

RESIDENTIAL APARTMENTS DEVELOPMENT
AT MAYES GARDENS
MANCHESTER M4 7FN

REMEDIATION STRATEGY REPORT

Client:
Multi Build UK Ltd.
Green Lane
Heywood
OL10 2EW

Consultant:
Build Vision Ltd
Consulting Engineers
Middle Cottage
Ben Kaye Row
Holmfirth
HD9 1EF

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1 INTRODUCTION

1.1 Appointment

- 1.1.1 Build Vision Consulting Engineers were appointed by Multi Build UK Ltd. to provide a Remediation Strategy Report for the site.
- 1.1.2 The Sub Surface Ground Investigation Report Reference 7501, dated May 2022 enclosed in Appendix B should be referred to for further information.

1.2 Development Proposals

- 1.2.1 The proposed development comprises the construction of two new residential apartments with associated hard paved, parking and soft landscaped areas as shown on the proposed site plan enclosed in Appendix A.

1.3 Site Location

The site is located at Mayes Gardens in Manchester shown on the site plan enclosed in Appendix A.

2 SITE REMEDIATION

2.1 General

- 2.1.1 The Site Investigation Conceptual Model indicates that there are Source-Pathway-Receptor pollution linkages present on the site and therefore the following remediation measures will be required to mitigate the risks identified.

2.2 Contamination

- 2.2.1 Made ground was identified to depths of 0.80m to 1.70m over firm to stiff clay drift deposits. The made ground consisted of ashy, clayey, sandy silt, brick and concrete fill with occasional rootlets, coal and clinker. No visible or olfactory evidence of contamination was identified during the site investigation excavations.
- 2.2.2 The results of samples of the made ground tested indicate elevated levels of lead and PAHs in TP1 above 1% SOM residential assessment levels. The PAH and TPH levels identified were below the inhalation only pathway assessment levels. The elevated lead and PAHs are consistent with the ash identified in the made ground.

- 2.2.3 No asbestos was identified and there was no visible evidence of asbestos in the made ground on site during the site investigation.
- 2.2.4 The risk to end user and construction workers from direct contact with the general made ground present beneath the site is therefore considered low to medium.
- 2.2.5 No groundwater was identified to the extent of the ground investigation, the made ground is underlain by low permeability clay drift deposits and there are no surface water receptors near to the site. As no significantly elevated levels of contaminants have been identified in the made ground and no pathways identified, the risk to controlled water receptors from contamination at the site is considered low.
- 2.2.6 The proposed development comprises the construction of two new residential apartments with associated hard paved, parking and soft landscaped areas. A site strip and cut and fill is required for the proposed development. A watching brief should be carried out by the contractor during the cut and fill and all excavation works and should any contamination not identified by the site investigation be encountered during the construction period, in particular any organic or hydrocarbon contamination, the engineer should be notified immediately.
- 2.2.7 Remediation measures to prevent contact with the contaminated ash made ground identified are required for end user receptors. Beneath the properties, hard paved and parking areas, the made ground identified will be capped. The made ground present in proposed soft landscaped areas should either be removed or capped by minimum 300mm capping layers, comprising minimum 100mm granular capillary break layer or geotextile membrane and the remainder as 'inert' subsoil and topsoil.
- 2.2.8 If the contaminated made ground is removed, validation of the removal would be required and should comprise of photographic evidence of excavations during and after and provision of waste transfer notes.
- 2.2.9 Delivery tickets and waste transfer notes will be required for all material imported and disposed off site.
- 2.2.10 Validation sampling and testing of any imported material will be required and should comprise 1 sample per 200m³ of greenfield source topsoil or 50m³ of brownfield source

topsoil and subsoil with 3 no. samples minimum of any source of material. Samples to be tested for a general soil suite comprising of heavy metals and PAHs as a minimum but dependant on source.

- 2.2.11 Where capping layers are provided to garden and soft landscaped areas, validation trial pits will be required at a rate of 1 no. per 2 to 3 plots with 3 no. minimum to confirm the depths of the capping layers and to be recorded by an engineer.
- 2.2.12 Construction workers should adopt appropriate health and safety measures on site and undertake soil gas monitoring prior to and during man entry of below ground voids or confined spaces, as detailed in HSE guidance.
- 2.2.13 Dust suppression measures should be adopted during all earthworks.
- 2.2.14 Surface water control measures should be adopted during construction to limit runoff and infiltration through exposed made ground and to limit siltation of the surface drainage.
- 2.2.15 The sulphate and pH results indicate Aggressive Chemical Environment for Concrete (ACEC) Classification DS-1 AC-1. The risk to structures is therefore considered low. Buried concrete and services should be designed in accordance with the guidance given in BRE Special Digest 1: Concrete in aggressive ground.
- 2.2.16 Levels exceed the assessment levels for Water Supply Pipes and the risk to services is therefore considered medium. The advice of service providers should be obtained to ensure that appropriate measures are taken to protect services from contamination and aggressive ground conditions.

2.3 Landfill Gas

- 2.3.1 No landfill gas monitoring has been carried out due to the size of the development. No organic material has been identified and as the made ground is underlain by low permeability clay drift deposits, indicating no pathways from off-site sources, the risk from landfill gases at the site is considered low.
- 2.3.2 However, as the development is modular construction fabricated prior to delivery and assembly on site, the developer has installed precautionary gas protection measures during fabrication in accordance with CS2 and Amber 1 from CIRIA C665 and BS 8485. For

residential, a score of 3.5 is required, this is achieved by providing beam and block floor slabs with low permeability gas membranes with taped joints and sealed entries using specialist approved gas prevention tape and underfloor ventilated voids. The gas membranes are methane gas membranes with integrated aluminium core and installed with reasonable level of workmanship in line with current good practice.

- 2.3.3 Validation of the installation of the gas protection measures is to be provided with photographic evidence of the ventilated voids and the gas membranes with gas taped sealed joints/entries.
- 2.3.4 A watching brief should be carried out by the contractor and should any organic or hydrocarbon contamination be identified during excavations, the engineer should be notified immediately.

2.4 Waste Regulations

- 2.4.1 Consultation should be made with the Environment Agency to confirm whether the transfer of materials should be registered as exempt from Waste Management licensing or require licensing.

2.5 Landfill Tax

- 2.5.1 The general made ground identified is likely to be classified as contaminated but prior to off site disposal of material it will be necessary to undertake waste characterisation with current landfill regulations.

2.6 Liability Statement

- 2.6.1 The site is unlikely to be classified by the Local Authority as 'Contaminated Land' or designated a 'Special Site' under the Contaminated Land Regulations, provided remediation measures are carried out.

3 FURTHER WORKS

- 3.1.1 Validation of the remediation measures should be carried out in accordance with the recommendations and submitted to the local authority for approval.

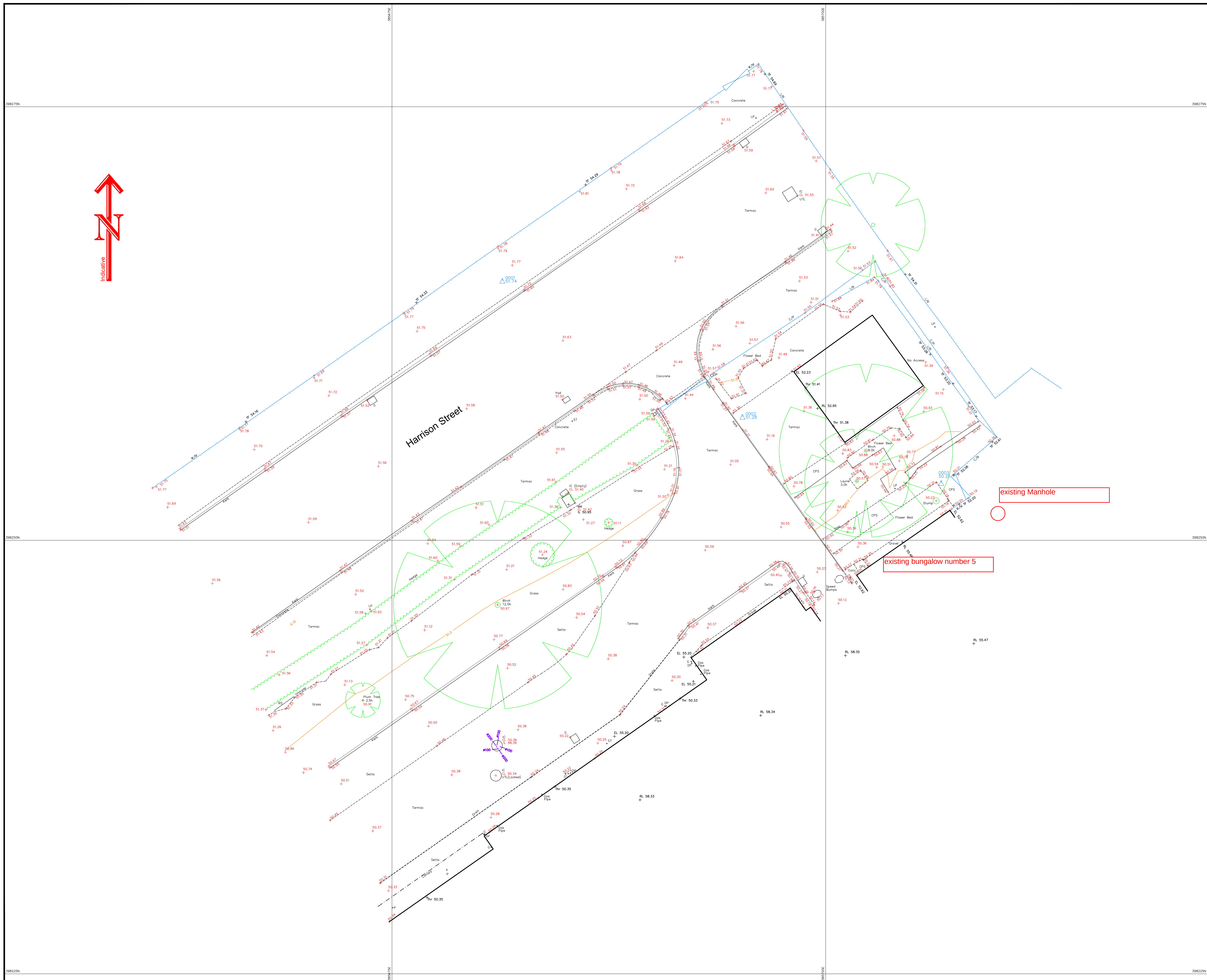
DISCLAIMER

The recommendations made and the opinions expressed in this report are based on the borehole and/or trial pit records, examination of samples and the results of the site and laboratory tests. The report is issued on the condition that Build Vision Consulting Engineers, will in no circumstances be liable for any loss arising directly or indirectly from ground conditions between the boreholes or trial pits which have not been shown by the borehole, trial pits or other tests carried out during the investigation, nor for any loss whatsoever arising directly or indirectly from any opinion given on the possible configuration of strata both between the borehole and/or trial pit positions and/or below the maximum depth of the investigation : such opinions, where given, are for guidance only. This report is confidential, personal to the client, non-assignable and not for the benefit of third parties.

APPENDIX A

SITE PLANS

- § Proposed Site Plan
- § Topographical Survey



Topographical Survey Legend

[illegible]

Drainage/Services Legend

	Foul		CCTV		Ducting
	Surface		E		Electric
	Combined		SL		Street lighting
	Drains (unspecified)		TN		Traffic management
	BT		GAS		d Service depth (mm)
	T		W		d EOT End of trace
	Telecom		Water		
	Pipe optics		F		
	CATV		UC		
			Unknown / misc		

Drainage pipe size data has been determined from the surface, in order to comply with confined spaces health and safety legislation. Please regard this data as approximate.

Survey Station Coordinates

STN	EASTINGS	NORTHINGS	LEVEL
0001	385681.36	398264.96	51.74
0002	385695.20	398257.12	51.28
0003	385706.66	398253.31	50.20

Please note:

Any discrepancy found between an Ordnance Survey benchmark and an OSGB15 computed orthometric height is likely to be due to bench mark subsidence or uplift and, assuming precise GPS survey has been carefully carried out, the orthometric height given by OSGB15 should be considered correct in preference to archive benchmark heights. OSGB15 converts GPS ellipsoid heights to orthometric heights above mean sea level.

Levels are related to **OSGB15**
Value **n/a**

Coordinates are related to **National Grid** (GPS)



The accuracy of this survey is commensurate with the drawing scale specified within the title block. Copyright in this drawing remains with Survey Systems Ltd. Do not scale from this drawing, work to figured dimensions. Check all dimensions on-site. In the event of any discrepancy, please refer query to Survey Systems Ltd.

Client **Triangle Architects**

Title
Topographical Survey
Hayes Gardens
Harrison Street
Manchester M4 7FN

Surveyed	DB EB	Drawn	PG
Date	November 2018	Checked	AG DB
File name	19122	Revision No.	Sheet size A1
Drawing No. SSL:19122:100:1:1			

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SURVEYsystems



APPENDIX B

GROUND INVESTIGATION INFORMATION

§ Sub Surface Trial Pit Logs, Test Results and Location Plan



MAYES GARDEN APARTMENTS, HARRISON STREET,
MANCHESTER. GREATER MANCHESTER

**Trial Pit
Number**
TP1

Dimensions
1.50m x 2.20m

Dates 19/05/2022

Engineer

Job Number
7501

Sheet
1/1

Depth
(m)

Sample / Tests

Water
Depth
(m)

Field Records

Level
(mOD)

Depth
(m)
(Thickness)

Description

Legend

Water

0.20-0.30
0.20-0.30

B
DAV

1.40-1.50
1.40-1.50

B
DAV

1.80-2.00
1.80-2.00

BD

HV at 1.80m c = 130+kPa.

2.10-2.20
2.10-2.20

BD

HV at 2.20m c = 130+kPa.
19/05/2022-DRY

(1.70)

1.70

(0.50)

2.20

MADE GROUND: dark brown ashy gravelly slightly clayey sandy silt with high cobble sized fragments of brick, medium boulder sized fragments of brick and concrete and occasional rootlets. Gravel sized fragments are fine to coarse brick.

Firm to stiff high strength brown and bluish grey mottled slightly gravelly slightly sandy silty CLAY. Gravel is subrounded siltstone and sandstone.

Complete at 2.20m

Plan

Remarks

Surface stripped by approximately 0.40m prior to our arrival.
Pit sides collapsing.
HV = Hand Shear Vane test.
No groundwater encountered.
On completion backfilled with arisings.

Scale (approx)

1:25

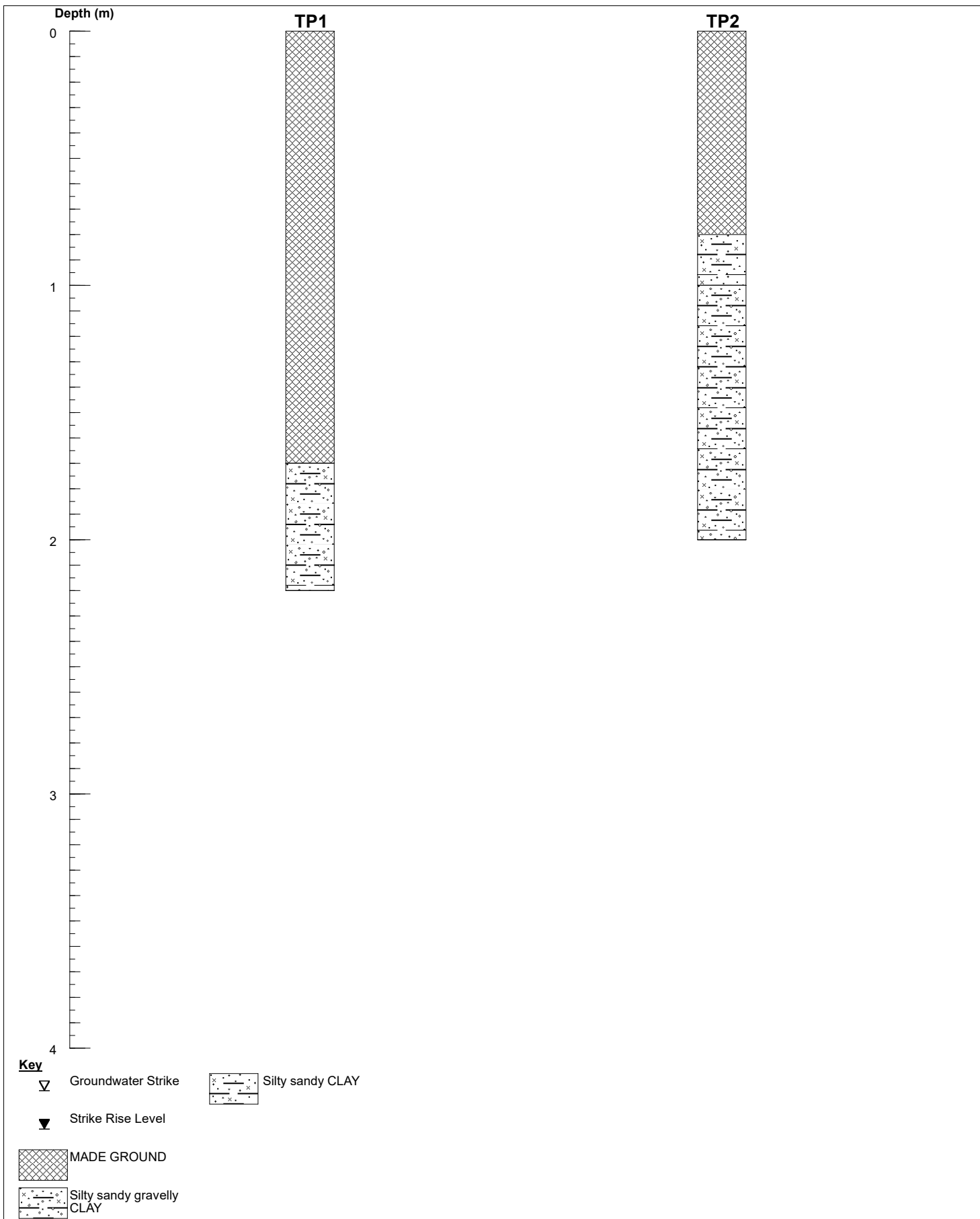
Logged By

WP/VW

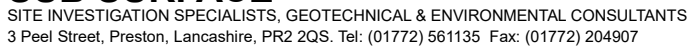
Figure No.

7501.TP1

 SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907						Site MAYES GARDEN APARTMENTS, HARRISON STREET, MANCHESTER, GREATER MANCHESTER		Trial Pit Number TP2	
Excavation Method MECHANICAL EXCAVATOR		Dimensions 0.70m x 1.50m		Ground Level (mOD)		Client MULTI UTILITY UK LIMITED		Job Number 7501	
		Location AS PLAN		Dates 19/05/2022		Engineer		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water
0.10-0.30 0.10-0.30	B DAV					MADE GROUND: dark brown slightly ashy clayey very silty gravelly fine to medium sand with some rootlets, occasional pockets of clay and low cobble sized fragments of brick. Gravel sized fragments are fine to coarse brick, stone, coal and clinker.			
0.70-0.80 0.70-0.80 0.80-1.00 0.80-1.00	B DAV B D		HV at 1.00m c = 53kPa.		(0.80) 0.80 (0.20) 1.00	Firm brown and grey mottled slightly sandy silty CLAY.			
1.50	D		HV at 1.50m c = 106kPa.		(1.00)	Firm to stiff medium strength becoming high strength brown and bluish grey mottled slightly gravelly slightly sandy silty CLAY. Gravel is subrounded fine to medium siltstone and sandstone.			
2.00 2.00	B D		HV at 2.00m c = 130+kPa. 19/05/2022:DRY		2.00	...below 1.50m: high strength.			
						Complete at 2.00m			
Plan						Remarks			
.						Surface stripped by approximately 0.40m prior to our arrival. Pit sides remained vertical and stable. HV = Hand Shear Vane test. No groundwater encountered. On completion backfilled with arisings.			
.									
.									
.									
.									
.									
						Scale (approx) 1:25	Logged By WP/VW	Figure No. 7501.TP2	



SS SUB SURFACE SITE INVESTIGATION SPECIALISTS, GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS 3 Peel Street, Preston, Lancashire, PR2 2QS. Tel: (01772) 561135 Fax: (01772) 204907	Nominal Section			
Site MAYES GARDEN APARTMENTS, HARRISON STREET, MANCHESTER, GREATER MANCHESTER	Date Drawn 06/06/2022	Date Checked	Sheet 1/1	Job Number 7501
Client MULTI UTILITY UK LIMITED	Drawn By	Checked By	Scale 1:20[V]	Figure No. 7496.1



Site : MAYES GARDEN APARTMENTS, HARRISON STREET, MANCHESTER, GREATER MANCHESTER Client : MULTI UTILITY UK LIMITED Engineer:	Job Number 7501
	Sheet 1 / 1

Borehole/ Trial Pit	Depth (m)	Sample	Natural Moisture Content %	Sample Passing 425µm Sieve		Liquid Limit %	Plastic Limit %	Plasticity Index %	Liquidity Index	Group Symbol	Laboratory Description
				Percentage %	Moisture Content %						
TP1	1.80	D	18	100	18	44	18	26	0.00	CI	Firm to stiff brown and bluish grey mottled slightly gravelly slightly sandy silty CLAY. Gravel is subrounded siltstone and sandstone.
TP2	1.50	D	19	98	19	42	18	24	0.04	CI	Firm to stiff brown and bluish grey mottled slightly gravelly slightly sandy silty CLAY. Gravel is subrounded fine to medium siltstone and sandstone.

Remarks :



Site : MAYES GARDEN APARTMENTS, HARRISON STREET, MANCHESTER, GREATER MANCHESTER Client : MULTI UTILITY UK LIMITED Engineer:	Job Number
	7501
	Sheet
	1 / 1

DETERMINATION OF pH, SULPHATE CONTENT AND TOTAL SULPHUR OF SOIL AND GROUNDWATER AND MAGNESIUM, CHLORIDE, AMMONIA AND NITRATE CONTENT

Method of Preparation :	BS 1377:PART 1:1990:7.5 Preparation of soil for chemical tests BS 1377:PART 3:1990:5.2, 5.3, 5.4 & 9.4
Method of Test	: Lab in-house methods based on BS1377: Part 3 for contents of water sol sulphate, pH, chloride and magnesium. Lab in-house method based on MEWAM (EA, 2006) for total sulphur
Remarks	: Classification relates to Design Sulphate Class of BRE Special Digest 1 (2005)



Amended Report

Report No.:	22-19490-3		
Initial Date of Issue:	01-Jun-2022	Date of Re-Issue:	20-Jun-2022
Client	Sub Surface		
Client Address:	3 Peel Street Preston Lancashire PR2 2QS		
Contact(s):	Simon Gabbatt		
Project	7501 Mayes Gardens Apartments, Harrison Street, Manchester		
Quotation No.:		Date Received:	25-May-2022
Order No.:		Date Instructed:	25-May-2022
No. of Samples:	4		
Turnaround (Wkdays):	11	Results Due:	22-Jun-2022
Date Approved:	20-Jun-2022		
Approved By:			

Details: Stuart Henderson, Technical Manager

Results - Soil

**Project: 7501 Mayes Gardens Apartments, Harrison Street,
Manchester**

Client: Sub Surface	Chemtest Job No.:				22-19490	22-19490	22-19490	22-19490
Quotation No.:	Chemtest Sample ID.:				1435551	1435552	1435553	1435554
	Client Sample ID.:				614, 615, 616	622	601, 602, 603	610
	Sample Location:				TP1	TP1	TP2	TP2
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.20	1.80	0.10	1.50
	Bottom Depth (m):				0.30	2.00	0.30	
	Date Sampled:				19-May-2022	19-May-2022	19-May-2022	19-May-2022
	Asbestos Lab:				DURHAM		DURHAM	
Determinand	Accred.	SOP	Units	LOD				
ACM Type	U	2192		N/A	-		-	
Asbestos Identification	U	2192		N/A	No Asbestos Detected		No Asbestos Detected	
Moisture	N	2030	%	0.020	15	14	20	14
pH	U	2010		4.0	8.8	8.9	8.8	8.7
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	0.91		0.53	
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010		0.32		0.024
Cyanide (Total)	U	2300	mg/kg	0.50	2.4		< 0.50	
Sulphide (Easily Liberatable)	N	2325	mg/kg	0.50	8.7		3.2	
Sulphate (Total)	U	2430	%	0.010	0.22		0.052	
Arsenic	U	2455	mg/kg	0.5	14		33	
Cadmium	U	2455	mg/kg	0.10	0.35		0.21	
Chromium	U	2455	mg/kg	0.5	270		64	
Molybdenum	U	2455	mg/kg	0.5	1.5		3.3	
Copper	U	2455	mg/kg	0.50	63		69	
Mercury	U	2455	mg/kg	0.05	1.6		0.14	
Nickel	U	2455	mg/kg	0.50	28		27	
Lead	U	2455	mg/kg	0.50	500		110	
Selenium	U	2455	mg/kg	0.25	0.44		0.70	
Zinc	U	2455	mg/kg	0.50	220		57	
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50		< 0.50	
TPH >C6-C10	N	2670	mg/kg	1.0	< 1.0			
TPH >C10-C21	N	2670	mg/kg	1.0	< 1.0			
TPH >C21-C40	N	2670	mg/kg	1.0	< 1.0			
Total TPH >C6-C40	U	2670	mg/kg	10	< 10			
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0			< 1.0	
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0			< 1.0	
Aliphatic TPH >C8-C10	U	2680	mg/kg	1.0			< 1.0	
Aliphatic TPH >C10-C12	U	2680	mg/kg	1.0			< 1.0	
Aliphatic TPH >C12-C16	U	2680	mg/kg	1.0			< 1.0	
Aliphatic TPH >C16-C21	U	2680	mg/kg	1.0			< 1.0	
Aliphatic TPH >C21-C35	U	2680	mg/kg	1.0			< 1.0	
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0			< 1.0	
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0			< 5.0	
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0			< 1.0	
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0			< 1.0	

Results - Soil

**Project: 7501 Mayes Gardens Apartments, Harrison Street,
Manchester**

Client: Sub Surface	Chemtest Job No.:				22-19490	22-19490	22-19490	22-19490
Quotation No.:	Chemtest Sample ID.:				1435551	1435552	1435553	1435554
	Client Sample ID.:				614, 615, 616	622	601, 602, 603	610
	Sample Location:				TP1	TP1	TP2	TP2
	Sample Type:				SOIL	SOIL	SOIL	SOIL
	Top Depth (m):				0.20	1.80	0.10	1.50
	Bottom Depth (m):				0.30	2.00	0.30	
	Date Sampled:				19-May-2022	19-May-2022	19-May-2022	19-May-2022
	Asbestos Lab:				DURHAM		DURHAM	
Determinand	Accred.	SOP	Units	LOD				
Aromatic TPH >C8-C10	U	2680	mg/kg	1.0			< 1.0	
Aromatic TPH >C10-C12	U	2680	mg/kg	1.0			< 1.0	
Aromatic TPH >C12-C16	U	2680	mg/kg	1.0			< 1.0	
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0			< 1.0	
Aromatic TPH >C21-C35	U	2680	mg/kg	1.0			< 1.0	
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0			< 1.0	
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0			< 5.0	
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0			< 10	
Naphthalene	U	2700	mg/kg	0.10	3.5		< 0.10	
Acenaphthylene	U	2700	mg/kg	0.10	0.77		< 0.10	
Acenaphthene	U	2700	mg/kg	0.10	2.3		< 0.10	
Fluorene	U	2700	mg/kg	0.10	2.1		< 0.10	
Phenanthrene	U	2700	mg/kg	0.10	17		< 0.10	
Anthracene	U	2700	mg/kg	0.10	5.0		< 0.10	
Fluoranthene	U	2700	mg/kg	0.10	24		< 0.10	
Pyrene	U	2700	mg/kg	0.10	25		< 0.10	
Benzo[a]anthracene	U	2700	mg/kg	0.10	10		< 0.10	
Chrysene	U	2700	mg/kg	0.10	13		< 0.10	
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	11		< 0.10	
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	5.0		< 0.10	
Benzo[a]pyrene	U	2700	mg/kg	0.10	10		< 0.10	
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	5.8		< 0.10	
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	1.9		< 0.10	
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	5.7		< 0.10	
Total Of 16 PAH's	U	2700	mg/kg	2.0	140		< 2.0	
Benzene	U	2760	µg/kg	1.0	< 1.0		< 1.0	
Toluene	U	2760	µg/kg	1.0	< 1.0		< 1.0	
Ethylbenzene	U	2760	µg/kg	1.0	< 1.0		< 1.0	
m & p-Xylene	U	2760	µg/kg	1.0	< 1.0		< 1.0	
o-Xylene	U	2760	µg/kg	1.0	< 1.0		< 1.0	
Methyl Tert-Butyl Ether	U	2760	µg/kg	1.0	< 1.0		< 1.0	
Total Phenols	U	2920	mg/kg	0.10	< 0.10		< 0.10	

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

APPENDIX C

ENVIRONMENTAL INFORMATION

- § Human Health GAC's
- § Residential GAC's
- § Inhalation Pathway GAC's

Risk Parameter: Human Health - residential with plant uptake (1.0% SOM)
Data set: ALL

Project No: 1308 Client: Multibuild UK Ltd
Project: Mayes Garden, Manchester

All values in mg/kg unless otherwise stated							Soil Type:	SOIL	SOIL										
							Location:	TP1	TP2										
							Depth:	0.2-0.3	0.1-0.3										
							Lab	S	S										
Chemicals of Potential Concern	No Samples	Min. Value	Max. Value	No. Samples >or = GAC	GAC	US ₉₅	Result of Significance Test												
								Potentially Suitable For Use	N.D.	N.D.									
Asbestos	2	-	-		-	-	Potentially Suitable For Use	N.D.	N.D.										
General Suite																			
Arsenic	2	14	33		37		Potentially Suitable For Use	14	33										
Boron	2	0.53	<1		290		Potentially Suitable For Use	0.91	0.53										
Cadmium	2	0.2	0.4		11		Potentially Suitable For Use	0.35	0.21										
Chromium (III)	2	64	270		910		Potentially Suitable For Use	270	64										
Chromium (VI)	2	0.5	0.5		6		Potentially Suitable For Use	0.5	0.5										
Copper	2	63	69		2400		Potentially Suitable For Use	63	69										
Lead	2	110	500	1	200		Further Assessment Required	500	110										
Mercury, inorganic	2	0.14	1.6		40		Potentially Suitable For Use	1.60	0.14										
Mercury elemental	2	0.14	1.6	1	1.2		Further Assessment Required	1.60	0.14										
Mercury Methyl	2	0.14	1.6		11		Potentially Suitable For Use	1.60	0.14										
Nickel	2	27	28		130		Potentially Suitable For Use	28	27										
Selenium	2	0.44	0.7		250		Potentially Suitable For Use	0.44	0.70										
Zinc	2	57	220		3700		Potentially Suitable For Use	220	57										
Cyanide (free)	2	0.5	2.4		24		Potentially Suitable For Use	2.4	0.50										
Phenol (total)	2	0.1	0.1		120		Potentially Suitable For Use	0.10	0.10										
Acenaphthene	2	0.1	2.3		210		Potentially Suitable For Use	2.3	0.1										
Acenaphthylene	2	0.1	0.77		170		Potentially Suitable For Use	0.77	0.1										
Anthracene	2	0.1	5		2400		Potentially Suitable For Use	5	0.1										
Benzo(a)anthracene	2	0.1	10	1	7.2		Further Assessment Required	10	0.1										
Benzo(a)pyrene	2	0.1	10	1	2.2		Further Assessment Required	10	0.1										
Benzo(b)fluoranthene	2	0.1	11	1	2.6		Further Assessment Required	11	0.1										
Benzo(ghi)perylene	2	0.1	5.7		320		Potentially Suitable For Use	5.7	0.1										
Benzo(k)fluoranthene	2	0.1	5		77		Potentially Suitable For Use	5	0.1										
Chrysene	2	0.1	13		15		Potentially Suitable For Use	13	0.1										
Dibenz(a,h)anthracene	2	0.1	1.9	1	0.24		Further Assessment Required	1.9	0.1										
Fluoranthene	2	0.1	24		280		Potentially Suitable For Use	24	0.1										
Fluorene	2	0.1	2.1		170		Potentially Suitable For Use	2.1	0.1										
Indeno(1,2,3,cd)pyrene	2	0.1	5.8		27		Potentially Suitable For Use	5.8	0.1										
Napthalene	2	0.1	3.5	1	2.3		Further Assessment Required	3.5	0.1										
Phenanthrene	2	0.1	17		95		Potentially Suitable For Use	17	0.1										
Pyrene	2	0.1	25		620		Potentially Suitable For Use	25	0.1										
VOCs-BTEX & MTBE																			
Benzene	2	0.001	0.001		0.087		Potentially Suitable For Use	0.001	0.001										
Toluene	2	0.001	0.001		130		Potentially Suitable For Use	0.001	0.001										
Ethylbenzene	2	0.001	0.001		47		Potentially Suitable For Use	0.001	0.001										
Xylene o-	2	0.001	0.001		60		Potentially Suitable For Use	0.001	0.001										
Xylene m-	2	0.001	0.001		59		Potentially Suitable For Use	0.001	0.001										
Xylene p-	2	0.001	0.001		56		Potentially Suitable For Use	0.001	0.001										
MTBE	2	0.001	0.001		49		Potentially Suitable For Use	0.001	0.001										
TPH Fractions																			
TPH ali EC05-EC06	2	1	1		42		Potentially Suitable For Use	1	1										
TPH ali >EC06-EC08	2	1	1		100		Potentially Suitable For Use	1	1										
TPH ali >EC08-EC10	2	1	1		27		Potentially Suitable For Use	1	1										
TPH ali >EC10-EC12	2	1	1		48		Potentially Suitable For Use	1	1										
TPH ali >EC12-EC16	2	1	1		24		Potentially Suitable For Use	1	1										
TPH ali >EC16-EC35	2	2	1		65000		Potentially Suitable For Use	1	1										
TPH ali >EC35-EC44	2	1	1		65000		Potentially Suitable For Use	1	1										
TPH aro EC05-EC07	2	1	1		70		Potentially Suitable For Use	1	1										
TPH aro >EC07-EC08	2	1	1		130		Potentially Suitable For Use	1	1										
TPH aro >EC08-EC10	2	1	1		34		Potentially Suitable For Use	1	1										
TPH aro >EC10-EC12	2	1	1		74		Potentially Suitable For Use	1	1										
TPH aro >EC12-EC16	2	1	1		140		Potentially Suitable For Use	1	1										
TPH aro >EC16-EC21	2	2	1		260		Potentially Suitable For Use	1	1										
TPH aro >EC21-EC35	2	1	1		1100		Potentially Suitable For Use	1	1										
TPH aro >EC35-EC44	2	1	1		1100		Potentially Suitable For Use	1	1										
TPH >EC44-EC70					1600														
Dioxins, furans & dioxin-like-PCBs																			
Total Dioxins, furans & DL-PCB (aerial dep)					0.0085														
Non-dioxin-like PCBs																			
PCB-28					0.2														
PCB-52					0.2														
PCB-101					0.34														
PCB-138					0.36														
PCB-153					0.36														
PCB-180					0.37														

Legend: MG denotes Made Ground, NAT denotes Natural Ground

Risk Parameter: Human Health - residential with plant uptake (2.5% SOM);
Data set: ALL

Project No: 1308 Client: Multibuild UK Ltd
Project: Mayes Garden, Manchester

All values in mg/kg unless otherwise stated							Soil Type:	SOIL	SOIL										
							Location:	TP1	TP2										
							Depth:	0.2-0.3	0.1-0.3										
							Lab	S	S										
Chemicals of Potential Concern	No Samples	Min. Value	Max. Value	No. Samples >or = GAC	GAC	US ₉₅	Result of Significance Test												
								Asbestos	2	-	-	-	-	Potentially Suitable For Use	N.D.	N.D.			
General Suite																			
Arsenic	2	14	33		37		Potentially Suitable For Use	14	33										
Boron	2	<1	<1		290		Potentially Suitable For Use	0.91	0.53										
Cadmium	2	<0	<0		11		Potentially Suitable For Use	0.35	0.21										
Chromium (III)	2	64	270		910		Potentially Suitable For Use	270	64										
Chromium (VI)	2	<1	<1		6		Potentially Suitable For Use	0.5	0.5										
Copper	2	63	69		2400		Potentially Suitable For Use	63	69										
Lead	2	110	500	1	200		Further Assessment Required	500	110										
Mercury, inorganic	2	<0	1.6		40		Potentially Suitable For Use	1.60	0.14										
Mercury elemental	2	<0	1.6	1	1.2		Further Assessment Required	1.60	0.14										
Mercury Methyl	2	<0	1.6		11		Potentially Suitable For Use	1.60	0.14										
Nickel	2	27	28		130		Potentially Suitable For Use	28	27										
Selenium	2	<0	<1		250		Potentially Suitable For Use	0.44	0.70										
Zinc	2	57	220		3700		Potentially Suitable For Use	220	57										
Cyanide (free)	2	<1	2.4		24		Potentially Suitable For Use	2.4	0.50										
Phenol (total)	2	<0	<0		200		Potentially Suitable For Use	0.10	0.10										
Acenaphthene	2	0.1	2.3		480		Potentially Suitable For Use	2.3	0.1										
Acenaphthylene	2	0.1	0.77		420		Potentially Suitable For Use	0.77	0.1										
Anthracene	2	0.1	5		5400		Potentially Suitable For Use	5	0.1										
Benzo(a)anthracene	2	0.1	10		11		Potentially Suitable For Use	10	0.1										
Benzo(a)pyrene	2	0.1	10	1	2.7		Further Assessment Required	10	0.1										
Benzo(b)fluoranthene	2	0.1	11	1	3.3		Further Assessment Required	11	0.1										
Benzo(ghi)perylene	2	0.1	5.7		340		Potentially Suitable For Use	5.7	0.1										
Benzo(k)fluoranthene	2	0.1	5		93		Potentially Suitable For Use	5	0.1										
Chrysene	2	0.1	13		22		Potentially Suitable For Use	13	0.1										
Dibenz(a,h)anthracene	2	0.1	1.9	1	0.28		Further Assessment Required	1.9	0.1										
Fluoranthene	2	0.1	24		560		Potentially Suitable For Use	24	0.1										
Fluorene	2	0.1	2.1		400		Potentially Suitable For Use	2.1	0.1										
Indeno(1,2,3,cd)pyrene	2	0.1	5.8		36		Potentially Suitable For Use	5.8	0.1										
Napthalene	2	0.1	3.5		5.6		Potentially Suitable For Use	3.5	0.1										
Phenanthrene	2	0.1	17		220		Potentially Suitable For Use	17	0.1										
Pyrene	2	0.1	25		1200		Potentially Suitable For Use	25	0.1										
VOCs-BTEX & MTBE																			
Benzene	2	<0	<0		0.17		Potentially Suitable For Use	0.001	0.001										
Toluene	2	<0	<0		290		Potentially Suitable For Use	0.001	0.001										
Ethylbenzene	2	<0	<0		110		Potentially Suitable For Use	0.001	0.001										
Xylene o-	2	<0	<0		140		Potentially Suitable For Use	0.001	0.001										
Xylene m-	2	<0	<0		140		Potentially Suitable For Use	0.001	0.001										
Xylene p-	2	<0	<0		130		Potentially Suitable For Use	0.001	0.001										
MTBE	2	<0	<0		84		Potentially Suitable For Use	0.001	0.001										
TPH Fractions																			
TPH ali EC05-EC06	2	1	1		78		Potentially Suitable For Use	1	1										
TPH ali >EC06-EC08	2	1	1		230		Potentially Suitable For Use	1	1										
TPH ali >EC08-EC10	2	1	1		65		Potentially Suitable For Use	1	1										
TPH ali >EC10-EC12	2	1	1		118		Potentially Suitable For Use	1	1										
TPH ali >EC12-EC16	2	1	1		59		Potentially Suitable For Use	1	1										
TPH ali >EC16-EC35	2	2	1		92000		Potentially Suitable For Use	1	1										
TPH ali >EC35-EC44	2	1	1		92000		Potentially Suitable For Use	1	1										
TPH aro EC05-EC07	2	1	1		140		Potentially Suitable For Use	1	1										
TPH aro >EC07-EC08	2	1	1		290		Potentially Suitable For Use	1	1										
TPH aro >EC08-EC10	2	1	1		83		Potentially Suitable For Use	1	1										
TPH aro >EC10-EC12	2	1	1		180		Potentially Suitable For Use	1	1										
TPH aro >EC12-EC16	2	1	1		330		Potentially Suitable For Use	1	1										
TPH aro >EC16-EC21	2	2	1		540		Potentially Suitable For Use	1	1										
TPH aro >EC21-EC35	2	1	1		1500		Potentially Suitable For Use	1	1										
TPH aro >EC35-EC44	2	1	1		1500		Potentially Suitable For Use	1	1										
TPH >EC44-EC70					1800														
Dioxins, furans & dioxin-like-PCBs																			
Total Dioxins, furans & DL-PCB (aerial dep)					0.0087														
Non-dioxin-like PCBs																			
PCB-28					0.27														
PCB-52					0.28														
PCB-101					0.37														
PCB-138					0.37														
PCB-153					0.38														
PCB-180					0.38														

Legend: MG denotes Made Ground, NAT denotes Natural Ground

Risk Parameter: Human Health - residential with plant uptake (6.0% SOM);
Data set: ALL

Project No: 1308 Client: Multibuild UK Ltd
Project: Mayes Garden, Manchester

All values in mg/kg unless otherwise stated							Soil Type:	SOIL	SOIL										
							Location:	TP1	TP2										
							Depth:	0.2-0.3	0.1-0.3										
							Lab	S	S										
Chemicals of Potential Concern	No Samples	Min. Value	Max. Value	No. Samples >or = GAC	GAC	US ₉₅	Result of Significance Test												
								Asbestos	2	-	-	-	-	Potentially Suitable For Use	N.D.	N.D.			
General Suite																			
Arsenic	2	14	33		37		Potentially Suitable For Use	14	33										
Boron	2	0.530	<1		290		Potentially Suitable For Use	0.91	0.53										
Cadmium	2	<0	<0		11		Potentially Suitable For Use	0.35	0.21										
Chromium (III)	2	64	270		910		Potentially Suitable For Use	270	64										
Chromium (VI)	2	<1	<1		6		Potentially Suitable For Use												
Copper	2	63	69		2400		Potentially Suitable For Use	63	69										
Lead	2	110	500	1	200		Further Assessment Required	500	110										
Mercury, inorganic	2	<0	1.6		40		Potentially Suitable For Use	1.60	0.14										
Mercury elemental	2	<0	1.6	1	1.2		Further Assessment Required	1.60	0.14										
Mercury Methyl	2	<0	1.6		11		Potentially Suitable For Use	1.60	0.14										
Nickel	2	27	28		130		Potentially Suitable For Use	28	27										
Selenium	2	0.440	0.700		250		Potentially Suitable For Use	0.44	0.70										
Zinc	2	57	220		3700		Potentially Suitable For Use	220	57										
Cyanide (free)	2	0.500	2.4		24		Potentially Suitable For Use	2.4	0.50										
Phenol (total)	2	0.100	0.100		380		Potentially Suitable For Use	0.10	0.10										
Acenaphthene	2	0.1	2.3		1000		Potentially Suitable For Use	2.3	0.1										
Acenaphthylene	2	0.1	0.77		920		Potentially Suitable For Use	0.77	0.1										
Anthracene	2	0.1	5		11000		Potentially Suitable For Use	5	0.1										
Benzo(a)anthracene	2	0.1	10		13		Potentially Suitable For Use	10	0.1										
Benzo(a)pyrene	2	0.1	10	1	3		Further Assessment Required	10	0.1										
Benzo(b)fluoranthene	2	0.1	11	1	3.7		Further Assessment Required	11	0.1										
Benzo(ghi)perylene	2	0.1	5.7		350		Potentially Suitable For Use	5.7	0.1										
Benzo(k)fluoranthene	2	0.1	5		100		Potentially Suitable For Use	5	0.1										
Chrysene	2	0.1	13		27		Potentially Suitable For Use	13	0.1										
Dibenz(a,h)anthracene	2	0.1	1.9	1	0.3		Further Assessment Required	1.9	0.1										
Fluoranthene	2	0.1	24		890		Potentially Suitable For Use	24	0.1										
Fluorene	2	0.1	2.1		860		Potentially Suitable For Use	2.1	0.1										
Indeno(1,2,3,cd)pyrene	2	0.1	5.8		41		Potentially Suitable For Use	5.8	0.1										
Napthalene	2	0.1	3.5		13		Potentially Suitable For Use	3.5	0.1										
Phenanthrene	2	0.1	17		440		Potentially Suitable For Use	17	0.1										
Pyrene	2	0.1	25		2000		Potentially Suitable For Use	25	0.1										
VOCs-BTEX & MTBE																			
Benzene	2	0.001	0.001		0.37		Potentially Suitable For Use	0.001	0.001										
Toluene	2	0.001	0.001		660		Potentially Suitable For Use	0.001	0.001										
Ethylbenzene	2	0.001	0.001		260		Potentially Suitable For Use	0.001	0.001										
Xylene o-	2	0.001	0.001		330		Potentially Suitable For Use	0.001	0.001										
Xylene m-	2	0.001	0.001		320		Potentially Suitable For Use	0.001	0.001										
Xylene p-	2	0.001	0.001		310		Potentially Suitable For Use	0.001	0.001										
MTBE	2	0.001	0.001		160		Potentially Suitable For Use	0.001	0.001										
TPH Fractions																			
TPH ali EC05-EC06	2	1	1		160		Potentially Suitable For Use	1	1										
TPH ali >EC06-EC08	2	1	1		530		Potentially Suitable For Use	1	1										
TPH ali >EC08-EC10	2	1	1		150		Potentially Suitable For Use	1	1										
TPH ali >EC10-EC12	2	1	1		283		Potentially Suitable For Use	1	1										
TPH ali >EC12-EC16	2	1	1		142		Potentially Suitable For Use	1	1										
TPH ali >EC16-EC35	2	2	1		110000		Potentially Suitable For Use	1	1										
TPH ali >EC35-EC44	2	1	1		110000		Potentially Suitable For Use	1	1										
TPH aro EC05-EC07	2	1	1		300		Potentially Suitable For Use	1	1										
TPH aro >EC07-EC08	2	1	1		660		Potentially Suitable For Use	1	1										
TPH aro >EC08-EC10	2	1	1		190		Potentially Suitable For Use	1	1										
TPH aro >EC10-EC12	2	1	1		380		Potentially Suitable For Use	1	1										
TPH aro >EC12-EC16	2	1	1		660		Potentially Suitable For Use	1	1										
TPH aro >EC16-EC21	2	2	1		930		Potentially Suitable For Use	1	1										
TPH aro >EC21-EC35	2	1	1		1700		Potentially Suitable For Use	1	1										
TPH aro >EC35-EC44	2	1	1		1700		Potentially Suitable For Use	1	1										
TPH >EC44-EC70					1900														
Dioxins, furans & dioxin-like-PCBs																			
Total Dioxins, furans & DL-PCB (aerial dep)					0.0087														
Non-dioxin-like PCBs																			
PCB-28					0.32														
PCB-52					0.34														
PCB-101					0.38														
PCB-138					0.38														
PCB-153					0.38														
PCB-180					0.39														

Legend: MG denotes Made Ground, NAT denotes Natural Ground

Risk Parameter: Residential SOM 1% Inhalation Pathway only for Volatile PAH's and
Data set: ALL

Project No: 1308 Client: Multibuild UK Ltd
Project: Mayes Garden, Manchester

All values in mg/kg unless otherwise stated								Soil Type:	SOIL	SOIL									
								Location:	TP1	TP2									
								Depth:	0.2-0.3	0.1-0.3									
								Lab	S	S									
Chemicals of Potential Concern	No Samples	Min. Value	Max. Value	No. Samples >or = GAC	GAC	Cheby chev US ₉₅	US ₉₅	Result of Significance Test											
General Suite																			
Napthalene	2	0.1	3.5		16			Potentially Suitable For Use	3.5	0.1									
VOCs-BTEX & MTBE																			
Benzene	2	0.001	0.001		0.27			Potentially Suitable For Use	0.001	0.001									
TPH Fractions																			
TPH ali EC05-EC06	2	1	1		30			Potentially Suitable For Use	1	1									
TPH ali >EC06-EC08	2	1	1		73			Potentially Suitable For Use	1	1									
TPH ali >EC08-EC10	2	1	1		19			Potentially Suitable For Use	1	1									
TPH ali >EC10-EC12	2	1	1		93			Potentially Suitable For Use	1	1									
TPH ali >EC12-EC16	2	1	1		782			Potentially Suitable For Use	1	1									
TPH aro EC05-EC07	2	1	1		266			Potentially Suitable For Use	1	1									
TPH aro >EC07-EC08	2	1	1		626			Potentially Suitable For Use	1	1									
TPH aro >EC08-EC10	2	1	1		33			Potentially Suitable For Use	1	1									
TPH aro >EC10-EC12	2	1	1		182			Potentially Suitable For Use	1	1									
TPH aro >EC12-EC16	2	1	1		2000			Potentially Suitable For Use	1	1									

Legend: MG denotes Made Ground, NAT denotes Natural Ground