Haigh Huddleston & Associates
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Our Ref: E17/7092/MD/008

30th May 2024

FAO Steve Mitchell
Mitchell@sbhomes.co.uk

Dear Sir,

Re: Development at former fire station, Manchester Road, Marsden Remediation Validation

1. Introduction

As specified in the 'Geo-Environmental Ground Investigation Report E19/7491/R001A By Haigh Huddleston & Associates dated August 2019', letter ref E17/7092/MD/001A dated 8 January 2021 detailing additional site investigation works and the Remediation Method Statement report ref E17/7092/RS001 dated May 2019, remediation work has been carried out at the above development.

2. Remediation Objectives

As detailed in the above mentioned Remediation Method Statement, the remediation works required can be detailed as follows:

1. Removal of the contaminated surface material to a depth of 1.2-1.5m below existing ground levels.
2. Removal of the perimeter walls and base to the gas holders where possible.
3. Clean stone to be imported to form a piling matt to allow the construction of the foundations.
4. Installation of a gas membrane to the proposed apartment building.
5. 600mm clean capping consisting of 450mm subsoils and 150mm topsoils to be provided to the limited soft landscaped public open space on site.

3. Remediation Validation

1-2. EXCAVATION OF THE GAS HOLDERS

Gas Holder 1
It was originally proposed to remove the entirety of the 4m deep construction of Gas Holder 1 from the south west of the development. However, due to the proximity of the gas holder to the site boundaries, and the risk of instability in third party land during the excavation works, the gas holder and inert infill material was only removed to a depth of 2-2.5m below existing ground levels, with the perimeter wall construction remaining below this depth.

The infill material primarily consisted of inert demolition material such as walling stone and bricks, assumed from buildings previously adjacent the site. The material was riddled to remove the fines and the walling stone/bricks set aside for re-use off site. Clean imported stone was used to bring the footprint of the gas holder up to piling matt level 1-1.5m below existing ground level. Surplus fines were stockpiled on site for removal at a later date.

Gas Holder 2
Gas Holder 2 was constructed at a later date than Gas Holder 1 and had a more formal construction consisting of a metal frame with stanchions within the perimeter stone wall of the holder and a stone slab base. It is understood that remedial works to this gasholder had been undertaken by The Gas Board when they vacated the land, before the fire station was established. As part of these workings, the main body of the gas holder construction had been removed from site, leaving just the 1m high metal support frame and stone wall below ground. The void left by the removal of the gas holder was then infilled with imported clean stone. The hardstanding serving the fire station was then constructed over this.

During the current development works, the metal frame was exposed and cut-out in sections for removal from site. The stone slab base has been broken-out and removed from site. Clean imported stone was used to bring the footprint of the gas holder up to piling matt level 1-1.5m below existing ground level.

Gas Holder 3
The majority of Gas Holder 3 extended beyond the site boundary onto third party land, therefore a full remediation of the entirety of the gas holder was not possible in this instance. The gas holder and infill material have been removed laterally to the site boundary and vertically to the underlying natural strata, including the cutting out and removal of the metal frame to the gas holder. The infill material has been stockpiled on site for removal at a later date.

This area of site is to be tarmacked hardstanding providing access to the parking to the rear of the apartment building and the remaining infill material retained offsite is considered a low risk to future site residents as there was no evidence of mobile free phase NAPL within the material.

Removal of Contaminated Material
The excess material from Gas Holder 1 and the excavated material from Gas Holder 3 were securely stockpiled on site pending removal. The material has been removed from site and waste transfer tickets confirming the removal of the material is included in Appendix A to the rear of this report.

Additional samples have been taken from the natural slay strata at depth adjacent to both gasholder 1 and 3 and the chemical analysis is attached to the rear of this report. Both of the samples have proved clear from elevated levels of contaminants when compared to the tier 1 trigger levels for domestic use without plant uptake. The tier 1 trigger levels are attached to the rear of the report for comparison.

We would therefore conclude that the remediation of the site has been undertaken and the risk to future site residents from the existing on-site contamination has been reduced to acceptable levels.

3. CLEAN STONE IMPORTED TO SITE TO FORM PILING MATT.

Following the excavation of the gas holders, and 1.2-1.5m depth of made ground throughout site, a geotextile membrane was placed over the exposed ground.

Clean crushed stone has then been imported to form a 0.6-1.0m thick piling matt to enable the piling of the proposed apartment building.

Photographic evidence confirming the placement of the geotextile and construction of the piling matt in clean stone is included in Appendix B.

4. VALIDATION OF GAS MEMBRANE INSTALLATION

Further to your request, we have attended site to undertake an inspection of the gas membranes to confirm that the quality of the installations is satisfactory to the apartment buildings on site.

When consulting BS 8485:2015 Table 2 the site can be characterised as CS2 for Type A buildings. Consulting tables 5 - 7 we recommended the following to achieve a score of 4.5:

- Fully vented minimum 150mm deep void below beam & block floor. To be increased to 250mm where the proximity of trees affects the foundation construction. 2.5 Points
- Continuous membrane across the cavity/party walls. 0 Points
- Cavity tray in the external walls. 0 Points
- Fully sealed service entries and ducts to manufactures specification. 0 Points
- Beam and block floor slab 0 Points
- A Proprietary Gas Barrier meeting all of the following criteria:

  • Sufficiently impervious to gasses with a methane gas Transmission rate <40.0ml/day/m2/atm (average) for sheets and joints (tested in accordance with BS ISO 15105-1 manometric method).

  • Sufficiently durable to remain serviceable for the anticipated life of the building and duration of gas Emissions.

  • Sufficiently strong to withstand in-service stresses (eg. Settlement if placed below a flood slab).

  • Sufficiently strong to withstand the installation process And following trades until covered (eg. Penetrations From steel fibres in fibre reinforced concrete, Penetration from reinforcement ties, tearing due to Working above it, dropping tools etc.)

  • Capable, after installation, of providing a complete Barrier to the entry of the relevant gas.

  • Verified in accordance with CIRIA C735 [N1] 2.0 Points

  Total 4.5 Points

Installation

Prior to work commencing on site it was agreed with the developer that the gas membrane installation would take place in a two stage process, with the DPM taken through the external cavity wall and taped into the main floor membrane.

Installation of the membranes was in accordance with the manufacturers specification and standard details.

Inspection Procedure
Prior to works commencing on site it was agreed between all parties that Haigh Huddleston Associates would inspect the property to ensure a suitable level of workmanship was achieved.

The membrane installation was inspected against the 'Visual Inspection Checklist' in Appendix C and Appendix D.

Validation of the Gas Membranes
It was agreed that the plot will use a Beam and Block floor construction.

The contractor responsible for the installation of gas membrane was SB Homes Ltd.

The inspections on site found the membrane installation to be satisfactory, with no issues noted. Some debris and marking was noted to the membrane in the timber frame apartment building and this was cleared prior to the screed being laid. No tears were present in the membrane.

Photographs of the installed membranes are included in Appendix C and Appendix D to the rear of this letter.

It was expected that the Aldeprufe GRA gas membrane to the timber frame apartments would be blue, while the membrane installed on site was noted to be black. Aldeburgh, the manufacturer of the Aldeprufe GRA gas membrane was contacted and confirmed that they had produced a black version of this membrane, and that the literature had not been updated to reflect this as yet. Copy correspondence confirming that this was an Aldeprufe GRA gas membrane is in Appendix D to the rear of this letter.

We can therefore confirm that the installation of the gas membrane is satisfactory to comply with BS 8485:2015 CS2 conditions for residential properties.

5. VALIDATION OF CLEAN CAPPING LAYER

Outside the footprint of the residential buildings, the site is primarily hardstanding, with only a small area of soft landscaping located in the south eastern corner of the site. During the previous remedial works on site, the made ground had been reduced on site and a geotextile membrane placed before the installation of a clean stone piling matt throughout the site.

Trial pits undertaken in the soft landscaped area have proved a 200mm thick layer of topsoil overlying 50mm of clean stone, with a geotextile membrane in place below. Beneath this the former piling matt extends to a depth of at least 600mm below ground levels. The clean stone and membrane act as a no-dig interface preventing future residents from encountering the made ground remaining on site.

The clean topsoil has been imported from a separate SB Homes site, and the chemical analysis for the topsoil, along with photographs of the depth of trial pits are included to the rear of this report.

Yours faithfully

MICHAEL DEAN BSc (Hons) HND
m.dean@haighhuddleston.co.uk

Appendices

Appendix A

Chemical Analysis of Natural Clays Adjacent Gas Holder 1 and Gas Holder 3

Waste Transfer Tickets

0m	Scale 1:50	4m
0m	Scale 1:100	8m
0m	Scale 1:200	16m
0m	Scale 1:500	40m
0m	Scale 1:1250	100m

(When to scale of original plan bar = 8cm)

KEY

TRIAL PITS

BOREHOLES

AREAS INNACCESSIBLE DURING SITE INVESTIGATION

Manchester Road

Former Fire Station

Bus Shelter

1.6m high stone wall

1.3m high stone wall

2.4m high steel pallisade fence

Construction between 1906-1930

High Pressure Gas Mains

Emergency House

GAS HOLDER 2

GAS HOLDER 3

GAS HOLDER 1

UNABLE TO TREAT MAJORITY OF GAS HOLDER AS IT IS LOCATED IN THIRD PARTY LAND.

concrete panel fence

chain link fence

Gas Plant

2.4m high concrete post and chain link fence

steel pallisade fence over stone wall

EXISTING MONITORING STATION

225Ø

1.830

Watercourse / Land drain 450Ø

max 2.0m highstone wall

Historical Buildings

Construction before 1890

stone wall

TP01 TP02 TP03 TP04 TP05 TP06 TP07

GAS1A GAS1B GAS3

WS01 WS02 WS03 WS04 WS05

STN2 STN3 STN4 STN6 STN7

STN2 E 2000.000 N 2000.000 El 187.090

STN3 E 1002.850 N 1986.630 El 187.400

STN4 E 1011.420 N 1959.940 El 188.140

STN6 E 979.170 N 1971.470 El 187.270

STN7 E 945.450 N 1952.550 El 186.800

NOTE:
1. Tree locations indicative only.
2. Perimeter of site is banked up with earth so not a true reflection of ground levels.

Rev B Additional sample locations added to plan 25.05.19

Haigh Huddleston & Associates

Civil Structural Engineering Consultants

Firth Buildings, 99 - 101 Leeds Rd, Dewsbury, WF12 7BU t 01924 464342 f 01924 450662

e trevor.haigh@haighhuddleston.co.uk

Client: SB HOMES

Project: FORMER FIRE STATION, MANCHESTER ROAD, MARSDEN

Detail: SITE INVESTIGATION WORKS PLAN

Dwn	Chkd	Date	Scale	Dwg No.
DP		07.03.19	1/200@A2	E17/7092/200B

Certificate of Analysis

Certificate Number	23-29867	*Issued:*	05-Jan-24

Client Haigh Huddleston & Associates Ltd
Firth Buildings
99-101 Leeds Road
Dewsbury
WF12 7BU

Our Reference	23-29867
Client Reference	7092
Order No	(not supplied)
Contract Title	SB HOMES - FIRE STATION
Description	2 Soil samples.
Date Received	19-Dec-23
Date Started	19-Dec-23
Date Completed	05-Jan-24
Test Procedures	Identified by prefix DETSn (details on request).
Notes	Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Kirk Bridgewood
General Manager

MCERTS
THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

ilac-MRA

UKAS TESTING
2139

Summary of Chemical Analysis
Matrix Descriptions

Our Ref 23-29867
Client Ref 7092
Contract Title SB HOMES - FIRE STATION

Sample ID	Depth	Lab No	Completed	Matrix Description
GH1	4.3	2279390	05/01/2024	Brown slightly gravelly, sandy CLAY
GH3	2.5	2279391	05/01/2024	Brown slightly gravelly, sandy CLAY

Summary of Chemical Analysis
Soil Samples

Our Ref 23-29867
Client Ref 7092
Contract Title SB HOMES - FIRE STATION

			Lab No	2279390	2279391
			.Sample ID	GH1	GH3
			Depth	4.30	2.50
			Other ID		
			Sample Type	SOIL	SOIL
			Sampling Date	15/12/2023	15/12/2023
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Metals					
Arsenic	DETSC 2301#	0.2	mg/kg	2.0	2.6
Cadmium	DETSC 2301#	0.1	mg/kg	< 0.1	< 0.1
Chromium	DETSC 2301#	0.15	mg/kg	12	12
Copper	DETSC 2301#	0.2	mg/kg	7.9	5.1
Lead	DETSC 2301#	0.3	mg/kg	14	14
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05
Nickel	DETSC 2301#	1	mg/kg	5.7	5.4
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	34	28
Inorganics					
pH	DETSC 2008#		pH	6.6	6.9
Thiocyanate	DETSC 2130#	0.6	mg/kg	2.2	0.7
Total Organic Carbon	DETSC 2084#	0.5	%	0.8	0.9
Sulphide	DETSC 2024*	10	mg/kg	< 10	20
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.03	0.04
Petroleum Hydrocarbons					
EPH (C10-C40)	DETSC 3311#	10	mg/kg	< 10	< 10
PAHs					
Naphthalene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
PAH 16 Total	DETSC 3301	1.6	mg/kg	< 1.6	< 1.6
Phenols					
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 23-29867
Client Ref 7092
Contract Title SB HOMES - FIRE STATION

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
2279390	GH1 4.30	SOIL	NAD	none	Shannon Hope
2279391	GH3 2.50	SOIL	NAD	none	Shannon Hope

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 23-29867
Client Ref 7092
Contract SB HOMES - FIRE STATION

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
2279390	GH1 4.30 SOIL	15/12/23	GJ 250ml, PT 1L		
2279391	GH3 2.50 SOIL	15/12/23	GJ 250ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO4	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC 2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC 2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC 2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC 2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC 2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 2311	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO4	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	As Received	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3321	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3321	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3521	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3521	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3521	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3521	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3521	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3521	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3521	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

End of Report

Duty of care: waste transfer note

Keep this page and copy it for future use. Please write as clearly as possible.

Section A – Description of waste

A1 Description of the waste being transferred

SOIL & STONE

List of Waste Regulations code(s)

17 05 04

A2 How is the waste contained?

Loose ☑ Sacks ☐ Skip ☐ Drum ☐

Other ☐

A3 How much waste? For example, number of sacks, weight

1 x load

Section B – Current holder of the waste – Transferor

By signing in Section D below I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011 Yes ☐

B1 Full name

SB HOMES

Company name and address

EMPIRE HOUSE
LEWISHAM Road
SLAITHWAITE
HUDDERSFIELD

Postcode HD7 5AL SIC code (2007)

B2 Name of your unitary authority or council

B3 Are you:

The producer of the waste? ☑
The importer of the waste? ☐
The local authority? ☐
The holder of an environmental permit? ☐
Permit number
Issued by
Registered waste exemption? ☐
Details, including registration number
A registered waste carrier, broker or dealer? ☐
Registration number
Details (are you a carrier, broker or dealer?)

Section C – Person collecting the waste – Transferee

C1 Full name

PeA WHITEHEAD ltd

Company name and address

DEWES GATE FARM
DOWRY LANE
SLAITHWAITE
HUDDERSFIELD

Postcode HD7 5TY

C2 Are you:

The local authority? ☐

NO

C3 Are you:

The holder of an environmental permit? ☐
Permit number
Issued by
Registered waste exemption? ☐
Details, including registration number
A registered waste carrier, broker or dealer? ☑
Registration number CBDU163228
Details (are you a carrier, broker or dealer?)

Section D – The transfer

D1 Address of transfer or collection point

MARSDEN FIRE STATION
MANCHESTER ROAD
MARSDEN

Postcode HD7 6HA

Date of transfer (DD/MM/YYYY) 16/5/24

D2 Broker or dealer who arranged this transfer (if applicable)

Booth Ventures
Howard Quarry
Bolton

Postcode BL2 4LB

Registration number

Time(s)

Transferor's signature

Name Stephen Byrom

Representing SB HOMES ltd

Transferee's signature A Shaw

Name ADELE SHAW

Representing PeA WHITEHEAD ltd

BOOTH VENTURES

Harwood Quarry, Brookfold Lane, Harwood, Bolton BL2 4LT
Tel: 01204 597788 Fax: 01204 597799

Material ✓				TICKET No. HQ [redacted] 12883
IN	✓	OUT		

Customer / Supplier
PA WHITEHEAD

Weight / Site Name
NUMBER FIVE

Date
15/5/24

Type of Material
N/H

Haulier
PA WHITEHEAD

Vehicle Reg No.
CE68PGF

Driver's Signature
[signature]

Name (PRINT)
ADAM TSCY

Appendix B

Photographs Showing Installation of Membrane and Piling Matt


S. B. HOMES LTD

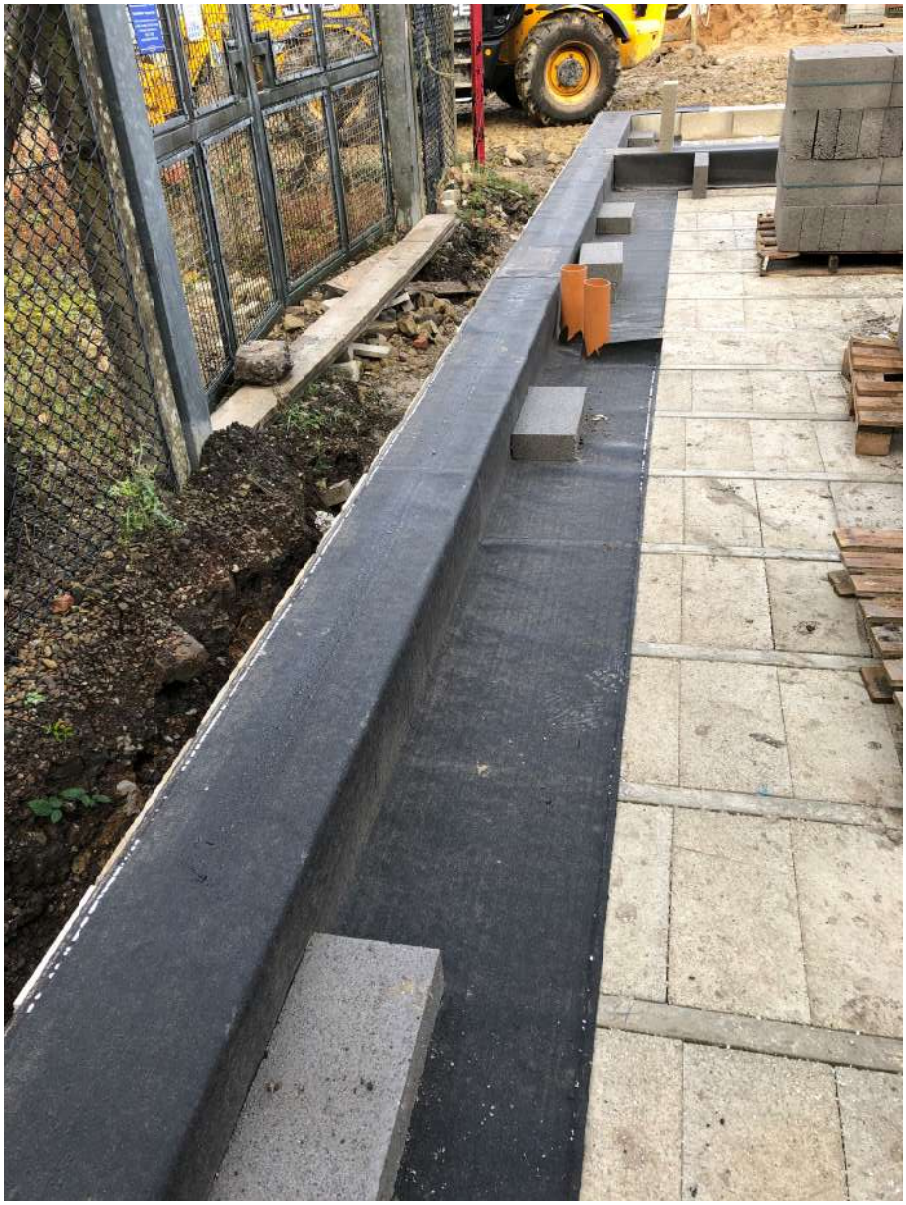
Appendix C

Inspection Checklist for Trad Apartments

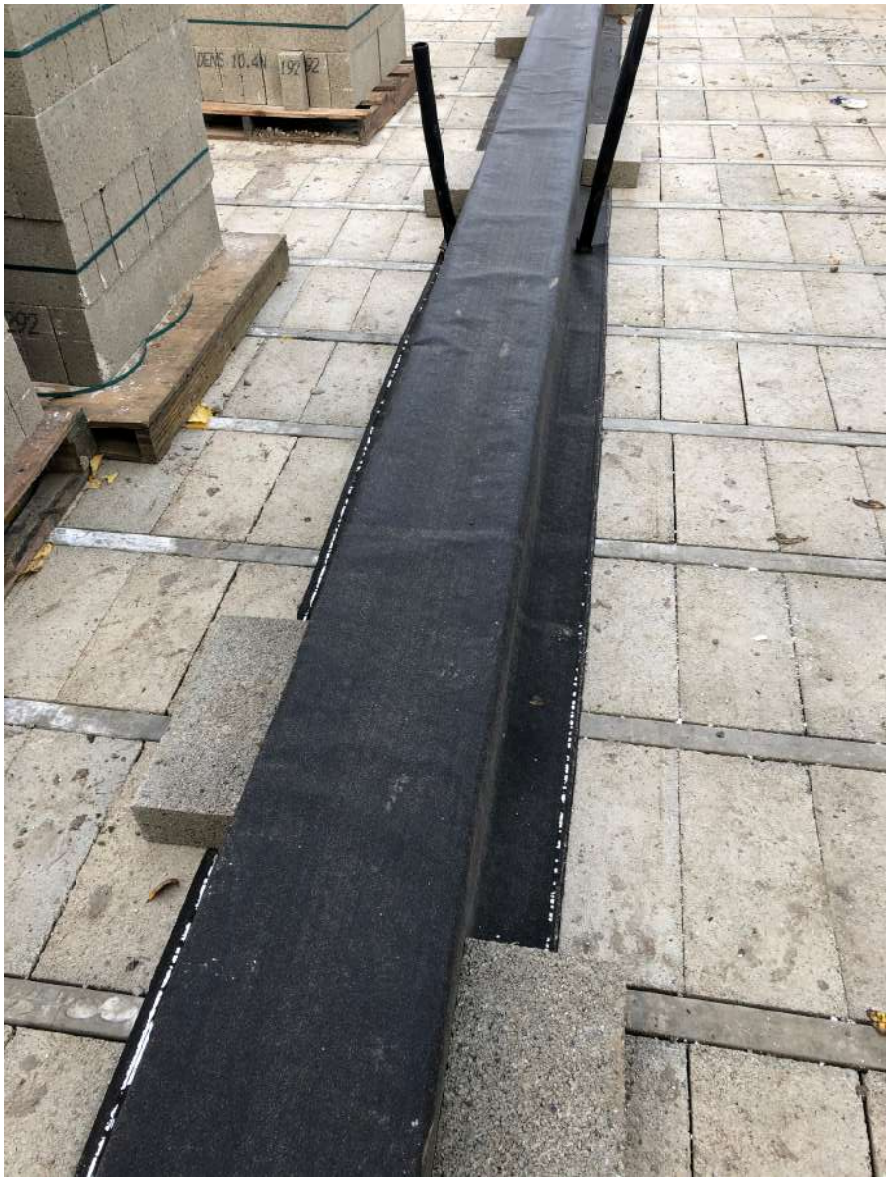
Photographs

Site name: Fire Station, Manchester Rd, Marsden			Gas characteristic situation: CS2
Job number: E17/7092			Type of development and building/block checked: Residential apartments
Date: 29/10/19 & 26/01/21			Building description: Traditional Construction
Visit by: MH			Foundation type: Beam & Block
Weather at time of inspection: Drizzle			Gas protection type: passive
No	Item	Comments	
1. Gas membrane			
1.1	Condition of sub-grade and underside of gas membrane	Good	
1.2	Gas membrane type	Aldeprufe GRA Gas Barrier	
1.3	Gas membrane condition	Good	
1.4	Jointing tape product	VisqueenPro Double Sided Jointing Tape	
1.5	Lapping design	In accordance with manufacturers details. 100mm Min overlap between floor and cavity membranes.	
1.6	Laps, welds and joints seals	Good. Joints sealed with VisqueenPro jointing tape	
1.7	Service entries seals	Top hats present. Sealing good.	
2. Passive venting			
2.1	Sub-floor void	Min 150mm achieved. Void unobstructed.	
2.2	External wall airbricks	Present.	
2.3	Internal sleeper walls	Vents present in line with air bricks in accordance with foundation drawings.	
2.4	External vent trenches/ducts	N/A	
3. Active venting			
3.1	System details	N/A	
Additional notes: Correspondence confirming validity of gas membrane attached.			
The gas protection measures inspected:		**A are acceptable and comply with the specification**	
		B are acceptable but attention is drawn to issues related to item no. xxx	
		C are not acceptable due to the issues related to item no. xxx	

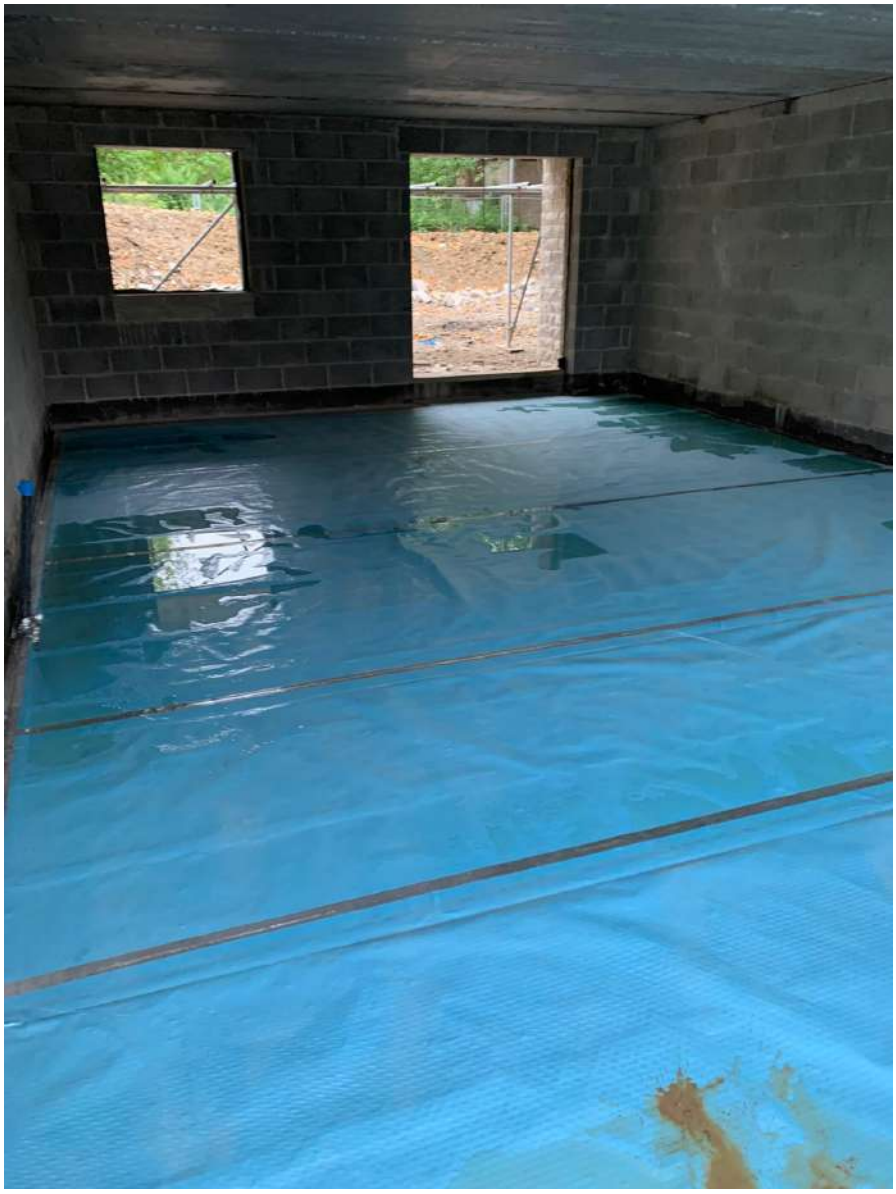
Name: Martin Huddleston Signature: Date: 27/01/21



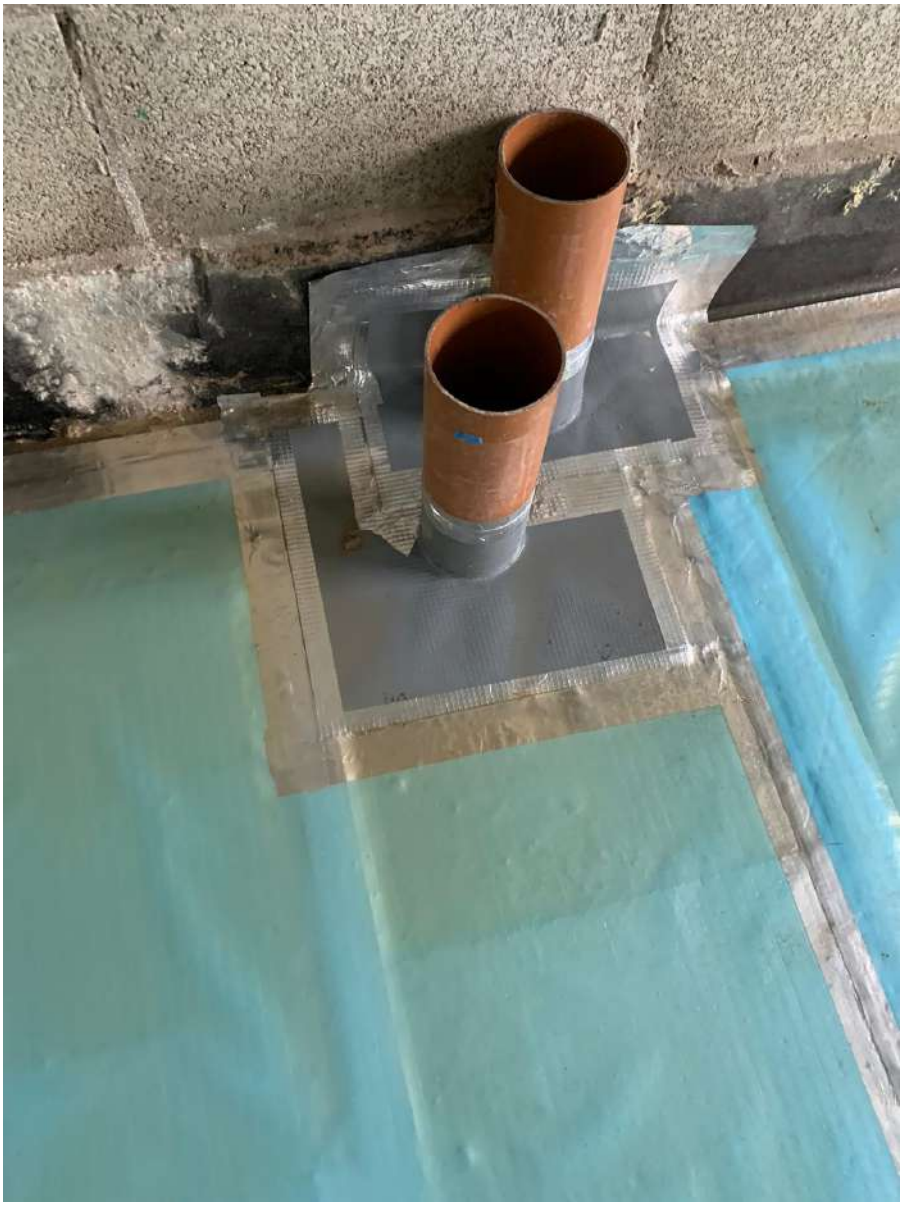
MEMBRANE TAKEN THROUGH EXTERNAL WALL



MEMBRANE TAKEN THROUGH PARTY WALL



GENERAL MEMBRANE ARRANGEMENT



TOPHAT INSTALLATION

Appendix D

Inspection Checklist for Apartments

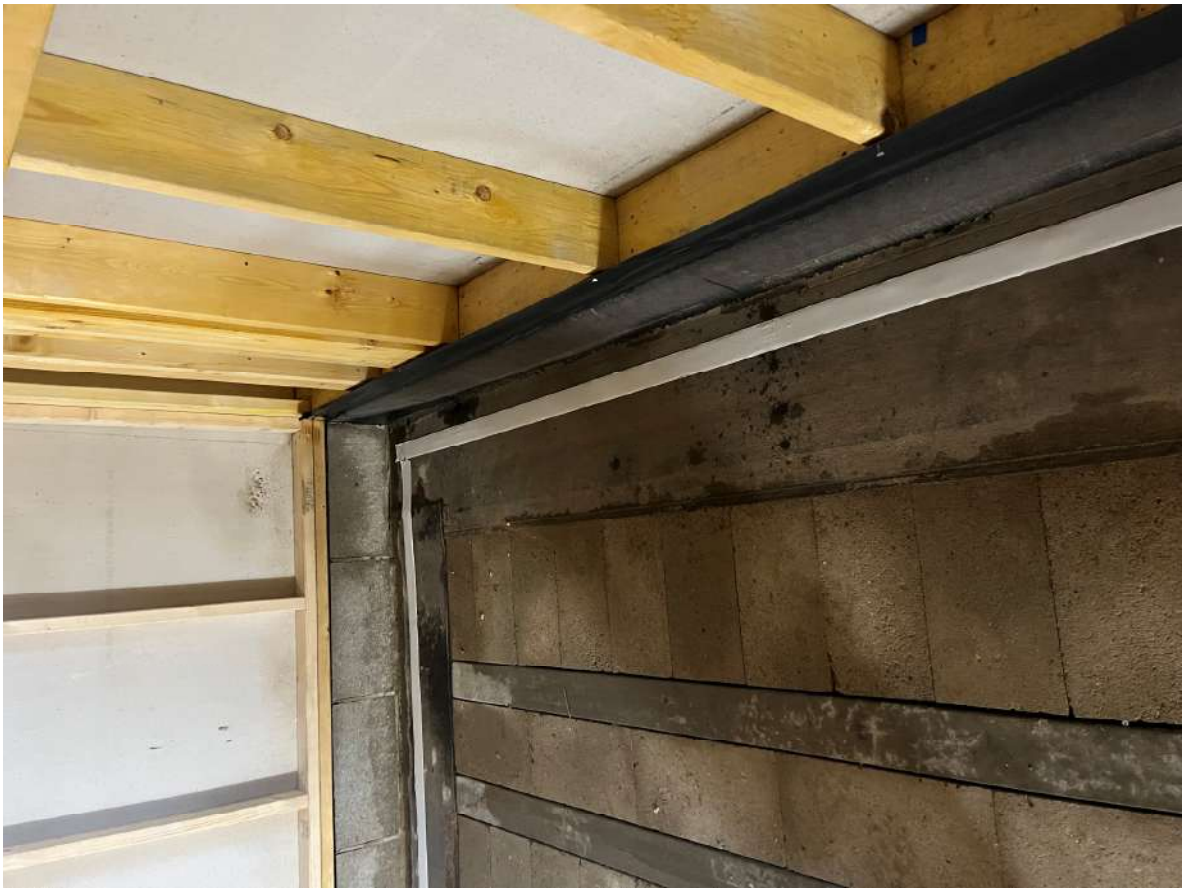
Photographs

Membrane Details

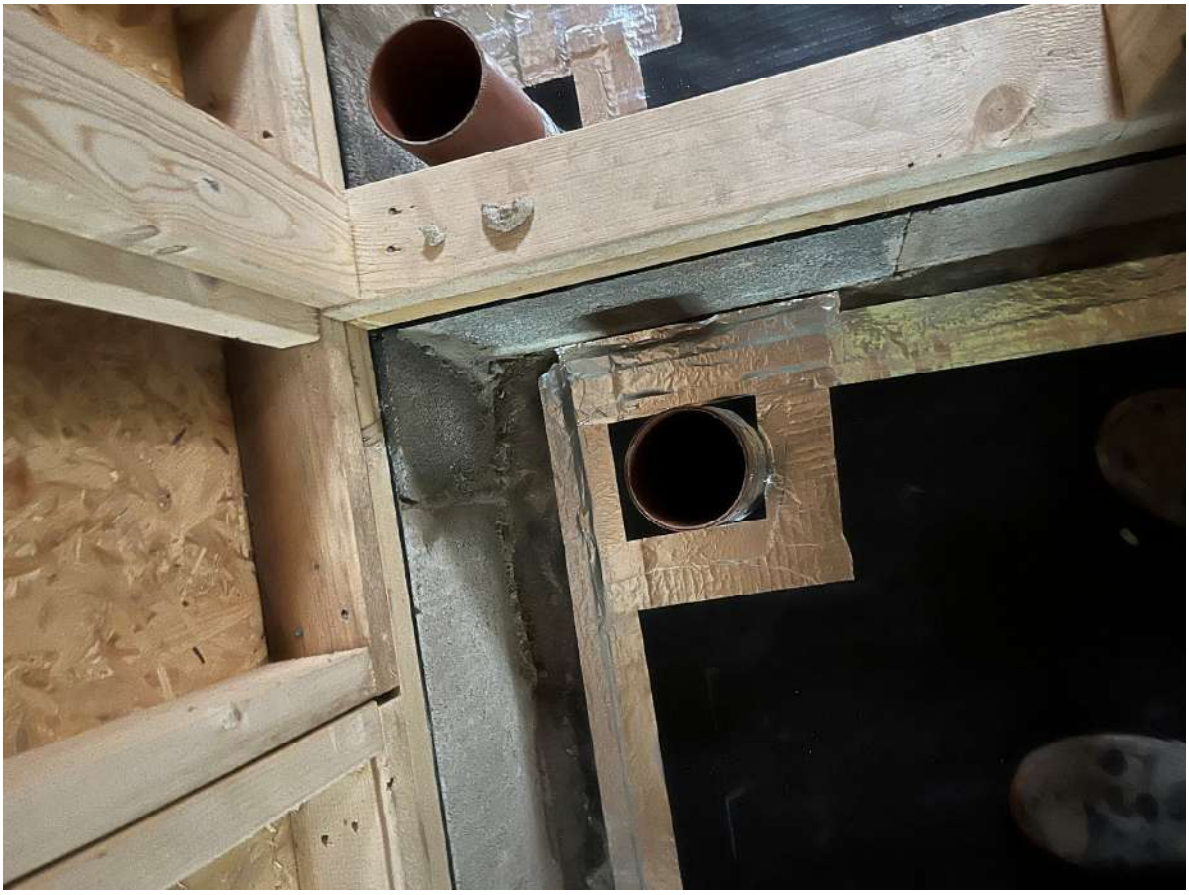
Site name: Fire Station, Manchester Rd, Marsden			Gas characteristic situation: CS2
Job number: E17/7092			Type of development and building/block checked: Residential apartments
Date: 02/11/23			Building description: Timber Frame Construction
Visit by: MH			Foundation type: Beam & Block
Weather at time of inspection: Clear			Gas protection type: passive
No	Item	Comments	
1. Gas membrane			
1.1	Condition of sub-grade and underside of gas membrane	Good	
1.2	Gas membrane type	Aldeprufe GRA Gas Barrier (black)	
1.3	Gas membrane condition	Good	
1.4	Jointing tape product	VisqueenPro Double Sided Jointing Tape	
1.5	Lapping design	In accordance with manufacturers details. 100mm Min overlap between floor and cavity membranes.	
1.6	Laps, welds and joints seals	Good. Joints sealed with VisqueenPro jointing tape	
1.7	Service entries seals	Top hats present. Sealing good.	
2. Passive venting			
2.1	Sub-floor void	Min 150mm achieved. Void unobstructed.	
2.2	External wall airbricks	Present.	
2.3	Internal sleeper walls	Vents present in line with air bricks in accordance with foundation drawings.	
2.4	External vent trenches/ducts	N/A	
3. Active venting			
3.1	System details	N/A	
Additional notes: Correspondence confirming validity of gas membrane attached.			

The gas protection measures inspected:	**A are acceptable and comply with the specification**
	B are acceptable but attention is drawn to issues related to item no. xxx
	C are not acceptable due to the issues related to item no. xxx

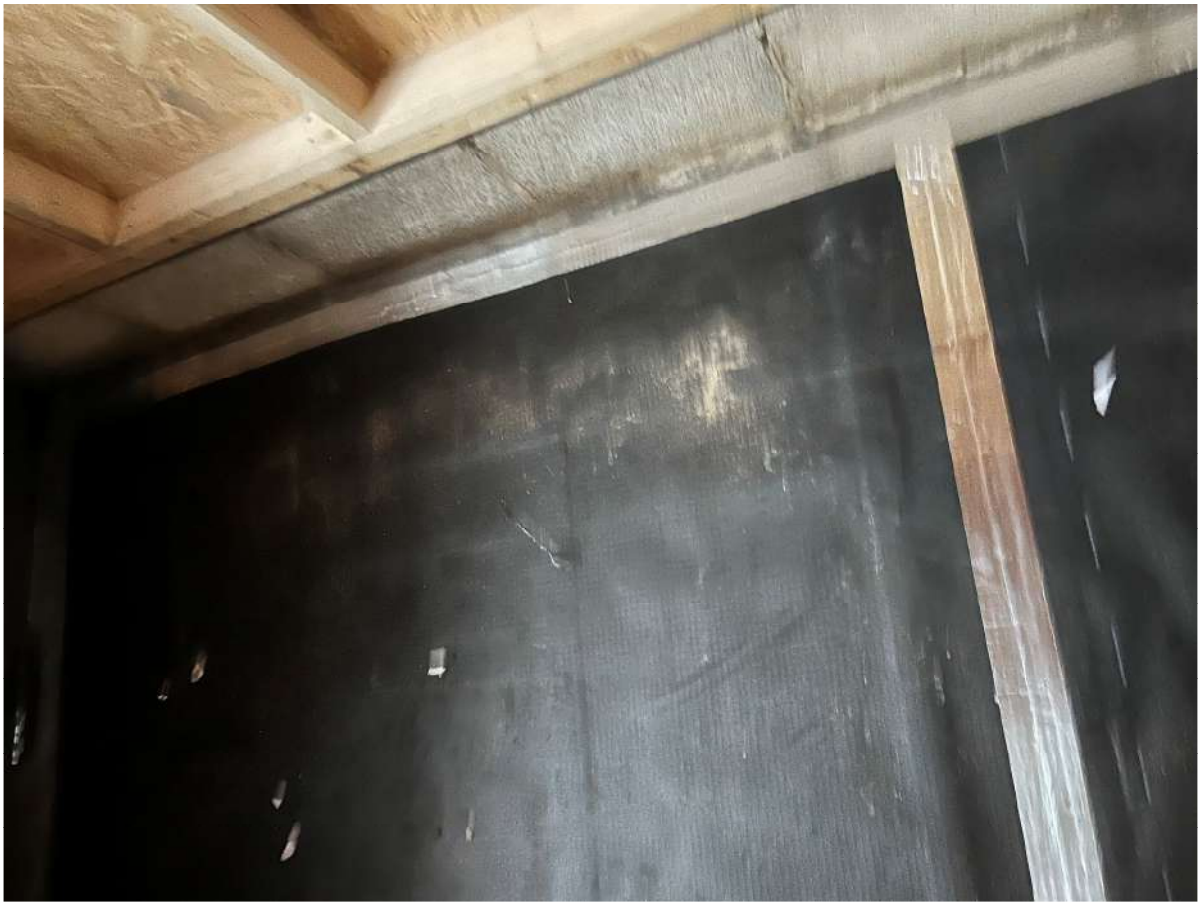
Name: Martin Huddleston Signature: Date: 06/12/23



MEMBRANE DETAIL THROUGH WOODEN FRAME



TOP HAT AND MEMBRANE CORNER DETAIL



TAPE DETAIL TO SEAM

Michael Dean

From: Sophie Thirsk-Senior <Sophie.Thirsk-Senior@alderburgh.com>
Sent: 08 November 2023 10:49
To: Michael Dean
Subject: GRA

Good Morning,

Many thanks for your timer as discussed, we have supplied Alderprufe GRA in black in the past. Apart from the colour both membranes are exactly the same with the same technical performance.

Thanks

Sophie

Sophie Thirsk-Senior
Senior Sales Coordinator

T: 0808 141 5800 - **M**: 07866 216410 **E**: Sophie.Thirsk-Senior@alderburgh.com **W**: www.alderburgh.com

ALDERBURGH

Alderburgh Ltd
Solutions House
Dane Street
Rochdale
OL11 4EZ

KEYTEC Geomembranes
LINING SOLUTIONS

Keytec Geomembranes Ltd
Unit 6 Plover Close
Interchange Park
Newport Pagnell
MK16 9PS

Please consider the environment before printing this e-mail

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Genuit Group plc
Company Registration No. 06059130
Registered Office: 4 Victoria Place, Holbeck, Leeds, LS11 5AE

ALDERPRUFE GRA

Alderprufe GRA Gas Barrier is a multilayer, low-density polyethylene membrane, reinforced with a polypropylene reinforcing grid with an integral aluminium foil (BBA 16/5368) for use above or below a concrete ground floors that are not subject to hydrostatic pressure, to protect buildings against gas penetration from the ground.

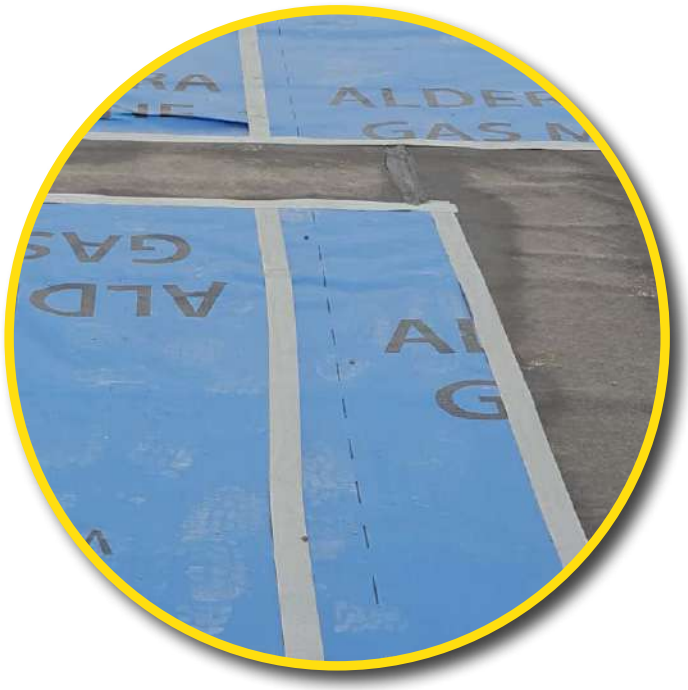
General Description

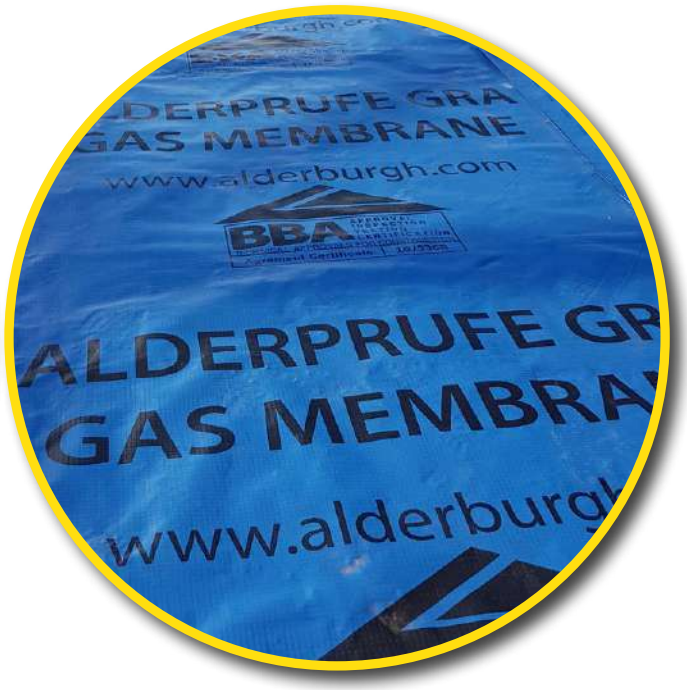
Alderprufe GRA is a proprietary gas barrier that is compliant with **BS8485:2015, Ciria 665** and is suitable for **Amber 1 & 2** applications. It provides an effective barrier to methane, carbon dioxide, radon, and hydrocarbon vapours; as **Ciria C748** notes, aluminium simply does not allow any permeation of almost any common organic pollutant.
It can be installed above or below a slab, above or below insulation or beneath a screed.
The methods of jointing provide an effective barrier to the passage of gases, hydrocarbon vapours, liquid water and water vapour from the ground.

Alderprufe GRA is suitable for use in accordance with the relevant clauses of CP102:1973 Code of Practice for protection of buildings against water from the ground (as amended), in concrete floors not subject to a hydrostatic pressure, and will meet Requirement of Building Regulations Approved Document C (England and Wales), in that sheet thickness is at least 1000 gauge.

Alderprufe GRA has a high resistance to puncture. On smooth or blinded surfaces it will not be damaged by normal on-site foot traffic but care should be taken to avoid damage during installation, particularly when handling building materials and equipment over the surface and when placing concrete or screed since it can be punctured by sharp objects.
Alderprufe GRA may be installed under all conditions normal to the construction of ground floor slabs.

The membranes remain flexible and do not soften at the extreme temperatures likely to occur in practice. When used in accordance with the manufacturer's instructions there will be no adverse effect on the membranes from underfloor heating under normal conditions of use, **Alderprufe GRA** will provide an effective barrier to the transmission of gases, liquid water and water vapour for the life of the concrete slab in which it is installed.





ALDERPRUFE GRA GAS BARRIER

Characteristic	Test Method	Unit	Alderprufe GRA
Physical Properties			
Thickness	EN 1849-2	mm	0.60
Width	EN 1849-2	m	2
Length	EN 1849-2	m	50 / 25
Weight	EN 1849-2	g/m2	350
Gas Permeability			
Methane	EN ISO 15105 - 1	ml/m2/day/atm	0.09
Carbon Dioxide	EN ISO 15105 - 1	ml/m2/day/atm	0.09
Radon	K124/02/95	m2/s	8.00
Water Vapour Transmission	EN 1931	g/m2/day	0.10
Complies with: BS8485:2015, CIRIA C664, CIRIA C748, NHBC (Green Amber 1, Amber 2, Red),			

Installation

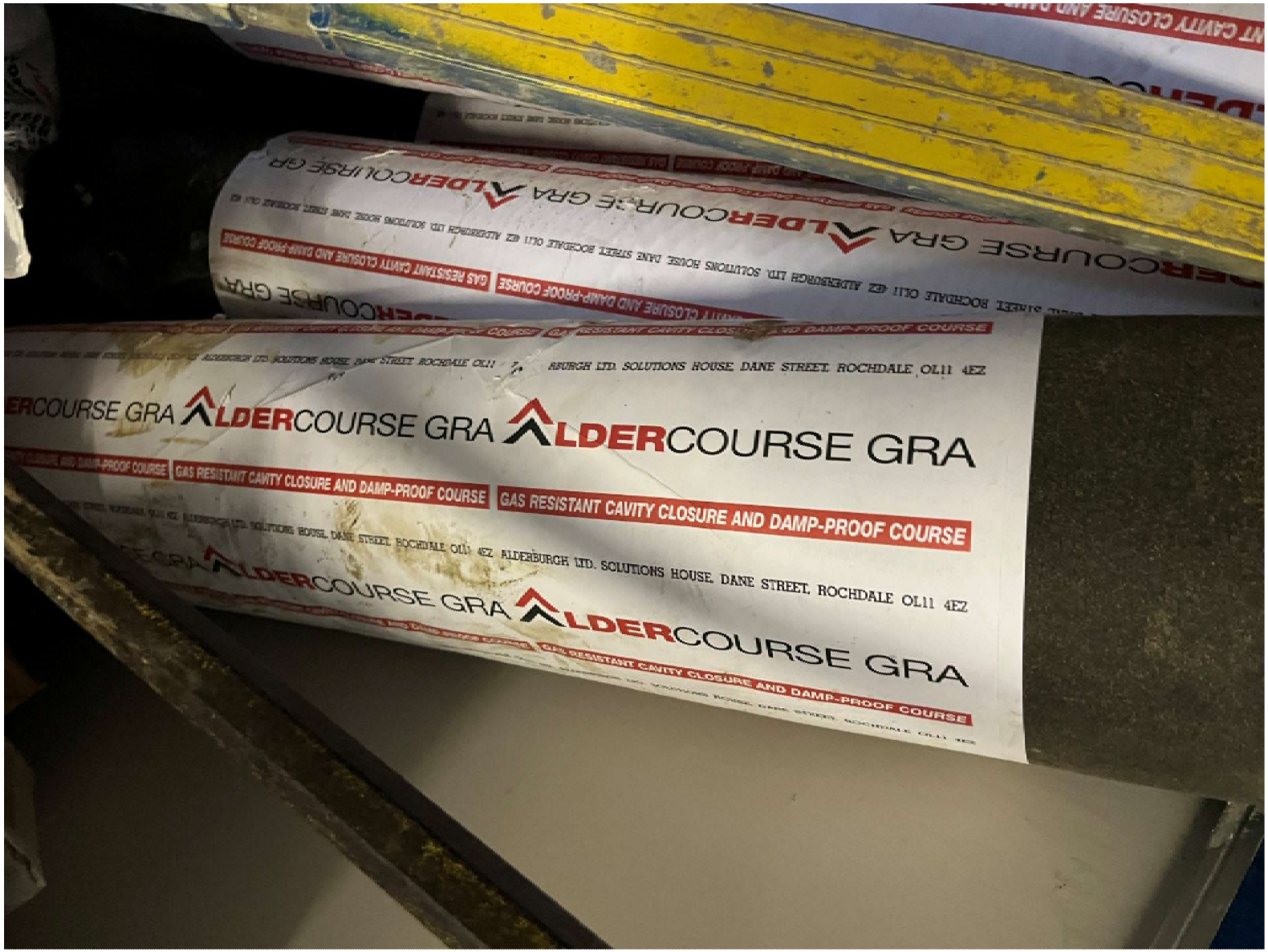
Unless the base is smooth, a surface blinding of soft sand or **Geotex 300PP** protection should be used to avoid puncturing the membrane during installation or when the concrete or screed is being placed.

Before jointing, sheets must be clean and free from dirt and grease. Adjacent sheets should be overlapped by at least 100mm wide and bonded with 100mm wide double-sided **Gastite Tape**.

Perforation or puncture of the sheets should be patched with sheets of identical thickness lapped at least 150mm beyond the limit of the puncture and sealed with 100mm wide **Gastite Tape**.
Continuity with DPC: **Alderprufe GRA** membrane must be continuous with damp-proof course in the surrounding walls; lapped and bonded to **Aldercourse GRA** gas dpc for continuation through load-bearing walls. Where necessary **Alderprufe MR50** should be used as a vertical course to link the two (refer to typical details and separate data sheets.)

Placing Concrete or Screed: **Alderprufe GRA** must be covered by a screed or other protective layer as soon as possible after installation. Care should be taken to ensure that the membrane is not stretched or displaced when placing the concrete or screed.
Best practice is to use pre-formed collars and cloaks at penetrations to the gas barrier, for example at columns, pipes or piles.
If gas ventilation is needed, refer to **Aldervent Gas Ventilation** brochure.

Use with: *Aldercourse GRA gas dpc * Gastite Tape * Preformed pipe collars, column cloaks, pile collars * Geotex 300PP or Backerboard HD protection * Membrane Holdfast * Alderprufe MR50*


ALDERCOURSE GRA
GAS RESISTANT CAVITY CLOSURE AND DAMP-PROOF COURSE
ALDERBURGH LTD. SOLUTIONS HOUSE, DANE STREET, ROCHDALE OL11 4EZ

Appendix E

Validation Pit Location Plan

Photographs

Chemical Analysis Results for Imported Topsoil

Tier 1 Trigger results for Domestic Use Without Plant Uptake

Key

- Site boundary
- Proposed Stone flag paving (specified by others).
- Proposed Tegula paving. Marshalls: Tegula 320x 240 x 80 concrete tumbled blocks. Colour: Harvest.
- Proposed Tumbled setts
- Proposed community garden lawn area. Turfed
- Proposed gravel
- Proposed tanalised timber edge
- Proposed mixed shrub and ornamental planting -590sqm.
- Proposed ornamental planting - 148sqm
- Proposed 2m high timber fence. Detail to be agreed.
- Proposed tarmac finish
- Proposed tarmac footway.
- Timber seating/bench.
- Proposed raised timber planter to rear community garden. (detailed by others).1000x3200x700mm.
- Proposed raised timber planters.(detailed by others). Various sizes - height 600mm.
- Proposed timber shed
- Proposed stone seats (specified by others)
- Proposed charging points
- Lighting column
- Proposed formal beech hedge. See softworks plan dwg 627_101RevA
- Proposed formal hawthorn hedge. See softworks plan dwg 627_101RevA
- Proposed tree grills
- Proposed heavy standard (12-14 girth) 2m clear stem. See softworks plan dwg 627_101RevA
- Proposed heavy standard (12-14 girth) container grown tree. See softworks plan dwg 627_101RevA

GENERAL NOTES:

1. Do not scale from this drawing.
2. All levels, dimensions & setting out to be checked & agreed on site
3. All dimensions are in millimetres unless otherwise stated
4. This drawing must be read in conjunction with the relevant specification clauses & detailed drawings.
5. This drawing is copyright protected & may not be reproduced in whole or part without written authority

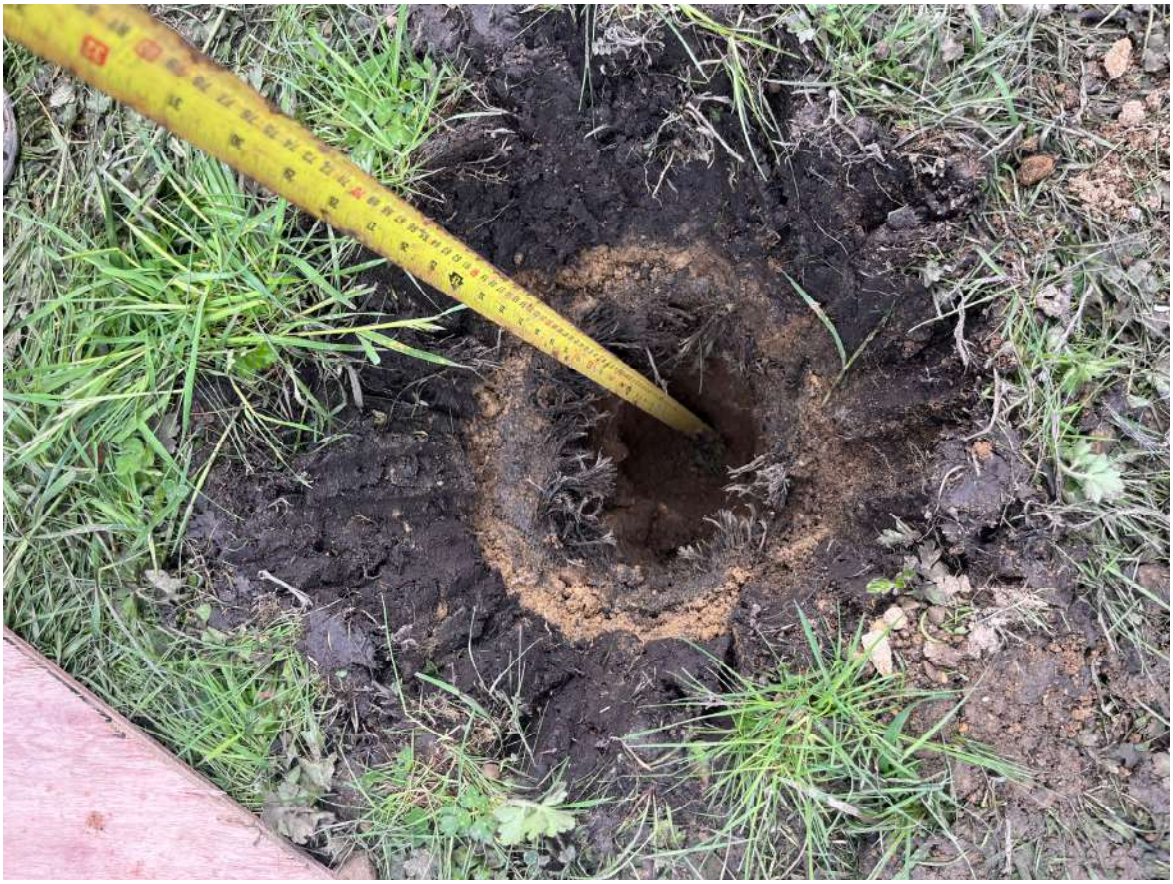
REVISION	DATE	DESCRIPTION	DRAWN BY	APPRVD BY
-	200421	Adjustment to paving spec	AR	AR
-	011220	Layout adjustments	AR	AR
-	141220	First issue	AR	AR

FOR PLANNING

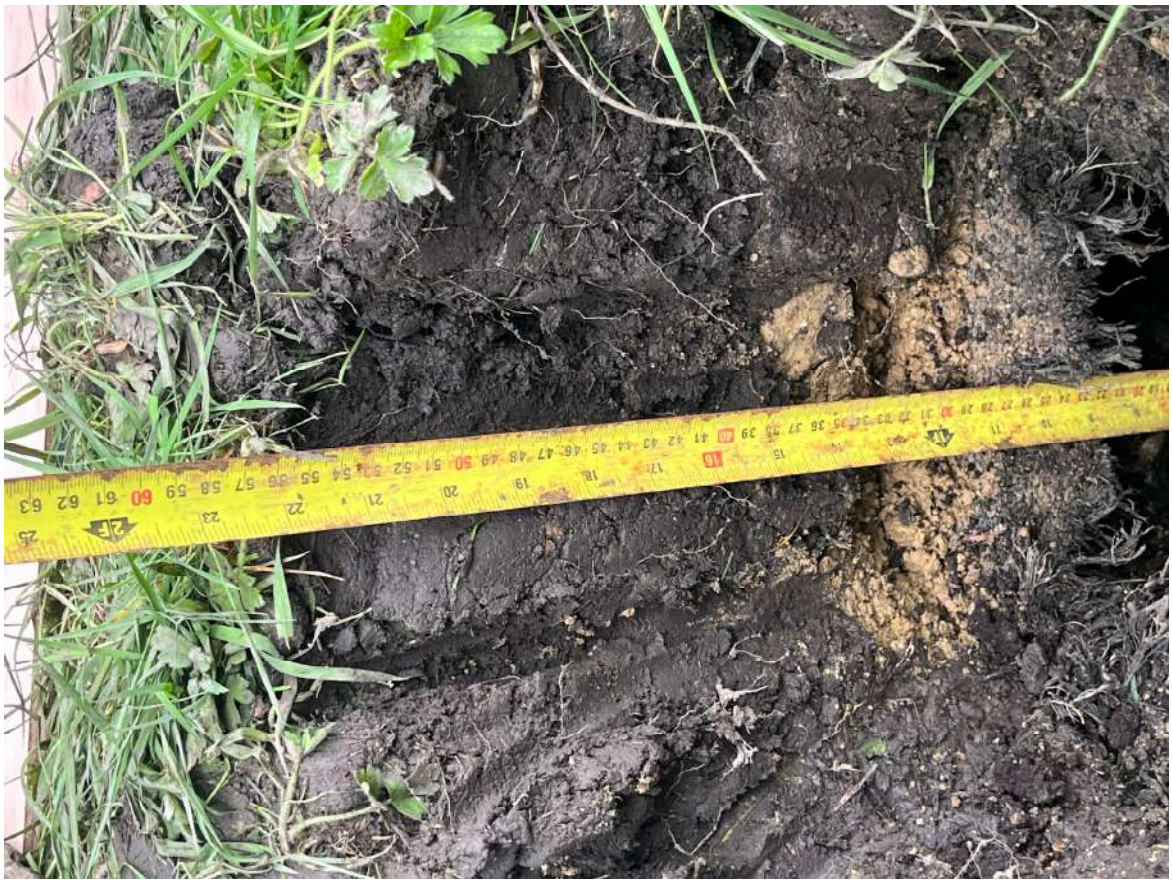
MARSDEN FIRE STATION
PROJECT

GENERAL ARRANGEMENT
DRAWING NAME

1:200 @ A2 SCALE	December 2020 DATE
627_100 DRAWING NO	B REVISION
AR DRAWN BY	AR CHECKED BY
AR APPROVED BY	



TRIAL PIT A



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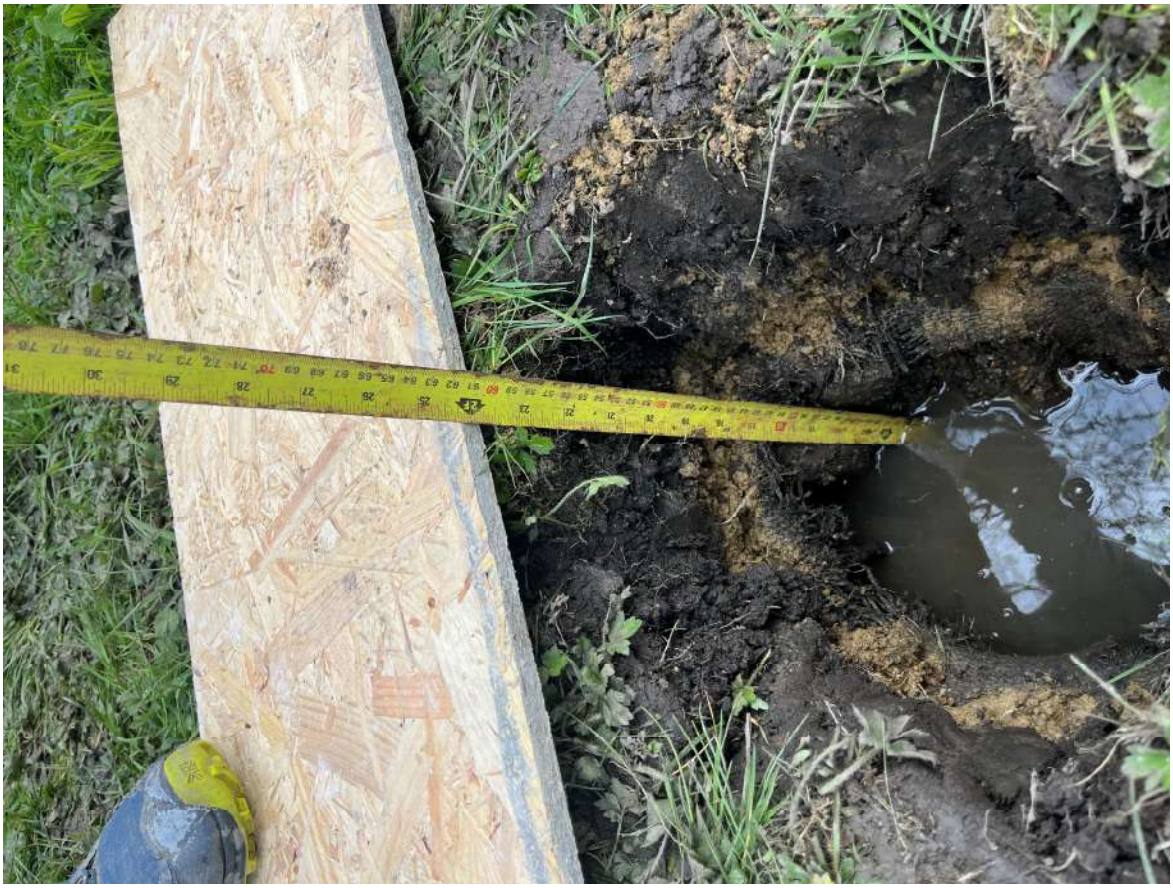

TRIAL PIT C

Certificate of Analysis

Certificate Number 19-07975

08-May-19

Client Haigh Huddleston & Associates Ltd
Firth Buildings
99-101 Leeds Road
Dewsbury
WF12 7BU

Our Reference 19-07975

Client Reference (not supplied)

Order No (not supplied)

Contract Title Marsden Lane,Marsden

Description 2 Soil samples.

Date Received 01-May-19

Date Started 01-May-19

Date Completed 08-May-19

Test Procedures Identified by prefix DETSn (details on request).

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

Approved By

Adam Fenwick
Contracts Manager

mCERTS
THE ENVIRONMENT AGENCY'S MONITORING CERTIFICATION SCHEME

UKAS TESTING
2139

Summary of Chemical Analysis
Matrix Descriptions

Our Ref 19-07975
Client Ref
Contract Title Marsden Lane,Marsden

Sample ID	Depth	Lab No	Completed	Matrix Description
TP01	0.4	1494634	08/05/2019	Dark brown very sandy CLAY
TP01	1	1494635	08/05/2019	Dark brown very sandy CLAY

Summary of Chemical Analysis
Soil Samples

Our Ref 19-07975
Client Ref
Contract Title Marsden Lane,Marsden

			Lab No	1494634	1494635
			Sample ID	TP01	TP01
			Depth	0.40	1.00
			Other ID		
			Sample Type	SOIL	SOIL
			Sampling Date	29/04/19	29/04/19
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Metals					
Arsenic	DETSC 2301#	0.2	mg/kg	12	15
Cadmium	DETSC 2301#	0.1	mg/kg	0.2	0.1
Chromium	DETSC 2301#	0.15	mg/kg	18	18
Copper	DETSC 2301#	0.2	mg/kg	21	21
Lead	DETSC 2301#	0.3	mg/kg	51	45
Mercury	DETSC 2325#	0.05	mg/kg	1.5	0.38
Nickel	DETSC 2301#	1	mg/kg	16	13
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	0.6
Zinc	DETSC 2301#	1	mg/kg	49	33
Inorganics					
pH	DETSC 2008#			5.9	4.8
Thiocyanate	DETSC 2130#	0.6	mg/kg	6.0	6.2
Sulphide	DETSC 2024*	10	mg/kg	24	< 10
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.28	0.13
PAHs					
Naphthalene	DETSC 3301	0.1	mg/kg	0.1	0.2
Acenaphthylene	DETSC 3301	0.1	mg/kg	< 0.1	0.1
Acenaphthene	DETSC 3301	0.1	mg/kg	< 0.1	< 0.1
Fluorene	DETSC 3301	0.1	mg/kg	0.4	< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg	0.2	0.6
Anthracene	DETSC 3301	0.1	mg/kg	0.2	0.2
Fluoranthene	DETSC 3301	0.1	mg/kg	< 0.1	1.0
Pyrene	DETSC 3301	0.1	mg/kg	0.4	0.9
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg	1.2	0.5
Chrysene	DETSC 3301	0.1	mg/kg	< 0.1	0.4
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg	0.5	0.6
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg	0.2	0.4
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg	1.4	0.6
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg	0.1	0.6
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg	0.1	0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg	0.6	0.5
PAH Total	DETSC 3301	1.6	mg/kg	5.7	6.8
Phenols					
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	0.6	0.4

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 19-07975
Client Ref
Contract Title Marsden Lane,Marsden

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1494634	TP01 0.40	SOIL	NAD	none	Colin Patrick
1494635	TP01 1.00	SOIL	NAD	none	Colin Patrick

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-07975
Client Ref
Contract Marsden Lane,Marsden

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1494634	TP01 0.40 SOIL	29/04/19	GJ 250ml, PT 1L		
1494635	TP01 1.00 SOIL	29/04/19	GJ 250ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2024	Sulphide	mg/kg	10	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO4	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO4	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	Air Dried	No	Yes	Yes
DETSC2123	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

TIER 1 SOIL GUIDANCE VALUES FOR USE IN DOMESTIC GARDENS

(WITH PLANT UPTAKE)

CONTAMINANT	ICRCL – TTV / DEFRA – SGV MG/KG
Arsenic	37 (4)
Cadmium	22 (4)
Chromium	130 (2)
Lead	200 (4)
Mercury	40 (1,5)
Selenium	250 (1)
Copper	2400 (1)
Nickel	180 (1)
Zinc	3700 (1)
Cyanide (total)	25
Sulphate	0.24% (3)
Sulphide	250
Thiocyanate	50
PAH (Total)	40
TPH (Total)	250
Phenols	280 (1)
PH	6-8
Asbestos	No fibres present

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(2) DEFRA CLR SGV's withdrawn used for initial comparison

(3) BS 8110 1985 Table 6.1

(4) Category 4 Screening Level

(5) Unless there is considered to be historical site usage that would result in elemental and methylmercury compounds to be present, the inorganic mercury SGV is used as this is the most prevalent for of mercury present in the natural environment.

TIER 1 SOIL GUIDANCE VALUES FOR USE IN DOMESTIC GARDENS WITH PLANT UPTAKE (SPECIATED PAH)

CONTAMINANT	SCREENING CRITERIA FOR PAH (mg/kg)		
	1% SOM	2.5% SOM	6%SOM
Acenaphthlene	210 (1)	510 (1)	1100 (1)
Acenaphthylene	170 (1)	420 (1)	920 (1)
Anthracene	2400 (1)	5400 (1)	11000 (1)
Benzo[a]anthracene	7.2 (1)	11 (1)	13 (1)
Benzo(a)pyrene	5 (2)	5 (2)	5 (2)
Benzo[b]fluoroanthene	2.6 (1)	3.3 (1)	3.7 (1)
Benzo[ghi]perylene	320 (1)	340 (1)	350 (1)
Benzo[k]fluoranthene	77 (1)	93 (1)	100 (1)
Chrysene	15 (1)	22 (1)	27 (1)
Dibenzo[ah]anthracene	0.24 (1)	0.28 (1)	0.3 (1)
Fluoranthene	280 (1)	560(1)	890 (1)
Fluorene	170 (1)	400 (1)	860 (1)
Indeno[123-cd]pyrene	27 (1)	36 (1)	41 (1)
Naphthalene	2.3 (1)	5.6 (1)	13 (1)
Phenanthrene	95 (1)	220 (1)	440 (1)
Pyrene	620 (1)	1200 (1)	2000 (1)

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(2) Category 4 Screening Level

LQM S4UL SCREENING VALUES FOR SPECIATED TOTAL TPH (RESIDENTIAL WITH PLANT UPTAKE 1% SOM)

Petroleum Hydrocarbons	LQM S4UL Screening Values (mg/kg)
Aliphatics	
C5-C6	42
C6-C8	100
C8-C10	27
C10-C12	130 (38)
C12-C16	1100 (24)
C16-C35	65000 (8.48)
Aromatics	
C5-C7	70
C7-C8	130
C8-C10	34
C10-C12	74
C12-C16	140
C16-C21	260
C21-C35	1100

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