01	ug/l	TM4/PM30
Benzo(a)anthracene	<0.01	0.04								<0.01	ug/l	TM4/PM30
Chrysene	0.02	0.05								<0.01	ug/l	TM4/PM30
Benzo(bk)fluoranthene	0.04	0.10								<0.01	ug/l	TM4/PM30
Benzo(a)pyrene	<0.01	0.05								<0.01	ug/l	TM4/PM30
Indeno(123cd)pyrene	<0.01	0.04								<0.01	ug/l	TM4/PM30
Dibenzo(ah)anthracene	<0.01	<0.01								<0.01	ug/l	TM4/PM30
Benzo(ghi)perylene	<0.01	0.04								<0.01	ug/l	TM4/PM30
PAH 16 Total	0.1	0.5								<0.1	ug/l	TM4/PM30
Benzo(b)fluoranthene	0.03	0.07								<0.01	ug/l	TM4/PM30
Benzo(k)fluoranthene	0.01	0.03								<0.01	ug/l	TM4/PM30
PAH Surrogate % Recovery	82	82								<0	%	TM4/PM30
Methyl Tertiary Butyl Ether #	<0.1	<0.1								<0.1	ug/l	TM15/PM10
Benzene #	<0.5	<0.5								<0.5	ug/l	TM15/PM10
Toluene #	<5	<5								<5	ug/l	TM15/PM10
Ethylbenzene #	<1	<1								<1	ug/l	TM15/PM10
p/m-Xylene #	<2	<2								<2	ug/l	TM15/PM10
o-Xylene #	<1	<1								<1	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	103	103								<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	107	109								<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Client Name: Omnia
Reference: A11057
Location: Kenavon Drive, Reading
Contact: Grace Larcombe
JE Job No.: 19/2118

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H₂SO₄, Z=ZnAc, N=NaOH, HN=HN0₃

J E Sample No.	1-3	4-6									Please see attached notes for all abbreviations and acronyms		
Sample ID	SW1001	SW1002											
Depth													
COC No / misc													
Containers	V P G	V P G											
Sample Date	07/01/2019	07/01/2019											
Sample Type	Surface Water	Surface Water											
Batch Number	1	1											
Date of Receipt	11/02/2019	11/02/2019											
TPH CWG													
Aliphatics													
>C5-C6 #	<10	<10									<10	ug/l	TM36/PM12
>C6-C8 #	<10	<10									<10	ug/l	TM36/PM12
>C8-C10 #	<10	<10									<10	ug/l	TM36/PM12
>C10-C12 #	<5	<5									<5	ug/l	TM5/PM16/PM30
>C12-C16 #	<10	<10									<10	ug/l	TM5/PM16/PM30
>C16-C21 #	<10	<10									<10	ug/l	TM5/PM16/PM30
>C21-C35 #	<10	<10									<10	ug/l	TM5/PM16/PM30
Total aliphatics C5-35 #	<10	<10									<10	ug/l	TM5/PM16/PM12/PM30/PM40
Aromatics													
>C5-EC7 #	<10	<10									<10	ug/l	TM36/PM12
>EC7-EC8 #	<10	<10									<10	ug/l	TM36/PM12
>EC8-EC10 #	<10	<10									<10	ug/l	TM36/PM12
>EC10-EC12 #	<5	<5									<5	ug/l	TM5/PM16/PM30
>EC12-EC16 #	<10	<10									<10	ug/l	TM5/PM16/PM30
>EC16-EC21 #	<10	<10									<10	ug/l	TM5/PM16/PM30
>EC21-EC35 #	<10	<10									<10	ug/l	TM5/PM16/PM30
Total aromatics C5-35 #	<10	<10									<10	ug/l	TM5/PM16/PM12/PM30/PM40
Total aliphatics and aromatics(C5-35) #	<10	<10									<10	ug/l	TM5/PM16/PM12/PM30/PM40
Total Phenols HPLC	<0.15	<0.15									<0.15	mg/l	TM26/PM0
Sulphate as SO4 #	27.0	26.9									<0.5	mg/l	TM38/PM0
Total Cyanide #	<0.01	<0.01									<0.01	mg/l	TM89/PM0
Hexavalent Chromium	<0.006	<0.006									<0.006	mg/l	TM38/PM0
Total Dissolved Chromium III	<6	<6									<6	ug/l	TM0/PM0
pH #	8.07	8.06									<0.01	pH units	TM73/PM0
				</									

Client Name: Omnia
Reference: A11057
Location: Kenavon Drive, Reading
Contact: Grace Larcombe
JE Job No.: 19/2118

SVOC Report : Liquid

J E Sample No.	1-3	4-6										
Sample ID	SW1001	SW1002										
Depth												
COC No / misc												
Containers	V P G	V P G										
Sample Date	07/01/2019	07/01/2019										
Sample Type	Surface Water	Surface Water										
Batch Number	1	1										
Date of Receipt	11/02/2019	11/02/2019										
	LOD/LOR	Units	Method No.									
SVOC MS												
Phenols												
2-Chlorophenol [#]	<1	<1								<1	ug/l	TM16/PM30
2-Methylphenol [#]	<0.5	<0.5								<0.5	ug/l	TM16/PM30
2-Nitrophenol	<0.5	<0.5								<0.5	ug/l	TM16/PM30
2,4-Dichlorophenol [#]	<0.5	<0.5								<0.5	ug/l	TM16/PM30
2,4-Dimethylphenol	<1	<1								<1	ug/l	TM16/PM30
2,4,5-Trichlorophenol [#]	<0.5	<0.5								<0.5	ug/l	TM16/PM30
2,4,6-Trichlorophenol	<1	<1								<1	ug/l	TM16/PM30
4-Chloro-3-methylphenol [#]	<0.5	<0.5								<0.5	ug/l	TM16/PM30
4-Methylphenol	<1	<1								<1	ug/l	TM16/PM30
4-Nitrophenol	<10	<10								<10	ug/l	TM16/PM30
Pentachlorophenol	<1	<1								<1	ug/l	TM16/PM30
Phenol	<1	<1								<1	ug/l	TM16/PM30
PAHs												
2-Chloronaphthalene [#]	<1	<1								<1	ug/l	TM16/PM30
2-Methylnaphthalene [#]	<1	<1								<1	ug/l	TM16/PM30
Phthalates												
Bis(2-ethylhexyl) phthalate	<5	<5								<5	ug/l	TM16/PM30
Butylbenzyl phthalate	<1	<1								<1	ug/l	TM16/PM30
Di-n-butyl phthalate [#]	<1.5	<1.5								<1.5	ug/l	TM16/PM30
Di-n-Octyl phthalate	<1	<1								<1	ug/l	TM16/PM30
Diethyl phthalate [#]	<1	<1								<1	ug/l	TM16/PM30
Dimethyl phthalate	<1	<1								<1	ug/l	TM16/PM30
Other SVOCs												
1,2-Dichlorobenzene [#]	<1	<1								<1	ug/l	TM16/PM30
1,2,4-Trichlorobenzene [#]	<1	<1								<1	ug/l	TM16/PM30
1,3-Dichlorobenzene [#]	<1	<1								<1	ug/l	TM16/PM30
1,4-Dichlorobenzene [#]	<1	<1								<1	ug/l	TM16/PM30
2-Nitroaniline	<1	<1								<1	ug/l	TM16/PM30
2,4-Dinitrotoluene [#]	<0.5	<0.5								<0.5	ug/l	TM16/PM30
2,6-Dinitrotoluene	<1	<1								<1	ug/l	TM16/PM30
3-Nitroaniline	<1	<1								<1	ug/l	TM16/PM30
4-Bromophenylphenylether [#]	<1	<1								<1	ug/l	TM16/PM30
4-Chloroaniline	<1	<1								<1	ug/l	TM16/PM30
4-Chlorophenylphenylether [#]	<1	<1								<1	ug/l	TM16/PM30
4-Nitroaniline	<0.5	<0.5								<0.5	ug/l	TM16/PM30
Azobenzene [#]	<0.5	<0.5								<0.5	ug/l	TM16/PM30
Bis(2-chloroethoxy)methane [#]	<0.5	<0.5								<0.5	ug/l	TM16/PM30
Bis(2-chloroethyl)ether [#]	<1	<1								<1	ug/l	TM16/PM30
Carbazole [#]	<0.5	<0.5								<0.5	ug/l	TM16/PM30
Dibenzofuran [#]	<0.5	<0.5								<0.5	ug/l	TM16/PM30
Hexachlorobenzene [#]	<1	<1								<1	ug/l	TM16/PM30
Hexachlorobutadiene [#]	<1	<1								<1	ug/l	TM16/PM30
Hexachlorocyclopentadiene	<1	<1								<1	ug/l	TM16/PM30
Hexachloroethane [#]	<1	<1								<1	ug/l	TM16/PM30
Isophorone [#]	<0.5	<0.5								<0.5	ug/l	TM16/PM30
N-nitrosodi-n-propylamine [#]	<0.5	<0.5								<0.5	ug/l	TM16/PM30
Nitrobenzene [#]	<1	<1								<1	ug/l	TM16/PM30
Surrogate Recovery 2-Fluorobiphenyl	113	111								<0	%	TM16/PM30
Surrogate Recovery p-Terphenyl-d14	123	112								<0	%	TM16/PM30

Please see attached notes for all abbreviations and acronyms

Client Name: Omnia
Reference: A11057
Location: Kenavon Drive, Reading
Contact: Grace Larcombe
JE Job No.: 19/2118

VOC Report : Liquid

J E Sample No.	1-3	4-6										
Sample ID	SW1001	SW1002										
Depth												
COC No / misc												
Containers	V P G	V P G										
Sample Date	07/01/2019	07/01/2019										
Sample Type	Surface Water	Surface Water										
Batch Number	1	1										
Date of Receipt	11/02/2019	11/02/2019										
	LOD/LOR	Units	Method No.									
VOC MS												
Dichlorodifluoromethane	<2	<2								<2	ug/l	TM15/PM10
Methyl Tertiary Butyl Ether #	<0.1	<0.1								<0.1	ug/l	TM15/PM10
Chloromethane #	<3	<3								<3	ug/l	TM15/PM10
Vinyl Chloride #	<0.1	<0.1								<0.1	ug/l	TM15/PM10
Bromomethane	<1	<1								<1	ug/l	TM15/PM10
Chloroethane #	<3	<3								<3	ug/l	TM15/PM10
Trichlorofluoromethane #	<3	<3								<3	ug/l	TM15/PM10
1,1-Dichloroethene (1,1 DCE) #	<3	<3								<3	ug/l	TM15/PM10
Dichloromethane (DCM) #	<5	<5								<5	ug/l	TM15/PM10
trans-1,2-Dichloroethene #	<3	<3								<3	ug/l	TM15/PM10
1,1-Dichloroethane #	<3	<3								<3	ug/l	TM15/PM10
cis-1,2-Dichloroethene #	<3	<3								<3	ug/l	TM15/PM10
2,2-Dichloropropane	<1	<1								<1	ug/l	TM15/PM10
Bromochloromethane #	<2	<2								<2	ug/l	TM15/PM10
Chloroform #	<2	<2								<2	ug/l	TM15/PM10
1,1,1-Trichloroethane #	<2	<2								<2	ug/l	TM15/PM10
1,1-Dichloropropene #	<3	<3								<3	ug/l	TM15/PM10
Carbon tetrachloride #	<2	<2								<2	ug/l	TM15/PM10
1,2-Dichloroethane #	<2	<2								<2	ug/l	TM15/PM10
Benzene #	<0.5	<0.5								<0.5	ug/l	TM15/PM10
Trichloroethene (TCE) #	<3	<3								<3	ug/l	TM15/PM10
1,2-Dichloropropane #	<2	<2								<2	ug/l	TM15/PM10
Dibromomethane #	<3	<3								<3	ug/l	TM15/PM10
Bromodichloromethane #	<2	<2								<2	ug/l	TM15/PM10
cis-1,3-Dichloropropene	<2	<2								<2	ug/l	TM15/PM10
Toluene #	<5	<5								<5	ug/l	TM15/PM10
trans-1,3-Dichloropropene	<2	<2								<2	ug/l	TM15/PM10
1,1,2-Trichloroethane #	<2	<2								<2	ug/l	TM15/PM10
Tetrachloroethene (PCE) #	<3	<3								<3	ug/l	TM15/PM10
1,3-Dichloropropane #	<2	<2								<2	ug/l	TM15/PM10
Dibromochloromethane #	<2	<2								<2	ug/l	TM15/PM10
1,2-Dibromoethane #	<2	<2								<2	ug/l	TM15/PM10
Chlorobenzene #	<2	<2								<2	ug/l	TM15/PM10
1,1,1,2-Tetrachloroethane #	<2	<2								<2	ug/l	TM15/PM10
Ethylbenzene #	<1	<1								<1	ug/l	TM15/PM10
p/m-Xylene #	<2	<2								<2	ug/l	TM15/PM10
o-Xylene #	<1	<1								<1	ug/l	TM15/PM10
Styrene	<2	<2								<2	ug/l	TM15/PM10
Bromoform #	<2	<2								<2	ug/l	TM15/PM10
Isopropylbenzene #	<3	<3								<3	ug/l	TM15/PM10
1,1,2,2-Tetrachloroethane	<4	<4								<4	ug/l	TM15/PM10
Bromobenzene #	<2	<2								<2	ug/l	TM15/PM10
1,2,3-Trichloropropane #	<3	<3								<3	ug/l	TM15/PM10
Propylbenzene #	<3	<3								<3	ug/l	TM15/PM10
2-Chlorotoluene #	<3	<3								<3	ug/l	TM15/PM10
1,3,5-Trimethylbenzene #	<3	<3								<3	ug/l	TM15/PM10
4-Chlorotoluene #	<3	<3								<3	ug/l	TM15/PM10
tert-Butylbenzene #	<3	<3								<3	ug/l	TM15/PM10
1,2,4-Trimethylbenzene #	<3	<3								<3	ug/l	TM15/PM10
sec-Butylbenzene #	<3	<3								<3	ug/l	TM15/PM10
4-Isopropyltoluene #	<3	<3								<3	ug/l	TM15/PM10
1,3-Dichlorobenzene #	<3	<3								<3	ug/l	TM15/PM10
1,4-Dichlorobenzene #	<3	<3								<3	ug/l	TM15/PM10
n-Butylbenzene #	<3	<3								<3	ug/l	TM15/PM10
1,2-Dichlorobenzene #	<3	<3								<3	ug/l	TM15/PM10
1,2-Dibromo-3-chloropropane	<2	<2								<2	ug/l	TM15/PM10
1,2,4-Trichlorobenzene	<3	<3								<3	ug/l	TM15/PM10
Hexachlorobutadiene	<3	<3								<3	ug/l	TM15/PM10
Naphthalene	<2	<2								<2	ug/l	TM15/PM10
1,2,3-Trichlorobenzene	<3	<3								<3	ug/l	TM15/PM10
Surrogate Recovery Toluene D8	103	103								<0	%	TM15/PM10
Surrogate Recovery 4-Bromofluorobenzene	107	109								<0	%	TM15/PM10

Please see attached notes for all abbreviations and acronyms

Matrix : Liquid

Client Name: Omnia **Matrix : Liquid**
Reference: A11057

Reference: A11057
Location: Kenavon Drive, Reading

Location: Kenavon Drive, Reading

Contact: Grace Larcombe

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 19/2118

SOILS

Please note we are only MCERTS accredited (UK soils only) 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 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.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually 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.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

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.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised 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.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Please include all sections of this report if it is reproduced

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
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 an Exova Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 19/2118

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM0	Not available	PM0	No preparation is required.				
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16/PM30	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE/Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5/TM36	please refer to TM5 and TM36 for method details	PM12/PM16/PM30	please refer to PM16/PM30 and PM12 for method details	Yes			
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.				
TM15	Modified USEPA 8260. Quantitative Determination of Volatile Organic Compounds (VOCs) by Headspace GC-MS.	PM10	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM16	Modified USEPA 8270. Quantitative determination of Semi-Volatile Organic compounds (SVOCs) by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.				
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM14	Analysis of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for dissolved metals and acidified if required.				

JE Job No: 19/2118

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM14	Analysis of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for dissolved metals and acidified if required.	Yes			
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GCFID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM0	No preparation is required.				
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM0	No preparation is required.	Yes			
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM0	No preparation is required.	Yes			



Exova Jones Environmental

Registered Office: Exova Environmental UK Limited, 10 Lower Grosvenor Place, London, SW1W 0EN. Reg No. 11371415

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Attention :	Grace Larcombe
Date :	14th March, 2019
Your reference :	A11057
Our reference :	Test Report 19/3778 Batch 1
Location :	Kenavon Drive, Reading
Date samples received :	8th March, 2019
Status :	Final report
Issue :	1

Three samples were received for analysis on 8th March, 2019 of which three were scheduled for analysis. 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:

Phil Sommerton BSc

Project Manager

Please see attached notes for all abbreviations and acronyms

Client Name: Omnia
Reference: A11057
Location: Kenavon Drive, Reading
Contact: Grace Larcombe
JE Job No.: 19/3778

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
H=H₂SO₄, Z=ZnAc, N=NaOH, HN=HNO₃

J E Sample No.	1-3	4-6	7-9								Please see attached notes for all abbreviations and acronyms		
Sample ID	BH1001A	BH1002	BH1003										
Depth	4.50	4.50	4.50										
COC No / misc													
Containers	V G	V G	V G										
Sample Date	06/03/2019	06/03/2019	06/03/2019										
Sample Type	Ground Water	Ground Water	Ground Water										
Batch Number	1	1	1										
Date of Receipt	08/03/2019	08/03/2019	08/03/2019								LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 #	<10	<10	<10								<10	ug/l	TM36/PM12
>C6-C8 #	<10	<10	<10								<10	ug/l	TM36/PM12
>C8-C10 #	<10	<10	<10								<10	ug/l	TM36/PM12
>C10-C12 #	<5	<5	<5								<5	ug/l	TM5/PM16/PM30
>C12-C16 #	<10	<10	<10								<10	ug/l	TM5/PM16/PM30
>C16-C21 #	<10	<10	<10								<10	ug/l	TM5/PM16/PM30
>C21-C35 #	<10	<10	<10								<10	ug/l	TM5/PM16/PM30
Total aliphatics C5-35 #	<10	<10	<10								<10	ug/l	TM5/PM16/PM30
Aromatics													
>C5-EC7 #	<10	<10	<10								<10	ug/l	TM36/PM12
>EC7-EC8 #	<10	<10	<10								<10	ug/l	TM36/PM12
>EC8-EC10 #	<10	<10	<10								<10	ug/l	TM36/PM12
>EC10-EC12 #	<5	<5	<5								<5	ug/l	TM5/PM16/PM30
>EC12-EC16 #	<10	<10	<10								<10	ug/l	TM5/PM16/PM30
>EC16-EC21 #	<10	<10	<10								<10	ug/l	TM5/PM16/PM30
>EC21-EC35 #	<10	<10	<10								<10	ug/l	TM5/PM16/PM30
Total aromatics C5-35 #	<10	<10	<10								<10	ug/l	TM5/PM16/PM30
Total aliphatics and aromatics(C5-35) #	<10	<10	<10								<10	ug/l	TM5/PM16/PM30
MTBE #	<5	<5	<5								<5	ug/l	TM31/PM12
Benzene #	<5	<5	<5								<5	ug/l	TM31/PM12
Toluene #	<5	<5	<5								<5	ug/l	TM31/PM12
Ethylbenzene #	<5	<5	<5								<5	ug/l	TM31/PM12
m/p-Xylene #	<5	<5	<5								<5	ug/l	TM31/PM12
o-Xylene #	<5	<5	<5								<5	ug/l	TM31/PM12
Total Phenols HPLC	<0.15	<0.15	<0.15								<0.15	mg/l	TM26/PM0
Sulphate as SO4 #	121.1	78.3	30.9								<0.5	mg/l	TM38/PM0
Free Cyanide	<0.001	<0.001	<0.001								<0.001	mg/l	TM89/PM0
Total Cyanide #	<0.01	<0.01	0.01								<0.01	mg/l	TM89/PM0
Hexavalent Chromium	<0.006	<0.006	<0.006								<0.006	mg/l	TM38/PM0
Total Dissolved Chromium III	<6	<6	<6								<6	ug/l	TM0/PM0
pH #	8.06	7.92	8.05								<0.01	pH units	TM73/PM0

Client Name: Omnia
Reference: A11057
Location: Kenavon Drive, Reading
Contact: Grace Larcombe

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 19/3778

SOILS

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

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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.

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Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually 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.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

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.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised 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.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

Please include all sections of this report if it is reproduced

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
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 an Exova Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 19/3778

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM0	Not available	PM0	No preparation is required.				
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16/PM30	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE/Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5/TM36	please refer to TM5 and TM36 for method details	PM12/PM16/PM30	please refer to PM16/PM30 and PM12 for method details	Yes			
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.				
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM14	Analysis of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for dissolved metals and acidified if required.				
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM14	Analysis of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for dissolved metals and acidified if required.	Yes			
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM0	No preparation is required.				

JE Job No: 19/3778

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM0	No preparation is required.	Yes			
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM0	No preparation is required.				
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM0	No preparation is required.	Yes			



Exova Jones Environmental

Registered Office: Exova Environmental UK Limited, 10 Lower Grosvenor Place, London, SW1W 0EN. Reg No. 11371415

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

Omnia
10 Manor Court
2 Barnes Wallis Road
Segensworth
Fareham
PO15 5TH

Tel: +44 (0) 1244 833780

Fax: +44 (0) 1244 833781



Attention :	Grace Larcombe
Date :	7th March, 2019
Your reference :	A11057
Our reference :	Test Report 19/3244 Batch 1
Location :	Kenavon Drive, Reading
Date samples received :	28th February, 2019
Status :	Final report
Issue :	1

Seven samples were received for analysis on 28th February, 2019 of which seven were scheduled for analysis. 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:

Bruce Leslie
Project Co-ordinator

Client Name: Omnia
Reference: A11057
Location: Kenavon Drive, Reading
Contact: Grace Larcombe
JE Job No.: 19/3244

Report : Liquid

Liquids/products: V=40ml vial, G=glass bottle, P=plastic bottle
 H=H₂SO₄, Z=ZnAc, N=NaOH, HN=HN0₃

J E Sample No.	1-3	4-6	7-9	10-12	13-15	16-18	19-21				Please see attached notes for all abbreviations and acronyms		
Sample ID	WS6	CP03	WS05	BH1001A	BH1002	BH1003	WS3						
Depth	2.90	4.50	4.00	4.50	4.50	3.50	3.80						
COC No / misc													
Containers	V G	V G	V G	V G	V G	V G	V G						
Sample Date	26/02/2019	26/02/2019	26/02/2019	26/02/2019	26/02/2019	26/02/2019	26/02/2019						
Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water						
Batch Number	1	1	1	1	1	1	1						
Date of Receipt	28/02/2019	28/02/2019	28/02/2019	28/02/2019	28/02/2019	28/02/2019	28/02/2019				LOD/LOR	Units	Method No.
Dissolved Arsenic [#]	-	-	-	<2.5	<2.5	<2.5	-				<2.5	ug/l	TM30/PM14
Dissolved Barium [#]	-	-	-	34	25	72	-				<3	ug/l	TM30/PM14
Dissolved Beryllium	-	-	-	<0.5	<0.5	<0.5	-				<0.5	ug/l	TM30/PM14
Dissolved Boron	-	-	-	270	122	64	-				<12	ug/l	TM30/PM14
Dissolved Cadmium [#]	-	-	-	<0.5	<0.5	<0.5	-				<0.5	ug/l	TM30/PM14
Total Dissolved Chromium [#]	-	-	-	<1.5	<1.5	<1.5	-				<1.5	ug/l	TM30/PM14
Dissolved Copper [#]	-	-	-	<7	<7	<7	-				<7	ug/l	TM30/PM14
Dissolved Lead [#]	-	-	-	<5	<5	<5	-				<5	ug/l	TM30/PM14
Dissolved Mercury [#]	-	-	-	<1	1	<1	-				<1	ug/l	TM30/PM14
Dissolved Nickel [#]	-	-	-	5	11	<2	-				<2	ug/l	TM30/PM14
Dissolved Selenium [#]	-	-	-	<3	<3	<3	-				<3	ug/l	TM30/PM14
Dissolved Vanadium [#]	-	-	-	<1.5	1.6	<1.5	-				<1.5	ug/l	TM30/PM14
Dissolved Zinc [#]	-	-	-	4	3	<3	-				<3	ug/l	TM30/PM14
Total Hardness Dissolved (as CaCO3)	-	-	-	271	288	262	-				<1	mg/l	TM30/PM14
PAH MS													
Naphthalene	-	-	-	<0.1	<0.1	<0.1	-				<0.1	ug/l	TM4/PM30
Acenaphthylene	-	-	-	0.01	<0.01	<0.01	-				<0.01	ug/l	TM4/PM30
Acenaphthene	-	-	-	<0.01	<0.01	<0.01	-				<0.01	ug/l	TM4/PM30
Fluorene	-	-	-	<0.01	<0.01	<0.01	-				<0.01	ug/l	TM4/PM30
Phenanthrene	-	-	-	<0.01	<0.01	<0.01	-				<0.01	ug/l	TM4/PM30
Anthracene	-	-	-	<0.01	<0.01	<0.01	-				<0.01	ug/l	TM4/PM30
Fluoranthene	-	-	-	<0.01	<0.01	0.01	-				<0.01	ug/l	TM4/PM30
Pyrene	-	-	-	<0.01	<0.01	0.01	-				<0.01	ug/l	TM4/PM30
Benzo(a)anthracene	-	-	-	<0.01	<0.01	0.01	-				<0.01	ug/l	TM4/PM30
Chrysene	-	-	-	<0.01	<0.01	<0.01	-				<0.01	ug/l	TM4/PM30
Benzo(b)fluoranthene	-	-	-	<0.01	<0.01	<0.01	-				<0.01	ug/l	TM4/PM30
Benzo(a)pyrene	-	-	-	<0.01	<0.01	<0.01	-				<0.01	ug/l	TM4/PM30
Indeno(123cd)pyrene	-	-	-	<0.01	<0.01	<0.01	-				<0.01	ug/l	TM4/PM30
Dibenzo(ah)anthracene	-	-	-	<0.01	<0.01	<0.01	-				<0.01	ug/l	TM4/PM30
Benzo(ghi)perylene	-	-	-	<0.01	<0.01	<0.01	-				<0.01	ug/l	TM4/PM30
PAH 16 Total	-	-	-	<0.1	<0.1	<0.1	-				<0.1	ug/l	TM4/PM30
Benzo(b)fluoranthene	-	-	-	<0.01	<0.01	<0.01	-				<0.01	ug/l	TM4/PM30
Benzo(k)fluoranthene	-	-	-	<0.01	<0.01	<0.01	-				<0.01	ug/l	TM4/PM30
PAH Surrogate % Recovery	-	-	-	78	74	79	-				<0	%	TM4/PM30

Client Name: Omnia
Reference: A11057
Location: Kenavon Drive, Reading
Contact: Grace Larcombe
JE Job No.: 19/3244

Report : Liquid

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Sample Type	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water	Ground Water						
Batch Number	1	1	1	1	1	1	1						
Date of Receipt	28/02/2019	28/02/2019	28/02/2019	28/02/2019	28/02/2019	28/02/2019	28/02/2019				LOD/LOR	Units	Method No.
TPH CWG													
Aliphatics													
>C5-C6 #	-	-	-	<10	<10	<10	-				<10	ug/l	TM36/PM12
>C6-C8 #	-	-	-	<10	<10	<10	-				<10	ug/l	TM36/PM12
>C8-C10 #	-	-	-	<10	<10	<10	-				<10	ug/l	TM36/PM12
>C10-C12 #	-	-	-	<5	<5	<5	-				<5	ug/l	TM5/PM16/PM30
>C12-C16 #	-	-	-	<10	<10	<10	-				<10	ug/l	TM5/PM16/PM30
>C16-C21 #	-	-	-	<10	<10	<10	-				<10	ug/l	TM5/PM16/PM30
>C21-C35 #	-	-	-	<10	<10	<10	-				<10	ug/l	TM5/PM16/PM30
Total aliphatics C5-35 #	-	-	-	<10	<10	<10	-				<10	ug/l	TM5/PM16/PM30
Aromatics													
>C5-EC7 #	-	-	-	<10	<10	<10	-				<10	ug/l	TM36/PM12
>EC7-EC8 #	-	-	-	<10	<10	<10	-				<10	ug/l	TM36/PM12
>EC8-EC10 #	-	-	-	<10	<10	<10	-				<10	ug/l	TM36/PM12
>EC10-EC12 #	-	-	-	<5	<5	<5	-				<5	ug/l	TM5/PM16/PM30
>EC12-EC16 #	-	-	-	<10	<10	<10	-				<10	ug/l	TM5/PM16/PM30
>EC16-EC21 #	-	-	-	<10	<10	<10	-				<10	ug/l	TM5/PM16/PM30
>EC21-EC35 #	-	-	-	<10	<10	<10	-				<10	ug/l	TM5/PM16/PM30
Total aromatics C5-35 #	-	-	-	<10	<10	<10	-				<10	ug/l	TM5/PM16/PM30
Total aliphatics and aromatics(C5-35) #	-	-	-	<10	<10	<10	-				<10	ug/l	TM5/PM16/PM30
MTBE #	-	-	-	<5	<5	<5	-				<5	ug/l	TM31/PM12
Benzene #	-	-	-	<5	<5	<5	-				<5	ug/l	TM31/PM12
Toluene #	-	-	-	<5	<5	<5	-				<5	ug/l	TM31/PM12
Ethylbenzene #	-	-	-	<5	<5	<5	-				<5	ug/l	TM31/PM12
m/p-Xylene #	-	-	-	<5	<5	<5	-				<5	ug/l	TM31/PM12
o-Xylene #	-	-	-	<5	<5	<5	-				<5	ug/l	TM31/PM12
Total Phenols HPLC	-	-	-	<0.15	<0.15	<0.15	-				<0.15	mg/l	TM26/PM0
Sulphate as SO4 #	-	-	-	129.1	35.2	1.2	-				<0.5	mg/l	TM38/PM0
Free Cyanide	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001				<0.001	mg/l	TM89/PM0
Total Cyanide #	-	-	-	<0.01	<0.01	<0.01	-				<0.01	mg/l	TM89/PM0
Hexavalent Chromium	-	-	-	<0.006	<0.006	<0.006	-				<0.006	mg/l	TM38/PM0
Total Dissolved Chromium III	-	-	-	<6	<6	<6	-				<6	ug/l	TM0/PM0
pH #	-	-	-	7.85	7.66	7.71	-				<0.01	pH units	TM73/PM0

Client Name: Omnia
Reference: A11057
Location: Kenavon Drive, Reading
Contact: Grace Larcombe

[illegible]

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NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 19/3244

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% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

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ISO17025 accreditation applies to surface water and groundwater and usually 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.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

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.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised 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.

REPORTS FROM THE SOUTH AFRICA LABORATORY

Any method number not prefixed with SA has been undertaken in our UK laboratory unless reported as subcontracted.

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ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa.
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 an Exova Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

JE Job No: 19/3244

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM0	Not available	PM0	No preparation is required.				
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM30	Water samples are extracted with solvent using a magnetic stirrer to create a vortex.				
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM16/PM30	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE/Water samples are extracted with solvent using a magnetic stirrer to create a vortex.	Yes			
TM5/TM36	please refer to TM5 and TM36 for method details	PM12/PM16/PM30	please refer to PM16/PM30 and PM12 for method details	Yes			
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM0	No preparation is required.				
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM14	Analysis of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for dissolved metals and acidified if required.				
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7, 6010B and BS EN ISO 11885 2009	PM14	Analysis of waters and leachates for metals by ICP OES/ICP MS. Samples are filtered for dissolved metals and acidified if required.	Yes			
TM31	Modified USEPA 8015B. Determination of Methyltertbutylether, Benzene, Toluene, Ethylbenzene and Xylene by headspace GC-FID.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM36	Modified US EPA method 8015B. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results can be confirmed using GCMS.	PM12	Modified US EPA method 5021. Preparation of solid and liquid samples for GC headspace analysis.	Yes			
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM0	No preparation is required.				

JE Job No: 19/3244

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods 325.2 (Chloride), 375.4 (Sulphate), 365.2 (o-Phosphate), 353.1 (TON), 354.1 (Nitrite), 350.1 (NH4+) comparable to BS ISO 15923-1, 7196A (Hex Cr)	PM0	No preparation is required.	Yes			
TM73	Modified US EPA methods 150.1 and 9045D and BS1377:1990. Determination of pH by Metrohm automated probe analyser.	PM0	No preparation is required.	Yes			
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM0	No preparation is required.				
TM89	Modified USEPA method OIA-1667. Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM0	No preparation is required.	Yes			

APPENDIX VII

GAS AND GROUNDWATER MONITORING RESULTS

Table 1.0 Summary of Ground Gas and Groundwater Monitoring Results

Well	Date	CH ₄ Peak %v/v	CH ₄ Steady %v/v	CH ₄ GSV l/hr	CO ₂ Peak %v/v	CO ₂ Steady %v/v	CO ₂ GSV l/hr	O ₂ %v/v	Atmos (mb)	Atmos. Pressure Dynamic	Flow (l/hr)	Depth to Base (m bgl)	Depth to Water (m bgl)
WS3	26/02/2019	<0.1	<0.1	0.0001	4.1	0.6	0.0041	16.5	1026	Falling	0.1	-	-
WS5	26/02/2019	<0.1	<0.1	0.0002	4.5	4.5	0.009	16.3	1026	Falling	0.2	5.35	2.84
WS6	26/02/2019	<0.1	<0.1	0.0002	2.7	2.7	0.0054	4.2	1026	Falling	0.2	-	-
BH1001a	26/02/2019	<0.1	<0.1	0.0002	0.8	0.4	0.0016	20.5	1026	Falling	0.2	6.85	3.53
BH1002	26/02/2019	<0.1	<0.1	0.0001	2.7	2.7	0.0027	16.5	1026	Falling	0.1	7.01	3.35
BH1003	26/02/2019	<0.1	<0.1	0.0002	0.2	0.2	0.0004	20.3	1026	Falling	0.2	7.85	2.60
CP03	26/02/2019	<0.1	<0.1	0.0037	0.2	0.2	0.0074	20.8	1026	Falling	3.7	-	-
BH1001a	06/03/2019	<0.1	<0.1	0.0003	0.1	0.1	0.0003	21.3	983	Rising	0.3	6.85	3.53
BH1002	06/03/2019	<0.1	<0.1	0.0001	0.7	0.7	0.0007	20.5	982	Rising	0.1	7.01	3.35
BH1003	06/03/2019	<0.1	<0.1	0.0002	0.5	0.5	0.001	19.9	983	Rising	0.2	7.85	2.60
BH1001a	12/03/2019	<0.1	<0.1	0.0002	0.3	0.3	0.0006	20.3	996	Rising	0.2	6.80	3.48
BH1002	12/03/2019	<0.1	<0.1	0.0001	2.0	2.0	0.002	17.9	996	Rising	<0.1	6.95	3.40
BH1003	12/03/2019	<0.1	<0.1	0.0001	0.2	0.2	0.0002	20.8	996	Rising	0.1	7.90	2.55

Notes:

Where a value of <0.1 has been recorded OEC have adopted a conservative approach and assumed a value of 0.1 for the purposes of calculating Gas Screening Values (GSVs).

* Due to high water levels, the boreholes were purged and left for a total of 30 minutes prior to the commencement of ground gas monitoring.

APPENDIX VIII

INTRUSIVE LOCATION CO-ORDINATES AND LEVELS

ID	EASTINGS	NORTHINGS	LEVEL
BH1001	472214.248	173599.359	39.328
BH1001A COVER LEVEL	472215.213	173591.534	39.340
BH1001A GROUND LEVEL	472215.307	173591.535	39.311
BH1001A PIPE LEVEL	472215.174	173591.529	39.236
BH1002 COVER LEVEL	472246.963	173568.978	39.172
BH1002 GROUND LEVEL	472246.846	173568.965	39.171
BH1002 PIPE LEVEL	472246.940	173569.003	38.983
BH1003 COVER LEVEL	472339.113	173570.365	38.423
BH1003 GROUND LEVEL	472339.381	173570.77	38.524
BH1003 PIPE LEVEL	472339.109	173570.349	38.334
CP03 COVER LEVEL	472341.098	173608.595	38.309
CP03 GROUND LEVEL	472341.193	173608.529	38.298
CP03 PIPE LEVEL	472341.027	173608.691	38.048
SW1001	472214.463	173517.172	36.880
SW1002	472369.321	173493.167	37.620
TP1001	472161.97	173535.313	39.893
TP1002	472162.967	173557.05	39.757
TP1003	472161.458	173582.052	40.069
TP1004	472170.036	173612.677	39.888
TP1005	472196.522	173605.551	39.324
TP1008	472245.109	173596.887	39.155
TP1009	472203.084	173590.62	39.342
TP1010	472225.513	173590.534	39.333
TP1011	472256.556	173605.972	38.905
TP1012	472213.926	173578.561	39.334
TP1013	472255.048	173580.07	38.988
TP1014	472209.384	173558.14	39.333
TP1015	472230.251	173555.976	39.236
TP1016	472262.019	173561.68	38.904
TP1017	472332.354	173607.557	38.517
TP1018	472348.918	173592.732	38.512
TP1019	472322.065	173591.204	38.513
TP1020	472304.62	173564.98	38.511
TP1021	472350.712	173559.757	38.525
TP1022	472370.959	173568.368	38.52
TP1024	472346.292	173537.785	38.495
TP1025	472185.271	173512.782	38.821
TP1026	472190.475	173517.619	38.785
TT1001	472274.452	173536.761	38.838
TT1003	472332.261	173527.582	38.181
TT1004	472359.864	173516.434	38.106
PREVIOUSLY INSTALLED SERVICEABLE LOCATIONS BY OTHERS			
WS3 COVER LEVEL	472181.646	173537.106	38.864
WS3 GROUND LEVEL	472181.755	173537.106	38.862
WS3 PIPE LEVEL	472181.630	173537.156	38.737
WS5 GROUND LEVEL	472286.238	173537.634	38.681
WS5 PIPE LEVEL	472286.342	173537.568	38.549
WS6 COVER LEVEL	472292.893	173607.906	38.322
WS6 GROUND LEVEL	472293.024	173607.866	38.322
WS6 PIPE LEVEL	472292.825	173607.918	38.225

APPENDIX IX
ORIGIN OF TIER 1 SCREENING CRITERIA

	DOC REF	DOCUMENT NAME
	TECH112	Residential End Use without Homegrown Produce

Determinant	Unit	GAC	Origin of Risk Assessment Value
Inorganics			
Metals			
Arsenic	mg/kg	40	LQM CIEH Suitable for Use Levels (\$4UL) 2015- Inorganic Arsenic
Beryllium	mg/kg	1.7	LQM CIEH Suitable for Use Levels (\$4UL) 2015
Boron	mg/kg	11,000	
Cadmium	mg/kg	85	
Chromium (III)	mg/kg	910	
Chromium (VI)	mg/kg	6	
Copper	mg/kg	7,100	
Lead	mg/kg	310	
Mercury	mg/kg	56	LQM CIEH Suitable for Use Levels (\$4UL) 2015- Inorganic Mercury
Nickel	mg/kg	180	LQM CIEH Suitable for Use Levels (\$4UL) 2015
Selenium	mg/kg	430	
Vanadium	mg/kg	1,200	
Zinc	mg/kg	40,000	
General Inorganics			
Total Cyanide	mg/kg	50	Dutch Intervention Values 2010
Asbestos	%	0.001%	OEC Derived Value based on ICRL
Organics			
General Organics			
Phenol	mg/kg	750	LQM CIEH Suitable for Use Levels (\$4UL) 2015 1%SOM
PAH			
Naphthalene	mg/kg	2.3	LQM CIEH Suitable for Use Levels (\$4UL) 2015 based on a sandy loam as defined in SR3 (EA 2009) 1% SOM
Acenaphthylene	mg/kg	2,900	
Acenaphthene	mg/kg	3,000	
Fluorene	mg/kg	2,800	
Phenanthrene	mg/kg	1,300	
Anthracene	mg/kg	31,000	
Fluoranthene	mg/kg	1,500	
Pyrene	mg/kg	3,700	
Benzo(a)Anthracene ^l	mg/kg	11	
Chrysene	mg/kg	30	
Benzo(b)Fluoranthene	mg/kg	3.9	
Benzo(k)Fluoranthene	mg/kg	110	
Benzo(a)Pyrene	mg/kg	3.2	
Indeno(123-cd)Pyrene	mg/kg	45	

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	DOC REF	DOCUMENT NAME
	TECH112	Residential End Use without Homegrown Produce

Determinant	Unit	GAC	Origin of Risk Assessment Value
Dibenzo(a,h)Anthracene	mg/kg	0.31	
Benzo(ghi)Perylene	mg/kg	360	
BTEX			
Benzene	mg/kg	0.38	LQM CIEH Suitable for Use Levels (S4UL) 2015 1%SOM
Toluene	mg/kg	880	
Ethylbenzene	mg/kg	83	
Xylenes	mg/kg	79	LQM CIEH Suitable for Use Levels (S4UL) 2015 1% SOM p-Xylene
TPH CWG (Speciated)			
Aliphatic			LQM CIEH Suitable for Use Levels (S4UL) 2015 based on a sandy loam as defined in SR3 (EA 2009) 1% SOM
Aliphatic EC 5-6	mg/kg	42	
Aliphatic EC >6-8	mg/kg	100	
Aliphatic EC >8-10	mg/kg	27	
Aliphatic EC >10-12	mg/kg	130	
Aliphatic EC > 12-16	mg/kg	1,100	
Aliphatic EC > 16-35	mg/kg	65,000	
Aliphatic EC >35-44	mg/kg	65,000	
Aromatic			LQM CIEH Suitable for Use Levels (S4UL) 2015 based on a sandy loam as defined in SR3 (EA 2009) 1% SOM
Aromatic EC 5-7	mg/kg	370	
Aromatic EC>7-8	mg/kg	860	
Aromatic EC> 8-10	mg/kg	47	
Aromatic EC> 10-12	mg/kg	250	
Aromatic EC> 12-16	mg/kg	1,800	
Aromatic EC> 16-21	mg/kg	1,900	
Aromatic EC> 21-35	mg/kg	1,900	
Aromatic EC> 35-44	mg/kg	1,900	
Banded TPH			
TPH EC 5-6*	mg/kg	42	LQM CIEH Suitable for Use Levels (S4UL) 2015 based on a sandy loam as defined in SR3 (EA 2009) 1% SOM, utilising the most conservative of the Ali/Aro chain lengths.
TPH EC >6-8*	mg/kg	100	
TPH EC >8-10*	mg/kg	27	
TPH EC> 10-12*	mg/kg	130	
TPH EC> 12-16*	mg/kg	1,100	
TPH EC> 16-21*	mg/kg	1,900	
TPH EC> 21-35*	mg/kg	1,900	
TPH EC> 35-44*	mg/kg	1,900	

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Determinand	Units	Hardness Banding (CaCO3 mg/l)	Freshwater EQS	Source
Arsenic	ug/l		50	WFD EQS 2010 (Freshwater in England & Wales)
Boron	ug/l		2000	Freshwater EQS (AA) - Dangerous Substances Directive (List II)
Cadmium	ug/l	<40	<0.08	WFD EQS 2010 (Freshwater in England & Wales)
		40-50	0.08	
		50-100	0.09	
		100-200	0.15	
		>200	0.25	
Chromium	ug/l		4.7	(AA) WFD EQS 2010 (Freshwater in England & Wales)
Copper	ug/l	0-50	1	WFD EQS 2010 (Freshwater in England & Wales)
		50-100	6	
		100-250	10	
		>250	28	
Cyanide (Free)	ug/l		1	(AA) WFD EQS 2010 (Freshwater in England & Wales)
Iron	ug/l		1000	(AA) WFD EQS 2010 (Freshwater in England & Wales)
Lead	ug/l		7.2	(AA) WFD EQS 2010 (Freshwater in England & Wales)
Mercury	ug/l		0.05	(AA) WFD EQS 2010 (Freshwater in England & Wales)
Nickel	ug/l		20	(AA) WFD EQS 2010 (Freshwater in England & Wales)
Selenium	ug/l		10	Drinking Water Directive
Sulphate	mg/l		400	Freshwater EQS (AA) - Dangerous Substances Directive (List II)
Zinc	ug/l	0-50	8	(AA) WFD EQS 2010 (Freshwater in England & Wales)
		50-100	50	
		100-250	75	
		>250	125	
pH			6 to 9	Freshwater EQS (AA) - Dangerous Substances Directive (List II)
Organics				
Phenol (total)	ug/l		7.7	(AA) WFD EQS 2010 (Freshwater in England & Wales)
MTBE	ug/l		30	Ireland (IGV)
TPH Aliphatic				
Aliphatic C5-C6	ug/l		15,000	WHO Petroleum Products in Drinking Water
Aliphatic C6-C8	ug/l		15,000	WHO Petroleum Products in Drinking Water
Aliphatic C8-C10	ug/l		300	WHO Petroleum Products in Drinking Water
Aliphatic C10-C12	ug/l		300	WHO Petroleum Products in Drinking Water
Aliphatic C12-C16	ug/l		300	WHO Petroleum Products in Drinking Water
Aliphatic C16-C21	ug/l		300	WHO Petroleum Products in Drinking Water
Aliphatic C21-C35	ug/l		300	WHO Petroleum Products in Drinking Water
TPH Aromatic				
Aromatic C5-C7	ug/l		10	(AA) WFD EQS 2010 (Freshwater in England & Wales)
Aromatic C7-C8	ug/l		50	Freshwater EQS (AA) - Dangerous Substances Directive (List II)
Aromatic C8-C10	ug/l		20	Freshwater EQS (AA) - Dangerous Substances Directive (List II)
Aromatic C10-C12	ug/l		100	WHO Petroleum Products in Drinking Water
Aromatic C12-C16	ug/l		100	WHO Petroleum Products in Drinking Water
Aromatic C16-C21	ug/l		90	WHO Petroleum Products in Drinking Water
Aromatic C21-C35	ug/l		90	WHO Petroleum Products in Drinking Water
BTEX				
Benzene	ug/l		10	(AA) WFD EQS 2010 (Freshwater in England & Wales)
Toluene	ug/l		50	(AA) WFD EQS 2010 (Freshwater in England & Wales)
Ethylbenzene	ug/l		20	Freshwater EQS (AA) - Dangerous Substances Directive (List II)
Xylenes	ug/l		30	(AA) WFD EQS 2010 (Freshwater in England & Wales)
PAH				
Anthracene	ug/l		0.1	(AA) WFD EQS 2010 (Freshwater in England & Wales)
Benzo(a)Pyrene	ug/l		0.005	(AA) WFD EQS 2010 (Freshwater in England & Wales)
Fluoranthene	ug/l		0.1	(AA) WFD EQS 2010 (Freshwater in England & Wales)
Naphthalene	ug/l		2.4	(AA) WFD EQS 2010 (Freshwater in England & Wales)
Benzo(b/k)fluoranthene	ug/l		0.003	(AA) WFD EQS 2010 (Freshwater in England & Wales)
Benzo(ghi)perylene & Indeno(1,2,3-cd)perylene	ug/l		0.002	(AA) WFD EQS 2010 (Freshwater in England & Wales)