ARP Geotechnical Limited

Trial Pit Log

TrialPit No **TP10** Sheet 1 of 1

Project Name: Hart Road, Thundersley Essex	Project No. LEG/03	Co-ords: 579694.18 - 188624.85 Level:	Date 09/10/2020
Location: Hart Road, Thundersley Essex		Pit Dimensions (m) Length: m Width: m Depth: 1.90 m	Machine Type: Hitachi Zaxis 17U	Scale 1:25
Client: Legal and General Modular Homes				Logged: DMB

Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
Depth	Type	Results				
0.00 - 0.30	ES					Brown slightly sandy slightly gravelly clayey TOPSOIL. Gravel is fine to medium rounded of mixed lithology.
			0.30			Stiff (high strength) brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is fine to medium subrounded of mixed lithology. [HEAD DEPOSITS]
1.00		HSV=89				
			1.90			End of Pit at 1.900m Maximum reach of excavator.

Groundwater: No groundwater seepages encountered.

Backfill: Backfilled with arisings on completion.

Stability: Sides remained stable throughout.

Remarks:

ARP Geotechnical Limited	Trial Pit Log	TrialPit No **TP11** Sheet 1 of 1

Project Name: Hart Road, Thundersley Essex	Project No. LEG/03	Co-ords: 579725.04 - 188631.14 Level:	Date 09/10/2020
Location: Hart Road, Thundersley Essex		Pit Dimensions (m) Length: m Width: m Depth: 1.90 m	Machine Type: Hitachi Zaxis 17U	Scale 1:25
Client: Legal and General Modular Homes				Logged: DMB

Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
Depth	Type	Results				
0.00 - 0.30	ES					Brown slightly sandy slightly gravelly clayey TOPSOIL. Gravel is fine to medium rounded of mixed lithology.
			0.30			Stiff (high strength) brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is fine to medium subrounded of mixed lithology. [HEAD DEPOSITS]
1.10		HSV=85				
			1.90			End of Pit at 1.900m Maximum reach of excavator.

Groundwater: No groundwater seepages encountered.

Backfill: Backfilled with arisings on completion.

Stability: Sides remained stable throughout.

Remarks:

ARP Geotechnical Limited

Trial Pit Log

TrialPit No **TP12** Sheet 1 of 1

Project Name: Hart Road, Thundersley Essex	Project No. LEG/03	Co-ords: 579671.90 - 188644.48 Level:	Date 09/10/2020
Location: Hart Road, Thundersley Essex		Pit Dimensions (m) Length: m Width: m Depth: 1.80 m	Machine Type: Hitachi Zaxis 17U
Client: Legal and General Modular Homes			Scale 1:25 Logged: DMB

Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
Depth	Type	Results				
0.00 - 0.30	ES					Brown slightly sandy slightly gravelly clayey TOPSOIL. Gravel is fine to medium rounded of mixed lithology.
			0.30			Stiff (high strength) brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is fine to medium subrounded of mixed lithology. [HEAD DEPOSITS]
1.20		HSV=85				
			1.80			End of Pit at 1.800m Maximum reach of excavator.

Groundwater: No groundwater seepages encountered.

Backfill: Backfilled with arisings on completion.

Stability: Sides remained stable throughout.

Remarks:

ARP Geotechnical Limited	Trial Pit Log	TrialPit No **TP13** Sheet 1 of 1

Project Name: Hart Road, Thundersley Essex	Project No. LEG/03	Co-ords: 579688.64 - 188676.26 Level:	Date 09/10/2020
Location: Hart Road, Thundersley Essex		Pit Dimensions (m) Length: m Width: m Depth: 1.90 m	Machine Type: Hitachi Zaxis 17U	Scale 1:25
Client: Legal and General Modular Homes				Logged: DMB

Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
Depth	Type	Results				
0.00 - 0.30	ES					Brown slightly sandy slightly gravelly clayey TOPSOIL. Gravel is fine to medium rounded of mixed lithology.
			0.30			Stiff (high strength) brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is fine to medium subrounded of mixed lithology. [HEAD DEPOSITS]
1.00		HSV=84				
			1.90			End of Pit at 1.900m Maximum reach of excavator.

Groundwater: No groundwater seepages encountered.

Backfill: Backfilled with arisings on completion.

Stability: Sides remained stable throughout.

Remarks:

ARP Geotechnical Limited

Trial Pit Log

TrialPit No **TP14** Sheet 1 of 1

Project Name: Hart Road, Thundersley Essex	Project No. LEG/03	Co-ords: 579666.03 - 188626.27 Level:	Date 09/10/2020
Location: Hart Road, Thundersley Essex		Pit Dimensions (m) Length: m Width: m Depth: 1.80 m	Machine Type: Hitachi Zaxis 17U	Scale 1:25
Client: Legal and General Modular Homes				Logged: DMB

Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
Depth	Type	Results				
			0.30			Brown slightly sandy slightly gravelly clayey TOPSOIL. Gravel is fine to medium rounded of mixed lithology.
1.00		HSV=83				Stiff (high strength) brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is fine to medium subrounded of mixed lithology. [HEAD DEPOSITS]
			1.80			End of Pit at 1.800m Maximum reach of excavator.

1 2 3 4 5

Groundwater: No groundwater seepages encountered.

Backfill: Backfilled with arisings on completion.

Stability: Sides remained stable throughout.

Remarks:

ARP Geotechnical Limited

Trial Pit Log

TrialPit No **TP15** Sheet 1 of 1

Project Name: Hart Road, Thundersley Essex	Project No. LEG/03	Co-ords: 579648.11 - 188659.41 Level:	Date 09/10/2020
Location: Hart Road, Thundersley Essex		Pit Dimensions (m) Length: m Width: m Depth: 1.60 m	Machine Type: Hitachi Zaxis 17U	Scale 1:25
Client: Legal and General Modular Homes				Logged: DMB

Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
Depth	Type	Results				
0.00 - 0.30	ES					Brown slightly sandy slightly gravelly clayey TOPSOIL. Gravel is fine to medium rounded of mixed lithology.
			0.30			Stiff (high strength) brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is fine to medium subrounded of mixed lithology. [HEAD DEPOSITS]
1.10		HSV=120				
			1.60			End of Pit at 1.600m Target depth achieved.

Groundwater: No groundwater seepages encountered.

Backfill: Backfilled with arisings on completion.

Stability: Sides remained stable throughout.

Remarks:

ARP Geotechnical Limited

Windowless Sample Log

Borehole No. **WS1**

Sheet 1 of 1

Project Name: Hart Road, Thundersley Essex	Project No. LEG/03	Co-ords: 579728.68 - 188515.26	Date 08/10/2020
Location: Hart Road, Thundersley Essex		Level:	Scale 1:40
Client: Legal and General Modular Homes		Rig Crew: Exploration Ltd	Logged: DMB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30 - 0.40	ES					MADE GROUND: Brown slightly sandy gravelly clay. Gravel is fine to coarse angular to subangular of mixed lithology, brick, wood fragments and trace ceramic.
		0.70 - 0.80	ES		0.60			
		1.00	SPT	N=6 (1,1/1,1,2,2)	0.80 1.00			MADE GROUND: Dark grey/black slightly sandy slightly gravelly clay. Gravel is fine subangular of wood and mixed lithology, Abundant plant matter and organic rich made ground.
							NO RECOVERY NO RECOVERY	Grey mottled brown sandy CLAY. [HEAD DEPOSITS]
					1.40			No Recovery.
		2.00	SPT	N=16 (3,4/3,4,4,5)				Stiff (high strength) brown mottled grey sandy CLAY. [HEAD DEPOSITS]
		3.00	SPT	N=15 (2,3/3,3,4,5)	3.00		NO RECOVERY NO RECOVERY	No Recovery.
					3.30			Stiff (high strength) brown mottled grey sandy CLAY. [HEAD DEPOSITS]
		4.00 - 4.50 4.00	D SPT	N=15 (3,3/2,4,4,5)				
					4.40			Stiff (high strength) grey sandy CLAY. [HEAD DEPOSITS]
		5.00	SPT	N=24 (4,4/5,5,7,7)				
					5.45			End of Borehole at 5.450m Maximum depth achieved.

Groundwater: Cores dry.

Backfill: Gas well installation to 3m. Upper 1m comprising plain pipe with bentonite surround, and from 1m to 3m comprising slotted pipe and gravel surround. Valve and flush cover provided.

Remarks:

ARP Geotechnical Limited

Windowless Sample Log

Borehole No. **WS2**

Sheet 1 of 1

Project Name: Hart Road, Thundersley Essex	Project No. LEG/03	Co-ords: 579666.19 - 188540.33	Date 08/10/2020
Location: Hart Road, Thundersley Essex		Level:	Scale 1:40
Client: Legal and General Modular Homes		Rig Crew: Exploration Ltd	Logged: DMB

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.00 - 0.30	ES		0.30			Brown slightly sandy slightly gravelly clayey TOPSOIL. Gravel is fine to medium rounded of mixed lithology.
		1.00	SPT	N=10 (2,1/2,2,3,3)				Firm (medium strength) brown sandy CLAY. [HEAD DEPOSITS]
					1.30			
					1.50			Firm (medium strength) brown slightly sandy gravelly CLAY. Gravel is fine to medium, subrounded of mixed lithology. [HEAD DEPOSITS]
		2.00	SPT	N=15 (3,3/3,4,4,4)				Firm (medium strength) to stiff (high strength) brown slightly sandy CLAY. [HEAD DEPOSITS]
		3.00	SPT	N=15 (3,3/4,3,4,4)				
		4.00	SPT	N=14 (4,3/3,3,4,4)				
					4.40			
					4.50			Brown clayey silty SAND. [HEAD DEPOSITS]
		5.00	SPT	N=17 (3,4/3,4,5,5)				Stiff (high strength) brown slightly sandy CLAY. [HEAD DEPOSITS]
					5.45			End of Borehole at 5.450m Maximum depth achieved.

Groundwater: Cores wet from 4.4m to 4.5m.

Backfill: Gas well installation to 3m. Upper 1m comprising plain pipe with bentonite surround, and from 1m to 3m comprising slotted pipe and gravel surround. Valve and flush cover provided.

Remarks:

ARP Geotechnical Limited	Windowless Sample Log	Borehole No. **WS3** Sheet 1 of 1
Project Name: Hart Road, Thundersley Essex	Project No. LEG/03	Co-ords: 579726.12 - 188566.40	Date 08/10/2020
Location: Hart Road, Thundersley Essex		Level:	Scale 1:40
Client: Legal and General Modular Homes		Rig Crew: Exploration Ltd	Logged: DMB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00 - 0.30	ES		0.30			Brown slightly sandy slightly gravelly clayey TOPSOIL. Gravel is fine to medium rounded of mixed lithology.
		1.00	SPT	N=19 (3,3/4,4,5,6)				Stiff (high strength) brown slightly sandy CLAY. [HEAD DEPOSITS]
		2.00	SPT	N=9 (2,2/2,2,2,3)	2.00		NO RECOVERY NO	No Recovery.
					2.25			Firm (medium strength) brown sandy CLAY. [HEAD DEPOSITS]
		3.00	SPT	N=12 (2,2/3,3,3,3)	2.60			Firm (medium strength) brown slightly sandy CLAY. [HEAD DEPOSITS]
		4.00	SPT	N=12 (3,3/3,3,3,3)	4.10			Stiff (high strength) grey slightly sandy CLAY. [HEAD DEPOSITS]
		5.00	SPT	N=15 (3,3/3,3,4,5)				
					5.45			End of Borehole at 5.450m Maximum depth achieved.

Groundwater: Cores dry.

Backfill: Gas well installation to 3m. Upper 1m comprising plain pipe with bentonite surround, and from 1m to 3m comprising slotted pipe and gravel surround. Valve and flush cover provided.

Remarks:

ARP Geotechnical Limited

Windowless Sample Log

Borehole No. **WS4**

Sheet 1 of 1

Project Name: Hart Road, Thundersley Essex	Project No. LEG/03	Co-ords: 579681.08 - 188603.41	Date 08/10/2020
Location: Hart Road, Thundersley Essex		Level:	Scale 1:40
Client: Legal and General Modular Homes		Rig Crew: Exploration Ltd	Logged: DMB

Well	Water Strikes	Sample and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.00 - 0.30	ES		0.30			Brown slightly sandy slightly gravelly clayey TOPSOIL. Gravel is fine to medium rounded of mixed lithology.
		1.00	SPT	N=12 (2,2/2,3,3,4)				Firm (medium strength) brown slightly sandy CLAY. [HEAD DEPOSITS]
		2.00	SPT	N=17 (3,3/3,4,5,5)	2.00		NO RECOVERY	No Recovery.
					2.30			Stiff (high strength) brown slightly sandy CLAY. [HEAD DEPOSITS]
		3.00	SPT	N=17 (3,3/3,4,5,5)	3.00		NO RECOVERY	No Recovery.
					3.20			Stiff (high strength) grey slightly sandy CLAY. [HEAD DEPOSITS]
		4.00	SPT	N=17 (3,4/3,4,5,5)				
		5.00	SPT	N=20 (4,4/4,5,5,6)				
					5.45			End of Borehole at 5.450m Maximum depth achieved.

Groundwater: Cores dry.

Backfill: Gas well installation to 3m. Upper 1m comprising plain pipe with bentonite surround, and from 1m to 3m comprising slotted pipe and gravel surround. Valve and flush cover provided.

Remarks:

ARP Geotechnical Limited

Windowless Sample Log

Borehole No. **WS5**

Sheet 1 of 1

Project Name: Hart Road, Thundersley Essex	Project No. LEG/03	Co-ords: 579711.08 - 188646.98	Date 08/10/2020
Location: Hart Road, Thundersley Essex		Level:	Scale 1:40
Client: Legal and General Modular Homes		Rig Crew: Exploration Ltd	Logged: DMB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00 - 0.30	ES		0.30			Brown slightly sandy slightly gravelly clayey TOPSOIL. Gravel is fine to medium rounded of mixed lithology.
		1.00	SPT	N=9 (3,2/2,2,3,2)				Firm (medium strength) light brown mottled grey slightly sandy CLAY. [HEAD DEPOSITS]
		2.00	SPT	N=13 (3,3/2,3,4,4)	2.00			Firm (medium strength) brown mottled grey slightly sandy CLAY. [HEAD DEPOSITS]
		3.00	SPT	N=12 (3,2/3,3,3,3)				
		4.00	SPT	N=11 (2,3/3,2,3,3)	3.80			Firm (medium strength) dark grey slightly sandy CLAY. [HEAD DEPOSITS]
		5.00	SPT	N=13 (3,3/3,3,4,3)				
					5.45			End of Borehole at 5.450m Maximum depth achieved.

1 2 3 4 5 6 7 8

Groundwater: Cores dry.

Backfill: Backfilled with arisings on completion.

Remarks:

ARP Geotechnical Limited

Windowless Sample Log

Borehole No. **WS6**

Sheet 1 of 1

Project Name: Hart Road, Thundersley Essex	Project No. LEG/03	Co-ords: 579722.02 - 188674.28	Date 08/10/2020
Location: Hart Road, Thundersley Essex		Level:	Scale 1:40
Client: Legal and General Modular Homes		Rig Crew: Exploration Ltd	Logged: DMB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.00 - 0.30	ES		0.30			Brown slightly sandy slightly gravelly clayey TOPSOIL. Gravel is fine to medium rounded of mixed lithology.
		1.00	SPT	N=9 (1,2/2,2,2,3)				Firm (medium strength) brown slightly sandy CLAY. [HEAD DEPOSITS]
		2.00	SPT	N=12 (2,3/2,3,3,4)				
		3.00	SPT	N=12 (2,2/3,2,4,3)	3.00			Firm (medium strength) brown sandy CLAY. [HEAD DEPOSITS]
		4.00	SPT	N=12 (3,3/3,3,3,3)	3.60			Firm (medium strength) to stiff (high strength) dark grey sandy CLAY. [HEAD DEPOSITS]
		5.00	SPT	N=15 (3,4/3,4,4,4)				
					5.45			End of Borehole at 5.450m Maximum depth achieved.

Groundwater: Cores dry.

Backfill: Backfilled with arisings on completion.

Remarks:

ARP Geotechnical Limited	Windowless Sample Log	Borehole No. **WS7** Sheet 1 of 1

Project Name:	Hart Road, Thundersley Essex	Project No. LEG/03	Co-ords: 579665.92 - 188660.97	Date 08/10/2020
Location:	Hart Road, Thundersley Essex		Level:	Scale 1:40
Client:	Legal and General Modular Homes		Rig Crew: Exploration Ltd	Logged: DMB

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30 - 0.50	ES		0.30			MADE GROUND: Concrete.
					0.50			MADE GROUND: Grey slightly sandy slightly gravelly clay. Gravel is fine to medium subangular of brick fragments.
		1.00	SPT	N=10 (2,2/2,2,3,3)				Firm (medium strength) brown slightly sandy CLAY. [HEAD DEPOSITS]
		2.00	SPT	N=11 (3,2/3,3,2,3)	2.00			Firm (medium strength) brown sandy CLAY. [HEAD DEPOSITS]
		3.00	SPT	N=11 (3,3/3,2,3,3)				
					3.45			End of Borehole at 3.450m Maximum depth achieved.

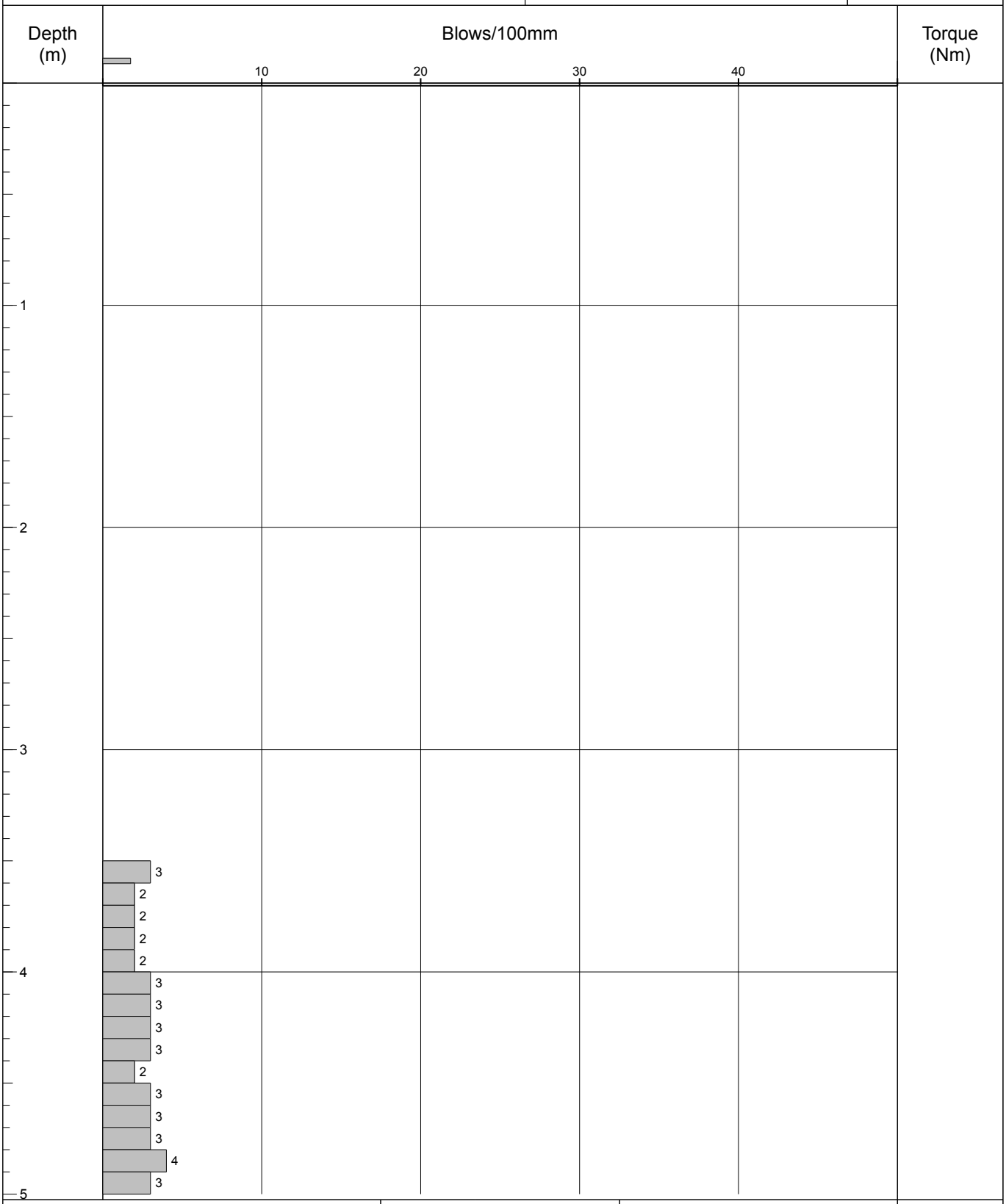
Groundwater: Cores dry.

Backfill: Backfilled with arisings on completion.

Remarks: Dynamic Probe DP1 undertaken from base of borehole to 10m depth.

ARP Geotechnical Limited	Probe Log	Probe No. **DP1** Sheet 1 of 3

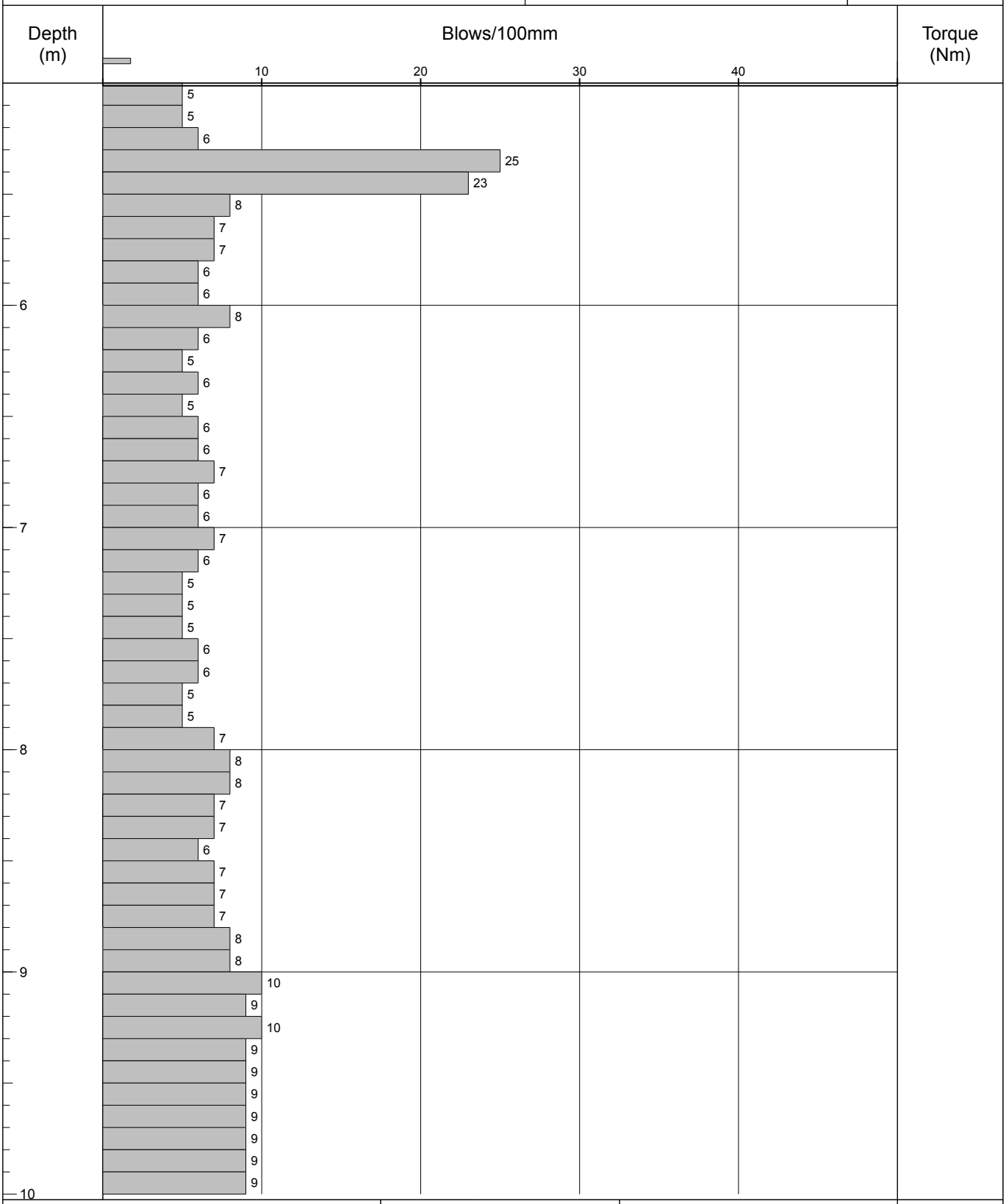
Project Name:	Hart Road, Thundersley Essex	Project No. LEG/03	Co-ords:	Hole Type DCP
Location:	Hart Road, Thundersley Essex		Level:	Scale 1:25
Client:	Legal and General Modular Homes		Dates: 08/10/2020	Logged By



Remarks	Fall Height	Cone Base Diameter	
	Hammer Wt	Final Depth	10.00
	Probe Type	Log Scale	1:25

ARP Geotechnical Limited	Probe Log	Probe No. **DP1** Sheet 2 of 3

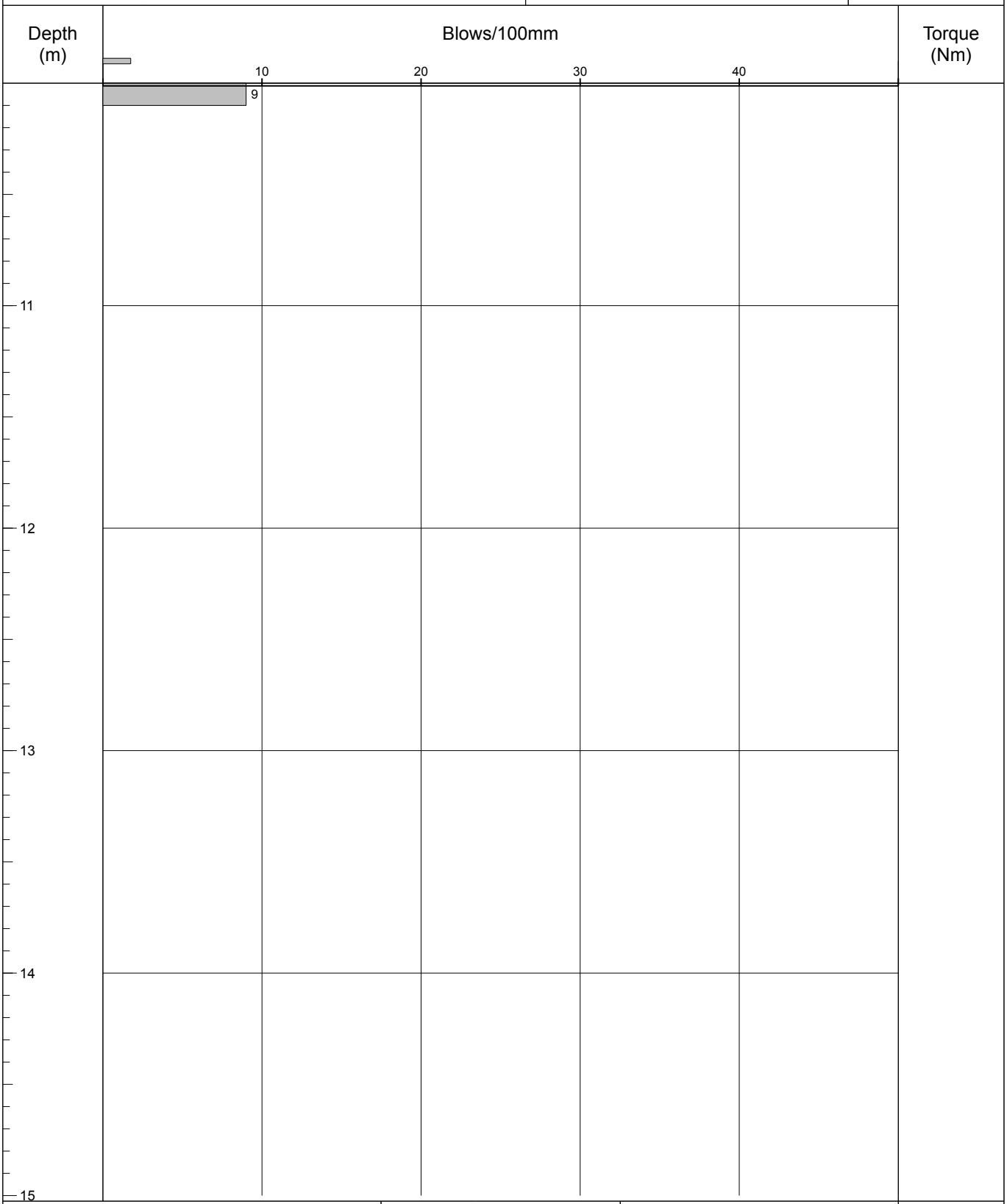
Project Name:	Hart Road, Thundersley Essex	Project No. LEG/03	Co-ords:	Hole Type DCP
Location:	Hart Road, Thundersley Essex		Level:	Scale 1:25
Client:	Legal and General Modular Homes		Dates: 08/10/2020	Logged By



Remarks	Fall Height	Cone Base Diameter	
	Hammer Wt	Final Depth	10.00
	Probe Type	Log Scale	1:25

ARP Geotechnical Limited	Probe Log	Probe No. **DP1** Sheet 3 of 3

Project Name:	Hart Road, Thundersley Essex	Project No. LEG/03	Co-ords:	Hole Type DCP
Location:	Hart Road, Thundersley Essex		Level:	Scale 1:25
Client:	Legal and General Modular Homes		Dates: 08/10/2020	Logged By



Remarks	Fall Height	Cone Base Diameter	
	Hammer Wt	Final Depth	10.00
	Probe Type	Log Scale	1:25

APPENDIX C

LABORATORY TEST CERTIFICATES AND SCREENING VALUES

ARP GEOTECHNICAL LIMITED
SOIL CONTAMINANT SCREENING VALUES
RESIDENTIAL WITH HOME-GROWN PRODUCE

Determinand	S4UL (mg/kg)			C4SL (mg/kg)		
Arsenic	37			37		
Cadmium	11			22		
Chromium (trivalent)	910					
Chromium (hexavalent)	6			21		
Copper	2400					
Lead				200		
Inorganic Mercury	40					
Nickel	180					
Selenium	250					
Zinc	3700					
Acidity (pH)	*Should be Greater Than 5			*Should be Greater Than 5		
	1% SOM	**2.5% SOM**	**6% SOM**	**1% SOM**	**2.5% SOM**	**6% SOM**
Naphthalene	2.3	5.6	13			
Acenaphthylene	170	420	920			
Acenaphthene	210	510	1,100			
Fluorene	170	400	860			
Phenanthrene	95	220	440			
Anthracene	2,400	5,400	11,000			
Fluoranthene	280	560	890			
Pyrene	620	1,200	2,000			
Benzo(a)anthracene	7.2	11	13			
Chrysene	15	22	27			
Benzo(b)fluoranthene	2.6	3.3	3.7			
Benzo(k)fluoranthene	77	93	100			
Benzo(a)pyrene	2.2	2.7	3			5
Indeno(1,2,3-cd)pyrene	27	36	41			
Dibenzo(a,h)anthracene	0.24	0.28	0.30			
Benzo(g,h,I)perylene	320	340	350			
Phenols	120	200	380			
Total TPH	*Above 500, speciate and compare with values below:					
C5 to C6 Aliphatic	42	78	160			
C6 to C8 Aliphatic	100	230	530			
C8 to C10 Aliphatic	27	65	150			
C10 to C12 Aliphatic	130	330	760			
C12 to C16 Aliphatic	1100	2,400	4,300			
C16 to C35 Aliphatic	65,000	92,000	110,000			
C35 TO C44 Aliphatic	65,000	92,000	110,000			
C5 to C7 Aromatic (Benzene)	70	140	300			
C7 to C8 Aromatic (Toluene)	130	290	660			
C8 to C10 Aromatic	34	83	190			
C10 to C12 Aromatic	74	180	380			
C12 to C16 Aromatic	140	330	660			
C16 to C21 Aromatic	260	540	930			
C21 TO C35 Aromatic	1100	1,500	1,700			
C35 TO C44 Aromatic	1100	1,500	1,700			
Asbestos	*Should be None Detected			*Should be None Detected		

* In House Value/Approach S4UL = Suitable 4 Use Level, CIEH/LQM 2014 C4SL = Cat 4 Screening Level, DEFRA, 2014

Blank cell indicates no published value or in-house value. Some values presented are above saturation limits.

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	20-27566-1
Initial Date of Issue:	19-Oct-2020
Client	ARP Geotechnical Ltd
Client Address:	5/6 Northwest Business Park Servia Hill Leeds Yorkshire LS6 2QH
Contact(s):	Dan Bennett
Project	LEG/03 Hart Road, Thundersley, Essex

Quotation No.:	Q20-21438	**Date Received:**	13-Oct-2020
Order No.:	LEG/03	**Date Instructed:**	13-Oct-2020
No. of Samples:	26		
Turnaround (Wkdays):	5	**Results Due:**	19-Oct-2020
Date Approved:	19-Oct-2020		

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Soil

Project: LEG/03 Hart Road, Thundersley, Essex

Client: ARP Geotechnical Ltd				**Chemtest Job No.:**	20-27566	20-27566	20-27566	20-27566	20-27566	20-27566	20-27566	20-27566	20-27566
Quotation No.: Q20-21438				**Chemtest Sample ID.:**	1079538	1079539	1079540	1079541	1079542	1079543	1079544	1079545	1079546
				Client Sample ID.:	TP1 D1	TP2 D1	TP3 D1	TP4 D1	TP5 D1	TP6 D1	TP7 D1	TP8 D1	TP9 D1
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Bottom Depth (m):	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
				Date Sampled:	08-Oct-2020	08-Oct-2020	08-Oct-2020	08-Oct-2020	08-Oct-2020	08-Oct-2020	08-Oct-2020	08-Oct-2020	08-Oct-2020
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	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	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-	-	-	-	-	-	-
Moisture	N	2030	%	0.020	14	14	14	9.7	13	23	15	15	17
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	Roots	Roots	Roots and Stones	Stones and Roots	Stones and Roots	Roots	Roots	Stones and Roots	Stones and Roots
Soil Texture	N	2040		N/A	Loam	Loam	Loam	Sand	Sand	Clay	Sand	Sand	Sand
pH	M	2010		4.0	7.2	8.3	7.2	7.3	7.4	6.5	7.0	6.7	7.1
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Sulphate (Total)	M	2430	mg/kg	100	1200	1400	1000	760	1100	1700	1300	770	1600
Arsenic	M	2450	mg/kg	1.0	11	12	12	7.8	13	9.9	10	5.2	11
Cadmium	M	2450	mg/kg	0.10	0.28	0.27	0.22	0.18	0.24	0.22	0.23	0.18	0.28
Chromium	M	2450	mg/kg	1.0	22	25	22	16	25	21	24	13	23
Copper	M	2450	mg/kg	0.50	25	25	17	16	24	25	21	10	26
Mercury	M	2450	mg/kg	0.10	0.29	0.26	0.21	0.23	0.32	0.29	0.36	0.10	0.33
Nickel	M	2450	mg/kg	0.50	17	16	13	11	16	13	14	7.7	14
Lead	M	2450	mg/kg	0.50	82	74	55	56	79	72	66	35	84
Selenium	M	2450	mg/kg	0.20	0.37	0.28	0.39	0.32	0.36	0.37	0.38	0.28	0.37
Zinc	M	2450	mg/kg	0.50	120	110	82	73	140	140	100	77	130
Chromium (Trivalent)	N	2490	mg/kg	1.0	22	25	22	16	25	21	24	13	23
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	5.0	4.3	3.6	2.8	4.0	7.6	4.0	4.0	5.5
Total TPH >C6-C40	M	2670	mg/kg	10	37	74	46	50	41	54	< 10	< 10	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.48	0.26	0.27	0.39	0.47	< 0.10	< 0.10	< 0.10	2.8
Anthracene	M	2700	mg/kg	0.10	0.19	0.15	0.14	0.19	0.22	< 0.10	< 0.10	< 0.10	0.24
Fluoranthene	M	2700	mg/kg	0.10	1.0	0.92	0.86	0.91	1.2	0.72	0.61	0.53	3.4
Pyrene	M	2700	mg/kg	0.10	1.0	1.0	0.85	0.98	1.3	0.75	0.68	0.50	2.9
Benzo[a]anthracene	M	2700	mg/kg	0.10	0.50	0.54	0.52	0.41	0.75	< 0.10	0.33	< 0.10	0.81
Chrysene	M	2700	mg/kg	0.10	0.64	0.53	0.53	0.43	0.92	< 0.10	0.49	< 0.10	1.4
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	0.66	< 0.10	< 0.10	1.0	< 0.10	< 0.10	< 0.10	1.9
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	0.16	< 0.10	< 0.10	0.29	< 0.10	< 0.10	< 0.10	0.89
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	0.78	< 0.10	< 0.10	1.0	< 0.10	< 0.10	< 0.10	1.4

Results - Soil

Project: LEG/03 Hart Road, Thundersley, Essex

Client: ARP Geotechnical Ltd			**Chemtest Job No.:**		20-27566	20-27566	20-27566	20-27566	20-27566	20-27566	20-27566	20-27566	20-27566
Quotation No.: Q20-21438			**Chemtest Sample ID.:**		1079538	1079539	1079540	1079541	1079542	1079543	1079544	1079545	1079546
			Client Sample ID.:		TP1 D1	TP2 D1	TP3 D1	TP4 D1	TP5 D1	TP6 D1	TP7 D1	TP8 D1	TP9 D1
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Bottom Depth (m):		0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
			Date Sampled:		08-Oct-2020	08-Oct-2020	08-Oct-2020	08-Oct-2020	08-Oct-2020	08-Oct-2020	08-Oct-2020	08-Oct-2020	08-Oct-2020
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	0.50	< 0.10	< 0.10	0.60	< 0.10	< 0.10	< 0.10	0.91
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	0.11	< 0.10	< 0.10	0.11	< 0.10	< 0.10	< 0.10	0.21
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	0.93	< 0.10	< 0.10	1.2	< 0.10	< 0.10	< 0.10	1.4
Total Of 16 PAH's	M	2700	mg/kg	2.0	3.8	6.5	3.2	3.3	9.1	< 2.0	2.1	< 2.0	18
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30

Results - Soil

Project: LEG/03 Hart Road, Thundersley, Essex

Client: ARP Geotechnical Ltd				**Chemtest Job No.:**	20-27566	20-27566	20-27566	20-27566	20-27566	20-27566	20-27566	20-27566	20-27566
Quotation No.: Q20-21438				**Chemtest Sample ID.:**	1079547	1079548	1079549	1079550	1079551	1079552	1079553	1079554	1079555
				Client Sample ID.:	TP10 D1	TP11 D1	TP12 D1	TP13 D1	TP15 D1	WS1 D1	WS1 D2	WS2 D1	WS3 D1
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.00	0.00	0.00	0.00	0.00	0.30	0.70	0.00	0.00
				Bottom Depth (m):	0.30	0.30	0.30	0.30	0.30	0.40	0.80	0.30	0.30
				Date Sampled:	09-Oct-2020	09-Oct-2020	09-Oct-2020	09-Oct-2020	09-Oct-2020	08-Oct-2020	08-Oct-2020	08-Oct-2020	08-Oct-2020
				Asbestos Lab:	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	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	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-	-	-	-	-	-	-	-	-
Moisture	N	2030	%	0.020	17	13	14	18	17	17	30	19	17
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	None	Roots	Stones	Stones	None	Stones	Stones, Roots and Wood	Stones	Stones and Roots
Soil Texture	N	2040		N/A	Loam	Sand	Sand	Sand	Loam	Clay	Loam	Loam	Clay
pH	M	2010		4.0	6.8	7.7	7.6	7.3	6.9	8.1	6.1	7.0	7.5
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	0.015	< 0.010	0.019	0.013	< 0.010	0.014	1.0	< 0.010	< 0.010
Sulphate (Total)	M	2430	mg/kg	100	1500	1100	1100	1600	1200	740	19000	960	1200
Arsenic	M	2450	mg/kg	1.0	11	11	9.9	11	11	10	7.5	8.2	12
Cadmium	M	2450	mg/kg	0.10	0.21	0.28	0.27	0.36	0.48	0.16	0.49	0.26	0.29
Chromium	M	2450	mg/kg	1.0	20	22	24	21	24	38	29	20	27
Copper	M	2450	mg/kg	0.50	20	31	25	32	29	22	55	14	31
Mercury	M	2450	mg/kg	0.10	0.17	0.41	0.26	0.24	0.31	< 0.10	0.16	0.11	0.36
Nickel	M	2450	mg/kg	0.50	13	16	16	16	16	31	22	13	18
Lead	M	2450	mg/kg	0.50	100	92	71	140	280	29	120	52	88
Selenium	M	2450	mg/kg	0.20	0.28	0.30	0.35	0.29	0.21	< 0.20	0.68	0.28	0.27
Zinc	M	2450	mg/kg	0.50	95	130	120	170	250	62	200	76	140
Chromium (Trivalent)	N	2490	mg/kg	1.0	20	22	24	21	24	38	29	20	27
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Organic Matter	M	2625	%	0.40	5.0	3.6	3.6	5.9	3.1	1.1	13	4.1	4.0
Total TPH >C6-C40	M	2670	mg/kg	10	61	41	32	85	72	110	150	< 10	< 10
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	M	2700	mg/kg	0.10	0.46	0.62	0.51	0.45	0.56	< 0.10	4.4	0.71	0.84
Anthracene	M	2700	mg/kg	0.10	0.20	0.20	0.27	0.24	0.26	< 0.10	1.4	0.14	0.17
Fluoranthene	M	2700	mg/kg	0.10	1.2	1.4	1.3	1.3	2.5	< 0.10	5.7	1.6	1.4
Pyrene	M	2700	mg/kg	0.10	1.3	1.3	1.3	1.3	2.4	< 0.10	5.1	1.4	1.3
Benzo[a]anthracene	M	2700	mg/kg	0.10	0.57	0.64	0.65	0.69	1.3	< 0.10	2.6	0.66	0.55
Chrysene	M	2700	mg/kg	0.10	0.75	0.69	0.88	0.78	1.3	< 0.10	5.8	1.1	0.73
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	0.93	1.1	< 0.10	1.8	< 0.10	4.3	< 0.10	0.84
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	0.24	0.19	< 0.10	0.56	< 0.10	1.5	< 0.10	0.23
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	0.91	1.1	< 0.10	1.7	< 0.10	3.3	< 0.10	0.80

Results - Soil

Project: LEG/03 Hart Road, Thundersley, Essex

Client: ARP Geotechnical Ltd			**Chemtest Job No.:**		20-27566	20-27566	20-27566	20-27566	20-27566	20-27566	20-27566	20-27566	20-27566
Quotation No.: Q20-21438			**Chemtest Sample ID.:**		1079547	1079548	1079549	1079550	1079551	1079552	1079553	1079554	1079555
			Client Sample ID.:		TP10 D1	TP11 D1	TP12 D1	TP13 D1	TP15 D1	WS1 D1	WS1 D2	WS2 D1	WS3 D1
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.00	0.00	0.00	0.00	0.00	0.30	0.70	0.00	0.00
			Bottom Depth (m):		0.30	0.30	0.30	0.30	0.30	0.40	0.80	0.30	0.30
			Date Sampled:		09-Oct-2020	09-Oct-2020	09-Oct-2020	09-Oct-2020	09-Oct-2020	08-Oct-2020	08-Oct-2020	08-Oct-2020	08-Oct-2020
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM	DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	0.60	0.70	< 0.10	1.1	< 0.10	2.8	< 0.10	0.54
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	0.10	0.34	< 0.10	0.11	< 0.10	1.0	< 0.10	0.13
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	0.59	1.3	< 0.10	1.4	< 0.10	4.8	< 0.10	0.84
Total Of 16 PAH's	M	2700	mg/kg	2.0	4.5	8.2	9.6	4.8	15	< 2.0	43	5.6	8.4
Total Phenols	M	2920	mg/kg	0.30	< 0.30	< 0.30	< 0.30	< 0.30	0.40	< 0.30	< 0.30	< 0.30	< 0.30

Results - Soil

Project: LEG/03 Hart Road, Thundersley, Essex

Client: ARP Geotechnical Ltd		**Chemtest Job No.:**			20-27566	20-27566	20-27566	20-27566	20-27566	20-27566	20-27566	20-27566
Quotation No.: Q20-21438		**Chemtest Sample ID.:**			1079556	1079557	1079558	1079559	1079560	1079561	1079562	1079563
		Client Sample ID.:			WS4 D1	WS5 D1	WS6 D1	WS7 D1	WS1 D3	WS5 D2	TP3 D2	TP6 D2
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			0.00	0.00	0.00	0.30	4.00	3.00	1.50	1.20
		Bottom Depth (m):			0.30	0.30	0.30	0.50	4.50	3.30	1.70	1.40
		Date Sampled:			08-Oct-2020	08-Oct-2020	08-Oct-2020	08-Oct-2020	08-Oct-2020	08-Oct-2020	08-Oct-2020	08-Oct-2020
		Asbestos Lab:			DURHAM	DURHAM	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	No Asbestos Detected	No Asbestos Detected				
ACM Detection Stage	U	2192		N/A	-	-	-	-				
Moisture	N	2030	%	0.020	17	14	15	14	16	14	13	15
Soil Colour	N	2040		N/A	Brown	Brown	Brown	Brown	Brown	Brown	Brown	Brown
Other Material	N	2040		N/A	Roots	Roots	None	Stones	None	None	None	None
Soil Texture	N	2040		N/A	Sand	Loam	Loam	Clay	Clay	Clay	Clay	Clay
pH	M	2010		4.0	7.5	8.1	8.2	8.3	8.3	7.4	8.0	5.6
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/l	0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.087	< 0.010	0.17	0.027
Sulphate (Total)	M	2430	mg/kg	100	1100	1500	1300	810				
Arsenic	M	2450	mg/kg	1.0	7.2	12	21	11				
Cadmium	M	2450	mg/kg	0.10	0.17	0.33	0.32	0.33				
Chromium	M	2450	mg/kg	1.0	15	26	24	26				
Copper	M	2450	mg/kg	0.50	16	30	33	27				
Mercury	M	2450	mg/kg	0.10	0.17	0.49	0.25	0.37				
Nickel	M	2450	mg/kg	0.50	9.7	17	16	18				
Lead	M	2450	mg/kg	0.50	51	94	800	300				
Selenium	M	2450	mg/kg	0.20	0.25	0.43	0.34	0.29				
Zinc	M	2450	mg/kg	0.50	82	150	140	170				
Chromium (Trivalent)	N	2490	mg/kg	1.0	15	26	24	26				
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50	< 0.50				
Organic Matter	M	2625	%	0.40	5.5	4.1	4.5	2.4				
Total TPH >C6-C40	M	2670	mg/kg	10	< 10	58	< 10	< 10				
Naphthalene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.49				
Acenaphthylene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.25				
Acenaphthene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.10				
Fluorene	M	2700	mg/kg	0.10	< 0.10	< 0.10	< 0.10	0.17				
Phenanthrene	M	2700	mg/kg	0.10	0.36	0.70	0.61	2.1				
Anthracene	M	2700	mg/kg	0.10	0.18	0.27	0.25	0.85				
Fluoranthene	M	2700	mg/kg	0.10	0.91	1.8	1.4	3.4				
Pyrene	M	2700	mg/kg	0.10	1.0	1.8	1.4	3.4				
Benzo[a]anthracene	M	2700	mg/kg	0.10	0.55	0.99	0.63	1.9				
Chrysene	M	2700	mg/kg	0.10	0.63	1.1	0.79	1.9				
Benzo[b]fluoranthene	M	2700	mg/kg	0.10	< 0.10	1.3	< 0.10	2.2				
Benzo[k]fluoranthene	M	2700	mg/kg	0.10	< 0.10	0.31	< 0.10	0.71				
Benzo[a]pyrene	M	2700	mg/kg	0.10	< 0.10	1.1	< 0.10	2.0				

Results - Soil

Project: LEG/03 Hart Road, Thundersley, Essex

Client: ARP Geotechnical Ltd			**Chemtest Job No.:**		20-27566	20-27566	20-27566	20-27566	20-27566	20-27566	20-27566	20-27566
Quotation No.: Q20-21438			**Chemtest Sample ID.:**		1079556	1079557	1079558	1079559	1079560	1079561	1079562	1079563
			Client Sample ID.:		WS4 D1	WS5 D1	WS6 D1	WS7 D1	WS1 D3	WS5 D2	TP3 D2	TP6 D2
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.00	0.00	0.00	0.30	4.00	3.00	1.50	1.20
			Bottom Depth (m):		0.30	0.30	0.30	0.50	4.50	3.30	1.70	1.40
			Date Sampled:		08-Oct-2020	08-Oct-2020	08-Oct-2020	08-Oct-2020	08-Oct-2020	08-Oct-2020	08-Oct-2020	08-Oct-2020
			Asbestos Lab:		DURHAM	DURHAM	DURHAM	DURHAM				
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.10	< 0.10	0.64	< 0.10	1.3				
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.10	< 0.10	0.24	< 0.10	0.22				
Benzo[g,h,i]perylene	M	2700	mg/kg	0.10	< 0.10	1.2	< 0.10	1.4				
Total Of 16 PAH's	M	2700	mg/kg	2.0	3.6	12	5.1	22				
Total Phenols	M	2920	mg/kg	0.30	1.8	< 0.30	< 0.30	< 0.30				

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

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"

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 45 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

LABORATORY REPORT

4043

Contract Number: PSL20/5540

Report Date: 30 October 2020

Client's Reference: LEG/03

Client Name: ARP Associates
Northwest House
5/6 Northwest Business Park
Servia Hill
Leeds
LS6 2QH

For the attention of: Dan Bennett

Contract Title: Hart Road, Thundersley, Essex

Date Received: 13/10/2020
Date Commenced: 13/10/2020
Date Completed: 30/10/2020

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. 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 other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

H Daniels (Senior Technician)	A Watkins (Director)	R Berriman (Quality Manager)
S Royle (Laboratory Manager)	S Eyre (Senior Technician)	L Knight (Senior Technician)

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awatkins@prosoils.co.uk

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
TP3	D2		1.50	1.70	Brown mottled grey slightly sandy CLAY.
TP6	D2		1.20	1.40	Brown mottled grey slightly sandy CLAY.
WS1	D3		4.00	4.50	Brown slightly sandy CLAY.
WS5	D2		3.00	3.30	Brown slightly sandy CLAY.

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
TP3	D2		1.50	1.70	26			62	25	37	100	High plasticity CH.
TP6	D2		1.20	1.40	36			60	24	36	100	High plasticity CH.
WS1	D3		4.00	4.50	34			64	25	39	100	High plasticity CH.
WS5	D2		3.00	3.30	30			54	22	32	100	High plasticity CH.

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

Hart Road, Thuundersely Essex

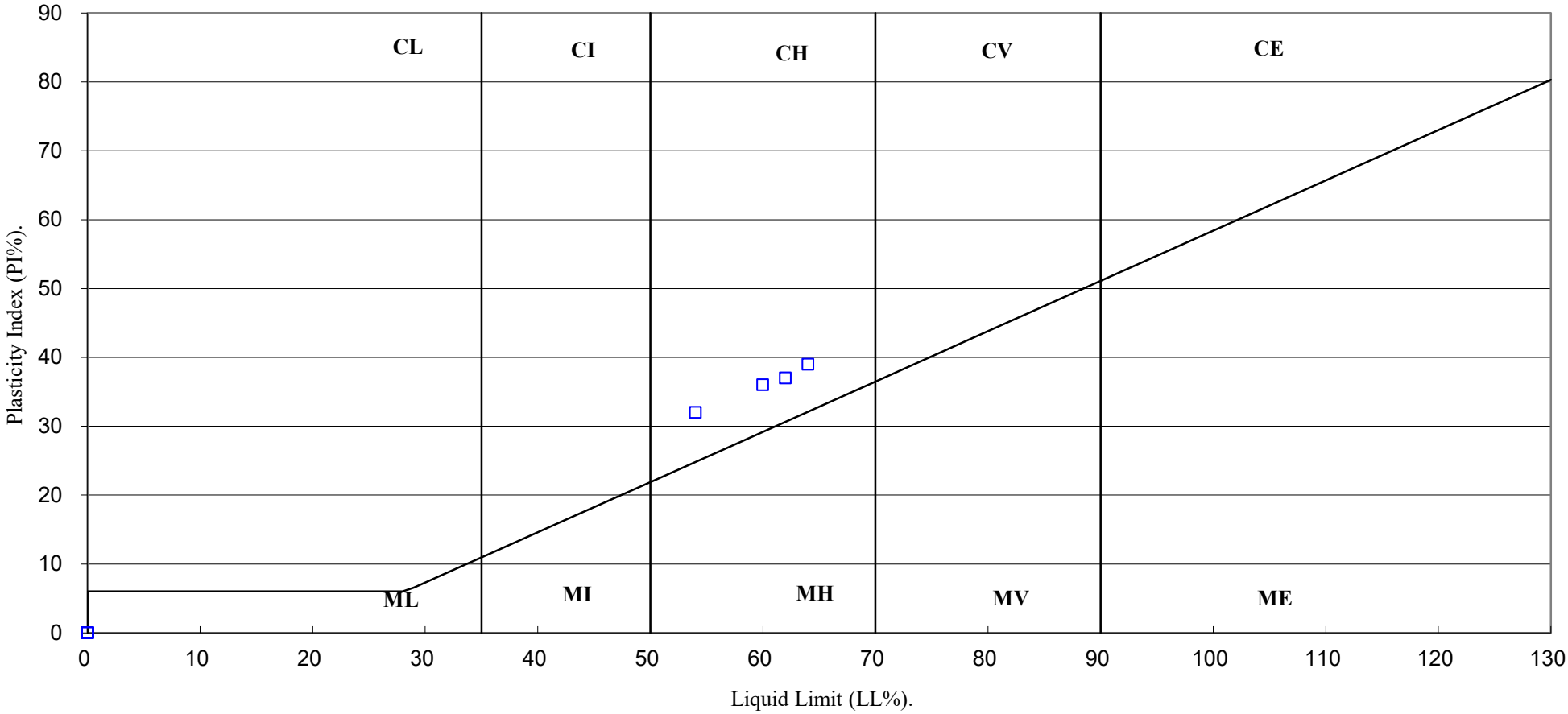
Contract No:

PSL20/5540

Client Ref:

LEG/03

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS TESTING 4043	PSL Professional Soils Laboratory	Hart Road, Thuundersely Essex	Contract No: PSL20/5540 Client Ref: LEG/03

A P P E N D I X D

RISK CATEGORISATION TABLES

Severity of Consequence

Severe	Short term (acute) risks to human health, likely to result in significant harm. Major pollution of (watercourses or groundwater)
Medium	Long-term (Chronic) damage (significant harm) to human health. Pollution of sensitive water resources.
Mild	Pollution of non-sensitive water resources.
Minor	Non-permanent health effects easily prevented by use of personal protective equipment during site works.

Probability of Risk Event Occurring

High Likelihood	There is a pollutant linkage and an event that either appears very likely in the short term, almost inevitable in the long term, or there is evidence of harm or pollution at the receptor.
Likely	There is a pollution linkage and all the elements are present and in the right place, so that a risk event is possible in the short term and likely over the long term.
Low Likelihood	There is a pollution linkage and circumstances are possible under which a risk event could occur. However, it is not certain that such an event would take place even over a longer period, and even less likely in the short term.
unlikely	There is a pollution linkage, but circumstances are such that it is improbable that an event would occur even in the very long term.

Comparison of Probability Against Severity of Consequence

		Severity of Consequence			
		Severe	**Medium**	**Mild**	**Minor**
Probability	**High Likelihood**	**Very High Risk**	**High Risk**	**Moderate Risk**	**Moderate/ Low Risk**
	Likely	**High Risk**	**Moderate Risk**	**Moderate/ Low Risk**	**Low Risk**
	Low Likelihood	**Moderate Risk**	**Moderate/ Low Risk**	**Low Risk**	**Very Low Risk**
	Unlikely	**Moderate/ Low Risk**	**Low Risk**	**Very Low Risk**	**Very Low Risk**

Risk Categories - Definitions

Very High Risk	High probability that severe harm could arise to a receptor, or there is evidence that severe harm is already occurring. Urgent investigation is required and urgent remediation is likely to be required.
High Risk	Harm is likely to arise to a receptor. Urgent investigation is required and remediation may be necessary in the short term and likely over the longer term.
Moderate Risk	Possible that harm could arise to a receptor, but low likelihood that such harm would be severe. Harm is likely to be mild. Investigation normally required to clarify risk. Some remedial works may be required in the long-term.
Moderate/ Low Risk	Possible that harm could arise to a receptor, but where a combination of likelihood and consequence results in a risk that is above low, but is not of sufficient concern to be classified as mild. Limited further investigation may be required to clarify the risk. If necessary, remediation works are likely to be limited in extent.
Low Risk	Possible that harm could arise to a receptor. Such harm, at worst, would normally be mild.
Very Low Risk	Low possibility that harm could arise to a receptor. Such harm is unlikely to be any worse than mild.

APPENDIX E

CONTAMINATION REMEDIATION STATEMENT

CONTAMINATION REMEDIATION STATEMENT

FOR

HART ROAD
THUNDERSLEY
ESSEX

ON BEHALF OF

LEGAL AND GENERAL MODULAR HOMES

ARP GEOTECHNICAL LTD

CHARTERED CONSULTING ENGINEERS

Northwest House 5/6 Northwest Business Park Servia Hill Leeds LS6 2QH

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CLIENT:	LEGAL AND GENERAL MODULAR HOMES
JOB NUMBER:	LEG/03
PROJECT:	HART ROAD, THUNDERSLEY, ESSEX
REPORT TYPE:	CONTAMINATION REMEDIATION STATEMENT
REPORT REFERENCE:	LEG/03rem

	Name	**Signature**
Prepared By:	D Bennett BSc MSc FGS	
Authorised By:	J Race BSc CGeol FGS EurGeol	

ISSUE	**DATE**	**STATUS**
1	6TH NOVEMBER 2020	V1 FINAL

1.0 Introduction

1.1 This document has been prepared to provide information for the Client and other interested parties, such as the Regulatory Authorities, outlining how contamination encountered on the site will be managed to ensure that the site is environmentally suitable for the intended residential use. The document should be agreed, prior to implementation, with the relevant Regulatory Authorities, usually the local Planning Authority and NHBC or other building control provider.

2.0 The Site

2.1 The ARP Geotechnical Ltd Stage 2 Geo-environmental Report, dated November 2020 under reference LEG/03r2, makes an assessment of contamination, along with other aspects.

2.2 The conceptual site model is for a residential development, including private gardens and communal landscaping.

2.3 At the time of the investigation, the site was occupied in the north by a residential property that fronts onto Hart Road, with associated hardstanding and a courtyard to the rear of the property. Small outbuildings and stables are present in the courtyard to the south of the building, comprising wooden frames and felt roofing. A small area of grass is also present in the courtyard. In the north of the site is an equestrian ménage which, at the time of the investigation, contained horses. The south of the site is undeveloped land which was boggy underfoot during the walkover and investigation. A wooden fence is present around the southeastern corner of the site, in the location of a former pond. The site slopes down gently to the southeast.

2.4 The geological maps show the site to be underlain by superficial head deposits, comprising clay, silt, sand and gravel. The underlying bedrock geology comprises sands of the Bagshot Formation. There are no faults shown to affect the site.

2.5 The site is not within a Coal Mining Reporting Area and is therefore considered stable in this regard.

2.6 The bedrock strata beneath the site are classed as a 'Secondary A' aquifer and the superficial deposits are classed as an 'Unproductive Strata. There are no groundwater abstractions within 500m of the site.

2.7 The nearest downslope surface water is an unnamed stream or open drain, flowing eastwards along the southern boundary of the site. Any surface water run-off, which is not intercepted by drainage, is likely to reach the stream. The site is not in an area at risk from river flooding. However, there are no surface water abstractions within 500m of the site.

2.8 No radon protective measures are required for properties constructed on the site.

2.9 There are no closed or currently licensed landfills within 250m of the site. However, a former shallow pond is present in the southeast of the site, which has been infilled. Gas monitoring is ongoing and will be reported separately on completion.

2.10 Ordnance Survey archive maps show small buildings on the north by 1923. By 1962, a large residential dwelling is shown to be present on the north, and additional buildings on the northwest of the site. Google Earth aerial photography shows a large pond to be present in the southeastern corner of the site, which was presumably infilled by 2017.

2.11 The ground investigation revealed a 0.3m thick surface covering of topsoil across the vast majority of the site, onto natural strata. Made ground was encountered only in WS1 (position of infilled pond) and WS7 (courtyard in the north of the site), comprising slightly sandy gravelly clay, including brick fragments, to a depth of 0.6m in WS1 and 0.5m in WS7 (below 0.3m of concrete). Below 0.6m in WS1 was a 0.2m thick layer of basal pond made ground, comprising dark grey/black slightly sandy slightly gravelly clay, including wood and organic matter. The natural strata across the site comprised typically slightly sandy clay, commonly slightly gravelly. The strata are all interpreted to be superficial head deposits. A dynamic probe (DP1), carried out from the base of WS7, indicated that bedrock is not present within 10m of the surface. The excavations generally remained stable for the short period of exposure. No groundwater seepages were encountered in any of the trial pits and the core samples remained dry throughout, with the exception of WS2 from 4.4m to 4.5m, which coincides with a band of silty sand.

2.12 The contamination testing revealed the topsoil to contain occasional elevations of lead and dibenzo(a,h)anthracene, as a result of natural random variation, but the overall representative concentrations are considered to be acceptable for re-use of the soil on the site. The basal pond material at WS1 below 0.6m, was found to contain elevated PAH compounds (benzo(b)flouranthene, benzo(a)pyrene and dibenzo(a,h)anthracene, at 4.3mg/kg, 3.3mg/kg and 1.0mg/kg respectively). The clay made ground at WS7 was found to be elevated in lead (300mg/kg).

3.0 Remediation Strategy

3.1 An asbestos survey should be carried out prior to any demolition or work on the existing buildings on the site, and any identified asbestos should be removed and disposed to a licenced facility.

3.2 The basal pond material (WS1) is already at a depth of 0.6m below existing ground levels. Provided it remains at this depth (this is likely to be case, as no development is proposed on this area of the site), the risks to future occupants from these pathways are negligible and no further action is required.

3.3 The concentrations of determinands within the made ground at WS7 are compatible with front garden and public open space (POS) areas, but not rear gardens where vegetable may be grown and eaten. Therefore, the material should be removed where it is present in proposed rear garden areas, and placed either below hard areas, front gardens, or POS.

Alternatively, protection could be provided by covering the material by at least 0.6m thickness of clean subsoil and topsoil.

3.4 If the cover blanket option is preferred in the rear gardens, the cover blanket must be clean and uncontaminated. Details of the profile are provided below.

Thickness (m)	Description
Minimum 0.1	Topsoil
Minimum 0.5	Subsoil

3.5 Alternatively, all or some of the made ground may be removed off site and taken to a suitably licensed landfill. The waste receiver may require Waste Acceptance Criteria Testing (WAC).

3.6 As only one sample has been tested of the WS7 type made ground, further sampling and testing on a smaller grid across the area highlighted on the plan may allow statistical analysis to be carried out, potentially reducing the representative concentration to levels acceptable for rear gardens, or at least may delineate more accurately the extent of the affected area, with a potential reduction.

4.0 Validation

4.1 To satisfy the Regulatory Authorities, verification that the above measures have been successfully implemented needs to be independently confirmed, to satisfy the regulatory authorities. The measures described below should ensure compliance.

4.2 If the option to remove the WS7 type made ground entirely from the rear garden area is taken then, following the removal, the area should be inspected by the Engineer, and the area photographed. As the underlying natural material is clearly identifiable from the made ground, sampling and testing is not considered necessary, unless there is doubt as to whether or not the made ground has been cleanly removed. All the details will be included within a Validation Letter Report. If the material has been taken off site, any disposal/transfer documents should be retained for inclusion in the Validation Report.

4.3 Where the option of placement of cover soils has been taken for any rear gardens underlain by the WS7 type made ground has been taken, it will be necessary to confirm the required 0.6m cover of uncontaminated soil has been placed by excavating trial pits to 0.6m depth across these areas on the basis of one pit per every two plots in the affected area. In any front gardens or POS, the cover blanket is not required. The trial pits will be photographed, to include a reference scale, and the photographs included within any report to enable the location on site to be identified. The likely worst case extent of the WS7 type made ground is indicated on the attached plan.

5.0 Laboratory Testing

5.1 For any imported subsoil and topsoil used, or any site-won uncontaminated topsoil and subsoil arisings to be re-used on the site, the source will need to be confirmed, and the material tested for the attached suite of contaminants, to comply with the maximum screening values listed. The frequency of testing is given on the table below. Any samples already tested in the site investigation carried out to date can be considered part of the overall total required.

Material Type	**Number of Samples**
Topsoil or subsoil from greenfield site	Minimum 3No. or 1 per 250m^3 (whichever is greater)
Topsoil or subsoil from brownfield site	Minimum 6No. or 1 per 100m^3 (whichever is greater)

5.2 The material should be placed in quarantined stockpiles prior to sampling and once a stockpile has been approved by the Engineer, no further material should be added to the stockpile, and any further import should be stockpiled separately. Any cross contamination of materials should be avoided, and further testing carried out where any cross contamination is suspected to have occurred.

5.3 If space is insufficient on the site to store quarantined stockpiles, topsoil/subsoil can be placed directly into the appropriate landscape areas, but samples of each material would need to be tested by taking samples from the validation trial pits.

5.4 The results of all the laboratory analysis, excavation logs, plans, photographs, and import documents will form part of the Remediation Validation Report.

5.5 In order to assist with progress of the scheme, interim Validation Reports may be prepared for specific areas, if required, showing how the contamination has been dealt with. On completion of the development, the discharge of any associated planning condition may be achieved by submission of all the interim validation letters, or issuing the information as a single combined Validation Report.

5.6 It is the responsibility of the supplier to ensure that imported topsoils are 'suitable for their intended purpose', as specified in BS 3882:2007. This relates to texture and nutrient/horticultural properties and does not form part of the contamination validation considerations of this Remediation Statement.

6.0 Unexpected Contamination

6.1 Any unexpected contamination uncovered during the works shall be inspected, sampled and analysed in laboratory for the suite of determinands appended to this Remediation Statement, and compared to the maximum concentration levels listed on the enclosure. Works on the affected materials shall cease until the appraisal is complete and, if

necessary, a revised Remediation Statement is to be prepared and approved by the Planning Authority before work is recommenced.

7.0 Protection of Workers and the Public During Development Works

7.1 Damping down of the ground surface should be carried out during dry periods to prevent dusting.

7.2 Washing facilities and a clean mess room should be provided.

7.3 Site fencing should be provided to exclude access to members of the public.

7.4 Movement of contamination off site on vehicle wheels shall be minimised by cleaning of vehicle wheels and/or use of road sweeper, as required.

ARP GEOTECHNICAL LIMITED
SOIL CONTAMINANT SCREENING VALUES
RESIDENTIAL WITH HOME-GROWN PRODUCE

Determinand	S4UL (mg/kg)			C4SL (mg/kg)		
Arsenic	37			37		
Cadmium	11			22		
Chromium (trivalent)	910					
Chromium (hexavalent)	6			21		
Copper	2400					
Lead				200		
Inorganic Mercury	40					
Nickel	180					
Selenium	250					
Zinc	3700					
Acidity (pH)	*Should be Greater Than 5			*Should be Greater Than 5		
	1% SOM	**2.5% SOM**	**6% SOM**	**1% SOM**	**2.5% SOM**	**6% SOM**
Naphthalene	2.3	5.6	13			
Acenaphthylene	170	420	920			
Acenaphthene	210	510	1,100			
Fluorene	170	400	860			
Phenanthrene	95	220	440			
Anthracene	2,400	5,400	11,000			
Fluoranthene	280	560	890			
Pyrene	620	1,200	2,000			
Benzo(a)anthracene	7.2	11	13			
Chrysene	15	22	27			
Benzo(b)fluoranthene	2.6	3.3	3.7			
Benzo(k)fluoranthene	77	93	100			
Benzo(a)pyrene	2.2	2.7	3			5
Indeno(1,2,3-cd)pyrene	27	36	41			
Dibenzo(a,h)anthracene	0.24	0.28	0.30			
Benzo(g,h,I)perylene	320	340	350			
Phenols	120	200	380			
Total TPH	*Above 500, speciate and compare with values below:					
C5 to C6 Aliphatic	42	78	160			
C6 to C8 Aliphatic	100	230	530			
C8 to C10 Aliphatic	27	65	150			
C10 to C12 Aliphatic	130	330	760			
C12 to C16 Aliphatic	1100	2,400	4,300			
C16 to C35 Aliphatic	65,000	92,000	110,000			
C35 TO C44 Aliphatic	65,000	92,000	110,000			
C5 to C7 Aromatic (Benzene)	70	140	300			
C7 to C8 Aromatic (Toluene)	130	290	660			
C8 to C10 Aromatic	34	83	190			
C10 to C12 Aromatic	74	180	380			
C12 to C16 Aromatic	140	330	660			
C16 to C21 Aromatic	260	540	930			
C21 TO C35 Aromatic	1100	1,500	1,700			
C35 TO C44 Aromatic	1100	1,500	1,700			
Asbestos	*Should be None Detected			*Should be None Detected		

* In House Value/Approach S4UL = Suitable 4 Use Level, CIEH/LQM 2014 C4SL = Cat 4 Screening Level, DEFRA, 2014

Blank cell indicates no published value or in-house value. Some values presented are above saturation limits.

0m — Approximate Scale — 56m

Key

Likely Worst Case Extent of WS7-Type Made Ground

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Project	HART ROAD THUNDERSLEY ESSEX
Client	LEGAL AND GENERAL MODULAR HOMES
Title	REMEDIATION PLAN
Date	OCTOBER 2020
Drawn	DMB
Scale	AS SHOWN
Job No.	**LEG/03**