

VALIDATION REPORT  
OF  
REMEDIATION  
HOUSE PLOTS 22 TO 37  
MIDLOTHIAN, NEW MILL  
HOLMFIRTH, HD9 7LN  
FOR  
SIGNATURE HOMES (Yorkshire) LTD  
REPORT REF: SIG 3500 Val 22 TO 37rev 1

Engineering Geologists and Environmental Scientists



# Ashton Bennett



**North:** Bridge Mills, Huddersfield Road,  
West Yorkshire, Holmfirth HD9 3TW

**South:** 22c Lambourn Road,  
Clapham, London SW4 0LY

**Tel:** 0845 8687488

**email:** [geoenviro@ashton-bennett.co.uk](mailto:geoenviro@ashton-bennett.co.uk)  
[www.ashton-bennett.com](http://www.ashton-bennett.com)

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ASHTON BENNETT CONSULTANCY  
Engineering Geologists & Environmental Scientists

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## Quality Management

Project	House Plots, 22 to 37 at Former Midlothian Site, New Mill Road, Holmfirth, HD9 7LN		
Client	Signature Homes (Yorkshire) Ltd		
Date	December 2023		
Version	Issue 2		
Reference	SIG3500 VAL 22 to 37 rev 1		
Prepared by	Frances A Bennett	BSc (Hons), CGeol, FGS, FIMMM, C.WEM, MCIWEM, CEnv, MIEEnvSci	Director Ashton Bennett Ltd
	Tristan Bennett	BSc (Hons)	Environmental Engineer Ashton Bennett
	Chris Ingham		GeoShield Ltd



## 1. INTRODUCTION

### 1.1 The Report

Signature Homes (Yorkshire) Ltd have planning permission to construct 56 houses on a site formerly known as Midlothian in New Mill Road, Holmfirth, HD9 7LN. This report describes the Validation of the remediation undertaken beneath the house plots 22 to 37 inclusive in Phase II of the development to make the plots suitable for their proposed use. The report was commissioned by the client Signature Homes (Yorkshire) Ltd and was carried out by the Ashton Bennett Consultancy and GeoShield Ltd.

Phase I and Phase II Reports were undertaken on the site in 2008, 2015 and 2018 and a Remediation Implementation Plan compiled by Eastwood and Partners Consulting Engineers was agreed by Kirklees Council in 2019. The Remediation Implementation Plan described the remediation required on the site to render the site suitable for its proposed use for residential housing with gardens.

This Report describes the remediation undertaken on house plots 22 to 37 and Ashton Bennett Ltd and GeoShield validate that these house plots have been remediated in accordance with the Remediation Implementation Plan.

Photographs of the remediation are presented in Appendix A, environmental test results for validation and guidelines for environmental assessment and confirmation

of a MCERTS accredited laboratory for soil testing are presented in Appendices B and C. Gas membrane verification plan and validation reports are presented in Appendix D.

The information for this report is from sources recommended by the Institute of Civil Engineers (ICE), the Association of Geotechnical and Geoenvironmental Specialists (AGS), Construction Industry Research and Information Association (CIRIA) and the Department of the Environment Transport and the Regions (DETR). The report has been compiled in accordance with the latest ICE, DETR, Department of Environment, Food and Rural Affairs (DEFRA), British Standard Draft Documents and British Standards, CIRIA, CLR 11 & other CLEA Reports and Eurocode 7, and the Verification Requirements for Cover Systems, Technical Guidance for Developers, Landowners and Consultants, Yorkshire and Lincolnshire Pollution Advisory Group November 2017.

In addition, the scope of the investigation has used the extensive knowledge and experience of the staff of Ashton Bennett Consultancy to assess the data and to interpret the findings.

## **1.2 Site Address and Planning Reference**

The site address is Signature Homes (Yorkshire) Ltd, New Mill Road, Holmfirth, HD9 7LN. The Planning Reference is 2015/93824.

## **1.3 Responsible Persons**

Mr John Hewitt of Signature Homes Yorkshire Ltd is responsible for site management.

This report, validating remediation of the gardens, was prepared by Frances A Bennett an engineering geologist who has a degree in Geology, a postgraduate qualification in Soil Mechanics and is a Chartered Geologist CGeol, Chartered Environmentalist CEnv and Chartered Water and Environmental Manager C.WEM with 45 years of experience in the fields of geology, geotechnical engineering, slope stability, hydrogeology, contamination, mining, waste disposal and site management. Frances Bennett validated the remediation of the gardens.

The validation of the gas membrane installation was undertaken by Chris Ingham of GeoShield Ltd.

## **2. THE SITE**

### **2.1 Site Description**

The proposed roadway lies within the site formerly known as Midlothian which lies to the west of the A635 New Mill Road, one mile north of Holmfirth town centre. The site measures circa 2.07 hectares and lies around National Grid Reference 414898E 409262N. The site topography generally slopes from 183m aOD in the south to 172m aOD in the north.

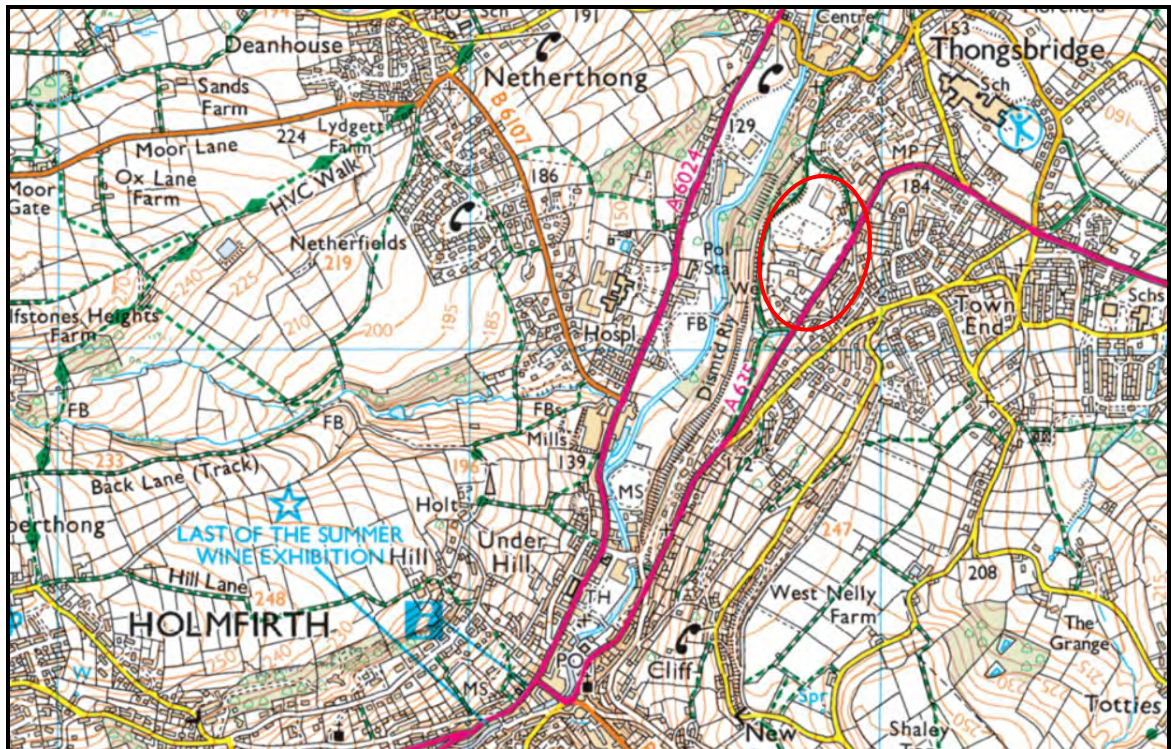
Access to the site is to the east of the site from the A635 New Mill Road.

The development site is bounded to the north by tennis courts and residential housing. The site is bounded to the west by a slope down to a footpath known as

Berry Bank Lane with the former Holmfirth rail lines and the Sands Recreation Ground and River Holme at lower ground levels.

The site is bounded to the south by two houses with large gardens, and to the east by the A635 with residential houses and gardens beyond.

The existing main vehicular and pedestrian access to the site is from New Mill Road near the centre of the site frontage.



**Figure 1 Site Location Plan**

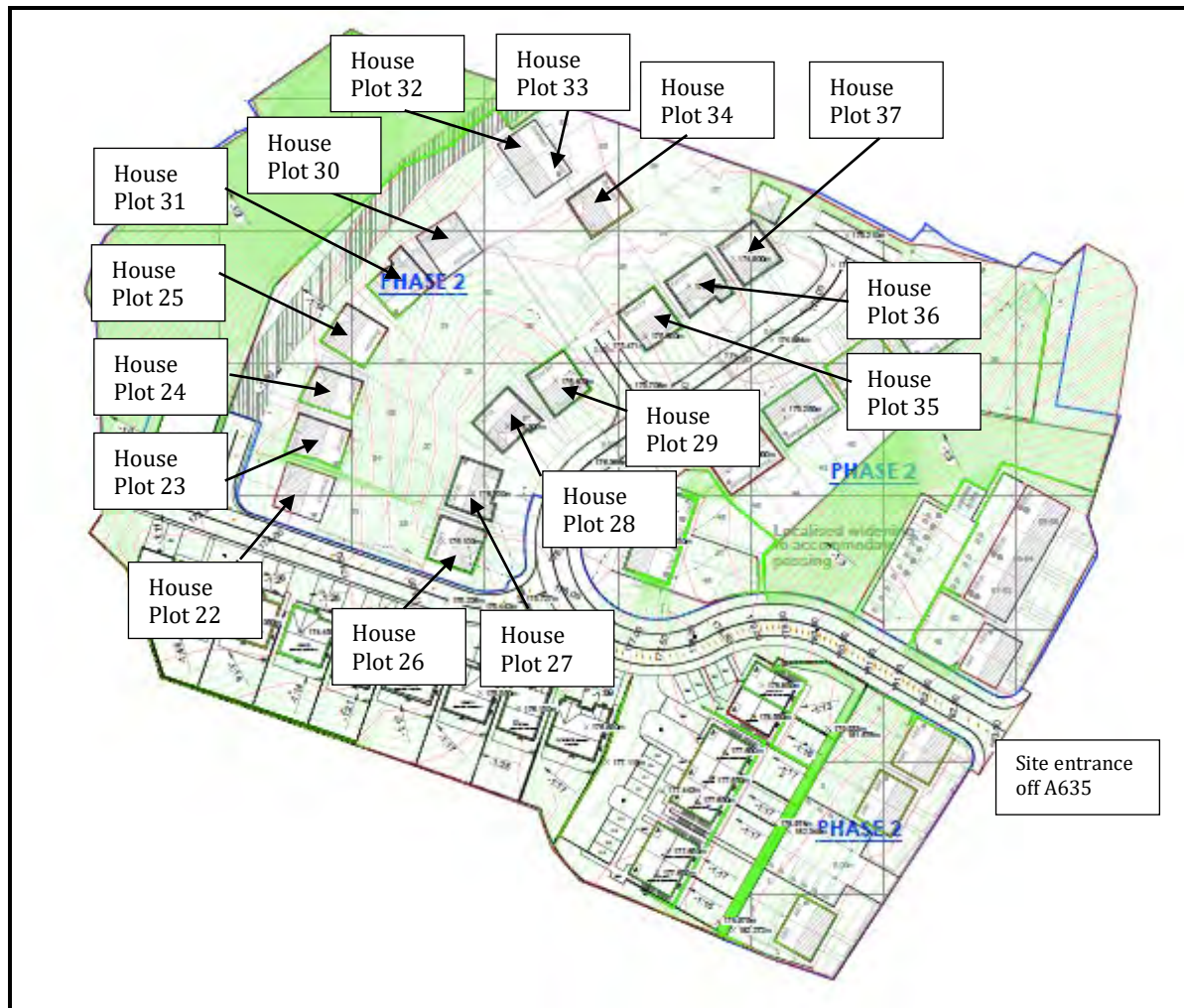


**Figure 2 Aerial Site Location Plan**

## 2.2 The Project

The project involves the demolition of all existing buildings on the site and construction of 56 houses in two phases of development as detailed on Figure 3.

The subject of this report is the validation of remediation and mitigating measures for House Plots 22 to 37 inclusive within Phase II of the development.

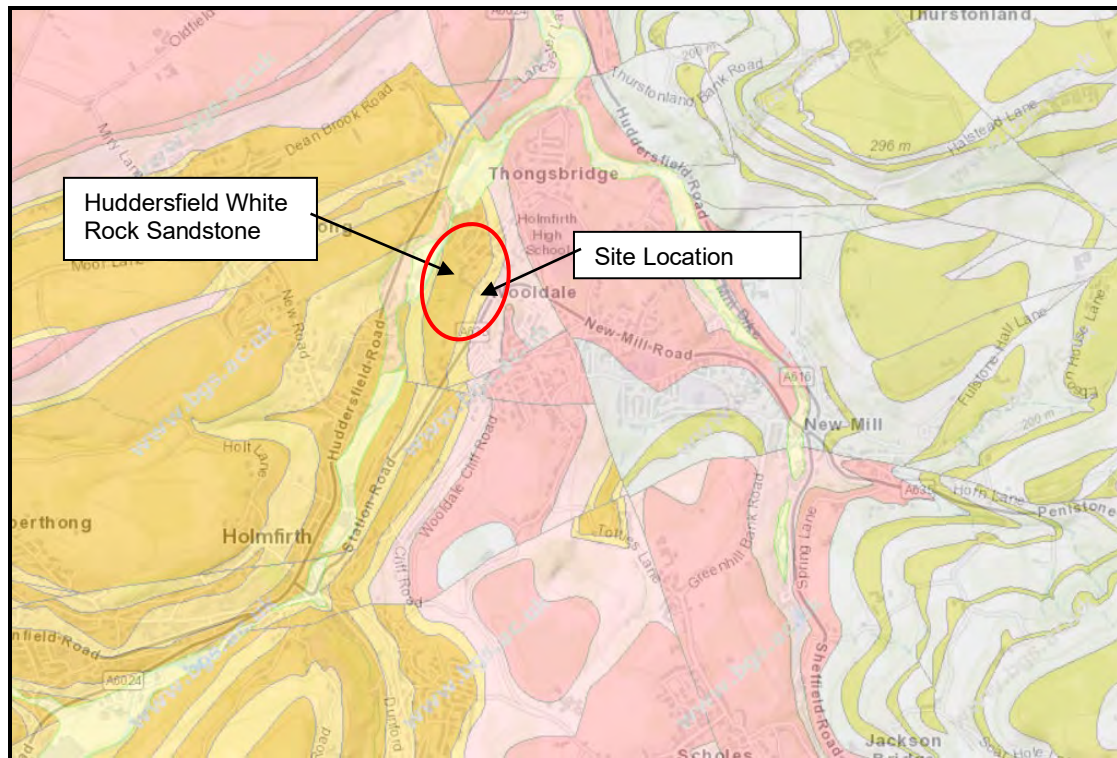


**Figure 3 Site Plan**

### 3. GEOLOGY

The geological maps of the British Geological Survey (BGS) at 1:10,560 scale, County series 260SE, indicate the site to be underlain by strata of the Millstone Grit Series. The Huddersfield White Rock Sandstone is indicated to underlie the majority of the site, with the Marsden Formation mudstone and siltstone beneath the eastern edge of the site. The Huddersfield White Rock is underlain by the Guiseley Grit to the west of the River Holme.

The strata are shown by the BGS map to dip at 8 degrees to the horizontal towards the east, with the Huddersfield White Rock overlain by the Rossendale Formation and the Rough Rock Sandstone east of the site. The Huddersfield White Rock Sandstone is indicated to be exposed along Berry Bank Lane with a height of 12ft or 3.3m of 'massive flaggy grit overlain by sandy shale and flags'.



**Figure 4 Site Geology**

## 4. REMEDIATION STRATEGY

### 4.1 Objectives

The objective of the Remediation Strategy was to ensure, according to the 1990 Environment Act the condition of the land is unlikely to cause pollution to the environment or harm to human health. The objective of the Remediation Strategy was to ensure an environmentally safe site for the construction and future use of the site for residential houses with gardens and with landscaped ground. The objectives include:

- To install gas protection measures in accordance with NHBC Amber 2 specification in all plots.
- To ensure that 600mm of clean inert physically suitable, permeable material, including at least 150mm of topsoil, is present within gardens and areas of soft landscaping where made ground remains. A geotextile membrane is to be included at the base of the capping layer.
- Upon identification of any additional or unexpected contamination, a suitable strategy to determine any remedial action is to be in place.
- To reduce the risks to construction workers, they should be aware of the presence of elevated levels of contaminants and ensure that appropriate personal protective equipment (PPE) is used and worn and the requisite working practices are adhered to. No further guidance with regard to this is considered necessary as part of this document.

## 4.2 Mitigation Proposals

### 4.2.1 Contamination

The concentrations of contaminants recorded at elevated levels in the 2008 to 2018 ground investigations were localised throughout the made ground and were generally only mildly elevated above the respective assessment values. Several elevated concentrations were sporadically encountered and at significant depth below ground level.

The Remediation Implementation Plan stated that where made ground is to remain beneath private gardens or soft landscaped areas of the proposed development, the potential risks to human health presented by the made ground could be mitigated through the use of a capping layer of inert material which should be placed above the made ground.

The capping layer should be a minimum of 600mm in thickness. At least 150mm of this capping thickness should comprise topsoil to act as a growing medium for plants. A geotextile membrane should be included at the base of the capping to differentiate between the subsoil and the underlying made ground.

The placement of the capping layer will also mitigate against the slight risk to plant growth presented by elevated levels of phytotoxic metals within the soils.

### 4.2.2 Gas

Gas has been monitored on the site from the 1980s by Kirklees Council and by Consultants acting for Tesco Stores and for Prospect Estates between 2008 and 2018. The results indicated that low levels of carbon dioxide were present and methane was generally absent. Of the 17 gas monitoring points installed by Tesco Stores, only 3 encountered methane at levels of 0.3% to 6%v/v and one at 12%v/v with flow rates <0.2l/hr in BH09, BH11 and BH12 in the northwest area of the site.

During a ground investigation by Eastwoods in 2019, elevated levels of gas were only recorded in three boreholes in the north west of the site with carbon dioxide levels up to 20.4% and methane up to 27.4%. A maximum flow of 0.7l/hr was recorded and the results indicate that the site is classified as 'Amber 2' under the NHBC traffic light classification system, assuming that the precast concrete floors with a ventilated void below would be used for all plots. Radon protection measures are not required.

## 5. REMEDIATION AND MITIGATION

The remediation comprised mitigating measures including the incorporation of a methane resistant membrane within construction of the houses, in accordance with the GeoShield Verification Plan presented in Appendix D, and in accordance with the NHBC Amber 2 traffic light classification.

A gas membrane to specification BS8485 :2015+2019 was installed to CIRIA 735. The membrane was installed in accordance with the GeoShield Verification Plan and verified by GeoShield Ltd staff.

The substrata was prepared in accordance with manufacturers instructions and BS8485. Materials used were Visqueen standard gas barrier, Visqueen GR DPC, Visqueen double sided butyl tape and GR Foil tape and Lap Tape, Visqueen Pro Detailing Tape and telescopic air vents. The specifications for these are presented in the Verification Plan in Appendix D.

The NHBC Amber '2' gas protection system requires 4.5 points and compliance is achieved by building a suspended block and beam floor with a ventilated subfloor void with a gas membrane on top. The ground gas membrane must meet the requirements of BS8485:2019 Table 7 and also the products specified in the plan. The 4.5 points were achieved with 2.5 points for the venting and 2 points for the gas membrane.

Records of the Geoshield validation for house plots 22 to 37 are included in Appendix D.

There were no special necessary requirements to control dust, noise, odours associated with the remediation. There was no requirement for control of water run off associated with remediation.

In the front gardens and rear gardens, where not hardcovered, an orange geotextile was laid, overlain by a minimum of 600mm of topsoil tested as uncontaminated, and covered in turf.

The topsoil was imported from a greenfield site at Hade Edge, Holmfirth known to the environmental engineer, Heather View, Hade Edge, Holmfirth, HD9 2RT. Additional topsoil was imported from a site at Abbey Road North, Shepley, HD8 8BJ. Visual inspection indicated a good organic content making it suitable for growing. The topsoil was free of obvious contaminating materials with no odour, staining or free product. The topsoil was free from bricks and other waste materials, and there was no evidence of asbestos fibres. The donor sites do not contain Japanese Knotweed. Test results for the topsoil as imported are presented in Appendix B.

The geotextile was an Abtex Orange, a permeable split tape woven polypropylene geotextile for use as a separator and marker layer in civil engineering. It has a mass of 62g/m<sup>2</sup> and a tensile strength of 10/9kN.m<sup>2</sup>, it is 1500N CBR puncture resistant. A full specification is presented in Appendix D.

The gardens were covered in a geotextile and 600mm of topsoil before turfing. Visits were made to site to view the laying of the geotextile and photographs are presented in Appendix A. Testing was undertaken in the gardens of each of the plots to check 600mm thickness of soil above the geotextile and soil samples were collected for testing for potential contaminating compounds and are presented in Appendix C.

All laboratory testing of soil samples for validation as uncontaminated soil was carried out by a NAMAS MCERTS accredited laboratory.

Observations during the ground works to construct the houses did not detect any soil remaining in the ground with an unusual odour, colour or appearance that would suggest it was contaminated.

Photographs of the remediation of the gardens are presented in Appendix A.

## **6. VALIDATION**

### **6.1 Geotextile and Depth of Topsoil**

Validation of the geotextile laid in the gardens of house plots 22 to 37 was undertaken by daily inspection during placing and covering in topsoil. The geotextile was laid overlapping between plots. The figure below illustrates an example from the on site of the geotextile laid beneath the first layer of topsoil. All the soil laid was topsoil and the thickness was confirmed by insertion of a graded metal rod of appropriate length, shown below. Photographs for all Plots are presented in Appendix A.



**Figure 5 General View of Geotextile and Topsoil being placed and checked for thickness**

## 6.2 Environmental Testing

### 6.2.1 Methodology

Of all the soil samples collected, over 50 were selected for testing from the rear gardens and front gardens, where applicable, of house plots 22 to 37, however the majority of the front gardens were hard covered for parking. The soil samples were tested by Chemtech of County Durham, and SOCOTEC of Bretby, both MCERTS laboratories, for speciated Polyaromatic Hydrocarbons (PAH), speciated Total Petroleum Hydrocarbons (TPH), sulphate, pH, asbestos screen and 9 heavy metals. Results are detailed in subsequent tables and are presented in full in Appendix C in Chemtech Reports 112142, 116012A, 114106, 114106(1), 114106(2), 122055, 127767 and SOCOTEC reports 23110636, 23110641, 23110643, 23110645, 23110651 and 23110652.

In addition, soil samples were tested from the topsoil stockpiles and results are presented in tables as samples Stockpile, Stockpile 2, HE, FL, ML, S, Stock, S1 Topsoil and S2 Topsoil in Chemtech Reports 90429, 111650(A), 116012, 97775, 127363 and 96789, and in full in Appendix B.

### 6.2.2 Environmental Assessment Guidelines

There are no definitive legal standards for contaminated land in the United Kingdom, although the Government Department of the Environment in the late 1970's published guidance on a restricted number of contaminants. Further guidance was published in March 2002 as the Contaminated Land Exposure Assessment (CLEA) by the Department of Environment, Food and Rural Affairs (DEFRA). These were withdrawn in August 2008 and new guidelines for some compounds were released in 2009. The UK Risk Assessment Framework is based on a tiered approach, Tier 1 being a risk screening or qualitative risk assessment, Tier 2 is a generic quantitative risk assessment and Tier 3 is a detailed quantitative risk assessment. Where the Tier 2 identifies a potentially unacceptable risk to human health either a Tier 3 Detailed Quantitative Risk Assessment (DQRA) is undertaken or risk management action recommended to remove the pathway and the risk.

For this site both a Tier 1 and Tier 2 assessment have been undertaken using generic assessment criteria and site specific assessment criteria based on CLEA 2009 and ATRISK 2019 which are based on the new CLEA guidance 2008 and 2009 (SC050021/SR3 (the CLEA Report) and SC050021/SR2 (the TOX report), SC050021/SR4, CLEA Software version 1.071 (2015) and toxicological reports and SGV technical notes (2009)). The figures used for assessment of lead are from DEFRA(2014b), Category 4 Screening Levels, which are based on the 'low level of toxicological concern (LLTC)'. C4SLs are 'estimates of contamination concentration in soil that present acceptable risk within the context of Part 2A'. In addition, assessment has used the LQM/CIEH S4ULs (2015) for Human Health Risk Assessment. The S4ULs are based on the principles of 'minimal' or 'tolerable' risk enshrined in SR2 (EA2009A), which has not been withdrawn and are based on the EA software.

For assessment of PAHs both LQM/CIEH and HPA advice has been used for the genotoxic PAHs for which toxicological information is considered scant for precise determination of SSVs.

For assessment of PAHs, the approach adopted herein has been to derive C4SLs for BaP as a surrogate marker for genotoxic PAHs, in line with the relevant HPA Contaminated Land Information Sheet (HPA 2010). This approach enables land contamination risk assessors to consider the combined carcinogenic risk associated with all genotoxic PAHs that might be present at a site, despite the absence of toxicological information for many of them, on an individual basis. Further information on the surrogate marker approach, including how and when it should be used, is provided in HPA.

The guidance set out in these documents has been used to establish a conceptual model of the risks on the site.

The site will be used for residential use with plant uptake and landscaped ground. The risk assessment has used a scenario of residential use with plant uptake as the model for assessment. In deriving the SSVs a child has been chosen as the critical receptor with exposure over a lifetime being the most appropriate and conservative scenario.

The assessment of the risks to users on the site has been undertaken within the framework set out in guidance published by DEFRA and the Environment Agency for the assessment of risks to human health associated with chronic long term exposure to contaminated soils. The guidance set out in this documentation has been used to establish a conceptual model of the risks on the site following redevelopment.

The Contaminated Land Exposure Assessment (CLEA) model provides a means of establishing concentrations of contamination in soils at a site. If results exceed these concentrations, then further assessment or intervention by mitigation or remediation may be required to reduce risks to human health.

### 6.2.3 Environmental Test Results for House Plots 22 to 37.

Soil samples were collected from June 2021 to April 2023 from the rear gardens and front gardens, where applicable, of house plots 22 to 37.

TABLE 1  
Environmental Report Numbers for House Plots

House Plot No	Chemtech or SOCOTEC Environmental Report Number
22	112142
23	112142, 23110641
24	112142
25	112142
26	114106(2)
27	114106(2)
28	114106, 116012A
29	114106(1), 23110641
30	114106(1), 23110641

31	114106, 116012A
32	127767, 122055, 23110643
33	127767, 122055, 23110645
34	127767, 122055, 23110651
35	127767, 122055, 23110652
36	122055, 23110636
37	116012A

Results of tests on the soil samples collected from house plots 22 to 37 in June 2021 to April 2023 are given in Tables 2, 3 and 4 and in Chemtech Reports 112142, 116012A, 114106, 114106(1), 114106(2), 127767 and 122055 in Appendix C.

**TABLE 2**  
Results of Tests for Heavy Metals

Metals	Units	Minimum Value In mg/kg	Maximum Value In mg/kg	ATRISK Contaminated Land Screening Values (SSV)	Samples Exceeding SSV
				Residential with plant uptake in mg/kg	
Boron	mg/kg	<0.5	1.6	290	NONE
Mercury	mg/kg	<0.5	2.3	181.44	NONE
Nickel	mg/kg	14	33	136	NONE
Copper	mg/kg	21	122	4790	NONE
Selenium	mg/kg	0.8	2.0	375	NONE
Zinc	mg/kg	51	237	20,300	NONE
Chromium VI	mg/kg	<1	<1	20.5	NONE
Arsenic	mg/kg	8.2	27	37	NONE
Cadmium	mg/kg	0.2	0.9	22.1	NONE
Lead	mg/kg	52	363	200	P32, P33 P34, P35
pH		7.4	8.6	5-9	NONE
Asbestos		NAD	NAD	NAD	NONE
Sulphate	mg/l SO4	41	624	500	22R

NAD = No asbestos detected P is House Plot number

All tests undertaken for heavy metals were within guidelines for residential use of the site with plant uptake with the exception of samples P32, P33, P34 and P35 for lead and sample 22R for sulphate all slightly exceeding the required levels. The testing laboratory Chemtech, assess total mercury which includes all forms of mercury, elemental, inorganic and organic and the assessment has therefore been used for ATRISK inorganic plus elemental SSVs of 181.44mg/kg.

Asbestos fibres were detected in concrete in Plot 28 (Chemtech 114106) and the entire garden was removed and replaced with tested as uncontaminated topsoil. Further testing was undertaken in Plot 28 (Chemtech 116012A) and no asbestos was detected.

No asbestos fibres were detected in any of the other plots and pH was within acceptable levels. Sulphate levels do not harm human health.

**TABLE 3**  
Results of Tests for Polyaromatic Hydrocarbons (PAH)

Polyaromatic Hydrocarbons	Units	Minimum Value In mg/kg	Maximum Value in In mg/kg	ATRISK or LQM/CIEH * Screening Values (SSV)	Samples Exceeding SSV/C4SL
				Residential with plant uptake in mg/kg	
Naphthalene	mg/kg	<0.02	0.80	12.2	NONE
Acenaphthylene	mg/kg	<0.02	0.30	920	NONE
Acenaphthene	mg/kg	<0.02	0.75	2760	NONE
Fluorene	mg/kg	<0.02	0.61	2610	NONE
Phenanthrene	mg/kg	<0.02	5.95	440	NONE
Anthracene	mg/kg	<0.02	1.78	26200	NONE
Fluoranthene	mg/kg	<0.02	8.67	2980	NONE
Pyrene	mg/kg	<0.02	7.51	2120	NONE
Benzo(a)anthracene	mg/kg	<0.02	4.16	13* OR 0.12 to 12.43 BaP	NONE
Chrysene	mg/kg	<0.03	3.77	27* OR 0.12 to 11.61 BaP	NONE
Benzo(b)fluoranthene	mg/kg	<0.02	5.15	3.7* OR 0.11 to 10.85 BaP	22R,29,23R, 23F,34,36 OR NONE
Benzo(k)fluoranthene	mg/kg	<0.03	2.18	100* OR 0.04 to 3.72 BaP	NONE
Benzo(a)pyrene	mg/kg	<0.02	4.64	4.95**	NONE
Indeno(1,2,3-cd) pyrene	mg/kg	<0.02	3.90	41* OR 0.07 to 7.27 BaP	NONE
Dibenzo(a,h)anthracene	mg/kg	<0.02	0.73	0.30* OR 0.01 to 1.38 BaP	22RF,23R 24F 29,30,33,34, 35,36 OR NONE
Benzo(ghi)perylene	mg/kg	<0.02	2.93	350* OR 0.08 to 8.22 BaP	NONE
TOTAL PAH	mg/kg	2.10	104		NONE

\*\* = C4SL assessment \* = LQM / CIEH assessment OR.....BaP = HPA assessment

Several gardens exceeded guidelines for Benzo(b)fluoranthene and Dibenzo(a,h)anthracene according to LQM/CIEH guidelines.

For further assessment of the PAHs Benzo(a)anthracene to Benzo(ghi)perylene in the above table, the ratio of the result for each PAH was assessed against the result for Benzo(a)pyrene. This methodology follows the advice given by Table 2 in the Health Protection Agency Contaminated Land Information Sheet, Risk Assessment Approaches for Polycyclic Aromatic Hydrocarbons (PAHs), prepared by the General Toxicology Unit, CRCE Chilton, HPA, 2010 version 5.

The Table below gives the lower and upper limits for the ratio to BaP for each PAH.

Profile of the genotoxic PAHs relative to BaP in the study by Culp et al, along with order of magnitude upper and lower limits.

PAH	Mean ratio to BaP	Lower limit	Upper limit
Benz[a]anthracene	1.24	0.12	12.43
Chrysene	1.16	0.12	11.61
Benzo[b]fluoranthene	1.08	0.11	10.85
Benzo[k]fluoranthene	0.37	0.04	3.72
Dibenz[ah]anthracene	0.14	0.01	1.38
Indeno[123-cd]pyrene	0.73	0.07	7.27
Benzo[ghi]perylene	0.82	0.08	8.22

The result for BaP fell within the C4SL required figure of 4.95mg/kg. The results for Benzo(a)anthracene to Benzo(ghi)perylene in the above table, all fell with the required lower to upper limit as a ratio of the Benzo(a)pyrene result and are therefore acceptable by this method of assessment which is recommended by Public Health England.

TABLE 4  
Results of Tests for Total Petroleum Hydrocarbons (TPH)

Total Petroleum Hydrocarbons		Minimum Values In mg/kg	Maximum Values In mg/kg	ATRISK Contaminated Land Screening Values (SSV)	Samples Exceeding SSV
				Residential with plant uptake in mg/kg	
Aromatic Hydrocarbons (mg/kg)	>C5-C7	<0.01	<0.01	0.871	NONE
	>C7-C8	<0.01	<0.01	780	NONE
	>C8-C10	<0.01	<0.01	232	NONE
	>C10-C12	<1	38	468	NONE
	>C12-C16	<1	151	830	NONE
	>C16-C21	<1	583	1040	NONE
	>C21-C35	2	294	1710	NONE
	>C35-C44	<1	121	28400	NONE
Aliphatic Hydrocarbons (mg/kg)	>C5-C6	<0.1	<0.1	369	NONE
	>C6-C8	<0.1	<0.1	1240	NONE
	>C8-C10	<0.1	<0.1	204	NONE
	>C10-C12	<6	<6	1180	NONE
	>C12-C16	<6	7	4130	NONE
	>C16-C35	<15	212	210,100	NONE
	>C35-C44	<10	34		

All TPHs results were within guidelines for use of the site for residential use with plant uptake.

## 6.2.4 Environmental Test Results for Topsoil Stockpiles

Three samples were collected from each stockpile and tested for 10 heavy metals, PAH speciated, TPH CWG UK, pH, sulphate and asbestos fibres. Test results are presented in Tables 5, 6 and 7 and detailed in full in Appendix B and in Chemtech Reports 90429, 111650(A), 116012, 97775 and 96789.

TABLE 5  
Results of Tests for Heavy Metals

Metals	Units	Minimum Value In mg/kg	Maximum Value In mg/kg	ATRISK Contaminated Land Screening Values (SSV)	Samples Exceeding SSV
				Residential with plant uptake in mg/kg	
Boron	mg/kg	<0.5	1.4	290	NONE
Mercury	mg/kg	<0.5	0.7	181.44	NONE
Nickel	mg/kg	8.3	41	136	NONE
Copper	mg/kg	15	253	4790	NONE
Selenium	mg/kg	0.7	2.2	375	NONE
Zinc	mg/kg	51	295.1	20,300	NONE
Chromium VI	mg/kg	<1	<1	20.5	NONE
Arsenic	mg/kg	4.1	30	37	NONE
Cadmium	mg/kg	<0.2	1.2	22.1	NONE
Lead	mg/kg	24	328	200	Stockpile 2
pH		6.7	8.2	5-9	NONE
Asbestos		NAD	NAD	NAD	NONE
Sulphate	mg/l SO <sub>4</sub>	26	783	500	S2-Topsoil

NAD = No asbestos detected

All tests undertaken for heavy metals, pH and sulphate were within guidelines for residential use of the site with plant uptake with the exception of, lead in Stockpile 2 and the sulphate levels in sample S2-Topsoil. Sulphate is not a concern to human health. No asbestos fibres were detected in the samples.

The area of the stockpile with elevated lead was not used for the gardens.



**Figure 6 Topsoil stockpiles Hade Edge (left) and Shepley (right)**



**Figure 6 Topsoil stockpiles Hade Edge (left) and Shepley (right)**

**TABLE 6**  
Results of Tests for Polyaromatic Hydrocarbons (PAH)

Polyaromatic Hydrocarbons	Units	Minimum Value In mg/kg	Maximum Value in In mg/kg	ATRISK Contaminated Land Screening Values (SSV)	Samples Exceeding SSV
				Residential with plant uptake in mg/kg	
Naphthalene	mg/kg	<0.02	1.21	12.2	NONE
Acenaphthylene	mg/kg	<0.02	0.30	920	NONE
Acenaphthene	mg/kg	<0.02	0.88	2760	NONE
Fluorene	mg/kg	<0.02	0.56	2610	NONE
Phenanthrene	mg/kg	0.07	5.99	440	NONE
Anthracene	mg/kg	0.02	1.99	26200	NONE
Fluoranthene	mg/kg	0.15	12.89	2980	NONE
Pyrene	mg/kg	0.14	11.41	2120	NONE
Benzo(a)anthracene	mg/kg	0.08	6.35	13* OR 0.12 to 12.43 BaP	NONE
Chrysene	mg/kg	0.09	6.78	27* OR 0.12 to 11.61 BaP	NONE
Benzo(b)fluoranthene	mg/kg	0.10	4.26	3.7* OR 0.11 to 10.85 BaP	Stockpile 2 OR NONE
Benzo(k)fluoranthene	mg/kg	0.04	3.33	100* OR 0.04 to 3.72 BaP	NONE
Benzo(a)pyrene	mg/kg	0.08	3.09	4.95**	NONE
Indeno(1,2,3-cd) pyrene	mg/kg	0.05	5.47	41* OR 0.07 to 7.27 BaP	NONE
Dibenzo(a,h)anthracene	mg/kg	<0.02	0.55	0.30* OR 0.01 to 1.38 BaP	Stockpile 2 OR NONE
Benzo(ghi)perylene	mg/kg	0.05	5.09	350* OR 0.08 to 8.22 BaP	NONE
TOTAL PAH	mg/kg	0.85	80.2		

\*\* = C4SL assessment \* = LQM / CIEH assessment OR.....BaP = HPA assessment

All tests undertaken for speciated Polyaromatic Hydrocarbons, with the exception of two, were within guidelines for residential use of the site with plant uptake, all results were within the appropriate ratio to Benzo(a)pyrene to be considered uncontaminating.

**TABLE 7**  
Results of Tests for Total Petroleum Hydrocarbons (TPH)

Total Petroleum Hydrocarbons		Minimum Values In mg/kg	Maximum Values In mg/kg	ATRISK Contaminated Land Screening Values (SSV)	Samples Exceeding SSV
				Residential with plant uptake in mg/kg	
Aromatic Hydrocarbons (mg/kg)	>C5-C7	<0.01	<0.01	0.871	NONE
	>C7-C8	<0.01	0.04	780	NONE
	>C8-C10	<0.01	<0.01	232	NONE
	>C10-C12	<1	<10	468	NONE
	>C12-C16	<1	32	830	NONE
	>C16-	<1	120	1040	NONE

	C21				
	>C21-C35	<1	406	1710	NONE
	>C35-C44	<1	85	28400	NONE
Aliphatic Hydrocarbons (mg/kg)	>C5-C6	<0.1	<0.1	369	NONE
	>C6-C8	<0.1	<0.1	1240	NONE
	>C8-C10	<0.1	<0.1	204	NONE
	>C10-C12	<4	<6	1180	NONE
	>C12-C16	<4	<6	4130	NONE
	>C16-C35	16	96	210,100	NONE
	>C35-C44	<10	35		NONE

All tests undertaken for speciated Total Petroleum Hydrocarbons were within guidelines for residential use of the site with plant uptake.

The soil samples from the topsoil stockpiles were all found to be uncontaminated according to guidelines by heavy metals, PAHs, TPHs, pH and sulphate and asbestos with the exception of one elevated lead.

These are not considered a concern as most gardens have aged, weathered lead in their soil. While some metals are more readily taken up by plants, lead remains attached to the soil as it is not a mobile element. Studies by Newcastle University have shown that elevated lead concentrations in allotments has not caused harm to the gardeners. <https://www.ncl.ac.uk/press/articles/archive/2019/07/leadinsoil/>

The level of lead in the 30 soils tested which exceeded the 200mg/kg SSV is 17%, with 83% falling within the 200mg/kg SSV.

It was considered prudent to further remediate the areas of elevated potential contaminants. Various gardens were therefore revisited, topsoil removed and replaced completely or replaced in specific areas with newly imported and tested as uncontaminated topsoil.

### 6.2.5 Environmental Retest Results for House Plots 28 and 36 Revisited

Due to various exceedences of PAHs in Plot 28 it was decided to replace the entire topsoil and retest the garden. The results from retesting Plot 28 in November 2022 indicated levels of PAHs as acceptable to LQM/CIEH. Of the three tests undertaken for Plot 36, one test has several PAHs exceeding LQM/CIEH guidelines. The area of this test was cleaned out and extended in size and the excavation infilled with new tested as uncontaminated topsoil.

Soil samples were collected in October 2022 and November 2022 from the garden of Plot 28. Soil samples 36, 36/1, 36/2 and 36/3 were collected from Plot 36 in April 2023 (36) and November 2023 (36/1 to 36/3).

**TABLE 8**  
Environmental Report Numbers for House Plots 28 and 36

House Plot No	Environmental Report Number
28	Chemtech 114106, Chemtech116012A
36	Chemtech 122055 SOCOTEC 23110636

Results of tests on all 6 soil samples collected from house Plots 28 and 36 are given in Tables 9, 10 and 11 and in Chemtech Reports 114106, 116012A, 122055 and 23110636 in Appendix C.

**TABLE 9**  
Results of Retests for Heavy Metals Plots 28 and 36

Metals	Units	Plot 28 July 2022	Plot 28 Nov 2022	Plot 36 April 2023	ATRISK Screening Values (SSV)	Samples Exceeding SSV
					Residential with plant uptake in mg/kg	
Boron	mg/kg	<0.5	0.8	0.7	290	NONE
Mercury	mg/kg	<0.5	<0.5	2.3	181.44	NONE
Nickel	mg/kg	29	26	25	136	NONE
Copper	mg/kg	52	51	73	4790	NONE
Selenium	mg/kg		1.3	<1.0	375	NONE
Zinc	mg/kg	143	141	162	20,300	NONE
Chromium VI	mg/kg	<1	<1	<1	20.5	NONE
Arsenic	mg/kg	13	15	21	37	NONE
Cadmium	mg/kg	0.4	0.5	0.5	22.1	NONE
Lead	mg/kg	113	145	199	200	NONE
pH		6.9	8.1	7.6	5-9	NONE
Asbestos		CHY	NAD	NAD	NAD	Plot 28 Oct 2022 Remediated Nov 2022 NONE
Sulphate	mg/l SO4	263	116	57	500	NONE

NAD = No asbestos detected    CHY = Chrysotile asbestos detected in cement

Asbestos fibres, Benzo(a)fluoranthene and Benzo(a)pyrene were detected in Plot 28 and following complete replacement of the 600mm cover in the garden of Plot 28 in October 2022, asbestos and PAHs were not detected in a retest in November 2022.

All tests undertaken for heavy metals, pH and sulphate on Plot 28 in November 2022 and Plot 36 in April 2023 were within guidelines for residential use of the site with plant uptake.

TABLE 10  
Results of Retests for Polyaromatic Hydrocarbons (PAH) Plots 28 and 36

Polyaromatic Hydrocarbons	Units	Plot 28 Oct 2022	Plot 28 Nov 2022	Plot 36 April 2023	Plot 36 Nov 2023	Plot 36 Nov 2023	Plot 36 Nov 2023	ATRISK Contaminated Land Screening Values (SSV) Residential with plant uptake in mg/kg	Samples Exceeding SSV/C4SL
Naphthalene	mg/kg	0.21	0.09	0.80	0.12	<0.11	0.13	12.2*	NONE
Acenaphthylene	mg/kg	0.12	0.03	0.11	0.20	<0.11	<0.11	920*	NONE
Acenaphthene	mg/kg	0.66	0.11	0.48	0.16	<0.11	0.20	2760*	
Fluorene	mg/kg	0.68	0.09	0.37	<0.11	<0.11	0.14	2610*	NONE
Phenanthrene	mg/kg	8.92	1.13	4.18	1.18	0.57	1.50	440*	NONE
Anthracene	mg/kg	2.28	0.36	1.12	0.69	0.20	0.50	26200*	NONE
Fluoranthene	mg/kg	17.37	1.88	7.14	4.21	1.03	2.31	2980*	NONE
Pyrene	mg/kg	13.80	1.67	6.28	4.36	0.93	1.94	2120*	NONE
Benzo(a)anthracene	mg/kg	7.16	0.91	3.29	2.85	0.48	1.00	13***	NONE
Chrysene	mg/kg	6.05	0.98	3.74	2.25	0.56	1.00	27***	NONE
Benzo(b)fluoranthene	mg/kg	8.16	1.19	4.17	5.50	0.52	0.92	3.7***	Plots 28, 36 Remediated NONE
Benzo(k)fluoranthene	mg/kg	3.29	0.42	1.61	1.90	0.23	0.49	100***	NONE
Benzo(a)pyrene	mg/kg	7.01	0.78	3.65	5.28	0.52	0.93	4.95**	Plots 28, 36 remediated NONE
Indeno(1,2,3-cd)pyrene	mg/kg	5.19	0.73	3.24	3.81	0.27	0.49	41***	NONE
Dibenzo(a,h)anthracene	mg/kg	1.03	0.14	0.73	0.94	<0.11	0.17	0.3***	Plots 28, 36 remediated NONE
Benzo(ghi)perylene	mg/kg	4.12	0.58	2.85	3.25	0.23	0.41	350***	NONE
TOTAL PAH	mg/kg	86.1	11.1	43.8	36.6	6.10	12.2		NONE

\* = ATRISK SSV, \*\* = C4SL assessment, \*\*\* = LQM/CIEH S4ULs  
Red = exceeds guideline

The PAHs were assessed against ATRISK SSV where available and against LQM/CIEH S4ULs, with Benzo(a)pyrene assessed against C4SL.

PAHs are formed within the environment as well as by industrial processes. Emissions can be from natural processes and from forest fires, wood burning smoke and from car exhaust fumes and cigarette smoke.

In the test result for Plot 36 in April 2023, the genotoxic PAHs Benzo(a)anthracene to Benzo(ghi)perylene in the above table, were assessed against the ratio of the result for each PAH against the result of 3.65mg/kg for Benzo(a)pyrene(BaP). This methodology follows the advice given by Table 2 in the Health Protection Agency Contaminated Land Information Sheet, Risk Assessment Approaches for Polycyclic Aromatic Hydrocarbons (PAHs), prepared by the General Toxicology Unit, CRCE Chilton, HPA, 2010 version 5.

The Table below gives the lower and upper limits for the ratio to BaP for each PAH.

Profile of the genotoxic PAHs relative to BaP in the study by Culp et al, along with order of magnitude upper and lower limits.

PAH	Mean ratio to BaP	Lower limit	Upper limit
Benz[a]anthracene	1.24	0.12	12.43
Chrysene	1.16	0.12	11.61
Benzo[b]fluoranthene	1.08	0.11	10.85
Benzo[k]fluoranthene	0.37	0.04	3.72
Dibenzo[ah]anthracene	0.14	0.01	1.38
Indeno[123-cd]pyrene	0.73	0.07	7.27
Benzo[ghi]perylene	0.82	0.08	8.22

The result for BaP (April 2023) fell within the C4SL required figure of 4.95mg/kg. The results for Benzo(a)anthracene to Benzo(ghi)perylene in the above table, all fell with the required lower to upper limit as a ratio of the Benzo(a)pyrene and are therefore acceptable. The results also fall within Table 1 The ratios of PAH to BaP in soil from potentially contaminated sites in England and Wales presented in Public Health England, Contaminated land information sheet : risk assessment approaches for polycyclic aromatic hydrocarbons (PAHs), 2017.

**Table 1. The ratios of PAH to BaP in soil from potentially contaminated sites in England and Wales.**

PAH	Mean ratio to BaP	Minimum	Maximum	Lower confidence limit	Upper confidence limit	Ratio of the upper and lower confidence limits
<b>Benz[a]anthracene</b>	1.03	0.47	2.16	0.95	1.11	1.17
<b>Chrysene</b>	1.15	0.60	2.09	1.07	1.23	1.15
<b>Benzo[b]fluoranthene</b>	1.12	0.54	1.67	1.05	1.19	1.13
<b>Benzo[k]fluoranthene</b>	0.64	0.28	1.15	0.58	0.70	1.21
<b>Dibenzo[ah]anthracene</b>	0.37	0.07	1.36	0.30	0.44	1.47
<b>Indeno[123-cd]pyrene</b>	0.53	0.15	1.71	0.45	0.61	1.35
<b>Benzo[ghi]perylene</b>	0.70	0.35	1.74	0.64	0.76	1.19

The concentrations of 7 genotoxic PAHs in soil were measured in PAH-contaminated land sites across England and Wales. The ratios of the mean concentrations of the 7 PAHs relative to BaP in soil were calculated. Data are presented as mean ratio of PAH to BaP with the upper and lower 95% confidence limits and the ratio of the upper and lower confidence limits, where n=52. The ratio of the upper and lower confidence limits was determined by dividing the upper confidence limit by the lower confidence limit (as recommended by IPCS <sup>14</sup>).

This assessment indicates that the soil tested for Plot 36 in April 2023 was unlikely to be considered contaminated by PAHs. Two further soil tests have proven the soil to lie within LQM/CIEH guidelines and as the area of contamination by PAHs (samples 36 in April 2023 and 36/1 in November 2023) have been replaced with tested as uncontaminated topsoil, and 2 additional test results lie within LQM/CIEH guidelines, the garden is considered to be remediated and fit for purpose.

**TABLE 11**  
**Results of Retests for Total Petroleum Hydrocarbons (TPH) Plots 28 and 36**

Total Petroleum Hydrocarbons		Plot 28 Sept 2022	Plot 28 Nov 2022	Plot 36 April 2023	ATRISK Screening Values (SSV)	Samples Exceeding SSV
					Residential with plant uptake in mg/kg	
Aromatic Hydrocarbons (mg/kg)	>C5-C7	<0.01	<0.01	<0.01	0.871	None
	>C7-C8	<0.01	<0.01	<0.01	780	None
	>C8-C10	<0.01	<0.01	<0.01	232	None
	>C10-C12	<1	<10	<10	468	None
	>C12-C16	4	<10	<10	830	None
	>C16-C21	13	<1	46	1040	None
	>C21-C35	46	<1	281	1710	None
>C35-C44	9	<1	115	28400	None	
Aliphatic Hydrocarbons (mg/kg)	>C5-C6	<0.1	<0.1	<0.01	369	None
	>C6-C8	<0.1	<0.1	<0.01	1240	None
	>C8-C10	<0.1	<0.1	<0.01	204	None
	>C10-C12	<6	<6	<6	1180	None
	>C12-C16	<6	<6	7	4130	None
	>C16-C35	28	<15	197	210,100	None
	>C35-C44	<10	<10	34		

All TPHs results were within guidelines for use of the gardens of Plots 28 and 36 for residential use with plant uptake.



**Figure 7 Sampling Plot 36**



**Figure 8 Sampling Plot 28**

Sampling in November 2023 was not photographed as it was undertaken in torrential rain as evidenced by the moisture contents of the samples.

**6.2.6 Environmental Retest Results for House Plots 32, 33, 34 and 35 Revisited**

Soil samples were collected in April, October and November 2023 from the gardens of Plots 32, 33, 34 and 35.

**TABLE 12**  
**Environmental Report Numbers for House Plots 32, 33, 34 and 35**

House Plot No	Environmental Report Number
32	Chemtech 122055(April 2023) Chemtech 127767(October 2023) SOCOTEC 23110643(November 2023)
33	Chemtech 122055(April 2023) Chemtech 127767(October 2023) SOCOTEC 23110645
34	Chemtech 122055(April 2023) Chemtech 127767(October 2023) SOCOTEC 23110651
35	Chemtech 127767, 122055 SOCOTEC 23110652

Results of tests on all soil samples collected from house Plots 32, 33, 34 and 35 are given in Tables 13 to 21 and in Chemtech Reports 122055, 127767 and SOCOTEC Reports 23110643, 23110645 and 23110651 in Appendix C.

**TABLE 13**  
**Results of Retests for Heavy Metals for Plot 32**

Metals	Units	Plot 32 April 2023 (1 test)	Plot 32 October 2023 (3 tests)	Plot 32 Nov 2023 (1 test)	ATRISK Screening Values (SSV) Residential with plant uptake in mg/kg	Samples Exceeding SSV
Boron	mg/kg	0.90	0.6 to 1.6		290	NONE
Mercury	mg/kg	1.6	<2 to <2		181.44	NONE
Nickel	mg/kg	30	7.6 to 20.4		136	NONE
Copper	mg/kg	93	36.6 to 39.7		4790	NONE
Selenium	mg/kg	<1	<3 to <3		375	NONE
Zinc	mg/kg	213	85 to 100.4		20,300	NONE
Chromium VI	mg/kg	<1	<0.04 to <0.04		20.5	NONE
Arsenic	mg/kg	25	7.7 to 27.3		37	NONE
Cadmium	mg/kg	0.7	<2 to <2		22.1	NONE
Lead	mg/kg	<b>363</b>	48.5, 71.4 to 72.4	77.1	200	Garden remediated again in Oct 2023 NONE
pH		7.7	7.2 to 7.3		5-9	NONE
Asbestos		NAD	NAD		NAD	NONE
Sulphate	mg/l SO <sub>4</sub>	66	50 to 649		500	NONE

NAD = No asbestos detected

The lead results for Plot 32 in April indicated elevated level of 363mg/kg against the guideline of 200mg/kg. The entire garden area was remediated by removal of the 600mm of soil and replacement with soil tested as within guidelines for heavy metals, and hydrocarbons.

Four further tests indicated no elevated lead and the garden of Plot 32 is considered suitable for use as residential garden with plant uptake with regard to the tests undertaken.

**TABLE 14**  
**Results of Reests for Heavy Metals for Plot 33**

Metals	Units	Plot 33 April 2023 (1 test)	Plot 33 Oct 2023 (1 test)	Plot 33 Nov 2023 (4 tests)	ATRISK Screening Values (SSV) Residential with plant uptake in mg/kg	Samples Exceeding SSV
Boron	mg/kg	0.7	1.0		290	NONE
Mercury	mg/kg	2.3	<2		181.44	NONE
Nickel	mg/kg	29	20		136	NONE
Copper	mg/kg	88	39.4		4790	NONE
Selenium	mg/kg	<1	<3		375	NONE

Zinc	mg/kg	207	86		20,300	NONE
Chromium VI	mg/kg	<1	<0.04		20.5	NONE
Arsenic	mg/kg	25	25.9		37	NONE
Cadmium	mg/kg	0.9	<2		22.1	NONE
Lead	mg/kg	234	66	10.1, 11.9, 58.6 and 133	200	Garden remediated again in Oct 2023 NONE
pH		7.6	7.3		5-9	NONE
Asbestos		NAD	NAD		NAD	NONE
Sulphate	mg/l SO <sub>4</sub>	41	45		500	NONE

NAD = No asbestos detected

The lead results for Plot 33 in April indicated elevated level of 234mg/kg against the guideline of 200mg/kg. The entire garden area was remediated by removal of the 600mm of soil and replacement with soil tested as within guidelines for heavy metals, and hydrocarbons.

Five further tests indicated no elevated lead and the garden of Plot 33 is considered suitable for use as residential garden with plant uptake with regard to the tests undertaken.

TABLE 15  
Results of Retests for Heavy Metals for Plot 34

Metals	Units	Plot 34 April 2023 (1 test)	Plot 34 October 2023 (3 tests)	Plot 34 Nov 2023 (4 tests)	ATRISK Screening Values (SSV) Residential with plant uptake in mg/kg	Samples Exceeding SSV
Boron	mg/kg	0.8	0.8 to 2.3		290	NONE
Mercury	mg/kg	1.1	<2 to <2		181.44	NONE
Nickel	mg/kg	33	18.4 to 26.1		136	NONE
Copper	mg/kg	104	36.1 to 49.6		4790	NONE
Selenium	mg/kg	<1	<3 to <3		375	NONE
Zinc	mg/kg	237	81.8 to 118.1		20,300	NONE
Chromium VI	mg/kg	<1	<0.04 to <0.04		20.5	NONE
Arsenic	mg/kg	27	25.2 to 30		37	NONE
Cadmium	mg/kg	0.8	<2 to <2		22.1	NONE
Lead	mg/kg	300	75.5, 90.5 and 353	10.8, 13.6, 33.7 and 195.1	200	Areas of lead remediated in Oct and Nov 2023 NONE
pH		7.7	6.9 to 7.1		5-9	NONE
Asbestos		NAD	NAD		NAD	NONE
Sulphate	mg/l SO <sub>4</sub>	63	80 to 115		500	NONE

NAD = No asbestos detected

The lead results for Plot 34 in April indicated elevated level of 300mg/kg against the guideline of 200mg/kg. The area where the sample taken in April 2023 was remediated and replaced with topsoil tested as uncontaminated by heavy metals and hydrocarbons. Seven further tests indicated only one elevated lead at 353mg/kg. This trial pit was cleaned out and infilled with topsoil tested as not contaminated by heavy metals or hydrocarbons. The garden of Plot 34 is considered suitable for use as residential garden with plant uptake with regard to the tests undertaken.

In a previous report by Ashton Bennett reference SIG3500 VAL 22 to 37, dated July 2023, the test results for the garden of Plot 35 gave an elevated reading for lead of 225mg/kg compared to the guidelines of 200mg/kg for a residential garden where produce may be grown. In addition the soil sample contained Dibenz(a,h) anthracene at a level of 0.40mg/kg against the guideline of 0.30mg/kg. The area where the lead and PAH were located was removed in October 23<sup>rd</sup> 2023 and was replaced with 600mm depth of the newly imported, and tested as uncontaminated, topsoil. The results of three tests on the topsoil before use are presented in Tables 25, 26 and 27 and in Chemtech Report 127363 in Appendix B. The results of further tests within the garden of Plot 35 are presented in Tables 16, 20 and 24 and in Chemtech Report 127767 and SOCOTEC 23110652 in Appendix C. All test results fell within guidelines for use of the site for residential with plant uptake. Three tests were considered sufficient to determine the nature of the topsoil in the small garden area.

TABLE 16  
Results of Retests for Heavy Metals for Plot 35

Metals	Units	Plot 35 April 202 (1 test)	Plot 35 October 2023 (3 tests)	Plot 35 November 2023 (3 tests)	ATRISK Contaminated Land Screening Values (SSV)	Samples Exceeding SSV
					Residential with plant uptake in mg/kg	
Boron	mg/kg	0.8	0.9, 0.9, 0.9		290	NONE
Mercury	mg/kg	1.7	<2, <2, <2		181.44	NONE
Nickel	mg/kg	33	20.3, 24.5, 19.5		136	NONE
Copper	mg/kg	90	40.4, 52, 40.1		4790	NONE
Selenium	mg/kg	<1.0	<3, <3, <3		375	NONE
Zinc	mg/kg	207	90.1, 112.1, 88.2		20,300	NONE
Chromium VI	mg/kg	<1	<0.04, <0.04, <0.04		20.5	NONE
Arsenic	mg/kg	25	25.9, 36.6, 27.8		37	NONE
Cadmium	mg/kg	0.7	<2, <2, <2		22.1	NONE
Lead	mg/kg	225	70, 91.3, 71.6	165.6, 222.9, 99.5	200	Site remediated Oct 2023 NONE
pH		7.8	6.8, 6.9, 6.8		5-9	NONE

Asbestos		NAD	NAD, NAD, NAD		NAD	NONE
Sulphate	mg/l SO4	8.2	65, 66, 56		500	NONE

The tests in November gave one elevated level of lead and this area was excavated and infilled with tested as uncontaminated topsoil.

**TABLE 17**  
Results of Retests for Polyaromatic Hydrocarbons (PAH) on Plot 32

Polyaromatic Hydrocarbons	Units	Plot 32 April 2023 (1 test)	Plot 32 Oct 2023 (3 tests)	Plot 32 Nov 2023 (3 tests)	ATRISK LQM/CIEH Screening Values (SSV) Residential with plant uptake in mg/kg	Samples Exceeding SSV/C4SL
Naphthalene	mg/kg	0.10	<0.02 to 0.15	<0.11 to 0.16	12.2*	None
Acenaphthylene	mg/kg	0.04	<0.02 to <0.02	<0.11 to <0.12	920*	None
Acenaphthene	mg/kg	0.24	<0.02 to 0.03	<0.11 to 0.20	2760*	None
Fluorene	mg/kg	0.18	<0.02 to 0.12	<0.11 to 0.16	2610*	None
Phenanthrene	mg/kg	2.01	0.05 to 1.46	0.93 to 1.81	440*	None
Anthracene	mg/kg	0.54	<0.02 to 0.51	0.33 to 0.74	26200*	None
Fluoranthene	mg/kg	3.32	0.08 to 2.09	1.89 to 2.66	2980*	None
Pyrene	mg/kg	2.97	0.07 to 1.84	1.64 to 2.21	2120*	None
Benzo(a)anthracene	mg/kg	1.48	0.05 to 0.97	0.86 to 1.10	13***	None
Chrysene	mg/kg	1.60	0.06 to 1.07	0.92 to 1.28	27***	None
Benzo(b)fluoranthene	mg/kg	1.76	0.04 to 0.96	0.90 to 1.07	3.7***	None
Benzo(k)fluoranthene	mg/kg	0.72	<0.03 to 0.42	0.47 to 0.50	100***	None
Benzo(a)pyrene	mg/kg	1.59	0.05 to 0.91	0.89 to 0.92	4.95**	None
Indeno(1,2,3-cd) pyrene	mg/kg	1.28	0.03 to 0.55	0.46 to 0.49	41***	None
Dibenzo(a,h)anthracene	mg/kg	0.27	<0.02 to 0.13	0.18 to 0.20	0.3***	None
Benzo(ghi)perylene	mg/kg	1.14	0.03 to 0.53	0.41 to 0.48	350***	None
<b>TOTAL PAH</b>	mg/kg	19.2	0.45 to 11.9	10.3 to 14.00		

\* = ATRISK SSV, \*\* = C4SL assessment, \*\*\* = LQM/CIEH S4ULs  
Red = exceeds guideline

All PAHs results for Plot 32 were within guidelines for use of the gardens for residential use with plant uptake with regard to the tests undertaken.

**TABLE 18**  
**Results of Retests for Polyaromatic Hydrocarbons (PAH) on Plot 33**

Polyaromatic Hydrocarbons	Units	Plot 33	Plot 33	Plot 33	ATRISK LQM/CIEH Screening Values (SSV) Residential with plant uptake in mg/kg	Samples Exceeding SSV/C4SL
		April 2023 (1 test)	Oct 2023 (1 tests)	Nov 2023 (3 tests)		
Naphthalene	mg/kg	0.22	<0.02	<0.11 to 0.68	12.2*	None
Acenaphthylene	mg/kg	0.08	<0.02	<0.11 to <0.11	920*	None
Acenaphthene	mg/kg	0.29	<0.02	<0.11 to 0.34	2760*	None
Fluorene	mg/kg	0.23	<0.02	<0.11 to 0.21	2610*	None
Phenanthrene	mg/kg	2.36	0.06	0.64 to 2.11	440*	None
Anthracene	mg/kg	0.61	<0.02	0.20 to 0.65	26200*	None
Fluoranthene	mg/kg	4.30	0.11	1.28 to 2.64	2980*	None
Pyrene	mg/kg	3.83	0.09	1.10 to 2.21	2120*	None
Benzo(a)anthracene	mg/kg	2.11	0.08	0.54 to 1.14	13***	None
Chrysene	mg/kg	2.24	0.07	0.68 to 1.13	27***	None
Benzo(b)fluoranthene	mg/kg	2.52	0.07	0.59 to 1.05	3.7***	None
Benzo(k)fluoranthene	mg/kg	1.10	0.04	0.26 to 0.50	100***	None
Benzo(a)pyrene	mg/kg	2.26	0.06	0.55 to 1.01	4.95**	None
Indeno(1,2,3-cd) pyrene	mg/kg	1.79	0.04	0.31 to 0.56	41***	None
Dibenzo(a,h)anthracene	mg/kg	0.37	<0.02	0.11 to 0.19	0.3***	Garden remediated in Oct 2023 NONE
Benzo(ghi)perylene	mg/kg	1.54	0.05	0.20 to 0.48	350***	None
TOTAL PAH	mg/kg	25.8	0.67	7.12 to 15.0		

\* = ATRISK SSV, \*\* = C4SL assessment, \*\*\* = LQM/CIEH S4ULs  
**Red** = exceeds guideline

The PAH results for Plot 33 in April indicated elevated level of Dibenzo(a,h)anthracene at 0.37mg/kg against the guideline of 0.30mg/kg. As detailed earlier the area of the garden was excavated and replaced with material tested as uncontaminated by heavy metals and hydrocarbons. Four further tests indicated no elevated PAHs and the garden of Plot 33 is considered suitable for use as residential garden with plant uptake with regard to the tests undertaken.

**TABLE 19**  
**Results of Retests for Polyaromatic Hydrocarbons (PAH) on Plot 34**

Polyaromatic Hydrocarbons	Units	Plot 34 April 2023 (1 test)	Plot 34 Oct 2023 (3 tests)	Plot 34 Nov 2023 (3 tests)	ATRISK LQM/CIEH Screening Values (SSV) Residential with plant uptake in mg/kg	Samples Exceeding SSV/C4SL
Naphthalene	mg/kg	0.19	<0.02 to 0.04	0.19 to 0.44	12.2*	None
Acenaphthylene	mg/kg	0.09	<0.02 to 0.05	<0.11 to <0.11	920*	None
Acenaphthene	mg/kg	0.39	<0.02 to 0.06	0.11 to 0.63	2760*	None
Fluorene	mg/kg	0.28	<0.02 to 0.06	<0.11 to 0.34	2610*	None
Phenanthrene	mg/kg	3.66	0.02 to 0.88	1.13 to 3.94	440*	None
Anthracene	mg/kg	0.94	0.06 to 0.26	0.28 to 1.22	26200*	None
Fluoranthene	mg/kg	7.16	0.34 to 0.91	1.86 to 6.52	2980*	None
Pyrene	mg/kg	6.41	0.29 to 0.76	1.65 to 5.57	2120*	None
Benzo(a)anthracene	mg/kg	3.08	0.17 to 0.39	0.84 to 2.73	13***	None
Chrysene	mg/kg	3.61	0.19 to 0.38	0.97 to 2.50	27***	None
Benzo(b)fluoranthene	mg/kg	4.12	0.13 to 0.36	0.97 to 2.72	3.7***	Garden remediated in Oct 2023 None
Benzo(k)fluoranthene	mg/kg	1.56	0.10 to 0.19	0.56 to 1.40	100***	None
Benzo(a)pyrene	mg/kg	3.73	0.16 to 0.28	0.82 to 2.50	4.95**	None
Indeno(1,2,3-cd) pyrene	mg/kg	3.14	0.04 to 0.21	0.42 to 1.07	41***	None
Dibenzo(a,h)anthracene	mg/kg	0.68	<0.02 to 0.05	0.14, 0.17, 0.33	0.3***	Garden remediated in Oct 2023 One result slightly above 0.3mg/kg but not a concern based on 4 uncontaminat ed results None
Benzo(ghi)perylene	mg/kg	2.75	0.10 to 0.18	0.37 to 0.92	350***	None
TOTAL PAH	mg/kg	41.8	1.84 to 5.11	10.5 to 32.8		

\* = ATRISK SSV, \*\* = C4SL assessment, \*\*\* = LQM/CIEH S4ULs  
**Red** = exceeds guideline

The PAH results for Plot 34 in April indicated elevated level of Dibenzo(a,h)anthracene at 0.68mg/kg against the guideline of 0.30mg/kg. As detailed earlier the area of the sample from April 2023 was remediated and replaced with topsoil tested as uncontaminated by heavy metals and hydrocarbons.

Six further tests for PAHs indicated no elevated PAHs with the exception of a slightly elevated level of 0.33mg/kg for Dibenzo(a,h)anthracene against the guideline of 0.30mg/kg in one of the samples. This area was cleaned out and replaced with tested as uncontaminated topsoil.

The PAHs were assessed against ATRISK SSV where available and against LQM/CIEH S4ULs, with Benzo(a)pyrene assessed against C4SL.

PAHs are formed within the environment as well as by industrial processes. Emissions can be from natural processes and from forest fires, wood burning smoke and from car exhaust fumes and cigarette smoke.

In the test results for Plot 34 in April 2023, the genotoxic PAHs Benzo(a)anthracene to Benzo(ghi)perylene in the above table, were assessed against the ratio of the result for each PAH against the result of 3.73mg/kg for Benzo(a)pyrene(BaP). This methodology follows the advice given by Table 2 in the Health Protection Agency Contaminated Land Information Sheet, Risk Assessment Approaches for Polycyclic Aromatic Hydrocarbons (PAHs), prepared by the General Toxicology Unit, CRCE Chilton, HPA, 2010 version 5.

The Table below gives the lower and upper limits for the ratio to BaP for each PAH. Profile of the genotoxic PAHs relative to BaP in the study by Culp et al, along with order of magnitude upper and lower limits.

PAH	Mean ratio to BaP	Lower limit	Upper limit
Benz[a]anthracene	1.24	0.12	12.43
Chrysene	1.16	0.12	11.61
Benzo[b]fluoranthene	1.08	0.11	10.85
Benzo[k]fluoranthene	0.37	0.04	3.72
Dibenzo[ah]anthracene	0.14	0.01	1.38
Indeno[123-cd]pyrene	0.73	0.07	7.27
Benzo[ghi]perylene	0.82	0.08	8.22

The result for BaP (April 2023) fell within the C4SL required figure of 4.95mg/kg. The results for Dibenzo(a,h)anthracene fell with the required lower to upper limit as a ratio of the Benzo(a)pyrene and is therefore acceptable. The result also falls within Table 1 The ratios of individual PAHs to BaP in soil from potentially contaminated sites in England and Wales presented in Public Health England, Contaminated land information sheet : risk assessment approaches for polycyclic aromatic hydrocarbons (PAHs), 2017.

**Table 1. The ratios of PAH to BaP in soil from potentially contaminated sites in England and Wales.**

PAH	Mean ratio to BaP	Minimum	Maximum	Lower confidence limit	Upper confidence limit	Ratio of the upper and lower confidence limits
<b>Benz[a]anthracene</b>	1.03	0.47	2.16	0.95	1.11	1.17

<b>Chrysene</b>	1.15	0.60	2.09	1.07	1.23	1.15
<b>Benzo[b]fluoranthene</b>	1.12	0.54	1.67	1.05	1.19	1.13
<b>Benzo[k]fluoranthene</b>	0.64	0.28	1.15	0.58	0.70	1.21
<b>Dibenzo[ah]anthracene</b>	0.37	0.07	1.36	0.30	0.44	1.47
<b>Indeno[123-cd]pyrene</b>	0.53	0.15	1.71	0.45	0.61	1.35
<b>Benzo[ghi]perylene</b>	0.70	0.35	1.74	0.64	0.76	1.19

The concentrations of 7 genotoxic PAHs in soil were measured in PAH-contaminated land sites across England and Wales. The ratios of the mean concentrations of the 7 PAHs relative to BaP in soil were calculated. Data are presented as mean ratio of PAH to BaP with the upper and lower 95% confidence limits and the ratio of the upper and lower confidence limits, where n=52. The ratio of the upper and lower confidence limits was determined by dividing the upper confidence limit by the lower confidence limit (as recommended by IPCS <sup>(4)</sup>).

This assessment indicates that the soil tested for Plot 34 in April 2023 was unlikely to be considered contaminated by PAHs. Five further soil tests have proven the soil to lie within LQM/CIEH guidelines and as the area of contamination by PAHs have been replaced with tested as uncontaminated topsoil, and additional test results lie within LQM/CIEH guidelines, the garden is considered to be remediated and fit for purpose.

The garden of Plot 34 is considered suitable for use as residential garden with plant uptake with regard to the tests undertaken.

**TABLE 20**  
Results of Retests for Polyaromatic Hydrocarbons (PAH) for Plot 35

Polyaromatic Hydrocarbons	Units	Plot 35 April 2023 (1 test)	Plot 35 October 2023 (3 tests)	Plot 35 November 2023 (3 tests)	ATRISK Contaminated Land Screening Values (SSV)	Samples Exceeding SSV/C4SL
					Residential with plant uptake in mg/kg	
Naphthalene	mg/kg	0.38	0.05, <0.02, 0.08	0.21, 13, 0.15	12.2*	NONE
Acenaphthylene	mg/kg	0.04	0.04, <0.02, 0.66	<0.11, 0.34, <0.10	920*	NONE
Acenaphthene	mg/kg	0.42	0.10, <0.02, 0.16	0.19, 0.27, 0.28	2760*	NONE
Fluorene	mg/kg	0.36	0.11, <0.02, 0.15	6.21, 0.41, 0.12	2610*	NONE
Phenanthrene	mg/kg	3.40	1.08, 0.08, 0.44	2.01, 12.3, 1.48	440*	NONE
Anthracene	mg/kg	0.85	0.43, 0.03, 0.21	0.64, 2.34, 0.41	26200*	NONE
Fluoranthene	mg/kg	5.09	1.23, 0.14, 0.53	2.98, 35.3, 2.53	2980*	NONE
Pyrene	mg/kg	4.44	1.05, 0.12, 0.46	2.66, 32.3, 2.24	2120*	NONE
Benzo(a)anthracene	mg/kg	2.17	0.54, 0.09, 0.30	1.24, 15, 1.01	13***	NONE
Chrysene	mg/kg	2.33	0.49, 0.08, 0.30	1.40, 16.9, 1.12	27***	NONE
Benzo(b)fluoranthene	mg/kg	2.50	0.43, 0.07, 0.28	1.18, 15, 0.97	3.7***	NONE
Benzo(k)fluoranthene	mg/kg	0.94	0.24, 0.04, 0.19	0.53, 5.0, 0.40	100***	NONE
Benzo(a)pyrene	mg/kg	2.33	0.48, 0.07, 0.28	1.12, 13.4, 0.88	4.95**	NONE
Indeno(1,2,3-cd)	mg/kg	1.79	0.21, 0.04,	0.70, 7.04,	41***	NONE

pyrene			0.21	0.54		
Dibenz(a,h)anthracene	mg/kg	0.40	0.06, <0.02, 0.11	0.17, 1.84, 0.13	0.3***	NONE
Benzo(ghi)perylene	mg/kg	1.56	0.23, 0.05, 0.20	0.53, 4.90, 0.41	350***	NONE
TOTAL PAH	mg/kg	2.9	6.75, 0.81, 3.96	16, 163, 12.7		

\* = ATRISK SSV, \*\* = C4SL assessment, \*\*\* = LQM/CIEH S4ULs

The PAHs were assessed against ATRISK SSV where available and against LQM/CIEH S4ULs with Benzo(a)pyrene assessed against C4SL. One sample had levels of 3 PAHs above LQM/CIEH guidelines and this area was overexcavated and replaced with tested as uncontaminated topsoil.

**TABLE 21**  
Results of Retests for Total Petroleum Hydrocarbons (TPH) in Plot 32

Total Petroleum Hydrocarbons		Plot 32 April 2023 (1 test)	Plot 32 October 2023 (3 tests)	ATRISK Contaminated Land Screening Values (SSV)	Samples Exceeding SSV
				Residential with plant uptake in mg/kg	
Aromatic Hydrocarbons (mg/kg)	>C5-C7	<0.01	<0.05 to <0.05	0.871	NONE
	>C7-C8	<0.01	<0.05 to <0.05	780	NONE
	>C8-C10	<0,01	<0.05 to <0.05	232	NONE
	>C10-C12	<10	<0.5 to 6	468	NONE
	>C12-C16	<10	1 to 25	830	NONE
	>C16-C21	27	<2 to 20	1040	NONE
	>C21-C35	103	8 to 57	1710	NONE
	>C35-C44	31	6 to 21	28400	NONE
Aliphatic Hydrocarbons (mg/kg)	>C5-C6	<0.1	<0.05 to <0.05	369	NONE
	>C6-C8	<0.1	<0.1 to <0.1	1240	NONE
	>C8-C10	<0.1	<0.05 to <0.05	204	NONE
	>C10-C12	<6	<0.5 to 1	1180	NONE
	>C12-C16	<6	<0.5 to 1	4130	NONE
	>C16-C35	53	<4.5 to <4.5	210,100	NONE
	>C35-C44	<10	<1 to <1		

**TABLE 22**  
Results of Retests for Total Petroleum Hydrocarbons (TPH) in Plot 33

Total Petroleum Hydrocarbons		Plot 33 April 2023 (1 test)	Plot 33 October 2023 (1 tests)	ATRISK Contaminated Land Screening Values (SSV)	Samples Exceeding SSV
				Residential with plant uptake in mg/kg	
Aromatic Hydrocarbons	>C5-C7	<0.01	<0.05	0.871	NONE
	>C7-C8	<0.01	<0.05	780	NONE

(mg/kg)	>C8-C10	<0,01	<0.05	232	NONE
	>C10-C12	<10	<0.5	468	NONE
	>C12-C16	12	2	830	NONE
	>C16-C21	32	4	1040	NONE
	>C21-C35	146	15	1710	NONE
	>C35-C44	52	5	28400	NONE
Aliphatic Hydrocarbons (mg/kg)	>C5-C6	<0.1	<0.05	369	NONE
	>C6-C8	<0.1	<0.1	1240	NONE
	>C8-C10	<0.1	<0.05	204	NONE
	>C10-C12	<6	<0.5	1180	NONE
	>C12-C16	6	1	4130	NONE
	>C16-C35	137	5	210,100	NONE
	>C35-C44	27	<1		

**TABLE 23**  
**Results of Retests for Total Petroleum Hydrocarbons (TPH) in Plot 34**

Total Petroleum Hydrocarbons		Plot 34 April 2023 (1 test)	Plot 34 October 2023 (3 test)	ATRISK Contaminated Land Screening Values (SSV)	Samples Exceeding SSV
				Residential with plant uptake in mg/kg	
Aromatic Hydrocarbons (mg/kg)	>C5-C7	<0.01	<0.05 to <0.05	0.871	NONE
	>C7-C8	<0.01	<0.05 to <0.05	780	NONE
	>C8-C10	<0,01	<0.05 to <0.05	232	NONE
	>C10-C12	<10	<0.5 to <0.5	468	NONE
	>C12-C16	<10	<0.1 to <0.1	830	NONE
	>C16-C21	73	<2 to <2	1040	NONE
	>C21-C35	294	<5 to <5	1710	NONE
	>C35-C44	121	<1.5 to 2	28400	NONE
Aliphatic Hydrocarbons (mg/kg)	>C5-C6	<0.1	<0.05 to <0.05	369	NONE
	>C6-C8	<0.1	<0.05 to <0.05	1240	NONE
	>C8-C10	<0.1	<0.1 to <0.1	204	NONE
	>C10-C12	<6	<0.5 to 1	1180	NONE
	>C12-C16	7	<0.5 to 1	4130	NONE
	>C16-C35	212	<4.5 to 10	210,100	NONE
	>C35-C44	34	<1 to <1		

**TABLE 24**  
**Results of Tests for Total Petroleum Hydrocarbons (TPH) for Plot 35**

Total Petroleum Hydrocarbons		Plot 35 April 2023	Plot 35 October 2023	ATRISK Contaminated Land Screening Values (SSV)	Samples Exceedin g SSV
				Residential with plant uptake in mg/kg	
Aromatic Hydrocarbon s (mg/kg)	>C5-C7	<0.01	<0.05, <0.05, <0.05	0.871	
	>C7-C8	<0.01	<0.05, <0.05, <0.05	780	
	>C8-C10	<0.01	<0.05, <0.05, <0.05	232	
	>C10- C12	<10	<0.5, <0.5,<0.5	468	
	>C12- C16	<10	<1, <1, <1	830	
	>C16- C21	44	<2, <2, <2	1040	
	>C21- C35	206	<5, <5, <5	1710	
>C35- C44	85	<1.5, <1.5, <1.5	28400		
Aliphatic Hydrocarbon s (mg/kg)	>C5-C6	<0.1	<0.05, <0.05, <0.05	369	
	>C6-C8	<0.1	<0.1, <0.1, <0.1	1240	
	>C8-C10	<0.1	<0.05, <0.05, <0.05	204	
	>C10- C12	<0.6	<0.5, <0.5,<0.5	1180	
	>C12- C16	<6	<0.5, <0.5,<0.5	4130	
	>C16- C35	148	<4.5, <4.5, <4.5	210,100	
	>C35- C44	24	<1, <1, <1		

All TPHs results were within guidelines for use of the site for residential use with plant uptake.

All TPHs test results for Plots 32, 34 and 35 were within guidelines for use of the gardens for residential use with plant uptake.

### 6.2.7 Environmental Test Results for Topsoil Stockpile Remediation

As elevated PAHs were encountered in Plots 28, 32, 33, 34, 35 and 36 a new import of topsoil was arranged on October 5<sup>th</sup> 2023 from Shepley and three soil samples from the stockpile were tested on October 9<sup>th</sup> 2023 for 10 heavy metals, PAH speciated, TPH CWG UK, pH, sulphate and asbestos fibres. Test results are

presented in Tables 25, 26 and 27 and detailed in full in Chemtech Report 127363 in Appendix B.

This material was used to remediate the gardens of Plots 32 and 33 and the small areas of elevated lead and PAHs in Plots 34, 35 and 36, and was used to infill pits where additional sampling was undertaken on October 23<sup>rd</sup> 2023 and November 1<sup>st</sup> 2023.

TABLE 25  
Results of Tests for Heavy Metals

Metals	Units	Minimum Value In mg/kg	Maximum Value In mg/kg	ATRISK Contaminated Land Screening Values (SSV)	
				Residential with plant uptake in mg/kg	Samples Exceeding SSV
Mercury	mg/kg	<2	<2	181.44	NONE
Nickel	mg/kg	20.4	25	136	NONE
Copper	mg/kg	38.1	40.8	4790	NONE
Selenium	mg/kg	<3	<3	375	NONE
Zinc	mg/kg	77.7	83.8	20,300	NONE
Chromium VI	mg/kg	<1	<1	20.5	NONE
Arsenic	mg/kg	27.1	32.9	37	NONE
Cadmium	mg/kg	<2	<2	22.1	NONE
Lead	mg/kg	63.4	74.3	200	NONE
pH		5.9	6.1	5-9	NONE
Asbestos		NAD	NAD	NAD	NONE
Sulphate	mg/l SO <sub>4</sub>	33	112	500	NONE

NAD = No asbestos detected

All tests undertaken for heavy metals, pH and sulphate were within guidelines for residential use of the site with plant uptake. No asbestos fibres were detected in the samples.



**Figure 9 New Topsoil stockpiles from Shepley**

**TABLE 26  
Results of Tests for Polyaromatic Hydrocarbons (PAH)**

Polyaromatic Hydrocarbons	Units	Minimum Value In mg/kg	Maximum Value in In mg/kg	ATRISK LQM/CIEH Screening Values (SSV)	Samples Exceeding SSV
				Residential with plant uptake in mg/kg	
Naphthalene	mg/kg	<0.02	0.03	12.2*	NONE
Acenaphthylene	mg/kg	<0.02	0.05	920*	NONE
Acenaphthene	mg/kg	<0.02	<0.02	2760*	NONE
Fluorene	mg/kg	<0.02	0.04	2610*	NONE
Phenanthrene	mg/kg	0.09	0.68	440*	NONE
Anthracene	mg/kg	0.02	0.08	26200*	NONE
Fluoranthene	mg/kg	0.17	0.95	2980*	NONE
Pyrene	mg/kg	0.16	0.76	2120*	NONE
Benzo(a)anthracene	mg/kg	0.10	0.33	13***	NONE
Chrysene	mg/kg	0.11	0.48	27***	NONE
Benzo(b)fluoranthene	mg/kg	0.09	0.41	3.7***	NONE
Benzo(k)fluoranthene	mg/kg	0.05	0.19	100***	NONE
Benzo(a)pyrene	mg/kg	0.10	0.41	4.95**	NONE
Indeno(1,2,3-cd) pyrene	mg/kg	0.05	0.23	41***	NONE
Dibenzo(a,h)anthracene	mg/kg	<0.02	0.05	0.3***	NONE
Benzo(ghi)perylene	mg/kg	0.05	0.21	350***	NONE
<b>TOTAL PAH</b>	<b>mg/kg</b>	<b>1.00</b>	<b>4.90</b>		

\* = ATRISK SSV, \*\* = C4SL assessment, \*\*\* = LQM/CIEH S4ULs

All tests undertaken for speciated Polyaromatic Hydrocarbons were within ATRISK, LQM/CIEH guidelines for residential use of the site with plant uptake and within the appropriate ratio to Benzo(a)pyrene to be considered uncontaminated with regard to the tests undertaken..

TABLE 27  
Results of Tests for Total Petroleum Hydrocarbons (TPH)

Total Petroleum Hydrocarbons		Minimum Values In mg/kg	Maximum Values In mg/kg	ATRISK Contaminated Land Screening Values (SSV)	Samples Exceeding SSV
				Residential with plant uptake in mg/kg	
Aromatic Hydrocarbons (mg/kg)	>C5-C7	<0.01	<0.01	0.871	NONE
	>C7-C8	<0.01	<0.01	780	NONE
	>C8-C10	<0.01	<0.01	232	NONE
	>C10-C12	<10	<10	468	NONE
	>C12-C16	<10	<10	830	NONE
	>C16-C21	<1	<1	1040	NONE
	>C21-C35	<1	<1	1710	NONE
	>C35-C44	<1	<1	28400	NONE
Aliphatic Hydrocarbons (mg/kg)	>C5-C6	<0.1	<0.1	369	NONE
	>C6-C8	<0.1	<0.1	1240	NONE
	>C8-C10	<0.1	<0.1	204	NONE
	>C10-C12	<6	<6	1180	NONE
	>C12-C16	<6	<6	4130	NONE
	>C16-C35	<15	<15	210,100	NONE
	>C35-C44	<10	<10		

All tests undertaken for speciated Total Petroleum Hydrocarbons were within guidelines for residential use of the site with plant uptake.

The soil samples from the topsoil stockpiles were all found to be uncontaminated according to guidelines by heavy metals, PAHs, TPHs, pH and sulphate and asbestos.

Based on the environmental test results on soil samples, the visual and olfactory evidence and the remediation and mitigating measures undertaken on site it is validated that the remediation of the gardens of house Plots 28, 32, 33, 34, 35 and 36 have taken place in accordance with the Remediation Implementation Plan.

The gardens of Plots 28, 32, 33, 34, 35 and 36 are remediated, and are fit for purpose according to the investigation and environmental testing and remediation undertaken and validated.

### 6.3 Gas Membrane and underfloor venting area

The validation of the installation of the gas membrane, taping and validation of the underfloor venting area was undertaken by GeoShield Ltd to NHBC Amber 2 classification, with validation sheets presented in Appendix D.

## 7. SUMMARY

The remediation was validated by site inspection by GeoShield and Ashton Bennett, with site visits and laboratory testing at a NAMAS accredited laboratory.

Where contaminated soil was detected within the gardens of house plots 22 to 37, these plots were remediated where applicable and replaced with fresh clean imported topsoil stockpile, proven to a depth of 600mm. Any undetected contamination is unlikely to detrimentally affect sensitive receptors due to the turf and hard standing cover over the plots and the thickness of 600mm of imported uncontaminated soil on the garden areas.

The remediation work to the gardens was validated by site visits by Ashton Bennett and by further selective laboratory environmental testing of soil samples and of imported topsoil and reporting of results to Planning Services, plus on site visual/olfactory observations during site visits.

Clean up standards were assessed against the latest ATRISK guidelines based on CLEA guidelines where published in 2017 and LQM/CIEH guidelines. Based on the soil testing there is no recorded contamination that has the potential to detrimentally harm sensitive receptors. The guidelines used are for land with residential use with plant uptake use in accordance with the guidelines of CLR11 (DEFRA).

Based on the site visits and environmental test results and the remediation and mitigating measures undertaken on site, it is validated that the remediation has taken place in accordance with the Remediation Implementation Plan. Any undetected contamination is sealed with hardcover or a geotextile and 600mm of topsoil, thus breaking pathways for contamination to harm humans or the environment. The risk of the site causing harm has therefore been eliminated.



**Figure 10 Turf in Front Garden of Plots 26 and 27**

This Consultancy attended on an appropriate number of other occasions to check the nature of material exposed on the site and to validate the remediation including inspecting the laying of the geotextile and the assessment of laboratory tests on soil samples from the house gardens.

Standards for imported material were assessed against derived SSVs as detailed in the Tables and as a risk assessment as to whether the material has the potential to harm sensitive receptors. The SSV guidelines used were for residential land use with plant uptake in gardens.

The risk assessment indicates there is a low risk of detected and undetected contamination detrimentally affecting the future occupants and workmen or other users of the site in the future and a low risk of the environment being detrimentally affected as the garden areas have been sealed and any undetected contamination lies beneath sufficient topsoil cover.

The mitigating measures undertaken will prevent any undetected contamination from migrating and reaching sensitive receptors. The house plots 22 to 37 are fit for purpose according to the mitigating measures and validation of a gas membrane and underfloor venting in the houses and a geotextile and 600mm of tested as uncontaminated topsoil in the gardens.

Geoshield Reports confirm the venting space and installation of the methane resistant membrane have been undertaken in accordance with NHBC specification in the Remediation Implementation Plan.

## **8. GENERAL REMARKS**

This report truly reflects the conditions found during the Validation of the remediation. Whilst the Validation and Remediation were undertaken in a professional manner taking due regard of additional information which became available as a result of ongoing research the results portrayed only pertain to the information attained and it is possible that other undetected information and undetected ground and gas conditions and undetected contamination and undetected mining may exist. The Validation was only undertaken within the house plots 22 and 37 boundaries and should not be used for interpretation purposes elsewhere. These conclusions are only a brief summary of the report, and it is recommended that the Report SIG 3500 VAL 22 TO 37rev 1 is read in full to ensure that all recommendations have been understood.

This report is provided for the sole use of the clients (Signature Homes(Yorkshire) Ltd) and no responsibility will be accepted by this Consultancy to any other parties who rely on this report entirely at their own risk. The copyright for this report is held by Ashton Bennett Consultancy and no reproduction of any part or all of the report can be undertaken or any other reproduction undertaken without the written approval of this Consultancy.

# Appendix A





Front garden of Houses 23 – 25 showing 600mm of topsoil



Corner plot of No 22 showing 600mm of topsoil depth



View over rear gardens of No 22-25 showing newly laid topsoil



Photos showing the rear gardens of Nos. 22 -25 proving 600mm of topsoil



Laying of membrane and topsoil Plots 26 and 27



Rear garden of Plot 26 showing 600mm of topsoil



Photo proving 600mm of topsoil in rear garden of Plot 27



Rear garden of Plot 26



Rear garden of Plot 27



Close up of measuring bar used to prove 600mm depth.



Rear Garden of Plot No 28 showing topsoil proving 600mm depth



Rear Garden of Plot No 31 showing topsoil proving 600mm depth



Rear Garden of Plot No 37 showing topsoil proving 600mm depth



Rear Garden of Plot No 28 showing topsoil proving 600mm depth



Trial Pit topsoil sampling for Plot 36 rear garden, ruler proving depths 600mm



House Plot 29 rear view & Trial Pit proving 600mm of topsoil



House Plot 30 rear view & Trial Pit proving 600mm of topsoil



Trial Pits topsoil sampling for Plots 32 and 33, ruler proving depths 600mm



Trial Pits topsoil sampling for Plots 34



Plot 32 Removal of contaminated soil and Proving depth(L)



Plot 32 Refilled with new clean stockpile and sampled



Plot 33 Removal of contaminated topsoil and depth proving(R)



Plot 33 refilled with new clean stockpile and sampled.



Plot 34 resampling in Trial Pits (T1 – T3) 600mm depth



Associated photos plots 26 to 31



**Associated Photos including Stockpile**



**Associated Photos showing hard cover front and side Plot 29 and 30, similar throughout.**



**Associated Photos Testing TP depths and Sampling. Laying of membrane prior to topsoil**



**Associated Photo proving depth with 600mm tool used throughout**

# Appendix B





## ANALYTICAL TEST REPORT

**Contract no:** 90429  
**Contract name:** ABC  
**Client reference:** -  
**Clients name:** Ashton Bennett  
**Clients address:** 131 Huddersfield Road  
Holmfirth  
West Yorkshire  
HD9 3TW

**Samples received:** 21 October 2020  
**Analysis started:** 23 October 2020  
**Analysis completed:** 30 October 2020  
**Report issued:** 30 October 2020

**Notes:** Opinions and interpretations expressed herein are outside the UKAS accreditation scope.  
Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.  
All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.  
Methods, procedures and performance data are available on request.  
Results reported herein relate only to the material supplied to the laboratory.  
This report shall not be reproduced except in full, without prior written approval.  
Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

**Key:** U UKAS accredited test  
M MCERTS & UKAS accredited test  
\$ Test carried out by an approved subcontractor  
I/S Insufficient sample to carry out test  
N/S Sample not suitable for testing  
NAD No Asbestos Detected

**Approved by:**

Karan Campbell  
Director

# Chemtech Environmental Limited

## SAMPLE INFORMATION

### MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

All results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

Analytical results are inclusive of stones.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
90429-1	HE	-	Loam with Gravel	-	-	21.5
90429-2	FL	-	Clay with Gravel	-	-	17.3
90429-3	ML	-	Clay with Gravel	-	-	17.4

# Chemtech Environmental Limited

## SOILS

Lab number			90429-1	90429-2	90429-3
Sample id			HE	FL	ML
Depth (m)			-	-	-
Date sampled			19/10/2020	19/10/2020	19/10/2020
Test	Method	Units			
Arsenic (total)	CE127 <sup>M</sup>	mg/kg As	7.1	4.1	5.2
Cadmium (total)	CE127 <sup>M</sup>	mg/kg Cd	<0.2	<0.2	<0.2
Chromium (total)	CE127 <sup>M</sup>	mg/kg Cr	56	74	64
Chromium (VI)	CE146	mg/kg CrVI	<1	<1	<1
Copper (total)	CE127 <sup>M</sup>	mg/kg Cu	15	32	32
Lead (total)	CE127 <sup>M</sup>	mg/kg Pb	50	27	24
Mercury (total)	CE127 <sup>M</sup>	mg/kg Hg	<0.5	<0.5	<0.5
Nickel (total)	CE127 <sup>M</sup>	mg/kg Ni	8.3	40	41
Selenium (total)	CE127 <sup>M</sup>	mg/kg Se	0.8	1.6	1.5
Zinc (total)	CE127 <sup>M</sup>	mg/kg Zn	63	88	112
pH	CE004 <sup>M</sup>	units	6.9	7.5	8.2
Sulphate (2:1 water soluble)	CE061 <sup>M</sup>	mg/l SO <sub>4</sub>	45	41	60
<b>PAH</b>					
Naphthalene	CE087 <sup>M</sup>	mg/kg	0.05	0.02	<0.02
Acenaphthylene	CE087 <sup>M</sup>	mg/kg	0.02	<0.02	<0.02
Acenaphthene	CE087 <sup>M</sup>	mg/kg	<0.02	<0.02	<0.02
Fluorene	CE087 <sup>U</sup>	mg/kg	0.03	<0.02	<0.02
Phenanthrene	CE087 <sup>M</sup>	mg/kg	0.30	0.13	0.07
Anthracene	CE087 <sup>U</sup>	mg/kg	0.06	0.04	0.02
Fluoranthene	CE087 <sup>M</sup>	mg/kg	0.58	0.24	0.15
Pyrene	CE087 <sup>M</sup>	mg/kg	0.50	0.23	0.14
Benzo(a)anthracene	CE087 <sup>U</sup>	mg/kg	0.25	0.12	0.08
Chrysene	CE087 <sup>M</sup>	mg/kg	0.31	0.15	0.09
Benzo(b)fluoranthene	CE087 <sup>M</sup>	mg/kg	0.37	0.17	0.10
Benzo(k)fluoranthene	CE087 <sup>M</sup>	mg/kg	0.14	0.06	0.04
Benzo(a)pyrene	CE087 <sup>U</sup>	mg/kg	0.28	0.13	0.08
Indeno(123cd)pyrene	CE087 <sup>M</sup>	mg/kg	0.20	0.08	0.05
Dibenz(ah)anthracene	CE087 <sup>M</sup>	mg/kg	0.05	<0.02	<0.02
Benzo(ghi)perylene	CE087 <sup>M</sup>	mg/kg	0.18	0.08	0.05
PAH (total of USEPA 16)	CE087	mg/kg	3.31	1.46	0.85
<b>TPH</b>					
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01	<0.01	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	0.04	<0.01	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01	<0.01	<0.01
EPH Aromatic (>EC10-EC12)	CE068	mg/kg	<1	<1	<1
EPH Aromatic (>EC12-EC16)	CE068	mg/kg	<1	<1	<1
EPH Aromatic (>EC16-EC21)	CE068	mg/kg	2	<1	<1
EPH Aromatic (>EC21-EC35)	CE068	mg/kg	3	<1	<1
EPH Aromatic (>EC35-EC44)	CE068	mg/kg	<1	<1	<1
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1	<0.1

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## SOILS

<b>Lab number</b>			90429-1	90429-2	90429-3
<b>Sample id</b>			HE	FL	ML
<b>Depth (m)</b>			-	-	-
<b>Date sampled</b>			19/10/2020	19/10/2020	19/10/2020
<b>Test</b>	<b>Method</b>	<b>Units</b>			
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	<0.1	<0.1
EPH Aliphatic (>C10-C12)	CE068	mg/kg	<4	<4	<4
EPH Aliphatic (>C12-C16)	CE068	mg/kg	<4	<4	<4
EPH Aliphatic (>C16-C35)	CE068	mg/kg	51	16	20
EPH Aliphatic (>C35-C44)	CE068	mg/kg	15	<10	<10
<b>Subcontracted analysis</b>					
Asbestos (qualitative)	\$	-	NAD	NAD	NAD

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## METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE127	Arsenic (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg As
CE127	Cadmium (total)	Aqua regia digest, ICP-MS	Dry	M	0.2	mg/kg Cd
CE127	Chromium (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cr
CE208	Chromium (III)	Calculation: Cr (total) - Cr (VI)	Dry		1	mg/kg CrIII
CE146	Chromium (VI)	Acid extraction, Colorimetry	Dry		1	mg/kg CrVI
CE127	Copper (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cu
CE127	Lead (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Pb
CE127	Mercury (total)	Aqua regia digest, ICP-MS	Dry	M	0.5	mg/kg Hg
CE127	Nickel (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Ni
CE127	Selenium (total)	Aqua regia digest, ICP-MS	Dry	M	0.3	mg/kg Se
CE127	Zinc (total)	Aqua regia digest, ICP-MS	Dry	M	5	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	M	10	mg/l SO <sub>4</sub>
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.34	mg/kg
CE067	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	As received		0.01	mg/kg
CE068	EPH Aromatic (>EC10-EC12)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC12-EC16)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC16-EC21)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC21-EC35)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC35-EC44)	Solvent extraction, GC-FID	As received		1	mg/kg
CE067	VPH Aliphatic (>C5-C6)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C6-C8)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C8-C10)	Headspace GC-FID	As received		0.1	mg/kg
CE068	EPH Aliphatic (>C10-C12)	Solvent extraction, GC-FID	As received		4	mg/kg
CE068	EPH Aliphatic (>C12-C16)	Solvent extraction, GC-FID	As received		4	mg/kg
CE068	EPH Aliphatic (>C16-C35)	Solvent extraction, GC-FID	As received		4	mg/kg

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## METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE068	EPH Aliphatic (>C35-C44)	Solvent extraction, GC-FID	As received		10	mg/kg
\$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-

# Chemtech Environmental Limited

## DEVIATING SAMPLE INFORMATION

### Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.

For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.

Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

### Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
90429-1	HE	-	N	
90429-2	FL	-	N	
90429-3	ML	-	N	



## ANALYTICAL TEST REPORT

**Contract no:** 96789  
**Contract name:** Homfirth  
**Client reference:** 3454  
**Clients name:** Ashton Bennett  
**Clients address:** 131 Huddersfield Road  
Holmfirth  
West Yorkshire  
HD9 3TW  
**Samples received:** 10 June 2021  
**Analysis started:** 10 June 2021  
**Analysis completed:** 17 June 2021  
**Report issued:** 17 June 2021

**Notes:** Opinions and interpretations expressed herein are outside the UKAS accreditation scope.  
Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.  
All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.  
Methods, procedures and performance data are available on request.  
Results reported herein relate only to the material supplied to the laboratory.  
This report shall not be reproduced except in full, without prior written approval.  
Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

**Key:** U UKAS accredited test  
M MCERTS & UKAS accredited test  
\$ Test carried out by an approved subcontractor  
I/S Insufficient sample to carry out test  
N/S Sample not suitable for testing  
NAD No Asbestos Detected

**Approved by:**

Rachael Burton  
Customer Support Squad Leader

# Chemtech Environmental Limited

## SAMPLE INFORMATION

### MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

All results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

Analytical results are inclusive of stones.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
96789-1	S	-	Sandy Clay with Gravel	-	-	20.1
96789-2	S14	-	Sandy Clay with Gravel	-	-	24.2
96789-3	S15	-	Sandy Clay with Gravel	-	-	22.1
96789-4	S16	-	Sandy Clay with Gravel	-	-	21.9
96789-5	S17	-	Sandy Clay with Gravel	-	-	25.1
96789-6	S18	-	Sandy Clay with Gravel	-	-	20.5
96789-7	S19	-	Sandy Clay with Gravel	-	-	22.8
96789-8	S20	-	Sandy Clay with Gravel	-	-	22.5
96789-9	S21	-	Sandy Clay with Gravel	-	-	20.9

# Chemtech Environmental Limited

## SOILS

Lab number			96789-1	96789-2	96789-3	96789-4	96789-5	96789-6
Sample id			S	S14	S15	S16	S17	S18
Depth (m)			-	-	-	-	-	-
Date sampled			19/05/2021	19/05/2021	19/05/2021	19/05/2021	19/05/2021	19/05/2021
Test	Method	Units						
Arsenic (total)	CE127 <sup>M</sup>	mg/kg As	9.2	11	10	10	10	9.9
Boron (water soluble)	CE063	mg/kg B	<0.5	0.5	<0.5	<0.5	<0.5	<0.5
Cadmium (total)	CE127 <sup>M</sup>	mg/kg Cd	0.2	0.3	0.2	0.3	0.3	0.2
Chromium (VI)	CE146	mg/kg CrVI	<1	<1	<1	<1	<1	<1
Copper (total)	CE127 <sup>M</sup>	mg/kg Cu	20	22	21	21	20	20
Lead (total)	CE127 <sup>M</sup>	mg/kg Pb	50	59	55	53	56	53
Mercury (total)	CE127 <sup>M</sup>	mg/kg Hg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel (total)	CE127 <sup>M</sup>	mg/kg Ni	10	11	11	11	10	10
Selenium (total)	CE127 <sup>M</sup>	mg/kg Se	0.7	0.8	0.8	0.7	0.8	0.8
Zinc (total)	CE127 <sup>M</sup>	mg/kg Zn	51	55	57	51	55	51
pH	CE004 <sup>M</sup>	units	6.9	6.5	6.5	6.3	6.9	6.8
Sulphate (2:1 water soluble)	CE061	mg/l SO <sub>4</sub>	89	48	46	48	34	50
<b>PAH</b>								
Naphthalene	CE087 <sup>M</sup>	mg/kg	<0.02	<0.02	<0.02	<0.02	0.03	<0.02
Acenaphthylene	CE087 <sup>M</sup>	mg/kg	0.03	<0.02	<0.02	<0.02	<0.02	0.03
Acenaphthene	CE087 <sup>M</sup>	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Fluorene	CE087 <sup>U</sup>	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Phenanthrene	CE087 <sup>M</sup>	mg/kg	0.36	0.18	0.17	0.16	0.20	0.24
Anthracene	CE087 <sup>U</sup>	mg/kg	0.14	0.03	0.03	0.03	0.03	0.02
Fluoranthene	CE087 <sup>M</sup>	mg/kg	1.05	0.36	0.46	0.41	0.41	0.51
Pyrene	CE087 <sup>M</sup>	mg/kg	0.91	0.32	0.41	0.37	0.38	0.46
Benzo(a)anthracene	CE087 <sup>U</sup>	mg/kg	0.52	0.16	0.24	0.23	0.21	0.23
Chrysene	CE087 <sup>M</sup>	mg/kg	0.50	0.23	0.31	0.25	0.23	0.23
Benzo(b)fluoranthene	CE087 <sup>M</sup>	mg/kg	0.69	0.26	0.38	0.39	0.33	0.36
Benzo(k)fluoranthene	CE087 <sup>M</sup>	mg/kg	0.27	0.10	0.13	0.15	0.12	0.14
Benzo(a)pyrene	CE087 <sup>U</sup>	mg/kg	0.56	0.20	0.30	0.30	0.26	0.29
Indeno(123cd)pyrene	CE087 <sup>M</sup>	mg/kg	0.40	0.15	0.22	0.25	0.19	0.21
Dibenz(ah)anthracene	CE087 <sup>M</sup>	mg/kg	0.06	<0.02	0.03	0.06	0.03	0.02
Benzo(ghi)perylene	CE087 <sup>M</sup>	mg/kg	0.35	0.13	0.19	0.22	0.16	0.19
PAH (total of USEPA 16)	CE087	mg/kg	5.84	2.10	2.87	2.82	2.56	2.93
<b>TPH</b>								
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01	0.01	0.01	<0.01	<0.01	0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
EPH Aromatic (>EC10-EC12)	CE068	mg/kg	<1	<1	<1	<1	<1	<1
EPH Aromatic (>EC12-EC16)	CE068	mg/kg	<1	<1	<1	<1	<1	<1
EPH Aromatic (>EC16-EC21)	CE068	mg/kg	3	<1	2	<1	2	2
EPH Aromatic (>EC21-EC35)	CE068	mg/kg	4	2	3	3	2	2
EPH Aromatic (>EC35-EC44)	CE068	mg/kg	<1	<1	<1	<1	<1	<1
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

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## SOILS

Lab number			96789-1	96789-2	96789-3	96789-4	96789-5	96789-6
Sample id			S	S14	S15	S16	S17	S18
Depth (m)			-	-	-	-	-	-
Date sampled			19/05/2021	19/05/2021	19/05/2021	19/05/2021	19/05/2021	19/05/2021
Test	Method	Units						
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
EPH Aliphatic (>C10-C12)	CE068	mg/kg	<4	<4	<4	<4	<4	<4
EPH Aliphatic (>C12-C16)	CE068	mg/kg	<4	<4	<4	<4	<4	<4
EPH Aliphatic (>C16-C35)	CE068	mg/kg	79	48	59	94	63	95
EPH Aliphatic (>C35-C44)	CE068	mg/kg	27	18	19	43	36	53
Subcontracted analysis								
Asbestos (qualitative)	\$	-	NAD	NAD	NAD	NAD	NAD	NAD

# Chemtech Environmental Limited

## SOILS

Lab number			96789-7	96789-8	96789-9
Sample id			S19	S20	S21
Depth (m)			-	-	-
Date sampled			19/05/2021	19/05/2021	19/05/2021
Test	Method	Units			
Arsenic (total)	CE127 <sup>M</sup>	mg/kg As	10	11	9.7
Boron (water soluble)	CE063	mg/kg B	<0.5	<0.5	<0.5
Cadmium (total)	CE127 <sup>M</sup>	mg/kg Cd	0.4	0.2	0.2
Chromium (VI)	CE146	mg/kg CrVI	<1	<1	<1
Copper (total)	CE127 <sup>M</sup>	mg/kg Cu	21	20	20
Lead (total)	CE127 <sup>M</sup>	mg/kg Pb	60	56	51
Mercury (total)	CE127 <sup>M</sup>	mg/kg Hg	0.7	<0.5	<0.5
Nickel (total)	CE127 <sup>M</sup>	mg/kg Ni	12	11	11
Selenium (total)	CE127 <sup>M</sup>	mg/kg Se	0.8	0.8	1.0
Zinc (total)	CE127 <sup>M</sup>	mg/kg Zn	58	51	51
pH	CE004 <sup>M</sup>	units	6.8	6.9	6.6
Sulphate (2:1 water soluble)	CE061	mg/l SO <sub>4</sub>	78	35	39
<b>PAH</b>					
Naphthalene	CE087 <sup>M</sup>	mg/kg	<0.02	<0.02	<0.02
Acenaphthylene	CE087 <sup>M</sup>	mg/kg	0.02	<0.02	0.02
Acenaphthene	CE087 <sup>M</sup>	mg/kg	<0.02	<0.02	0.08
Fluorene	CE087 <sup>U</sup>	mg/kg	<0.02	0.03	0.06
Phenanthrene	CE087 <sup>M</sup>	mg/kg	0.19	1.04	0.72
Anthracene	CE087 <sup>U</sup>	mg/kg	0.05	0.65	0.17
Fluoranthene	CE087 <sup>M</sup>	mg/kg	0.54	3.60	1.03
Pyrene	CE087 <sup>M</sup>	mg/kg	0.49	3.00	0.94
Benzo(a)anthracene	CE087 <sup>U</sup>	mg/kg	0.28	1.66	0.51
Chrysene	CE087 <sup>M</sup>	mg/kg	0.28	1.59	0.49
Benzo(b)fluoranthene	CE087 <sup>M</sup>	mg/kg	0.46	1.64	0.72
Benzo(k)fluoranthene	CE087 <sup>M</sup>	mg/kg	0.16	0.71	0.28
Benzo(a)pyrene	CE087 <sup>U</sup>	mg/kg	0.36	1.39	0.56
Indeno(123cd)pyrene	CE087 <sup>M</sup>	mg/kg	0.26	0.91	0.38
Dibenz(ah)anthracene	CE087 <sup>M</sup>	mg/kg	0.05	0.17	0.07
Benzo(ghi)perylene	CE087 <sup>M</sup>	mg/kg	0.23	0.73	0.33
PAH (total of USEPA 16)	CE087	mg/kg	3.37	17.1	6.37
<b>TPH</b>					
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01	<0.01	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01	<0.01	0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01	<0.01	<0.01
EPH Aromatic (>EC10-EC12)	CE068	mg/kg	<1	<1	<1
EPH Aromatic (>EC12-EC16)	CE068	mg/kg	<1	<1	<1
EPH Aromatic (>EC16-EC21)	CE068	mg/kg	2	9	4
EPH Aromatic (>EC21-EC35)	CE068	mg/kg	3	9	4
EPH Aromatic (>EC35-EC44)	CE068	mg/kg	<1	<1	<1
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1	<0.1

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## SOILS

<b>Lab number</b>			96789-7	96789-8	96789-9
<b>Sample id</b>			S19	S20	S21
<b>Depth (m)</b>			-	-	-
<b>Date sampled</b>			19/05/2021	19/05/2021	19/05/2021
<b>Test</b>	<b>Method</b>	<b>Units</b>			
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	<0.1	<0.1
EPH Aliphatic (>C10-C12)	CE068	mg/kg	<4	<4	<4
EPH Aliphatic (>C12-C16)	CE068	mg/kg	<4	<4	<4
EPH Aliphatic (>C16-C35)	CE068	mg/kg	71	50	70
EPH Aliphatic (>C35-C44)	CE068	mg/kg	29	20	37
<b>Subcontracted analysis</b>					
Asbestos (qualitative)	\$	-	NAD	NAD	NAD

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## METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE127	Arsenic (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg As
CE063	Boron (water soluble)	Hot water extract, ICP-OES	Dry		0.5	mg/kg B
CE127	Cadmium (total)	Aqua regia digest, ICP-MS	Dry	M	0.2	mg/kg Cd
CE146	Chromium (VI)	Acid extraction, Colorimetry	Dry		1	mg/kg CrVI
CE127	Copper (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cu
CE127	Lead (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Pb
CE127	Mercury (total)	Aqua regia digest, ICP-MS	Dry	M	0.5	mg/kg Hg
CE127	Nickel (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Ni
CE127	Selenium (total)	Aqua regia digest, ICP-MS	Dry	M	0.3	mg/kg Se
CE127	Zinc (total)	Aqua regia digest, ICP-MS	Dry	M	5	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		10	mg/l SO <sub>4</sub>
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.34	mg/kg
CE067	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	As received		0.01	mg/kg
CE068	EPH Aromatic (>EC10-EC12)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC12-EC16)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC16-EC21)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC21-EC35)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC35-EC44)	Solvent extraction, GC-FID	As received		1	mg/kg
CE067	VPH Aliphatic (>C5-C6)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C6-C8)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C8-C10)	Headspace GC-FID	As received		0.1	mg/kg
CE068	EPH Aliphatic (>C10-C12)	Solvent extraction, GC-FID	As received		4	mg/kg
CE068	EPH Aliphatic (>C12-C16)	Solvent extraction, GC-FID	As received		4	mg/kg
CE068	EPH Aliphatic (>C16-C35)	Solvent extraction, GC-FID	As received		4	mg/kg
CE068	EPH Aliphatic (>C35-C44)	Solvent extraction, GC-FID	As received		10	mg/kg

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## METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
\$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-

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## DEVIATING SAMPLE INFORMATION

### Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.

For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.

Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

### Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
96789-1	S	-	Y	pH (EHT), PAH (EHT), TPH (EHT)
96789-2	S14	-	Y	pH (EHT), PAH (EHT), TPH (EHT)
96789-3	S15	-	Y	pH (EHT), PAH (EHT), TPH (EHT)
96789-4	S16	-	Y	pH (EHT), PAH (EHT), TPH (EHT)
96789-5	S17	-	Y	pH (EHT), PAH (EHT), TPH (EHT)
96789-6	S18	-	Y	pH (EHT), PAH (EHT), TPH (EHT)
96789-7	S19	-	Y	pH (EHT), PAH (EHT), TPH (EHT)
96789-8	S20	-	Y	pH (EHT), PAH (EHT), TPH (EHT)
96789-9	S21	-	Y	pH (EHT), PAH (EHT), TPH (EHT)



## ANALYTICAL TEST REPORT

**Contract no:** 97775  
**Contract name:** ABC, Mid Holmfirth  
**Client reference:** -  
**Clients name:** Ashton Bennett  
**Clients address:** 131 Huddersfield Road  
Holmfirth  
West Yorkshire  
HD9 3TW  
**Samples received:** 28 June 2021  
**Analysis started:** 28 June 2021  
**Analysis completed:** 05 July 2021  
**Report issued:** 05 July 2021

**Notes:** Opinions and interpretations expressed herein are outside the UKAS accreditation scope. Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling. All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing. Methods, procedures and performance data are available on request. Results reported herein relate only to the material supplied to the laboratory. This report shall not be reproduced except in full, without prior written approval. Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

**Key:** U UKAS accredited test  
M MCERTS & UKAS accredited test  
\$ Test carried out by an approved subcontractor  
I/S Insufficient sample to carry out test  
N/S Sample not suitable for testing

**Approved by:**

Rachael Burton  
Customer Support Squad Leader

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## SAMPLE INFORMATION

### MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

All results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

Analytical results are inclusive of stones.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
97775-1	SA14	-	Loamy Sand with Gravel & Roots	-	-	10.8
97775-2	SA15	-	Loamy Sand with Gravel & Roots	-	-	7.9
97775-3	SA16	-	Loamy Sand with Gravel & Roots	-	-	9.7
97775-4	SA17	-	Loamy Sand with Gravel & Roots	-	-	11.2
97775-5	SA18	-	Loamy Sand with Gravel & Roots	-	-	6.5
97775-6	SA19	-	Loamy Sand with Gravel & Roots	-	-	18.0
97775-7	SA20	-	Loamy Sand with Gravel & Roots	-	-	16.2
97775-8	SA21	-	Loamy Sand with Gravel & Roots	-	-	9.6
97775-9	Stock	-	Loamy Sand with Gravel & Roots	-	-	8.7

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## SOILS

Lab number			97775-1	97775-2	97775-3	97775-4	97775-5	97775-6
Sample id			SA14	SA15	SA16	SA17	SA18	SA19
Depth (m)			-	-	-	-	-	-
Date sampled			24/06/2021	24/06/2021	24/06/2021	24/06/2021	24/06/2021	24/06/2021
Test	Method	Units						
pH	CE004 <sup>M</sup>	units	6.8	7.0	6.7	6.9	6.9	6.9
<b>PAH</b>								
Naphthalene	CE087 <sup>M</sup>	mg/kg	0.02	0.04	<0.02	0.05	0.07	<0.02
Acenaphthylene	CE087 <sup>M</sup>	mg/kg	0.05	0.12	0.03	0.02	0.06	<0.02
Acenaphthene	CE087 <sup>M</sup>	mg/kg	0.03	0.09	<0.02	0.17	0.06	<0.02
Fluorene	CE087 <sup>U</sup>	mg/kg	0.03	0.10	<0.02	0.14	0.09	<0.02
Phenanthrene	CE087 <sup>M</sup>	mg/kg	0.54	1.92	0.22	1.06	1.21	0.17
Anthracene	CE087 <sup>U</sup>	mg/kg	0.10	0.17	0.09	0.17	0.11	0.03
Fluoranthene	CE087 <sup>M</sup>	mg/kg	0.89	2.45	0.53	1.34	1.28	0.38
Pyrene	CE087 <sup>M</sup>	mg/kg	0.76	1.94	0.48	1.18	1.05	0.34
Benzo(a)anthracene	CE087 <sup>U</sup>	mg/kg	0.35	0.64	0.26	0.57	0.45	0.17
Chrysene	CE087 <sup>M</sup>	mg/kg	0.47	1.08	0.32	0.64	0.61	0.22
Benzo(b)fluoranthene	CE087 <sup>M</sup>	mg/kg	0.51	1.07	0.36	0.65	0.64	0.25
Benzo(k)fluoranthene	CE087 <sup>M</sup>	mg/kg	0.19	0.47	0.15	0.25	0.27	0.09
Benzo(a)pyrene	CE087 <sup>U</sup>	mg/kg	0.36	0.72	0.25	0.47	0.46	0.18
Indeno(123cd)pyrene	CE087 <sup>M</sup>	mg/kg	0.34	0.71	0.24	0.42	0.41	0.15
Dibenz(ah)anthracene	CE087 <sup>M</sup>	mg/kg	0.04	0.10	0.02	0.06	0.06	<0.02
Benzo(ghi)perylene	CE087 <sup>M</sup>	mg/kg	0.26	0.53	0.20	0.34	0.33	0.13
PAH (total of USEPA 16)	CE087	mg/kg	4.93	12.2	3.15	7.52	7.16	2.10
<b>TPH</b>								
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
EPH Aromatic (>EC10-EC12)	CE068	mg/kg	<1	<1	<1	<1	<1	<1
EPH Aromatic (>EC12-EC16)	CE068	mg/kg	<1	<1	<1	<1	<1	<1
EPH Aromatic (>EC16-EC21)	CE068	mg/kg	3	8	2	5	5	<1
EPH Aromatic (>EC21-EC35)	CE068	mg/kg	3	6	3	4	4	2
EPH Aromatic (>EC35-EC44)	CE068	mg/kg	<1	<1	<1	<1	<1	<1
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
EPH Aliphatic (>C10-C12)	CE068	mg/kg	<4	<4	<4	<4	<4	<4
EPH Aliphatic (>C12-C16)	CE068	mg/kg	<4	5	4	<4	<4	8
EPH Aliphatic (>C16-C35)	CE068	mg/kg	57	77	108	78	93	69
EPH Aliphatic (>C35-C44)	CE068	mg/kg	25	27	39	35	26	17

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## SOILS

Lab number			97775-7	97775-8	97775-9
Sample id			SA20	SA21	Stock
Depth (m)			-	-	-
Date sampled			24/06/2021	24/06/2021	24/06/2021
Test	Method	Units			
pH	CE004 <sup>M</sup>	units	7.0	6.7	6.7
<b>PAH</b>					
Naphthalene	CE087 <sup>M</sup>	mg/kg	<0.02	0.02	<0.02
Acenaphthylene	CE087 <sup>M</sup>	mg/kg	0.02	0.02	<0.02
Acenaphthene	CE087 <sup>M</sup>	mg/kg	<0.02	<0.02	0.05
Fluorene	CE087 <sup>U</sup>	mg/kg	<0.02	<0.02	0.03
Phenanthrene	CE087 <sup>M</sup>	mg/kg	0.23	0.23	0.47
Anthracene	CE087 <sup>U</sup>	mg/kg	0.04	0.06	0.09
Fluoranthene	CE087 <sup>M</sup>	mg/kg	0.51	0.57	0.84
Pyrene	CE087 <sup>M</sup>	mg/kg	0.46	0.53	0.74
Benzo(a)anthracene	CE087 <sup>U</sup>	mg/kg	0.23	0.26	0.34
Chrysene	CE087 <sup>M</sup>	mg/kg	0.29	0.36	0.43
Benzo(b)fluoranthene	CE087 <sup>M</sup>	mg/kg	0.32	0.42	0.46
Benzo(k)fluoranthene	CE087 <sup>M</sup>	mg/kg	0.12	0.16	0.18
Benzo(a)pyrene	CE087 <sup>U</sup>	mg/kg	0.23	0.29	0.31
Indeno(123cd)pyrene	CE087 <sup>M</sup>	mg/kg	0.21	0.27	0.31
Dibenz(ah)anthracene	CE087 <sup>M</sup>	mg/kg	0.03	0.04	0.04
Benzo(ghi)perylene	CE087 <sup>M</sup>	mg/kg	0.17	0.23	0.25
PAH (total of USEPA 16)	CE087	mg/kg	2.86	3.47	4.55
<b>TPH</b>					
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01	<0.01	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01	<0.01	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01	<0.01	<0.01
EPH Aromatic (>EC10-EC12)	CE068	mg/kg	<1	<1	<1
EPH Aromatic (>EC12-EC16)	CE068	mg/kg	<1	<1	<1
EPH Aromatic (>EC16-EC21)	CE068	mg/kg	2	2	3
EPH Aromatic (>EC21-EC35)	CE068	mg/kg	2	3	3
EPH Aromatic (>EC35-EC44)	CE068	mg/kg	<1	<1	<1
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1	<0.1
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	<0.1	<0.1
EPH Aliphatic (>C10-C12)	CE068	mg/kg	<4	<4	<4
EPH Aliphatic (>C12-C16)	CE068	mg/kg	<4	<4	5
EPH Aliphatic (>C16-C35)	CE068	mg/kg	55	70	83
EPH Aliphatic (>C35-C44)	CE068	mg/kg	15	26	35

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## METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.34	mg/kg
CE067	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	As received		0.01	mg/kg
CE068	EPH Aromatic (>EC10-EC12)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC12-EC16)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC16-EC21)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC21-EC35)	Solvent extraction, GC-FID	As received		1	mg/kg
CE068	EPH Aromatic (>EC35-EC44)	Solvent extraction, GC-FID	As received		1	mg/kg
CE067	VPH Aliphatic (>C5-C6)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C6-C8)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C8-C10)	Headspace GC-FID	As received		0.1	mg/kg
CE068	EPH Aliphatic (>C10-C12)	Solvent extraction, GC-FID	As received		4	mg/kg
CE068	EPH Aliphatic (>C12-C16)	Solvent extraction, GC-FID	As received		4	mg/kg
CE068	EPH Aliphatic (>C16-C35)	Solvent extraction, GC-FID	As received		4	mg/kg
CE068	EPH Aliphatic (>C35-C44)	Solvent extraction, GC-FID	As received		10	mg/kg

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## DEVIATING SAMPLE INFORMATION

### Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.

For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.

Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

### Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
97775-1	SA14	-	N	
97775-2	SA15	-	N	
97775-3	SA16	-	N	
97775-4	SA17	-	N	
97775-5	SA18	-	N	
97775-6	SA19	-	N	
97775-7	SA20	-	N	
97775-8	SA21	-	N	
97775-9	Stock	-	N	



## ANALYTICAL TEST REPORT

**Contract no:** 111650(A)

**Contract name:** Midlothian 3500

**Client reference:** 3500

**Clients name:** Ashton Bennett

**Clients address:** 131 Huddersfield Road  
Holmfirth  
West Yorkshire  
HD9 3TW

**Samples received:** 19 July 2022

**Analysis started:** 19 July 2022

**Analysis completed:** 29 July 2022

**Report issued:** 29 July 2022

This is a supplementary report to report number 111650 issued 28 July 2022.

**Key**

- U UKAS accredited test
- M MCERTS & UKAS accredited test
- \$ Test carried out by an approved subcontractor
- I/S Insufficient sample to carry out test
- N/S Sample not suitable for testing
- NAD No Asbestos Detected

**Approved by:**

Rachael Burton

Reporting Manager

# Chemtech Environmental Limited

## SAMPLE INFORMATION

### MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
111650-2	S1 - Topsoil	-	Sandy Clayey Loam with Gravel & Roots	-	-	11.9
111650-4	S2 - Topsoil	-	Sandy Clayey Loam with Gravel & Roots	-	-	12.5

# Chemtech Environmental Limited

## SOILS

Lab number			111650-2	111650-4
Sample id			S1- Topsoil	S2 - Topsoil
Depth (m)			-	-
Date sampled			13/07/2022	13/07/2022
Test	Method	Units		
Arsenic (total)	CE127 <sup>M</sup>	mg/kg As	12	11
Boron (water soluble)	CE063 <sup>M</sup>	mg/kg B	0.9	0.9
Cadmium (total)	CE127 <sup>M</sup>	mg/kg Cd	0.5	0.6
Chromium (VI)	CE146	mg/kg CrVI	<1	<1
Copper (total)	CE127 <sup>M</sup>	mg/kg Cu	77	253
Lead (total)	CE127 <sup>M</sup>	mg/kg Pb	144	159
Mercury (total)	CE127 <sup>M</sup>	mg/kg Hg	<0.5	<0.5
Nickel (total)	CE127 <sup>M</sup>	mg/kg Ni	37	33
Selenium (total)	CE127 <sup>M</sup>	mg/kg Se	1.3	1.2
Zinc (total)	CE127 <sup>M</sup>	mg/kg Zn	156	139
pH	CE004 <sup>M</sup>	units	8.0	8.1
Sulphate (2:1 water soluble)	CE061 <sup>U</sup>	mg/l SO <sub>4</sub>	438	783
Total Organic Carbon (TOC)	CE197	% w/w C	2.8	3.1
Estimate of OMC (calculated from TOC)	CE197	% w/w	4.8	5.4
<b>PAH</b>				
Naphthalene	CE087 <sup>M</sup>	mg/kg	0.1	0.1
Acenaphthylene	CE087 <sup>M</sup>	mg/kg	0.1	0.1
Acenaphthene	CE087 <sup>M</sup>	mg/kg	0.2	0.2
Fluorene	CE087 <sup>U</sup>	mg/kg	0.1	0.1
Phenanthrene	CE087 <sup>M</sup>	mg/kg	1.3	1.8
Anthracene	CE087 <sup>U</sup>	mg/kg	0.4	0.5
Fluoranthene	CE087 <sup>M</sup>	mg/kg	2.4	3.7
Pyrene	CE087 <sup>M</sup>	mg/kg	2.2	3.3
Benzo(a)anthracene	CE087 <sup>U</sup>	mg/kg	1.2	1.7
Chrysene	CE087 <sup>M</sup>	mg/kg	0.9	1.4
Benzo(b)fluoranthene	CE087 <sup>M</sup>	mg/kg	1.4	2.1
Benzo(k)fluoranthene	CE087 <sup>M</sup>	mg/kg	0.6	0.7
Benzo(a)pyrene	CE087 <sup>U</sup>	mg/kg	1.0	1.5
Indeno(123cd)pyrene	CE087 <sup>M</sup>	mg/kg	0.9	1.4
Dibenz(ah)anthracene	CE087 <sup>M</sup>	mg/kg	0.2	0.2
Benzo(ghi)perylene	CE087 <sup>M</sup>	mg/kg	0.7	1.0
PAH (total of USEPA 16)	CE087	mg/kg	13.6	19.7
<b>TPH</b>				
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01	<0.01
EPH Aromatic (>EC10-EC12)	CE250	mg/kg	4	4
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	12	12
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	36	38
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	129	105

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## SOILS

<b>Lab number</b>			111650-2	111650-4
<b>Sample id</b>			S1- Topsoil	S2 - Topsoil
<b>Depth (m)</b>			-	-
<b>Date sampled</b>			13/07/2022	13/07/2022
<b>Test</b>	<b>Method</b>	<b>Units</b>		
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	14	13
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	<0.1
EPH Aliphatic (>C10-C12)	CE250	mg/kg	<6	<6
EPH Aliphatic (>C12-C16)	CE250	mg/kg	<6	<6
EPH Aliphatic (>C16-C35)	CE250	mg/kg	51	27
EPH Aliphatic (>C35-C44)	CE250	mg/kg	<10	<10
<b>Subcontracted analysis</b>				
Asbestos (qualitative)	\$	-	NAD	NAD

# Chemtech Environmental Limited

## METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE127	Arsenic (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg As
CE063	Boron (water soluble)	Hot water extract, ICP-OES	Dry	M	0.5	mg/kg B
CE127	Cadmium (total)	Aqua regia digest, ICP-MS	Dry	M	0.2	mg/kg Cd
CE146	Chromium (VI)	Acid extraction, Colorimetry	Dry		1	mg/kg CrVI
CE127	Copper (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cu
CE127	Lead (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Pb
CE127	Mercury (total)	Aqua regia digest, ICP-MS	Dry	M	0.5	mg/kg Hg
CE127	Nickel (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Ni
CE127	Selenium (total)	Aqua regia digest, ICP-MS	Dry	M	0.3	mg/kg Se
CE127	Zinc (total)	Aqua regia digest, ICP-MS	Dry	M	5	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO <sub>4</sub>
CE197	Total Organic Carbon (TOC)	Carbon Analyser	Dry		0.1	% w/w C
CE197	Estimate of OMC (calculated from TOC)	Calculation from Total Organic Carbon	Dry		0.1	% w/w
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.34	mg/kg
CE067	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	As received		0.01	mg/kg
CE250	EPH Aromatic (>EC10-EC12)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC12-EC16)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC16-EC21)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC21-EC35)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC35-EC44)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE067	VPH Aliphatic (>C5-C6)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C6-C8)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C8-C10)	Headspace GC-FID	As received		0.1	mg/kg
CE250	EPH Aliphatic (>C10-C12)	Solvent extraction, GCxGC-FID	As received		6	mg/kg
CE250	EPH Aliphatic (>C12-C16)	Solvent extraction, GCxGC-FID	As received		6	mg/kg

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## METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE250	EPH Aliphatic (>C16-C35)	Solvent extraction, GCxGC-FID	As received		15	mg/kg
CE250	EPH Aliphatic (>C35-C44)	Solvent extraction, GCxGC-FID	As received		10	mg/kg
\$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-

# Chemtech Environmental Limited

## DEVIATING SAMPLE INFORMATION

### Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.

For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.

Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

### Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
111650-2	S1- Topsoil	-	N	
111650-4	S2 - Topsoil	-	N	

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## ADDITIONAL INFORMATION

### Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

BTEX compounds are identified by retention time only and may include interference from co-eluting compounds.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

For soils and solids, analytical results are inclusive of stones, where applicable.

# Chemtech Environmental Limited

## TEST REPORT REVISIONS

The table below identifies amendments that have been made to this test report for each revision.

Test Report Reference	Details of amendments to test report	Issue Date
111650	Original report issued	28 July 2022
111650(A)	Report Split	29 July 2022



## ANALYTICAL TEST REPORT

**Contract no:** 116012

**Contract name:** Midlothian

**Client reference:** 3500

**Clients name:** Ashton Bennett

**Clients address:** 131 Huddersfield Road  
Holmfirth  
West Yorkshire  
HD9 3TW

**Samples received:** 18 November 2022

**Analysis started:** 18 November 2022

**Analysis completed:** 23 November 2022

**Report issued:** 23 November 2022

**Key**

- U UKAS accredited test
- M MCERTS & UKAS accredited test
- \$ Test carried out by an approved subcontractor
- I/S Insufficient sample to carry out test
- N/S Sample not suitable for testing
- NAD No Asbestos Detected

**Approved by:**

Abbie Neasham-Bourn  
Senior Reporting Administrator

# Chemtech Environmental Limited

## SAMPLE INFORMATION

### MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
116012-1	Plot28	0.60	Loamy Clay with Roots	-	-	19.9
116012-2	Plot 31	0.60	Sandy Clayey Loam	-	-	19.4
116012-3	Plot 37	0.60	Sandy Clayey Loam	-	-	18.5
116012-4	Stockplie 2	0.60	Loamy Clay	-	-	29.1

# Chemtech Environmental Limited

## SOILS

Lab number			116012-1	116012-2	116012-3	116012-4
Sample id			Plot28	Plot 31	Plot 37	Stockplie 2
Depth (m)			0.60	0.60	0.60	0.60
Date sampled			16/11/2022	16/11/2022	16/11/2022	16/11/2022
Test	Method	Units				
Arsenic (total)	CE127 <sup>M</sup>	mg/kg As	15	12	11	30
Boron (water soluble)	CE063 <sup>U</sup>	mg/kg B	0.8	<0.5	<0.5	1.0
Cadmium (total)	CE127 <sup>M</sup>	mg/kg Cd	0.5	0.3	0.2	1.2
Chromium (VI)	CE146	mg/kg CrVI	<1	<1	<1	<1
Copper (total)	CE127 <sup>M</sup>	mg/kg Cu	51	30	26	101
Lead (total)	CE127 <sup>M</sup>	mg/kg Pb	145	74	67	328
Mercury (total)	CE127 <sup>M</sup>	mg/kg Hg	<0.5	<0.5	<0.5	0.7
Nickel (total)	CE127 <sup>M</sup>	mg/kg Ni	26	14	14	35
Selenium (total)	CE127 <sup>M</sup>	mg/kg Se	1.3	1.1	1.0	2.2
Zinc (total)	CE127 <sup>M</sup>	mg/kg Zn	141.8	79.1	69.7	295.1
pH	CE004 <sup>M</sup>	units	8.1	7.9	7.7	7.5
Sulphate (2:1 water soluble)	CE061 <sup>U</sup>	mg/l SO <sub>4</sub>	116	41	45	26
<b>PAH</b>						
Naphthalene	CE087 <sup>M</sup>	mg/kg	0.09	0.04	0.28	0.22
Acenaphthylene	CE087 <sup>M</sup>	mg/kg	0.03	0.04	0.05	0.08
Acenaphthene	CE087 <sup>M</sup>	mg/kg	0.11	0.05	0.32	0.44
Fluorene	CE087 <sup>U</sup>	mg/kg	0.09	0.04	0.27	0.34
Phenanthrene	CE087 <sup>M</sup>	mg/kg	1.13	0.54	2.14	4.18
Anthracene	CE087 <sup>U</sup>	mg/kg	0.36	0.14	0.35	0.99
Fluoranthene	CE087 <sup>M</sup>	mg/kg	1.88	1.02	2.26	6.85
Pyrene	CE087 <sup>M</sup>	mg/kg	1.67	0.94	1.98	5.94
Benzo(a)anthracene	CE087 <sup>U</sup>	mg/kg	0.91	0.52	0.93	3.10
Chrysene	CE087 <sup>M</sup>	mg/kg	0.98	0.60	0.88	2.96
Benzo(b)fluoranthene	CE087 <sup>M</sup>	mg/kg	1.19	0.84	1.31	4.26
Benzo(k)fluoranthene	CE087 <sup>M</sup>	mg/kg	0.42	0.29	0.46	1.44
Benzo(a)pyrene	CE087 <sup>U</sup>	mg/kg	0.78	0.53	0.85	3.09
Indeno(123cd)pyrene	CE087 <sup>M</sup>	mg/kg	0.73	0.49	0.80	2.81
Dibenz(ah)anthracene	CE087 <sup>M</sup>	mg/kg	0.14	0.09	0.15	0.55
Benzo(ghi)perylene	CE087 <sup>M</sup>	mg/kg	0.58	0.39	0.62	2.22
PAH (total of USEPA 16)	CE087	mg/kg	11.1	6.56	13.7	39.5
<b>TPH</b>						
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01
EPH Aromatic (>EC10-EC12)	CE250	mg/kg	<10	<10	<10	<10
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	<10	<10	16	32
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	<1	<1	12	42
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	<1	11	70	178
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	<1	<1	12	50
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1

# Chemtech Environmental Limited

## SOILS

<b>Lab number</b>			116012-1	116012-2	116012-3	116012-4
<b>Sample id</b>			Plot28	Plot 31	Plot 37	Stockplie 2
<b>Depth (m)</b>			0.60	0.60	0.60	0.60
<b>Date sampled</b>			16/11/2022	16/11/2022	16/11/2022	16/11/2022
<b>Test</b>	<b>Method</b>	<b>Units</b>				
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1
EPH Aliphatic (>C10-C12)	CE250	mg/kg	<6	<6	<6	<6
EPH Aliphatic (>C12-C16)	CE250	mg/kg	<6	<6	<6	<6
EPH Aliphatic (>C16-C35)	CE250	mg/kg	<15	<15	<15	89
EPH Aliphatic (>C35-C44)	CE250	mg/kg	<10	<10	<10	17
<b>Subcontracted analysis</b>						
Asbestos (qualitative)	\$	-	NAD	NAD	NAD	NAD

# Chemtech Environmental Limited

## METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE127	Arsenic (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg As
CE063	Boron (water soluble)	Hot water extract, ICP-OES	Dry	U	0.5	mg/kg B
CE127	Cadmium (total)	Aqua regia digest, ICP-MS	Dry	M	0.2	mg/kg Cd
CE146	Chromium (VI)	Acid extraction, Colorimetry	Dry		1	mg/kg CrVI
CE127	Copper (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cu
CE127	Lead (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Pb
CE127	Mercury (total)	Aqua regia digest, ICP-MS	Dry	M	0.5	mg/kg Hg
CE127	Nickel (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Ni
CE127	Selenium (total)	Aqua regia digest, ICP-MS	Dry	M	0.3	mg/kg Se
CE127	Zinc (total)	Aqua regia digest, ICP-MS	Dry	M	5	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO <sub>4</sub>
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.34	mg/kg
CE067	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	As received		0.01	mg/kg
CE250	EPH Aromatic (>EC10-EC12)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC12-EC16)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC16-EC21)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC21-EC35)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC35-EC44)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE067	VPH Aliphatic (>C5-C6)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C6-C8)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C8-C10)	Headspace GC-FID	As received		0.1	mg/kg
CE250	EPH Aliphatic (>C10-C12)	Solvent extraction, GCxGC-FID	As received		6	mg/kg
CE250	EPH Aliphatic (>C12-C16)	Solvent extraction, GCxGC-FID	As received		6	mg/kg
CE250	EPH Aliphatic (>C16-C35)	Solvent extraction, GCxGC-FID	As received		15	mg/kg
CE250	EPH Aliphatic (>C35-C44)	Solvent extraction, GCxGC-FID	As received		10	mg/kg

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## METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
\$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-

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## DEVIATING SAMPLE INFORMATION

### Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.

For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.

Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

### Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
116012-1	Plot28	0.60	N	
116012-2	Plot 31	0.60	N	
116012-3	Plot 37	0.60	N	
116012-4	Stockplie 2	0.60	N	

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## ADDITIONAL INFORMATION

### Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

For soils and solids, analytical results are inclusive of stones, where applicable.



## ANALYTICAL TEST REPORT

**Contract no:** 127363

**Contract name:** Midlothian

**Client reference:** 3500

**Clients name:** Ashton Bennett

**Clients address:** 131 Huddersfield Road  
Holmfirth  
West Yorkshire  
HD9 3TW

**Samples received:** 09 October 2023

**Analysis started:** 09 October 2023

**Analysis completed:** 16 October 2023

**Report issued:** 16 October 2023

**Key**

- U UKAS accredited test
- M MCERTS & UKAS accredited test
- \$ Test carried out by an approved subcontractor
- I/S Insufficient sample to carry out test
- N/S Sample not suitable for testing
- NAD No Asbestos Detected

**Approved by:**

*E. McCulloch*

\_\_\_\_\_  
Ellis McCulloch  
Senior Reporting Administrator

# Chemtech Environmental Limited

## SAMPLE INFORMATION

### MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
127363-1	Stockpile 1	-	Sandy Loam with Roots	-	-	27.6
127363-2	Stockpile 2	-	Sandy Loam with Roots	-	-	26.1
127363-3	Stockpile 3	-	Sandy Loam with Roots	-	-	27.3

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## SOILS

Lab number			127363-1	127363-2	127363-3
Sample id			Stockpile 1	Stockpile 2	Stockpile 3
Depth (m)			-	-	-
Date sampled			05/10/2023	05/10/2023	05/10/2023
Test	Method	Units			
Arsenic (total)	CE264 <sup>M</sup>	mg/kg As	27.1	32.9	28.8
Cadmium (total)	CE264 <sup>M</sup>	mg/kg Cd	<2	<2	<2
Chromium (VI)	CE146	mg/kg CrVI	<1	<1	<1
Copper (total)	CE264 <sup>M</sup>	mg/kg Cu	38.1	40.8	39.7
Lead (total)	CE264 <sup>U</sup>	mg/kg Pb	63.4	74.3	68.1
Mercury (total)	CE264 <sup>U</sup>	mg/kg Hg	<2	<2	<2
Nickel (total)	CE264 <sup>M</sup>	mg/kg Ni	25.0	22.4	20.4
Selenium (total)	CE264	mg/kg Se	<3	<3	<3
Zinc (total)	CE264 <sup>M</sup>	mg/kg Zn	79.6	83.8	77.7
pH	CE004 <sup>M</sup>	units	6.1	5.9	5.9
Sulphate (2:1 water soluble)	CE061 <sup>U</sup>	mg/l SO <sub>4</sub>	112	49	33
<b>PAH</b>					
Naphthalene	CE087 <sup>M</sup>	mg/kg	0.03	<0.02	0.03
Acenaphthylene	CE087 <sup>M</sup>	mg/kg	0.05	<0.02	<0.02
Acenaphthene	CE087 <sup>M</sup>	mg/kg	<0.02	<0.02	<0.02
Fluorene	CE087 <sup>U</sup>	mg/kg	0.04	<0.02	<0.02
Phenanthrene	CE087 <sup>M</sup>	mg/kg	0.68	0.09	0.13
Anthracene	CE087 <sup>U</sup>	mg/kg	0.08	0.02	0.03
Fluoranthene	CE087 <sup>M</sup>	mg/kg	0.95	0.17	0.21
Pyrene	CE087 <sup>M</sup>	mg/kg	0.76	0.16	0.19
Benzo(a)anthracene	CE087 <sup>U</sup>	mg/kg	0.33	0.10	0.11
Chrysene	CE087 <sup>M</sup>	mg/kg	0.48	0.11	0.14
Benzo(b)fluoranthene	CE087 <sup>M</sup>	mg/kg	0.41	0.09	0.12
Benzo(k)fluoranthene	CE087 <sup>M</sup>	mg/kg	0.19	0.05	0.05
Benzo(a)pyrene	CE087 <sup>U</sup>	mg/kg	0.41	0.10	0.11
Indeno(123cd)pyrene	CE087 <sup>M</sup>	mg/kg	0.23	0.05	0.07
Dibenz(ah)anthracene	CE087 <sup>M</sup>	mg/kg	0.05	<0.02	<0.02
Benzo(ghi)perylene	CE087 <sup>M</sup>	mg/kg	0.21	0.05	0.07
PAH (total of USEPA 16)	CE087	mg/kg	4.90	1.00	1.25
<b>TPH</b>					
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01	<0.01	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01	<0.01	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01	<0.01	<0.01
EPH Aromatic (>EC10-EC12)	CE250	mg/kg	<10	<10	<10
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	<10	<10	<10
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	<1	<1	<1
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	<1	<1	<1
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	<1	<1	<1
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1	<0.1
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	<0.1	<0.1

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## SOILS

<b>Lab number</b>			127363-1	127363-2	127363-3
<b>Sample id</b>			Stockpile 1	Stockpile 2	Stockpile 3
<b>Depth (m)</b>			-	-	-
<b>Date sampled</b>			05/10/2023	05/10/2023	05/10/2023
<b>Test</b>	<b>Method</b>	<b>Units</b>			
EPH Aliphatic (>C10-C12)	CE250	mg/kg	<6	<6	<6
EPH Aliphatic (>C12-C16)	CE250	mg/kg	<6	<6	<6
EPH Aliphatic (>C16-C35)	CE250	mg/kg	<15	<15	<15
EPH Aliphatic (>C35-C44)	CE250	mg/kg	<10	<10	<10
<b>Subcontracted Analysis</b>					
Asbestos (qualitative)	\$	-	NAD	NAD	NAD

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## METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE264	Arsenic (total)	Aqua Regia Extraction, ICPOES	Dry	M	3	mg/kg As
CE264	Cadmium (total)	Aqua Regia Extraction, ICPOES	Dry	M	2	mg/kg Cd
CE146	Chromium (VI)	Acid extraction, Colorimetry	Dry		1	mg/kg CrVI
CE264	Copper (total)	Aqua Regia Extraction, ICPOES	Dry	M	2	mg/kg Cu
CE264	Lead (total)	Aqua Regia Extraction, ICPOES	Dry	U	3	mg/kg Pb
CE264	Mercury (total)	Aqua Regia Extraction, ICPOES	Dry	U	2	mg/kg Hg
CE264	Nickel (total)	Aqua Regia Extraction, ICPOES	Dry	M	3	mg/kg Ni
CE264	Selenium (total)	Aqua Regia Extraction, ICPOES	Dry	U	3	mg/kg Se
CE264	Zinc (total)	Aqua Regia Extraction, ICPOES	Dry	M	4	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO <sub>4</sub>
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.34	mg/kg
CE067	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	As received		0.01	mg/kg
CE250	EPH Aromatic (>EC10-EC12)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC12-EC16)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC16-EC21)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC21-EC35)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC35-EC44)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE067	VPH Aliphatic (>C5-C6)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C6-C8)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C8-C10)	Headspace GC-FID	As received		0.1	mg/kg
CE250	EPH Aliphatic (>C10-C12)	Solvent extraction, GCxGC-FID	As received		6	mg/kg
CE250	EPH Aliphatic (>C12-C16)	Solvent extraction, GCxGC-FID	As received		6	mg/kg
CE250	EPH Aliphatic (>C16-C35)	Solvent extraction, GCxGC-FID	As received		15	mg/kg
CE250	EPH Aliphatic (>C35-C44)	Solvent extraction, GCxGC-FID	As received		10	mg/kg
\$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-

# Chemtech Environmental Limited

## DEVIATING SAMPLE INFORMATION

### Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.

For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.

Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

### Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
127363-1	Stockpile 1	-	N	
127363-2	Stockpile 2	-	N	
127363-3	Stockpile 3	-	N	

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## ADDITIONAL INFORMATION

### Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

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Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

For soils and solids, analytical results are inclusive of stones, where applicable.

Moisture Content Calculated on a Wet Weight basis

# Appendix C





## ANALYTICAL TEST REPORT

**Contract no:** 112142

**Contract name:** Frances Bennett

**Client reference:** 3500

**Clients name:** Ashton Bennett

**Clients address:** 131 Huddersfield Road  
Holmfirth  
West Yorkshire  
HD9 3TW

**Samples received:** 02 August 2022

**Analysis started:** 02 August 2022

**Analysis completed:** 04 August 2022

**Report issued:** 04 August 2022

**Key**

- U UKAS accredited test
- M MCERTS & UKAS accredited test
- \$ Test carried out by an approved subcontractor
- I/S Insufficient sample to carry out test
- N/S Sample not suitable for testing
- NAD No Asbestos Detected

**Approved by:**

Rachael Burton

Reporting Manager

# Chemtech Environmental Limited

## SAMPLE INFORMATION

### MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
112142-1	22R	0.00-0.60	Sandy Loamy Clay with Gravel & Roots	-	-	13.9
112142-2	22F	0.00-0.60	Sandy Loamy Clay with Gravel & Roots	-	-	15.3
112142-3	23F	0.00-0.60	Sandy Loamy Clay with Gravel & Roots	-	-	15.4
112142-4	23R	0.00-0.60	Sandy Loamy Clay with Gravel & Roots	-	-	14.9
112142-5	24F	0.00-0.60	Sandy Loamy Clay with Gravel & Roots	-	-	14.1
112142-6	24R	0.00-0.60	Sandy Loamy Clay with Gravel & Roots	-	-	14.0
112142-7	25F	0.00-0.60	Sandy Loamy Clay with Gravel & Roots	-	-	13.8
112142-8	25R	0.00-0.60	Sandy Loamy Clay with Gravel & Roots	-	-	13.4

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## SOILS

Lab number			112142-1	112142-2	112142-3	112142-4	112142-5	112142-6
Sample id			22R	22F	23F	23R	24F	24R
Depth (m)			0.00-0.60	0.00-0.60	0.00-0.60	0.00-0.60	0.00-0.60	0.00-0.60
Date sampled			01/08/2022	01/08/2022	01/08/2022	01/08/2022	01/08/2022	01/08/2022
Test	Method	Units						
Arsenic (total)	CE127 <sup>M</sup>	mg/kg As	13	14	16	12	13	14
Boron (water soluble)	CE063 <sup>U</sup>	mg/kg B	1.6	1.1	0.8	0.8	1.0	1.0
Cadmium (total)	CE127 <sup>M</sup>	mg/kg Cd	0.3	0.4	0.4	0.4	0.5	0.4
Chromium (VI)	CE146	mg/kg CrVI	<1	<1	<1	<1	<1	<1
Copper (total)	CE127 <sup>M</sup>	mg/kg Cu	44	53	70	55	48	122
Lead (total)	CE127 <sup>M</sup>	mg/kg Pb	100	128	151	117	122	111
Mercury (total)	CE127 <sup>M</sup>	mg/kg Hg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel (total)	CE127 <sup>M</sup>	mg/kg Ni	26	23	28	26	27	26
Selenium (total)	CE127 <sup>M</sup>	mg/kg Se	1.2	1.2	1.1	1.4	2.0	1.4
Zinc (total)	CE127 <sup>M</sup>	mg/kg Zn	132	134	171	168	124	131
pH	CE004 <sup>M</sup>	units	8.3	8.0	7.8	7.5	7.4	7.5
Sulphate (2:1 water soluble)	CE061 <sup>U</sup>	mg/l SO <sub>4</sub>	624	200	182	238	447	259
<b>PAH</b>								
Naphthalene	CE087 <sup>M</sup>	mg/kg	0.40	0.22	0.18	0.29	0.18	<0.02
Acenaphthylene	CE087 <sup>M</sup>	mg/kg	0.30	0.08	0.11	0.15	0.10	<0.02
Acenaphthene	CE087 <sup>M</sup>	mg/kg	0.64	0.29	0.74	0.75	0.23	<0.02
Fluorene	CE087 <sup>U</sup>	mg/kg	0.44	0.25	0.61	0.55	0.18	<0.02
Phenanthrene	CE087 <sup>M</sup>	mg/kg	4.64	2.39	5.95	5.10	2.00	<0.02
Anthracene	CE087 <sup>U</sup>	mg/kg	1.28	0.72	1.78	1.38	0.45	<0.02
Fluoranthene	CE087 <sup>M</sup>	mg/kg	8.47	4.48	8.51	8.67	4.32	<0.02
Pyrene	CE087 <sup>M</sup>	mg/kg	7.11	4.00	7.27	7.51	3.82	<0.02
Benzo(a)anthracene	CE087 <sup>U</sup>	mg/kg	4.16	2.27	3.79	4.00	2.04	<0.02
Chrysene	CE087 <sup>M</sup>	mg/kg	3.77	2.03	3.28	3.47	1.83	<0.03
Benzo(b)fluoranthene	CE087 <sup>M</sup>	mg/kg	5.15	2.95	4.47	4.99	2.64	<0.02
Benzo(k)fluoranthene	CE087 <sup>M</sup>	mg/kg	2.18	1.11	1.90	2.06	1.09	<0.03
Benzo(a)pyrene	CE087 <sup>U</sup>	mg/kg	4.38	2.69	3.81	4.64	2.13	<0.02
Indeno(123cd)pyrene	CE087 <sup>M</sup>	mg/kg	3.90	2.17	3.48	3.75	1.82	<0.02
Dibenz(ah)anthracene	CE087 <sup>M</sup>	mg/kg	0.72	0.39	0.61	0.61	0.31	<0.02
Benzo(ghi)perylene	CE087 <sup>M</sup>	mg/kg	2.93	1.70	2.63	2.89	1.48	<0.02
PAH (total of USEPA 16)	CE087	mg/kg	50.5	27.8	49.1	50.8	24.6	<0.34
<b>TPH</b>								
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
EPH Aromatic (>EC10-EC12)	CE250	mg/kg	38	2	2	2	1	2
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	151	6	6	6	4	7
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	583	49	43	32	27	48
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	256	97	89	92	73	112
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	7	5	6	7	6	10
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

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## SOILS

Lab number			112142-1	112142-2	112142-3	112142-4	112142-5	112142-6
Sample id			22R	22F	23F	23R	24F	24R
Depth (m)			0.00-0.60	0.00-0.60	0.00-0.60	0.00-0.60	0.00-0.60	0.00-0.60
Date sampled			01/08/2022	01/08/2022	01/08/2022	01/08/2022	01/08/2022	01/08/2022
Test	Method	Units						
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
EPH Aliphatic (>C10-C12)	CE250	mg/kg	<6	<6	<6	<6	<6	<6
EPH Aliphatic (>C12-C16)	CE250	mg/kg	<6	<6	<6	<6	<6	<6
EPH Aliphatic (>C16-C35)	CE250	mg/kg	<15	<15	<15	15	<15	17
EPH Aliphatic (>C35-C44)	CE250	mg/kg	<10	<10	<10	<10	<10	<10
Subcontracted analysis								
Asbestos (qualitative)	\$	-	NAD	NAD	NAD	NAD	NAD	NAD

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## SOILS

Lab number			112142-7	112142-8
Sample id			25F	25R
Depth (m)			0.00-0.60	0.00-0.60
Date sampled			01/08/2022	01/08/2022
Test	Method	Units		
Arsenic (total)	CE127 <sup>M</sup>	mg/kg As	11	17
Boron (water soluble)	CE063 <sup>U</sup>	mg/kg B	0.9	0.8
Cadmium (total)	CE127 <sup>M</sup>	mg/kg Cd	0.3	0.3
Chromium (VI)	CE146	mg/kg CrVI	<1	<1
Copper (total)	CE127 <sup>M</sup>	mg/kg Cu	47	57
Lead (total)	CE127 <sup>M</sup>	mg/kg Pb	107	117
Mercury (total)	CE127 <sup>M</sup>	mg/kg Hg	<0.5	<0.5
Nickel (total)	CE127 <sup>M</sup>	mg/kg Ni	26	27
Selenium (total)	CE127 <sup>M</sup>	mg/kg Se	1.2	1.4
Zinc (total)	CE127 <sup>M</sup>	mg/kg Zn	108	127
pH	CE004 <sup>M</sup>	units	7.5	7.5
Sulphate (2:1 water soluble)	CE061 <sup>U</sup>	mg/l SO <sub>4</sub>	652	443
<b>PAH</b>				
Naphthalene	CE087 <sup>M</sup>	mg/kg	<0.02	<0.02
Acenaphthylene	CE087 <sup>M</sup>	mg/kg	<0.02	<0.02
Acenaphthene	CE087 <sup>M</sup>	mg/kg	<0.02	<0.02
Fluorene	CE087 <sup>U</sup>	mg/kg	<0.02	<0.02
Phenanthrene	CE087 <sup>M</sup>	mg/kg	<0.02	<0.02
Anthracene	CE087 <sup>U</sup>	mg/kg	<0.02	<0.02
Fluoranthene	CE087 <sup>M</sup>	mg/kg	<0.02	<0.02
Pyrene	CE087 <sup>M</sup>	mg/kg	<0.02	<0.02
Benzo(a)anthracene	CE087 <sup>U</sup>	mg/kg	<0.02	<0.02
Chrysene	CE087 <sup>M</sup>	mg/kg	<0.03	<0.03
Benzo(b)fluoranthene	CE087 <sup>M</sup>	mg/kg	<0.02	<0.02
Benzo(k)fluoranthene	CE087 <sup>M</sup>	mg/kg	<0.03	<0.03
Benzo(a)pyrene	CE087 <sup>U</sup>	mg/kg	<0.02	<0.02
Indeno(123cd)pyrene	CE087 <sup>M</sup>	mg/kg	<0.02	<0.02
Dibenz(ah)anthracene	CE087 <sup>M</sup>	mg/kg	<0.02	<0.02
Benzo(ghi)perylene	CE087 <sup>M</sup>	mg/kg	<0.02	<0.02
PAH (total of USEPA 16)	CE087	mg/kg	<0.34	<0.34
<b>TPH</b>				
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01	<0.01
EPH Aromatic (>EC10-EC12)	CE250	mg/kg	3	2
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	26	12
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	160	59
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	188	113
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	11	8
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1

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## SOILS

<b>Lab number</b>			112142-7	112142-8
<b>Sample id</b>			25F	25R
<b>Depth (m)</b>			0.00-0.60	0.00-0.60
<b>Date sampled</b>			01/08/2022	01/08/2022
<b>Test</b>	<b>Method</b>	<b>Units</b>		
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	<0.1
EPH Aliphatic (>C10-C12)	CE250	mg/kg	<6	<6
EPH Aliphatic (>C12-C16)	CE250	mg/kg	<6	<6
EPH Aliphatic (>C16-C35)	CE250	mg/kg	16	20
EPH Aliphatic (>C35-C44)	CE250	mg/kg	<10	<10
<b>Subcontracted analysis</b>				
Asbestos (qualitative)	\$	-	NAD	NAD

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## METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE127	Arsenic (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg As
CE063 <sup>U</sup>	Boron (water soluble)	Hot water extract, ICP-OES	Dry	U	0.5	mg/kg B
CE127	Cadmium (total)	Aqua regia digest, ICP-MS	Dry	M	0.2	mg/kg Cd
CE146	Chromium (VI)	Acid extraction, Colorimetry	Dry		1	mg/kg CrVI
CE127	Copper (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cu
CE127	Lead (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Pb
CE127	Mercury (total)	Aqua regia digest, ICP-MS	Dry	M	0.5	mg/kg Hg
CE127	Nickel (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Ni
CE127	Selenium (total)	Aqua regia digest, ICP-MS	Dry	M	0.3	mg/kg Se
CE127	Zinc (total)	Aqua regia digest, ICP-MS	Dry	M	5	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO <sub>4</sub>
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.34	mg/kg
CE067	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	As received		0.01	mg/kg
CE250	EPH Aromatic (>EC10-EC12)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC12-EC16)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC16-EC21)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC21-EC35)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC35-EC44)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE067	VPH Aliphatic (>C5-C6)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C6-C8)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C8-C10)	Headspace GC-FID	As received		0.1	mg/kg
CE250	EPH Aliphatic (>C10-C12)	Solvent extraction, GCxGC-FID	As received		6	mg/kg
CE250	EPH Aliphatic (>C12-C16)	Solvent extraction, GCxGC-FID	As received		6	mg/kg
CE250	EPH Aliphatic (>C16-C35)	Solvent extraction, GCxGC-FID	As received		15	mg/kg
CE250	EPH Aliphatic (>C35-C44)	Solvent extraction, GCxGC-FID	As received		10	mg/kg

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## METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
\$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-

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## DEVIATING SAMPLE INFORMATION

### Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.

For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.

Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

### Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
112142-1	22R	0.00-0.60	N	
112142-2	22F	0.00-0.60	N	
112142-3	23F	0.00-0.60	N	
112142-4	23R	0.00-0.60	N	
112142-5	24F	0.00-0.60	N	
112142-6	24R	0.00-0.60	N	
112142-7	25F	0.00-0.60	N	
112142-8	25R	0.00-0.60	N	

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## ADDITIONAL INFORMATION

### Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

For soils and solids, analytical results are inclusive of stones, where applicable.

# Chemtech Environmental Limited

## SOILS

Lab number			114106-1	114106-2	114106-3	114106-4	114106-5	114106-6
Sample id			26	27	28	29	30	31
Depth (m)			-	-	-	-	-	-
Date sampled			28/09/2022	28/09/2022	28/09/2022	28/09/2022	28/09/2022	28/09/2022
Test	Method	Units						
Arsenic (total)	CE127 <sup>M</sup>	mg/kg As	9.1	8.5	13	9.5	8.2	8.3
Boron (water soluble)	CE063 <sup>U</sup>	mg/kg B	<0.5	0.5	<0.5	0.8	0.8	0.8
Cadmium (total)	CE127 <sup>M</sup>	mg/kg Cd	0.3	0.4	0.4	0.4	0.3	1.3
Chromium (VI)	CE146	mg/kg CrVI	<1	<1	<1	<1	<1	<1
Copper (total)	CE127 <sup>M</sup>	mg/kg Cu	21	55	52	36	33	37
Lead (total)	CE127 <sup>M</sup>	mg/kg Pb	52	53	113	60	57	70
Mercury (total)	CE127 <sup>M</sup>	mg/kg Hg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel (total)	CE127 <sup>M</sup>	mg/kg Ni	20	25	29	30	26	27
Selenium (total)	CE127 <sup>M</sup>	mg/kg Se	0.8	1.0	1.2	1.1	1.0	0.9
Zinc (total)	CE127 <sup>M</sup>	mg/kg Zn	61	86	143	126	102	94
pH	CE004 <sup>M</sup>	units	8.6	8.5	6.9	7.4	8.1	7.9
Sulphate (2:1 water soluble)	CE061 <sup>U</sup>	mg/l SO <sub>4</sub>	222	200	263	334	386	377
<b>PAH</b>								
Naphthalene	CE087 <sup>M</sup>	mg/kg	0.04	0.04	0.21	0.26	0.39	0.81
Acenaphthylene	CE087 <sup>M</sup>	mg/kg	<0.02	<0.02	0.12	0.06	0.06	0.05
Acenaphthene	CE087 <sup>M</sup>	mg/kg	0.09	0.05	0.66	0.57	0.47	0.44
Fluorene	CE087 <sup>U</sup>	mg/kg	0.06	0.04	0.68	0.42	0.37	0.32
Phenanthrene	CE087 <sup>M</sup>	mg/kg	0.55	0.65	8.92	4.74	3.50	3.36
Anthracene	CE087 <sup>U</sup>	mg/kg	0.20	0.21	2.28	1.29	1.11	0.87
Fluoranthene	CE087 <sup>M</sup>	mg/kg	1.71	1.46	17.37	7.12	5.93	4.94
Pyrene	CE087 <sup>M</sup>	mg/kg	1.49	1.26	13.80	6.26	5.22	4.19
Benzo(a)anthracene	CE087 <sup>U</sup>	mg/kg	0.77	0.64	7.16	3.37	2.93	2.30
Chrysene	CE087 <sup>M</sup>	mg/kg	0.59	0.50	6.05	2.53	2.15	1.69
Benzo(b)fluoranthene	CE087 <sup>M</sup>	mg/kg	0.81	0.75	8.16	3.94	3.47	2.62
Benzo(k)fluoranthene	CE087 <sup>M</sup>	mg/kg	0.33	0.30	3.29	1.51	1.37	1.04
Benzo(a)pyrene	CE087 <sup>U</sup>	mg/kg	0.67	0.67	7.01	3.51	3.19	2.17
Indeno(123cd)pyrene	CE087 <sup>M</sup>	mg/kg	0.50	0.45	5.19	2.62	2.36	1.72
Dibenz(ah)anthracene	CE087 <sup>M</sup>	mg/kg	0.09	0.09	1.03	0.55	0.44	0.37
Benzo(ghi)perylene	CE087 <sup>M</sup>	mg/kg	0.39	0.39	4.12	2.12	1.95	1.37
PAH (total of USEPA 16)	CE087	mg/kg	8.28	7.49	86.1	40.9	34.9	28.3
<b>TPH</b>								
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
EPH Aromatic (>EC10-EC12)	CE250	mg/kg	<1	<1	<1	2	1	2
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	1	3	4	6	6	17
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	3	10	13	23	20	110
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	12	24	46	170	200	1116
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	2	2	9	78	97	541

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## SOILS

Lab number			114106-1	114106-2	114106-3	114106-4	114106-5	114106-6
Sample id			26	27	28	29	30	31
Depth (m)			-	-	-	-	-	-
Date sampled			28/09/2022	28/09/2022	28/09/2022	28/09/2022	28/09/2022	28/09/2022
Test	Method	Units						
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
EPH Aliphatic (>C10-C12)	CE250	mg/kg	<6	<6	<6	<6	<6	<6
EPH Aliphatic (>C12-C16)	CE250	mg/kg	<6	<6	<6	<6	<6	<6
EPH Aliphatic (>C16-C35)	CE250	mg/kg	<15	<15	28	163	172	1418
EPH Aliphatic (>C35-C44)	CE250	mg/kg	<10	<10	<10	31	30	195
Subcontracted analysis								
Asbestos (qualitative)	\$	-	NAD	NAD	Chrysotile	NAD	NAD	NAD
Form of Asbestos	\$	-	-	-	Asbestos in Cement	-	-	-



## ANALYTICAL TEST REPORT

**Contract no:** 114106(1)

**Contract name:** ABC 3500

**Client reference:** -

**Clients name:** Ashton Bennett

**Clients address:** 131 Huddersfield Road  
Holmfirth  
West Yorkshire  
HD9 3TW

**Samples received:** 06 October 2022

**Analysis started:** 06 October 2022

**Analysis completed:** 14 October 2022

**Report issued:** 17 October 2022

This is a supplementary report to report number 114106 issued 14 October 2022.

**Key**

- U UKAS accredited test
- M MCERTS & UKAS accredited test
- \$ Test carried out by an approved subcontractor
- I/S Insufficient sample to carry out test
- N/S Sample not suitable for testing
- NAD No Asbestos Detected

**Approved by:**

Abbie Neasham-Bourn  
Senior Reporting Administrator

# Chemtech Environmental Limited

## SAMPLE INFORMATION

### MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
114106-4	29	-	Sandy Clayey Loam with Gravel & Roots	-	-	12.3
114106-5	30	-	Sandy Clayey Loam with Gravel & Roots	-	-	11.2

# Chemtech Environmental Limited

## SOILS

Lab number			114106-4	114106-5
Sample id			29	30
Depth (m)			-	-
Date sampled			28/09/2022	28/09/2022
Test	Method	Units		
Arsenic (total)	CE127 <sup>M</sup>	mg/kg As	9.5	8.2
Boron (water soluble)	CE063 <sup>U</sup>	mg/kg B	0.8	0.8
Cadmium (total)	CE127 <sup>M</sup>	mg/kg Cd	0.4	0.3
Chromium (VI)	CE146	mg/kg CrVI	<1	<1
Copper (total)	CE127 <sup>M</sup>	mg/kg Cu	36	33
Lead (total)	CE127 <sup>M</sup>	mg/kg Pb	60	57
Mercury (total)	CE127 <sup>M</sup>	mg/kg Hg	<0.5	<0.5
Nickel (total)	CE127 <sup>M</sup>	mg/kg Ni	30	26
Selenium (total)	CE127 <sup>M</sup>	mg/kg Se	1.1	1.0
Zinc (total)	CE127 <sup>M</sup>	mg/kg Zn	126	102
pH	CE004 <sup>M</sup>	units	7.4	8.1
Sulphate (2:1 water soluble)	CE061 <sup>U</sup>	mg/l SO <sub>4</sub>	334	386
<b>PAH</b>				
Naphthalene	CE087 <sup>M</sup>	mg/kg	0.26	0.39
Acenaphthylene	CE087 <sup>M</sup>	mg/kg	0.06	0.06
Acenaphthene	CE087 <sup>M</sup>	mg/kg	0.57	0.47
Fluorene	CE087 <sup>U</sup>	mg/kg	0.42	0.37
Phenanthrene	CE087 <sup>M</sup>	mg/kg	4.74	3.50
Anthracene	CE087 <sup>U</sup>	mg/kg	1.29	1.11
Fluoranthene	CE087 <sup>M</sup>	mg/kg	7.12	5.93
Pyrene	CE087 <sup>M</sup>	mg/kg	6.26	5.22
Benzo(a)anthracene	CE087 <sup>U</sup>	mg/kg	3.37	2.93
Chrysene	CE087 <sup>M</sup>	mg/kg	2.53	2.15
Benzo(b)fluoranthene	CE087 <sup>M</sup>	mg/kg	3.94	3.47
Benzo(k)fluoranthene	CE087 <sup>M</sup>	mg/kg	1.51	1.37
Benzo(a)pyrene	CE087 <sup>U</sup>	mg/kg	3.51	3.19
Indeno(123cd)pyrene	CE087 <sup>M</sup>	mg/kg	2.62	2.36
Dibenz(ah)anthracene	CE087 <sup>M</sup>	mg/kg	0.55	0.44
Benzo(ghi)perylene	CE087 <sup>M</sup>	mg/kg	2.12	1.95
PAH (total of USEPA 16)	CE087	mg/kg	40.9	34.9
<b>TPH</b>				
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01	<0.01
EPH Aromatic (>EC10-EC12)	CE250	mg/kg	2	1
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	6	6
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	23	20
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	170	200
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	78	97
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1

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## SOILS

<b>Lab number</b>			114106-4	114106-5
<b>Sample id</b>			29	30
<b>Depth (m)</b>			-	-
<b>Date sampled</b>			28/09/2022	28/09/2022
<b>Test</b>	<b>Method</b>	<b>Units</b>		
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	<0.1
EPH Aliphatic (>C10-C12)	CE250	mg/kg	<6	<6
EPH Aliphatic (>C12-C16)	CE250	mg/kg	<6	<6
EPH Aliphatic (>C16-C35)	CE250	mg/kg	163	172
EPH Aliphatic (>C35-C44)	CE250	mg/kg	31	30
<b>Subcontracted analysis</b>				
Asbestos (qualitative)	\$	-	NAD	NAD

# Chemtech Environmental Limited

## METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE127	Arsenic (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg As
CE063	Boron (water soluble)	Hot water extract, ICP-OES	Dry	U	0.5	mg/kg B
CE127	Cadmium (total)	Aqua regia digest, ICP-MS	Dry	M	0.2	mg/kg Cd
CE146	Chromium (VI)	Acid extraction, Colorimetry	Dry		1	mg/kg CrVI
CE127	Copper (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cu
CE127	Lead (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Pb
CE127	Mercury (total)	Aqua regia digest, ICP-MS	Dry	M	0.5	mg/kg Hg
CE127	Nickel (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Ni
CE127	Selenium (total)	Aqua regia digest, ICP-MS	Dry	M	0.3	mg/kg Se
CE127	Zinc (total)	Aqua regia digest, ICP-MS	Dry	M	5	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO <sub>4</sub>
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.34	mg/kg
CE067	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	As received		0.01	mg/kg
CE250	EPH Aromatic (>EC10-EC12)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC12-EC16)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC16-EC21)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC21-EC35)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC35-EC44)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE067	VPH Aliphatic (>C5-C6)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C6-C8)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C8-C10)	Headspace GC-FID	As received		0.1	mg/kg
CE250	EPH Aliphatic (>C10-C12)	Solvent extraction, GCxGC-FID	As received		6	mg/kg
CE250	EPH Aliphatic (>C12-C16)	Solvent extraction, GCxGC-FID	As received		6	mg/kg
CE250	EPH Aliphatic (>C16-C35)	Solvent extraction, GCxGC-FID	As received		15	mg/kg
CE250	EPH Aliphatic (>C35-C44)	Solvent extraction, GCxGC-FID	As received		10	mg/kg

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## METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
\$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-

# Chemtech Environmental Limited

## DEVIATING SAMPLE INFORMATION

### Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.

For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.

Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

### Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
114106-4	29	-	N	
114106-5	30	-	N	

# Chemtech Environmental Limited

## ADDITIONAL INFORMATION

### Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

For soils and solids, analytical results are inclusive of stones, where applicable.

# Chemtech Environmental Limited

## TEST REPORT REVISIONS

The table below identifies amendments that have been made to this test report for each revision.

Test Report Reference	Details of amendments to test report	Issue Date
114106	Original report issued	14 October 2022
114106(1)	Report narrowed down.	17 October 2022



## ANALYTICAL TEST REPORT

**Contract no:** 114106(2)

**Contract name:** ABC 3500

**Client reference:** -

**Clients name:** Ashton Bennett

**Clients address:** 131 Huddersfield Road  
Holmfirth  
West Yorkshire  
HD9 3TW

**Samples received:** 06 October 2022

**Analysis started:** 06 October 2022

**Analysis completed:** 14 October 2022

**Report issued:** 21 July 2023

This is a supplementary report to report number 114106 issued 14 October 2022.

**Key**

- U UKAS accredited test
- M MCERTS & UKAS accredited test
- \$ Test carried out by an approved subcontractor
- I/S Insufficient sample to carry out test
- N/S Sample not suitable for testing
- NAD No Asbestos Detected

**Approved by:**

Abbie Neasham-Bourn  
Senior Reporting Administrator

# Chemtech Environmental Limited

## SAMPLE INFORMATION

### MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
114106-1	26	-	Sandy Clayey Loam with Gravel & Roots	-	-	16.5
114106-2	27	-	Sandy Loamy Clay with Gravel & Roots	-	-	17.5

# Chemtech Environmental Limited

## SOILS

Lab number			114106-1	114106-2
Sample id			26	27
Depth (m)			-	-
Date sampled			28/09/2022	28/09/2022
Test	Method	Units		
Arsenic (total)	CE127 <sup>M</sup>	mg/kg As	9.1	8.5
Boron (water soluble)	CE063 <sup>U</sup>	mg/kg B	<0.5	0.5
Cadmium (total)	CE127 <sup>M</sup>	mg/kg Cd	0.3	0.4
Chromium (VI)	CE146	mg/kg CrVI	<1	<1
Copper (total)	CE127 <sup>M</sup>	mg/kg Cu	21	55
Lead (total)	CE127 <sup>M</sup>	mg/kg Pb	52	53
Mercury (total)	CE127 <sup>M</sup>	mg/kg Hg	<0.5	<0.5
Nickel (total)	CE127 <sup>M</sup>	mg/kg Ni	20	25
Selenium (total)	CE127 <sup>M</sup>	mg/kg Se	0.8	1.0
Zinc (total)	CE127 <sup>M</sup>	mg/kg Zn	61	86
pH	CE004 <sup>M</sup>	units	8.6	8.5
Sulphate (2:1 water soluble)	CE061 <sup>U</sup>	mg/l SO <sub>4</sub>	222	200
<b>PAH</b>				
Naphthalene	CE087 <sup>M</sup>	mg/kg	0.04	0.04
Acenaphthylene	CE087 <sup>M</sup>	mg/kg	<0.02	<0.02
Acenaphthene	CE087 <sup>M</sup>	mg/kg	0.09	0.05
Fluorene	CE087 <sup>U</sup>	mg/kg	0.06	0.04
Phenanthrene	CE087 <sup>M</sup>	mg/kg	0.55	0.65
Anthracene	CE087 <sup>U</sup>	mg/kg	0.20	0.21
Fluoranthene	CE087 <sup>M</sup>	mg/kg	1.71	1.46
Pyrene	CE087 <sup>M</sup>	mg/kg	1.49	1.26
Benzo(a)anthracene	CE087 <sup>U</sup>	mg/kg	0.77	0.64
Chrysene	CE087 <sup>M</sup>	mg/kg	0.59	0.50
Benzo(b)fluoranthene	CE087 <sup>M</sup>	mg/kg	0.81	0.75
Benzo(k)fluoranthene	CE087 <sup>M</sup>	mg/kg	0.33	0.30
Benzo(a)pyrene	CE087 <sup>U</sup>	mg/kg	0.67	0.67
Indeno(123cd)pyrene	CE087 <sup>M</sup>	mg/kg	0.50	0.45
Dibenz(ah)anthracene	CE087 <sup>M</sup>	mg/kg	0.09	0.09
Benzo(ghi)perylene	CE087 <sup>M</sup>	mg/kg	0.39	0.39
PAH (total of USEPA 16)	CE087	mg/kg	8.28	7.49
<b>TPH</b>				
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01	<0.01
EPH Aromatic (>EC10-EC12)	CE250	mg/kg	<1	<1
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	1	3
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	3	10
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	12	24
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	2	2
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1

# Chemtech Environmental Limited

## SOILS

<b>Lab number</b>			114106-1	114106-2
<b>Sample id</b>			26	27
<b>Depth (m)</b>			-	-
<b>Date sampled</b>			28/09/2022	28/09/2022
<b>Test</b>	<b>Method</b>	<b>Units</b>		
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	<0.1
EPH Aliphatic (>C10-C12)	CE250	mg/kg	<6	<6
EPH Aliphatic (>C12-C16)	CE250	mg/kg	<6	<6
EPH Aliphatic (>C16-C35)	CE250	mg/kg	<15	<15
EPH Aliphatic (>C35-C44)	CE250	mg/kg	<10	<10
<b>Subcontracted analysis</b>				
Asbestos (qualitative)	\$	-	NAD	NAD

# Chemtech Environmental Limited

## METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE127	Arsenic (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg As
CE063	Boron (water soluble)	Hot water extract, ICP-OES	Dry	U	0.5	mg/kg B
CE127	Cadmium (total)	Aqua regia digest, ICP-MS	Dry	M	0.2	mg/kg Cd
CE146	Chromium (VI)	Acid extraction, Colorimetry	Dry		1	mg/kg CrVI
CE127	Copper (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cu
CE127	Lead (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Pb
CE127	Mercury (total)	Aqua regia digest, ICP-MS	Dry	M	0.5	mg/kg Hg
CE127	Nickel (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Ni
CE127	Selenium (total)	Aqua regia digest, ICP-MS	Dry	M	0.3	mg/kg Se
CE127	Zinc (total)	Aqua regia digest, ICP-MS	Dry	M	5	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO <sub>4</sub>
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.34	mg/kg
CE067	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	As received		0.01	mg/kg
CE250	EPH Aromatic (>EC10-EC12)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC12-EC16)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC16-EC21)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC21-EC35)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC35-EC44)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE067	VPH Aliphatic (>C5-C6)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C6-C8)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C8-C10)	Headspace GC-FID	As received		0.1	mg/kg
CE250	EPH Aliphatic (>C10-C12)	Solvent extraction, GCxGC-FID	As received		6	mg/kg
CE250	EPH Aliphatic (>C12-C16)	Solvent extraction, GCxGC-FID	As received		6	mg/kg
CE250	EPH Aliphatic (>C16-C35)	Solvent extraction, GCxGC-FID	As received		15	mg/kg
CE250	EPH Aliphatic (>C35-C44)	Solvent extraction, GCxGC-FID	As received		10	mg/kg

# Chemtech Environmental Limited

## METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
\$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-

# Chemtech Environmental Limited

## ADDITIONAL INFORMATION

### Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

For soils and solids, analytical results are inclusive of stones, where applicable.

# Chemtech Environmental Limited

## TEST REPORT REVISIONS

The table below identifies amendments that have been made to this test report for each revision.

Test Report Reference	Details of amendments to test report	Issue Date
114106	Original report issued	14 October 2022
114106(1)	Report narrowed down.	17 October 2022
114106(2)	Samples 26&27 only	21 July 2023



## ANALYTICAL TEST REPORT

**Contract no:** 116012A

**Contract name:** Midlothian

**Client reference:** 3500

**Clients name:** Ashton Bennett

**Clients address:** 131 Huddersfield Road  
Holmfirth  
West Yorkshire  
HD9 3TW

**Samples received:** 18 November 2022

**Analysis started:** 18 November 2022

**Analysis completed:** 23 November 2022

**Report issued:** 23 November 2022

**Key**

- U UKAS accredited test
- M MCERTS & UKAS accredited test
- \$ Test carried out by an approved subcontractor
- I/S Insufficient sample to carry out test
- N/S Sample not suitable for testing
- NAD No Asbestos Detected

**Approved by:**

Abbie Neasham-Bourn  
Senior Reporting Administrator

# Chemtech Environmental Limited

## SAMPLE INFORMATION

### MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
116012-1	Plot 28	0.60	Loamy Clay with Roots	-	-	19.9
116012-2	Plot 31	0.60	Sandy Clayey Loam	-	-	19.4
116012-3	Plot 37	0.60	Sandy Clayey Loam	-	-	18.5

# Chemtech Environmental Limited

## SOILS

Lab number			116012-1	116012-2	116012-3
Sample id			Plot28	Plot 31	Plot 37
Depth (m)			0.60	0.60	0.60
Date sampled			16/11/2022	16/11/2022	16/11/2022
Test	Method	Units			
Arsenic (total)	CE127 <sup>M</sup>	mg/kg As	15	12	11
Boron (water soluble)	CE063 <sup>U</sup>	mg/kg B	0.8	<0.5	<0.5
Cadmium (total)	CE127 <sup>M</sup>	mg/kg Cd	0.5	0.3	0.2
Chromium (VI)	CE146	mg/kg CrVI	<1	<1	<1
Copper (total)	CE127 <sup>M</sup>	mg/kg Cu	51	30	26
Lead (total)	CE127 <sup>M</sup>	mg/kg Pb	145	74	67
Mercury (total)	CE127 <sup>M</sup>	mg/kg Hg	<0.5	<0.5	<0.5
Nickel (total)	CE127 <sup>M</sup>	mg/kg Ni	26	14	14
Selenium (total)	CE127 <sup>M</sup>	mg/kg Se	1.3	1.1	1.0
Zinc (total)	CE127 <sup>M</sup>	mg/kg Zn	141.8	79.1	69.7
pH	CE004 <sup>M</sup>	units	8.1	7.9	7.7
Sulphate (2:1 water soluble)	CE061 <sup>U</sup>	mg/l SO <sub>4</sub>	116	41	45
<b>PAH</b>					
Naphthalene	CE087 <sup>M</sup>	mg/kg	0.09	0.04	0.28
Acenaphthylene	CE087 <sup>M</sup>	mg/kg	0.03	0.04	0.05
Acenaphthene	CE087 <sup>M</sup>	mg/kg	0.11	0.05	0.32
Fluorene	CE087 <sup>U</sup>	mg/kg	0.09	0.04	0.27
Phenanthrene	CE087 <sup>M</sup>	mg/kg	1.13	0.54	2.14
Anthracene	CE087 <sup>U</sup>	mg/kg	0.36	0.14	0.35
Fluoranthene	CE087 <sup>M</sup>	mg/kg	1.88	1.02	2.26
Pyrene	CE087 <sup>M</sup>	mg/kg	1.67	0.94	1.98
Benzo(a)anthracene	CE087 <sup>U</sup>	mg/kg	0.91	0.52	0.93
Chrysene	CE087 <sup>M</sup>	mg/kg	0.98	0.60	0.88
Benzo(b)fluoranthene	CE087 <sup>M</sup>	mg/kg	1.19	0.84	1.31
Benzo(k)fluoranthene	CE087 <sup>M</sup>	mg/kg	0.42	0.29	0.46
Benzo(a)pyrene	CE087 <sup>U</sup>	mg/kg	0.78	0.53	0.85
Indeno(123cd)pyrene	CE087 <sup>M</sup>	mg/kg	0.73	0.49	0.80
Dibenz(ah)anthracene	CE087 <sup>M</sup>	mg/kg	0.14	0.09	0.15
Benzo(ghi)perylene	CE087 <sup>M</sup>	mg/kg	0.58	0.39	0.62
PAH (total of USEPA 16)	CE087	mg/kg	11.1	6.56	13.7
<b>TPH</b>					
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01	<0.01	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01	<0.01	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01	<0.01	<0.01
EPH Aromatic (>EC10-EC12)	CE250	mg/kg	<10	<10	<10
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	<10	<10	16
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	<1	<1	12
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	<1	11	70
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	<1	<1	12
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1	<0.1

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## SOILS

<b>Lab number</b>			116012-1	116012-2	116012-3
<b>Sample id</b>			Plot28	Plot 31	Plot 37
<b>Depth (m)</b>			0.60	0.60	0.60
<b>Date sampled</b>			16/11/2022	16/11/2022	16/11/2022
<b>Test</b>	<b>Method</b>	<b>Units</b>			
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	<0.1	<0.1
EPH Aliphatic (>C10-C12)	CE250	mg/kg	<6	<6	<6
EPH Aliphatic (>C12-C16)	CE250	mg/kg	<6	<6	<6
EPH Aliphatic (>C16-C35)	CE250	mg/kg	<15	<15	<15
EPH Aliphatic (>C35-C44)	CE250	mg/kg	<10	<10	<10
<b>Subcontracted analysis</b>					
Asbestos (qualitative)	\$	-	NAD	NAD	NAD

# Chemtech Environmental Limited

## METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE127	Arsenic (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg As
CE063	Boron (water soluble)	Hot water extract, ICP-OES	Dry	U	0.5	mg/kg B
CE127	Cadmium (total)	Aqua regia digest, ICP-MS	Dry	M	0.2	mg/kg Cd
CE146	Chromium (VI)	Acid extraction, Colorimetry	Dry		1	mg/kg CrVI
CE127	Copper (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cu
CE127	Lead (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Pb
CE127	Mercury (total)	Aqua regia digest, ICP-MS	Dry	M	0.5	mg/kg Hg
CE127	Nickel (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Ni
CE127	Selenium (total)	Aqua regia digest, ICP-MS	Dry	M	0.3	mg/kg Se
CE127	Zinc (total)	Aqua regia digest, ICP-MS	Dry	M	5	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO <sub>4</sub>
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.34	mg/kg
CE067	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	As received		0.01	mg/kg
CE250	EPH Aromatic (>EC10-EC12)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC12-EC16)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC16-EC21)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC21-EC35)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC35-EC44)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE067	VPH Aliphatic (>C5-C6)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C6-C8)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C8-C10)	Headspace GC-FID	As received		0.1	mg/kg
CE250	EPH Aliphatic (>C10-C12)	Solvent extraction, GCxGC-FID	As received		6	mg/kg
CE250	EPH Aliphatic (>C12-C16)	Solvent extraction, GCxGC-FID	As received		6	mg/kg
CE250	EPH Aliphatic (>C16-C35)	Solvent extraction, GCxGC-FID	As received		15	mg/kg
CE250	EPH Aliphatic (>C35-C44)	Solvent extraction, GCxGC-FID	As received		10	mg/kg

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## METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
\$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-

# Chemtech Environmental Limited

## DEVIATING SAMPLE INFORMATION

### Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.

For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.

Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

### Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
116012-1	Plot 28	0.60	N	
116012-2	Plot 31	0.60	N	
116012-3	Plot 37	0.60	N	

# Chemtech Environmental Limited

## ADDITIONAL INFORMATION

### Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

For soils and solids, analytical results are inclusive of stones, where applicable.

# Chemtech Environmental Limited

## TEST REPORT REVISIONS

The table below identifies amendments that have been made to this test report for each revision.

Test Report Reference	Details of amendments to test report	Issue Date
116012	Original report issued	23 November 2022
116012A	Report Split	25 November 2022



## ANALYTICAL TEST REPORT

**Contract no:** 122055

**Contract name:** Frances Bennett

**Client reference:** 3500

**Clients name:** Ashton Bennett

**Clients address:** 131 Huddersfield Road  
Holmfirth  
West Yorkshire  
HD9 3TW

**Samples received:** 25 April 2023

**Analysis started:** 25 April 2023

**Analysis completed:** 03 May 2023

**Report issued:** 03 May 2023

**Key**

- U UKAS accredited test
- M MCERTS & UKAS accredited test
- \$ Test carried out by an approved subcontractor
- I/S Insufficient sample to carry out test
- N/S Sample not suitable for testing
- NAD No Asbestos Detected

**Approved by:**

Samantha Rogerson  
Reporting Manager

# Chemtech Environmental Limited

## SAMPLE INFORMATION

### MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
122055-1	P32	-	Sandy Clay with Gravel & Roots	-	-	26.4
122055-2	P33	-	Sandy Clay with Gravel & Roots	-	-	26.5
122055-3	P34	-	Sandy Clayey Loam with Gravel & Roots	-	-	26.9
122055-4	P35	-	Sandy Clayey Loam with Gravel & Roots	-	-	23.0
122055-5	P36	-	Sandy Clayey Loam with Gravel & Roots	-	-	22.6

# Chemtech Environmental Limited

## SOILS

Lab number			122055-1	122055-2	122055-3	122055-4	122055-5
Sample id			P32	P33	P34	P35	P36
Depth (m)			-	-	-	-	-
Date sampled			-	-	-	-	-
Test	Method	Units					
Boron (water soluble)	CE063 <sup>U</sup>	mg/kg B	0.9	0.7	0.8	0.8	0.7
Chromium (VI)	CE146	mg/kg CrVI	<1	<1	<1	<1	<1
Arsenic	\$ <sup>M</sup>	mg/kg	25	25	27	25	21
Cadmium	\$ <sup>M</sup>	mg/kg	0.7	0.9	0.8	0.7	0.5
Copper	\$ <sup>M</sup>	mg/kg	93	88	104	90	73
Lead	\$ <sup>M</sup>	mg/kg	363	234	300	225	199
Mercury	\$ <sup>M</sup>	mg/kg	1.6	2.3	1.1	1.7	2.3
Nickel	\$ <sup>M</sup>	mg/kg	30	29	33	33	25
Selenium	\$ <sup>M</sup>	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc	\$ <sup>M</sup>	mg/kg	213	207	237	207	162
pH	CE004 <sup>M</sup>	units	7.7	7.6	7.7	7.8	7.6
Sulphate (2:1 water soluble)	CE061 <sup>U</sup>	mg/l SO <sub>4</sub>	66	41	63	82	57
<b>PAH</b>							
Naphthalene	CE087 <sup>M</sup>	mg/kg	0.10	0.22	0.19	0.38	0.80
Acenaphthylene	CE087 <sup>M</sup>	mg/kg	0.04	0.08	0.09	0.04	0.11
Acenaphthene	CE087 <sup>M</sup>	mg/kg	0.24	0.29	0.39	0.42	0.48
Fluorene	CE087 <sup>U</sup>	mg/kg	0.18	0.23	0.28	0.36	0.37
Phenanthrene	CE087 <sup>M</sup>	mg/kg	2.01	2.36	3.66	3.40	4.18
Anthracene	CE087 <sup>U</sup>	mg/kg	0.54	0.61	0.94	0.85	1.12
Fluoranthene	CE087 <sup>M</sup>	mg/kg	3.32	4.30	7.16	5.09	7.14
Pyrene	CE087 <sup>M</sup>	mg/kg	2.97	3.83	6.41	4.44	6.28
Benzo(a)anthracene	CE087 <sup>U</sup>	mg/kg	1.48	2.11	3.08	2.17	3.29
Chrysene	CE087 <sup>M</sup>	mg/kg	1.60	2.24	3.61	2.33	3.74
Benzo(b)fluoranthene	CE087 <sup>M</sup>	mg/kg	1.76	2.52	4.12	2.50	4.17
Benzo(k)fluoranthene	CE087 <sup>M</sup>	mg/kg	0.72	1.10	1.56	0.94	1.61
Benzo(a)pyrene	CE087 <sup>U</sup>	mg/kg	1.59	2.26	3.73	2.33	3.65
Indeno(123cd)pyrene	CE087 <sup>M</sup>	mg/kg	1.28	1.79	3.14	1.79	3.24
Dibenz(ah)anthracene	CE087 <sup>M</sup>	mg/kg	0.27	0.37	0.68	0.40	0.73
Benzo(ghi)perylene	CE087 <sup>M</sup>	mg/kg	1.14	1.54	2.75	1.56	2.85
PAH (total of USEPA 16)	CE087	mg/kg	19.2	25.8	41.8	29.0	43.8
<b>TPH</b>							
VPH Aromatic (>EC5-EC7)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
VPH Aromatic (>EC7-EC8)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
VPH Aromatic (>EC8-EC10)	CE067	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
EPH Aromatic (>EC10-EC12)	CE250	mg/kg	<10	<10	<10	<10	<10
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	<10	12	<10	<10	<10
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	27	32	73	44	46
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	103	146	294	206	281
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	31	52	121	85	115

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## SOILS

Lab number			122055-1	122055-2	122055-3	122055-4	122055-5
Sample id			P32	P33	P34	P35	P36
Depth (m)			-	-	-	-	-
Date sampled			-	-	-	-	-
Test	Method	Units					
VPH Aliphatic (>C5-C6)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
VPH Aliphatic (>C6-C8)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
VPH Aliphatic (>C8-C10)	CE067	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EPH Aliphatic (>C10-C12)	CE250	mg/kg	<6	<6	<6	<6	<6
EPH Aliphatic (>C12-C16)	CE250	mg/kg	<6	6	7	6	7
EPH Aliphatic (>C16-C35)	CE250	mg/kg	53	137	212	148	197
EPH Aliphatic (>C35-C44)	CE250	mg/kg	<10	27	34	24	34
Subcontracted analysis							
Asbestos (qualitative)	\$	-	NAD	NAD	NAD	NAD	NAD

# Chemtech Environmental Limited

## METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE063	Boron (water soluble)	Hot water extract, ICP-OES	Dry	U	0.5	mg/kg B
CE146	Chromium (VI)	Acid extraction, Colorimetry	Dry		1	mg/kg CrVI
\$ <sup>M</sup>	Arsenic	Aqua regia digest, ICP-MS	Dry	M	0.5	mg/kg
\$ <sup>M</sup>	Cadmium	Aqua regia digest, ICP-MS	Dry	M	0.2	mg/kg
\$ <sup>M</sup>	Copper	Aqua regia digest, ICP-MS	Dry	M	4	mg/kg
\$ <sup>M</sup>	Lead	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg
\$ <sup>M</sup>	Mercury	Aqua regia digest, ICP-MS	Dry	M	0.1	mg/kg
\$ <sup>M</sup>	Nickel	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg
\$ <sup>M</sup>	Selenium	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg
\$ <sup>M</sup>	Zinc	Aqua regia digest, ICP-MS	Dry	M	4.5	mg/kg
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO <sub>4</sub>
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.34	mg/kg
CE067	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	As received		0.01	mg/kg
CE067	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	As received		0.01	mg/kg
CE250	EPH Aromatic (>EC10-EC12)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC12-EC16)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC16-EC21)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC21-EC35)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC35-EC44)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE067	VPH Aliphatic (>C5-C6)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C6-C8)	Headspace GC-FID	As received		0.1	mg/kg
CE067	VPH Aliphatic (>C8-C10)	Headspace GC-FID	As received		0.1	mg/kg
CE250	EPH Aliphatic (>C10-C12)	Solvent extraction, GCxGC-FID	As received		6	mg/kg

# Chemtech Environmental Limited

## METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE250	EPH Aliphatic (>C12-C16)	Solvent extraction, GCxGC-FID	As received		6	mg/kg
CE250	EPH Aliphatic (>C16-C35)	Solvent extraction, GCxGC-FID	As received		15	mg/kg
CE250	EPH Aliphatic (>C35-C44)	Solvent extraction, GCxGC-FID	As received		10	mg/kg
\$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-

# Chemtech Environmental Limited

## DEVIATING SAMPLE INFORMATION

### Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.

For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.

Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

### Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
122055-1	P32	-	N	
122055-2	P33	-	N	
122055-3	P34	-	N	
122055-4	P35	-	N	
122055-5	P36	-	N	

# Chemtech Environmental Limited

## ADDITIONAL INFORMATION

### Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

For soils and solids, analytical results are inclusive of stones, where applicable.

Moisture Content Calculated on a Wet Weight basis



## ANALYTICAL TEST REPORT

**Contract no:** 127767

**Contract name:** Woodland Housing Development

**Client reference:** -

**Clients name:** Ashton Bennett

**Clients address:** 131 Huddersfield Road  
Holmfirth  
West Yorkshire  
HD9 3TW

**Samples received:** 25 October 2023

**Analysis started:** 25 October 2023

**Analysis completed:** 02 November 2023

**Report issued:** 02 November 2023

**Key**

- U UKAS accredited test
- M MCERTS & UKAS accredited test
- \$ Test carried out by an approved subcontractor
- I/S Insufficient sample to carry out test
- N/S Sample not suitable for testing
- NAD No Asbestos Detected

**Approved by:**

*E. McCulloch*

\_\_\_\_\_  
Ellis McCulloch  
Senior Reporting Administrator

# Chemtech Environmental Limited

## SAMPLE INFORMATION

### MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
127767-1	Plot 32 G1	-	Sandy Clayey Loam with Gravel & Roots	-	-	27.2
127767-2	Plot 32 G2	-	Clayey Loam with Gravel & Roots	-	-	26.4
127767-3	Plot 32 T1	-	Loamy Clay with Gravel & Roots	-	-	33.9
127767-4	Plot 33 T1	-	Loamy Clay with Gravel & Roots	-	-	31.2
127767-5	Plot 34 T1	-	Loamy Clay with Gravel & Roots	-	-	33.9
127767-6	Plot 34 T2	-	Loamy Clay with Gravel & Roots	-	-	32.6
127767-7	Plot 34 T3	-	Loamy Clay with Gravel & Roots	-	-	33.5
127767-8	Plot 35 T1	-	Loamy Clay with Gravel & Roots	-	-	32.9
127767-9	Plot 35 T2	-	Loamy Clay with Gravel & Roots	-	-	31.2
127767-10	Plot 35 T3	-	Loamy Clay with Gravel & Roots	-	-	30.7

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## SOILS

Lab number			127767-1	127767-2	127767-3	127767-4	127767-5	127767-6
Sample id			Plot 32 G1	Plot 32 G2	Plot 32 T1	Plot 33 T1	Plot 34 T1	Plot 34 T2
Depth (m)			-	-	-	-	-	-
Date sampled			24/10/2023	24/10/2023	24/10/2023	24/10/2023	24/10/2023	24/10/2023
Test	Method	Units						
Arsenic (total)	CE264 <sup>M</sup>	mg/kg As	7.7	24.9	27.3	25.9	30.0	34.8
Boron (water soluble)	CE063 <sup>U</sup>	mg/kg B	1.6	0.6	0.6	1.0	0.8	2.3
Cadmium (total)	CE264 <sup>M</sup>	mg/kg Cd	<2	<2	<2	<2	<2	<2
Chromium (VI)	CE263	mg/kg CrVI	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Copper (total)	CE264 <sup>M</sup>	mg/kg Cu	36.6	38.2	39.7	39.4	42.1	49.6
Lead (total)	CE264 <sup>U</sup>	mg/kg Pb	48.5	72.4	71.4	66.0	75.5	353.0
Mercury (total)	CE264 <sup>U</sup>	mg/kg Hg	<2	<2	<2	<2	<2	<2
Nickel (total)	CE264 <sup>M</sup>	mg/kg Ni	7.6	18.3	20.4	20.0	20.7	26.1
Selenium (total)	CE264	mg/kg Se	<3	<3	<3	<3	<3	<3
Zinc (total)	CE264 <sup>M</sup>	mg/kg Zn	100.4	85.0	89.2	86.0	95.1	118.1
pH	CE004 <sup>M</sup>	units	7.3	7.2	7.3	7.3	7.1	6.8
Sulphate (2:1 water soluble)	CE061 <sup>U</sup>	mg/l SO <sub>4</sub>	649	171	50	45	115	90
<b>PAH</b>								
Naphthalene	CE087 <sup>M</sup>	mg/kg	0.15	0.03	<0.02	<0.02	<0.02	<0.02
Acenaphthylene	CE087 <sup>M</sup>	mg/kg	<0.02	<0.02	<0.02	<0.02	<0.02	0.05
Acenaphthene	CE087 <sup>M</sup>	mg/kg	0.20	0.03	<0.02	<0.02	<0.02	0.03
Fluorene	CE087 <sup>U</sup>	mg/kg	0.12	<0.02	<0.02	<0.02	<0.02	0.04
Phenanthrene	CE087 <sup>M</sup>	mg/kg	1.46	0.19	0.05	0.06	0.20	0.81
Anthracene	CE087 <sup>U</sup>	mg/kg	0.51	0.07	<0.02	<0.02	0.06	0.26
Fluoranthene	CE087 <sup>M</sup>	mg/kg	2.09	0.32	0.08	0.11	0.34	0.81
Pyrene	CE087 <sup>M</sup>	mg/kg	1.84	0.29	0.07	0.09	0.29	0.66
Benzo(a)anthracene	CE087 <sup>U</sup>	mg/kg	0.97	0.17	0.05	0.08	0.17	0.30
Chrysene	CE087 <sup>M</sup>	mg/kg	1.07	0.21	0.06	0.07	0.19	0.30
Benzo(b)fluoranthene	CE087 <sup>M</sup>	mg/kg	0.96	0.19	0.04	0.07	0.13	0.24
Benzo(k)fluoranthene	CE087 <sup>M</sup>	mg/kg	0.42	0.10	<0.03	0.04	0.10	0.10
Benzo(a)pyrene	CE087 <sup>U</sup>	mg/kg	0.91	0.18	0.05	0.06	0.16	0.22
Indeno(123cd)pyrene	CE087 <sup>M</sup>	mg/kg	0.55	0.14	0.03	0.04	0.09	0.13
Dibenz(ah)anthracene	CE087 <sup>M</sup>	mg/kg	0.13	0.02	<0.02	<0.02	<0.02	0.03
Benzo(ghi)perylene	CE087 <sup>M</sup>	mg/kg	0.53	0.14	0.03	0.05	0.10	0.12
PAH (total of USEPA 16)	CE087	mg/kg	11.9	2.09	0.45	0.67	1.84	4.08
<b>TPH</b>								
VPH Aromatic (>EC5-EC7)	\$	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
VPH Aromatic (>EC7-EC8)	\$	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
VPH Aromatic (>EC8-EC10)	\$	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
EPH Aromatic (>EC10-EC12)	CE250	mg/kg	2	6	<0.5	<0.5	<0.5	<0.5
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	7	25	1	2	<1	<1
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	20	18	<2	4	<2	<2
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	57	45	8	15	<5	<5
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	21	14	6	5	2	<1.5
VPH Aliphatic (>C5-C6)	\$	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
VPH Aliphatic (>C6-C8)	\$	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

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## SOILS

Lab number			127767-1	127767-2	127767-3	127767-4	127767-5	127767-6
Sample id			Plot 32 G1	Plot 32 G2	Plot 32 T1	Plot 33 T1	Plot 34 T1	Plot 34 T2
Depth (m)			-	-	-	-	-	-
Date sampled			24/10/2023	24/10/2023	24/10/2023	24/10/2023	24/10/2023	24/10/2023
Test	Method	Units						
VPH Aliphatic (>C8-C10)	\$	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
EPH Aliphatic (>C10-C12)	CE250	mg/kg	<0.5	3	<0.5	<0.5	<0.5	<0.5
EPH Aliphatic (>C12-C16)	CE250	mg/kg	<0.5	10	<0.5	1	<0.5	<0.5
EPH Aliphatic (>C16-C35)	CE250	mg/kg	21	38	8	5	10	<4.5
EPH Aliphatic (>C35-C44)	CE250	mg/kg	2	2	<1	<1	<1	<1
Subcontracted Analysis								
Asbestos (qualitative)	\$	-	NAD	NAD	NAD	NAD	NAD	NAD

# Chemtech Environmental Limited

## SOILS

Lab number			127767-7	127767-8	127767-9	127767-10
Sample id			Plot 34 T3	Plot 35 T1	Plot 35 T2	Plot 35 T3
Depth (m)			-	-	-	-
Date sampled			24/10/2023	24/10/2023	24/10/2023	24/10/2023
Test	Method	Units				
Arsenic (total)	CE264 <sup>M</sup>	mg/kg As	25.2	25.9	36.6	27.8
Boron (water soluble)	CE063 <sup>U</sup>	mg/kg B	0.9	0.9	0.9	0.9
Cadmium (total)	CE264 <sup>M</sup>	mg/kg Cd	<2	<2	<2	<2
Chromium (VI)	CE263	mg/kg CrVI	<0.04	<0.04	<0.04	<0.04
Copper (total)	CE264 <sup>M</sup>	mg/kg Cu	36.1	40.4	52.0	40.1
Lead (total)	CE264 <sup>U</sup>	mg/kg Pb	90.5	70.0	91.3	71.6
Mercury (total)	CE264 <sup>U</sup>	mg/kg Hg	<2	<2	<2	<2
Nickel (total)	CE264 <sup>M</sup>	mg/kg Ni	18.4	20.3	24.5	19.5
Selenium (total)	CE264	mg/kg Se	<3	<3	<3	<3
Zinc (total)	CE264 <sup>M</sup>	mg/kg Zn	81.8	90.1	112.1	88.2
pH	CE004 <sup>M</sup>	units	7.0	6.8	6.9	6.8
Sulphate (2:1 water soluble)	CE061 <sup>U</sup>	mg/l SO <sub>4</sub>	80	65	66	56
<b>PAH</b>						
Naphthalene	CE087 <sup>M</sup>	mg/kg	0.04	0.05	<0.02	0.08
Acenaphthylene	CE087 <sup>M</sup>	mg/kg	<0.02	0.04	<0.02	0.06
Acenaphthene	CE087 <sup>M</sup>	mg/kg	0.06	0.10	<0.02	0.16
Fluorene	CE087 <sup>U</sup>	mg/kg	0.06	0.11	<0.02	0.15
Phenanthrene	CE087 <sup>M</sup>	mg/kg	0.88	1.08	0.08	0.44
Anthracene	CE087 <sup>U</sup>	mg/kg	0.26	0.43	0.03	0.21
Fluoranthene	CE087 <sup>M</sup>	mg/kg	0.91	1.23	0.14	0.53
Pyrene	CE087 <sup>M</sup>	mg/kg	0.76	1.05	0.12	0.46
Benzo(a)anthracene	CE087 <sup>U</sup>	mg/kg	0.39	0.54	0.09	0.30
Chrysene	CE087 <sup>M</sup>	mg/kg	0.38	0.49	0.08	0.30
Benzo(b)fluoranthene	CE087 <sup>M</sup>	mg/kg	0.36	0.43	0.07	0.28
Benzo(k)fluoranthene	CE087 <sup>M</sup>	mg/kg	0.19	0.24	0.04	0.19
Benzo(a)pyrene	CE087 <sup>U</sup>	mg/kg	0.40	0.48	0.07	0.28
Indeno(123cd)pyrene	CE087 <sup>M</sup>	mg/kg	0.18	0.21	0.04	0.21
Dibenz(ah)anthracene	CE087 <sup>M</sup>	mg/kg	0.05	0.06	<0.02	0.11
Benzo(ghi)perylene	CE087 <sup>M</sup>	mg/kg	0.18	0.23	0.05	0.20
PAH (total of USEPA 16)	CE087	mg/kg	5.11	6.75	0.81	3.96
<b>TPH</b>						
VPH Aromatic (>EC5-EC7)	\$	mg/kg	<0.05	<0.05	<0.05	<0.05
VPH Aromatic (>EC7-EC8)	\$	mg/kg	<0.05	<0.05	<0.05	<0.05
VPH Aromatic (>EC8-EC10)	\$	mg/kg	<0.05	<0.05	<0.05	<0.05
EPH Aromatic (>EC10-EC12)	CE250	mg/kg	<0.5	<0.5	<0.5	<0.5
EPH Aromatic (>EC12-EC16)	CE250	mg/kg	<1	<1	<1	<1
EPH Aromatic (>EC16-EC21)	CE250	mg/kg	<2	<2	<2	<2
EPH Aromatic (>EC21-EC35)	CE250	mg/kg	<5	<5	<5	<5
EPH Aromatic (>EC35-EC44)	CE250	mg/kg	<1.5	<1.5	<1.5	<1.5
VPH Aliphatic (>C5-C6)	\$	mg/kg	<0.05	<0.05	<0.05	<0.05
VPH Aliphatic (>C6-C8)	\$	mg/kg	<0.1	<0.1	<0.1	<0.1

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## SOILS

<b>Lab number</b>			127767-7	127767-8	127767-9	127767-10
<b>Sample id</b>			Plot 34 T3	Plot 35 T1	Plot 35 T2	Plot 35 T3
<b>Depth (m)</b>			-	-	-	-
<b>Date sampled</b>			24/10/2023	24/10/2023	24/10/2023	24/10/2023
<b>Test</b>	<b>Method</b>	<b>Units</b>				
VPH Aliphatic (>C8-C10)	\$	mg/kg	<0.05	<0.05	<0.05	<0.05
EPH Aliphatic (>C10-C12)	CE250	mg/kg	1	<0.5	<0.5	<0.5
EPH Aliphatic (>C12-C16)	CE250	mg/kg	1	<0.5	<0.5	<0.5
EPH Aliphatic (>C16-C35)	CE250	mg/kg	<4.5	<4.5	<4.5	<4.5
EPH Aliphatic (>C35-C44)	CE250	mg/kg	<1	<1	<1	<1
<b>Subcontracted Analysis</b>						
Asbestos (qualitative)	\$	-	NAD	NAD	NAD	NAD

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## METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE264	Arsenic (total)	Aqua Regia Extraction, ICPOES	Dry	M	3	mg/kg As
CE063	Boron (water soluble)	Hot water extract, ICP-OES	Dry	U	1	mg/kg B
CE264	Cadmium (total)	Aqua Regia Extraction, ICPOES	Dry	M	2	mg/kg Cd
CE263	Chromium (VI)	Discrete Analyser	Dry			mg/kg CrVI
CE146	Chromium (VI)	Acid extraction, Colorimetry	Dry		1	mg/kg CrVI
CE264	Copper (total)	Aqua Regia Extraction, ICPOES	Dry	M	2	mg/kg Cu
CE264	Lead (total)	Aqua Regia Extraction, ICPOES	Dry	U	3	mg/kg Pb
CE264	Mercury (total)	Aqua Regia Extraction, ICPOES	Dry	U	2	mg/kg Hg
CE264	Nickel (total)	Aqua Regia Extraction, ICPOES	Dry	M	3	mg/kg Ni
CE264	Selenium (total)	Aqua Regia Extraction, ICPOES	Dry	U	3	mg/kg Se
CE264	Zinc (total)	Aqua Regia Extraction, ICPOES	Dry	M	4	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO <sub>4</sub>
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.34	mg/kg
\$	VPH Aromatic (>EC5-EC7)	Headspace GC-FID	As received		0.05	mg/kg
\$	VPH Aromatic (>EC7-EC8)	Headspace GC-FID	As received		0.05	mg/kg
\$	VPH Aromatic (>EC8-EC10)	Headspace GC-FID	As received		0.05	mg/kg
CE250	EPH Aromatic (>EC10-EC12)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC12-EC16)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC16-EC21)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC21-EC35)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
CE250	EPH Aromatic (>EC35-EC44)	Solvent extraction, GCxGC-FID	As received		1	mg/kg
\$	VPH Aliphatic (>C5-C6)	Headspace GC-FID	As received		0.05	mg/kg
\$	VPH Aliphatic (>C6-C8)	Headspace GC-FID	As received		0.1	mg/kg
\$	VPH Aliphatic (>C8-C10)	Headspace GC-FID	As received		0.05	mg/kg
CE250	EPH Aliphatic (>C10-C12)	Solvent extraction, GCxGC-FID	As received		6	mg/kg
CE250	EPH Aliphatic (>C12-C16)	Solvent extraction, GCxGC-FID	As received		6	mg/kg
CE250	EPH Aliphatic (>C16-C35)	Solvent extraction, GCxGC-FID	As received		15	mg/kg

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## METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE250	EPH Aliphatic (>C35-C44)	Solvent extraction, GCxGC-FID	As received		10	mg/kg
\$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-

# Chemtech Environmental Limited

## DEVIATING SAMPLE INFORMATION

### Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.

For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.

Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

### Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
127767-1	Plot 32 G1	-	N	
127767-2	Plot 32 G2	-	N	
127767-3	Plot 32 T1	-	N	
127767-4	Plot 33 T1	-	N	
127767-5	Plot 34 T1	-	N	
127767-6	Plot 34 T2	-	N	
127767-7	Plot 34 T3	-	N	
127767-8	Plot 35 T1	-	N	
127767-9	Plot 35 T2	-	N	
127767-10	Plot 35 T3	-	N	

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## ADDITIONAL INFORMATION

### Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

DEFRA Licence for the introduction and movement within England of prohibited soil for chemical and physical analysis Licence No: 132693/469907-0

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

For soils and solids, analytical results are inclusive of stones, where applicable.

Moisture Content Calculated on a Wet Weight basis



Environmental  
Chemistry

## Certificate of Analysis

**Client:** Ashton Bennett Ltd

**Project:** 23110636

**Quote:** BEC231132230 V2.1

**Project Ref:** 3536

**Site:** Woodlands

**Contact:** Frances Bennett

**Address:** Unit L Bridge Mills  
Huddersfield Road,  
Holmfirth  
HD9 2NH

**E-Mail:** [fabennett@ashton-bennett.co.uk](mailto:fabennett@ashton-bennett.co.uk)

**Phone:** 07771706074

**No. Samples Received:** 3

**Date Received:** 07/11/2023

**Analysis Date:** 14/11/2023

**Date Issued:** 14/11/2023

**Report Type:** Final Version 02

This report supersedes any versions previously issued by the laboratory

A handwritten signature in black ink, appearing to read 'J. Dickinson'.

Reported by Customer Service Co-Ordinator  
Julie Dickinson  
01283 554496



Client: Ashton Bennett Ltd  
Project Name: 3536-Woodlands  
Project No: 23110636  
Date Issued: 14/11/2023

**Samples Analysed**

<b><u>Text ID</u></b>	<b><u>Sample Reference</u></b>	<b><u>Sampling Date</u></b>	<b><u>Sample Type</u></b>	<b><u>Sample Description</u></b>
23110636-001	36/1	01/11/2023 11:30:00	SOLID	Soil Sample
23110636-002	36/2	01/11/2023 11:30:00	SOLID	Soil Sample
23110636-003	36/3	01/11/2023 11:30:00	SOLID	Soil Sample



Client: Ashton Bennett Ltd  
 Project Name: 3536-Woodlands  
 Project No: 23110636  
 Date Issued: 14/11/2023



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	001	002	003
					Customer ID	36/1	36/2	36/3
					Sample Type	SOLID	SOLID	SOLID
					Sampling Date	01/11/2023	01/11/2023	01/11/2023
Acenaphthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.16	<0.11	0.20
Acenaphthylene	PAHMSUS	0.08	mg/kg <sup>^</sup>	U		0.20	<0.11	<0.11
Anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	U		0.69	0.20	0.50
Benzo[a]anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		2.86	0.48	1.00
Benzo[a]pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		5.28	0.52	0.93
Benzo[b]fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		5.50	0.52	0.92
Benzo[g,h,i]perylene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		3.25	0.23	0.41
Benzo[k]fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		1.90	0.23	0.49
Chrysene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		2.25	0.56	1.00
Dibenzo[a,h]anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.94	<0.11	0.17
Fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		4.21	1.03	2.31
Fluorene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		<0.11	<0.11	0.14
Indeno[1,2,3-cd]pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		3.61	0.27	0.49
Naphthalene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.12	<0.11	0.13
Phenanthrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		1.18	0.57	1.50
Pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		4.36	0.93	1.94
Total PAH 16	PAHMSUS	1.28	mg/kg <sup>^</sup>	U		36.6	6.10	12.2
Total Moisture at 35°C	CLANDPREP	0.1	%	N		29.6	26.6	26.7
Colour of Material	CLANDPREP		-	N		Brown/Black	Brown/Black	Brown/Black



Client: Ashton Bennett Ltd  
 Project Name: 3536-Woodlands  
 Project No: 23110636  
 Date Issued: 14/11/2023



Analysis Results

Analysis	Method Code	MDL	Units	Accred.	Sample ID	001	002	003
					Customer ID	36/1	36/2	36/3
					Sample Type	SOLID	SOLID	SOLID
					Sampling Date	01/11/2023	01/11/2023	01/11/2023
Major Constituents	CLANDPREP		-	N	CLAY	CLAY	CLAY	
Minor Constituents	CLANDPREP		-	N	Gravel	Gravel	Gravel	
Miscellaneous Constituents	CLANDPREP		-	N	Organic Matter	Organic Matter	Organic Matter	



Client: Ashton Bennett Ltd  
 Project Name: 3536-Woodlands  
 Project No: 23110636  
 Date Issued: 14/11/2023

**Deviating Sample Report**

All samples received in an appropriate condition with no deviancies noted with the samples.

**Analysis Method**

<u>Method Code</u>	<u>Method Description</u>	<u>Analysis Method</u>
CLANDPREP	DW35 - CLand Prep and Dry Weight Correction to 35°C	As Received
CLANDPREP	Solid Material Description	As Received
PAHMSUS	16 PAHs by GCMS	As Received

**Result Report Notes**

Letters alongside results signify that the result has associated report notes.  
 The report notes are as follows:

<u>Letter</u>	<u>Note</u>
A	Due to the matrix of the sample the laboratory has had to deviate from our standard protocols to be able to process the sample and provide a result. Where applicable the accreditation has been removed and this should be taken into consideration when utilising the data.
B	The QC associated with this result has not wholly met the QMS requirements, the accreditation has therefore been removed. However, the Laboratory has confidence in the performance of the method as a whole and that the integrity of the data has not been significantly compromised.
C	Due to matrix interference, the internal standard and/or surrogate has not met the QMS requirements. This should be taken into consideration when utilising the data.
D	A non-standard volume or mass has been used for this test which has resulted in a raised detection limit.
E	Due to the parameter value being beyond our calibration range (and following the maximum size of dilution allowed, where applicable), the result cannot be quantified and as such the result will appear as a greater than symbol (>) with the accreditation removed. This data should be used for indicative purposes only.
F	Based on the sample history, appearance and smell a dilution was applied prior to testing. Unfortunately, the result is either above (>) or below (<) our calibration range. Results above our calibration range have accreditation removed. The data should be used for indicative purposes only.
G	The day 5 oxygen reading was below the capability of the instrument to detect, and therefore the calculated BOD has been reported unaccredited for guidance purposes only.

**HWOL Acronym Key**

<u>Acronym</u>	<u>Description</u>
HS	Headspace Analysis
EH	Extractable Hydrocarbons - i.e everything extracted by the solvent(s)
CU	Clean up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
+	Operator to indicate cumulative e.g. EH_CU+HS_1D_Total



Client: Ashton Bennett Ltd  
Project Name: 3536-Woodlands  
Project No: 23110636  
Date Issued: 14/11/2023

### Additional Information

This report refers to samples as received. SOCOTEC UK Ltd takes no responsibility for accuracy or competence of sampling by others.

Results within this report relate only to the samples tested.

The accreditation codes are as follows:

- U = UKAS accredited analysis
- M = MCERT accredited analysis
- N = Unaccredited analysis

Any units marked with ^ signify results are reported on a dry weight basis of 35° c.

All Air Dried and Ground Samples (ADG) are oven dried at less than 35° c.

This report shall not be reproduced except in full, without written approval of the laboratory.

Opinions and interpretations given are outside the scope of our UKAS accreditation.

Any samples marked with \* are not covered by our scope of UKAS accreditation. If applicable, further report notes have been added.

Any solid samples where the Major Constituents are not one of the following (Sand, Silt, Clay, Made Ground) are not one of our accredited matrix types.

Any samples marked with ‡ have had MCERTS accreditation removed for this result

Any samples marked with a tick in the deviant table is deviant for the specific reason.

Any samples reported as IS, NA, ND mean the following:

- IS = Insufficient Sample to complete analysis
- NA = Sample is not amenable for the required analysis
- ND = Results cannot be determined

Items listed with a 'SUB' method code prefix have been carried out by an external subcontracted laboratory.

Our deviating sample report does not include deviancy information for Subcontracted analysis. Please see the report from the subcontracted lab for information regarding any deviancies for this analysis.

Summaries of analysis methods are available upon request.

## **End of Certificate of Analysis**



Environmental  
Chemistry

## Certificate of Analysis

**Client:** Ashton Bennett Ltd

**Project:** 23110641

**Quote:** BEC231132230 V2.1

**Project Ref:** 3529

**Site:** Woodlands

**Contact:** Frances Bennett

**Address:** Unit L Bridge Mills  
Huddersfield Road,  
Holmfirth  
HD9 2NH

**E-Mail:** [fabennett@ashton-bennett.co.uk](mailto:fabennett@ashton-bennett.co.uk)

**Phone:** 07771706074

**No. Samples Received:** 3

**Date Received:** 07/11/2023

**Analysis Date:** 15/11/2023

**Date Issued:** 15/11/2023

**Report Type:** Final Version 01

This report supersedes any versions previously issued by the laboratory

A handwritten signature in black ink, appearing to read 'J. Dickinson'.

Reported by Customer Service Co-Ordinator  
Julie Dickinson  
01283 554496



Client: Ashton Bennett Ltd  
Project Name: 3529-Woodlands  
Project No: 23110641  
Date Issued: 15/11/2023

**Samples Analysed**

<b><u>Text ID</u></b>	<b><u>Sample Reference</u></b>	<b><u>Sampling Date</u></b>	<b><u>Sample Type</u></b>	<b><u>Sample Description</u></b>
23110641-001	29	01/11/2023 11:30:00	SOLID	Soil Sample
23110641-002	23	01/11/2023 11:30:00	SOLID	Soil Sample
23110641-003	30	01/11/2023 11:30:00	SOLID	Soil Sample



Client: Ashton Bennett Ltd  
 Project Name: 3529-Woodlands  
 Project No: 23110641  
 Date Issued: 15/11/2023



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	001	002	003
					Customer ID	29	23	30
					Sample Type	SOLID	SOLID	SOLID
					Sampling Date	01/11/2023	01/11/2023	01/11/2023
Acenaphthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.19	0.27	0.18
Acenaphthylene	PAHMSUS	0.08	mg/kg <sup>^</sup>	U		<0.11	<0.11	<0.11
Anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	U		0.53	0.84	0.50
Benzo[a]anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		1.13	1.33	0.62
Benzo[a]pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		1.02	1.32	0.57
Benzo[b]fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		1.24	1.45	0.73
Benzo[g,h,i]perylene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.46	0.64	0.29
Benzo[k]fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.62	0.72	0.34
Chrysene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		1.32	1.51	0.88
Dibenzo[a,h]anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.14	0.18	<0.11
Fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		2.66	3.35	1.61
Fluorene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.12	<0.11	<0.11
Indeno[1,2,3-cd]pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.42	0.58	0.24
Naphthalene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.21	0.11	0.23
Phenanthrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		1.52	2.33	1.44
Pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		2.34	2.86	1.37
Total PAH 16	PAHMSUS	1.28	mg/kg <sup>^</sup>	U		14.0	17.7	9.33
Total Moisture at 35°C	CLANDPREP	0.1	%	N		28.1	26.4	27.7
Colour of Material	CLANDPREP		-	N		Brown/Black	Brown/Black	Brown/Black



Client: Ashton Bennett Ltd  
 Project Name: 3529-Woodlands  
 Project No: 23110641  
 Date Issued: 15/11/2023



Analysis Results

Analysis	Method Code	MDL	Units	Accred.	Sample ID	001	002	003
					Customer ID	29	23	30
					Sample Type	SOLID	SOLID	SOLID
					Sampling Date	01/11/2023	01/11/2023	01/11/2023
Major Constituents	CLANDPREP		-	N	CLAY	CLAY	CLAY	
Minor Constituents	CLANDPREP		-	N	Gravel	Gravel	Gravel	
Miscellaneous Constituents	CLANDPREP		-	N	Organic Matter	Organic Matter	Organic Matter	



Client: Ashton Bennett Ltd  
Project Name: 3529-Woodlands  
Project No: 23110641  
Date Issued: 15/11/2023

### Deviating Sample Report

All samples received in an appropriate condition with no deviancies noted with the samples.

### Analysis Method

<u>Method Code</u>	<u>Method Description</u>	<u>Analysis Method</u>
CLANDPREP	DW35 - CLand Prep and Dry Weight Correction to 35°C	As Received
CLANDPREP	Solid Material Description	As Received
PAHMSUS	16 PAHs by GCMS	As Received

### Result Report Notes

Letters alongside results signify that the result has associated report notes.  
The report notes are as follows:

<u>Letter</u>	<u>Note</u>
A	Due to the matrix of the sample the laboratory has had to deviate from our standard protocols to be able to process the sample and provide a result. Where applicable the accreditation has been removed and this should be taken into consideration when utilising the data.
B	The QC associated with this result has not wholly met the QMS requirements, the accreditation has therefore been removed. However, the Laboratory has confidence in the performance of the method as a whole and that the integrity of the data has not been significantly compromised.
C	Due to matrix interference, the internal standard and/or surrogate has not met the QMS requirements. This should be taken into consideration when utilising the data.
D	A non-standard volume or mass has been used for this test which has resulted in a raised detection limit.
E	Due to the parameter value being beyond our calibration range (and following the maximum size of dilution allowed, where applicable), the result cannot be quantified and as such the result will appear as a greater than symbol (>) with the accreditation removed. This data should be used for indicative purposes only.
F	Based on the sample history, appearance and smell a dilution was applied prior to testing. Unfortunately, the result is either above (>) or below (<) our calibration range. Results above our calibration range have accreditation removed. The data should be used for indicative purposes only.
G	The day 5 oxygen reading was below the capability of the instrument to detect, and therefore the calculated BOD has been reported unaccredited for guidance purposes only.

### HWOL Acronym Key

<u>Acronym</u>	<u>Description</u>
HS	Headspace Analysis
EH	Extractable Hydrocarbons - i.e everything extracted by the solvent(s)
CU	Clean up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
+	Operator to indicate cumulative e.g. EH_CU+HS_1D_Total



Client: Ashton Bennett Ltd  
Project Name: 3529-Woodlands  
Project No: 23110641  
Date Issued: 15/11/2023

### Additional Information

This report refers to samples as received. SOCOTEC UK Ltd takes no responsibility for accuracy or competence of sampling by others.

Results within this report relate only to the samples tested.

The accreditation codes are as follows:

- U = UKAS accredited analysis
- M = MCERT accredited analysis
- N = Unaccredited analysis

Any units marked with ^ signify results are reported on a dry weight basis of 35° c.

All Air Dried and Ground Samples (ADG) are oven dried at less than 35° c.

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Any solid samples where the Major Constituents are not one of the following (Sand, Silt, Clay, Made Ground) are not one of our accredited matrix types.

Any samples marked with ‡ have had MCERTS accreditation removed for this result

Any samples marked with a tick in the deviant table is deviant for the specific reason.

Any samples reported as IS, NA, ND mean the following:

- IS = Insufficient Sample to complete analysis
- NA = Sample is not amenable for the required analysis
- ND = Results cannot be determined

Items listed with a 'SUB' method code prefix have been carried out by an external subcontracted laboratory.

Our deviating sample report does not include deviancy information for Subcontracted analysis. Please see the report from the subcontracted lab for information regarding any deviancies for this analysis.

Summaries of analysis methods are available upon request.

## **End of Certificate of Analysis**



Environmental  
Chemistry

## Certificate of Analysis

**Client:** Ashton Bennett Ltd

**Project:** 23110643

**Quote:** BEC231132230 V2.1

**Project Ref:** 3532

**Site:** Woodlands

**Contact:** Frances Bennett

**Address:** Unit L Bridge Mills  
Huddersfield Road,  
Holmfirth  
HD9 2NH

**E-Mail:** fabennett@ashton-bennett.co.uk

**Phone:** 07771706074

**No. Samples Received:** 4

**Date Received:** 07/11/2023

**Analysis Date:** 16/11/2023

**Date Issued:** 16/11/2023

**Report Type:** Final Version 01

This report supersedes any versions previously issued by the laboratory

A handwritten signature in black ink, appearing to be 'J. Dickinson'.

Reported by Customer Service Co-Ordinator  
Julie Dickinson  
01283 554496



Client: Ashton Bennett Ltd  
Project Name: 3532-Woodlands  
Project No: 23110643  
Date Issued: 16/11/2023

**Samples Analysed**

<b><u>Text ID</u></b>	<b><u>Sample Reference</u></b>	<b><u>Sampling Date</u></b>	<b><u>Sample Type</u></b>	<b><u>Sample Description</u></b>
23110643-001	32/1	01/11/2023 11:30:00	SOLID	Soil Sample
23110643-002	32/2	01/11/2023 11:30:00	SOLID	Soil Sample
23110643-003	32/3	01/11/2023 11:30:00	SOLID	Soil Sample
23110643-004	32/4	01/11/2023 11:30:00	SOLID	Soil Sample



Client: Ashton Bennett Ltd  
 Project Name: 3532-Woodlands  
 Project No: 23110643  
 Date Issued: 16/11/2023



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	001	002	003	004
					Customer ID	32/1	32/2	32/3	32/4
					Sample Type	SOLID	SOLID	SOLID	SOLID
					Sampling Date	01/11/2023	01/11/2023	01/11/2023	01/11/2023
Lead as Pb	ICPMSS	0.7	mg/kg <sup>^</sup>	UM					77.1
Acenaphthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	0.20	0.13	<0.11		
Acenaphthylene	PAHMSUS	0.08	mg/kg <sup>^</sup>	U	<0.12	<0.11	<0.11		
Anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	U	0.74	0.35	0.33		
Benzo[a]anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	1.10	0.93	0.86		
Benzo[a]pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	0.92	0.90	0.89		
Benzo[b]fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	1.07	1.00	0.90		
Benzo[g,h,i]perylene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	0.41	0.48	0.45		
Benzo[k]fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	0.50	0.47	0.47		
Chrysene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	1.28	1.01	0.92		
Dibenzo[a,h]anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	0.20	0.18	0.16		
Fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	2.68	2.13	1.89		
Fluorene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	0.16	<0.11	<0.11		
Indeno[1,2,3-cd]pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	0.46	0.49	0.47		
Naphthalene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	0.16	<0.11	<0.11		
Phenanthrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	1.81	1.07	0.93		
Pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM	2.21	1.87	1.64		
Total PAH 16	PAHMSUS	1.28	mg/kg <sup>^</sup>	U	14.0	11.3	10.3		
Total Moisture at 35°C	CLANDPREP	0.1	%	N	31.3	27.1	26.0		26.1



Client: Ashton Bennett Ltd  
 Project Name: 3532-Woodlands  
 Project No: 23110643  
 Date Issued: 16/11/2023



Analysis Results

Analysis	Method Code	MDL	Units	Accred.	Sample ID	001	002	003	004
					Customer ID	32/1	32/2	32/3	32/4
					Sample Type	SOLID	SOLID	SOLID	SOLID
					Sampling Date	01/11/2023	01/11/2023	01/11/2023	01/11/2023
Colour of Material	CLANDPREP		-	N	Brown/Black	Brown/Black	Brown/Black	Brown/Black	Brown/Black
Major Constituents	CLANDPREP		-	N	CLAY	CLAY	CLAY	CLAY	CLAY
Minor Constituents	CLANDPREP		-	N	Gravel	Gravel	Gravel	Gravel	Gravel
Miscellaneous Constituents	CLANDPREP		-	N	Organic Matter	Organic Matter	Organic Matter	Organic Matter	Organic Matter



Client: Ashton Bennett Ltd  
Project Name: 3532-Woodlands  
Project No: 23110643  
Date Issued: 16/11/2023

### Deviating Sample Report

All samples received in an appropriate condition with no deviancies noted with the samples.

### Analysis Method

<u>Method Code</u>	<u>Method Description</u>	<u>Analysis Method</u>
CLANDPREP	DW35 - CLand Prep and Dry Weight Correction to 35°C	As Received
CLANDPREP	Solid Material Description	As Received
ICPMSS	Lead in Solids by ICPMS	Air Dried & Ground
PAHMSUS	16 PAHs by GCMS	As Received

### Result Report Notes

Letters alongside results signify that the result has associated report notes.  
The report notes are as follows:

<u>Letter</u>	<u>Note</u>
A	Due to the matrix of the sample the laboratory has had to deviate from our standard protocols to be able to process the sample and provide a result. Where applicable the accreditation has been removed and this should be taken into consideration when utilising the data.
B	The QC associated with this result has not wholly met the QMS requirements, the accreditation has therefore been removed. However, the Laboratory has confidence in the performance of the method as a whole and that the integrity of the data has not been significantly compromised.
C	Due to matrix interference, the internal standard and/or surrogate has not met the QMS requirements. This should be taken into consideration when utilising the data.
D	A non-standard volume or mass has been used for this test which has resulted in a raised detection limit.
E	Due to the parameter value being beyond our calibration range (and following the maximum size of dilution allowed, where applicable), the result cannot be quantified and as such the result will appear as a greater than symbol (>) with the accreditation removed. This data should be used for indicative purposes only.
F	Based on the sample history, appearance and smell a dilution was applied prior to testing. Unfortunately, the result is either above (>) or below (<) our calibration range. Results above our calibration range have accreditation removed. The data should be used for indicative purposes only.
G	The day 5 oxygen reading was below the capability of the instrument to detect, and therefore the calculated BOD has been reported unaccredited for guidance purposes only.

### HWOL Acronym Key

<u>Acronym</u>	<u>Description</u>
HS	Headspace Analysis
EH	Extractable Hydrocarbons - i.e everything extracted by the solvent(s)
CU	Clean up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
+	Operator to indicate cumulative e.g. EH_CU+HS_1D_Total



Client: Ashton Bennett Ltd  
Project Name: 3532-Woodlands  
Project No: 23110643  
Date Issued: 16/11/2023

### Additional Information

This report refers to samples as received. SOCOTEC UK Ltd takes no responsibility for accuracy or competence of sampling by others.

Results within this report relate only to the samples tested.

The accreditation codes are as follows:

- U = UKAS accredited analysis
- M = MCERT accredited analysis
- N = Unaccredited analysis

Any units marked with ^ signify results are reported on a dry weight basis of 35° c.

All Air Dried and Ground Samples (ADG) are oven dried at less than 35° c.

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Any samples marked with \* are not covered by our scope of UKAS accreditation. If applicable, further report notes have been added.

Any solid samples where the Major Constituents are not one of the following (Sand, Silt, Clay, Made Ground) are not one of our accredited matrix types.

Any samples marked with ‡ have had MCERTS accreditation removed for this result

Any samples marked with a tick in the deviant table is deviant for the specific reason.

Any samples reported as IS, NA, ND mean the following:

- IS = Insufficient Sample to complete analysis
- NA = Sample is not amenable for the required analysis
- ND = Results cannot be determined

Items listed with a 'SUB' method code prefix have been carried out by an external subcontracted laboratory.

Our deviating sample report does not include deviancy information for Subcontracted analysis. Please see the report from the subcontracted lab for information regarding any deviancies for this analysis.

Summaries of analysis methods are available upon request.

## **End of Certificate of Analysis**



Environmental  
Chemistry

## Certificate of Analysis

**Client:** Ashton Bennett Ltd

**Project:** 23110645

**Quote:** BEC231132230 V2.1

**Project Ref:** 3533

**Site:** Woodlands

**Contact:** Frances Bennett

**Address:** Unit L Bridge Mills  
Huddersfield Road,  
Holmfirth  
HD9 2NH

**E-Mail:** [fabennett@ashton-bennett.co.uk](mailto:fabennett@ashton-bennett.co.uk)

**Phone:** 07771706074

**No. Samples Received:** 7

**Date Received:** 07/11/2023

**Analysis Date:** 16/11/2023

**Date Issued:** 16/11/2023

**Report Type:** Final Version 01

This report supersedes any versions previously issued by the laboratory

A handwritten signature in black ink, appearing to be 'J. Dickinson'.

Reported by Customer Service Co-Ordinator  
Julie Dickinson  
01283 554496



Client: Ashton Bennett Ltd  
Project Name: 3533-Woodlands  
Project No: 23110645  
Date Issued: 16/11/2023

**Samples Analysed**

<b><u>Text ID</u></b>	<b><u>Sample Reference</u></b>	<b><u>Sampling Date</u></b>	<b><u>Sample Type</u></b>	<b><u>Sample Description</u></b>
23110645-001	33/1	01/11/2023 11:30:00	SOLID	Soil Sample
23110645-002	33/1	01/11/2023 11:30:00	SOLID	Soil Sample
23110645-003	33/2	01/11/2023 11:30:00	SOLID	Soil Sample
23110645-004	33/2	01/11/2023 11:30:00	SOLID	Soil Sample
23110645-005	33/3	01/11/2023 11:30:00	SOLID	Soil Sample
23110645-006	33/3	01/11/2023 11:30:00	SOLID	Soil Sample
23110645-007	33/4	01/11/2023 11:30:00	SOLID	Soil Sample



Client: Ashton Bennett Ltd  
 Project Name: 3533-Woodlands  
 Project No: 23110645  
 Date Issued: 16/11/2023



Analysis Results

Analysis	Method Code	MDL	Units	Accred.	Sample ID	001	002	003	004	005	006	007
					Customer ID	33/1	33/1	33/2	33/2	33/3	33/3	33/4
					Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
					Sampling Date	01/11/2023	01/11/2023	01/11/2023	01/11/2023	01/11/2023	01/11/2023	01/11/2023
Lead as Pb	ICPMS5	0.7	mg/kg <sup>^</sup>	UM		133.0		11.9		10.1		58.6
Acenaphthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM			<0.11		0.34		<0.11	
Acenaphthylene	PAHMSUS	0.08	mg/kg <sup>^</sup>	U			<0.11		<0.11		<0.11	
Anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	U			0.20		0.65		0.24	
Benzo[a]anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM			0.58		1.14		0.54	
Benzo[a]pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM			0.63		1.01		0.55	
Benzo[b]fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM			0.65		1.05		0.59	
Benzo[g,h,i]perylene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM			0.27		0.48		0.29	
Benzo[k]fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM			0.26		0.50		0.33	
Chrysene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM			0.68		1.13		0.69	
Dibenzo[a,h]anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM			<0.11		0.19		0.11	
Fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM			1.28		2.64		1.31	
Fluorene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM			<0.11		0.21		<0.11	
Indeno[1,2,3-cd]pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM			0.31		0.56		0.31	
Naphthalene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM			0.11		0.68		<0.11	
Phenanthrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM			0.64		2.11		0.65	
Pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM			1.13		2.21		1.10	
Total PAH 16	PAHMSUS	1.28	mg/kg <sup>^</sup>	U			7.17		15.0		7.12	
Total Moisture at 35°C	CLANDPREP	0.1	%	N		33.4	24.6	33.2	23.6	33.2	24.4	38.8



Client: Ashton Bennett Ltd  
 Project Name: 3533-Woodlands  
 Project No: 23110645  
 Date Issued: 16/11/2023



Analysis Results

Analysis	Method Code	MDL	Units	Accred.	Sample ID	001	002	003	004	005	006	007
					Customer ID	33/1	33/1	33/2	33/2	33/3	33/3	33/4
					Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
					Sampling Date	01/11/2023	01/11/2023	01/11/2023	01/11/2023	01/11/2023	01/11/2023	01/11/2023
Colour of Material	CLANDPREP		-	N	Brown/Black	Brown/Black	Brown/Black	Brown/Black	Brown/Black	Brown/Black	Brown/Black	Brown/Black
Major Constituents	CLANDPREP		-	N	CLAY	CLAY	CLAY	CLAY	CLAY	CLAY	CLAY	CLAY
Minor Constituents	CLANDPREP		-	N	Gravel	Gravel	Gravel	Gravel	Gravel	Gravel	Gravel	Gravel
Miscellaneous Constituents	CLANDPREP		-	N	Organic Matter	Organic Matter	Organic Matter	Organic Matter	Organic Matter	Organic Matter	Organic Matter	Organic Matter



Client: Ashton Bennett Ltd  
 Project Name: 3533-Woodlands  
 Project No: 23110645  
 Date Issued: 16/11/2023

**Deviating Sample Report**

All samples received in an appropriate condition with no deviancies noted with the samples.

**Analysis Method**

<u>Method Code</u>	<u>Method Description</u>	<u>Analysis Method</u>
CLANDPREP	DW35 - CLand Prep and Dry Weight Correction to 35°C	As Received
CLANDPREP	Solid Material Description	As Received
ICPMSS	Lead in Solids by ICPMS	Air Dried & Ground
PAHMSUS	16 PAHs by GCMS	As Received

**Result Report Notes**

Letters alongside results signify that the result has associated report notes.  
 The report notes are as follows:

<u>Letter</u>	<u>Note</u>
A	Due to the matrix of the sample the laboratory has had to deviate from our standard protocols to be able to process the sample and provide a result. Where applicable the accreditation has been removed and this should be taken into consideration when utilising the data.
B	The QC associated with this result has not wholly met the QMS requirements, the accreditation has therefore been removed. However, the Laboratory has confidence in the performance of the method as a whole and that the integrity of the data has not been significantly compromised.
C	Due to matrix interference, the internal standard and/or surrogate has not met the QMS requirements. This should be taken into consideration when utilising the data.
D	A non-standard volume or mass has been used for this test which has resulted in a raised detection limit.
E	Due to the parameter value being beyond our calibration range (and following the maximum size of dilution allowed, where applicable), the result cannot be quantified and as such the result will appear as a greater than symbol (>) with the accreditation removed. This data should be used for indicative purposes only.
F	Based on the sample history, appearance and smell a dilution was applied prior to testing. Unfortunately, the result is either above (>) or below (<) our calibration range. Results above our calibration range have accreditation removed. The data should be used for indicative purposes only.
G	The day 5 oxygen reading was below the capability of the instrument to detect, and therefore the calculated BOD has been reported unaccredited for guidance purposes only.

**HWOL Acronym Key**

<u>Acronym</u>	<u>Description</u>
HS	Headspace Analysis
EH	Extractable Hydrocarbons - i.e everything extracted by the solvent(s)
CU	Clean up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
+	Operator to indicate cumulative e.g. EH_CU+HS_1D_Total



Client: Ashton Bennett Ltd  
Project Name: 3533-Woodlands  
Project No: 23110645  
Date Issued: 16/11/2023

### Additional Information

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Results within this report relate only to the samples tested.

The accreditation codes are as follows:

- U = UKAS accredited analysis
- M = MCERT accredited analysis
- N = Unaccredited analysis

Any units marked with ^ signify results are reported on a dry weight basis of 35° c.

All Air Dried and Ground Samples (ADG) are oven dried at less than 35° c.

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Opinions and interpretations given are outside the scope of our UKAS accreditation.

Any samples marked with \* are not covered by our scope of UKAS accreditation. If applicable, further report notes have been added.

Any solid samples where the Major Constituents are not one of the following (Sand, Silt, Clay, Made Ground) are not one of our accredited matrix types.

Any samples marked with ‡ have had MCERTS accreditation removed for this result

Any samples marked with a tick in the deviant table is deviant for the specific reason.

Any samples reported as IS, NA, ND mean the following:

- IS = Insufficient Sample to complete analysis
- NA = Sample is not amenable for the required analysis
- ND = Results cannot be determined

Items listed with a 'SUB' method code prefix have been carried out by an external subcontracted laboratory.

Our deviating sample report does not include deviancy information for Subcontracted analysis. Please see the report from the subcontracted lab for information regarding any deviancies for this analysis.

Summaries of analysis methods are available upon request.

## **End of Certificate of Analysis**



Environmental  
Chemistry

## Certificate of Analysis

**Client:** Ashton Bennett Ltd

**Project:** 23110651

**Quote:** BEC231132230 V2.1

**Project Ref:** 3534

**Site:** Woodlands

**Contact:** Frances Bennett

**Address:** Unit L Bridge Mills  
Huddersfield Road,  
Holmfirth  
HD9 2NH

**E-Mail:** fabennett@ashton-bennett.co.uk

**Phone:** 07771706074

**No. Samples Received:** 7

**Date Received:** 07/11/2023

**Analysis Date:** 16/11/2023

**Date Issued:** 16/11/2023

**Report Type:** Final Version 01

This report supersedes any versions previously issued by the laboratory

A handwritten signature in black ink, appearing to be 'J. Dickinson'.

Reported by Customer Service Co-Ordinator  
Julie Dickinson  
01283 554496



Client: Ashton Bennett Ltd  
Project Name: 3534-Woodlands  
Project No: 23110651  
Date Issued: 16/11/2023

**Samples Analysed**

<b><u>Text ID</u></b>	<b><u>Sample Reference</u></b>	<b><u>Sampling Date</u></b>	<b><u>Sample Type</u></b>	<b><u>Sample Description</u></b>
23110651-001	34/1	01/11/2023 11:30:00	SOLID	Soil Sample
23110651-002	34/1	01/11/2023 11:30:00	SOLID	Soil Sample
23110651-003	34/2	01/11/2023 11:30:00	SOLID	Soil Sample
23110651-004	34/2	01/11/2023 11:30:00	SOLID	Soil Sample
23110651-005	34/3	01/11/2023 11:30:00	SOLID	Soil Sample
23110651-006	34/3	01/11/2023 11:30:00	SOLID	Soil Sample
23110651-007	34/4	01/11/2023 11:30:00	SOLID	Soil Sample



Client: Ashton Bennett Ltd  
 Project Name: 3534-Woodlands  
 Project No: 23110651  
 Date Issued: 16/11/2023



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	001	002	003	004	005	006	007
					Customer ID	34/1	34/1	34/2	34/2	34/3	34/3	34/4
					Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
					Sampling Date	01/11/2023	01/11/2023	01/11/2023	01/11/2023	01/11/2023	01/11/2023	01/11/2023
Lead as Pb	ICPMSS	0.7	mg/kg <sup>^</sup>	UM	33.7		13.6			10.8		195.1
Acenaphthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.11		0.63			0.19	
Acenaphthylene	PAHMSUS	0.08	mg/kg <sup>^</sup>	U		<0.11		<0.11			<0.11	
Anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	U		0.28		1.22			0.44	
Benzo[a]anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.84		2.73			1.28	
Benzo[a]pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.82		2.50			1.15	
Benzo[b]fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.97		2.72			1.30	
Benzo[g,h,i]perylene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.37		0.92			0.46	
Benzo[k]fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.56		1.40			0.68	
Chrysene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.97		2.50			1.26	
Dibenzo[a,h]anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.14		0.33			0.17	
Fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		1.86		6.52			2.73	
Fluorene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		<0.11		0.34			<0.11	
Indeno[1,2,3-cd]pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.42		1.07			0.53	
Naphthalene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.19		0.29			0.44	
Phenanthrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		1.13		3.94			2.11	
Pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		1.65		5.57			2.37	
Total PAH 16	PAHMSUS	1.28	mg/kg <sup>^</sup>	U		10.5		32.8			15.3	
Total Moisture at 35°C	CLANDPREP	0.1	%	N		26.1	25.4	25.6	25.9	18.8	24.1	26.3



Client: Ashton Bennett Ltd  
 Project Name: 3534-Woodlands  
 Project No: 23110651  
 Date Issued: 16/11/2023



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	001	002	003	004	005	006	007
					Customer ID	34/1	34/1	34/2	34/2	34/3	34/3	34/4
					Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
					Sampling Date	01/11/2023	01/11/2023	01/11/2023	01/11/2023	01/11/2023	01/11/2023	01/11/2023
Colour of Material	CLANDPREP		-	N	Brown/Black	Brown/Black	Brown/Black	Brown/Black	Brown/Black	Brown/Black	Brown/Black	Brown/Black
Major Constituents	CLANDPREP		-	N	CLAY	CLAY	CLAY	CLAY	CLAY	CLAY	CLAY	CLAY
Minor Constituents	CLANDPREP		-	N	Gravel	Gravel	Gravel	Gravel	Gravel	Gravel	Gravel	Gravel
Miscellaneous Constituents	CLANDPREP		-	N	Organic Matter	Organic Matter	Organic Matter	Organic Matter	Organic Matter	Organic Matter	Organic Matter	Organic Matter



Client: Ashton Bennett Ltd  
 Project Name: 3534-Woodlands  
 Project No: 23110651  
 Date Issued: 16/11/2023

**Deviating Sample Report**

All samples received in an appropriate condition with no deviancies noted with the samples.

**Analysis Method**

<u>Method Code</u>	<u>Method Description</u>	<u>Analysis Method</u>
CLANDPREP	DW35 - CLand Prep and Dry Weight Correction to 35°C	As Received
CLANDPREP	Solid Material Description	As Received
ICPMSS	Lead in Solids by ICPMS	Air Dried & Ground
PAHMSUS	16 PAHs by GCMS	As Received

**Result Report Notes**

Letters alongside results signify that the result has associated report notes.  
 The report notes are as follows:

<u>Letter</u>	<u>Note</u>
A	Due to the matrix of the sample the laboratory has had to deviate from our standard protocols to be able to process the sample and provide a result. Where applicable the accreditation has been removed and this should be taken into consideration when utilising the data.
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D	A non-standard volume or mass has been used for this test which has resulted in a raised detection limit.
E	Due to the parameter value being beyond our calibration range (and following the maximum size of dilution allowed, where applicable), the result cannot be quantified and as such the result will appear as a greater than symbol (>) with the accreditation removed. This data should be used for indicative purposes only.
F	Based on the sample history, appearance and smell a dilution was applied prior to testing. Unfortunately, the result is either above (>) or below (<) our calibration range. Results above our calibration range have accreditation removed. The data should be used for indicative purposes only.
G	The day 5 oxygen reading was below the capability of the instrument to detect, and therefore the calculated BOD has been reported unaccredited for guidance purposes only.

**HWOL Acronym Key**

<u>Acronym</u>	<u>Description</u>
HS	Headspace Analysis
EH	Extractable Hydrocarbons - i.e everything extracted by the solvent(s)
CU	Clean up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
+	Operator to indicate cumulative e.g. EH_CU+HS_1D_Total



Client: Ashton Bennett Ltd  
Project Name: 3534-Woodlands  
Project No: 23110651  
Date Issued: 16/11/2023

### Additional Information

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- M = MCERT accredited analysis
- N = Unaccredited analysis

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All Air Dried and Ground Samples (ADG) are oven dried at less than 35° c.

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- IS = Insufficient Sample to complete analysis
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- ND = Results cannot be determined

Items listed with a 'SUB' method code prefix have been carried out by an external subcontracted laboratory.

Our deviating sample report does not include deviancy information for Subcontracted analysis. Please see the report from the subcontracted lab for information regarding any deviancies for this analysis.

Summaries of analysis methods are available upon request.

## **End of Certificate of Analysis**



Environmental  
Chemistry

## Certificate of Analysis

**Client:** Ashton Bennett Ltd

**Project:** 23110652

**Quote:** BEC231132230 V2.1

**Project Ref:** 3535

**Site:** Woodlands

**Contact:** Frances Bennett

**Address:** Unit L Bridge Mills  
Huddersfield Road,  
Holmfirth  
HD9 2NH

**E-Mail:** [fabennett@ashton-bennett.co.uk](mailto:fabennett@ashton-bennett.co.uk)

**Phone:** 07771706074

**No. Samples Received:** 7

**Date Received:** 07/11/2023

**Analysis Date:** 21/11/2023

**Date Issued:** 22/11/2023

**Report Type:** Final Version 01

This report supersedes any versions previously issued by the laboratory

A handwritten signature in black ink, appearing to read 'J. Dickinson'.

Reported by Customer Service Co-Ordinator  
Julie Dickinson  
01283 554496



Client: Ashton Bennett Ltd  
Project Name: 3535-Woodlands  
Project No: 23110652  
Date Issued: 22/11/2023

**Samples Analysed**

<b><u>Text ID</u></b>	<b><u>Sample Reference</u></b>	<b><u>Sampling Date</u></b>	<b><u>Sample Type</u></b>	<b><u>Sample Description</u></b>
23110652-001	35/1	01/11/2023 11:30:00	SOLID	Soil Sample
23110652-002	35/1	01/11/2023 11:30:00	SOLID	Soil Sample
23110652-003	35/2	01/11/2023 11:30:00	SOLID	Soil Sample
23110652-004	35/2	01/11/2023 11:30:00	SOLID	Soil Sample
23110652-005	35/3	01/11/2023 11:30:00	SOLID	Soil Sample
23110652-006	35/3	01/11/2023 11:30:00	SOLID	Soil Sample
23110652-007	35/4	01/11/2023 11:30:00	SOLID	Soil Sample



Client: Ashton Bennett Ltd  
 Project Name: 3535-Woodlands  
 Project No: 23110652  
 Date Issued: 22/11/2023



**Analysis Results**

Analysis	Method Code	MDL	Units	Accred.	Sample ID	001	002	003	004	005	006	007
					Customer ID	35/1	35/1	35/2	35/2	35/3	35/3	35/4
					Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
					Sampling Date	01/11/2023	01/11/2023	01/11/2023	01/11/2023	01/11/2023	01/11/2023	01/11/2023
Lead as Pb	ICPMS5	0.7	mg/kg <sup>^</sup>	UM	165.6		222.9			99.5		116.2
Acenaphthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.28		0.27			0.19	
Acenaphthylene	PAHMSUS	0.08	mg/kg <sup>^</sup>	U		<0.11		0.34			<0.10	
Anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	U		0.64		2.34			0.41	
Benzo[a]anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		1.24		15.0			1.01	
Benzo[a]pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		1.12		13.4			0.88	
Benzo[b]fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		1.18		15.0			0.97	
Benzo[g,h,i]perylene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.53		4.90			0.41	
Benzo[k]fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.53		5.60			0.40	
Chrysene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		1.40		16.9			1.12	
Dibenzo[a,h]anthracene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.17		1.84			0.13	
Fluoranthene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		2.98		35.3			2.53	
Fluorene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.21		0.41			0.12	
Indeno[1,2,3-cd]pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.70		7.04			0.54	
Naphthalene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		0.21		0.13			0.15	
Phenanthrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		2.01		12.3			1.48	
Pyrene	PAHMSUS	0.08	mg/kg <sup>^</sup>	UM		2.66		32.3			2.24	
Total PAH 16	PAHMSUS	1.28	mg/kg <sup>^</sup>	U		16.0		163			12.7	
Total Moisture at 35°C	CLANDPREP	0.1	%	N		16.0	28.3	19.5	27.3	29.3	21.9	28.2



Client: Ashton Bennett Ltd  
 Project Name: 3535-Woodlands  
 Project No: 23110652  
 Date Issued: 22/11/2023



Analysis Results

Analysis	Method Code	MDL	Units	Accred.	Sample ID	001	002	003	004	005	006	007
					Customer ID	35/1	35/1	35/2	35/2	35/3	35/3	35/4
					Sample Type	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
					Sampling Date	01/11/2023	01/11/2023	01/11/2023	01/11/2023	01/11/2023	01/11/2023	01/11/2023
Colour of Material	CLANDPREP		-	N	Brown/Black	Brown/Black	Brown/Black	Brown/Black	Brown/Black	Brown/Black	Brown/Black	Brown/Black
Major Constituents	CLANDPREP		-	N	CLAY	CLAY	CLAY	CLAY	CLAY	CLAY	CLAY	CLAY
Minor Constituents	CLANDPREP		-	N	Gravel	Gravel	Gravel	Gravel	Gravel	Gravel	Gravel	Gravel
Miscellaneous Constituents	CLANDPREP		-	N	Organic Matter	Organic Matter	Organic Matter	Organic Matter	Organic Matter	Organic Matter	Organic Matter	Organic Matter



Client: Ashton Bennett Ltd  
 Project Name: 3535-Woodlands  
 Project No: 23110652  
 Date Issued: 22/11/2023

**Deviating Sample Report**

All samples received in an appropriate condition with no deviancies noted with the samples.

**Analysis Method**

<u>Method Code</u>	<u>Method Description</u>	<u>Analysis Method</u>
CLANDPREP	DW35 - CLand Prep and Dry Weight Correction to 35°C	As Received
CLANDPREP	Solid Material Description	As Received
ICPMSS	Lead in Solids by ICPMS	Air Dried & Ground
PAHMSUS	16 PAHs by GCMS	As Received

**Result Report Notes**

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<u>Letter</u>	<u>Note</u>
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G	The day 5 oxygen reading was below the capability of the instrument to detect, and therefore the calculated BOD has been reported unaccredited for guidance purposes only.

**HWOL Acronym Key**

<u>Acronym</u>	<u>Description</u>
HS	Headspace Analysis
EH	Extractable Hydrocarbons - i.e everything extracted by the solvent(s)
CU	Clean up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
+	Operator to indicate cumulative e.g. EH_CU+HS_1D_Total



Client: Ashton Bennett Ltd  
Project Name: 3535-Woodlands  
Project No: 23110652  
Date Issued: 22/11/2023

### Additional Information

This report refers to samples as received. SOCOTEC UK Ltd takes no responsibility for accuracy or competence of sampling by others.

Results within this report relate only to the samples tested.

The accreditation codes are as follows:

- U = UKAS accredited analysis
- M = MCERT accredited analysis
- N = Unaccredited analysis

Any units marked with ^ signify results are reported on a dry weight basis of 35° c.

All Air Dried and Ground Samples (ADG) are oven dried at less than 35° c.

This report shall not be reproduced except in full, without written approval of the laboratory.

Opinions and interpretations given are outside the scope of our UKAS accreditation.

Any samples marked with \* are not covered by our scope of UKAS accreditation. If applicable, further report notes have been added.

Any solid samples where the Major Constituents are not one of the following (Sand, Silt, Clay, Made Ground) are not one of our accredited matrix types.

Any samples marked with ‡ have had MCERTS accreditation removed for this result

Any samples marked with a tick in the deviant table is deviant for the specific reason.

Any samples reported as IS, NA, ND mean the following:

- IS = Insufficient Sample to complete analysis
- NA = Sample is not amenable for the required analysis
- ND = Results cannot be determined

Items listed with a 'SUB' method code prefix have been carried out by an external subcontracted laboratory.

Our deviating sample report does not include deviancy information for Subcontracted analysis. Please see the report from the subcontracted lab for information regarding any deviancies for this analysis.

Summaries of analysis methods are available upon request.

## **End of Certificate of Analysis**

# Appendix D



ABTEX ORANGE is a permeable split tape woven polypropylene geotextile for use as an economical separator and marker layer in civil engineering and building projects.

Its main application is to act as a separator and marker layer between clean cover material and potentially contaminated subsoils in brownfield reclamation projects.

Geotextile Properties		
Product Grade		Abtex Orange 15
Mass per unit area <i>EN ISO 9864</i>	(g/m <sup>2</sup> )	62
Tensile strength MD/CMD <i>EN ISO 10319</i>	(kN/m)	10 / 9
Elongation MD/CMD <i>EN ISO 10319</i>	(%)	22 / 15
CBR puncture resistance <i>EN ISO 12236</i>	(N)	1 500
Dynamic perforation cone drop <i>EN ISO 13433</i>	(mm)	18
Pore size O <sub>90</sub> <i>EN ISO 12956</i>	(µm)	330
Water flow normal to the plane <i>EN ISO 11058</i>	(l/m <sup>2</sup> ·s)	10
Flow velocity <i>EN ISO 11058</i>	(m/s)	10 x 10 <sup>-3</sup>
Resistance to weathering	To be covered within one month of installation	
Product Dimensions		
Width	(m)	4.5
Length	(m)	100

#### Notes

1. Cut widths may also be available, please enquire. Rolls supplied cut to width are subject to wider tolerance.
2. In line with our policy of continuous improvement, we reserve the right to make changes without notice at any time. It is the responsibility of all users to satisfy themselves that the above data is current.
3. ABTEX ORANGE is inert and does not present a health hazard. No special precautions are necessary.
4. Final determination of the suitability of any information is the sole responsibility of the user.
5. Please note that in compliance with CE marking regulations the rolls will be marked and labelled as Lotrak Alarm 15.



# GEOSHIELD Verification Report



PROJECT REFERENCE: GEO101204

REPORT NUMBER: 014

PROJECT: Signature Homes - Holmfirth

PROJECT ADDRESS: New Mill Road

Holmfirth

HD9 7LT

MEMBRANE SPECIFICATION: Gas membrane to specification BS8485 2019

Installed to CIRIA 735

Visqueen GR DPC

Visqueen Standard Gas Barrier

Visqueen Double sided butyl tape

Visqueen GR Foil Tape

Visqueen GR lap Tape

Visqueen Pro Detailing Tape



**GEOSHIELD  
Verification  
PLAN**



SPECIFICATION:

[Redacted]

[Redacted]

[Redacted]

INFORMATION INCLUDED:

[Redacted]

Material specification technical data sheets

Geotechnical Survey Report - PR/AJK/39141/007

Site Layout - Final

Phase Plan

1602-110 House Type - Venice - Roma - Florence

1602-111 House Type - Tuscant

1602-300 Draft Foundations

1602-301 Draft Foundations

1451-700a Typical Tanking Detail

[Redacted]

[Redacted]

[Redacted]

Information presented to at the pre-verification stage assumed correct

Any change client will let GeoShield know or this Pre-verification Plan will be void.



# GEOSHIELD Verification Report



VERIFICATION OFFICER: Chris Ingham

VERIFICATION COMPANY: GeoShield Limited

Icon Business Park, 4100 Park Approach

Thorpe Park, LEEDS

West Yorkshire

LS15 8GB

CONTACT NUMBER: 07555214679

EMAIL ADDRESS: CIngham@Geoshield.co.uk

ORDER NUMBER:

PER VISIT: YES:



NO:



PROJECT: YES:



NO:





# GEOSHIELD Verification Report



## CLIENT DETAILS

CLIENT CONTACT: John Hewitt

CONTACTS ROLE: Signature Homes Ltd

MOBILE PHONE: 01226 790892

EMAIL ADDRESS: Johnhewittbeyond@hotmail.com

---

CLIENT CONTACT:

CONTACTS ROLE:

MOBILE PHONE:

EMAIL ADDRESS

NOTES:

NOTES:

NOTES:



# GEOSHIELD Verification Report



## APPLICATION TEAM LEADERS

APPLICATOR NAME: John Hewitt

COMPANY: Signature Homes

APPLICATOR TEL: 07919445467

APPLICATOR EMAIL:

---

APPLICATOR NAME: Adrian Needle

COMPANY: Signature Homes

APPLICATOR TEL: 07963810635

APPLICATOR EMAIL:

NOTES:

NOTES:

NOTES:

NOTES:



# GEOSHIELD Verification Report



AREA SURVEYED: Plots 22-25 Infills and Plots 29-36 Perimeters

## SITE CONDITIONS:

# WEATHER: Overcast

# TEMPERATURE: 15c

# MEMBRANE TEMPERATURE: N/A

# RELATIVE HUMIDITY: 81

-----

TIME: 09:00 - 11:30

REPORT NUMBER: 014

DATE: 24/05/2022

ACCOMPANIED Adrian





# GEOSHIELD Verification Report

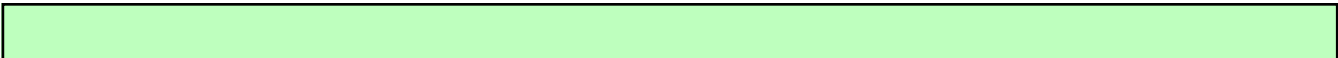


## OVERVIEW PHOTOGRAPHS



Overview of interior of a plot

Plots 22-25 Infills





# GEOSHIELD Verification Report

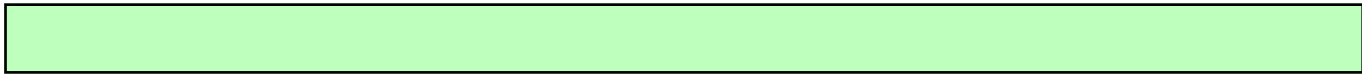


## OVERVIEW PHOTOGRAPHS



Overview of perimeters and partitions

Plots 29-36 Perimeters





# GEOSHIELD Verification Report



## VERIFICATION ITEM ONE

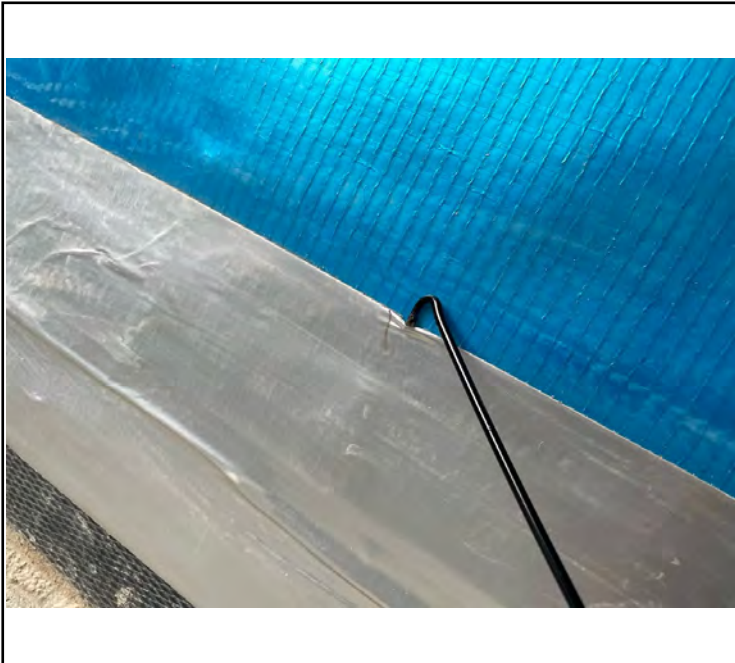
LOCATION/GRID LINE: Plots 22-25 Infills

NOTES: Installation has been carried out to an excellent standard.

Joints in Visqueen Standard Gas Barrier sealed with butyl tape and GR Foil Tape.

Joints to GR DPC sealed with butyl tape and GR Lap Tape as per manufacturers spec.

ALL joints visually inspected and checked with pick and probe. Excellent install.



1. Pick and probe proved good bond achieved.

2. Pick and probe proved good bond achieved.

# GEOSHIELD Verification Report

## VERIFICATION ITEM ONE



3. Double sided butyl tape installed inside all joints and correct lap tapes used

throughout. Excellent installation throughout. Passed and verified.



# GEOSHIELD Verification Report



## VERIFICATION ITEM TWO

LOCATION/GRID LINE: Plots 22-25 Infills

NOTES: Visqueen Standard Gas Barrier in good condition and

detailing has been carried out to a good standard. Access is now restricted until floor

insulation to be installed today. Good install throughout.



1. Good detailing and good seal to previously verified GR DPC.

2. Consistent full seal achieved throughout.

# GEOSHIELD Verification Report

## VERIFICATION ITEM TWO



3. Pipe penetrations sealed with Pro Detailing tape as per NVQ Level 2.

Good installation and good bond achieved.



# GEOSHIELD Verification Report



## VERIFICATION ITEM THREE

LOCATION/GRID LINE: Plots 29-36 Perimeters

NOTES: Perimeters have been sealed with GR DPC and Visqueen

Ultimate Gas Damp Proof Membrane. Spec of new membrane covers for Radon, CO2,

Methane, VOCS and Hydrocarbons. All joints sealed with butyl tape and corner

details reinforced with Pro Detailing Tape.



1. All joints sealed with butyl tape

2. All joints sealed with butyl tape.



# GEOSHIELD Verification Report



## VERIFICATION ITEM THREE



3. Corner details reinforced with Pro Detailing Tape.



# 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	Plots 16,17 & 20,21 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 14-15 & 18-19 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 7-11 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 12-13 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 20-21	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 14-15 and 18-19	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 16-17	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 7-13	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plot 25 Perimeters	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 23-24 Perimeters	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 22, 30 and 31 Perimeters	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 26, 27 and 28 Perimeters	<input checked="" type="checkbox"/>



# GEOSHIELD Verification Report



## GAS MEMBRANE TESTING

VISUAL:	<input type="checkbox"/> YES	<input checked="" type="checkbox"/>	<input type="checkbox"/> NO	<input type="checkbox"/>	SMOKE TEST:	<input type="checkbox"/> YES	<input type="checkbox"/>	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>
COMPRESSED AIR:	<input type="checkbox"/> YES	<input type="checkbox"/>	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>	DILECTIC	<input type="checkbox"/> YES	<input type="checkbox"/>	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>
DESTRUCTIVE:	<input type="checkbox"/> YES	<input type="checkbox"/>	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>	OTHER:	<input type="checkbox"/> YES	<input checked="" type="checkbox"/>	<input type="checkbox"/> NO	<input type="checkbox"/>
Testing checklist attached:	<input type="checkbox"/> YES	<input type="checkbox"/>	<input type="checkbox"/> NO	<input type="checkbox"/>					

## Gridline/Plot Sign off

Gridline/Plot Sign off	Plots 22-25 Infills and Plots 29-36 Perimeters	<input checked="" type="checkbox"/>
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Gridline/Plot Sign off		<input type="checkbox"/>
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Gridline/Plot Sign off		<input type="checkbox"/>



# GEOSHIELD Verification Report



## ADDITIONAL PHOTOGRAPHS



Photo evidence of good installation

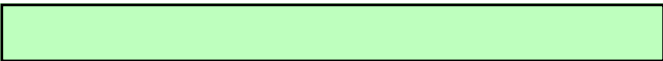


Photo evidence of good installation

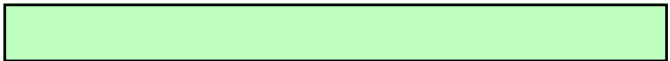


Photo evidence of good installation

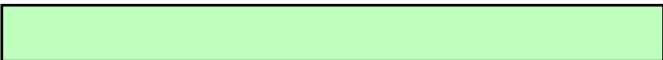
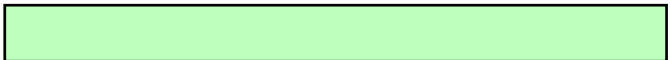


Photo evidence of good installation





# GEOSHIELD Verification Report



## ADDITIONAL PHOTOGRAPHS



Photo evidence of good installation

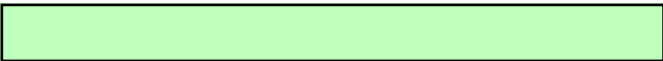


Photo evidence of good installation

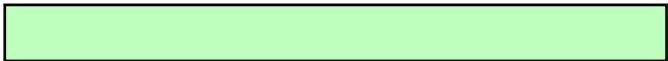


Photo evidence of good installation

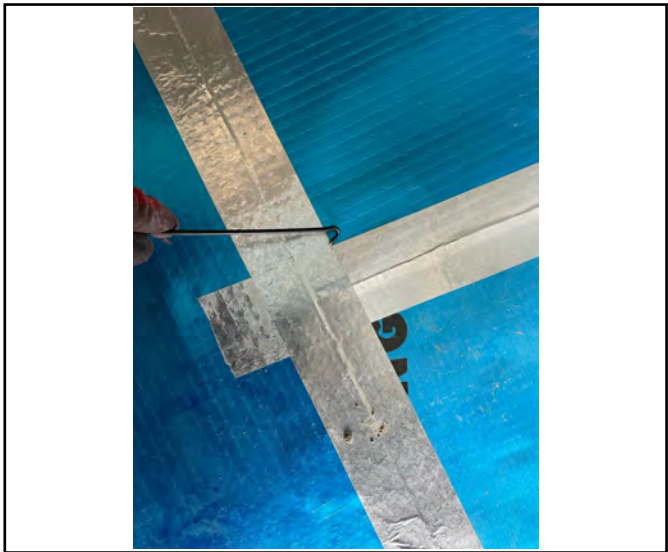
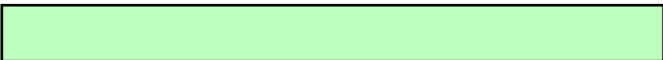
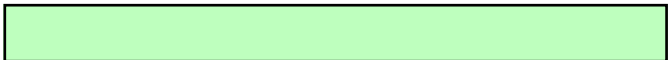


Photo evidence of good installation





# GEOSHIELD Verification Report



## ADDITIONAL PHOTOGRAPHS



Photo evidence of good installation

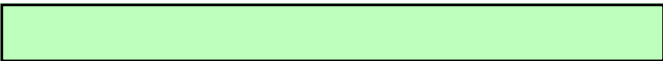


Photo evidence of good installation

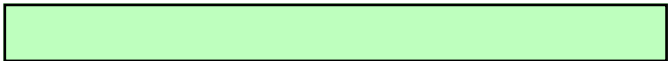


Photo evidence of good installation

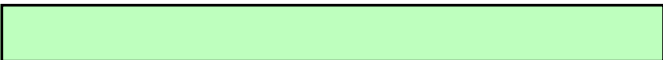
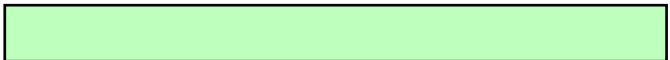


Photo evidence of good installation





# GEOSHIELD Verification Report



## REMEDIATION LOG

Date	Nr	Remediation Description	Y/N
02/11/2020	001	DPC installation had major limitations due to block work install	✓
02/11/2020	002	GR DPC installed but major limitations caused by block work.	✓
02/11/2020	003	GR DPC already covered with block work however so limitations	
		were caused, however remediations will be made during the infil	
		process	✓
02/11/2020	004	Corners must be seen on future visit	✓
13/11/2020	005	Visqueen Low Perm on site - informed needs upgrading to	✓
		Visqueen Standard Gas Barrier	
11/12/2020	006	No faults found	✓
28/02/2021	007	No faults found	✓
24/03/2021	008	No faults found	✓
26/07/2021	009	No faults found	✓
19/01/2022	010	No faults found	✓
26/01/2022	011	No faults found	✓
15/02/2022	012	No faults found	✓





# GEOSHIELD Verification Report



## VERIFICATION SUMMARY

Report 014 is for Plots 22-25 Infills and Plots 29-36 Perimeters. All works visually

inspected and tested with Mechanical Point Stress Test (pick and probe).

Excellent installation with no faults found. Good number of telescopic vents

throughout.

Passed and verified in accordance with BS8485:2019 and CIRIA 735.

GEOSHIELD SIGNATURE:

DATE: 24/05/2022



# GEOSHIELD

## Verification Certificate

Date: 24 May 2022

**Signature Homes Yorkshire Limited**

---

**Plot 22**

**New Mill Road**

**Holmfirth**

**HD9 7LT**

The documentation in this handover package shows that the installation of the Gas Membrane and ancillaries was installed to specification. Verified in accordance with BS 8485:2015+A1:2019 and CIRIA 735.

All areas were verified, and remediation issues corrected.

**Paul Colbeck**

Director of Site Services





# GEOSHIELD Verification Report



PROJECT REFERENCE: GEO101204

REPORT NUMBER: 014

PROJECT: Signature Homes - Holmfirth

PROJECT ADDRESS: New Mill Road

Holmfirth

HD9 7LT

MEMBRANE SPECIFICATION: Gas membrane to specification BS8485 2019

Installed to CIRIA 735

Visqueen GR DPC

Visqueen Standard Gas Barrier

Visqueen Double sided butyl tape

Visqueen GR Foil Tape

Visqueen GR lap Tape

Visqueen Pro Detailing Tape



GEOSHIELD  
Verification  
PLAN



SPECIFICATION:

[Redacted]

[Redacted]

[Redacted]

INFORMATION INCLUDED:

[Redacted]

Material specification technical data sheets

Geotechnical Survey Report - PR/AJK/39141/007

Site Layout - Final

Phase Plan

1602-110 House Type - Venice - Roma - Florence

1602-111 House Type - Tuscant

1602-300 Draft Foundations

1602-301 Draft Foundations

1451-700a Typical Tanking Detail

[Redacted]

[Redacted]

[Redacted]

Information presented to at the pre-verification stage assumed correct

Any change client will let GeoShield know or this Pre-verification Plan will be void.



# GEOSHIELD Verification Report



VERIFICATION OFFICER: Chris Ingham

VERIFICATION COMPANY: GeoShield Limited

Icon Business Park, 4100 Park Approach

Thorpe Park, LEEDS

West Yorkshire

LS15 8GB

CONTACT NUMBER: 07555214679

EMAIL ADDRESS: CIngham@Geoshield.co.uk

ORDER NUMBER:

PER VISIT: YES:



NO:



PROJECT: YES:



NO:





# GEOSHIELD Verification Report



## CLIENT DETAILS

CLIENT CONTACT: John Hewitt

CONTACTS ROLE: Signature Homes Ltd

MOBILE PHONE: 01226 790892

EMAIL ADDRESS: Johnhewittbeyond@hotmail.com

---

CLIENT CONTACT:

CONTACTS ROLE:

MOBILE PHONE:

EMAIL ADDRESS

NOTES:

NOTES:

NOTES:



# GEOSHIELD Verification Report



## APPLICATION TEAM LEADERS

APPLICATOR NAME: John Hewitt

COMPANY: Signature Homes

APPLICATOR TEL: 07919445467

APPLICATOR EMAIL:

---

APPLICATOR NAME: Adrian Needle

COMPANY: Signature Homes

APPLICATOR TEL: 07963810635

APPLICATOR EMAIL:

NOTES:

NOTES:

NOTES:

NOTES:



# GEOSHIELD Verification Report



AREA SURVEYED: Plots 22-25 Infills and Plots 29-36 Perimeters

## SITE CONDITIONS:

# WEATHER: Overcast

# TEMPERATURE: 15c

# MEMBRANE TEMPERATURE: N/A

# RELATIVE HUMIDITY: 81

-----

TIME: 09:00 - 11:30 REPORT NUMBER: 014

DATE: 24/05/2022

ACCOMPANIED Adrian





# GEOSHIELD Verification Report

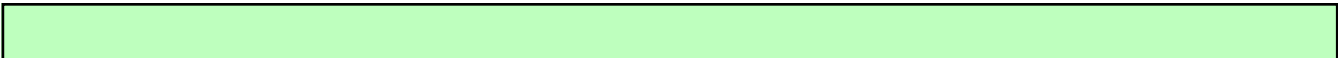


## OVERVIEW PHOTOGRAPHS



Overview of interior of a plot

Plots 22-25 Infills





# GEOSHIELD Verification Report

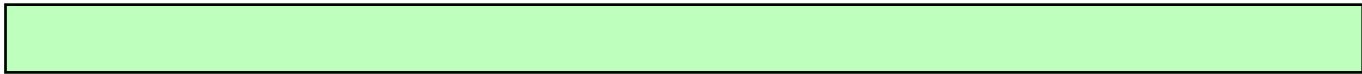


## OVERVIEW PHOTOGRAPHS



Overview of perimeters and partitions

Plots 29-36 Perimeters





# GEOSHIELD Verification Report



## VERIFICATION ITEM ONE

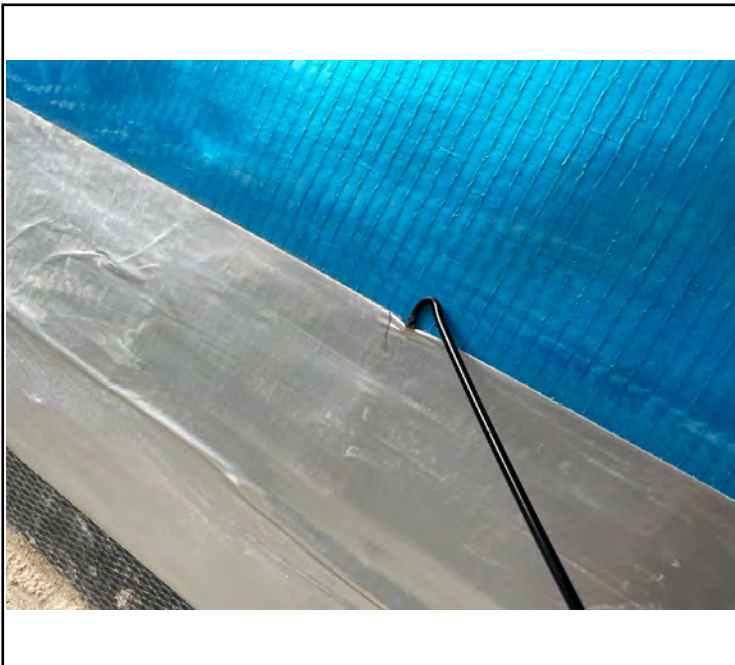
LOCATION/GRID LINE: Plots 22-25 Infills

NOTES: Installation has been carried out to an excellent standard.

Joints in Visqueen Standard Gas Barrier sealed with butyl tape and GR Foil Tape.

Joints to GR DPC sealed with butyl tape and GR Lap Tape as per manufacturers spec.

ALL joints visually inspected and checked with pick and probe. Excellent install.



1. Pick and probe proved good bond achieved.

2. Pick and probe proved good bond achieved.



# GEOSHIELD Verification Report



## VERIFICATION ITEM ONE



3. Double sided butyl tape installed inside all joints and correct lap tapes used

throughout. Excellent installation throughout. Passed and verified.



# GEOSHIELD Verification Report



## VERIFICATION ITEM TWO

LOCATION/GRID LINE: Plots 22-25 Infills

NOTES: Visqueen Standard Gas Barrier in good condition and

detailing has been carried out to a good standard. Access is now restricted until floor

insulation to be installed today. Good install throughout.



1. Good detailing and good seal to previously verified GR DPC.

2. Consistent full seal achieved throughout.

# GEOSHIELD Verification Report

## VERIFICATION ITEM TWO



3. Pipe penetrations sealed with Pro Detailing tape as per NVQ Level 2.

Good installation and good bond achieved.



# GEOSHIELD Verification Report



## VERIFICATION ITEM THREE

LOCATION/GRID LINE: Plots 29-36 Perimeters

NOTES: Perimeters have been sealed with GR DPC and Visqueen

Ultimate Gas Damp Proof Membrane. Spec of new membrane covers for Radon, CO2,

Methane, VOCS and Hydrocarbons. All joints sealed with butyl tape and corner

details reinforced with Pro Detailing Tape.



1. All joints sealed with butyl tape

2. All joints sealed with butyl tape.



# GEOSHIELD Verification Report



## VERIFICATION ITEM THREE



3. Corner details reinforced with Pro Detailing Tape.



# 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	Plots 16,17 & 20,21 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 14-15 & 18-19 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 7-11 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 12-13 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 20-21	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 14-15 and 18-19	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 16-17	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 7-13	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plot 25 Perimeters	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 23-24 Perimeters	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 22, 30 and 31 Perimeters	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 26, 27 and 28 Perimeters	<input checked="" type="checkbox"/>





# GEOSHIELD Verification Report



## ADDITIONAL PHOTOGRAPHS



Photo evidence of good installation

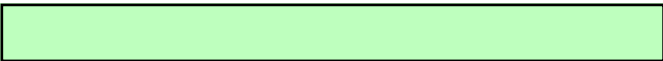


Photo evidence of good installation

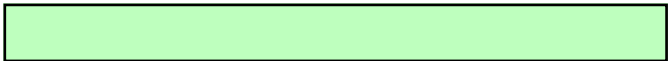


Photo evidence of good installation

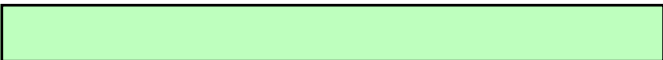
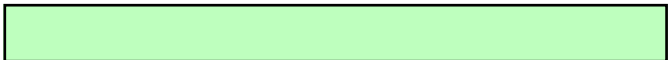


Photo evidence of good installation





# GEOSHIELD Verification Report



## ADDITIONAL PHOTOGRAPHS



Photo evidence of good installation

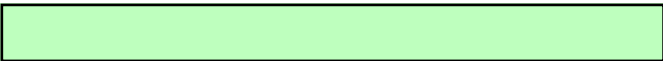


Photo evidence of good installation

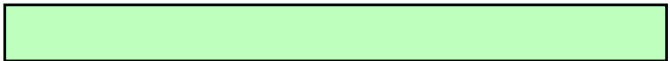


Photo evidence of good installation

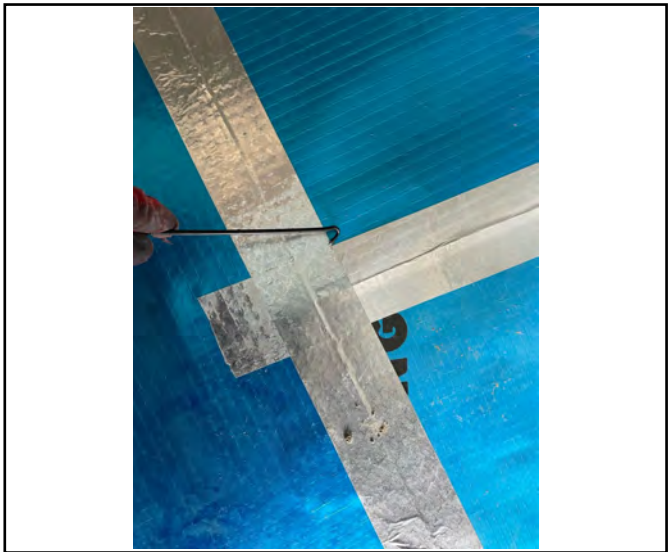
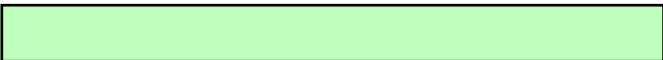
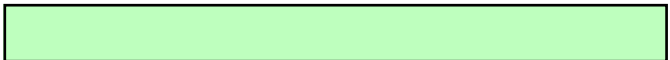


Photo evidence of good installation





# GEOSHIELD Verification Report



## ADDITIONAL PHOTOGRAPHS



Photo evidence of good installation

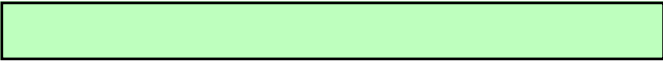


Photo evidence of good installation

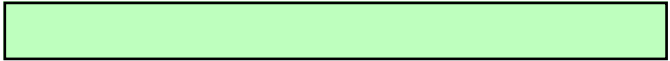


Photo evidence of good installation

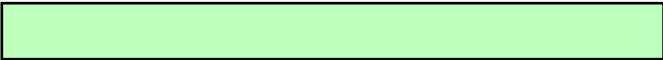
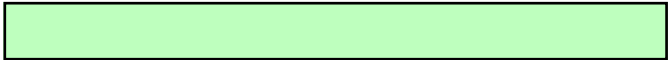


Photo evidence of good installation





# GEOSHIELD Verification Report



## REMEDIATION LOG

Date	Nr	Remediation Description	Y/N
02/11/2020	001	DPC installation had major limitations due to block work install	✓
02/11/2020	002	GR DPC installed but major limitations caused by block work.	✓
02/11/2020	003	GR DPC already covered with block work however so limitations	
		were caused, however remediations will be made during the infil	
		process	✓
02/11/2020	004	Corners must be seen on future visit	✓
13/11/2020	005	Visqueen Low Perm on site - informed needs upgrading to	✓
		Visqueen Standard Gas Barrier	
11/12/2020	006	No faults found	✓
28/02/2021	007	No faults found	✓
24/03/2021	008	No faults found	✓
26/07/2021	009	No faults found	✓
19/01/2022	010	No faults found	✓
26/01/2022	011	No faults found	✓
15/02/2022	012	No faults found	✓





# GEOSHIELD Verification Report



## VERIFICATION SUMMARY

Report 014 is for Plots 22-25 Infills and Plots 29-36 Perimeters. All works visually

inspected and tested with Mechanical Point Stress Test (pick and probe).

Excellent installation with no faults found. Good number of telescopic vents

throughout.

Passed and verified in accordance with BS8485:2019 and CIRIA 735.

GEOSHIELD SIGNATURE:

DATE: 24/05/2022



# GEOSHIELD

## Verification Certificate

Date: 24 May 2022

**Signature Homes Yorkshire Limited**

---

**Plot 23**

**New Mill Road**

**Holmfirth**

**HD9 7LT**

The documentation in this handover package shows that the installation of the Gas Membrane and ancillaries was installed to specification. Verified in accordance with BS 8485:2015+A1:2019 and CIRIA 735.

All areas were verified, and remediation issues corrected.

**Paul Colbeck**

Director of Site Services





# GEOSHIELD

## Verification Certificate

Date: 24 May 2022

**Signature Homes Yorkshire Limited**

---

**Plot 24**

**New Mill Road**

**Holmfirth**

**HD9 7LT**

The documentation in this handover package shows that the installation of the Gas Membrane and ancillaries was installed to specification. Verified in accordance with BS 8485:2015+A1:2019 and CIRIA 735.

All areas were verified, and remediation issues corrected.

**Paul Colbeck**

Director of Site Services





# GEOSHIELD

## Verification Certificate

Date: 24 May 2022

**Signature Homes Yorkshire Limited**

---

**Plot 25**

**New Mill Road**

**Holmfirth**

**HD9 7LT**

The documentation in this handover package shows that the installation of the Gas Membrane and ancillaries was installed to specification. Verified in accordance with BS 8485:2015+A1:2019 and CIRIA 735.

All areas were verified, and remediation issues corrected.

**Paul Colbeck**

Director of Site Services





# GEOSHIELD

## Verification Certificate

Date: 22 June 2022

**Signature Homes Yorkshire Limited**

---

**Plot 26**

**New Mill Road**

**Holmfirth**

**HD9 7LT**

The documentation in this handover package shows that the installation of the Gas Membrane and ancillaries was installed to specification. Verified in accordance with BS 8485:2015+A1:2019 and CIRIA 735.

All areas were verified, and remediation issues corrected.

**Paul Colbeck**

Director of Site Services





# GEOSHIELD

## Verification Certificate

Date: 27 July 2022

**Signature Homes Yorkshire Limited**

---

**Plot 27**

**New Mill Road**

**Holmfirth**

**HD9 7LT**

The documentation in this handover package shows that the installation of the Gas Membrane and ancillaries was installed to specification. Verified in accordance with BS 8485:2015+A1:2019 and CIRIA 735.

All areas were verified, and remediation issues corrected.

**Paul Colbeck**

Director of Site Services





# GEOSHIELD

## Verification Certificate

Date: 27 July 2022

**Signature Homes Yorkshire Limited**

---

**Plot 28**

**New Mill Road**

**Holmfirth**

**HD9 7LT**

The documentation in this handover package shows that the installation of the Gas Membrane and ancillaries was installed to specification. Verified in accordance with BS 8485:2015+A1:2019 and CIRIA 735.

All areas were verified, and remediation issues corrected.

**Paul Colbeck**

Director of Site Services





# GEOSHIELD

## Verification Certificate

Date: 27 July 2022

**Signature Homes Yorkshire Limited**

---

**Plot 29**

**New Mill Road**

**Holmfirth**

**HD9 7LT**

The documentation in this handover package shows that the installation of the Gas Membrane and ancillaries was installed to specification. Verified in accordance with BS 8485:2015+A1:2019 and CIRIA 735.

All areas were verified, and remediation issues corrected.

**Paul Colbeck**

Director of Site Services





# GEOSHIELD

## Verification Certificate

Date: 27 July 2022

**Signature Homes Yorkshire Limited**

---

**Plot 30**

**New Mill Road**

**Holmfirth**

**HD9 7LT**

The documentation in this handover package shows that the installation of the Gas Membrane and ancillaries was installed to specification. Verified in accordance with BS 8485:2015+A1:2019 and CIRIA 735.

All areas were verified, and remediation issues corrected.

**Paul Colbeck**

Director of Site Services





# GEOSHIELD

## Verification Certificate

Date: 22 June 2022

**Signature Homes Yorkshire Limited**

---

**Plot 31**

**New Mill Road**

**Holmfirth**

**HD9 7LT**

The documentation in this handover package shows that the installation of the Gas Membrane and ancillaries was installed to specification. Verified in accordance with BS 8485:2015+A1:2019 and CIRIA 735.

All areas were verified, and remediation issues corrected.

**Paul Colbeck**

Director of Site Services





# GEOSHIELD Verification Report



PROJECT REFERENCE: GEO101204

REPORT NUMBER: 015

PROJECT: Signature Homes - Holmfirth

PROJECT ADDRESS: New Mill Road

Holmfirth

HD9 7LT

MEMBRANE SPECIFICATION: Gas membrane to specification BS8485 2019

Installed to CIRIA 735

Visqueen GR DPC

Visqueen Standard Gas Barrier

Visqueen Double sided butyl tape

Visqueen GR Foil Tape

Visqueen GR lap Tape

Visqueen Pro Detailing Tape



**GEOSHIELD  
Verification  
PLAN**



SPECIFICATION:

[Redacted]

[Redacted]

[Redacted]

INFORMATION INCLUDED:

[Redacted]

Material specification technical data sheets

Geotechnical Survey Report - PR/AJK/39141/007

Site Layout - Final

Phase Plan

1602-110 House Type - Venice - Roma - Florence

1602-111 House Type - Tuscant

1602-300 Draft Foundations

1602-301 Draft Foundations

1451-700a Typical Tanking Detail

[Redacted]

[Redacted]

[Redacted]

Information presented to at the pre-verification stage assumed correct

Any change client will let GeoShield know or this Pre-verification Plan will be void.



# GEOSHIELD Verification Report



VERIFICATION OFFICER: Chris Ingham

VERIFICATION COMPANY: GeoShield Limited

Icon Business Park, 4100 Park Approach

Thorpe Park, LEEDS

West Yorkshire

LS15 8GB

CONTACT NUMBER: 07555214679

EMAIL ADDRESS: CIngham@Geoshield.co.uk

ORDER NUMBER:

PER VISIT: YES:



NO:



PROJECT: YES:



NO:





# GEOSHIELD Verification Report



## CLIENT DETAILS

CLIENT CONTACT: John Hewitt

CONTACTS ROLE: Signature Homes Ltd

MOBILE PHONE: 01226 790892

EMAIL ADDRESS: Johnhewittbeyond@hotmail.com

---

CLIENT CONTACT:

CONTACTS ROLE:

MOBILE PHONE:

EMAIL ADDRESS

NOTES:

NOTES:

NOTES:



# GEOSHIELD Verification Report



## APPLICATION TEAM LEADERS

APPLICATOR NAME: John Hewitt

COMPANY: Signature Homes

APPLICATOR TEL: 07919445467

APPLICATOR EMAIL:

---

APPLICATOR NAME: Adrian Needle

COMPANY: Signature Homes

APPLICATOR TEL: 07963810635

APPLICATOR EMAIL:

NOTES:

NOTES:

NOTES:

NOTES:



# GEOSHIELD Verification Report



AREA SURVEYED: Plots 31 and 26 Infills and Plots 32-35 Perimeters

## SITE CONDITIONS:

# WEATHER: Sunny

# TEMPERATURE: 19c

# MEMBRANE TEMPERATURE: N/A

# RELATIVE HUMIDITY: 56

---

TIME: 09:00 - 11:30 REPORT NUMBER: 015

DATE: 22/06/2022

ACCOMPANIED Adrian





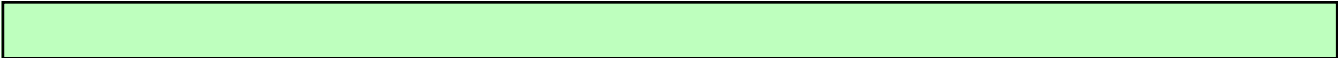
# GEOSHIELD Verification Report



## OVERVIEW PHOTOGRAPHS



Overview of infill

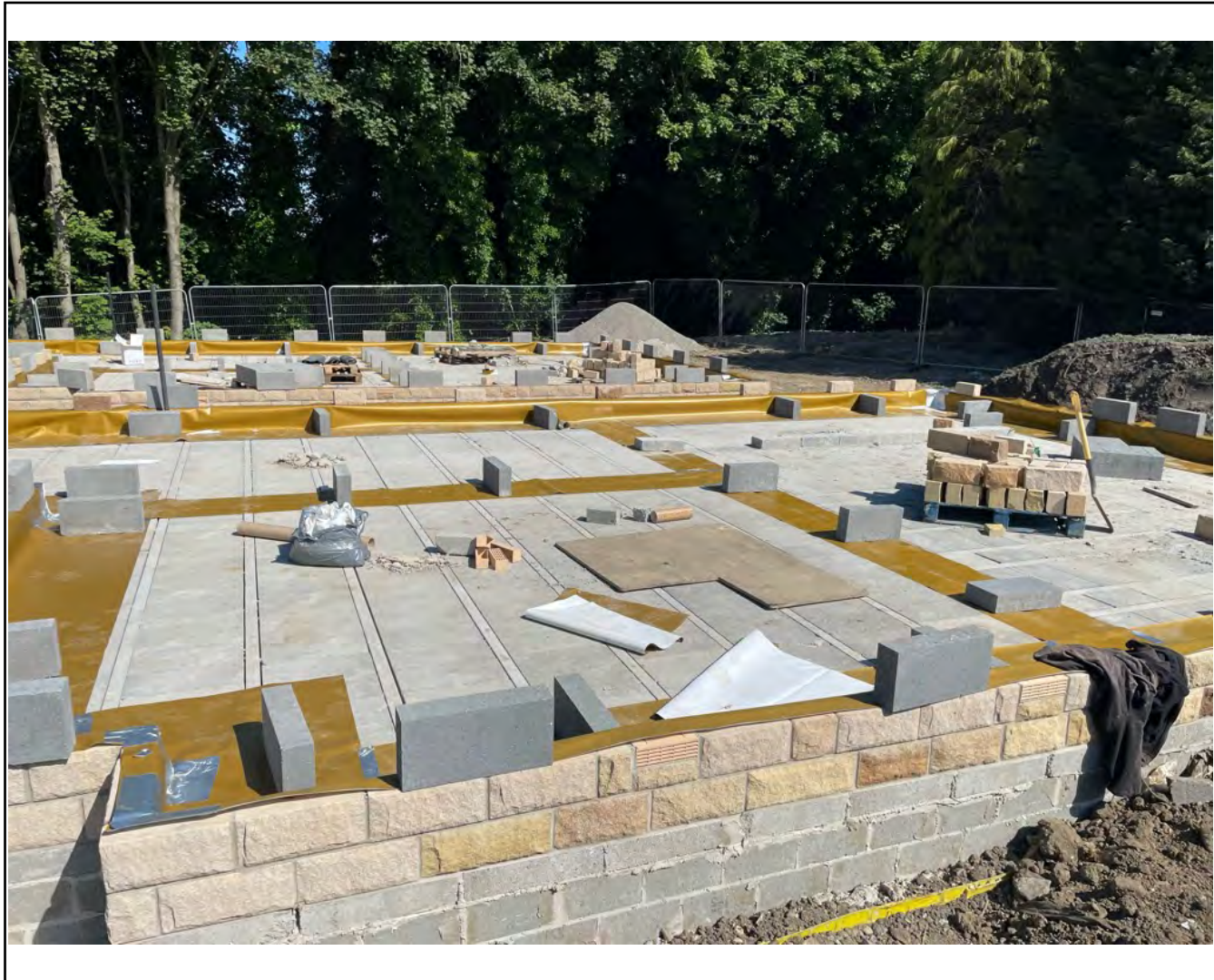




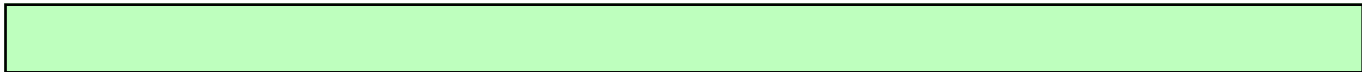
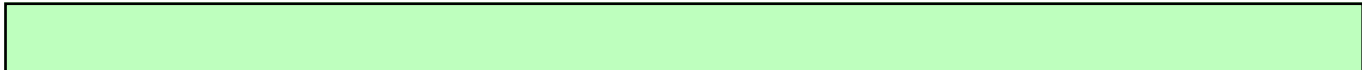
# GEOSHIELD Verification Report



## OVERVIEW PHOTOGRAPHS



Overview of perimeters





# GEOSHIELD Verification Report



## VERIFICATION ITEM ONE

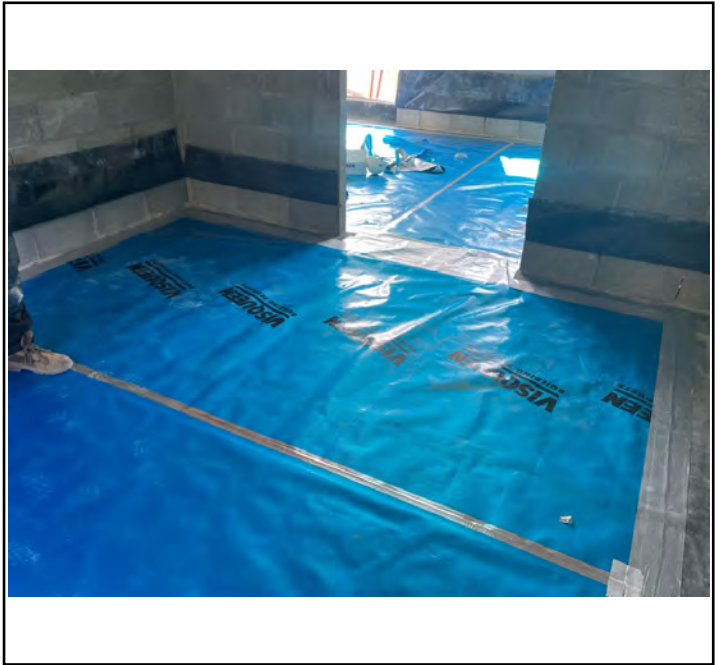
LOCATION/GRID LINE: Plots 31 and 26 Infills

NOTES: All works visually inspected and tested with pick and probe.

Installation as per manufacturers specification with double sided butyl tape inside all

joints - GR Lap Tape to GR DPC and GR Foil Tape to joints in Standard Gas Barrier.

Good installation throughout.



1. Photo evidence of good installation.

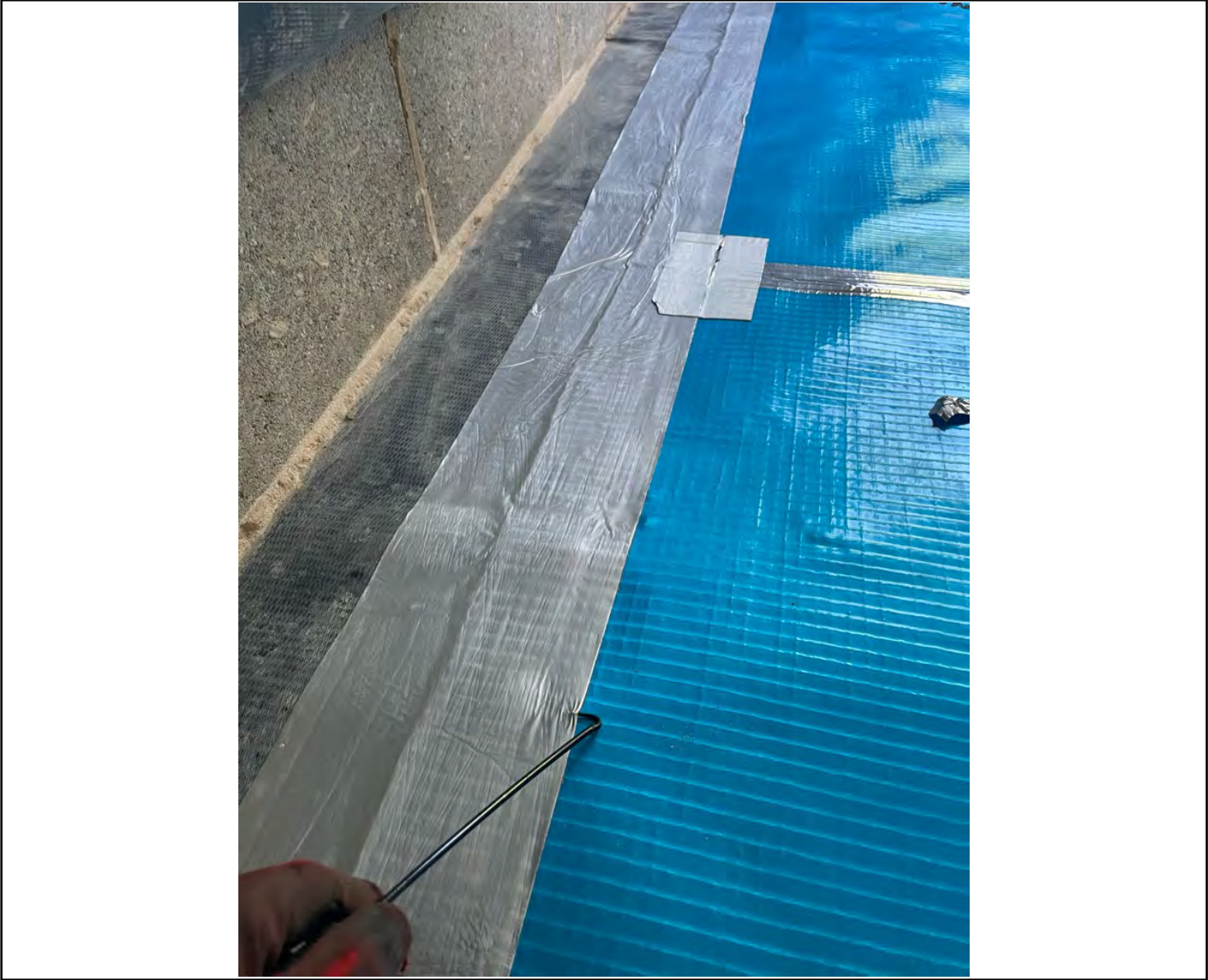
2. Photo evidence of good installation.



# GEOSHIELD Verification Report



## VERIFICATION ITEM ONE



3. Pick and probe carried out and good bond achieved throughout. Passed and

verified. No faults found.



# GEOSHIELD Verification Report



## VERIFICATION ITEM TWO

LOCATION/GRID LINE: Plots 31 and 26 Infills

NOTES: All works visually inspected and no faults found. Pipe

penetration sealed to a good standard. All other pipes to come in through the wall.

Passed and verified.



1. Pipe penetrations sealed to good standard. All other pipes to come in through the walls.

2. Damaged GR DPC fully sealed and Pro Detailing Tape.

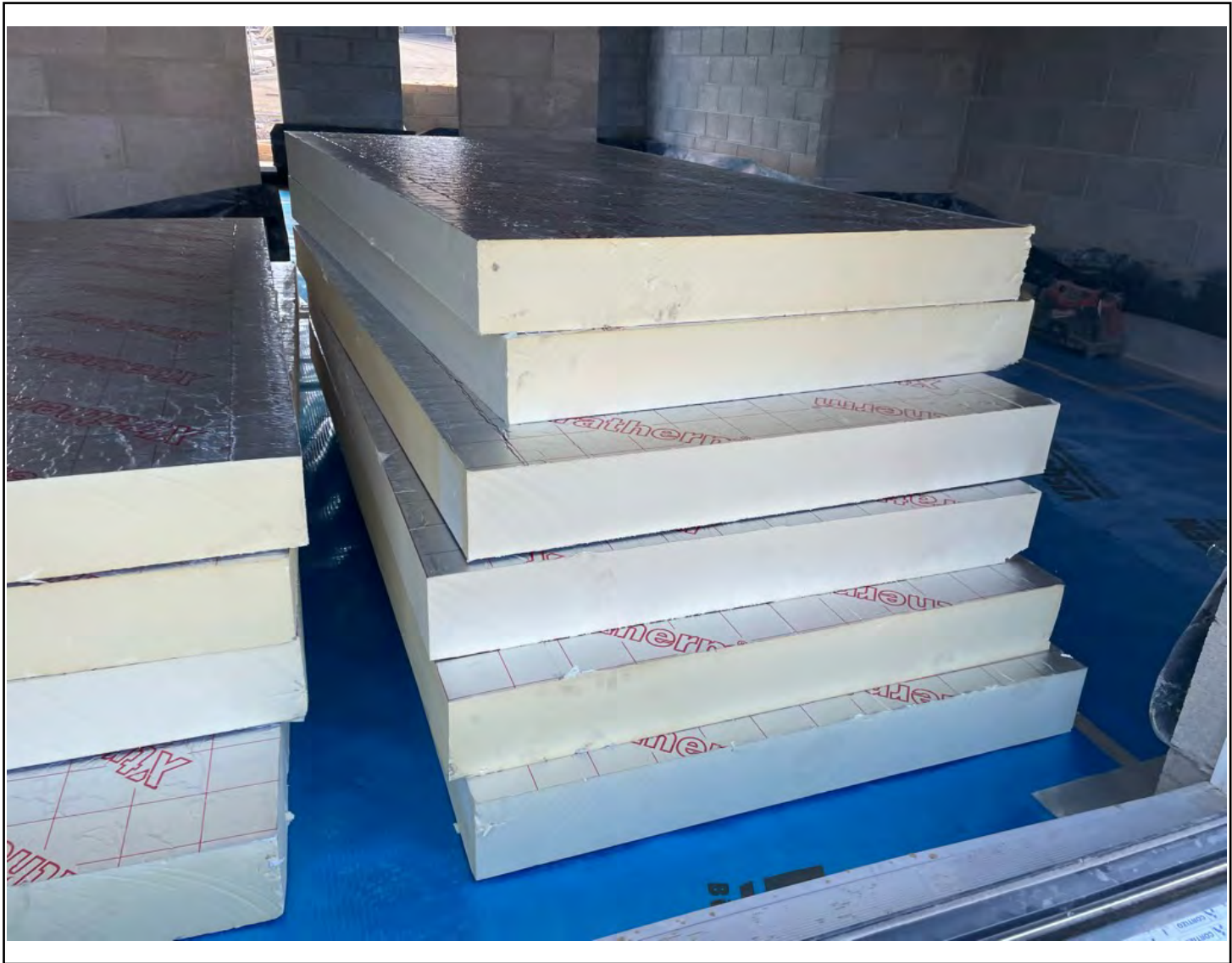
No faults found.



# GEOSHIELD Verification Report



## VERIFICATION ITEM TWO



3. Insulation brought in to install before any other trades have access to the plot.

This will protect the membrane from damage. Passed and verified.



# GEOSHIELD Verification Report



## VERIFICATION ITEM THREE

LOCATION/GRID LINE: Plots 32-35 Perimeters

NOTES: Corner details sealed to as good standard. Butyl tape

inside all joints with Pro Detailing to overlap and to reinforce corner details as per

toolbox talk. Passed and verified with no faults found.



1. Photo evidence of good installation

2. Photo evidence of good installation.



# GEOSHIELD Verification Report



## VERIFICATION ITEM THREE



3. Butyl tape inside all joints.

Lap Tape then applied. Good installation throughout. Passed and verified.



# GEOSHIELD Verification Report



## REMEDIATION LOG

Date	Nr	Remediation Description	Y/N
02/11/2020	001	DPC installation had major limitations due to block work install	✓
02/11/2020	002	GR DPC installed but major limitations caused by block work.	✓
02/11/2020	003	GR DPC already covered with block work however so limitations	
		were caused, however remediations will be made during the infil	
		process	✓
02/11/2020	004	Corners must be seen on future visit	✓
13/11/2020	005	Visqueen Low Perm on site - informed needs upgrading to	✓
		Visqueen Standard Gas Barrier	
11/12/2020	006	No faults found	✓
28/02/2021	007	No faults found	✓
24/03/2021	008	No faults found	✓
26/07/2021	009	No faults found	✓
19/01/2022	010	No faults found	✓
26/01/2022	011	No faults found	✓
15/02/2022	012	No faults found	✓





# GEOSHIELD Verification Report



## ADDITIONAL PHOTOGRAPHS



Photo evidence of good installation

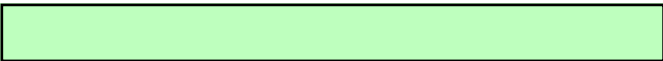


Photo evidence of good installation

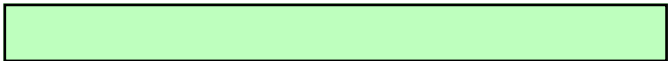


Photo evidence of good installation

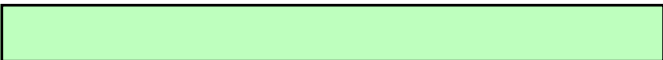
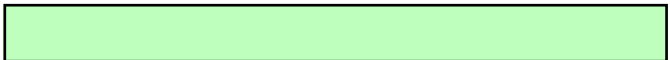


Photo evidence of good installation





# GEOSHIELD Verification Report



## ADDITIONAL PHOTOGRAPHS



Photo evidence of good installation

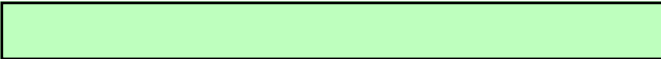


Photo evidence of good installation

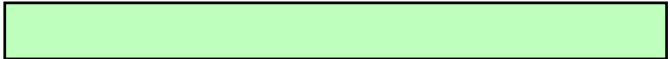


Photo evidence of good installation

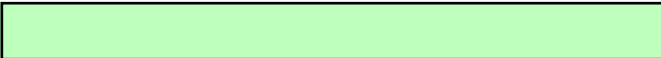
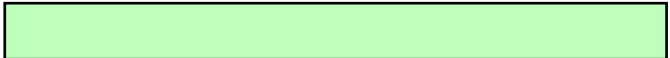


Photo evidence of good installation





# GEOSHIELD Verification Report



## GAS MEMBRANE TESTING

VISUAL:	<input type="checkbox"/> YES	<input checked="" type="checkbox"/>	<input type="checkbox"/> NO	<input type="checkbox"/>	SMOKE TEST:	<input type="checkbox"/> YES	<input type="checkbox"/>	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>
COMPRESSED AIR:	<input type="checkbox"/> YES	<input type="checkbox"/>	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>	DILECTIC	<input type="checkbox"/> YES	<input type="checkbox"/>	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>
DESTRUCTIVE:	<input type="checkbox"/> YES	<input type="checkbox"/>	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>	OTHER:	<input type="checkbox"/> YES	<input checked="" type="checkbox"/>	<input type="checkbox"/> NO	<input type="checkbox"/>
Testing checklist attached:	<input type="checkbox"/> YES	<input type="checkbox"/>	<input type="checkbox"/> NO	<input type="checkbox"/>					

## Gridline/Plot Sign off

Gridline/Plot Sign off	Plots 16,17 & 20,21 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 14-15 & 18-19 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 7-11 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 12-13 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 20-21	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 14-15 and 18-19	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 16-17	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 7-13	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plot 25 Perimeters	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 23-24 Perimeters	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 22, 30 and 31 Perimeters	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 26, 27 and 28 Perimeters	<input checked="" type="checkbox"/>



# GEOSHIELD Verification Report



## GAS MEMBRANE TESTING

VISUAL:	<input type="checkbox"/> YES	<input checked="" type="checkbox"/>	<input type="checkbox"/> NO	<input type="checkbox"/>	SMOKE TEST:	<input type="checkbox"/> YES	<input type="checkbox"/>	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>
COMPRESSED AIR:	<input type="checkbox"/> YES	<input type="checkbox"/>	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>	DILECTIC	<input type="checkbox"/> YES	<input type="checkbox"/>	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>
DESTRUCTIVE:	<input type="checkbox"/> YES	<input type="checkbox"/>	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>	OTHER:	<input type="checkbox"/> YES	<input checked="" type="checkbox"/>	<input type="checkbox"/> NO	<input type="checkbox"/>
Testing checklist attached:	<input type="checkbox"/> YES	<input type="checkbox"/>	<input type="checkbox"/> NO	<input type="checkbox"/>					

## Gridline/Plot Sign off

Gridline/Plot Sign off	Plots 22-25 Infills and Plots 29-36 Perimeters	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 31 and 26 Infills and Plots 32-35 Perimeters	<input checked="" type="checkbox"/>
Gridline/Plot Sign off		<input type="checkbox"/>
Gridline/Plot Sign off		<input type="checkbox"/>
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Gridline/Plot Sign off		<input type="checkbox"/>
Gridline/Plot Sign off		<input type="checkbox"/>
Gridline/Plot Sign off		<input type="checkbox"/>



# GEOSHIELD Verification Report



## VERIFICATION SUMMARY

Report 015 is for Plots 31 and 26 Infills and Plots 32-35 Perimeters. Installation has been carried out to a good standard using products throughout. All works visually inspected and tested with pick and probe. No faults found. Insulation brought in to protect the membrane before any follow on trades have access. Passed and verified in accordance with BS8485:2019 and CIRIA 735.

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

GEOSHIELD SIGNATURE:

DATE: 22/06/2022



# GEOSHIELD Verification Report



PROJECT REFERENCE: GEO101204

REPORT NUMBER: 016

PROJECT: Signature Homes - Holmfirth

PROJECT ADDRESS: New Mill Road

Holmfirth

HD9 7LT

MEMBRANE SPECIFICATION: Gas membrane to specification BS8485 2019

Installed to CIRIA 735

Visqueen GR DPC

Visqueen Standard Gas Barrier

Visqueen Double sided butyl tape

Visqueen GR Foil Tape

Visqueen GR lap Tape

Visqueen Pro Detailing Tape



**GEOSHIELD  
Verification  
PLAN**



**SPECIFICATION:**

[Redacted]

[Redacted]

[Redacted]

**INFORMATION INCLUDED:**

[Redacted]

Material specification technical data sheets

Geotechnical Survey Report - PR/AJK/39141/007

Site Layout - Final

Phase Plan

1602-110 House Type - Venice - Roma - Florence

1602-111 House Type - Tuscant

1602-300 Draft Foundations

1602-301 Draft Foundations

1451-700a Typical Tanking Detail

[Redacted]

[Redacted]

[Redacted]

Information presented to at the pre-verification stage assumed correct

Any change client will let GeoShield know or this Pre-verification Plan will be void.



# GEOSHIELD Verification Report



VERIFICATION OFFICER: Finlay Todd

VERIFICATION COMPANY: GeoShield Limited

Icon Business Park, 4100 Park Approach

Thorpe Park, LEEDS

West Yorkshire

LS15 8GB

CONTACT NUMBER: 07502343063

EMAIL ADDRESS: Ftodd@Geoshield.co.uk

ORDER NUMBER:

PER VISIT: YES:



NO:



PROJECT: YES:



NO:





# GEOSHIELD Verification Report



## CLIENT DETAILS

CLIENT CONTACT: John Hewitt

CONTACTS ROLE: Signature Homes Ltd

MOBILE PHONE: 01226 790892

EMAIL ADDRESS: Johnhewittbeyond@hotmail.com

---

CLIENT CONTACT:

CONTACTS ROLE:

MOBILE PHONE:

EMAIL ADDRESS

NOTES:

NOTES:

NOTES:



# GEOSHIELD Verification Report



## APPLICATION TEAM LEADERS

APPLICATOR NAME: John Hewitt

COMPANY: Signature Homes

APPLICATOR TEL: 07919445467

APPLICATOR EMAIL:

---

APPLICATOR NAME: Adrian Needle

COMPANY: Signature Homes

APPLICATOR TEL: 07963810635

APPLICATOR EMAIL:

NOTES:

NOTES:

NOTES:

NOTES:



# GEOSHIELD Verification Report



AREA SURVEYED: Plots 27,28,29,30

## SITE CONDITIONS:

# WEATHER: Sunny

# TEMPERATURE: 25c

# MEMBRANE TEMPERATURE:

# RELATIVE HUMIDITY:

-----

TIME: 12:30-14:00 REPORT NUMBER: 016

DATE: 27/06/2022

ACCOMPANIED Adrian





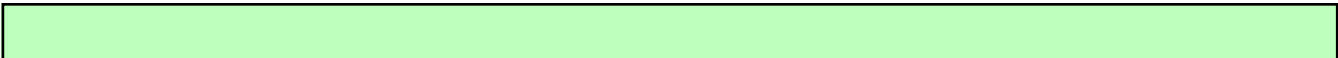
# GEOSHIELD Verification Report



## OVERVIEW PHOTOGRAPHS



Overview of verified area





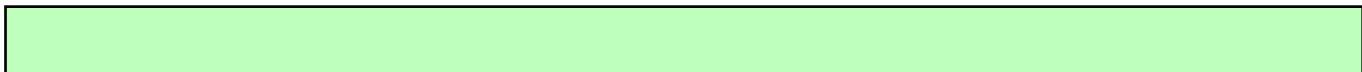
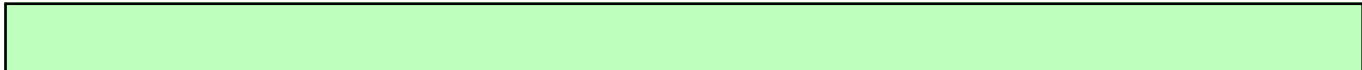
# GEOSHIELD Verification Report



## OVERVIEW PHOTOGRAPHS



Overview of verified area





# GEOSHIELD Verification Report

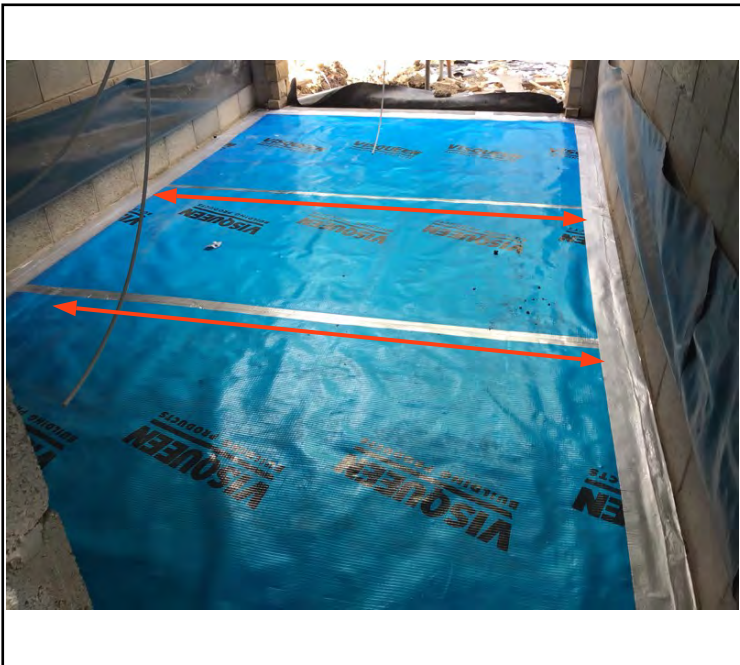


## VERIFICATION ITEM ONE

LOCATION/GRID LINE: Plots 27-30

NOTES: Taped Lap Joints

Visqueen Standard Gas Barrier has been installed to the infill of the plots 27-30 with overlaps of 150mm created. These overlaps have been sealed using double sided gas resistant butyl tape. The left photo shows an overview of a verified room with the red



arrows highlighting the taped lap joints. The right photo shows the double sided butyl

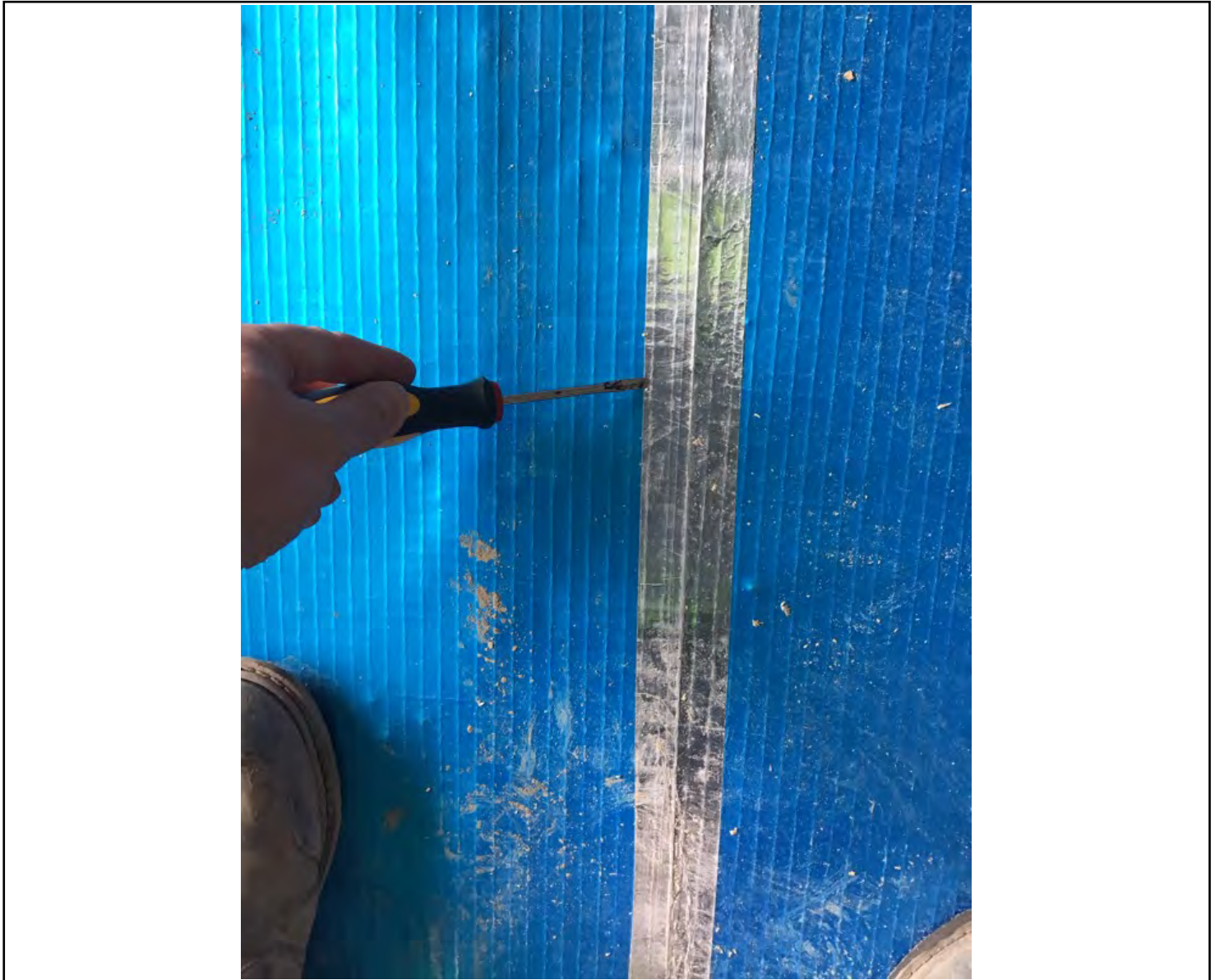
tape used during the installation.



# GEOSHIELD Verification Report

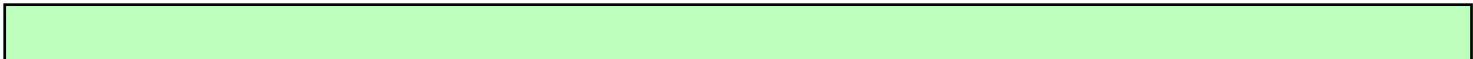
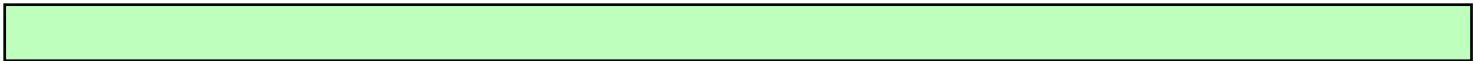


## VERIFICATION ITEM ONE



A thorough pick and probe test was carried out on all taped lap joints to ensure a strong

bond has been created between the materials. No faults found during the verification.





# GEOSHIELD Verification Report



## VERIFICATION ITEM TWO

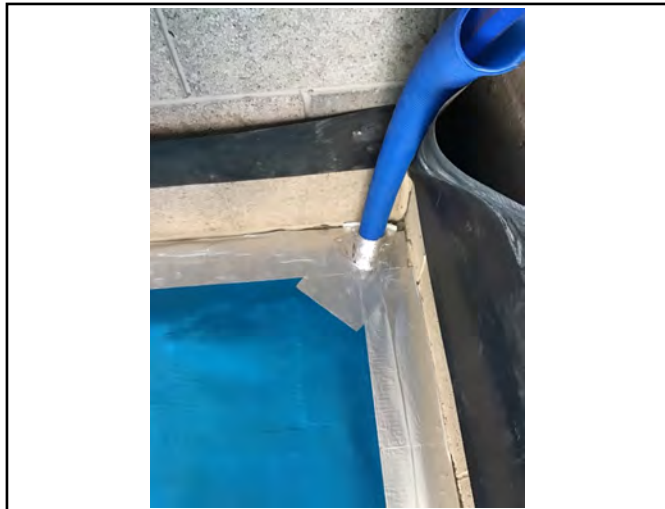
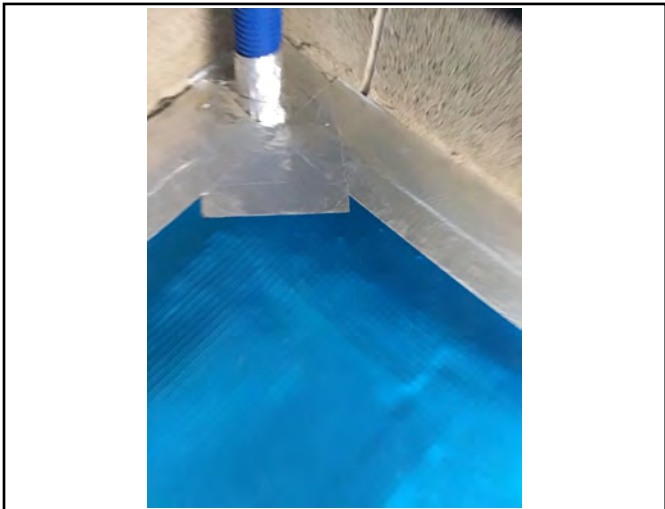
LOCATION/GRID LINE: Plots 27-30

NOTES: Sealed Pipe Penetration

All service entries across the verified areas have been sealed using Visqueen Gas

Resistant Self Adhesive Membrane. Sections of GR SAM have been cut and a hot air

leister has been used to activate the black bitumen side. The sections have then been



applied to the service entry 150mm vertically and returned a further 150mm to the

membrane in a petal method. A top hat has then been cut and applied to the entry to

complete the detail.



# GEOSHIELD Verification Report



## VERIFICATION ITEM TWO



Pick and probe testing found no faults on any service entry with material installed

to manufacturers specification.



# GEOSHIELD Verification Report



## REMEDIATION LOG

Date	Nr	Remediation Description	Y/N
02/11/2020	001	DPC installation had major limitations due to block work install	✓
02/11/2020	002	GR DPC installed but major limitations caused by block work.	✓
02/11/2020	003	GR DPC already covered with block work however so limitations	
		were caused, however remediations will be made during the infil	
		process	✓
02/11/2020	004	Corners must be seen on future visit	✓
13/11/2020	005	Visqueen Low Perm on site - informed needs upgrading to	✓
		Visqueen Standard Gas Barrier	
11/12/2020	006	No faults found	✓
28/02/2021	007	No faults found	✓
24/03/2021	008	No faults found	✓
26/07/2021	009	No faults found	✓
19/01/2022	010	No faults found	✓
26/01/2022	011	No faults found	✓
15/02/2022	012	No faults found	✓





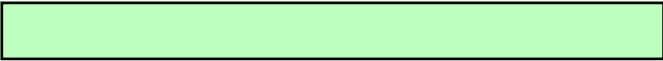
# GEOSHIELD Verification Report



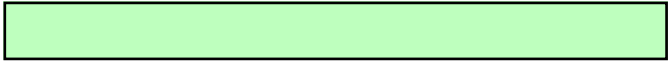
## ADDITIONAL PHOTOGRAPHS



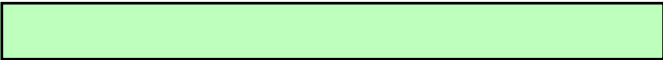
GR SAM used



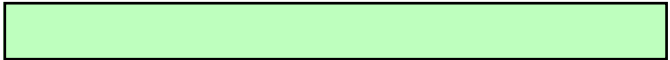
Silver foil taped used during install



Double sided butyl tape



Pick and probe test





# GEOSHIELD Verification Report



## GAS MEMBRANE TESTING

VISUAL:	<input type="checkbox"/> YES	<input checked="" type="checkbox"/>	<input type="checkbox"/> NO	<input type="checkbox"/>	SMOKE TEST:	<input type="checkbox"/> YES	<input type="checkbox"/>	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>
COMPRESSED AIR:	<input type="checkbox"/> YES	<input type="checkbox"/>	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>	DILECTIC	<input type="checkbox"/> YES	<input type="checkbox"/>	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>
DESTRUCTIVE:	<input type="checkbox"/> YES	<input type="checkbox"/>	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>	OTHER:	<input type="checkbox"/> YES	<input checked="" type="checkbox"/>	<input type="checkbox"/> NO	<input type="checkbox"/>
Testing checklist attached:	<input type="checkbox"/> YES	<input type="checkbox"/>	<input type="checkbox"/> NO	<input type="checkbox"/>					

## Gridline/Plot Sign off

Gridline/Plot Sign off	Plots 16,17 & 20,21 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 14-15 & 18-19 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 7-11 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 12-13 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 20-21	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 14-15 and 18-19	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 16-17	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 7-13	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plot 25 Perimeters	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 23-24 Perimeters	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 22, 30 and 31 Perimeters	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 26, 27 and 28 Perimeters	<input checked="" type="checkbox"/>





# GEOSHIELD Verification Report



## VERIFICATION SUMMARY

Report 016 is to verify the membrane installed across plots 27-30 infills. Visqueen Standard Gas Barrier has been installed to the infills of the given plots and sealed using double sided butyl tape and silver foil tape. The service entries have been sealed using Visqueen Gas Resistant Self Adhesive Membrane, with no faults found during the verification process.

[Redacted]

[Redacted]

[Redacted]

[Redacted]

Passed and verified in accordance with BS8485:2019 and CIRIA 735.

GEOSHIELD SIGNATURE:

DATE: 27/07/2022



# GEOSHIELD Verification Report



PROJECT REFERENCE: GEO101204

REPORT NUMBER: 018

PROJECT: Signature Homes - Holmfirth

PROJECT ADDRESS: New Mill Road

Holmfirth

HD9 7LT

MEMBRANE SPECIFICATION: Gas membrane to specification BS8485 2019

Installed to CIRIA 735

Visqueen GR DPC

Visqueen Standard Gas Barrier

Visqueen Double sided butyl tape

Visqueen GR Foil Tape

Visqueen GR lap Tape

Visqueen Pro Detailing Tape



# GEOSHIELD Verification Report



VERIFICATION OFFICER: Michael Dodd

VERIFICATION COMPANY: GeoShield Limited

Icon Business Park, 4100 Park Approach

Thorpe Park, LEEDS

West Yorkshire

LS15 8GB

CONTACT NUMBER: 07555 214679

EMAIL ADDRESS: mdodd@Geoshield.co.uk

ORDER NUMBER:

PER VISIT: YES:



NO:



PROJECT: YES:



NO:





# GEOSHIELD Verification Report



## CLIENT DETAILS

CLIENT CONTACT: John Hewitt

CONTACTS ROLE: Signature Homes Ltd

MOBILE PHONE: 01226 790892

EMAIL ADDRESS: Johnhewittbeyond@hotmail.com

---

CLIENT CONTACT:

CONTACTS ROLE:

MOBILE PHONE:

EMAIL ADDRESS

NOTES:

NOTES:

NOTES:



# GEOSHIELD Verification Report



## APPLICATION TEAM LEADERS

APPLICATOR NAME: John Hewitt

COMPANY: Signature Homes

APPLICATOR TEL: 07919445467

APPLICATOR EMAIL:

---

APPLICATOR NAME: Adrian Needle

COMPANY: Signature Homes

APPLICATOR TEL: 07963810635

APPLICATOR EMAIL:

NOTES:

NOTES:

NOTES:

NOTES:



# GEOSHIELD Verification Report



AREA SURVEYED: Plots 32, 33 & 34 inclusive (infill)

Plots 35 & 36 (remaining garage only)

## SITE CONDITIONS:

# WEATHER: Overcast

# TEMPERATURE: 14.C

# MEMBRANE TEMPERATURE: N/A

# RELATIVE HUMIDITY: N/A

-----  
TIME: 08:00 to 09:25 REPORT NUMBER: 018

DATE: 11/11/2022

ACCOMPANIED Adrian Needle



# GEOSHIELD Verification Report



## VERIFICATION LAYOUT



Overview of Site Layout

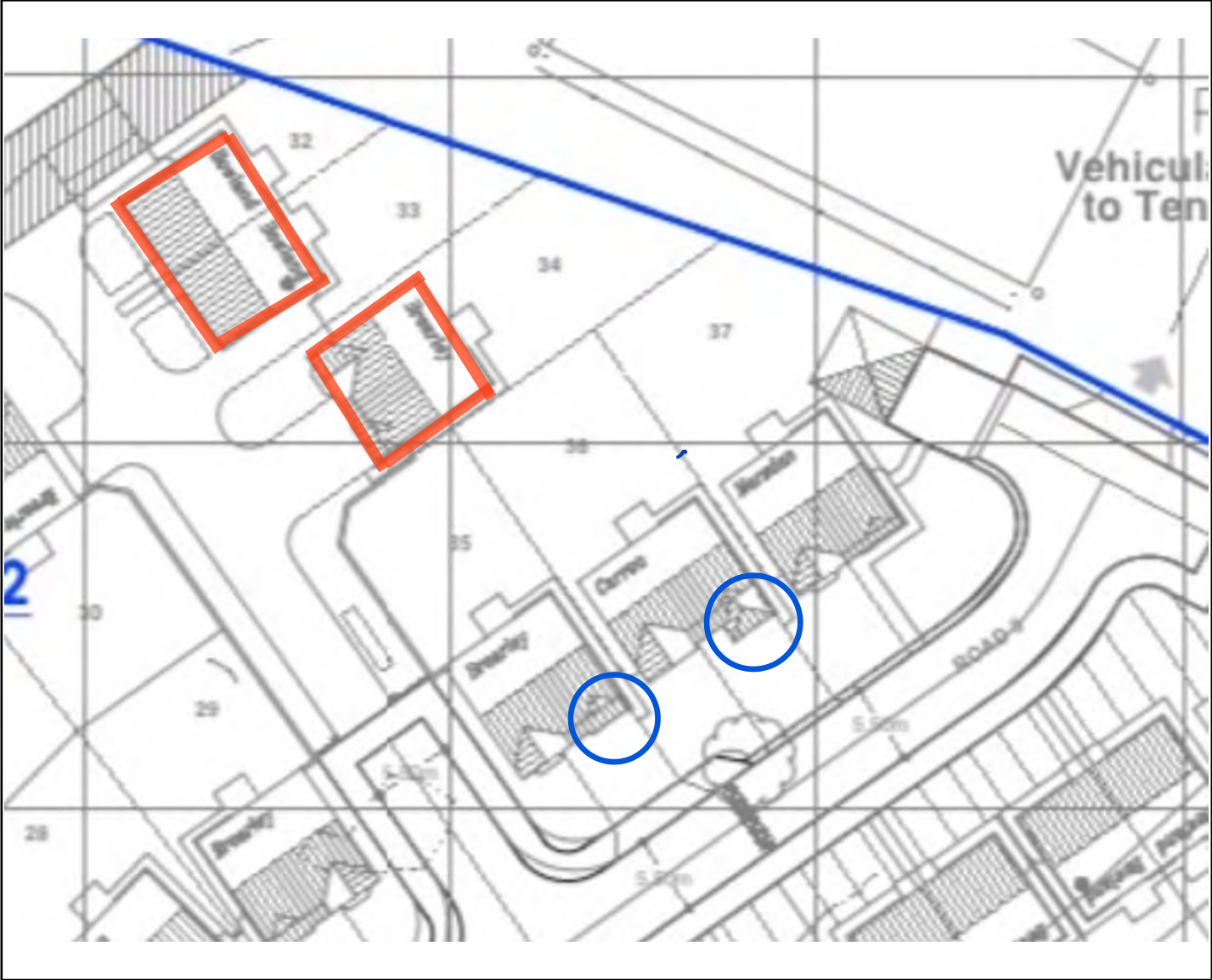




# GEOSHIELD Verification Report



## VERIFICATION LAYOUT



Overview of verified plots highlighted as follows:-

Outlined in red - verification of infill

Outlined in blue - verification of remaining integral garage only



# GEOSHIELD Verification Report

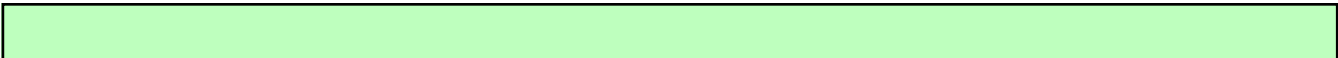


## OVERVIEW PHOTOGRAPHS



Overview of verified area - Garage Infill

Plot 35 & 36





# GEOSHIELD Verification Report

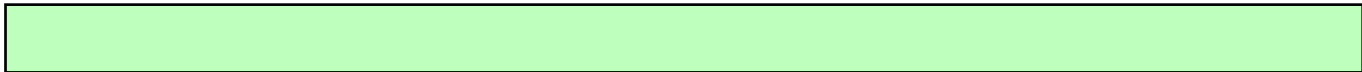


## OVERVIEW PHOTOGRAPHS



Overview of verified area - garage infill

Plot 35





# GEOSHIELD Verification Report

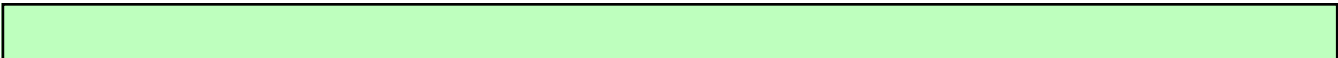


## OVERVIEW PHOTOGRAPHS



Overview of verified area - garage infill

Plot 36





# GEOSHIELD Verification Report

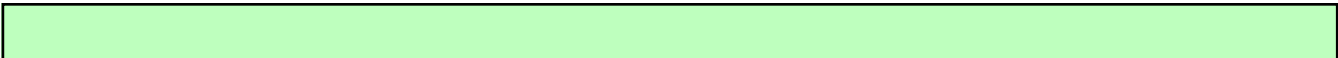


## OVERVIEW PHOTOGRAPHS



Overview of verified area

Plots 32, 33 & 34.





# GEOSHIELD Verification Report

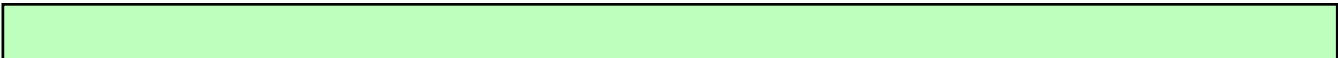


## OVERVIEW PHOTOGRAPHS



Overview of verified area - full infill

Plot 32





# GEOSHIELD Verification Report

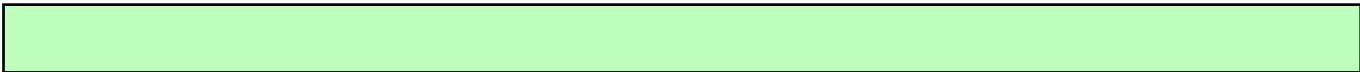


## OVERVIEW PHOTOGRAPHS



Overview of verified area - full infill

Plot 33





# GEOSHIELD Verification Report

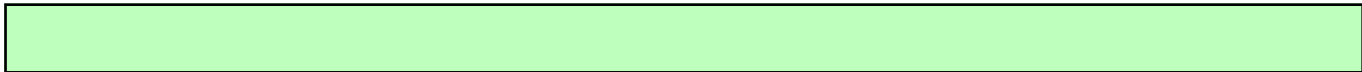


## OVERVIEW PHOTOGRAPHS



Overview of verified area - full infill

Plot 34





# GEOSHIELD Verification Report



## VERIFICATION ITEM ONE

LOCATION/GRID LINE: Plots 32, 33 & 34 inclusive

NOTES: Visqueen Gas Barrier Installation-Lap Joints

The Visqueen Gas Barrier had been installed (infill) to the previously installed Visqueen

Ultimate Damp Proof Course. The Visqueen Foil Lap Tape was carefully peeled back

exposing the Visqueen Double Sided Butyl Tape sealing the formed lap joint. The left

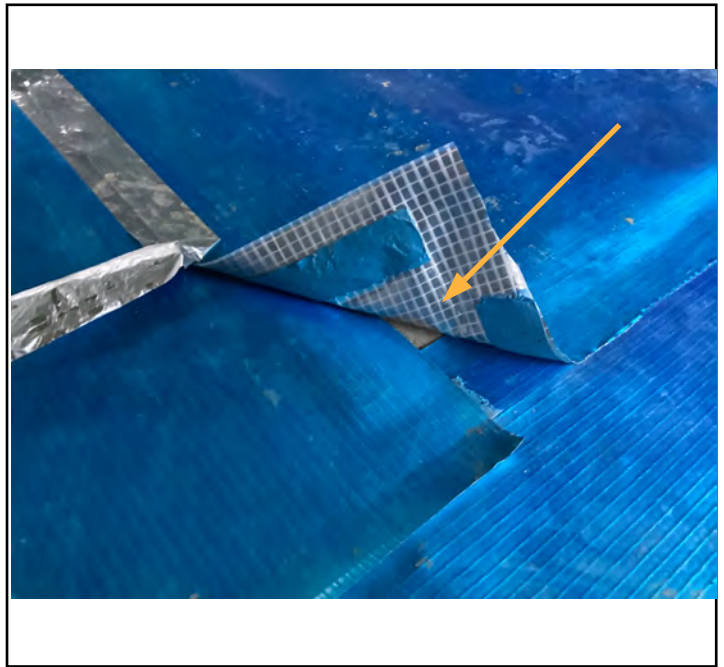
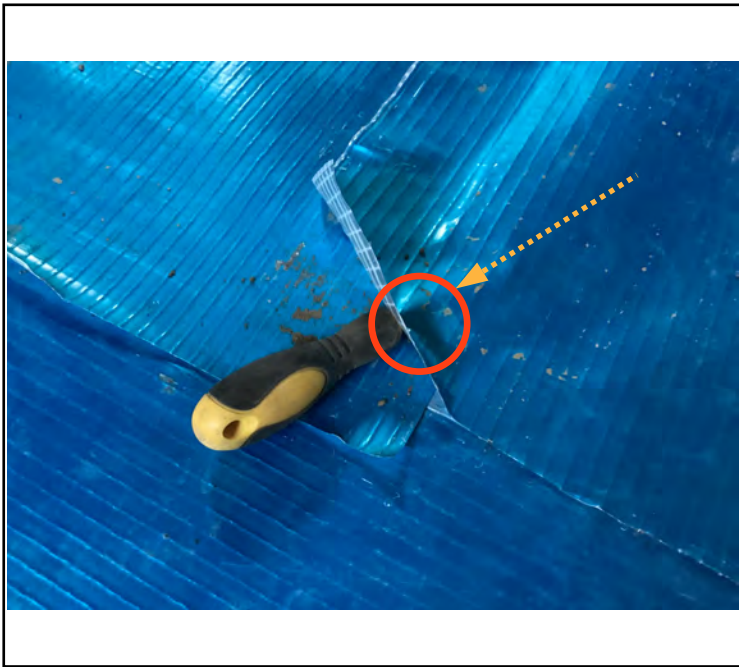


image shows on this occasion, a gap within the seal. The right image shows the extent of

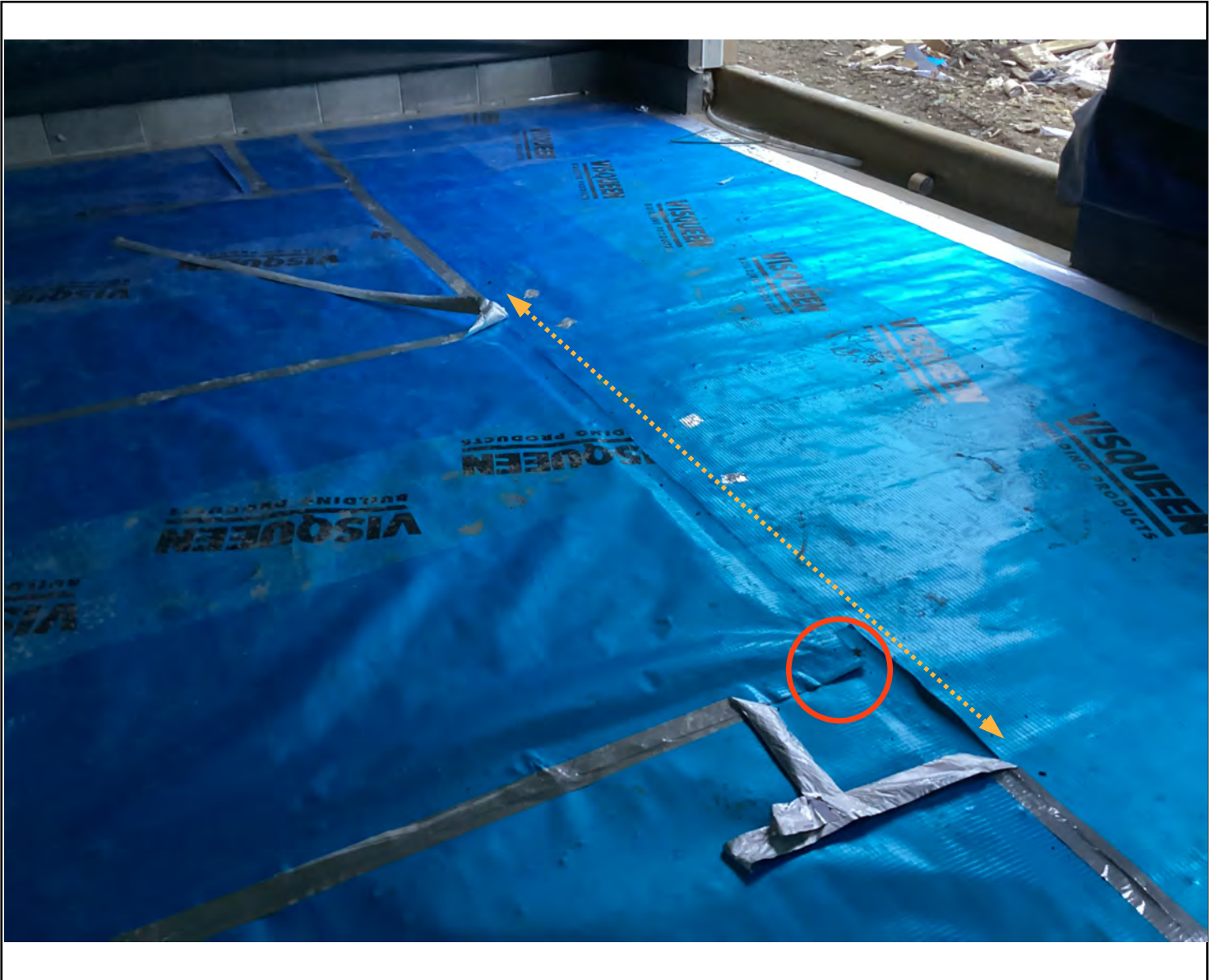
the issue where the Visqueen Double Sided Butyl Tape has not been lapped correctly.



# GEOSHIELD Verification Report



## VERIFICATION ITEM ONE



The overview image shows the extent of the sampled Visqueen Lap Joint (yellow arrow)

The Mechanical Point Stress Test was undertaken along the exposed lap joint but on

this occasion, the joint at the corner (red circle) was incomplete. The lap joint was then

remediated using additional Visqueen Double Sided Butyl Tape-see additional photos.



# GEOSHIELD Verification Report



## VERIFICATION ITEM TWO

LOCATION/GRID LINE: Plots 32, 33 & 34 inclusive and Plots 35 & 36 Garage Only

NOTES: Visqueen Gas Barrier/Ultimate DPC - Damage Inspection

The Visqueen Gas Barrier was installed (infill) to the previously installed Visqueen

Ultimate DPC. A visual inspection identified damage which was likely caused by

follow on trades. The image on the left shows initially that the Visqueen Ultimate DPC



is effective in that it fully crossed to the garage perimeter edge. It was noted however

that there was a small number of punctures (red circle) and required remediation.

The image on the right shows the Visqueen Ultimate DPC crossing a door threshold

and again, there were a couple of damaged areas requiring remediation. The required

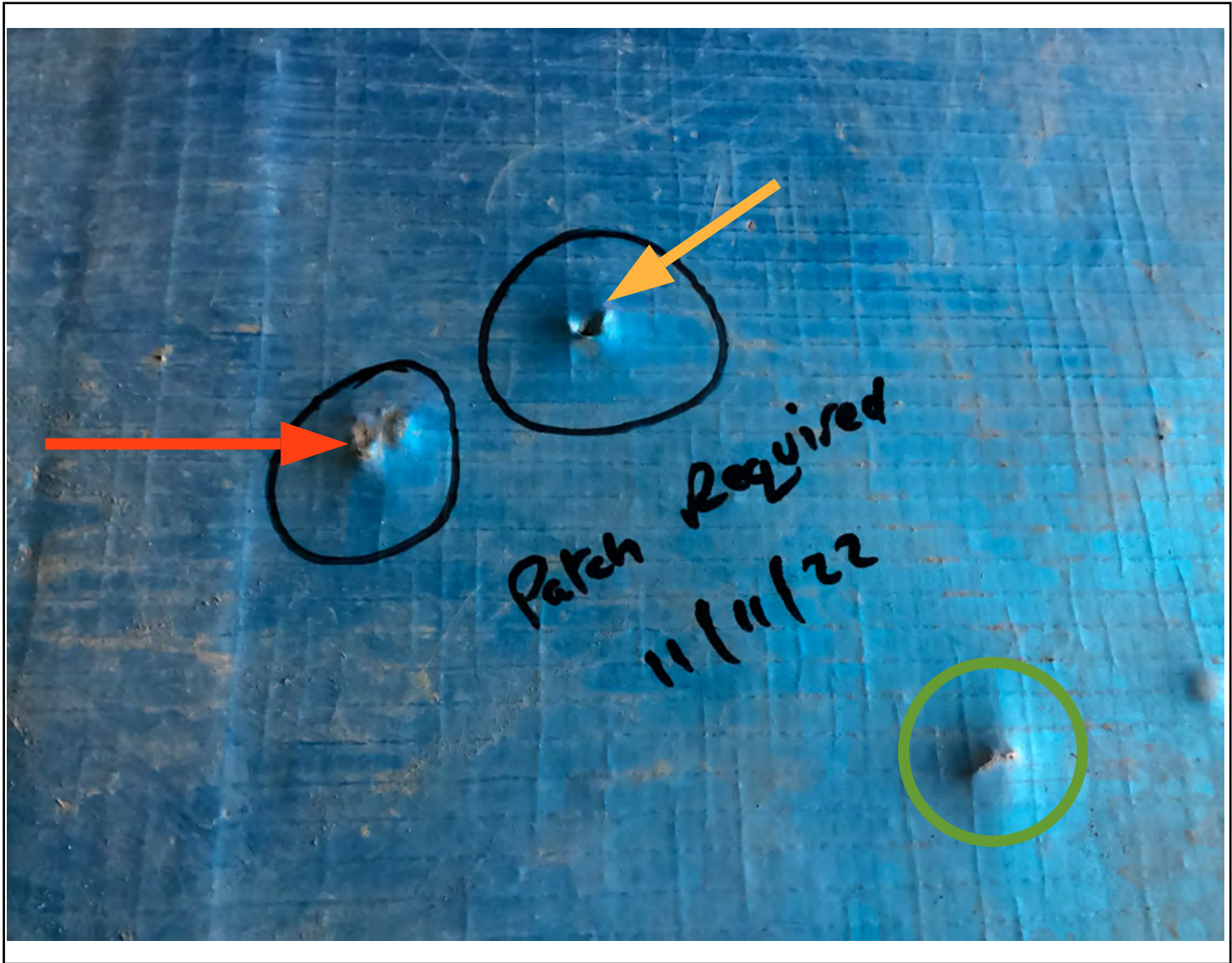
remediations were completed during the verification and recorded in 'additional photos'.



# GEOSHIELD Verification Report



## VERIFICATION ITEM TWO



The image shows three areas identified during the inspection. The red arrow

identifies a potential puncture due to some debris beneath the Visqueen Gas Barrier

The area identified with a green circle proved to be some 'soft debris' which flattened

under pressure but the yellow arrow identified a puncture requiring remediation..



# GEOSHIELD Verification Report



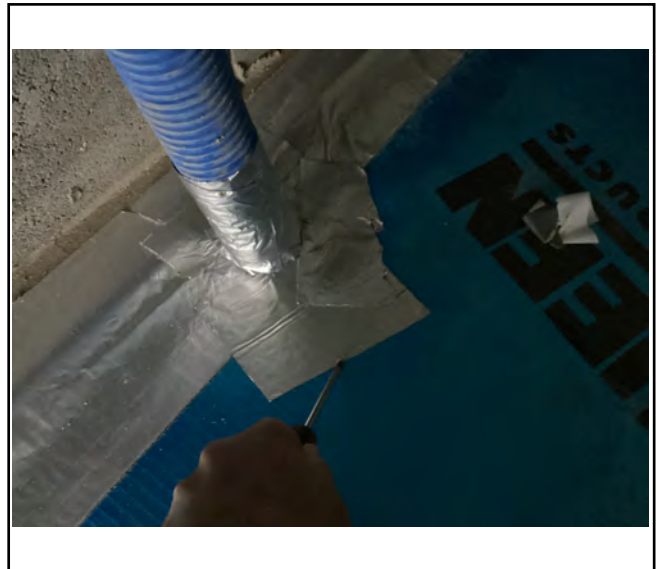
## VERIFICATION ITEM THREE

LOCATION/GRID LINE: Plots 32, 33 & 34 inclusive.

NOTES: Pipe Penetration Installation

The various pipe penetrations had all been sealed using strips of the Visqueen Pro Detailing Tape ensuring a seal with both the pipe and the Visqueen Gas Barrier.

The image on the right shows the Mechanical Point Stress Test being undertaken



along the edges checking there was full adhesion but also there were no potential

capillary leaks. The image on the right shows the Mechanical Point Stress Test

being undertaken along the edges to the Visqueen Gas Barrier. The adhesion of

the Visqueen Pro-Detailing Tape was aided by the application of additional heat.



# GEOSHIELD Verification Report



## VERIFICATION ITEM THREE



the overview image shows a typically installed pipe penetration this report.

The Visqueen Pro-Detailing Tapes had been cut and secured by combining

both heat and sufficient pressure resulting in a fully sealed pipe penetration.



# GEOSHIELD Verification Report



## REMEDIATION LOG

Date	Nr	Remediation Description	Y/N
02/11/2020	001	DPC installation had major limitations due to block work install	✓
02/11/2020	002	GR DPC installed but major limitations caused by block work.	✓
02/11/2020	003	GR DPC already covered with block work however so limitations	
		were caused, however remediations will be made during the infil	
		process	✓
02/11/2020	004	Corners must be seen on future visit	✓
13/11/2020	005	Visqueen Low Perm on site - informed needs upgrading to	✓
		Visqueen Standard Gas Barrier	
11/12/2020	006	No faults found	✓
28/02/2021	007	No faults found	✓
24/03/2021	008	No faults found	✓
26/07/2021	009	No faults found	✓
19/01/2022	010	No faults found	✓
26/01/2022	011	No faults found	✓
15/02/2022	012	No faults found	✓



# GEOSHIELD Verification Report



## REMEDIATION LOG

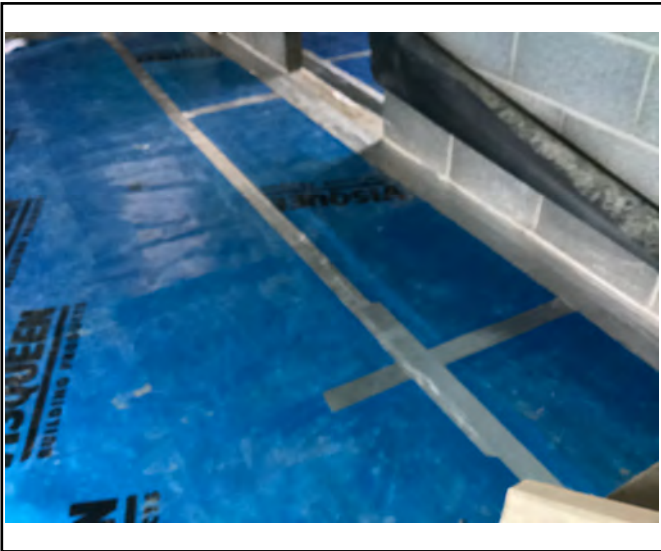
Date	Nr	Remediation Description	Y/N
	013	No Faults found	✓
24/05/2022	014	No faults found	✓
22/06/2022	015	No faults found	✓
27/07/2022	016	No faults found during visit	✓
21/09/2022	017	One puncture to Visqueen Gas Barrier within Plot 37 and was	
		remediated during the verification visit.	✓
11/11/2022	018	One incomplete Visqueen lap joint within plot 34 but remediated	
		during the verification visit.	✓
		Seven punctures to Visqueen Ultimate DPC all remediated during	
		the verification visit.	✓
		One puncture to Visqueen Gas Barrier but remediated during the	
		verification visit.	✓



# GEOSHIELD Verification Report

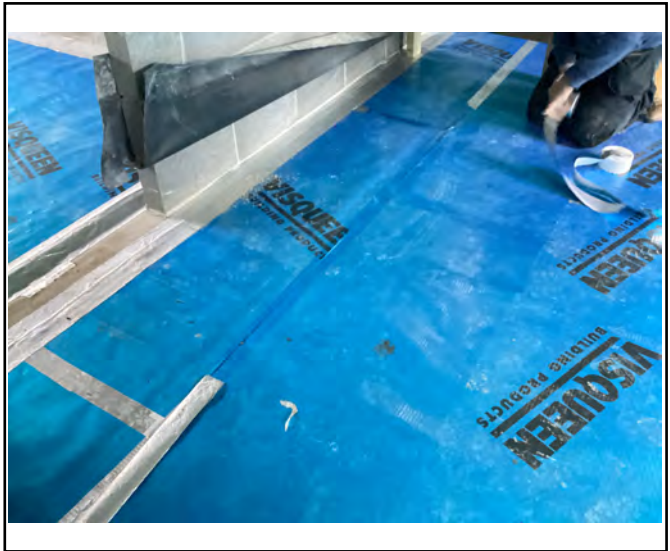


## ADDITIONAL PHOTOGRAPHS



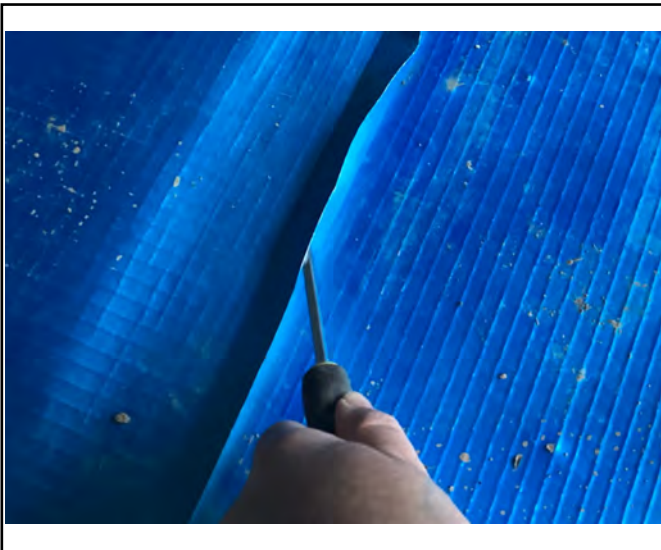
Plot 33 - view of a sampled lap joint

prior to checking the lap joint seal.



View of Foil Tape following it's careful

removal prior to testing seal



Mechanical Point Stress Test being

undertaken along the butyl tape seal



View of the butyl tape identified

within the sampled lap joint - Plot 33



# GEOSHIELD Verification Report

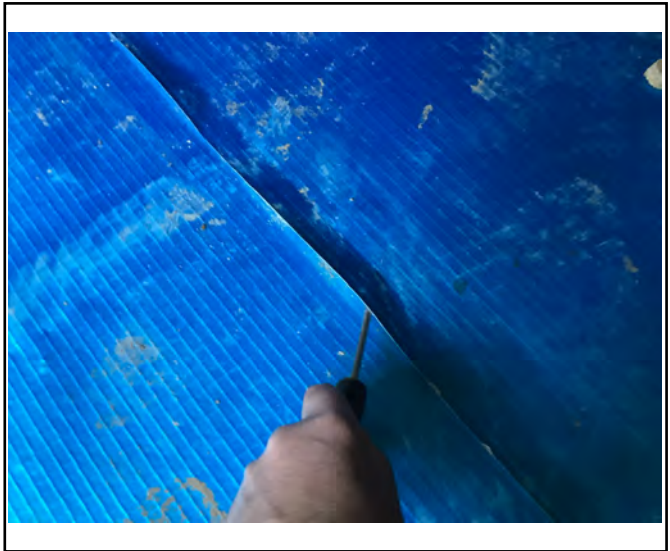


## ADDITIONAL PHOTOGRAPHS



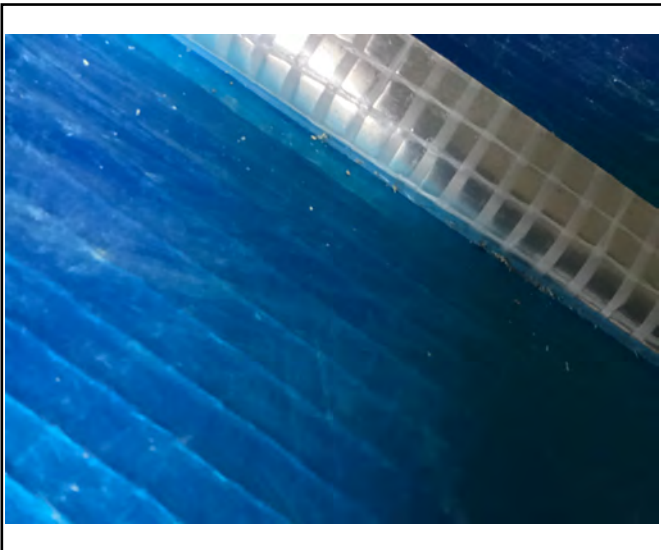
View of Foil Tape following it's careful

removal prior to testing seal - Plot 32



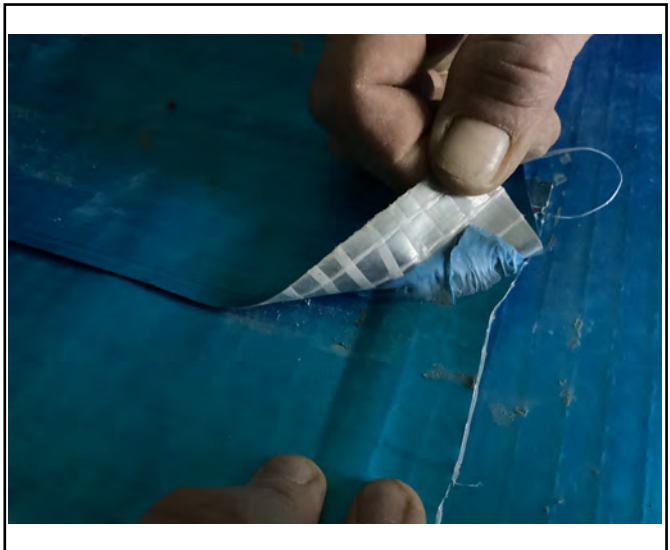
Mechanical Point Stress Test being

undertaken along the butyl tape seal



View of the butyl tape identified

within the sampled lap joint - Plot 32



View of the corner butyl tape identified

within the sampled lap joint - Plot 32



# GEOSHIELD Verification Report

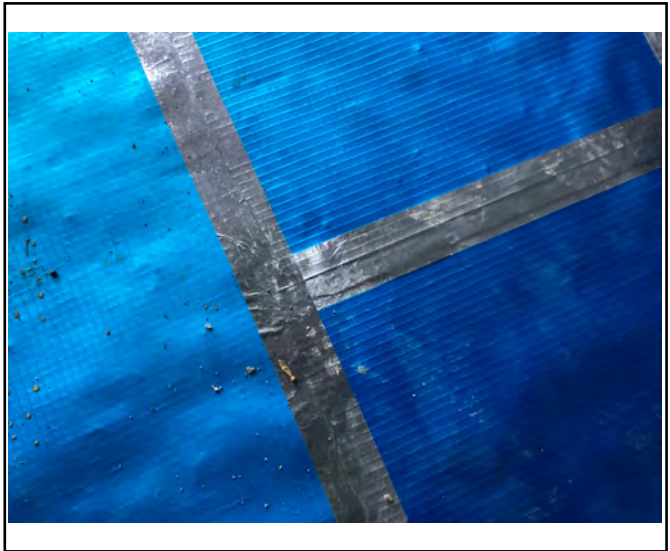


## ADDITIONAL PHOTOGRAPHS



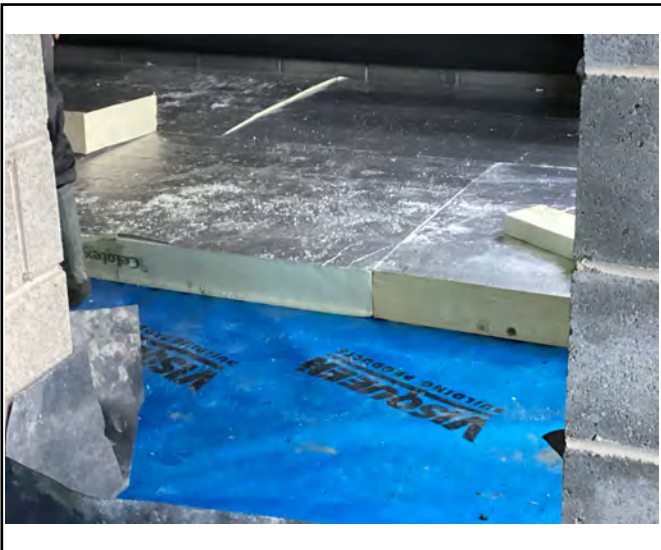
Mechanical Point Stress Test being

undertaken along Ultimate DPC lap



View of a typical Visqueen Gas Barrier

lap joint completed with Foil Tape



View showing the insulation being

placed within one of the rooms.



Remediation completed to the

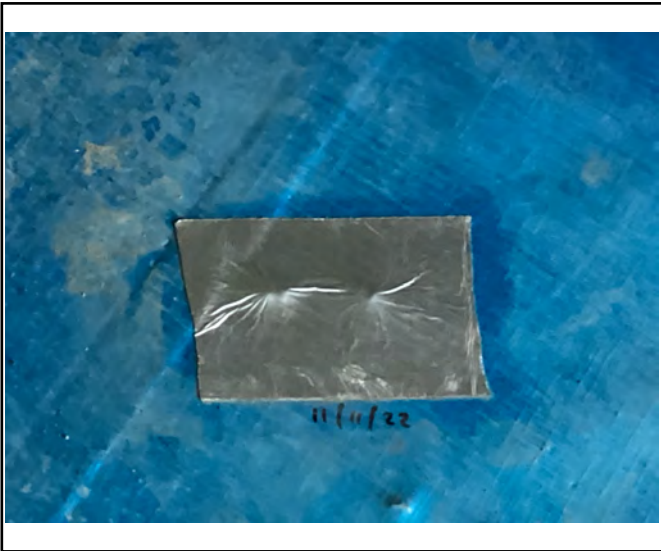
Visqueen Gas Barrier using GRSAM



# GEOSHIELD Verification Report



## ADDITIONAL PHOTOGRAPHS



Remediation completed to the

Visqueen Gas Barrier using GRSAM



Remediation completed to the

Visqueen Gas Barrier using GRSAM



View showing completed Visqueen

Gas Barrier within Plot 35



View showing completed Visqueen

Gas Barrier within Plot 36



# 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	Plots 16,17 & 20,21 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 14-15 & 18-19 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 7-11 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 12-13 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 20-21	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 14-15 and 18-19	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 16-17	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 7-13	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plot 25 Perimeters	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 23-24 Perimeters	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 22, 30 and 31 Perimeters	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 31 and 26 Infills and Plots 32-35 Perimeters	<input checked="" type="checkbox"/>





# GEOSHIELD Verification Report



## VERIFICATION SUMMARY

This was the eighteenth verification visit where I was accompanied by Adrian

Needle of Signature Homes.

Verification was completed as follows:-

>. Mechanical Point Stress Test to physically sampled Visqueen Lap Joints within

Plots 32, 33 & 34 - only one issue identified and remediated.

>. Visual inspection of infill installation to plots 32, 33 & 34 - eight punctures

identified and remediated.

>. Mechanical Point Stress Test to sampled Visqueen pipe penetration detailing

and no issues were identified.

Passed and verified in accordance with BS8485:2019 and CIRIA 735.

GEOSHIELD SIGNATURE:

DATE: 11/11/2022



# GEOSHIELD Verification Report



PROJECT REFERENCE: GEO101204

REPORT NUMBER: 017

PROJECT: Signature Homes - Holmfirth

PROJECT ADDRESS: New Mill Road

Holmfirth

HD9 7LT

MEMBRANE SPECIFICATION: Gas membrane to specification BS8485 2019

Installed to CIRIA 735

Visqueen GR DPC

Visqueen Standard Gas Barrier

Visqueen Double sided butyl tape

Visqueen GR Foil Tape

Visqueen GR lap Tape

Visqueen Pro Detailing Tape



**GEOSHIELD  
Verification  
PLAN**



**SPECIFICATION:**

[Redacted]

[Redacted]

[Redacted]

**INFORMATION INCLUDED:**

[Redacted]

Material specification technical data sheets

Geotechnical Survey Report - PR/AJK/39141/007

Site Layout - Final

Phase Plan

1602-110 House Type - Venice - Roma - Florence

1602-111 House Type - Tuscant

1602-300 Draft Foundations

1602-301 Draft Foundations

1451-700a Typical Tanking Detail

[Redacted]

[Redacted]

[Redacted]

Information presented to at the pre-verification stage assumed correct

Any change client will let GeoShield know or this Pre-verification Plan will be void.



# GEOSHIELD Verification Report



VERIFICATION OFFICER: Michael Dodd

VERIFICATION COMPANY: GeoShield Limited

Icon Business Park, 4100 Park Approach

Thorpe Park, LEEDS

West Yorkshire

LS15 8GB

CONTACT NUMBER: 07555 214679

EMAIL ADDRESS: mdodd@Geoshield.co.uk

ORDER NUMBER:

PER VISIT: YES:



NO:



PROJECT: YES:



NO:





# GEOSHIELD Verification Report



## CLIENT DETAILS

CLIENT CONTACT: John Hewitt

CONTACTS ROLE: Signature Homes Ltd

MOBILE PHONE: 01226 790892

EMAIL ADDRESS: Johnhewittbeyond@hotmail.com

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CLIENT CONTACT:

CONTACTS ROLE:

MOBILE PHONE:

EMAIL ADDRESS

NOTES:

NOTES:

NOTES:



# GEOSHIELD Verification Report



## APPLICATION TEAM LEADERS

APPLICATOR NAME: John Hewitt

COMPANY: Signature Homes

APPLICATOR TEL: 07919445467

APPLICATOR EMAIL:

---

APPLICATOR NAME: Adrian Needle

COMPANY: Signature Homes

APPLICATOR TEL: 07963810635

APPLICATOR EMAIL:

NOTES:

NOTES:

NOTES:

NOTES:



# GEOSHIELD Verification Report



AREA SURVEYED: Plots 35, 36, 37, 38, 39, 40 & 41

## SITE CONDITIONS:

# WEATHER: Sunny

# TEMPERATURE: 25c

# MEMBRANE TEMPERATURE: N/A

# RELATIVE HUMIDITY: N/A

-----

TIME: 14:00 to 16:00 REPORT NUMBER: 017

DATE: 21/09/2022

ACCOMPANIED Adrian Needle



# GEOSHIELD Verification Report



## VERIFICATION LAYOUT



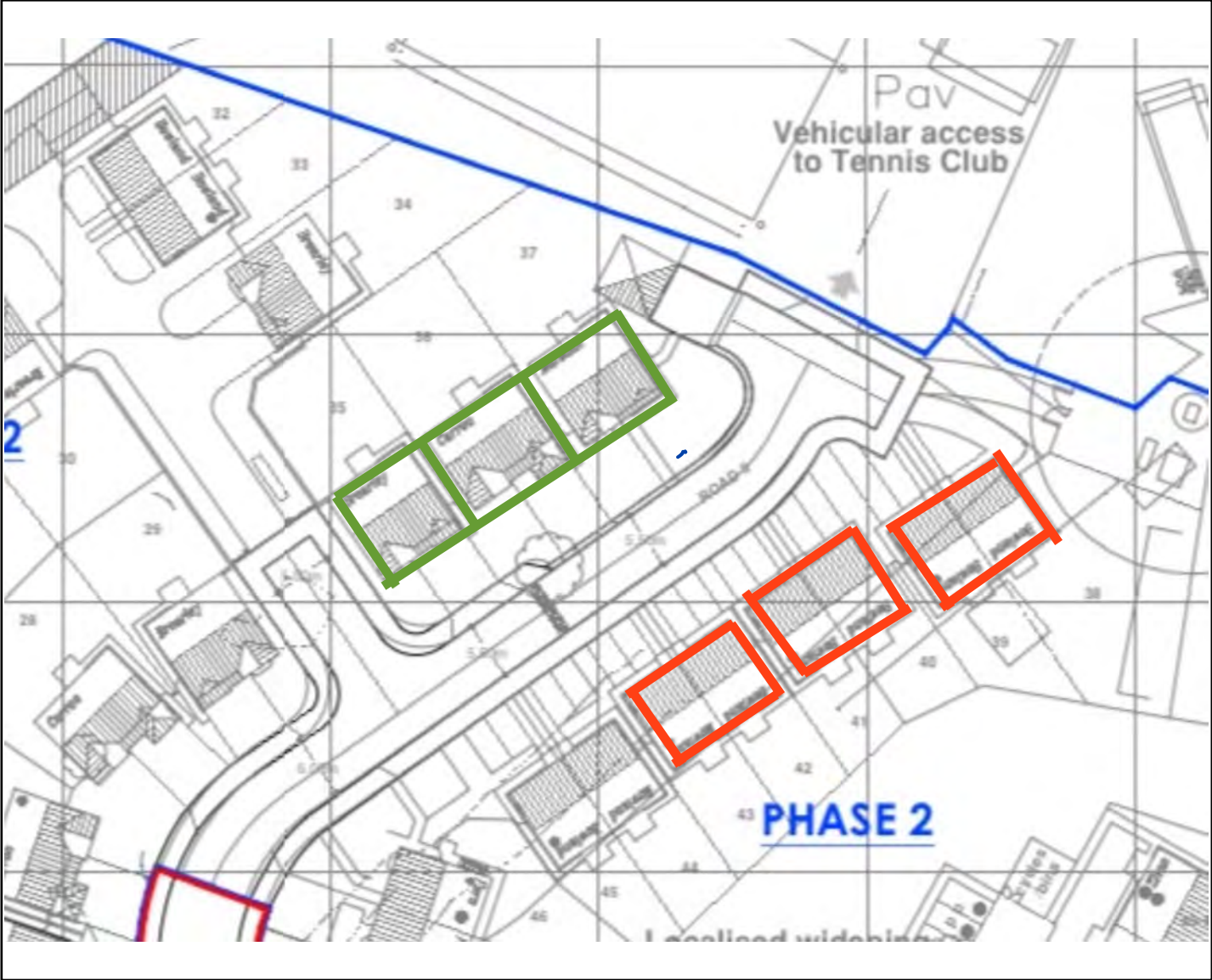
Overview of verified plots highlighted in blue



# GEOSHIELD Verification Report



## VERIFICATION LAYOUT



Overview of verified plots highlighted as follows:-

Outlined in green - verification of infill

Outlined in red - verification of perimeter/internal walls



# GEOSHIELD Verification Report

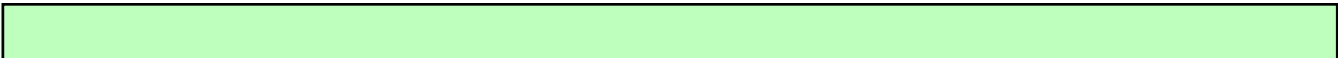


## OVERVIEW PHOTOGRAPHS



Overview of verified area - infill

Plot 35





# GEOSHIELD Verification Report

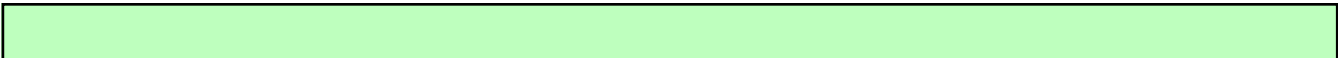


## OVERVIEW PHOTOGRAPHS



Overview of verified area - infill

Plot 36





# GEOSHIELD Verification Report

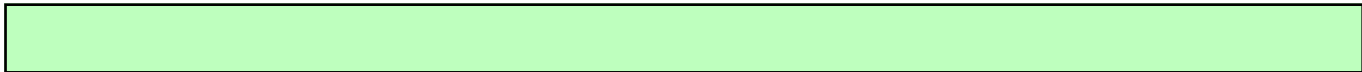


## OVERVIEW PHOTOGRAPHS



Overview of verified area - infill

Plot 37





# GEOSHIELD Verification Report

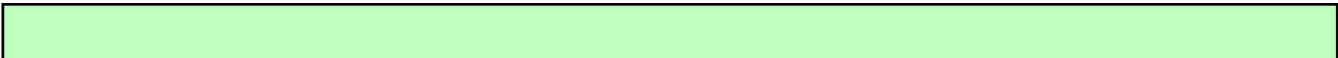


## OVERVIEW PHOTOGRAPHS



Overview of verified area - perimeter/internal walls

Plot 38





# GEOSHIELD Verification Report

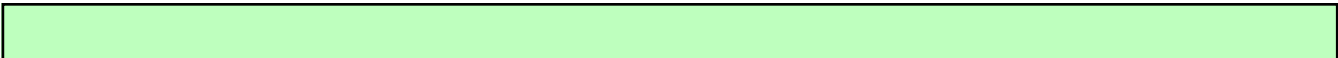


## OVERVIEW PHOTOGRAPHS



Overview of verified area - perimeter/internal walls

Plot 39





# GEOSHIELD Verification Report

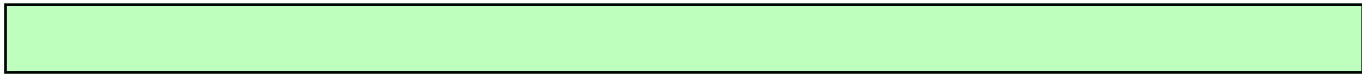


## OVERVIEW PHOTOGRAPHS



Overview of verified area - perimeter/internal walls

Plot 40





# GEOSHIELD Verification Report

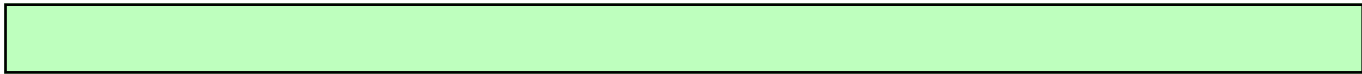


## OVERVIEW PHOTOGRAPHS



Overview of verified area - perimeter/internal walls

Plot 41





# GEOSHIELD Verification Report



## VERIFICATION ITEM ONE

LOCATION/GRID LINE: Plots 38, 39, 40 & 41 inclusive

NOTES: Perimeter/Internal Wall Installation

Photo 1 showing a typical internal corner formed using Visqueen Gas Resistant Self

Adhesive Membrane. The installation proved to be fully bonded to the Visqueen Ultimate

Damp Proof Course (blue arrow) following the Mechanical Point Stress Test (red arrow).

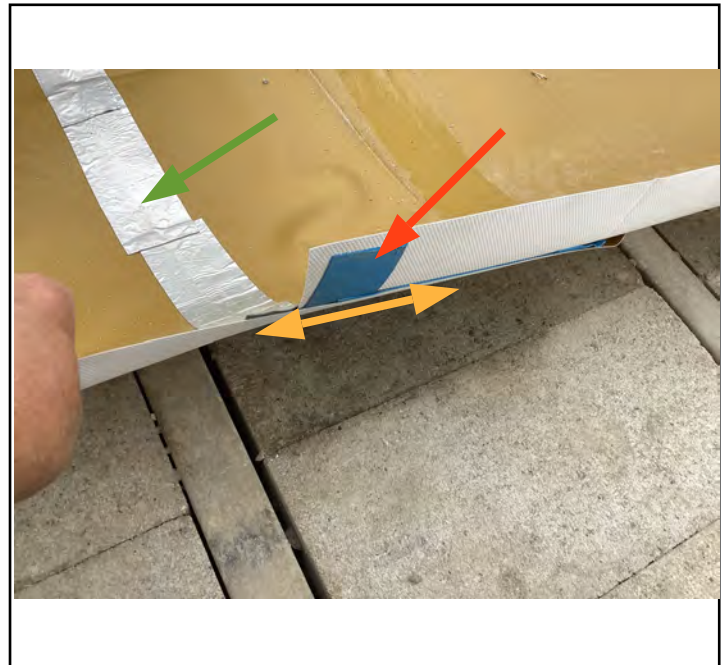
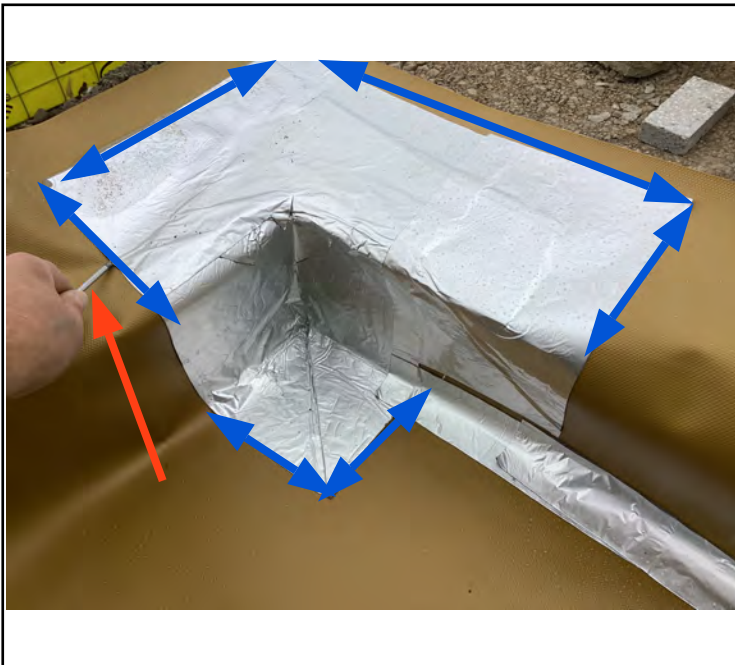


Photo 2 showing a typical minimum 150mm lap joint (yellow arrow), sealed with Visqueen

Double Sided Butyl Tape (red arrow) and lap completed using GRSAM (green arrow).

# GEOSHIELD Verification Report

## VERIFICATION ITEM ONE



Overview showing the extent of the typical installation of the Visqueen Ultimate Damp

Proof Course to both the perimeter (red arrow) and internal wall positions (blue arrow).

A thorough inspection confirmed the whole installation was completed correctly and no faults were identified during the verification visit.



# GEOSHIELD Verification Report



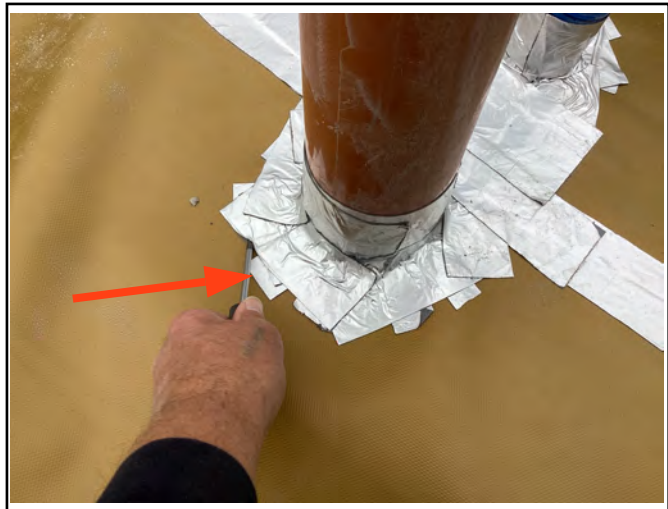
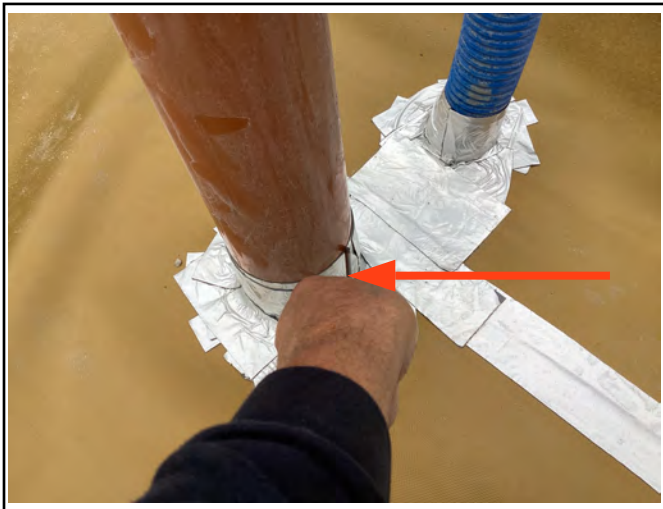
## VERIFICATION ITEM TWO

LOCATION/GRID LINE: Plots 38, 39, 40 & 41 inclusive

NOTES: Pipe Penetration Installation

The pipe penetrations were typically sealed using Visqueen Gas Resistant Self

Adhesive Membrane to the Visqueen Ultimate Damp Proof Course.



Photos showing that the edges of the Visqueen Gas Resistant Self Adhesive

Membrane being checked for potential capillary leaks using the Mechanical Point

Stress Test (red arrows).

# GEOSHIELD Verification Report

## VERIFICATION ITEM TWO



Overview of the typical pipe penetration installation where all pipes were fully

sealed to the Visqueen Ultimate Damp Proof Course using Visqueen Gas

Resistant Self Adhesive Membrane.

No faults were identified during the verification visit.



# GEOSHIELD Verification Report



## VERIFICATION ITEM THREE

LOCATION/GRID LINE: Plots 35, 36, 37 inclusive.

NOTES: Visqueen Gas Barrier Installation- infill

The Visqueen Gas Barrier had been installed (infill) to the previously installed

Visqueen Ultimate Damp Proof Course. The lap joints had been sealed combining

Visqueen Double Sided Butyl Tape and Visqueen Foil Tape.

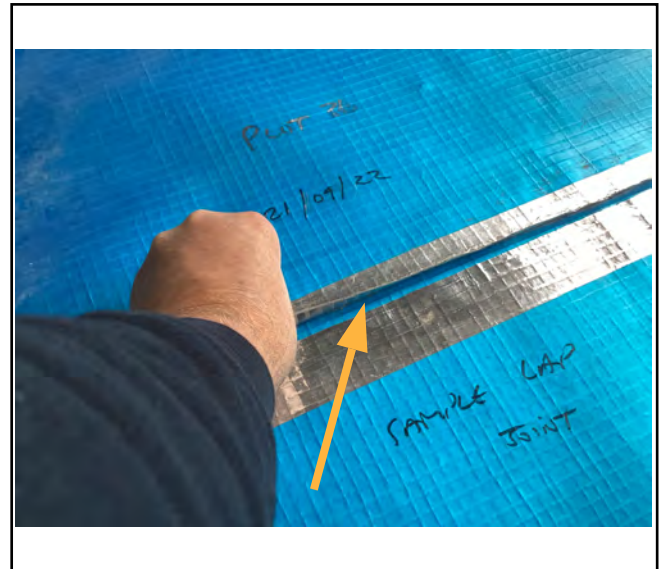
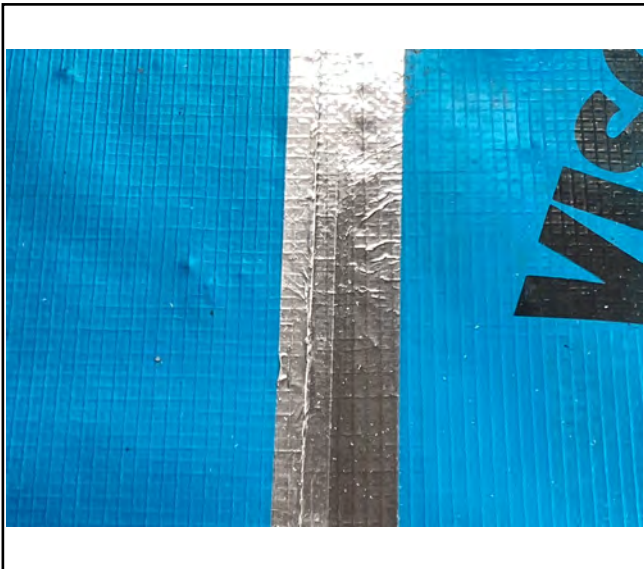


Photo 1 showing the typically completed lap joint where the Visqueen Foil Tape is

on view. Photo 2 showing a sampled lap joint where checks could be made to

ensure the Visqueen Double Sided Butyl Tape had been installed forming the seal

(see yellow arrow) Verification confirmed all sampled lap joints were fully sealed.



# GEOSHIELD Verification Report



## VERIFICATION ITEM THREE



Overview showing the typical infill installation of the Visqueen Gas Barrier

to the various rooms within the plots.

In addition, a visual inspection of the Visqueen Gas Barrier was undertaken

checking for any damage. Only one fault was identified during the verification visit.



# GEOSHIELD Verification Report



## REMEDIATION LOG

Date	Nr	Remediation Description	Y/N
02/11/2020	001	DPC installation had major limitations due to block work install	✓
02/11/2020	002	GR DPC installed but major limitations caused by block work.	✓
02/11/2020	003	GR DPC already covered with block work however so limitations	
		were caused, however remediations will be made during the infil	
		process	✓
02/11/2020	004	Corners must be seen on future visit	✓
13/11/2020	005	Visqueen Low Perm on site - informed needs upgrading to	✓
		Visqueen Standard Gas Barrier	
11/12/2020	006	No faults found	✓
28/02/2021	007	No faults found	✓
24/03/2021	008	No faults found	✓
26/07/2021	009	No faults found	✓
19/01/2022	010	No faults found	✓
26/01/2022	011	No faults found	✓
15/02/2022	012	No faults found	✓





# GEOSHIELD Verification Report



## ADDITIONAL PHOTOGRAPHS



View along the Visqueen Ultimate

DPC crossing the external cavity wall.



View showing the Visqueen Ultimate

DPC to internal wall position



View showing Visqueen Ultimate DPC

lapped and sealed to perimeter



View showing the perimeter lap joint

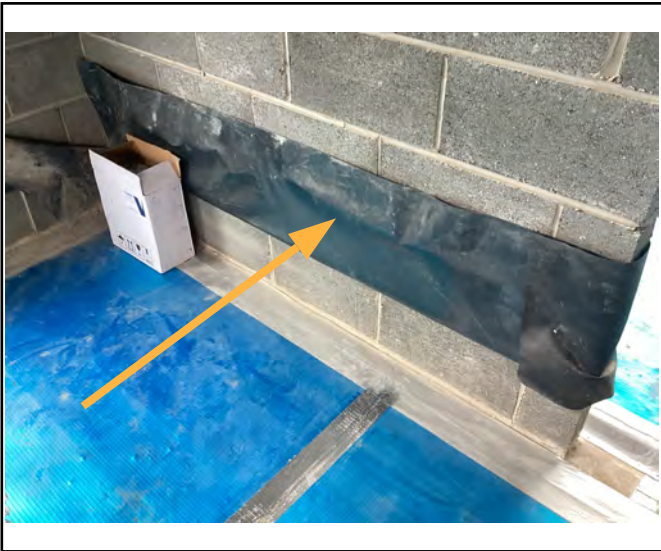
with Visqueen Gas Barrier infill.



# GEOSHIELD Verification Report



## ADDITIONAL PHOTOGRAPHS



View of the DPC which was used to

protect the Ultimate DPC



Typical threshold showing complete

seals between DPC and Gas Barrier



Puncture identified within plot 37

requiring remediation



Remediated puncture within plot 37

using GRSAM patch.



# GEOSHIELD Verification Report



## ADDITIONAL PHOTOGRAPHS



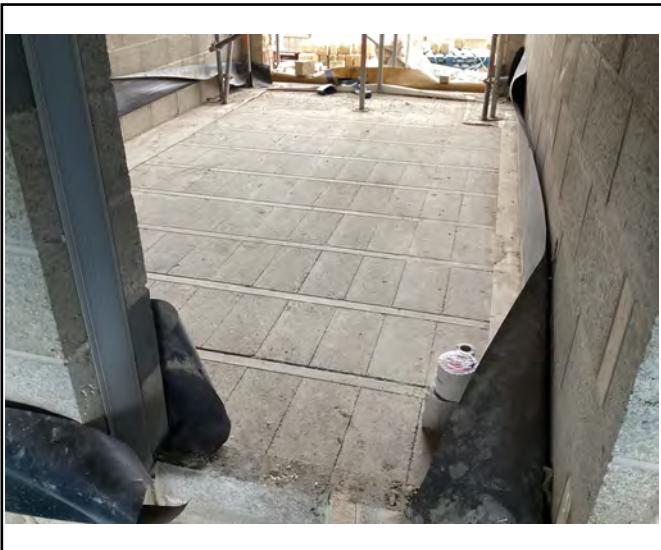
View showing incomplete Gas Barrier

seal due to scaffolding



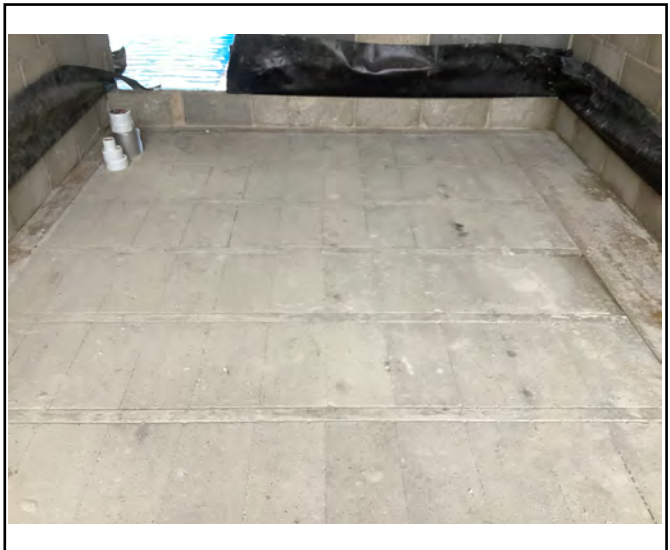
Mechanical Point Stress Test to

perimeter GRSAM



Incomplete Visqueen Gas Barrier

within plot 35 garage



Incomplete Visqueen Gas Barrier

within plot 35 garage



# 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	Plots 16,17 & 20,21 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 14-15 & 18-19 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 7-11 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 12-13 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 20-21	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 14-15 and 18-19	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 16-17	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 7-13	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plot 25 Perimeters	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 23-24 Perimeters	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 22, 30 and 31 Perimeters	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 31 and 26 Infills and Plots 32-35 Perimeters	<input checked="" type="checkbox"/>





# GEOSHIELD Verification Report



## VERIFICATION SUMMARY

This was the seventeenth verification visit where I was accompanied by Adrian

Needle of Signature Homes.

Verification was completed as follows:-

>. Mechanical Point Stress Test to all internal corner and pipe penetration detailing

to the perimeters within plots 38, 39, 40 & 41 - no faults identified.

>. Three sampled lap joints within plots 35, 36 & 37 - no faults identified.

>. Visual inspection of infill installation to plots 35, 36 & 37 - one puncture identified

All in all, the gas membrane installation was very well installed having only

identified one fault throughout the verification process.

Passed and verified in accordance with BS8485:2019 and CIRIA 735.

GEOSHIELD SIGNATURE:

DATE: 21/09/2022



# GEOSHIELD Verification Report



PROJECT REFERENCE: GEO101204

REPORT NUMBER: 017

PROJECT: Signature Homes - Holmfirth

PROJECT ADDRESS: New Mill Road

Holmfirth

HD9 7LT

MEMBRANE SPECIFICATION: Gas membrane to specification BS8485 2019

Installed to CIRIA 735

Visqueen GR DPC

Visqueen Standard Gas Barrier

Visqueen Double sided butyl tape

Visqueen GR Foil Tape

Visqueen GR lap Tape

Visqueen Pro Detailing Tape



GEOSHIELD  
Verification  
PLAN



SPECIFICATION:

[Redacted]

[Redacted]

[Redacted]

INFORMATION INCLUDED:

[Redacted]

Material specification technical data sheets

Geotechnical Survey Report - PR/AJK/39141/007

Site Layout - Final

Phase Plan

1602-110 House Type - Venice - Roma - Florence

1602-111 House Type - Tuscant

1602-300 Draft Foundations

1602-301 Draft Foundations

1451-700a Typical Tanking Detail

[Redacted]

[Redacted]

[Redacted]

Information presented to at the pre-verification stage assumed correct

Any change client will let GeoShield know or this Pre-verification Plan will be void.



# GEOSHIELD Verification Report



VERIFICATION OFFICER: Michael Dodd

VERIFICATION COMPANY: GeoShield Limited

Icon Business Park, 4100 Park Approach

Thorpe Park, LEEDS

West Yorkshire

LS15 8GB

CONTACT NUMBER: 07555 214679

EMAIL ADDRESS: mdodd@Geoshield.co.uk

ORDER NUMBER:

PER VISIT: YES:



NO:



PROJECT: YES:



NO:





# GEOSHIELD Verification Report



## CLIENT DETAILS

CLIENT CONTACT: John Hewitt

CONTACTS ROLE: Signature Homes Ltd

MOBILE PHONE: 01226 790892

EMAIL ADDRESS: Johnhewittbeyond@hotmail.com

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CLIENT CONTACT:

CONTACTS ROLE:

MOBILE PHONE:

EMAIL ADDRESS

NOTES:

NOTES:

NOTES:



# GEOSHIELD Verification Report



## APPLICATION TEAM LEADERS

APPLICATOR NAME: John Hewitt

COMPANY: Signature Homes

APPLICATOR TEL: 07919445467

APPLICATOR EMAIL:

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APPLICATOR NAME: Adrian Needle

COMPANY: Signature Homes

APPLICATOR TEL: 07963810635

APPLICATOR EMAIL:

NOTES:

NOTES:

NOTES:

NOTES:



# GEOSHIELD Verification Report



AREA SURVEYED: Plots 35, 36, 37, 38, 39, 40 & 41

## SITE CONDITIONS:

# WEATHER: Sunny

# TEMPERATURE: 25c

# MEMBRANE TEMPERATURE: N/A

# RELATIVE HUMIDITY: N/A

-----  
TIME: 14:00 to 16:00 REPORT NUMBER: 017

DATE: 21/09/2022

ACCOMPANIED Adrian Needle



# GEOSHIELD Verification Report



## VERIFICATION LAYOUT



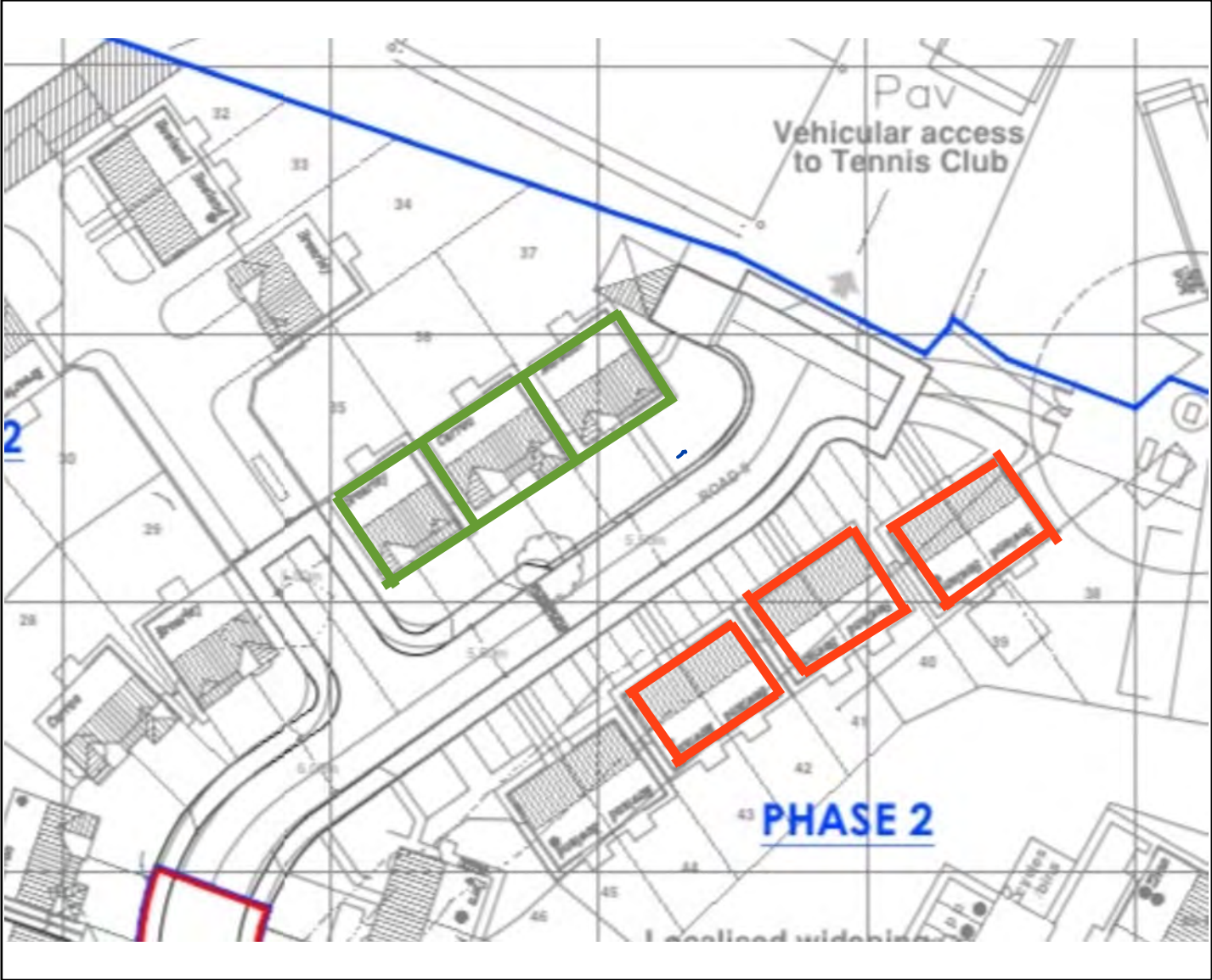
Overview of verified plots highlighted in blue



# GEOSHIELD Verification Report



## VERIFICATION LAYOUT



Overview of verified plots highlighted as follows:-

Outlined in green - verification of infill

Outlined in red - verification of perimeter/internal walls



# GEOSHIELD Verification Report

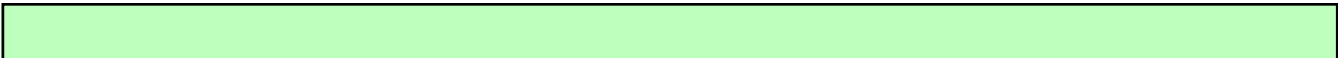


## OVERVIEW PHOTOGRAPHS



Overview of verified area - infill

Plot 35





# GEOSHIELD Verification Report



## OVERVIEW PHOTOGRAPHS



Overview of verified area - infill

Plot 36





# GEOSHIELD Verification Report

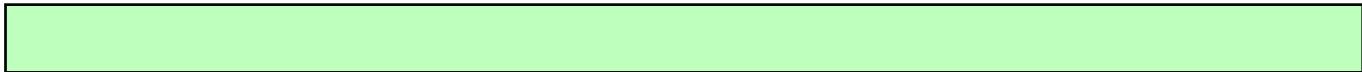


## OVERVIEW PHOTOGRAPHS



Overview of verified area - infill

Plot 37





# GEOSHIELD Verification Report

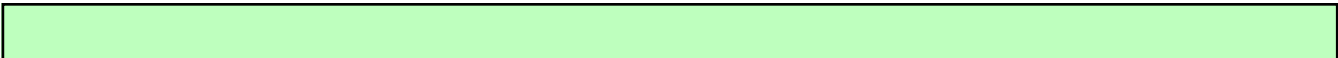


## OVERVIEW PHOTOGRAPHS



Overview of verified area - perimeter/internal walls

Plot 38





# GEOSHIELD Verification Report

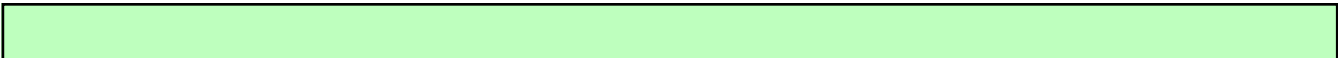


## OVERVIEW PHOTOGRAPHS



Overview of verified area - perimeter/internal walls

Plot 39





# GEOSHIELD Verification Report

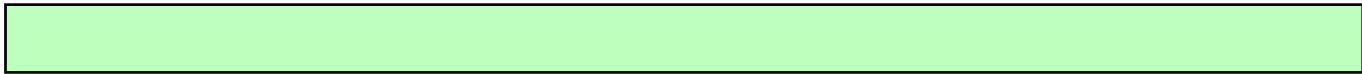


## OVERVIEW PHOTOGRAPHS



Overview of verified area - perimeter/internal walls

Plot 40





# GEOSHIELD Verification Report

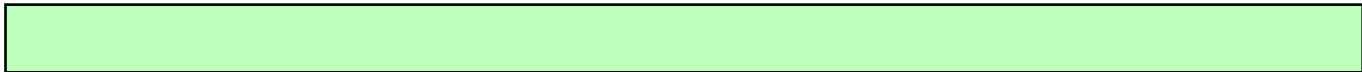


## OVERVIEW PHOTOGRAPHS



Overview of verified area - perimeter/internal walls

Plot 41





# GEOSHIELD Verification Report



## VERIFICATION ITEM ONE

LOCATION/GRID LINE: Plots 38, 39, 40 & 41 inclusive

NOTES: Perimeter/Internal Wall Installation

Photo 1 showing a typical internal corner formed using Visqueen Gas Resistant Self

Adhesive Membrane. The installation proved to be fully bonded to the Visqueen Ultimate

Damp Proof Course (blue arrow) following the Mechanical Point Stress Test (red arrow).

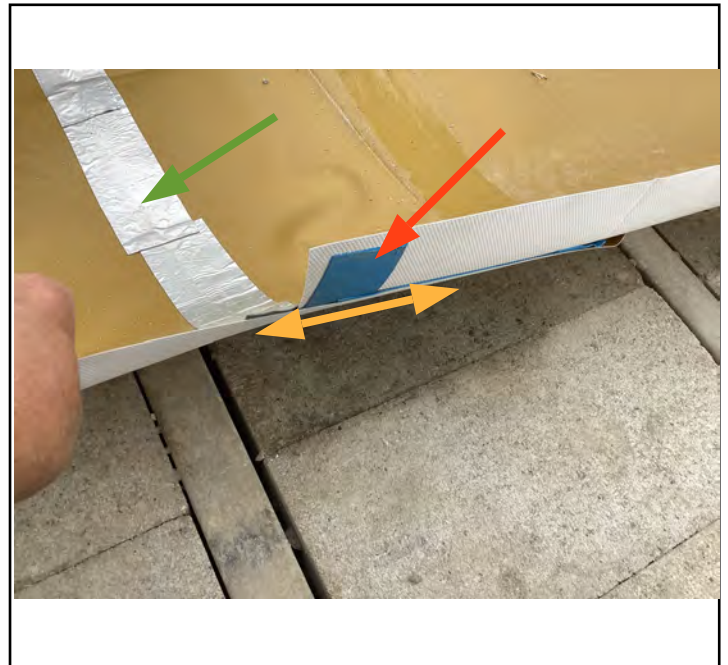
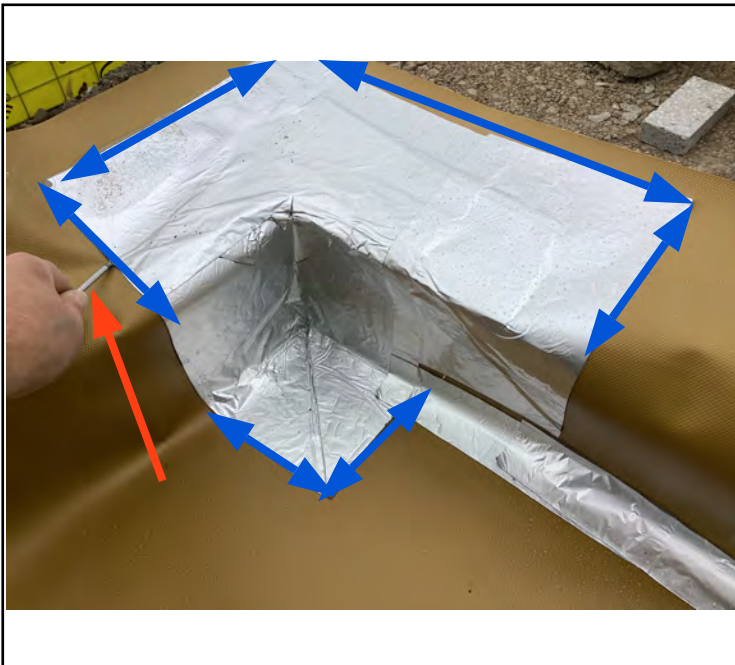


Photo 2 showing a typical minimum 150mm lap joint (yellow arrow), sealed with Visqueen

Double Sided Butyl Tape (red arrow) and lap completed using GRSAM (green arrow).

# GEOSHIELD Verification Report

## VERIFICATION ITEM ONE



Overview showing the extent of the typical installation of the Visqueen Ultimate Damp

Proof Course to both the perimeter (red arrow) and internal wall positions (blue arrow).

A thorough inspection confirmed the whole installation was completed correctly and no faults were identified during the verification visit.



# GEOSHIELD Verification Report



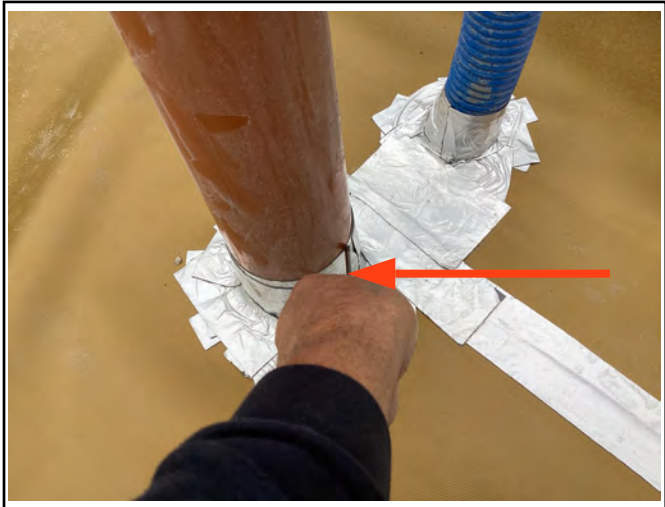
## VERIFICATION ITEM TWO

LOCATION/GRID LINE: Plots 38, 39, 40 & 41 inclusive

NOTES: Pipe Penetration Installation

The pipe penetrations were typically sealed using Visqueen Gas Resistant Self

Adhesive Membrane to the Visqueen Ultimate Damp Proof Course.



Photos showing that the edges of the Visqueen Gas Resistant Self Adhesive

Membrane being checked for potential capillary leaks using the Mechanical Point

Stress Test (red arrows).

# GEOSHIELD Verification Report

## VERIFICATION ITEM TWO



Overview of the typical pipe penetration installation where all pipes were fully

sealed to the Visqueen Ultimate Damp Proof Course using Visqueen Gas

Resistant Self Adhesive Membrane.

No faults were identified during the verification visit.



# GEOSHIELD Verification Report



## VERIFICATION ITEM THREE

LOCATION/GRID LINE: Plots 35, 36, 37 inclusive.

NOTES: Visqueen Gas Barrier Installation- infill

The Visqueen Gas Barrier had been installed (infill) to the previously installed

Visqueen Ultimate Damp Proof Course. The lap joints had been sealed combining

Visqueen Double Sided Butyl Tape and Visqueen Foil Tape.

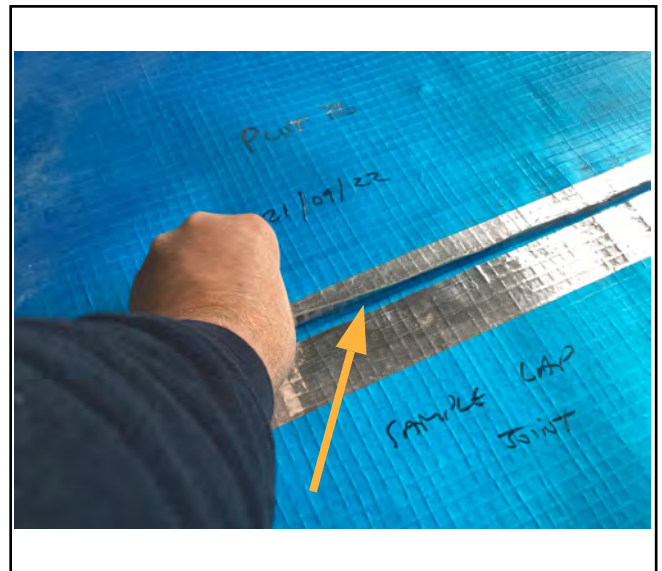
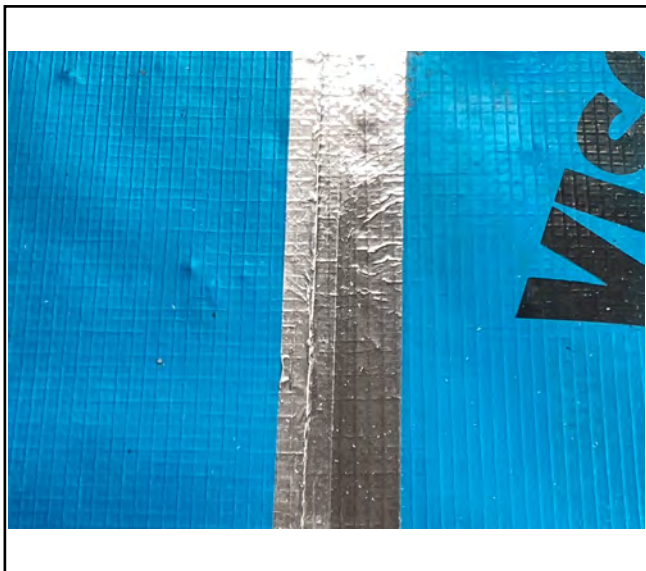


Photo 1 showing the typically completed lap joint where the Visqueen Foil Tape is

on view. Photo 2 showing a sampled lap joint where checks could be made to

ensure the Visqueen Double Sided Butyl Tape had been installed forming the seal

(see yellow arrow) Verification confirmed all sampled lap joints were fully sealed.



# GEOSHIELD Verification Report



## VERIFICATION ITEM THREE



Overview showing the typical infill installation of the Visqueen Gas Barrier

to the various rooms within the plots.

In addition, a visual inspection of the Visqueen Gas Barrier was undertaken

checking for any damage. Only one fault was identified during the verification visit.



# GEOSHIELD Verification Report



## REMEDIATION LOG

Date	Nr	Remediation Description	Y/N
02/11/2020	001	DPC installation had major limitations due to block work install	✓
02/11/2020	002	GR DPC installed but major limitations caused by block work.	✓
02/11/2020	003	GR DPC already covered with block work however so limitations	
		were caused, however remediations will be made during the infil	
		process	✓
02/11/2020	004	Corners must be seen on future visit	✓
13/11/2020	005	Visqueen Low Perm on site - informed needs upgrading to	✓
		Visqueen Standard Gas Barrier	
11/12/2020	006	No faults found	✓
28/02/2021	007	No faults found	✓
24/03/2021	008	No faults found	✓
26/07/2021	009	No faults found	✓
19/01/2022	010	No faults found	✓
26/01/2022	011	No faults found	✓
15/02/2022	012	No faults found	✓





# GEOSHIELD Verification Report



## ADDITIONAL PHOTOGRAPHS



View along the Visqueen Ultimate

DPC crossing the external cavity wall.



View showing the Visqueen Ultimate

DPC to internal wall position



View showing Visqueen Ultimate DPC

lapped and sealed to perimeter



View showing the perimeter lap joint

with Visqueen Gas Barrier infill.



# GEOSHIELD Verification Report



## ADDITIONAL PHOTOGRAPHS



View of the DPC which was used to

protect the Ultimate DPC



Typical threshold showing complete

seals between DPC and Gas Barrier



Puncture identified within plot 37

requiring remediation



Remediated puncture within plot 37

using GRSAM patch.



# GEOSHIELD Verification Report



## ADDITIONAL PHOTOGRAPHS



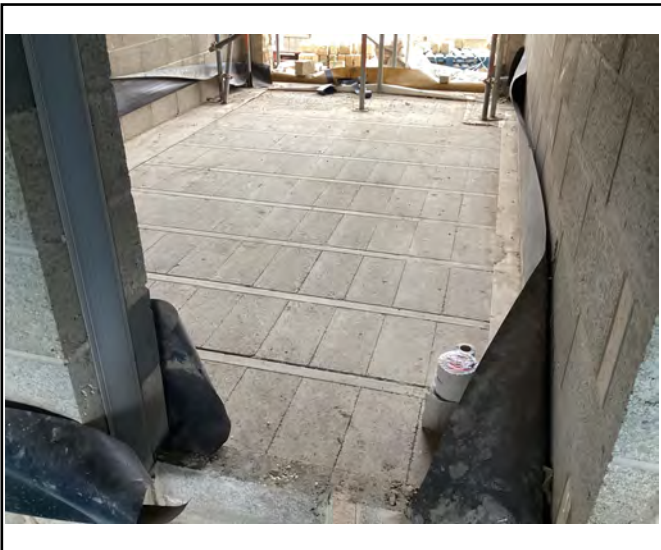
View showing incomplete Gas Barrier

seal due to scaffolding



Mechanical Point Stress Test to

perimeter GRSAM



Incomplete Visqueen Gas Barrier

within plot 35 garage



Incomplete Visqueen Gas Barrier

within plot 35 garage



# GEOSHIELD Verification Report



## GAS MEMBRANE TESTING

VISUAL:	<input type="checkbox"/> YES	<input checked="" type="checkbox"/>	<input type="checkbox"/> NO	<input type="checkbox"/>	SMOKE TEST:	<input type="checkbox"/> YES	<input type="checkbox"/>	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>
COMPRESSED AIR:	<input type="checkbox"/> YES	<input type="checkbox"/>	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>	DILECTIC	<input type="checkbox"/> YES	<input type="checkbox"/>	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>
DESTRUCTIVE:	<input type="checkbox"/> YES	<input type="checkbox"/>	<input type="checkbox"/> NO	<input checked="" type="checkbox"/>	OTHER:	<input type="checkbox"/> YES	<input checked="" type="checkbox"/>	<input type="checkbox"/> NO	<input type="checkbox"/>
Testing checklist attached:	<input type="checkbox"/> YES	<input type="checkbox"/>	<input type="checkbox"/> NO	<input type="checkbox"/>					

## Gridline/Plot Sign off

Gridline/Plot Sign off	Plots 16,17 & 20,21 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 14-15 & 18-19 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 7-11 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 12-13 Perimeters and Partitions	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 20-21	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 14-15 and 18-19	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 16-17	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 7-13	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plot 25 Perimeters	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 23-24 Perimeters	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 22, 30 and 31 Perimeters	<input checked="" type="checkbox"/>
Gridline/Plot Sign off	Plots 31 and 26 Infills and Plots 32-35 Perimeters	<input checked="" type="checkbox"/>





# GEOSHIELD Verification Report



## VERIFICATION SUMMARY

This was the seventeenth verification visit where I was accompanied by Adrian

Needle of Signature Homes.

Verification was completed as follows:-

>. Mechanical Point Stress Test to all internal corner and pipe penetration detailing

to the perimeters within plots 38, 39, 40 & 41 - no faults identified.

>. Three sampled lap joints within plots 35, 36 & 37 - no faults identified.

>. Visual inspection of infill installation to plots 35, 36 & 37 - one puncture identified

All in all, the gas membrane installation was very well installed having only

identified one fault throughout the verification process.

Passed and verified in accordance with BS8485:2019 and CIRIA 735.

GEOSHIELD SIGNATURE:

DATE: 21/09/2022

