Former Manor Filling Station
Old Shoreham Road
Lancing
West Sussex

Verification Report

Report Beneficiary:
Randall & Chisnall Construction Ltd
27 Ferringham Lane
Ferring
West Sussex
BN12 5NB

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Report Section	Prepared By	Approved By
Verification Report	Stuart Card BA (Hons)	Alex Minchell-Bewick BSc MSc DIC AIEMA MIEnvSc CEnv

Head Office
Unit 3
The Old Grain Store
Ditchling Common Business Park
Ditchling
West Sussex
BN6 8SG

Northern Office
Suite C2
Dunham House
85-89 Cross Street
Sale
Cheshire
M33 7HH

Tel: 01273 483119
www.ashdownsi.co.uk

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All wastes arising from the site works are deemed to have been in the possession of the main contractor, who was responsible for managing and disposing of waste in accordance with Section 34 of the Environmental Protection Act 1990 and the Environmental Protection (Duty of Care) Regulations 1991. A full waste audit of the development was beyond the scope of the verification works undertaken by Ashdown Site Investigation Ltd.

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1. INTRODUCTION

This report has been prepared by Ashdown Site Investigation Limited following completion of the recommended remedial works at the site of a former petrol filling station site located on the north side of Old Shoreham Road, Lancing, West Sussex. The remedial works have been carried out as part of the redevelopment of the site to provide six dwellings with private gardens. An 'as constructed' development layout is included in Appendix A.

The scope of the works covered by this report, and the terms and conditions under which they were undertaken, were set out within the offer letter Q18-7741, dated 24th September 2018. The instruction to proceed was received from the client.

It is noted that, since the preparation of the remediation strategy, an area in the north east of the site is now subject to a separate planning application for the development of a new house. The client has advised that this area, marked by hatching on the plan presented in Appendix A, is currently separated from the remainder of the site and that future end users of the current dwellings will not have any access to this part of the site. As such, this area is not considered within this report and any remedial works which may be required as part of its future development will be addressed under a separate report.

This report provides a summary of the ground investigation and risk assessment works undertaken at the site, a summary of the proposed remediation strategy and evidence of the verification inspections and testing undertaken to confirm the successful completion of the remedial works.

The following reports have been prepared for the site:

- Phase 1 Desk Study[1]
- Geotechnical and Ground Contamination Risk Assessment Report[2] and
- Report on Supplementary Ground Investigation, Updated Quantitative Ground Contamination Risk Assessment, Remediation Strategy and Verification Plan[3].

The report has been prepared in line with current guidance[4,5] and should be read in conjunction with the previous reports for the site.

This issue of the report ("Issue 2") removes the waste transfer notes included in Appendix L. The removal of these documents was at the behest of the Local Authority Planning Validation Officer due to GDPR. Copies of the waste transfer notes, provided to Ashdown Site Investigation Ltd. are available for review by appropriate Local Authority Officers.

[1] Soils Limited. Report Ref. 14386/DS, dated August 2014.
[2] Ashdown Site Investigation Ltd., Report Ref. R17-12318, dated September 2017.
[3] Ashdown Site Investigation Ltd., Report Ref. R18-12916, dated 11th June 2018.
[4] Chapters 3 and 4 of Environment Agency Contaminated Land Report 11: Model Procedures for Management of Land Contamination.
[5] Environment Agency Report Ref: SC030114/R1 "Verification of remediation of land contamination".

2. SITE LOCATION

The site comprises a roughly rectangular shaped plot of land located to the north of Old Shoreham Road, Lancing, West Sussex, centred on the approximate Ordnance Survey national grid reference TQ 1904 0572.

3. RISK ASSESSMENT

The Phase 1 Desk Study identified potential pollutant linkages relating to the former use of the site as a petrol filling station, the presence of an electricity substation adjacent to the site, the likely presence of made ground associated with demolition of former buildings and the presence of an earth bund in the southern part of the site.

Two phases of ground investigation were subsequently undertaken by Ashdown Site Investigation Ltd.

The first phase of investigation identified concentrations of PAH compounds within the shallow made ground soils in the former filling station areas, along with evidence of petroleum hydrocarbon contamination at depth. A second phase of work was recommended to assess the potential risk to end users from ground gases and the potential risk to controlled waters from the petroleum hydrocarbon contamination identified.

The second phase identified the presence of an LNAPL (light non aqueous phase liquid) plume within the shallow groundwater, spreading to the east of the site.

At the time of the second phase of ground investigation, considerable uncertainly existed as to the status of the former underground storage tanks (UST) at the site. Slit trenches undertaken as part of the investigation were unable to identify the location of the tanks.

Subsequent to the intrusive works, the client undertook further investigation and exposed a concrete monolith immediately to the south of the former filling points. Based on the information supplied by the client, it was concluded that the steel tanks had been removed with the resulting excavation backfilled with concrete. A significant amount of residual contamination remained beneath and immediately adjacent to the concrete monolith, which appeared to be the source of the ongoing hydrocarbon plume.

Following further gas monitoring it was concluded that the site should be categorised as Amber 2 due to the potential for locally elevated concentrations of methane to be generated during the ongoing biodegradation of petroleum hydrocarbons in the soil/groundwater.

A copy of the revised quantitative conceptual model is included in Appendix B.

3.1 Remediation Strategy

To protect end users from the sources of contamination identified, the following remedial works were recommended:

- **Plots 4-6 (Former Filling Station Area) - Soft Landscaped Garden Areas:** Removal of all made ground soils **OR** Placement of 600mm of verified "clean" cover soils overlying high visibility geotextile marker;

- **Narrow Planters Adjacent to Plots 4-6:** Removal of all made ground soils **OR** Removal of made ground soils to maximum feasible depth and placement of verified "clean" cover soils over a high visibility geotextile marker;
- Removal of concrete and associated petroleum hydrocarbon impacted soils to a maximum feasible achievable depth in area of former underground tank;
- Removal of all infrastructure associated with former filling station area and any associated petroleum hydrocarbon impacted soils;
- Provision of suitably ventilated sub floor void and presence of a gas and hydrocarbon vapour resistant membrane across the floor slab with all service penetrations and joints sealed; and
- Provision of barrier pipe or written confirmation from water supply company as to other acceptable pipe material.

Further monitoring of the concentrations of petroleum hydrocarbons within the underlying groundwater was recommended following the removal of below ground infrastructure.

A site plan indicating the extent of the areas where the above remedial works were required, as presented in the remediation strategy, is included in Appendix C.

The remediation strategy recommended that a method statement for the installation of the gas and vapour resistant membrane, which should include details of the verification to be carried out, was submitted to and approved by the Local Authority prior to the commencement of installation of any part of the gas protection measures.

The design of gas and vapour protection measures was undertaken by PAGeotechnical, with the details submitted to the Local Authority.

Both the remediation strategy and the details of the gas and vapour protection measures were approved by Katharine Giddings, Environmental Health Technical Officer – Contaminated Land, Adur and Worthing Councils, and by Sophie Brown, Sustainable Places Planning Advisor – Environment Agency. A copy of comments received in this regard are included in Appendix D.

4. VERIFICATION OF REMEDIATION WORKS

Ashdown Site Investigation Ltd. undertook periodic inspections of the site during the construction works, but did not maintain a full-time presence on site.

Details of the verification inspections undertaken are presented in the following sections.

4.1 Removal of Petrol Filling Station Infrastructure

During the removal of the concrete plinth in the former filling station area, an underground tank was encountered and then removed by the client.

Following the removal of the tank and remaining infrastructure a site inspection was undertaken on 26th October 2019 to inspect and to sample the base and the sides of the resulting excavation.

Excavation resulting from removal of the tank and associated infrastructure



All stained soils from around the tank had been removed. Groundwater was encountered at the base of the pit, which prevented any deeper removal of soils. From visual inspection it appeared that the majority of stained soils had been excavated.

A total of forty samples taken from the base and sides of the excavation were tested for their total concentrations of petroleum hydrocarbons, with the results speciated by equivalent carbon weight fractions. Figure 2 shows the locations of the sampling points within the base and sides of the excavation. The laboratory test results are included in Appendix E.

Detectable concentrations of short range hydrocarbons were recorded in the samples from the base of the pit, though overall the total concentrations present were relatively low. No significant concentrations of petroleum hydrocarbons were recorded in the samples taken from the sides of the excavation.

The testing is considered to show that the majority of contamination soils have been removed from around the former tank.

4.2 Gas Protection Measures

A Geoshield Ltd. *Verification Report*[6] and PAGeoContracting Ltd. *Completion Certificate*[7] for the installation of the gas/vapour protection measures in all of the new properties are included in Appendix J.

4.3 Groundwater Monitoring

Six rounds of groundwater monitoring were carried out at approximately monthly intervals between October 2018 and April 2019. The laboratory test results are presented in Appendix K.

The initial rounds of monitoring recorded concentrations of petroleum hydrocarbons and BTEX compounds similar to those recorded during the ground investigation.

However, following the completion of the majority of groundworks and the removal of the tank and associated impacted soils, the concentrations recorded within the groundwater decreased significantly which strongly suggests that natural attenuation of the contaminant plume is occurring.

A graphical representation of the laboratory test results from WS104B, where the highest concentrations were recorded, is included in Appendix K to demonstrate this decrease in contaminant concentrations.

4.4 Plots 4 – 6: Soft Landscaping Areas

Following construction of the houses, a site visit was undertaken on the 13th September 2019 to inspect the stripped formation following stripping of the garden and soft landscaped areas, to confirm that a sufficient depth of made ground had been removed to allow placement of 600mm of cover soils.

Plots 4 – 6: Stripped Formations – Sufficient Depth to Place 600mm of Cover Soils



[6] Project Ref PAG 6189
[7] Job No. 6189/HSG/01



Within the narrow planters, the inspection confirmed that the maximum feasible depth of made ground has been removed and that concrete haunching extended across the majority of the planter areas.

Plots 4 – 6: Stripped Formations – Narrow Planters



At the time of the inspection, a stockpile of topsoil was present for use in the communal soft landscaped areas.

Stockpile of Topsoil



Six samples were taken from the stockpile. Five of these, selected at random, were tested for the contaminants detailed within the remediation strategy. The laboratory test results are included in Appendix F.

No visual or olfactory evidence of suspected petroleum hydrocarbon contamination was noted and no evidence of suspected asbestos materials was noted on inspection of the soils.

None of the samples recorded concentrations of heavy metals above the criteria set out in the remediation strategy. No significant concentrations of petroleum hydrocarbons and no asbestos containing materials were identified within the samples screened.

One of the samples recorded a concentration of dibenz(ah)anthracene of 0.25mg/kg, very marginally above the soil screening value of 0.24mg/kg.

The remediation strategy stated:

"In the event that any individual sample of imported material records concentrations of contaminants above the screening values listed above, the following method of assessment will be undertaken:

- Statistical analysis of the results, along with an assessment of whether any statistical 'outliers' should be removed from the dataset and treated as 'hotspots'. If the data indicates that the majority of the soil mass as a whole may be considered to contain contaminant concentrations below the screening values then it may be deemed suitable to remain."

Statistical analysis was undertaken on the concentrations of each PAH compound tested for using the ESI Contaminated Land Statistics Calculator version 2. A Copy of the summary page from the spreadsheet is presented within Appendix G.

The following table summarises the SSV, maximum, minimum and mean concentrations and the 95th percentile upper confidence limits for the PAH compounds tested for.

Table 1. Summary of Test Results and Statistical Analysis for PAH Compounds

Contaminant	SSV (mg/kg)	No. of Samples	Minimum Concentration (mg/kg)	Maximum concentration (mg/kg)	Limit of Detection (mg/kg)	Mean Concentration (mg/kg)	95% Upper Confidence Limit (mg/kg)	No of exceedances
Naphthalene	2.3	5	<LOD	<LOD	< 0.1	0.05	0.05	0
Acenaphthylene	170	5	<LOD	<LOD	< 0.1	0.05	0.05	0
Acenaphthene	210	5	<LOD	<LOD	< 0.1	0.05	0.05	0
Fluorene	170	5	<LOD	<LOD	< 0.1	0.05	0.05	0
Phenanthrene	95	5	0.32	2.05	< 0.1	0.94	1.59	0
Anthracene	2400	5	<LOD	0.44	< 0.1	0.17	0.32	0
Fluoranthene	280	5	1.01	3.85	< 0.1	2.03	3.06	0
Pyrene	620	5	0.94	3.35	< 0.1	1.80	2.67	0
Benz(a)anthracene	7.2	5	0.56	1.89	< 0.1	1.02	1.51	0
Chrysene	15	5	0.54	1.8	< 0.1	1.00	1.45	0

Benzo(b)fluoranthene	2.6	5	0.88	2.53	< 0.1	1.51	2.09	0
Benzo(k)fluoranthene	77	5	0.23	0.85	< 0.1	0.47	0.69	0
Benzo(a)pyrene	2.2	5	0.69	2.07	< 0.1	1.19	1.69	0
Indeno(123-cd)pyrene	27	5	0.61	1.46	< 0.1	0.92	1.23	0
Dibenz(ah)anthracene	0.24	5	<LOD	0.25	< 0.1	0.15	0.21	1
Benzo(ghi)perylene	320	5	0.55	1.36	< 0.1	0.86	1.15	0

Statistical analysis shows that the upper 95th percentile concentration for dibenz(ah)anthracene lies below the soil screening value and as such it can be reasonably assumed that the concentrations of PAH compounds within the mass of topsoil as a whole comply with the criteria set out within the remediation strategy.

Topsoil from the stockpile was used to backfill the narrow planters around the site, and photographs supplied by the groundworker confirming the presence of the high visibility geotextile markers are provided below.

Plots 4 – 6: Narrow Planters – Placement of Geotextile Marker and Topsoil



Whilst the rear gardens of Plots 4 – 6 were originally proposed to be soft landscaped, the design was subsequently amended to provide astro-turf within these areas.

Following the placement of a high visibility geotextile marker, the garden areas were backfilled with beach gravel and granite chippings. Photographs of the backfilling of these areas supplied by the groundworker are below.

Plots 4 – 6: Rear Gardens – Placement of Geotextile Marker and Stone Materials



Delivery notes confirming that the materials comprised virgin sources, and therefore that no screening for asbestos was required, are included as Appendix H.

4.5 Services

Photographs of the installation of barrier pipe, supplied by the client, are shown below, an invoice for the barrier pipe is included as Appendix I.



5. WASTE MANAGEMENT DOCUMENTATION

All wastes arising from the site works were deemed to be in the possession of the main contractor, who was responsible for managing and disposing of waste in accordance with Section 34 of the Environmental Protection Act 1990 and the Environmental Protection (Duty of Care) Regulations 1991.

A full waste audit of the development was beyond the scope of the verification works undertaken by Ashdown Site Investigation Ltd. Information pertaining to the removal of the underground tank is included in Appendix L. At the behest of the Local Authority, waste transfer notes included in Version 1 of the report were removed due to GDPR.

6. POST REMEDIATION RISK ASSESSMENT

6.1 Basis of Risk Assessment

The risk assessment considers the potential sources of contamination, the potential receptors, and the pathways by which these may be linked. A complete pollutant linkage is only deemed to exist where all three are present.

A site is considered suitable for use where no complete pollutant linkages are present in relation to the proposed development. A completed verification checklist is included in Appendix M.

6.2 Post Remediation Conceptual Model

A post remediation conceptual model for the development is presented in the following table.

Table 2. Post Remediation Conceptual Model– Potential Pollutant Linkages and Assessment of Risk

Contaminant Source	Remedial Measures	Potential Pathway(s)	Assessment of Risk
Made ground soils in former filling station area of the site.	**Astro Turf Garden Areas** Placement of 600mm of virgin crushed materials over a high visibility geotextile marker.	Pathways severed by remedial measures.	No significant pollutant linkages identified.
	Narrow Planters Removal of made ground soils to maximum feasible depth and placement of verified "clean" cover soils over a high visibility geotextile marker.		
	Provision of building cover, parking areas and permanent access ways comprising hard cover.	Pathways severed by construction works.	

Contaminant Source	Remedial Measures	Potential Pathway(s)	Assessment of Risk
Petroleum hydrocarbon contamination at depth and within localised groundwater and associated generalisation of soil gases and vapours associated with removed USTs and associated infrastructure.	Removal of tanks and associated petroleum hydrocarbon impacted soils to a maximum feasible achievable depth in area of former underground tank.	Migration to groundwater.	Very Low
	Removal of all infrastructure associated with former filling station area and any associated petroleum hydrocarbon impacted soils.	N/A – source removed.	No significant pollutant linkages identified.
	Provision of suitably ventilated sub floor void and presence of a gas and hydrocarbon vapour resistant membrane across the floor slab with all service penetrations and joints sealed.	Pathways severed by remedial measures and construction works.	No significant pollutant linkages identified.
	Provision of barrier pipe.	Pathways severed by construction works.	No significant pollutant linkages identified.

7. REGULATORY APPROVAL

It is recommended that this report is submitted to the Local Authority in support of an application to discharge the planning conditions relating to contaminated land.

Ashdown Site Investigation Ltd.

FIGURES

Figure 1 Site Location Plan
Figure 2 Tank Excavation Plan



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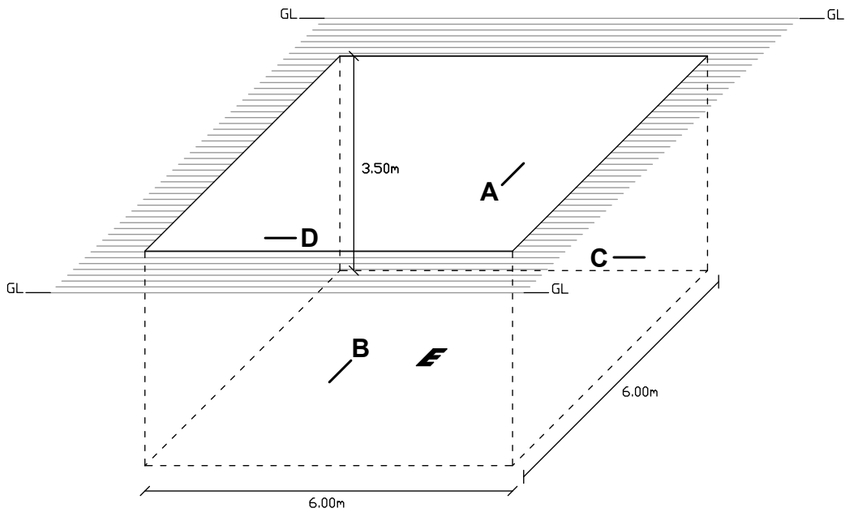
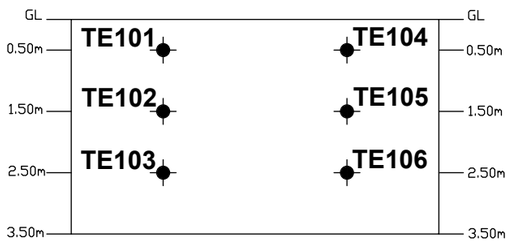
ASHDOWN SITE INVESTIGATION LIMITED	Site: Manor Filling Station, Old Shoreham Road, Lancing, West Sussex	Site Location Plan. Not To Scale	Figure 1 C18-13334

Pit Diagram (NTS)

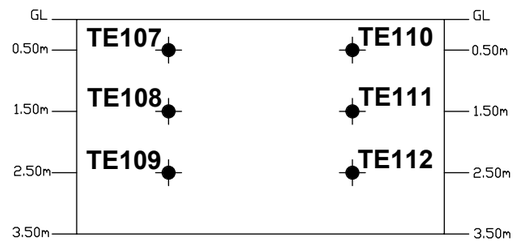


Sampling Details

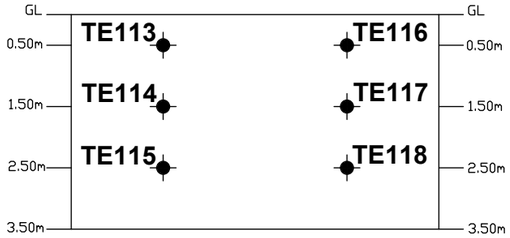
Face A



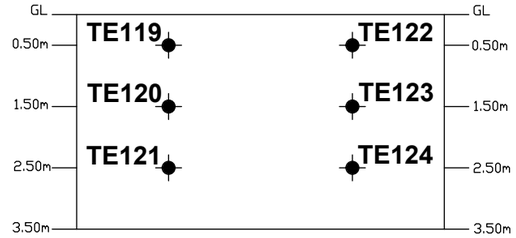
Face B



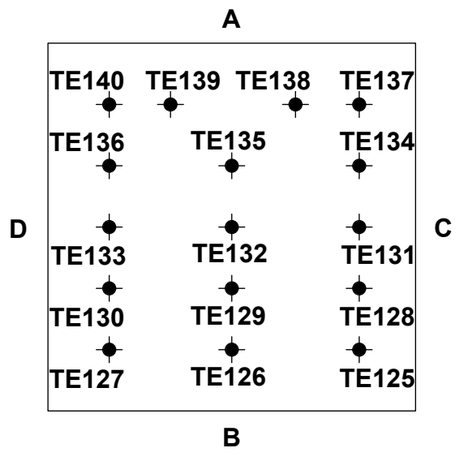
Face C



Face D



Base (E)



ASHDOWN SITE INVESTIGATION LIMITED

Unit 3
The Old Grain Store
Ditchling Common Business Park
Ditchling
West Sussex
BN6 8SG
01273 483119
contact@ashdownsi.co.uk

Site:

Former Manor Filing Station
Old Shoreham Road
Lancing
West Sussex

Project Ref:

C18-13334

Figure No.

2

Drawing Title

Tank Excavation Plan

Scale

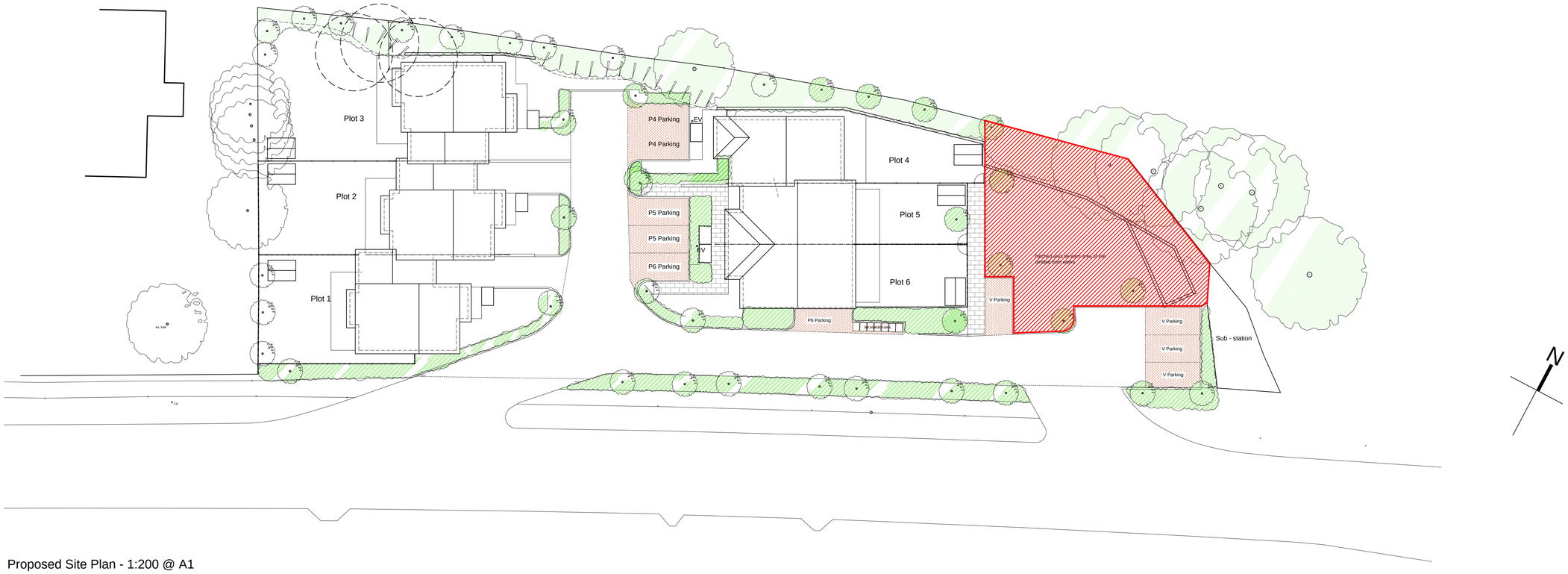
1:100

APPENDIX A

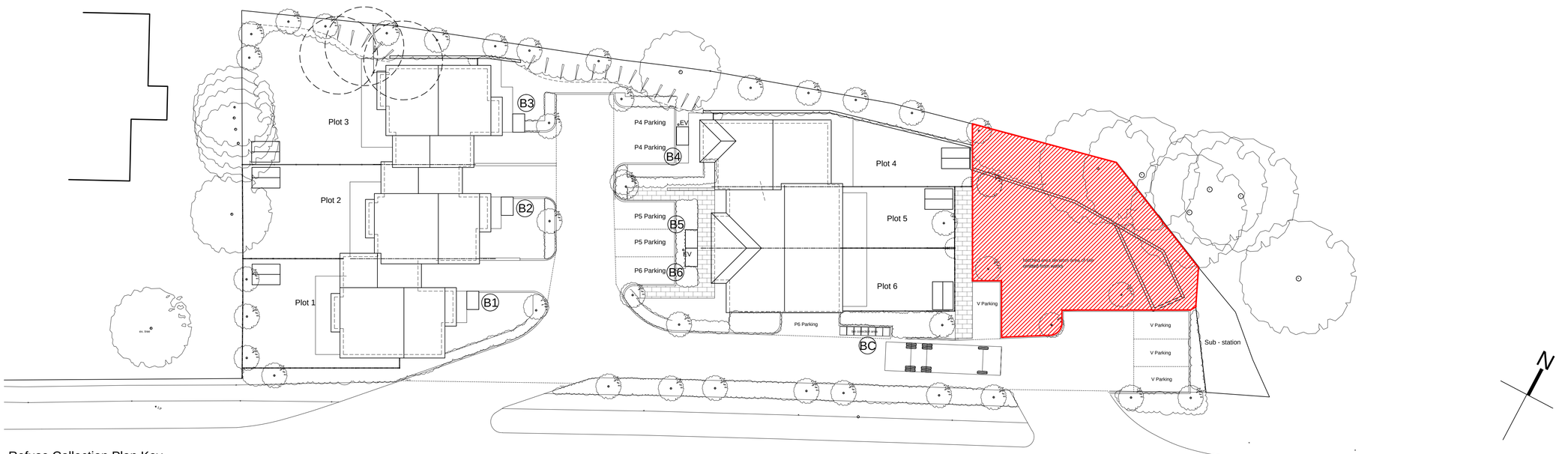
Development Layout

NOTES

- DO NOT SCALE OFF THIS DRAWING EXCEPT FOR PLANNING PURPOSES
- CHECK ALL DIMENSIONS ON SITE BEFORE ANY WORK IS COMMENCED
- ALL GOODS MATERIALS AND WORKMANSHIP MUST CONFORM WITH CURRENT BUILDING REGULATIONS, BRITISH STANDARDS AND CODES OF PRACTICE
- COPYRIGHT OF THIS DRAWING IS RETAINED BY THE ARCHITECT AND IT MUST NOT BE REPRODUCED WITHOUT WRITTEN CONSENT



Proposed Site Plan - 1:200 @ A1



Refuse Collection Plan Key

B01 - 06 - individual plot bin storage - refer to dwg. no. 2.06 External Works for details

BC - communal bin collection area

Proposed Refuse Collection Plan - 1:200 @ A1

0m 2m 4m 6m 8m 10m

scale bar - 1:200 @ A1

REV	DATE	BY	AMENDMENT
H	17.10.19	ec	area omitted from works
G	01.10.19	ec	site layout amended
F	30.09.19	ec	site layout amended
E	13.09.19	ec	site layout amended
D	29.08.18	ec	bin collection plan added
C	03.08.18	ec	gen udpates
B	16.03.18	ec	dims added at planners request
A	06.03.18	ec	gen. updates. PLANNING ISSUE

folkes architects
The Old Forge
6 Church Street
Storrington
West Sussex
RH20 4LA
t. 01903 860629
info@folkesarchitects.co.uk

CLIENT
Randall & Chisnall Construction Ltd

JOB TITLE
Develolpment of land at the
Former Manor Filling Station
Old Shoreham Road
Lancing
BN15 0QS

DRAWING TITLE
Proposed Site Plan

PLANNING ISSUE

DATE	SCALE	DRAWN BY	CHECKED BY
Jan '18	1:100 @ A1	ec	mf

JOB NO.	DRAWING NO.	REVISION
1682	2.01	H

APPENDIX B

Revised Conceptual Model

Former Manor Filling Station, Old Shoreham Road, Lancing, West Sussex				Revised Quantitative Conceptual Model		R18-12916	
Source	**Receptor**	**Contaminants**	**Pathway**	**Complete Linkage Present?**	**Probability**	**Consequence**	**Risk**
Elevated concentrations of PAH compounds within made ground soils in the former filling station area of the site	End Users	PAH Compounds	Dermal contact with soil and dust (indoor & outdoor)	Yes	P2: Low	C3: Moderate	Low/Moderate
			Ingestion of soil and indoor dust	Yes	P2: Low	C3: Moderate	Low/Moderate
			Consumption of home-grown produce and attached soil	Yes	P2: Low	C3: Moderate	Low/Moderate
			Inhalation of soil dust (indoor and outdoor)	Yes	P2: Low	C3: Moderate	Low/Moderate
			Inhalation of soil vapours	Contaminat does not pose a risk via this pathway			N/A
			Inhalation of soil gases/ Risk of explosion	Contaminat does not pose a risk via this pathway			N/A
	End Users (via Water Supply Pipework)		Contamination of incoming services	Contaminat does not pose a risk via this pathway			N/A
	Groundwater	PAH Compounds	Migration to groundwater	Yes	P1: Very Low	C1: Very Minor	Negligible
Residual petroleum hydrocarbon contamination associated with the former UST	End Users	BTEX Compounds, Petroleum Hydrocarbons and Land Gases	Dermal contact with soil and dust (indoor & outdoor)	Yes	P1: Very Low	C3: Moderate	Low
			Ingestion of soil and indoor dust	Yes	P1: Very Low	C3: Moderate	Low
			Consumption of home-grown produce and attached soil	Yes	P1: Very Low	C3: Moderate	Low
			Inhalation of soil dust (indoor and outdoor)	Yes	P1: Very Low	C3: Moderate	Low
			Inhalation of soil vapours	Yes	P4: High	C3: Moderate	High
			Inhalation of soil gases/ Risk of explosion	Yes	P3: Moderate	C3: Moderate	Moderate
	End Users (via Water Supply Pipework)	BTEX Compounds and Petroleum Hydrocarbons	Contamination of incoming services	Yes	P3: Moderate	C3: Moderate	Moderate
	Groundwater	BTEX Compounds and Petroleum Hydrocarbons	Migration to groundwater	Yes	P3: Moderate	C2: Minor	Low/Moderate

Former Manor Filling Station, Old Shoreham Road, Lancing, West Sussex				Revised Quantitative Conceptual Model		R18-12916	
Source	**Receptor**	**Contaminants**	**Pathway**	**Complete Linkage Present?**	**Probability**	**Consequence**	**Risk**
Elevated concentrations of ground gases	End Users	Land Gases	Dermal contact with soil and dust (indoor & outdoor)	Identified contaminant(s) do not pose a risk via this pathway			N/A
			Ingestion of soil and indoor dust	Identified contaminant(s) do not pose a risk via this pathway			N/A
			Consumption of home-grown produce and attached soil	Identified contaminant(s) do not pose a risk via this pathway			N/A
			Inhalation of soil dust (indoor and outdoor)	Identified contaminant(s) do not pose a risk via this pathway			N/A
			Inhalation of soil vapours	Identified contaminant(s) do not pose a risk via this pathway			N/A
			Inhalation of soil gases/ Risk of explosion	Yes	P3: Moderate	C4: Severe	High
	End Users (via Water Supply Pipework)		Contamination of incoming services	Identified contaminant(s) do not pose a risk via this pathway			N/A
	Groundwater		Migration to groundwater	Identified contaminant(s) do not pose a risk via this pathway			N/A

APPENDIX C

Site Plan indicating Extent of Remediation Required

Key for Remedial Works (as shown on diagram)

Soft Landscaped Areas:
Removal of all made ground soils
or
Placement of 600mm of verified "clean" cover soils over a high visibility geotextile marker

Narrow Planters:
Removal of all made ground soils
or
Removal of made ground soils to maximum feasible depth and placement of verified “clean” cover soils over a geotextile marker

Provision of suitably ventilated sub floor void and presence of a gas and hydrocarbon vapour resistant membrane across the floor slab with all service penetrations and joints sealed

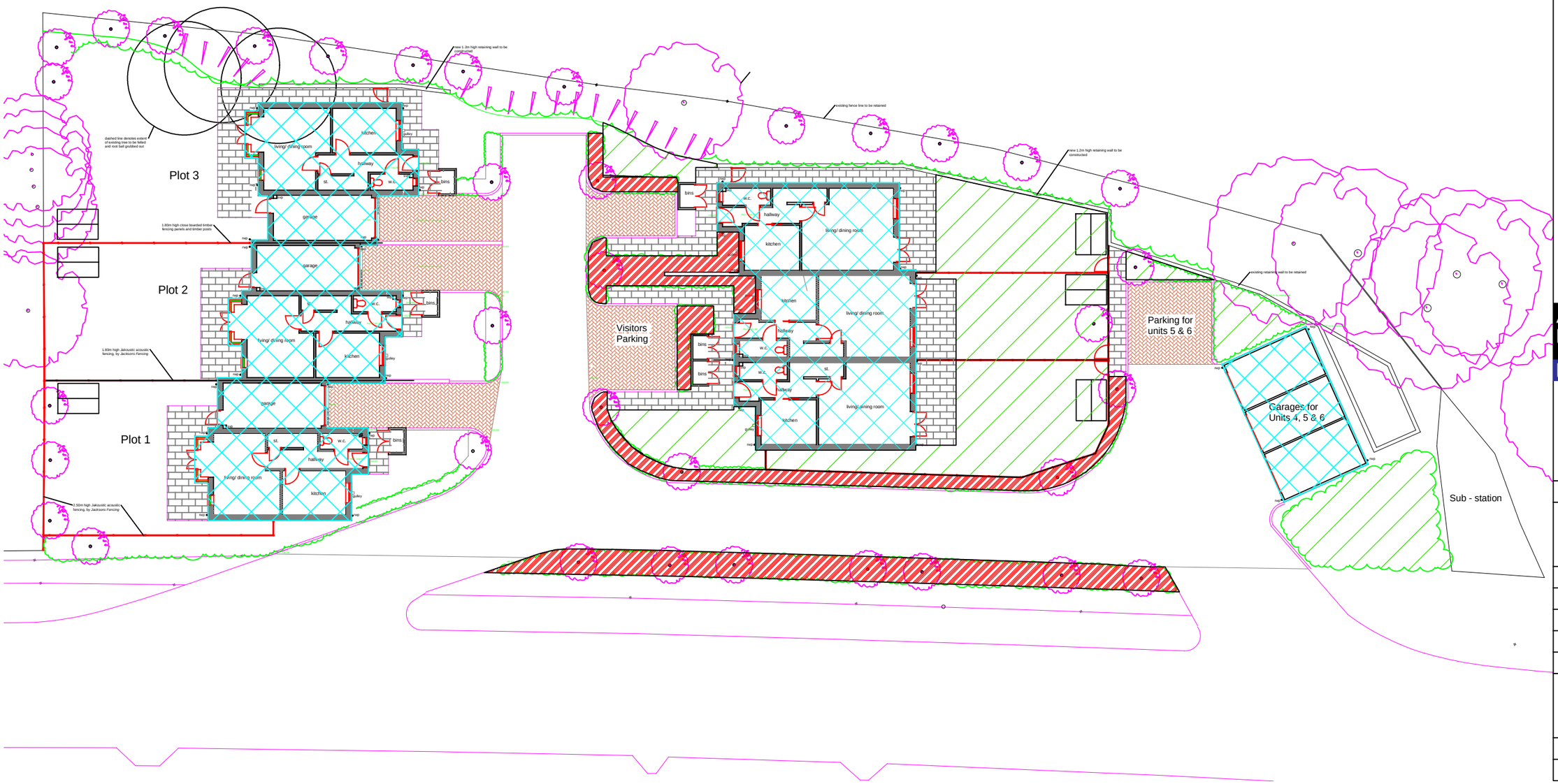
Other Remedial Works (not shown on diagram)

Removal of concrete monlith along with underlying and adjacent petroleum hydrocarbon impacted soils to a maximum feasible achievable depth in area of former underground tank.

Removal of all pipework infrastructure associated with former filling station area and any associated petroleum hydrocarbon impacted soils.

Provision of barrier pipe or written confirmation from water supply company as to pipe material.

All other service providers’ requirements adhered to.



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ASHDOWN SITE INVESTIGATION LIMITED

Unit 3
The Old Grain Store
Ditchling Common Business Park
Ditchling
West Sussex
BN6 8SG
01273 483119
contact@ashdownsi.co.uk

Site:

Former Manor Filling Station
Old Shoreham Raoad
Lancing
West Sussex

Report Ref:

R18-12916

Figure No.

3

Drawing Title

Remedial Works Plan

Scale

NTS

APPENDIX D

Local Authority Comments

From: Katharine Giddings
Sent: 12 July 2018 19:04
To: Peter Barnett
Subject: Re: AWDM/0376/18 - - Manor Filling Station, Lancing

Flag Status: Flagged

Hi Peter,

Thank you for your e-mail.
I can confirm that the proposed remedial measures as outlined in Ashdown Site Investigation Limited's report (ref.: R18-12916, dated June 2018) are satisfactory and I look forward to receipt o the Verification report in due course. In the meantime, may I please request a copies of Report No. R17-12318, dated September 2017
Soils Limited. Report Ref. 14386/DS, dated August 2014 for continuity?

Thank you,

Kate.

On 29 June 2018 at 14:27, Peter Barnett <peter.barnett@adur-worthing.gov.uk> wrote:
Hi Kate

Can you please let me know whether you are happy with the contamination report and test results which I sent you on 14 June? I've just received the additional information below which should be read in conjunction with the earlier report.

Thanks

Peter Barnett
Principal Planning Officer, Adur & Worthing Councils
Phone: 01903 221310
Email: peter.barnett@adur-worthing.gov.uk
Website: http://www.adur-worthing.gov.uk
Address: Development Management, Portland House, 44 Richmond Road, Worthing, BN11 1HS

---------- Forwarded message ----------
From: **Euan Clark - Folkes Architects** <euan@folkesarchitects.co.uk>
Date: 29 June 2018 at 14:24
Subject: RE: AWDM/0376/18 - - Manor Filling Station, Lancing
To: Peter Barnett <peter.barnett@adur-worthing.gov.uk>

Hi Peter,

Thank you for the update, greatly appreciated.

In regards to the Gas Membrane Specification, we have been in contact with PAGeotechnical - https://www.pageo.co.uk/gas-protection-membranes.html , regarding the specification and they have reviewed the reports etc and have provided the following specification:

PAG HC 400 is a multilayer gas barrier that will protect against Ground Gas, VOCs and Hydrocarbon vapours. PAG HC400 has passed BS ISO15105-1 manometric method for Ground Gas but also BS ISO15105-2 which is for VOC vapour resistance.

A copy of their specification document is attached for your information.

As required under the regulations, C735, the membrane installation is to be installed by suitably qualified operatives and is to be externally validated in order to comply with regulations.

Please let me know if this acceptable or if you require any additional information.

Kind Regards

Euan

From: Peter Barnett [mailto:peter.barnett@adur-worthing.gov.uk]
Sent: Friday, June 29, 2018 1:21 PM
To: Euan Clark - Folkes Architects <euan@folkesarchitects.co.uk>
Subject: Re: AWDM/0376/18 - - Manor Filling Station, Lancing

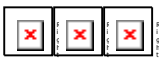
Euan

I have today chased Highways England for an update as they still have a holding objection. With regard to contamination, in your email of 11 June you mentioned that you were going to send details of the gas membrane design but I don't recall receiving this.

Please can you send it?

Thanks

Peter Barnett
Principal Planning Officer, Adur & Worthing Councils
Phone: 01903 221310
Email: peter.barnett@adur-worthing.gov.uk
Website: http://www.adur-worthing.gov.uk
Address: Development Management, Portland House, 44 Richmond Road, Worthing, BN11 1HS



On 29 June 2018 at 11:40, Euan Clark - Folkes Architects <euan@folkesarchitects.co.uk> wrote:

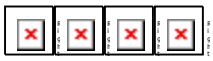
> Good morning Peter,
>
> Please can you provide an update as to where we are with this application, as time is obviously ticking ever onwards and our client is getting geared up to commence works – although not until after the application has been determined.
>
> Have Highways England confirmed the ownership queries? Are the proposed drainage and contamination issues satisfactory?
>
> Kind Regards
>
> Euan
>
> **From:** Peter Barnett [mailto:peter.barnett@adur-worthing.gov.uk]
> **Sent:** Thursday, June 7, 2018 2:01 PM
> **To:** Euan Clark - Folkes Architects <euan@folkesarchitects.co.uk>
> **Cc:** Ken Argent <ken.argent@adur-worthing.gov.uk>
> **Subject:** Fwd: AWDM/0376/18 - - Manor Filling Station, Lancing
>
> Euan

I hope the drainage test went well today. I have received the comments below from Highways England which you will see maintains their objection until the ownership and acceptability of the drainage connection is resolved.

I am happy for you to contact Highways England direct but please copy me in to any correspondence.

Thanks

Peter Barnett
Principal Planning Officer, Adur & Worthing Councils
Phone: 01903 221310
Email: peter.barnett@adur-worthing.gov.uk
Website: http://www.adur-worthing.gov.uk
Address: Development Management, Portland House, 44 Richmond Road, Worthing, BN11 1HS



---------- Forwarded message ----------
From: **Bowie, David** <David.Bowie@highwaysengland.co.uk>
Date: 5 June 2018 at 23:02
Subject: RE: AWDM/0376/18 - - Manor Filling Station, Lancing
To: Peter Barnett <peter.barnett@adur-worthing.gov.uk>
Cc: Planning SE <planningse@highwaysengland.co.uk>, "Cleaver, Elizabeth" <Elizabeth.Cleaver@highwaysengland.co.uk>, "Franklin, Richard" <Richard.Franklin@highwaysengland.co.uk>, "Turner, Lyn" <Lyn.Turner@highwaysengland.co.uk>

Dear Peter,

Many thanks for the drainage information relating to the Manor Filling Station site, Lancing (application no. AWDM/0376/18). Regrettably this information does not take me forwards in understanding the existing drainage situation at this location on the A27. Our records differ quite considerably from those supplied by the consultant and as the area is prone to flooding I am concerned that discharging storm water run-off from the site into Highways England's drainage network could have significant safety implications.

As mentioned in my email of the 10th April, Highways England do not normally allow any new connections into its highway drainage network and accordingly the applicants consultants are requested to locate and survey the drainage run to which they intend to connect to ensure that this is not Highways England's drainage run. If this is the case an alternative method of discharge will be required. My records seem to indicate that this is the case and therefore I am

not agreeable to the proposals at this point. Please can you ensure that the applicant undertakes a full drainage survey of this area to ensure that the proposals are robust.

Kind regards

David

David Bowie

Area 4 Spatial Planning Team
Highways England | Bridge House | 1 Walnut Tree Close | Guildford | Surrey | GU1 4LZ
Mobile: + 44 (0) 7900 056130
Web: http://www.highways.gov.uk

From: Peter Barnett [mailto:peter.barnett@adur-worthing.gov.uk]
Sent: 15 May 2018 12:59
To: Bowie, David; Planning SE
Subject: Fwd: AWDM/0376/18 - - Manor Filling Station, Lancing

Dear David

Further to your holding objection received 10 April, would you please advise whether the attached details are sufficient to overcome your objections?

Thanks

Peter Barnett
Principal Planning Officer, Adur & Worthing Councils
Phone: 01903 221310
Email: peter.barnett@adur-worthing.gov.uk
Website: http://www.adur-worthing.gov.uk
Address: Development Management, Portland House, 44 Richmond Road, Worthing, BN11 1HS

---------- Forwarded message ----------
From: **Euan Clark - Folkes Architects** <euan@folkesarchitects.co.uk>
Date: 15 May 2018 at 12:22
Subject: FW: 6947 - Manor Filling Station, Lancing
To: Peter Barnett <peter.barnett@adur-worthing.gov.uk>

Good afternoon Peter,

Re: Proposed Development at Manor Filling Station – Updated Drainage Details

Your ref: AWDM/0376/18

We have now had the head wall surveyed as well as the Manhole indicated on the Civil Engineers drawings to confirm the inverts and flow rates etc as requested by the councils Drainage Engineer – this additional survey information has been added to and is indicated on the attached updated drainage layout.

Please can you confirm if the revised information satisfies the councils Drainage Engineer and addresses the Highways drainage comments.

Kind Regards

Euan

From: Dave Smith [mailto:dsmith@gtacivils.co.uk]
Sent: Tuesday, May 15, 2018 12:09 PM
To: euan@folkesarchitects.co.uk
Cc: Neil Stevenson <NStevenson@gtacivils.co.uk>
Subject: 6947 - Manor Filling Station, Lancing

Hi Euan,

Further to your email yesterday, please find attached the updated Drainage Plan and extended calculations to include the surveyed outfall pipe to the headwall.

The calculations show that it has a capacity of 32.1 l/sec but is only taking the controlled flow of 5 l/sec.

regards,

David Smith

Civil Engineer

gta Civils

Consulting Engineers

Direct: 01444 225663 T: 01444 871444

www.gtacivils.co.uk

Drainage - Flood Risk - Highways - Transport

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GTA Civils Ltd, 66a Church Walk, Burgess Hill, West Sussex, RH15 9AS

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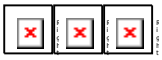
Katharine Giddings
Environmental Health Technical Officer - Contaminated Land, Adur and Worthing Councils
Phone: 01273263114
Email: kate.giddings@adur-worthing.gov.uk
Website: www.adur-worthing.gov.uk
Address: Public Health and Regulation, Portland House
44 Richmond Road
Worthing
West Sussex
BN11 1HS



Our ref: HA/2018/120378/03-L01
Your ref: AWDM/0376/18

Date: 05 September 2018

Adur & Worthing Councils
Development Control
Portland House Richmond Road
Worthing
West Sussex
BN11 1LF

Dear Sir/Madam

(ADDITIONAL DOCS) APPROVAL OF DETAILS REQUIRED BY CONDITIONS (SITE INVESTIGATION AND REMEDIATION) UNDER OUTLINE PERMISSION AWDM/1128/14 FOR ERECTION OF 6 DWELLINGS (CONDITIONS 5.9 AND 10) LANCING MANOR FILLING STATION OLD SHOREHAM ROAD LANCING WEST SUSSEX

Thank you for the consultation on the above application, please quote our reference on all correspondence.

We have reviewed the information as submitted and have the following comments.

Environment Agency Position

We agree with the conclusions and recommendations for further investigations and remediation strategy at the site, **and can recommend the discharge of this condition**.

Elevated hydrocarbon levels have been detected in the soil and groundwater to the east of the site. This contamination seems to be causing a ground gas issue also. Previous investigations did not detect UST but further GPR surveys did identify a concrete caisson. It is theorised that the UST were removed with the void filled in with concrete. It appears that some hydrocarbons were still present within the void at this stage – acting as a source for the hydrocarbon contamination. This appears to have been a source of contamination for at least 20 years.

The remediation strategy basically proposes removal of source and contaminated material being replaced by imported material. Additionally, geo textile or membrane will be installed to reduce ground gas emissions. The verification plan calls for prolonged groundwater monitoring and testing of soil as well as ground gas monitoring.

Please do not hesitate to contact me on the number below should you have any queries on the above information.

Yours faithfully

Mrs Sophie Brown
Sustainable Places Planning Advisor

Direct dial 02030 257250
Direct e-mail planningSSD@environment-agency.gov.uk

End

APPENDIX E

Laboratory Test Results – Tank Excavation

Alex Bewick
Ashdown Site Investigations Ltd
Unit 3 The Grain Store
Ditchling Common Business Park
Ditchling Common
West Sussex
BN6 8SG

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
russell.jarvis@dets.co.uk

DETS Report No: 18-84371

Site Reference:	Former Manor Filling Station, Old Shoreham Road, Lancing
Project / Job Ref:	C18-13334
Order No:	P18-6869
Sample Receipt Date:	30/10/2018
Sample Scheduled Date:	30/10/2018
Report Issue Number:	1
Reporting Date:	05/11/2018

Authorised by:

[redacted]

Russell Jarvis
Associate Director of Client Services

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - EPH Texas Banded							
DETS Report No: 18-84371	**Date Sampled**	26/10/18	26/10/18	26/10/18	26/10/18	26/10/18
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing	**TP / BH No**	TE101	TE102	TE103	TE104	TE105
Project / Job Ref: C18-13334	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: P18-6869	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 05/11/2018	**DETS Sample No**	369352	369353	369354	369355	369356

Determinand	**Unit**	**RL**	**Accreditation**					
EPH Texas (C6 - C8)	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	0.06	< 0.05
EPH Texas (>C8 - C10)	mg/kg	< 1	**MCERTS**	< 1	< 1	< 1	< 1	< 1
EPH Texas (>C10 - C12)	mg/kg	< 1	**MCERTS**	< 1	< 1	< 1	< 1	< 1
EPH Texas (>C12 - C16)	mg/kg	< 1	**MCERTS**	< 1	< 1	< 1	< 1	< 1
EPH Texas (>C16 - C21)	mg/kg	< 1	**MCERTS**	< 1	< 1	< 1	< 1	< 1
EPH Texas (>C21 - C40)	mg/kg	< 6	**MCERTS**	< 6	< 6	< 6	< 6	< 6
EPH Texas (C6 - C40)	mg/kg	< 6	NONE	< 6	< 6	< 6	< 6	< 6

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

(n) 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

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - EPH Texas Banded							
DETS Report No: 18-84371	**Date Sampled**	26/10/18	26/10/18	26/10/18	26/10/18	26/10/18
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing	**TP / BH No**	TE106	TE107	TE108	TE109	TE110
Project / Job Ref: C18-13334	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: P18-6869	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 05/11/2018	**DETS Sample No**	369357	369358	369359	369360	369361

Determinand	**Unit**	**RL**	**Accreditation**					
EPH Texas (C6 - C8)	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	0.07
EPH Texas (>C8 - C10)	mg/kg	< 1	**MCERTS**	< 1	< 1	< 1	< 1	17
EPH Texas (>C10 - C12)	mg/kg	< 1	**MCERTS**	< 1	< 1	< 1	< 1	11
EPH Texas (>C12 - C16)	mg/kg	< 1	**MCERTS**	< 1	< 1	< 1	< 1	24
EPH Texas (>C16 - C21)	mg/kg	< 1	**MCERTS**	< 1	< 1	< 1	< 1	26
EPH Texas (>C21 - C40)	mg/kg	< 6	**MCERTS**	< 6	< 6	< 6	< 6	< 6
EPH Texas (C6 - C40)	mg/kg	< 6	NONE	< 6	< 6	< 6	< 6	77

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

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Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - EPH Texas Banded							
DETS Report No: 18-84371	**Date Sampled**	26/10/18	26/10/18	26/10/18	26/10/18	26/10/18
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing	**TP / BH No**	TE111	TE112	TE113	TE114	TE115
Project / Job Ref: C18-13334	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: P18-6869	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 05/11/2018	**DETS Sample No**	369362	369363	369364	369365	369366

Determinand	**Unit**	**RL**	**Accreditation**					
EPH Texas (C6 - C8)	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
EPH Texas (>C8 - C10)	mg/kg	< 1	**MCERTS**	< 1	< 1	< 1	< 1	< 1
EPH Texas (>C10 - C12)	mg/kg	< 1	**MCERTS**	< 1	< 1	< 1	< 1	< 1
EPH Texas (>C12 - C16)	mg/kg	< 1	**MCERTS**	< 1	< 1	< 1	4	< 1
EPH Texas (>C16 - C21)	mg/kg	< 1	**MCERTS**	< 1	< 1	< 1	< 1	< 1
EPH Texas (>C21 - C40)	mg/kg	< 6	**MCERTS**	< 6	< 6	< 6	13	< 6
EPH Texas (C6 - C40)	mg/kg	< 6	NONE	< 6	< 6	< 6	17	< 6

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - EPH Texas Banded						
DETS Report No: 18-84371	**Date Sampled**	26/10/18	26/10/18	26/10/18	26/10/18	26/10/18
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing	**TP / BH No**	TE116	TE117	TE118	TE119	TE120
Project / Job Ref: C18-13334	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: P18-6869	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 05/11/2018	**DETS Sample No**	369367	369368	369369	369370	369371

Determinand	**Unit**	**RL**	**Accreditation**					
EPH Texas (C6 - C8)	mg/kg	< 0.05	NONE	0.11	< 0.05	< 0.05	0.23	< 0.05
EPH Texas (>C8 - C10)	mg/kg	< 1	**MCERTS**	< 1	< 1	< 1	4	5
EPH Texas (>C10 - C12)	mg/kg	< 1	**MCERTS**	< 1	< 1	< 1	7	13
EPH Texas (>C12 - C16)	mg/kg	< 1	**MCERTS**	< 1	< 1	< 1	21	11
EPH Texas (>C16 - C21)	mg/kg	< 1	**MCERTS**	< 1	< 1	< 1	30	< 1
EPH Texas (>C21 - C40)	mg/kg	< 6	**MCERTS**	< 6	< 6	< 6	13	< 6
EPH Texas (C6 - C40)	mg/kg	< 6	NONE	< 6	< 6	< 6	74	28

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - EPH Texas Banded							
DETS Report No: 18-84371	**Date Sampled**	26/10/18	26/10/18	26/10/18	26/10/18	26/10/18
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing	**TP / BH No**	TE121	TE122	TE123	TE124	TE125
Project / Job Ref: C18-13334	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: P18-6869	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 05/11/2018	**DETS Sample No**	369372	369373	369374	369375	369376

Determinand	**Unit**	**RL**	**Accreditation**					(n)
EPH Texas (C6 - C8)	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	66.40
EPH Texas (>C8 - C10)	mg/kg	< 1	**MCERTS**	< 1	< 1	4	< 1	182
EPH Texas (>C10 - C12)	mg/kg	< 1	**MCERTS**	< 1	< 1	5	< 1	59
EPH Texas (>C12 - C16)	mg/kg	< 1	**MCERTS**	< 1	< 1	2	< 1	14
EPH Texas (>C16 - C21)	mg/kg	< 1	**MCERTS**	< 1	6	2	< 1	< 1
EPH Texas (>C21 - C40)	mg/kg	< 6	**MCERTS**	< 6	11	< 6	< 6	< 6
EPH Texas (C6 - C40)	mg/kg	< 6	NONE	< 6	17	14	< 6	321

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - EPH Texas Banded						
DETS Report No: 18-84371	**Date Sampled**	26/10/18	26/10/18	26/10/18	26/10/18	26/10/18
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing	**TP / BH No**	TE126	TE127	TE128	TE129	TE130
Project / Job Ref: C18-13334	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: P18-6869	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 05/11/2018	**DETS Sample No**	369377	369378	369379	369380	369381

Determinand	**Unit**	**RL**	**Accreditation**	(n)		(n)	(n)	(n)
EPH Texas (C6 - C8)	mg/kg	< 0.05	NONE	31.60	8.09	12.20	12.10	11.60
EPH Texas (>C8 - C10)	mg/kg	< 1	**MCERTS**	89	31	12	27	14
EPH Texas (>C10 - C12)	mg/kg	< 1	**MCERTS**	32	12	3	9	4
EPH Texas (>C12 - C16)	mg/kg	< 1	**MCERTS**	10	2	< 1	1	< 1
EPH Texas (>C16 - C21)	mg/kg	< 1	**MCERTS**	< 1	< 1	< 1	< 1	< 1
EPH Texas (>C21 - C40)	mg/kg	< 6	**MCERTS**	< 6	< 6	< 6	< 6	< 6
EPH Texas (C6 - C40)	mg/kg	< 6	NONE	163	53	27	49	29

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - EPH Texas Banded						
DETS Report No: 18-84371	**Date Sampled**	26/10/18	26/10/18	26/10/18	26/10/18	26/10/18
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing	**TP / BH No**	TE131	TE132	TE133	TE134	TE135
Project / Job Ref: C18-13334	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: P18-6869	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 05/11/2018	**DETS Sample No**	369382	369383	369384	369385	369386

Determinand	**Unit**	**RL**	**Accreditation**	(n)		(n)	(n)	(n)
EPH Texas (C6 - C8)	mg/kg	< 0.05	NONE	20.20	20.90	29.20	24.50	24.10
EPH Texas (>C8 - C10)	mg/kg	< 1	**MCERTS**	83	139	189	123	73
EPH Texas (>C10 - C12)	mg/kg	< 1	**MCERTS**	30	39	59	41	26
EPH Texas (>C12 - C16)	mg/kg	< 1	**MCERTS**	9	11	16	11	8
EPH Texas (>C16 - C21)	mg/kg	< 1	**MCERTS**	< 1	< 1	< 1	< 1	< 1
EPH Texas (>C21 - C40)	mg/kg	< 6	**MCERTS**	< 6	< 6	< 6	< 6	< 6
EPH Texas (C6 - C40)	mg/kg	< 6	NONE	142	211	293	200	131

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

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Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - EPH Texas Banded							
DETS Report No: 18-84371	**Date Sampled**	26/10/18	26/10/18	26/10/18	26/10/18	26/10/18
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing	**TP / BH No**	TE136	TE137	TE138	TE139	TE140
Project / Job Ref: C18-13334	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: P18-6869	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 05/11/2018	**DETS Sample No**	369387	369388	369389	369390	369391

Determinand	**Unit**	**RL**	**Accreditation**	(n)	(n)	(n)	(n)	(n)
EPH Texas (C6 - C8)	mg/kg	< 0.05	NONE	39.20	2.09	6.87	33.70	31.80
EPH Texas (>C8 - C10)	mg/kg	< 1	**MCERTS**	231	20	13	72	70
EPH Texas (>C10 - C12)	mg/kg	< 1	**MCERTS**	82	7	4	25	44
EPH Texas (>C12 - C16)	mg/kg	< 1	**MCERTS**	23	2	< 1	6	14
EPH Texas (>C16 - C21)	mg/kg	< 1	**MCERTS**	< 1	< 1	< 1	< 1	< 1
EPH Texas (>C21 - C40)	mg/kg	< 6	**MCERTS**	< 6	< 6	< 6	17	< 6
EPH Texas (C6 - C40)	mg/kg	< 6	NONE	375	31	24	155	159

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

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Maidstone
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Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 18-84371	
Ashdown Site Investigations Ltd	
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing	
Project / Job Ref: C18-13334	
Order No: P18-6869	
Reporting Date: 05/11/2018	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
369352	TE101	None Supplied	None Supplied	5.7	Brown sandy clay with stones
369353	TE102	None Supplied	None Supplied	14	Brown sandy clay with stones
369354	TE103	None Supplied	None Supplied	16.9	Brown sandy clay with stones and chalk
369355	TE104	None Supplied	None Supplied	4.4	Brown sandy clay with stones and chalk
369356	TE105	None Supplied	None Supplied	12.1	Brown sandy clay
369357	TE106	None Supplied	None Supplied	11.4	Brown sandy clay with chalk
369358	TE107	None Supplied	None Supplied	12.4	Brown sandy clay with vegetation
369359	TE108	None Supplied	None Supplied	13.9	Brown sandy clay with chalk
369360	TE109	None Supplied	None Supplied	17.5	Brown sandy clay with chalk
369361	TE110	None Supplied	None Supplied	12.5	Brown sandy clay with stones
369362	TE111	None Supplied	None Supplied	16.3	Brown sandy clay with stones and chalk
369363	TE112	None Supplied	None Supplied	17.1	Brown sandy clay with chalk
369364	TE113	None Supplied	None Supplied	15.5	Brown sandy clay with chalk
369365	TE114	None Supplied	None Supplied	13.3	Brown sandy clay with chalk
369366	TE115	None Supplied	None Supplied	12.7	Brown sandy clay with chalk
369367	TE116	None Supplied	None Supplied	15.3	Brown sandy clay with stones
369368	TE117	None Supplied	None Supplied	14.5	Brown sandy clay with stones
369369	TE118	None Supplied	None Supplied	13.9	Brown sandy clay with chalk
369370	TE119	None Supplied	None Supplied	11.6	Brown sandy clay with stones and concrete
369371	TE120	None Supplied	None Supplied	14.9	Brown sandy clay with stones and chalk
369372	TE121	None Supplied	None Supplied	15	Brown sandy clay with chalk
369373	TE122	None Supplied	None Supplied	8.3	Brown sandy clay with stones and concrete
369374	TE123	None Supplied	None Supplied	14.2	Brown sandy clay with stones and chalk
369375	TE124	None Supplied	None Supplied	13.6	Brown sandy clay
369376	TE125	None Supplied	None Supplied	17.2	White chalk with stones
369377	TE126	None Supplied	None Supplied	17.9	White chalk
369378	TE127	None Supplied	None Supplied	19.2	Light grey sandy clay with stones and chalk
369379	TE128	None Supplied	None Supplied	19.1	White chalk
369380	TE129	None Supplied	None Supplied	17.6	White chalk
369381	TE130	None Supplied	None Supplied	19.4	White chalk
369382	TE131	None Supplied	None Supplied	17.1	White chalk
369383	TE132	None Supplied	None Supplied	15.6	Brown sandy clay with chalk
369384	TE133	None Supplied	None Supplied	17.1	White chalk
369385	TE134	None Supplied	None Supplied	16.6	White chalk
369386	TE135	None Supplied	None Supplied	17	White chalk
369387	TE136	None Supplied	None Supplied	15.4	White chalk
369388	TE137	None Supplied	None Supplied	15.5	White chalk
369389	TE138	None Supplied	None Supplied	20	White chalk
369390	TE139	None Supplied	None Supplied	19.2	White chalk
369391	TE140	None Supplied	None Supplied	18.1	White chalk

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample [I/S]

Unsuitable Sample [U/S]

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Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-84371
Ashdown Site Investigations Ltd
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing
Project / Job Ref: C18-13334
Order No: P18-6869
Reporting Date: 05/11/2018

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

APPENDIX F

Laboratory Test Results - Topsoil

Stuart Card
Ashdown Site Investigations Ltd
Unit 3 The Grain Store
Ditchling Common Business Park
Ditchling Common
West Sussex
BN6 8SG

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 19-13377

Site Reference:	Former Manor Filling Station, Old Shoreham Road, Lancing
Project / Job Ref:	C18-13334_8
Order No:	7939
Sample Receipt Date:	18/09/2019
Sample Scheduled Date:	18/09/2019
Report Issue Number:	1
Reporting Date:	24/09/2019

Authorised by:

[redacted]

Technical Manager

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DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate							
DETS Report No: 19-13377	**Date Sampled**	13/09/19	13/09/19	13/09/19	13/09/19	13/09/19
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing	**TP / BH No**	VE101	VE102	VE103	VE104	VE106
Project / Job Ref: C18-13334_8	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 7939	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 24/09/2019	**DETS Sample No**	435616	435617	435618	435619	435620

Determinand	**Unit**	**RL**	**Accreditation**					
Asbestos Screen (S)	N/a	N/a	**ISO17025**	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	**MCERTS**	7.8	7.8	7.7	7.6	7.6
Organic Matter	%	< 0.1	**MCERTS**	2.6	2.9	3.4	4	3.9
Arsenic (As)	mg/kg	< 2	**MCERTS**	6	6	7	7	9
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	**MCERTS**	0.3	0.2	0.3	0.3	0.3
Chromium (Cr)	mg/kg	< 2	**MCERTS**	15	16	16	16	18
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	**MCERTS**	19	37	21	20	24
Lead (Pb)	mg/kg	< 3	**MCERTS**	44	43	68	76	93
Mercury (Hg)	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	**MCERTS**	10	10	10	11	11
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3	< 3	< 3
Zinc (Zn)	mg/kg	< 3	**MCERTS**	74	72	91	110	111

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C
Subcontracted analysis (S)

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Rose Lane
Lenham Heath
Maidstone
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Soil Analysis Certificate - Speciated PAHs							
DETS Report No: 19-13377	**Date Sampled**	13/09/19	13/09/19	13/09/19	13/09/19	13/09/19
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing	**TP / BH No**	VE101	VE102	VE103	VE104	VE106
Project / Job Ref: C18-13334_8	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 7939	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 24/09/2019	**DETS Sample No**	435616	435617	435618	435619	435620

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	0.32	1	2.05	0.85	0.47
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	0.17	0.44	0.12	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	1.01	1.98	3.85	1.82	1.49
Pyrene	mg/kg	< 0.1	MCERTS	0.94	1.74	3.35	1.58	1.37
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.56	0.98	1.89	0.88	0.81
Chrysene	mg/kg	< 0.1	MCERTS	0.54	0.91	1.80	0.93	0.84
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.88	1.40	2.53	1.48	1.24
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.23	0.43	0.85	0.46	0.36
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.69	1.10	2.07	1.15	0.94
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.61	0.86	1.46	0.89	0.78
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	0.15	0.25	0.15	0.13
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.55	0.80	1.36	0.84	0.74
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	6.3	11.5	21.9	11.2	9.2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - EPH Banded (Type F)							
DETS Report No: 19-13377	**Date Sampled**	13/09/19	13/09/19	13/09/19	13/09/19	13/09/19
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing	**TP / BH No**	VE101	VE102	VE103	VE104	VE106
Project / Job Ref: C18-13334_8	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 7939	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 24/09/2019	**DETS Sample No**	435616	435617	435618	435619	435620

Determinand	**Unit**	**RL**	**Accreditation**					
EPH (>C8 - C10)	mg/kg	< 1	**MCERTS**	2	2	< 1	< 1	< 1
EPH (>C10 - C12)	mg/kg	< 1	**MCERTS**	< 1	< 1	< 1	< 1	< 1
EPH (>C12 - C16)	mg/kg	< 1	**MCERTS**	< 1	2	3	3	< 1
EPH (>C16 - C21)	mg/kg	< 1	**MCERTS**	8	13	23	16	13
EPH (>C21 - C40)	mg/kg	< 6	**MCERTS**	46	73	108	84	76
EPH (C8 - C40)	mg/kg	< 6	**MCERTS**	55	90	134	102	89

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 19-13377	
Ashdown Site Investigations Ltd	
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing	
Project / Job Ref: C18-13334_8	
Order No: 7939	
Reporting Date: 24/09/2019	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
435616	VE101	None Supplied	None Supplied	12.8	Brown sandy clay with vegetation
435617	VE102	None Supplied	None Supplied	13.3	Brown loamy sand with stones and vegetation
435618	VE103	None Supplied	None Supplied	13.1	Brown loamy sand with vegetation
435619	VE104	None Supplied	None Supplied	11.6	Brown loamy sand with vegetation
435620	VE106	None Supplied	None Supplied	12.1	Brown loamy sand with vegetation

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

DETS Ltd
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Lenham Heath
Maidstone
Kent ME17 2JN
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Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 19-13377
Ashdown Site Investigations Ltd
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing
Project / Job Ref: C18-13334_8
Order No: 7939
Reporting Date: 24/09/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

APPENDIX G

Statistical Analysis Summary Sheet

Client/client ref:
Project ref: C18-13334
Site ref: Former Manor Filing Station, Old Shoreham Road, Lancing, West Sussex
Data description: Topsoil
Contaminant(s): PAH compounds
Test scenario: Planning
Date: 16 October 2019
User details: SC

	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Di-benzo(a,h)anthracene	Benzo(ghi)perylene
Critical concentration, C_c	**2.3**	**170**	**210**	**170**	**95**	**2400**	**280**	**620**	**7.2**	**15**	**2.6**	**77**	**2.2**	**27**	**0.24**	**320**
Notes																
Full dataset size	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Outliers present?	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	No
Number of outliers temporarily excluded	0															
Number removed by filter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sample size, n	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
Sample mean, $\overline{X}$	0.05	0.05	0.05	0.05	0.938	0.166	2.03	1.796	1.024	1.004	1.506	0.466	1.19	0.92	0.146	0.858
Standard deviation, s	0	0	0	0	0.67990441	0.16133815	1.08293582	0.91909194	0.50836011	0.47173086	0.61707374	0.23222834	0.52359335	0.32085822	0.07127412	0.3018609
Number of non-detects	**5**	**5**	**5**	**5**	0	**2**	0	0	0	0	0	0	0	0	**1**	0
Set non-detect values to:																
Distribution	Single value	Single value	Single value	Single value	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Statistical approach																
Test scenario:					**Evidence level required:**		**95%**									
t statistic, t_0 (or k_0)	N/A	N/A	N/A	N/A	-309.3508801	-33260.52653	-573.9581253	-1504.034692	-27.16569533	-66.34293061	-3.964288562	-736.9265508	-4.313325678	-181.7520901	-2.949042284	-2364.079674
Upper confidence limit (on true mean concentration, μ)	0.05	0.05	0.05	0.05	1.58621465	0.31981832	3.06246112	2.67225386	1.50866588	1.45374389	2.09431247	0.68740437	1.68918912	1.2259033	0.21395209	1.14579142
Evidence level	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**99%**	**100%**	**99%**	**100%**	**98%**	**100%**
Base decision on:																
Result	μ < Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc	μ < Cc

APPENDIX H

Delivery Notes for Virgin Materials

TJ TRANSPORT LTD

Charity Farm, 127 Wickham Road, Fareham, Hampshire, PO17 5BP
Tel: 01329 226446 Fax: 01329 826167 www.tj-transport.co.uk
Carriers Registration Certificate No. **CBDU133054**

CONVEYANCE / TRANSFER NOTE

1360221

Driver Name:	CHRIS RAWLINGS
Registration:	N40 TST
Date & Time:	1/10/19
Customer:	COVERS
Loaded at:	AGGREGATE PORTSMOUTH
Deliver to:	RANDELL + CHISNELL LANCING MANOR FILLING ST. OLD SHOREHAM RD LANCING
Day work / waiting time or additional charges:	
Driver Signature:	[redacted]
Disposal Signature:	
Disposal / Material Ticket Number:	

Inert Spoil	17 05 04		Asphalt	17 03 02	
Soils & Stone	17 05 04		Builders Waste	17 09 04	
Non-Haz Spoil	17 05 04		Hardcore (MRF)	19 12 12	
Hazardous Spoil	17 05 03		Soils (MS)	19 12 12	
Hardcore	17 01 02				
Concrete	17 01 01		Other - Describe below		✓

Waste description & EWC / Materials: 20 - 40 mm MARINE SHINGLE

Volume		M³	1 X LOAD	Load
Gross Weight				Tonnes
Nett Weight				Tonnes
Tare Weight				Tonnes

(* in accordance with the Weights and Measures Act 1985)

SIC Code:

Construction	41.10		Demolition	43.11	
Civil Engineering	42.99		Waste Collection	38.11	

*I confirm that I have fulfilled my duty to apply the waste hierarchy, as required by Regulation 12 of the waste (England and Wales) Regul[redacted]

Customer Signature: [redacted]

Notes
Customers ordering vehicles off the public road do so entirely at their own responsibility.
Certified that the above particulars are true and relate to the material or waste being conveyed in described, which material or waste is being so conveyed in pursuance of:
(a) a sale or agreement for the sale thereof made by the cubic tonne / metre / load
(b) an agreement for the carriage thereof made by the cubic tonne / metre / load

---

TJ TRANSPORT LTD

Charity Farm, 127 Wickham Road, Fareham, Hampshire, PO17 5BP
Tel: 01329 226446 Fax: 01329 826167 www.tj-transport.co.uk
Carriers Registration Certificate No. **CBDU133054**

CONVEYANCE / TRANSFER NOTE

1361171

Driver Name:	M. CHENEY
Registration:	SZ5 TJT
Date & Time:	1/10/19
Customer:	COVERS
Loaded at:	CHARITY FARM
Deliver to:	RANDELL + CHISNELL CONS LANCING MANOR FILLING STATION OLD SHOREHAM ROAD LANCING, BN15 0QS
Day work / waiting time or additional charges:	
Driver Signat[redacted]	
Disposal Signature:	
Disposal / Material Ticket Number:	

Inert Spoil	17 05 04		Asphalt	17 03 02	
Soils & Stone	17 05 04		Builders Waste	17 09 04	
Non-Haz Spoil	17 05 04		Hardcore (MRF)	19 12 12	
Hazardous Spoil	17 05 03		Soils (MS)	19 12 12	
Hardcore	17 01 02				
Concrete	17 01 01		Other - Describe below		

Waste description & EWC / Materials: 20/40mm SINGLE SIZE GRAVEL

Volume	~~T5~~	M³	1 Y	Load
Gross Weight				Tonnes
Nett Weight				Tonnes
Tare Weight				Tonnes

(* in accordance with the Weights and Measures Act 1985)

SIC Code:

Construction	41.10		Demolition	43.11	
Civil Engineering	42.99		Waste Collection	38.11	

"I confirm that [redacted] y Regulation 12 of the waste (England and [redacted]

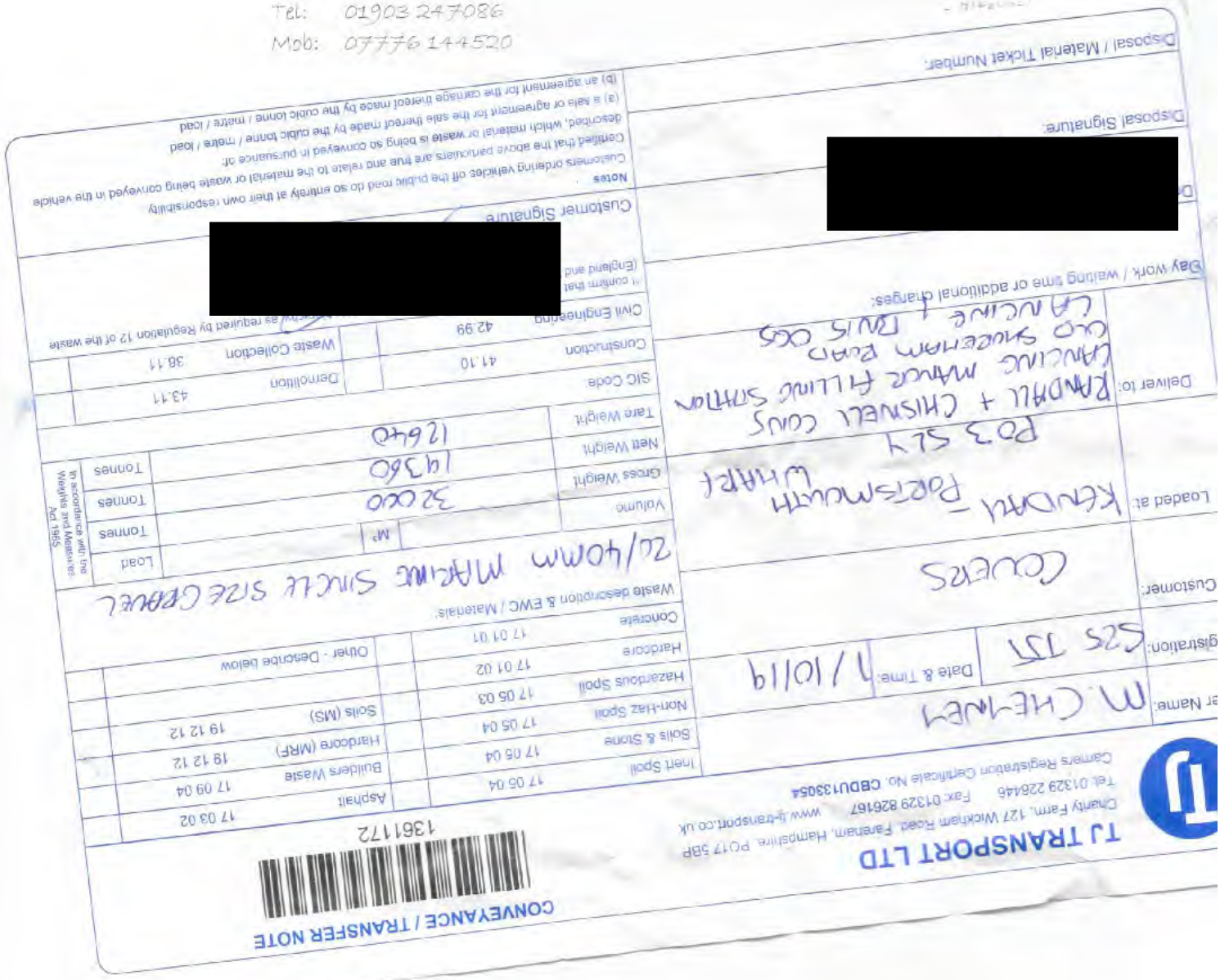
Customer S[redacted]

Notes
Customers ordering vehicles off the public road do so entirely at their own responsibility.
Certified that the above particulars are true and relate to the material or waste being conveyed in the vehicle described, which material or waste is being so conveyed in pursuance of:

RANDALL & CHISNALL BUILDING CONTRACTORS L.T.D.

27 ferringham lane
ferring
Worthing
BN12 5NB
Tel: 01903 247086
Mob: 07776 144520

- new build
- extensions
- loft conversions
-



CONVEYANCE / TRANSFER NOTE

1361172

TJ TRANSPORT LTD

Chantry Farm, 127 Wickham Road, Fareham, Hampshire. PO17 5BP
Tel: 01329 226445 Fax: 01329 826167 www.tj-transport.co.uk
Carriers Registration Certificate No. CBDU13054

Customer Name: M. CHENEY
Registration: SZS 137
Date & Time: 9/10/19
Customer: COVERS
Loaded at: KINGHAM - FARNBOROUGH
Deliver to: RANDALL + CHISNELL COUS LANDLINE MANOR FILLING STATION C/O SWEETMAN FARM CANDLE LANE, DAVIS CROS
Day Work / waiting time or additional charges:
Disposal Signature:
Disposal / Material Ticket Number:

Waste description & EWC / Materials:

Inert Spoil	17 05 04		
Soils & Stone	17 05 04		
Non-Haz Spoil	17 05 04		
Hazardous Spoil	17 05 03		
Hardcore	17 01 02		
Concrete	17 01 01		
Outer - Describe below			
Soils (MS)	19 12 12		
Hardcore (MRF)	19 12 12		
Bulders Waste	17 09 04		
Asphalt	17 03 02		

22/40mm MAKE SURE SIZE CHANGE

Load	Tonnes	Volume	m³
	Tonnes	Gross Weight	32000
	Tonnes	Nett Weight	19360
In accordance with the Weights and Measures Act 1985		Tare Weight	12640

Demolition	43.11		
Waste Collection	38.11		
Civil Engineering	42.99		
Construction	41.10		

SIC Code:

Customer Signature

Notes

Customers ordering vehicles off the public road do so entirely at their own responsibility
Certified that the above particulars are true and relate to the material or waste being conveyed in the vehicle described, which material or waste is being so conveyed in pursuance of:
(a) a sale or agreement for the sale thereof made by the cubic tonne / metre / load
(b) an agreement for the carriage thereof made by the cubic tonne / metre / load

VAT No: 777 6713 77

RANDALL & CHISNALL
BUILDING CONTRACTORS

DAY AGGREGATES

www.daygroup.co.uk

BULK MATERIALS CONVEYANCE NOTE

DATE	TIME	PROJECT CODE	ORDER CODE	TICKET NUMBER

VEHICLE REG.	HAULIER'S CODE/NAME	DRIVER'S NAME

USTOMER NAME: SIC CODE:

TE ADDRESS:

UTS CODE: ZONE CODE:

STRUCTIONS:

USTOMER ORDER No.:

ATERIAL DESCRIPTION:

SOURCE/W.D.P.	U.O.M.	GROSS WEIGHT	TARE WEIGHT	NETT QUANTITY
		31.70	12.40	19.30

CASH SALE DETAILS	RATE	NETT	VAT	TOTAL

THIS BLOCK TO BE USED FOR WAITING TIME OR DAY WORK ONLY	TIME ON SITE	TIME OFF SITE	HOURS	MINUTES
	REASON FOR WAITING [redacted]			
	SIGNED BY		PRINT NAME	

OMERS ORDERING VEHICLES OFF THE HIGHWAY DO SO ENTIRELY ON THEIR OWN RESPONSIBILITY.

GOODS RECEIVED	SIGNED BY		PRINT NAME	

THIS LOAD IS SOLD SUBJECT TO OUR CONDITIONS OF BUSINESS (AVAILABLE ON REQUEST). DAY AGGREGATES IS A DIVISION OF DAY GROUP LTD. REGISTRATION NO. 432417.

Sales
0844 257 7000
Branch Support Centre
01825 748400

PARKER BUILDING SUPPLIES

www.parkerbs.com

Sales Invoice

Invoice To:

RANDALL & CHISNALL CONSTRUCTION LTD
27 FERRINGHAM LANE
FERRING
WORTHING
WEST SUSSEX
BN12 5NB

Goods deliver to:-

RANDALL & CHISNALL CONSTRUCTION LTD
Former Manor Filling Station
Old Shoreham Road
LANCING
BN15 0QS

For queries regarding this invoice, please contact:

Invoice Enquiries:	01903 259111
Branch Location:	Angmering

Document No.	Taxpoint Date	Contact	Advice No.	Invoice Acc.	Your Ref.	Our Ref.
0021/02131150	04/10/2019		0021/00204327	0012880		301656

Product	Description	Quantity	Unit Price	Discount	Total	V
G03400	CJB GRANO DUST LARGE CRANE BAG	7 BG	60.69 BG		424.83	S
G03488	EVERGREENS ARTIFICIAL GRASS JOINT GLUE	6 EA	5.99 EA		35.94	S
G03487	EVERGREENS ARTIFICIAL GRASS JOINT TAPE 10MTR ROLL	3 RL	8.65 RL		25.95	S

Additional information :-
From Monday 18th March the summer opening hours for our branches will be 07.00 - 17.30 Mon-Fri. Saturday hours do not change.

GREAT NEWS our New Plumbing Departments at Crowborough & Tonbridge are NOW OPEN.

COPY COPY COPY COPY COPY COPY

OUR BANK DETAILS HAVE CHANGED, SEE BELOW FOR MORE INFO.

	Rate	Goods	VAT
S	20.00	486.72	97.34

Payment terms net monthly.
Due date 30/11/2019

TOTAL GOODS:	486.72
TOTAL VAT:	97.34
INVOICE TOTAL:	584.06

All Values are in GB Pounds

APPENDIX I

Barrier Pipe Invoice

strukta
Specialist Builders Merchant

WANT TO GO PAPERLESS?
SEND YOUR EMAIL ADDRESS
TO
ACCOUNTS@STRUKTA.CO.UK

strukta Group
36 Walworth Road
Walworth Industrial Estate
Andover Hants. SP10 5LH
United Kingdom
VAT No 155 4516 11

INVOICE

Invoice To

RANDALL & CHISNALL CONSTRUCTION LTD
27 FERRINGHAM LANE
FERRING
WORTHING WEST SUSSEX BN12 5NB
United Kingdom

Delivery To

GARY
RANDALL & CHISNALL CONSTRUCTION LTD
MANOR ROAD,
LANCING, W Sussex BN15 0HL
United Kingdom

Invoice No	Date	Customer	Your Order Ref	Sales Order No	Taken By
INSG0015215	24/05/2019	RANDA004	A27	Sales Order #SOSG0014634	Lauren Moggach

Item	Description	Quantity	Unit	Net Price	Amount
	Puriton Barrier Pipe 25mm x 50m [must have markings]	2	EACH	276.00	552.00

PLEASE NOTE NET PRICES SHOWN ABOVE INCLUDE DISCOUNTS AGREED
Bank transfer: Lloyds TSB Salisbury Sort-Code:30-97-41 Account number: 48103260

IT IS THE CONDITION OF CONTRACT THAT THESE GOODS REMAIN THE PROPERTY OF STRUKTA GROUP LIMITED UNTIL PAID IN FULL.

ACCEPTANCE OF THESE GOODS IMPLIES ACCEPTANCE OF THE CONDITIONS OF SALE OF THE COMPANY. CONDITIONS OF SALE AVAILABLE ON REQUEST.

PAYMENT OF THIS INVOICE IS REQUIRED BY END OF THE MONTH FOLLOWING DATE OF INVOICE. THANK YOU.

FULL TERMS AND CONDITIONS AND LIST OF PARTNERS AVAILABLE ON REQUEST.

NON DELIVERY OR DISCREPANCIES MUST BE NOTIFIED WITHIN 3 DAYS OF RECEIPT OF INVOICE OTHERWISE CLAIMS CANNOT BE ACCEPTED.

ALL NON-STOCK GOODS ARE NON-REFUNDABLE.

Subtotal	552.00
Shipping Cost (Delivered)	0.00
Tax Total	110.40
Total	662.40
Amount Due	£662.40

Ref. 41829 C

APPENDIX J

Geoshield Ltd. Verification Report
PAGeoContracting Ltd. Completion Certificate

COMPLETION CERTIFICATE

Job Name……Manor Filling Station Job No…...6189/HSG/01

Building Reference:

Manor Filling Station
Old Shoreham Road
Lancing
West Sussex
BN15 0QS

Description of work element:

‘Supply and installation’

Hydrocarbon 400
PAG Self Adhesive Gas Resistant

This is to certify that the works described above have been completed in accordance with our specification of works and method statement and that any variations have been agreed and recorded.

Signed [redacted]

Name Debbie Duffin

Date of completion: 20.05.2019

PAGeoContracting Ltd. Darwin House, Corby Gate Business Park
Corby, Northants, NN17 5JG
Tel : 01536 740040 Fax : 01536 740044 e-mail : office@PAGEO.co.uk web : www.pageo.co.uk
Registered in England No.708883

GEOSHIELD Verification Report

PROJECT REFERENCE: PAG. 6189

PROJECT: Manor filling station

PROJECT ADDRESS: Old Shoreham Rd

Lancing

BN15 0QS

MEMBRANE SPECIFICATION: Membrane to Bs8485 2015 and Ciria 735

PAG SAGR Detailing Tape

Verification Plan will not be legally valid until payment is made.

GEOSHIELD Verification Report

MEMBRANE SPECIFICATION: Membrane to Bs8485 2015 and Ciria 735

DESIGN DETAILS:

Drawing number. 1682. 2. 01. Rev B

Verification Plan will not be legally valid until payment is made.

GEOSHIELD Verification Report

SURVEYOR:	John Turnbull
VERIFICATION COMPANY:	GEOSHIELD LIMITED
	Suite 46, 4100 Park Approach
	Thorpe Park, Leeds
	West Yorkshire
	LS15 8GB
CONTACT NUMBER:	07584 222519
EMAIL ADDRESS:	jturnbull@geoshield.co.uk
ORDER NUMBER:	Purchase Order Number 3461

PER VISIT: YES: ☐ NO: ☐ PROJECT: YES: ☑ NO: ☐

Verification Plan will not be legally valid until payment is made.

GEOSHIELD Verification Report

CLIENT DETAILS

CLIENT CONTACT:	Debbie Duffin
CONTACTS ROLE:	PAG Operations Manager
MOBILE PHONE:	07471 033979
EMAIL ADDRESS:	Debbie@pageo.co.uk

CLIENT CONTACT:	
CONTACTS ROLE:	
MOBILE PHONE:	
EMAIL ADDRESS	
NOTES:	

Verification Plan will not be legally valid until payment is made.

GEOSHIELD Verification Report

APPLICATION TEAM LEADERS

APPLICATOR NAME: Richard Jones

COMPANY: PAGeoContracting Limited

APPLICATOR TEL: 01536 740040

APPLICATOR EMAIL:

APPLICATOR NAME:

COMPANY:

APPLICATOR TEL:

APPLICATOR EMAIL:

NOTES:

NOTES:

Verification Plan will not be legally valid until payment is made.

GEOSHIELD Verification Report

AREA SURVEYED:	Plots 4/5/6
Garages 1/2/3	

SITE CONDITIONS:

# WEATHER:	Dry /sunny
# TEMPERATURE:	17c
# MEMBRANE TEMPERATURE:	
# RELATIVE HUMIDITY:	Low

TIME:	10.30 - 11.30	REPORT NUMBER:	002
DATE:	20/05/2019		
ACCOMPANIED	Yes		

Verification Plan will not be legally valid until payment is made.

GEOSHIELD Verification Report

VERIFICATION LAYOUT

Click to set image

Not available for this visit

Verification Plan will not be legally valid until payment is made.

GEOSHIELD Verification Report

OVERVIEW PHOTOS

Click to set image

Verification Plan will not be legally valid until payment is made.

GEOSHIELD Verification Report

LIMITATIONS

SURVEY AREA:

RESTRICTIONS AND LIMITATIONS: No restrictions or limitations identified during the Verification Visit.

Verification Plan will not be legally valid until payment is made.

GEOSHIELD Verification Report

VERIFICATION ITEM ONE

LOCATION/GRID LINE: Plots 4/5/6

NOTES: Membrane installation

These two photos are close ups showing the membrane installation

All seams have been visually inspected and pick and probe tested

Then all seams have been air lance tested





Air test at 50psi from maximum of 51 mm

Verification Plan will not be legally valid until payment is made.

GEOSHIELD Verification Report

VERIFICATION ITEM ONE



This photo is a larger overview showing the biggest seams

All the work has been installed to a very good standard

Verification Plan will not be legally valid until payment is made.

GEOSHIELD Verification Report

VERIFICATION ITEM TWO

LOCATION/GRID LINE: Plots 4/5/6

NOTES: Upstand detailing

These two photos are close ups showing the upstand detailing

All the upstands have been very well sealed to the membrane

They have been rolled to remove air bubbles and improve sealing





These upstands have been completed using PAG detailing tape

Verification Plan will not be legally valid until payment is made.

GEOSHIELD Verification Report

VERIFICATION ITEM TWO



This photo is a larger overview showing two more of the upstands

Once again very well installed and sealed

Verification Plan will not be legally valid until payment is made.

GEOSHIELD Verification Report

VERIFICATION ITEM THREE

LOCATION/GRID LINE: Plots 4/5/6

NOTES: Pipe penetrations

These two photos are close ups showing the pipe penetrations

These two have already been boxed in

They have been well sealed at the base to the membrane





These pipe penetrations have been visually inspected and pick

and probe tested

Verification Plan will not be legally valid until payment is made.

GEOSHIELD Verification Report

VERIFICATION ITEM THREE



This photo is a larger overview showing the pipe penetrations

which have not yet been connected, but are sealed

Verification Plan will not be legally valid until payment is made.

GEOSHIELD Verification Report

REMEDIATION LOG

Date	Nr	Remediation Description	Y/N
13/03/2019	001	None found	✔
20/05/2019	002	None found on this visit	✔

GEOSHIELD Verification Report

ADDITIONAL PHOTOS



Garage 1



Garage 2



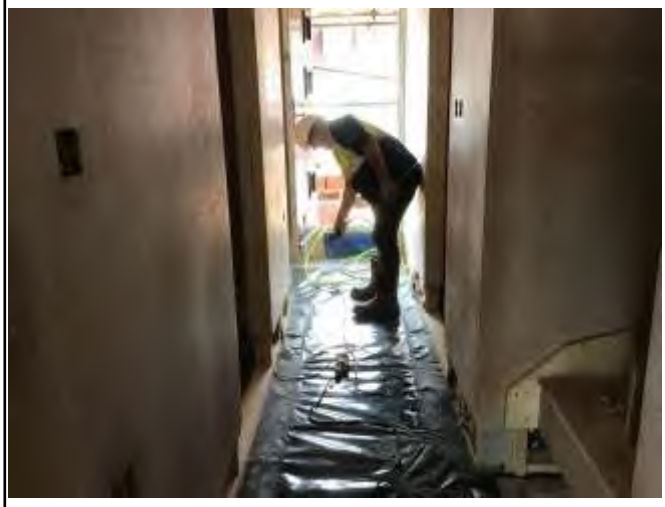
Garage 3



Pipe penetrations warning plot 4

GEOSHIELD Verification Report

ADDITIONAL PHOTOS



Air lance testing



Further testing



50psi air testing



Seams being air tested

GEOSHIELD Verification Report

GAS MEMBRANE TESTING

VISUAL:	YES	✔	NO		SMOKE TEST:	YES		NO	✔
COMPRESSED AIR:	YES	✔	NO		DILECTIC	YES		NO	✔
DESTRUCTIVE:	YES		NO	✔	OTHER:	YES	✔	NO	

Testing checklist attached: YES | | NO | ✔

Gridline/Plot Sign off

Gridline/Plot Sign off	Infills plots 1/2/3 13/03/2019	✔
Gridline/Plot Sign off	Infills plots. 4/5/6 21/05/2019	✔
Gridline/Plot Sign off	Infills garages. 1/2/3. 21/05/2019	✔
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		

PCA Property Care

GEOSHIELD LTD
TANKING, GAS AND HYDROCARBON BARRIER SYSTEMS
QUALITY ASSURANCE PROGRAMS AND INSPECTION SERVICES

INTEGRITY TESTING RECORD

DESTRUCTIVE TEST

LAP TYPE

Weld:

Tape:

Pass		Fail	

COMMENTS

Not Applicable

TEST NUMBER 1

LAP TYPE

Weld:

Tape:

Pass		Fail	

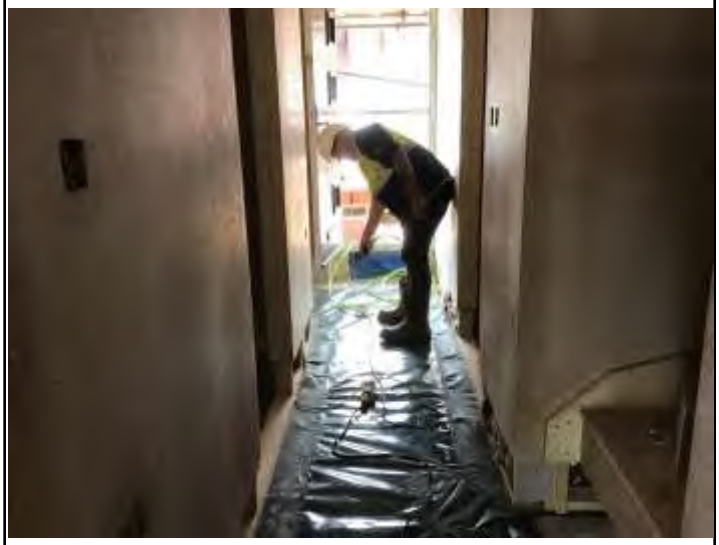
COMMENTS

Not Applicable

TEST NUMBER 2

AIR LANCE INTEGRITY TESTING

AIR LANCE TEST: ASTM D4437-08:2013 Inspects all seams for unbonded areas using a 4.8mm air nozzle held not more than 51mm away from the seam. 50 Psi is the minimum requirement. The air nozzle is directed on the upper edge seam, riffles indicate a unbonded seam. Each seam is numbered and failure marked with a F/1 F/2 classification and a description given



Plot 6 air testing



Plot 5 air testing



Plot 4 air testing



50 psi air testing

GEOSHIELD LTD
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QUALITY ASSURANCE PROGRAMS AND INSPECTION SERVICES







INTEGRITY TESTING RECORD

AIR LANCE INTEGRITY TESTING (cont)

Detail of the Gas Membrane	PAG HC 400
Detail of Tapes	PAG SAGR Detailing Tape
Joints and lap design	Welded

TEST NUMBER:	FAILED OR PASSED	DETAIL, COMMENT AND RECOMMDATIONS
001	Passed	Excellent standard of work
002	Passed	Once more excellent work

NOTES:

GEOSHIELD Verification Report

VERIFICATION SUMMARY

All materials have been installed to the manufacturers spec

This is my second visit to this site and the standard of installation

has been consistent and very good

All the welded seams are very well sealed

Pipe penetrations very well sealed

Installed to BS 8485 2015. and CIRIA 735

GEOSHIELD SIGNATURE:

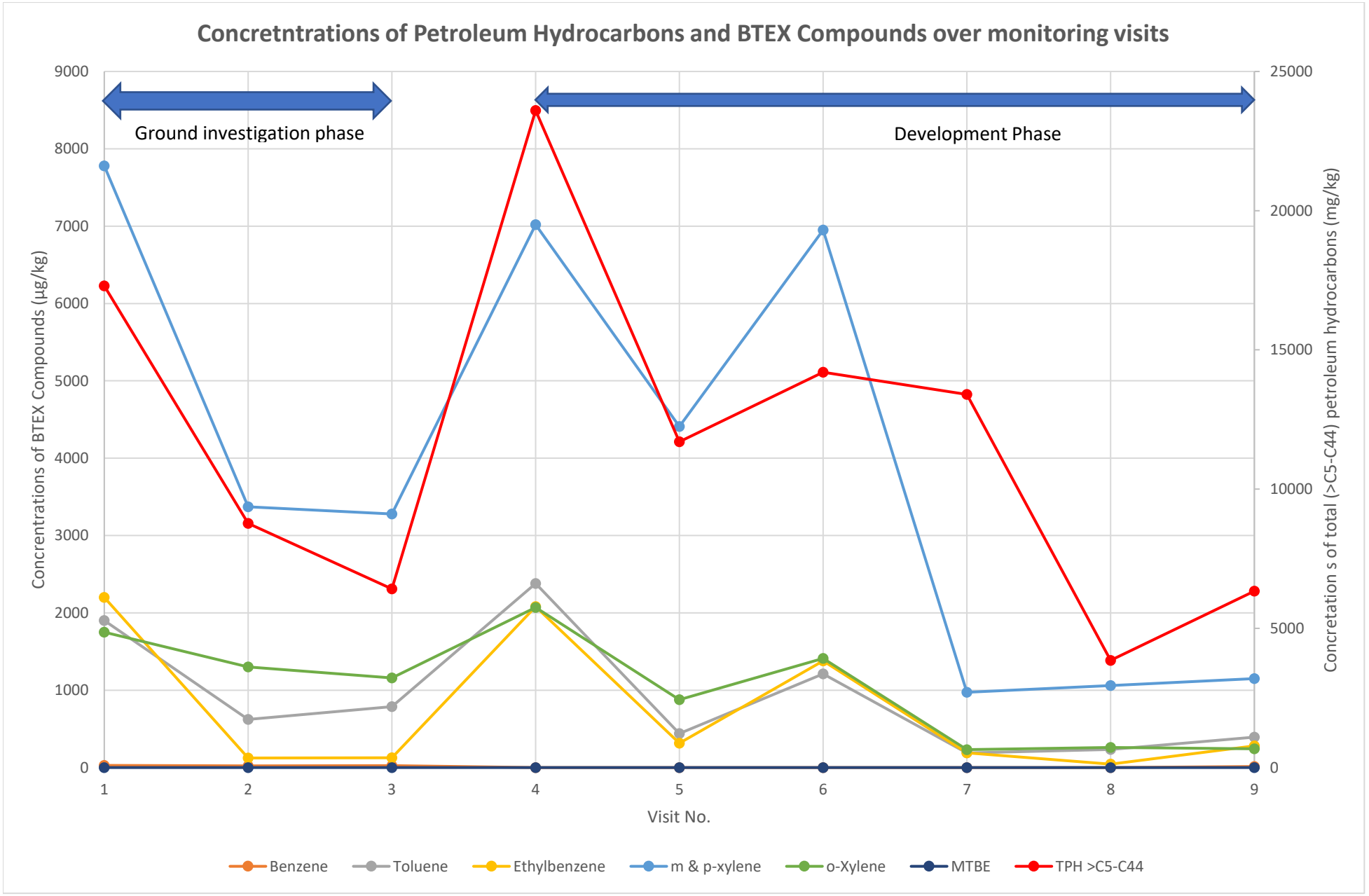


DATE: 20/05/2019

Verification Plan will not be legally valid until payment is made.

APPENDIX K

Laboratory Test Results – Groundwater Monitoring
Graphical Representation of Laboratory Teat Results


Concretntrations of Petroleum Hydrocarbons and BTEX Compounds over monitoring visits
Ground investigation phase
Development Phase
Concrentrations of BTEX Compounds (µg/kg)
Concretation s of total (>C5-C44) petroleum hydrocarbons (mg/kg)
Visit No.
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
25000
20000
15000
10000
5000
0
1
2
3
4
5
6
7
8
9
Benzene
Toluene
Ethylbenzene
m & p-xylene
o-Xylene
MTBE
TPH >C5-C44

Stuart Card
Ashdown Site Investigations Ltd
Unit 3 The Grain Store
Ditchling Common Business Park
Ditchling Common
West Sussex
BN6 8SG

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
russell.jarvis@dets.co.uk

DETS Report No: 18-84373

Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing

Project / Job Ref: C18-13334

Order No: P18-6870

Sample Receipt Date: 30/10/2018

Sample Scheduled Date: 30/10/2018

Report Issue Number: 1

Reporting Date: 05/11/2018

Authorised by:
[redacted]
Russell Jarvis
Associate Director of Client Services

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Water Analysis Certificate - TPH LQM Banded							
DETS Report No: 18-84373	**Date Sampled**	26/10/18	26/10/18	26/10/18	26/10/18	
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing	**TP / BH No**	WS103A	WS103B	WS104A	WS104B	
Project / Job Ref: C18-13334	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: P18-6870	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	
Reporting Date: 05/11/2018	**DETS Sample No**	369398	369399	369400	369401	

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	
Aliphatic >C5 - C6	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C6 - C8	ug/l	< 10	NONE	< 10	265	< 10	3100	
Aliphatic >C8 - C10	ug/l	< 10	NONE	< 10	56	< 10	1100	
Aliphatic >C10 - C12	ug/l	< 10	NONE	< 10	11	< 10	210	
Aliphatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C16 - C35	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C35 - C44	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic (C5 - C44)	ug/l	< 70	NONE	< 70	332	< 70	4410	
Aromatic >C5 - C7	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C7 - C8	ug/l	< 10	NONE	< 10	< 10	< 10	2380	
Aromatic >C8 - C10	ug/l	< 10	NONE	< 10	528	< 10	12000	
Aromatic >C10 - C12	ug/l	< 10	NONE	< 10	218	< 10	4600	
Aromatic >C12 - C16	ug/l	< 10	NONE	< 10	12	< 10	250	
Aromatic >C16 - C21	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C21 - C35	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C35 - C44	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic (>C5 - C44)	ug/l	< 70	NONE	< 70	758	< 70	19200	
Total >C5 - C44	ug/l	< 140	NONE	< 140	1090	< 140	23600	

(hs) Please note deviating sample due to head space in container

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

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Water Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-84373	**Date Sampled**	26/10/18	26/10/18	26/10/18	26/10/18	
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing	**TP / BH No**	WS103A	WS103B	WS104A	WS104B	
Project / Job Ref: C18-13334	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: P18-6870	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	
Reporting Date: 05/11/2018	**DETS Sample No**	369398	369399	369400	369401	

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	
Benzene	ug/l	< 1	**ISO17025**	< 1	< 1	< 1	< 1	
Toluene	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	2380	
Ethylbenzene	ug/l	< 5	**ISO17025**	< 5	72	< 5	2080	
p & m-xylene	ug/l	< 10	**ISO17025**	< 10	174	< 10	7020	
o-xylene	ug/l	< 5	**ISO17025**	< 5	161	< 5	2070	
MTBE	ug/l	< 10	**ISO17025**	< 10	< 10	< 10	< 10	

(hs) Please note deviating sample due to head space in container

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

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Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-84373
Ashdown Site Investigations Ltd
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing
Project / Job Ref: C18-13334
Order No: P18-6870
Reporting Date: 05/11/2018

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

Stuart Card
Ashdown Site Investigations Ltd
Unit 3 The Grain Store
Ditchling Common Business Park
Ditchling Common
West Sussex
BN6 8SG

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
russell.jarvis@dets.co.uk

DETS Report No: 18-86060

Site Reference:	Former Manor Filling Station, Old Shoreham Road, Lancing
Project / Job Ref:	C18-13334
Order No:	P18-6999
Sample Receipt Date:	04/12/2018
Sample Scheduled Date:	04/12/2018
Report Issue Number:	1
Reporting Date:	10/12/2018

Authorised by:

[redacted]

Russell Jarvis
Associate Director of Client Services

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Water Analysis Certificate - TPH LQM Banded							
DETS Report No: 18-86060	**Date Sampled**	30/11/18	30/11/18	30/11/18	30/11/18	
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing	**TP / BH No**	WS103A	WS103B	WS104A	WS104B	
Project / Job Ref: C18-13334	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: P18-6999	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	
Reporting Date: 10/12/2018	**DETS Sample No**	376217	376218	376219	376220	

Determinand	**Unit**	**RL**	**Accreditation**					
Aliphatic >C5 - C6	ug/l	< 10	NONE	< 10	82	< 10	759	
Aliphatic >C6 - C8	ug/l	< 10	NONE	< 10	256	< 10	1640	
Aliphatic >C8 - C10	ug/l	< 10	NONE	< 10	48	< 10	110	
Aliphatic >C10 - C12	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C16 - C35	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C35 - C44	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic (C5 - C44)	ug/l	< 70	NONE	< 70	386	< 70	2510	
Aromatic >C5 - C7	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C7 - C8	ug/l	< 10	NONE	< 10	< 10	< 10	440	
Aromatic >C8 - C10	ug/l	< 10	NONE	< 10	1350	< 10	7200	
Aromatic >C10 - C12	ug/l	< 10	NONE	< 10	480	< 10	1400	
Aromatic >C12 - C16	ug/l	< 10	NONE	< 10	27	< 10	100	
Aromatic >C16 - C21	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C21 - C35	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C35 - C44	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic (>C5 - C44)	ug/l	< 70	NONE	< 70	1860	< 70	9140	
Total >C5 - C44	ug/l	< 140	NONE	< 140	2240	< 140	11700	

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Water Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-86060	**Date Sampled**	30/11/18	30/11/18	30/11/18	30/11/18		
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied		
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing	**TP / BH No**	WS103A	WS103B	WS104A	WS104B		
Project / Job Ref: C18-13334	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied		
Order No: P18-6999	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied		
Reporting Date: 10/12/2018	**DETS Sample No**	376217	376218	376219	376220		

Determinand	**Unit**	**RL**	**Accreditation**					
Benzene	ug/l	< 1	**ISO17025**	< 1	< 1	< 1	< 1	
Toluene	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	440	
Ethylbenzene	ug/l	< 5	**ISO17025**	< 5	59	< 5	314	
p & m-xylene	ug/l	< 10	**ISO17025**	< 10	345	< 10	4410	
o-xylene	ug/l	< 5	**ISO17025**	< 5	204	< 5	878	
MTBE	ug/l	< 10	**ISO17025**	< 10	< 10	< 10	< 10	

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Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-86060
Ashdown Site Investigations Ltd
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing
Project / Job Ref: C18-13334
Order No: P18-6999
Reporting Date: 10/12/2018

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

4480

Stuart Card
Ashdown Site Investigations Ltd
Unit 3 The Grain Store
Ditchling Common Business Park
Ditchling Common
West Sussex
BN6 8SG

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
russell.jarvis@dets.co.uk

DETS Report No: 18-86898

Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing

Project / Job Ref: C18-13334

Order No: P18-7070

Sample Receipt Date: 21/12/2018

Sample Scheduled Date: 21/12/2018

Report Issue Number: 1

Reporting Date: 04/01/2019

Authorised by:

[redacted]

Russell Jarvis
Associate Director of Client Services

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DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Water Analysis Certificate - TPH LQM Banded						
DETS Report No: 18-86898	**Date Sampled**	18/12/18	18/12/18	18/12/18	18/12/18	
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing	**TP / BH No**	WS103A	WS103B	WS104A	WS104B	
Project / Job Ref: C18-13334	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: P18-7070	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	
Reporting Date: 04/01/2019	**DETS Sample No**	379826	379827	379828	379829	

Determinand	**Unit**	**RL**	**Accreditation**					
Aliphatic >C5 - C6	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C6 - C8	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C8 - C10	ug/l	< 10	NONE	< 10	< 10	< 10	640	
Aliphatic >C10 - C12	ug/l	< 10	NONE	< 10	< 10	< 10	90	
Aliphatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C16 - C35	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C35 - C44	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic (C5 - C44)	ug/l	< 70	NONE	< 70	< 70	< 70	730	
Aromatic >C5 - C7	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C7 - C8	ug/l	< 10	NONE	< 10	< 10	< 10	1210	
Aromatic >C8 - C10	ug/l	< 10	NONE	< 10	200	< 10	11000	
Aromatic >C10 - C12	ug/l	< 10	NONE	< 10	54	< 10	1200	
Aromatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	< 10	89	
Aromatic >C16 - C21	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C21 - C35	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C35 - C44	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic (>C5 - C44)	ug/l	< 70	NONE	< 70	254	< 70	13500	
Total >C5 - C44	ug/l	< 140	NONE	< 140	254	< 140	14200	

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING 4480

Water Analysis Certificate - BTEX / MTBE							
DETS Report No: 18-86898	**Date Sampled**	18/12/18	18/12/18	18/12/18	18/12/18	
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing	**TP / BH No**	WS103A	WS103B	WS104A	WS104B	
Project / Job Ref: C18-13334	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: P18-7070	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	
Reporting Date: 04/01/2019	**DETS Sample No**	379826	379827	379828	379829	

Determinand	**Unit**	**RL**	**Accreditation**					
Benzene	ug/l	< 1	**ISO17025**	< 1	< 1	< 1	< 1	
Toluene	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	1210	
Ethylbenzene	ug/l	< 5	**ISO17025**	< 5	10	< 5	1380	
p & m-xylene	ug/l	< 10	**ISO17025**	< 10	117	< 10	6950	
o-xylene	ug/l	< 5	**ISO17025**	< 5	36	< 5	1410	
MTBE	ug/l	< 10	**ISO17025**	< 10	< 10	< 10	< 10	

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

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Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 18-86898
Ashdown Site Investigations Ltd
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing
Project / Job Ref: C18-13334
Order No: P18-7070
Reporting Date: 04/01/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by co	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR detect	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10 C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

Stuart Card
Ashdown Site Investigations Ltd
Unit 3 The Grain Store
Ditchling Common Business Park
Ditchling Common
West Sussex
BN6 8SG

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 19-01799

Site Reference:	Former Manor Filling Station, Old Shoreham Road, Lancing
Project / Job Ref:	C18-13334
Order No:	P19-7239
Sample Receipt Date:	11/02/2019
Sample Scheduled Date:	11/02/2019
Report Issue Number:	1
Reporting Date:	15/02/2019

[redacted]
Russell Jarvis
Associate Director of Client Services

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Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Water Analysis Certificate - TPH LQM Banded						
DETS Report No: 19-01799	**Date Sampled**	06/02/19	06/02/19	06/02/19	06/02/19	
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing	**TP / BH No**	WS103A	WS103B	WS104A	WS104B	
Project / Job Ref: C18-13334	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: P19-7239	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	
Reporting Date: 15/02/2019	**DETS Sample No**	388631	388632	388633	388634	

Determinand	**Unit**	**RL**	**Accreditation**					
Aliphatic >C5 - C6	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C6 - C8	ug/l	< 10	NONE	493	< 10	< 10	10000	
Aliphatic >C8 - C10	ug/l	< 10	NONE	22	< 10	< 10	130	
Aliphatic >C10 - C12	ug/l	< 10	NONE	< 10	< 10	< 10	43	
Aliphatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C16 - C35	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C35 - C44	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic (C5 - C44)	ug/l	< 70	NONE	515	< 70	< 70	10200	
Aromatic >C5 - C7	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C7 - C8	ug/l	< 10	NONE	< 10	< 10	42	189	
Aromatic >C8 - C10	ug/l	< 10	NONE	85	< 10	< 10	2300	
Aromatic >C10 - C12	ug/l	< 10	NONE	99	< 10	< 10	710	
Aromatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	< 10	62	
Aromatic >C16 - C21	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C21 - C35	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C35 - C44	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic (>C5 - C44)	ug/l	< 70	NONE	184	< 70	< 70	3260	
Total >C5 - C44	ug/l	< 140	NONE	699	< 140	< 140	13400	

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

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Water Analysis Certificate - BTEX / MTBE						
DETS Report No: 19-01799	**Date Sampled**	06/02/19	06/02/19	06/02/19	06/02/19	
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing	**TP / BH No**	WS103A	WS103B	WS104A	WS104B	
Project / Job Ref: C18-13334	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: P19-7239	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	
Reporting Date: 15/02/2019	**DETS Sample No**	388631	388632	388633	388634	

Determinand	Unit	RL	Accreditation					
Benzene	ug/l	< 1	ISO17025	< 1	< 1	< 1	< 1	
Toluene	ug/l	< 5	ISO17025	< 5	< 5	42	189	
Ethylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	191	
p & m-xylene	ug/l	< 10	ISO17025	45	< 10	< 10	973	
o-xylene	ug/l	< 5	ISO17025	28	< 5	< 5	232	
MTBE	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

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Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 19-01799
Ashdown Site Investigations Ltd
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing
Project / Job Ref: C18-13334
Order No: P19-7239
Reporting Date: 15/02/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR dete	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichlorometha	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

Alex Bewick
Ashdown Site Investigations Ltd
Unit 3 The Grain Store
Ditchling Common Business Park
Ditchling Common
West Sussex
BN6 8SG

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 19-03043

Site Reference:	Former Manor Filling Station, Old Shoreham Road, Lancing
Project / Job Ref:	C18-13334
Order No:	P19-7321
Sample Receipt Date:	05/03/2019
Sample Scheduled Date:	05/03/2019
Report Issue Number:	1
Reporting Date:	11/03/2019

[redacted]
Russell Jarvis
Associate Director of Client Services

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DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Water Analysis Certificate - TPH LQM Banded						
DETS Report No: 19-03043	**Date Sampled**	01/03/19	01/03/19	01/03/19	01/03/19	
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing	**TP / BH No**	WS103A	WS103B	WS104A	WS104B	
Project / Job Ref: C18-13334	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: P19-7321	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	
Reporting Date: 11/03/2019	**DETS Sample No**	393707	393708	393709	393710	

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)		(hs)	
Aliphatic >C5 - C6	ug/l	< 10	NONE	< 10	< 10	< 10	87	
Aliphatic >C6 - C8	ug/l	< 10	NONE	< 10	< 10	< 10	1300	
Aliphatic >C8 - C10	ug/l	< 10	NONE	< 10	27	< 10	< 10	
Aliphatic >C10 - C12	ug/l	< 10	NONE	< 10	15	< 10	< 10	
Aliphatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C16 - C35	ug/l	< 10	NONE	< 10	< 10	26	< 10	
Aliphatic >C35 - C44	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic (C5 - C44)	ug/l	< 70	NONE	< 70	< 70	< 70	1390	
Aromatic >C5 - C7	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C7 - C8	ug/l	< 10	NONE	< 10	< 10	< 10	233	
Aromatic >C8 - C10	ug/l	< 10	NONE	< 10	51	163	1780	
Aromatic >C10 - C12	ug/l	< 10	NONE	< 10	83	65	404	
Aromatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	17	45	
Aromatic >C16 - C21	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C21 - C35	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C35 - C44	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic (>C5 - C44)	ug/l	< 70	NONE	< 70	134	245	2470	
Total >C5 - C44	ug/l	< 140	NONE	< 140	176	270	3850	

(hs) Please note deviating sample due to head space in container

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

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Water Analysis Certificate - BTEX / MTBE						
DETS Report No: 19-03043	**Date Sampled**	01/03/19	01/03/19	01/03/19	01/03/19	
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing	**TP / BH No**	WS103A	WS103B	WS104A	WS104B	
Project / Job Ref: C18-13334	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: P19-7321	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	
Reporting Date: 11/03/2019	**DETS Sample No**	393707	393708	393709	393710	

Determinand	Unit	RL	Accreditation	(hs)	(hs)		(hs)	
Benzene	ug/l	< 1	ISO17025	< 1	< 1	< 1	< 1	
Toluene	ug/l	< 5	ISO17025	< 5	< 5	< 5	233	
Ethylbenzene	ug/l	< 5	ISO17025	< 5	< 5	< 5	44	
p & m-xylene	ug/l	< 10	ISO17025	< 10	14	< 10	1060	
o-xylene	ug/l	< 5	ISO17025	< 5	9	< 5	261	
MTBE	ug/l	< 10	ISO17025	< 10	< 10	< 10	< 10	

(hs) Please note deviating sample due to head space in container

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Maidstone
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UKAS TESTING 4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 19-03043
Ashdown Site Investigations Ltd
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing
Project / Job Ref: C18-13334
Order No: P19-7321
Reporting Date: 11/03/2019

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR dete	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 – C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichlorometha	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

Alex Bewick
Ashdown Site Investigations Ltd
Unit 3 The Grain Store
Ditchling Common Business Park
Ditchling Common
West Sussex
BN6 8SG

DETS Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 19-04726

Site Reference:	Former Manor Filling Station, Old Shoreham Road, Lancing
Project / Job Ref:	C18-13334
Order No:	PO7439
Sample Receipt Date:	04/04/2019
Sample Scheduled Date:	04/04/2019
Report Issue Number:	1
Reporting Date:	10/04/2019

[redacted]
Dave Ashworth
Deputy Quality Manager

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Water Analysis Certificate - TPH LQM Banded						
DETS Report No: 19-04726	**Date Sampled**	02/04/19	02/04/19	02/04/19	02/04/19	
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing	**TP / BH No**	WS103A	WS103B	WS104A	WS104B	
Project / Job Ref: C18-13334	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: PO7439	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	
Reporting Date: 10/04/2019	**DETS Sample No**	400192	400193	400194	400195	

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	
Aliphatic >C5 - C6	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C6 - C8	ug/l	< 10	NONE	< 10	< 10	< 10	210	
Aliphatic >C8 - C10	ug/l	< 10	NONE	< 10	< 10	< 10	100	
Aliphatic >C10 - C12	ug/l	< 10	NONE	< 10	< 10	< 10	28	
Aliphatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C16 - C35	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic >C35 - C44	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aliphatic (C5 - C44)	ug/l	< 70	NONE	< 70	< 70	< 70	338	
Aromatic >C5 - C7	ug/l	< 10	NONE	< 10	< 10	< 10	12	
Aromatic >C7 - C8	ug/l	< 10	NONE	< 10	< 10	< 10	392	
Aromatic >C8 - C10	ug/l	< 10	NONE	< 10	93	< 10	4300	
Aromatic >C10 - C12	ug/l	< 10	NONE	< 10	149	< 10	1200	
Aromatic >C12 - C16	ug/l	< 10	NONE	< 10	< 10	< 10	100	
Aromatic >C16 - C21	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C21 - C35	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic >C35 - C44	ug/l	< 10	NONE	< 10	< 10	< 10	< 10	
Aromatic (>C5 - C44)	ug/l	< 70	NONE	< 70	242	< 70	6000	
Total >C5 - C44	ug/l	< 140	NONE	< 140	242	< 140	6340	

(hs) Please note deviating sample due to head space in container

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Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

UKAS TESTING 4480

Water Analysis Certificate - BTEX / MTBE						
DETS Report No: 19-04726	**Date Sampled**	02/04/19	02/04/19	02/04/19	02/04/19	
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: Former Manor Filling Station, Old Shoreham Road, Lancing	**TP / BH No**	WS103A	WS103B	WS104A	WS104B	
Project / Job Ref: C18-13334	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: PO7439	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	
Reporting Date: 10/04/2019	**DETS Sample No**	400192	400193	400194	400195	

Determinand	**Unit**	**RL**	**Accreditation**	(hs)	(hs)	(hs)	(hs)	
Benzene	ug/l	< 1	**ISO17025**	< 1	< 1	< 1	12	
Toluene	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	392	
Ethylbenzene	ug/l	< 5	**ISO17025**	< 5	< 5	< 5	281	
p & m-xylene	ug/l	< 10	**ISO17025**	< 10	61	< 10	1150	
o-xylene	ug/l	< 5	**ISO17025**	< 5	19	< 5	243	
MTBE	ug/l	< 10	**ISO17025**	< 10	< 10	< 10	< 10	

(hs) Please note deviating sample due to head space in container

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Water	UF	pH	Determination of pH by electrometric measurement	E107
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Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

APPENDIX L

Tank Removal Information

KpH ENVIRONMENTAL

00191

Gas Test Certificate

Site RABBIT DEMOLITION MANOR FILLING STATION OLD SHOREHAM RD LANCING BN15 0QS

Date 18.10.18

Job No T EN12106

Tanks 3 x 10,000 LTR UNDERGROUND FUEL TANK'S

Method of Test Explosimeter & Visual Inspection Time

Reading 0 % LEL Period of Validity 36 Hours

Gas Monitor Serial No KA413-105704 Calibration Date 20.3.19

We have tested the above tanks and certify that it is safe for the following work to be carried out, provided that no changes take place affecting their condition subsequent to this test.

THE ABOVE TANKS HAVE BEEN SLURRY FILLED BY OTHERS AND MADE SAFE FOR COLD CUTTING REMOVAL

Tested by [redacted] Signed [redacted]

Remarks

KpH Environmental Services Ltd
Unit 1, Paddock Barn Farm ▪ Godstone Road ▪ Caterham ▪ Surrey ▪ CR3 6SF
Tel: 01883 346604 ▪ Fax: 01883 349836 ▪ www.kph.co.uk ▪ environmental@kph.co.uk

Charles Muddle Ltd

Adversane Lane Billingshurst West Sussex RH14 9EG
Tel: 01403 784 838
Email: info@muddle.co.uk

CHARLES MUDDLE LTD

Statement

RABBITT DEMO
37 CHARTWELL RD
LANCING BUS PARK
WORTHING
BN15 8TU

Date	Time	SIC Code
05/11/2018	14:28:28	

Number	Acc. No
STAT003833	AC000068

Ref	Description				Units	Weight	Rate	Amount
	Gross	CONS:	11 01 50200	24/10/2018 15:03:17		22.8400		
	Tare	CONS:	11 01 50201	24/10/2018 15:12:04	IN	17.620		
LANCING PETROL	SHEARING			T026226\1 24/10/2018	567	5.220	£150.00	£783.00
	170405							

APPENDIX M

Verification Report Checklist

Item	Tick (✓)
Regulatory Approval of Remediation Strategy	Appendix D
Method Statement / Design of Gas Protection Measures	Submitted to LA
Regulatory Approval of Gas Protection Measures	Appendix D
Documentation (Including Photographs) of Excavation of Soils in Area of Former USTs	Section 4.1
Documentation (Including Photographs) Confirming Removal of Infrastructure in Former Filling Station Area of the Site.	Section 4.1
Documentation (Including Photographs) of Stripped Formation in Soft Landscaped Areas (Plots 4, 5 and 6)	Section 4.4
Documentation (Including Photographs) of High Visibility Geotextile Marker -if required (Plots 4, 5 and 6)	Section 4.4
Documentation (Including Photographs) Confirming Depth of Cover Soils - if required (Plots 4, 5 and 6)	Section 4.4
Supplier Certification for Cover Soils (if provided)	N/A
Laboratory Teat Data for Cover Soils Delivery Notes for Virgin Materials	Appendix F Appendix H
Documentation from Contractor (Including Photographs) of Installed Supply Pipe Material (if Barrier Pipe)	Section 4.5 Appendix I
Documentation from Water Supply Company (if required)	N/A
Confirmation from Groundworker as to any other service provider requirements.	None Supplied
Documentation (Including Certification) of Independent Verification of Gas Protection Measures	Appendix J
Laboratory Test Data from Groundwater Monitoring	Appendix K
Verification of Gas Protection Measures from Installer/Verifier	Appendix I
Documentation of Tank Removal	Appendix L
Example Waste Transfer Notes	N/A - Removed