

Katherine Child

BoKlok Housing Ltd
Maple Cross House
Denham Way,
Maple Cross,
Rickmansworth,
WD3 9SW

23rd February 2021

Our ref RB/21/LP2466soakage

Dear Katherine,

Re: Land West of Elmgrove Road, Littlehampton, BN17 6LT

1. Introduction

Further to our site investigation report, ref. LP2265 dated July 2020 to which the reader is referred, LEAP has been instructed by Katherine Child of BoKlok Housing Ltd in a meeting dated 16th February 2021 to update the findings of the report with specific regard to the feasibility of a sustainable drainage system (SUDS) at the above site.

Subsequent to the Phase II investigation in Summer 2020, a number of additional studies have been undertaken which have been used to further inform the recommendations made herein. These are as follows, with relevant information from each appended to this letter report:

- Addendum letter report for CBR testing by LEAP 8th September 2020, ref MW/20/LP2265.
- Additional boreholes and monitoring, Wilson Bailey, dated January 2021, ref I5734
- Additional test pitting for detailed made ground and superficial soil classification by LEAP, February 2021.

2. Phase II Investigation findings

As part of the Phase II investigations in Summer 2020, a total of 17 trial holes were excavated across the site, comprising 12No. machine excavated test pits to depths up to 3m bgl, and 5No. windowless sampler boreholes to depths up to 6m bgl. The locations of the holes were specified by the client, with some flexibility to take account of existing stockpiles and services on site. As such, coverage was biased towards the central, northern and eastern portions of the site.

The ground conditions (outside of stockpile areas) were summarised as follows:

Depth From (m)	Depth To (m)	Soil Type	Description
0.0	0.30 / 0.40	TOPSOIL	Light brown to light orangish brown locally reworked slightly gravelly silty clayey TOPSOIL Gravel is fine to sized rounded flint and occasional brick, chalk, mortar and concrete.
0.0	0.25 / 0.50	MADE GROUND (non-stockpile areas)	Light brown to orangish brown sandy gravelly clayey MADE GROUND. Gravels of brick, concrete, asphalt, sub angular to sub rounded flint. Wire noted in TPI. Black ashy gravelly fill noted in TP2, possible remnant blacktop surface. TPI-TP3, TP5, WS1A-C, WS2-WS5
0.25/0.5	1.1/3.0	CLAY	Stiff to firm brown becoming orangish brown CLAY and pale brown becoming orange brown gravelly sandy CLAY occasionally mottled orange. Gravel is fine to coarse sub angular to sub rounded flint. Sand is fine to medium grained.
1.1/1.8	2.35/4.10	SAND	Medium dense orange brown to orange or yellowish orange slightly clayey gravelly SAND. Sand is fine to coarse grained. Gravel is fine to coarse sub rounded to sub angular flint.
2.4/2.7	4.10/>6.0	CHALK	Soft off white mottled pale orange gravelly SILT or silty GRAVEL (structureless CHALK HEAD) WS2-WS5
4.10/5.00	>6.0	CHALK	Off white low density CHALK recovered as silty chalk gravel. Gravel is fine to coarse low to medium density chalk and occasional coarse flint. WS3 and WS4

In general, the topsoil and made ground was found to be underlain everywhere by a mantle of firm to stiff orange brown CLAY becoming sandy and gravelly with depth. The CLAY was underlain by a clayey gravelly SAND from depths of around 1-2m, itself underlain by chalk from around 4-5m bgl. Groundwater was encountered as a strike in the chalk in WS3 at 5m bgl, with levels recorded between 5.3m and 5.4m bgl in monitoring visits in June and July (all other shallower wells being dry during drilling and monitoring). The clays were classified as being of low to intermediate plasticity.

A single soakage test was carried out in TPI (centre south of site) at a test depth of 1.4m to 2m below ground level which was entirely within the sands. The test was not compliant with BRE 365 (in that it failed to drain to 75% empty within the test time) and returned a relatively poor rate of soakage ($3.88 \times 10^{-6} \text{m/s}$).

The report concluded that, although improved rates may be achievable in the chalk at depth, the sands were not considered suitable for effective soakaway drainage. Furthermore, noting the depth to groundwater and risk of solution features the use of deeper drainage would be limited by the requirement for regulatory approval and the need to keep drainage structures at least 20m distant from proposed or existing buildings.

3. Recent Investigations

Subsequent to the phase II investigation, further test pits and boreholes have been excavated on site, and the locations and results of these are attached to this letter. In summary, the findings corroborate those of the Phase II investigation. The near surface soils have been assessed much more extensively, in a series of 36 test pits see Fig I attached. The soils encountered were found to conform to the previous findings, with the exception of some areas of locally deeper made ground (up to 2.15m bgl) – possibly related to removal of old foundations. The made ground in the majority of locations was found to be underlain by clay as before.

2 No. boreholes were drilled by Wilson Bailey to depths of 5-6m, with groundwater monitoring installations to the base of the boreholes. At the time of writing, five monitoring visits have been carried out since December 2020 to include three LEAP wells (WS2-4) and the two deeper wells (BH7&8), with standing water levels identified at depths of around 4.3 to 5.8m below ground level in the deeper wells. The locations of the monitoring wells, borehole logs and results of the monitoring are attached to this letter.

4. Recommendations for soakaway drainage

In order to provide an unsaturated zone, the groundwater monitoring to date suggests that it would be necessary to limit the depth of any soakaways to a maximum of around 3 to 3.5m below ground level. This would mean that, depending on the final location, they would predominantly discharge into the sands. These soils have been shown in the Phase II investigation to provide poor soakage rates. Furthermore, given the potential for the presence of solution features on site, as previously indicated, soakaways would need to be kept remote from structures, which would severely limit their extent and frequency.

The confirmed presence of made ground and clay soils across the site, typically to depths of around 1.5m, locally deeper, precludes the use of SUDs systems such as permeable paving due to the excessive depths required to consistently penetrate permeable strata.

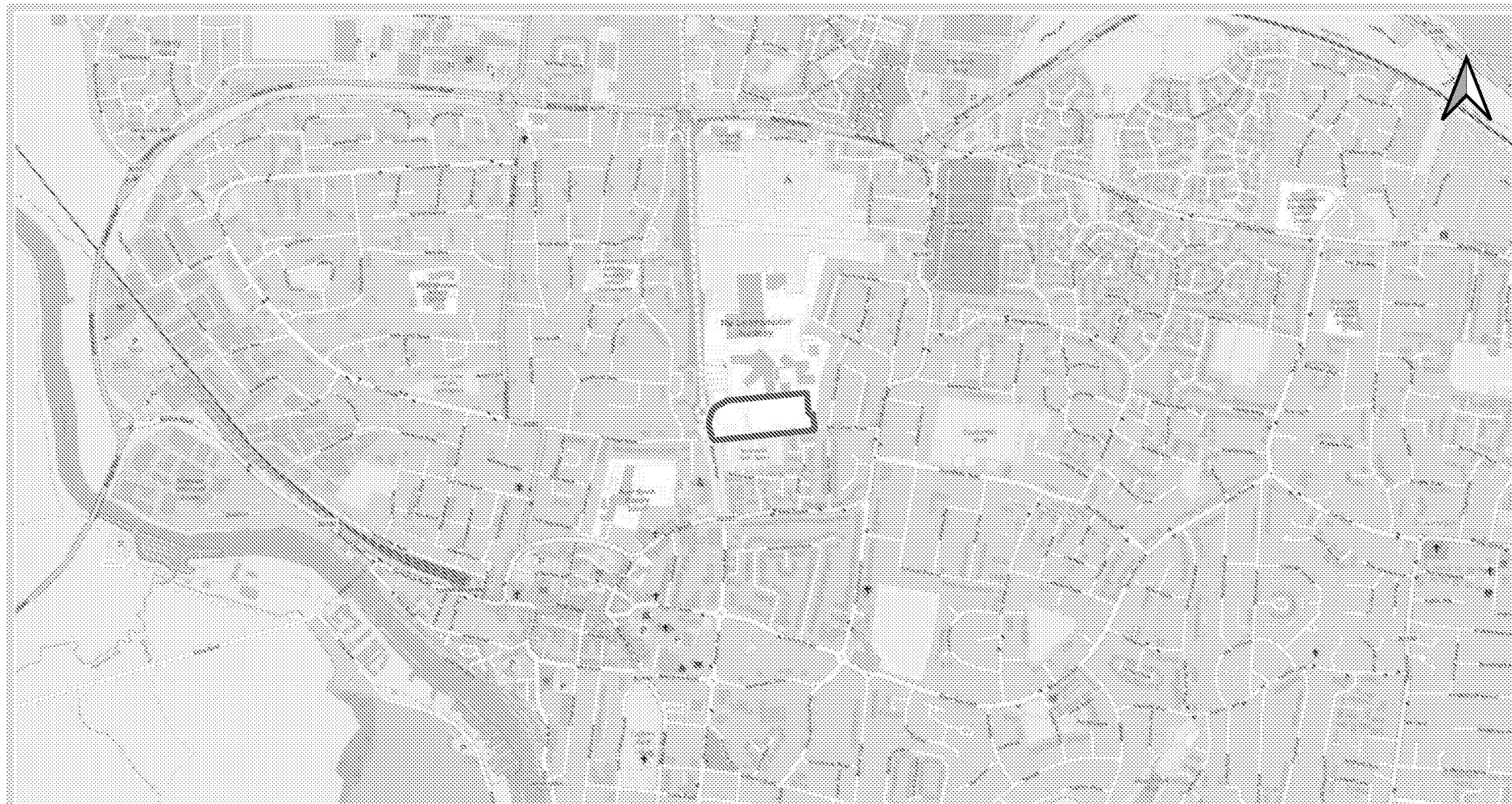
Therefore, as per the previous recommendations in the Phase II report, if the requirement for an unsaturated zone is maintained, it is concluded that the site is not suitable for soakaway drainage and allowance should be made for surface water to be piped off site.

Please do not hesitate to contact the undersigned if you need any further clarification.

Yours faithfully,



Richard Brinkworth BEng CEng MICE



Basemap: © OpenStreetMapcontributors

 Site boundary



Client: BoKlok Housing Ltd

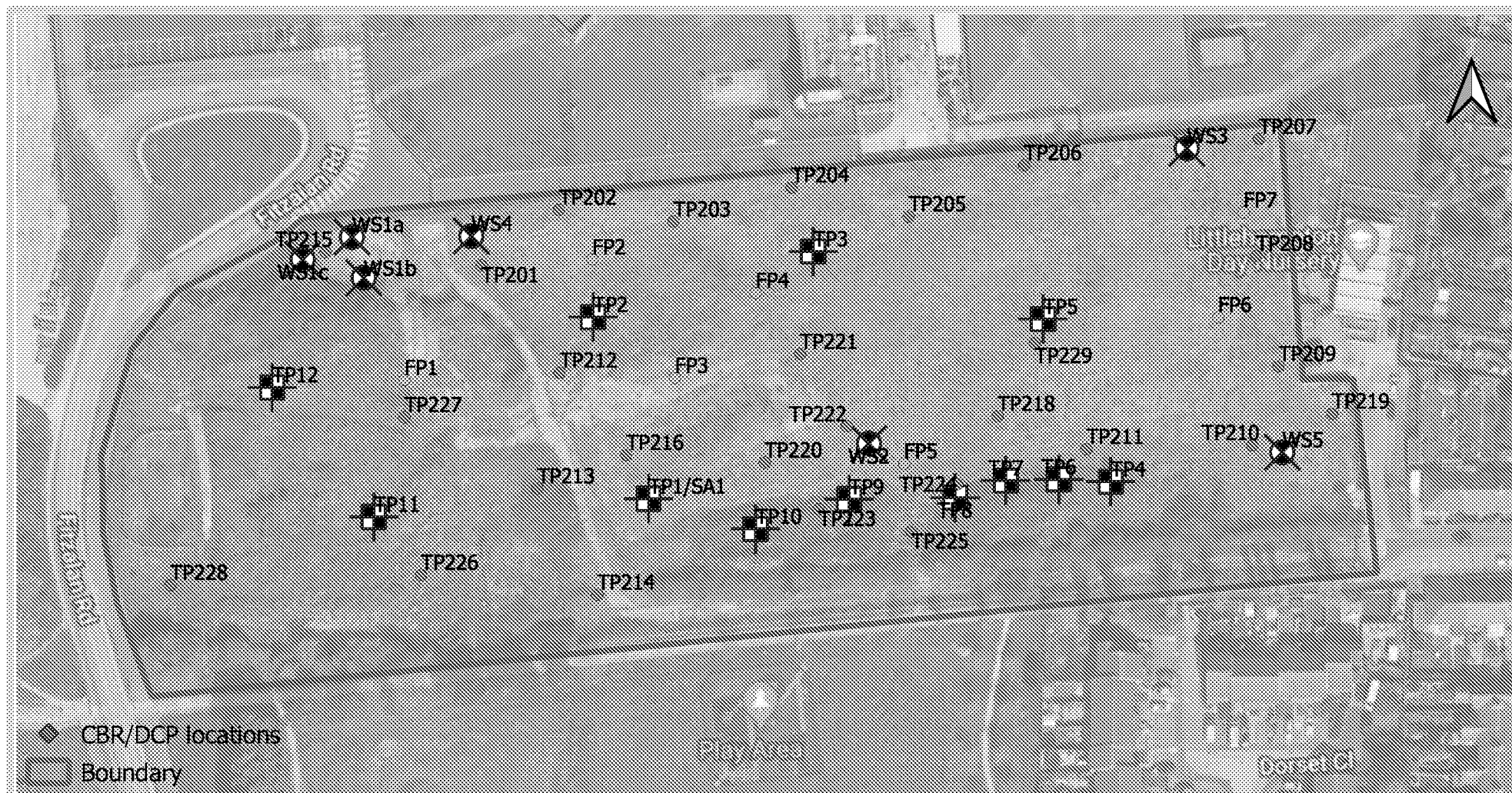
Title: Site Location Plan

Project ID: LP2466

Project: Land off Elmgrove Road, Littlehampton

Date: 03/02/21

Figure No. 1



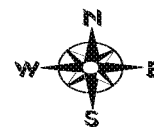
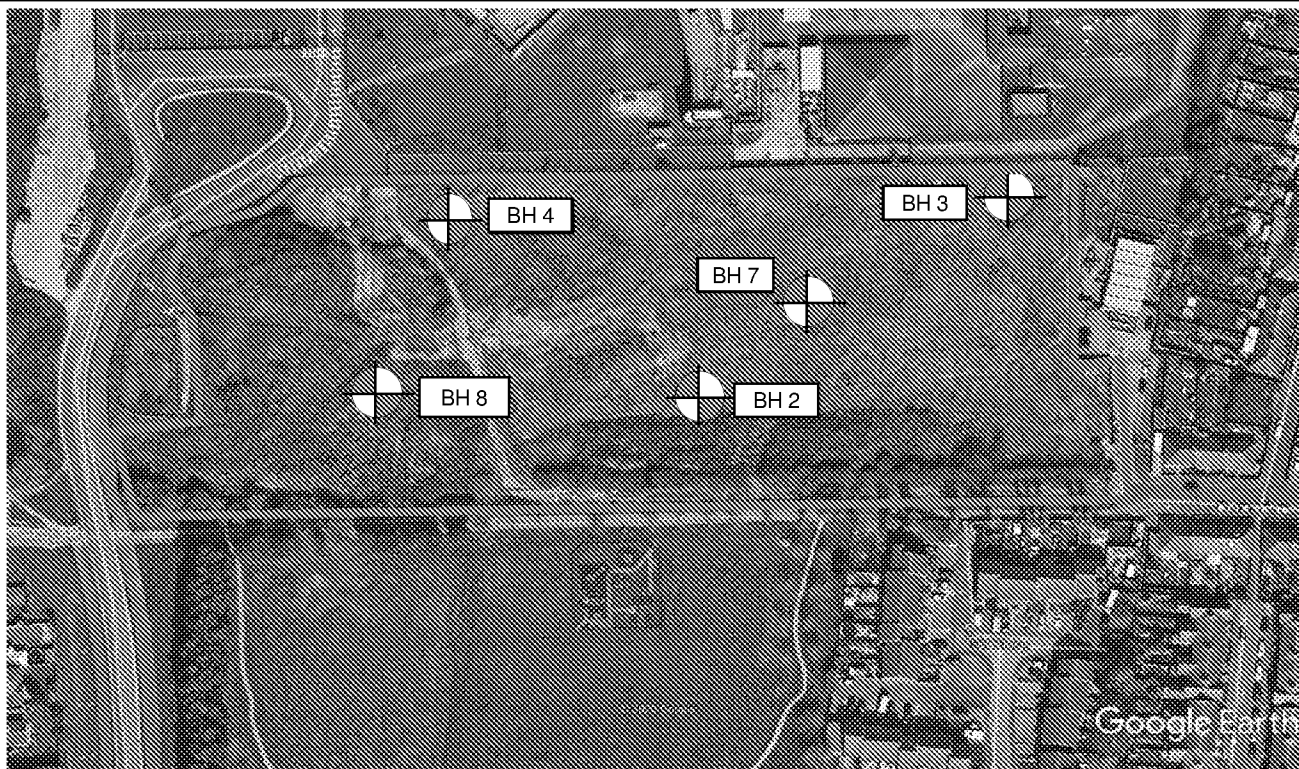
Note 1: Exploratory holes have been positioned by handheld GPS survey and should therefore only be taken as approximate
 Note 2: Exploratory holes shown are not to scale
 Note 3: Elevations not shown



Client:	BoKlok Housing Ltd	Title:	SI Locations	Project ID:	LP2466
Project:	Land off Elmgrove Road, Littlehampton	Date:	15/02/21	Figure No.	02

Site BoKlok Littlehampton Development site, Littlehampton

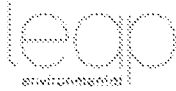
Client BoKlok Housing Ltd



	Boreholes installed previously by others			New boreholes installed by Wilson Bailey	
	BH 2	BH 3	BH 4	BH 7	BH 8
21 December 2020	dry at 3m	4.35	dry at 3m	--	--
08 January 2021	dry at 3m	4.30	dry at 3m	--	--
18 January 2021	dry at 3m	4.40	dry at 3m	4.80	5.84
01 February 2021	dry at 3m	4.41	dry at 3m	4.78	5.84
16 February 2021	dry at 3m	4.40	dry at 3m	4.76	5.83
depth to groudwater in metres below ground level					

 WILSON BAILEY GEOTECHNICAL & ENVIROMENTAL						Site Former Littlehampton Academy site		Number BH-07
Excavation Method Drive-in Windowless Sampler		Dimensions Location 503331 E 102638 N		Ground Level (mOD) 9.50	Client BokLok Housing Limited		Job Number 15734	Sheet 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.20-0.30	EBH7-1				(0.65)	MADE GROUND: Greyish brown sandy gravelly CLAY. Gravel is brick, concrete and asphalt.		
0.90-1.00	DBH7-2			8.85	0.65	Stiff dark brown CLAY		
1.00-1.45	SPT(C) N=8	0.00	1,1/2,2,2,2		(0.85)			
1.60-1.70	DBH7-3			8.00	1.50	Firm to stiff orangish brown slightly sandy CLAY		
2.00-2.45	SPT(C) N=19	0.00	3,5/5,3,5,6		(0.80)			
				7.20	2.30	Light orange-brown sandy CLAY		
3.00-3.45	SPT(C) N=10	0.00	3,3/2,3,2,3		(1.80)			
3.50-3.60	DBH7-4							
4.00-4.45	SPT(C) N=27	0.00	7,6/7,6,6,8	5.40	4.10	Structureless cream CHALK consisting of chalk gravel in a marly chalk matrix.		
					(0.90)			
4.80-5.00	DBH7-5			4.50	5.00	Complete at 5.00m		
5.00-5.45	SPT(C) N=47	5.00	10,9/10,12,13,12					
Remarks Groundwater not encountered during drilling. Groundwater monitoring standpipe installed with a response zone from 1.00 m to 5.00 m below ground level.							Scale (approx) 1:50	Logged By
							Figure No. 15734.BH-07	

 WILSON BAILEY GEOTECHNICAL & ENVIROMENTAL						Site Former Littlehampton Academy site		Number BH-08	
Excavation Method Drive-in Windowless Sampler		Dimensions		Ground Level (mOD) 10.00		Client BokLok Housing Limited		Job Number 15734	
		Location 503246 E 102598 N		Dates 08/01/2021-01/02/2021		Engineer		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.05-0.15	EBH08-			9.85	(0.15)	MADE GROUND: Dark brown organic slightly sandy CLAY (topsoil) with abundant rootlets and rare fine gravel.			
0.20-0.40	DBH08-				(1.15)	MADE GROUND: Dark orange-brown sandy gravelly CLAY. sand is orange-brown, medium to coarse. Gravel is flint, brick, concrete and asphalt fragments. exhibits some brown staining in the more clay rich areas.			
1.00-1.45	SPT(C) N=10	0.00	1,1/2,2,3,3	8.70	1.30	Orange-brown slightly gravelly sandy CLAY. sand is medium, gravel is fine to coarse sub angular to sub rounded flints and chalk.			
1.10-1.20	EBH08-				(1.40)				
1.70-1.80	DBH08-	0.00	1,2/3,2,2,3	7.30	2.70	Stiff light orange-brown slightly sandy slightly gravelly CLAY.			
2.00-2.45	SPT(C) N=10				(1.60)				
2.80-2.90	DBH08-	0.00	3,3/5,5,6,7		4.30	Light orange-brown sandy CLAY with rare chalk gravel.			
3.00-3.45	SPT(C) N=23				(0.90)				
4.00-4.45	SPT(C) N=22	0.00	5,4/6,5,5,6	5.70	5.20	Structureless cream CHALK consisting of chalk gravel in a marly chalk matrix.			
4.60-4.70	DBH08-				(0.80)				
5.00-5.45	SPT(C) N=36	0.00	3,4/9,10,8,9	4.80	6.00	Complete at 6.00m			
5.60-6.00	DBH08-								
6.00-6.45	SPT(C) N=32	0.00	7,5/8,9,8,7	4.00					
Remarks Groundwater not encountered during drilling. Groundwater monitoring standpipe installed with a response one from 1.50 m to 5.00 m below ground level.							Scale (approx) 1:50	Logged By	
							Figure No. 15734.BH-08		

 Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No FP1 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 12/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m): Depth 1.50		Scale 1:25 Logged KT	
Client: BoKlok Housing Ltd.									

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.05	ES		0.10			BLACKTOP	
	0.30	ES					Pinkish brown gravelly slightly sandy MADE GROUND. Gravel is fine to coarse sub-angular to angular concrete.	
				0.50			Reddish brown sandy REWORKED CLAY.	
	1.50	ES		1.50			End of pit at 1.50 m	

Remarks: Trial pit was terminated at 1.5m due to possible service. Pit remained dry and stable.



Stability: Stable

Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No FP2 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 11/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m): Depth 1.00		Scale 1:25 Logged KT	
Client: BoKlok Housing Ltd.									

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.10		Grass over dark brown silty sandy slightly clayey TOPSOIL with abundant rootlets. Brown clayey slightly gravelly slightly sandy MADE GROUND. Gravel is medium to cobble-sized concrete, fine to coarse sub-rounded to sub-angular brick, and rare coarse glass fragments Firm reddish brown slightly sandy CLAY		
	0.40	ES						
				0.60				
				1.00				
							<i>Hand Pen at 1m = 110kPa</i> End of pit at 1.00 m	1
								2
								3
								4
								5

Remarks: Trial pit remained dry and stable.

Stability: Stable

Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No FP3 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 11/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m): Depth 1.70		Scale 1:25 Logged KT	
Client: BoKlok Housing Ltd.									

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.80	ES		0.90			Brown silty sandy gravelly MADE GROUND. Gravel is fine to cobble-sized brick, fine to coarse sub-rounded concrete, rare coarse blacktop fragments, and fine to coarse sub-rounded to angular flint.	1
				1.50			Dark greyish brown very sandy REWORKED CLAY. 300 x 700 x 700mm horizontal concrete slab present at 1.1m (possible pad footing).	2
				1.70			Stiff reddish brown slightly sandy CLAY. Hand Pen at 1.7m = 210kPa Minor seepage at base of pit End of pit at 1.70 m	3
								4
								5

Remarks:	Trial pit remained stable. Possible 300x700x700mm concrete pad footing was encountered at 1.1m. Minor seepage at the base of the pit.	
Stability:	Stable	

Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No FP4 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 11/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m): Depth 1.40		Scale 1:25	
Client: BoKlok Housing Ltd.						Logged KT			

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.20			Grass over brown silty slightly sandy slightly clayey TOPSOIL with frequent rootlets.	
				1.10			Reddish brown clayey slightly sandy slightly gravelly MADE GROUND. Gravel is fine to cobble-sized brick, fine to coarse sub-rounded concrete, and fine to medium sub-angular to angular flint.	1
			N=15	1.40			Firm reddish brown slightly sandy CLAY. <u>Hand Pen at 1.2m = 150kPa</u>	
							----- End of pit at 1.40 m	2
								3
								4
								5

Remarks: Trial pit remained dry and stable. Stability: Stable	
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Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No FP5 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 10/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m): Depth 2.10		Scale 1:25 Logged KT	
Client: BoKlok Housing Ltd.									

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.05	ES	N=14	0.60	1.70	2.10	Brown silty sandy gravelly slightly clayey MADE GROUND. Gravel is fine to cobble-sized brick and occasional medium clinker.	1
	0.50	ES					Firm reddish brown slightly sandy CLAY	
	1.10	D					Possible horizontal shear surface at 1.2m	
							Medium dense reddish brown gravelly SAND. Gravel is fine to cobble-sized angular to sub-rounded flint.	2
							End of pit at 2.10 m	3
								4
								5

Remarks: Trial pit remained dry and stable.

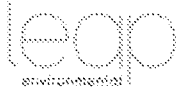
Stability: Stable

Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No FP6 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 11/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m): Depth 1.75		Scale 1:25 Logged KT	
Client: BoKlok Housing Ltd.									

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.10			Grass over brown silty clayey TOPSOIL with rootlets.	
							Brown clayey gravelly slightly sandy MADE GROUND. Gravel is fine to cobble-sized brick, fine to cobble-sized sub-rounded to sub-angular concrete, rare coarse angular slate fragments, and rare plastic tape. <u>Boulder-sized brick wall fragment present within made ground</u>	
				0.90			Firm reddish brown slightly sandy CLAY. <u>Hand Pen at 1m = 180kPa</u>	1
				1.10			Medium dense reddish brown coarse SAND.	
				1.75			End of pit at 1.75 m	2
								3
								4
								5

Remarks: Trial pit remained dry and stable.

Stability: Stable

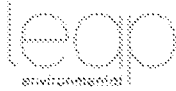
 Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No FP7 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 11/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m): Depth 1.90		Scale 1:25 Logged KT	
Client: BoKlok Housing Ltd.									
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.10	ES		0.10			Grass over dark brown silty sandy slightly clayey TOPSOIL with rootlets.		
	0.40	ES					Brown clayey slightly sandy slightly gravelly MADE GROUND. Gravel is medium to cobble-sized brick, occasional fine to medium sub-rounded blacktop, and fine to coarse sub-rounded to angular flint.		
				0.73			Medium dense reddish brown medium to coarse slightly gravelly SAND. Gravel is fine sub-rounded to angular flint.		
				1.70 1.90			Medium dense reddish brown gravelly coarse SAND. Gravel is fine to coarse rounded to angular flint.		
End of pit at 1.90 m									
Remarks: Trial pit remained dry and stable.									
Stability: Stable									

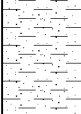


Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No TP201 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 10/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m): Depth 1.05		Scale 1:25 Logged KT	
Client: BoKlok Housing Ltd.									

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.05	ES	N=15				Grass over brown sandy silty slightly clayey MADE GROUND. Gravel is fine to cobble-sized brick, fine to coarse sub-rounded concrete and fine to coarse angular to sub-angular flint.	
	0.30	ES		0.60				
	1.05	ES		1.05			Hand Pen at 1.05m = 120kPa End of pit at 1.05 m	
								2
								3
								4
								5

Remarks: Trial pit remained dry and stable.	
Stability: Stable	

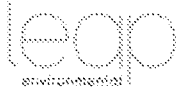
 Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No TP202 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 10/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m): Depth 0.80		Scale 1:25 Logged KT	
Client: BoKlok Housing Ltd.									

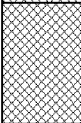
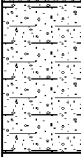
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.10	ES	N=11	0.15			Grass over dark brown sandy silty TOPSOIL with rootlets
	0.30	ES		0.40			Brown sandy clayey slightly gravelly MADE GROUND. Gravel is fine to cobble-sized brick, rare fine angular flint, and rare fine sub-rounded chalk.
							Stiff reddish brown slightly sandy CLAY.
				0.80			Hand Pen at 0.8m = 250kPa End of pit at 0.80 m

Remarks: Trial pit remained dry and stable.

Stability: Stable



 Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No TP203 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 10/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m): Depth 1.10		Scale 1:25 Logged ADC	
Client: BoKlok Housing Ltd.									

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES	N=21	0.20			Grass over orange brown reworked sandy clayey TOPSOIL with brick and blacktop	1
	0.40	ES		0.60			Brown REWORKED silty clay with occasional brick	
				1.10			Orange brown clayey slightly gravelly SAND. Gravel is occasional fine to medium rounded flint.	
						End of pit at 1.10 m		
								2
								3
								4
								5

Remarks: Trial pit remained dry and stable.		
Stability: Stable		

Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No TP204 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 10/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m): Depth 1.00		Scale 1:25 Logged KT	
Client: BoKlok Housing Ltd.									

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.15	ES	N=10	0.10			Grass over brown silty slightly clayey TOPSOIL.	
				0.18			BLACKTOP	
	0.30	ES		0.27			Brown silty clayey gravelly MADE GROUND. Gravel is fine to medium sub-rounded brick, fine to coarse sub-rounded concrete, and fine to medium sub-angular flint.	
	0.40	ES					Firm reddish brown slightly sandy CLAY.	
				1.00			Hand Pen at 1m = 145kPa	1
							End of pit at 1.00 m	2
								3
								4
								5

Remarks: Trial pit remained dry and stable.

Stability: Stable

Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No TP205 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 10/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m): Depth 0.90		Scale 1:25	
Client: BoKlok Housing Ltd.								Logged KT	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.15		Grass over dark brown silty sandy gravelly TOPSOIL with rootlets. Gravel is fine to coarse sub-angular to sub-rounded flint, medium sub-rounded clinker, and fine to coarse sub-rounded brick.		
	0.50	ES		0.25			Reddish brown clayey slightly sandy slightly gravelly MADE GROUND. Stiff reddish brown slightly sandy CLAY.	
			N=16	0.90			Hand Pen at 0.9m = 200kPa End of pit at 0.90 m	1
								2
								3
								4
								5

Remarks: Trial pit remained dry and stable.		
Stability: Stable		

 Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No TP206 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 10/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m): Depth 1.10		Scale 1:25 Logged KT	
Client: BoKlok Housing Ltd.									

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.05	ES	N=15	0.15		Grass over brown silty sandy slightly gravelly slightly clayey TOPSOIL with rootlets. Gravel is fine sub-rounded to rounded flint. Brown sandy clayey gravelly MADE GROUND. Gravel is fine to cobble-sized bricks, and fine to coarse sub-rounded to angular flint. Shingle comprising medium sub-angular to angular flint present from 0.3 to 0.45m on northern side of pit Firm reddish brown slightly sandy CLAY.	Hand Pen at 1.1m = 130kPa End of pit at 1.10 m	1
	0.30	ES		0.45				2
				1.10				3
								4
								5

Remarks: Trial pit remained dry and stable.

Stability: Stable

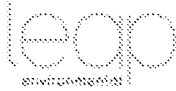


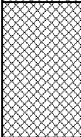
Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No TP208 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 11/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m): Depth 0.90		Scale 1:25 Logged KT	
Client: BoKlok Housing Ltd.									

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES		0.15		Grass over dark brown sandy clayey slightly gravelly TOPSOIL with rootlets. Gravel is fine to medium sub-rounded to angular flint.	Brown clayey slightly sandy gravelly MADE GROUND. Gravel is fine to cobble-sized sub-rounded concrete, fine to cobble-sized sub-rounded to angular brick, occasional ceramic pipe fragments. <i>Boulder of concrete present within made ground.</i>	
	0.30	ES						
	0.50	ES						
				0.80		Medium dense reddish brown coarse SAND.		
				0.90		----- End of pit at 0.90 m		

Remarks: Trial pit remained dry and stable.

Stability: Stable

 Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No TP210 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 11/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m): Depth 0.80		Scale 1:25 Logged KT	
Client: BoKlok Housing Ltd.									

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.10	ES	N=17	0.15			Grass over dark brown silty sandy slightly clayey TOPSOIL with occasional rootlets.
	0.30	ES		0.60			Reddish brown clayey slightly sandy slightly gravelly MADE GROUND. Gravel is rare ceramic pipe fragments, and occasional medium to coarse sub-angular to sub-rounded flint.
				0.80			Stiff reddish brown slightly sandy CLAY.
							Hand Pen at 0.8m = 240kPa End of pit at 0.80 m

Remarks: Trial pit remained dry and stable.

Stability: Stable



Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No TP211 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 11/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m): Depth 1.10		Scale 1:25 Logged KT	
Client: BoKlok Housing Ltd.									

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES	N=24	0.15		Grass over brown silty sandy gravelly slightly clayey TOPSOIL. Gravel is fine angular flint.	1 2 3 4 5	
	0.40	ES			Brown sandy clayey slightly gravelly MADE GROUND. Gravel is medium to cobble-sized brick, fine to cobble-sized sub-rounded to sub-angular flint, and rare fine blacktop fragments.			
				0.80	Firm reddish brown sandy CLAY.			
				1.10	Hand Pen at 1.1m = 130kPa End of pit at 1.10 m			

Remarks: Trial pit remained dry and stable.

Stability: Stable

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 Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No TP214 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 11/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m): Depth 0.75		Scale 1:25 Logged KT	
Client: BoKlok Housing Ltd.									

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.05	ES	N=11	0.20			Grass over dark brown silty sandy slightly clayey TOPSOIL with frequent roots and rootlets	1 2 3 4 5
	0.30	ES		0.35			Brown clayey slightly gravelly MADE GROUND. Gravel is rare fine sub-angular brick and rare fine angular flint	
							Stiff reddish brown slightly sandy CLAY.	
	0.75	ES		0.75			<i>Hand Pen at 0.75m = 210kPa</i> <i>End of pit at 0.75 m</i>	

Remarks: Trial pit remained dry and stable.	
Stability: Stable	

Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No TP216 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 11/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m): Depth 0.76		Scale 1:25	
Client: BoKlok Housing Ltd.						Logged KT			

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.05	ES	N=14			Grass over brown sandy gravelly MADE GROUND. Gravel is fine to cobble-sized brick, fine to coarse sub-angular to angular flint, and fine to coarse sub-rounded concrete. <i>Made ground becomes clayey with depth</i> Dead electric cable at 0.3m. Cable Avoidance Tool did not detect signal. Firm reddish brown slightly sandy CLAY.	Hand Pen at 0.76m = 160kPa End of pit at 0.76 m	1
	0.40	ES		0.45				2
				0.76				3
								4
								5

Remarks: Trial pit remained dry and stable.	
Stability: Stable	

Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No TP218 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 12/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m): Depth 2.70		Scale 1:25	
Client: BoKlok Housing Ltd.						Logged KT			

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES				[Pattern]	Brown gravelly sandy silty MADE GROUND. Gravel is fine to cobble-sized sub-rounded to sub-angular bricks, fine to cobble-sized sub-rounded to sub-angular concrete, and fine to coarse angular to sub-rounded flint. <i>Rootlets present in made ground within top 0.1m</i>	1
	0.30	ES						
	1.50	ES		1.40		[Pattern]	Boulder-sized brick wall fragment present within made ground Boulder of concrete present within made ground. Made ground becomes clayey with depth	2
				2.15				
				2.70		[Pattern]	Firm reddish brown mottled greenish brown very sandy slightly gravelly CLAY. Sand is coarse. Gravel is rare fine sub-angular flint. Hand Pen at 2.6m = 140kPa	3
							End of pit at 2.70 m	4
								5

Remarks: Minor seepage was encountered at 1.4m on north east corner of pit, causing localised collapse within made ground. Water filled pit to 2.65m in 5 minutes.

Stability:

Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No TP220 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 11/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m): Depth 1.00		Scale 1:25 Logged KT	
Client: BoKlok Housing Ltd.									

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.10	ES	N=14	0.10			Grass over brown silty sandy slightly clayey TOPSOIL with rootlets.	1
	0.30	ES					Brown sandy silty gravelly MADE GROUND. Gravel is fine to cobble-sized brick, fine to cobble-sized sub-rounded to angular flint, with occasional wood and glass fragments.	
				0.80				Stiff reddish brown slightly sandy CLAY.
				1.00		Hand Pen at 1m = 250kPa End of pit at 1.00 m		3
								4
								5

Remarks: Trial pit remained dry and stable.

Stability: Stable

Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No TP221 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 11/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m):		Scale 1:25	
Client: BoKlok Housing Ltd.						Depth 0.53		Logged KT	

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.10	ES		0.53			Grass over brown slightly clayey sandy gravelly MADE GROUND. Gravel is fine to cobble-sized brick, occasional fine blacktop, and fine to coarse sub-angular to angular flint. <u>Made ground becomes clayey with depth</u> <u>Electrical cable warning tape present on side of pit at 0.4m</u> ----- End of pit at 0.53 m
	0.30	ES					

1

2

3

4

5

Remarks: Trial pit remained dry and stable. Pit terminated at 0.53m due to suspected service.	
Stability: Stable	

Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No TP222 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 11/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m): Depth 1.00		Scale 1:25 Logged KT	
Client: BoKlok Housing Ltd.									

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.05	ES	N=13	0.10		Grass over brown silty sandy slightly clayey TOPSOIL with rootlets. Brown sandy clayey gravelly MADE GROUND. Gravel is fine to cobble-sized brick, coarse to cobble-sized blacktop fragments, medium to cobble sized concrete, and medium to coarse sub-rounded to angular flint. <u>Boulder of concrete present within made ground.</u> Firm reddish brown slightly sandy CLAY. Hand Pen at 1m = 150kPa End of pit at 1.00 m		
	0.45	ES		0.80				
				1.00				

Remarks: Trial pit remained dry and stable.

Stability: Stable

Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No TP223 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 10/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m): Depth 2.30		Scale 1:25	
Client: BoKlok Housing Ltd.						Logged KT			

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.20	ES	N=15	0.10		Grass over brown silty slightly sandy TOPSOIL with abundant roots. Brown sandy silty gravelly slightly clayey MADE GROUND. Gravel is fine to coarse sub-angular brick, fine to medium angular flint, and occasional medium sub-rounded clinker. Firm reddish brown sandy CLAY.		
	0.60	ES		0.30				
	1.00	D						
				1.70		Medium dense reddish brown mottled greenish grey medium to coarse-grained SAND.		
	2.30	D		2.30				
----- End of pit at 2.30 m -----								

Remarks: Trial pit remained dry and stable.

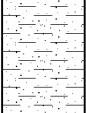
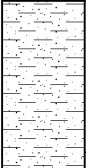
Stability: Stable

Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA [REDACTED] www.leapenvironmental.com				Trial Pit Log				Trialpit No TP225 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 12/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m): Depth 0.95		Scale 1:25 Logged KT	
Client: BoKlok Housing Ltd.									

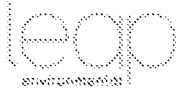
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.10	ES	N=14				Grass over brown sandy clayey slightly gravelly MADE GROUND. Gravel is rare fine to cobble-sized brick, medium sub-rounded concrete, and fine to coarse sub-angular to sub-rounded flint.		
	0.45	ES		0.40				Weathered BLACKTOP	
				0.50				Firm reddish brown sandy CLAY.	
				0.95			Hand Pen at 0.95m = 165kPa		
							End of pit at 0.95 m	1	
								2	
								3	
								4	
								5	

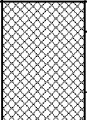
Remarks: Trial pit remained dry and stable.

Stability: Stable

 Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No TP226 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 10/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m): Depth 2.50		Scale 1:25 Logged KT	
Client: BoKlok Housing Ltd.									
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.10	ES	N=13	0.10		 Grass over dark brown silty sandy slightly clayey TOPSOIL with abundant rootlets.  Brown silty slightly sandy slightly gravelly clayey MADE GROUND. Gravel is rare fine to coarse sub-rounded brick and rare fine to medium sub-rounded flint.	1 2 3 4 5		
	0.50	ES		0.45	 Firm reddish brown slightly sandy CLAY with rare rootlets.				
	1.10	D		1.50	 <u>Hand Pen at 1.1m = 90kPa</u>				
	2.00	D			 Stiff reddish brown mottled greenish brown slightly sandy CLAY <u>Clay becomes sandier with depth</u>				
	2.50	D			2.50	 <u>Hand Pen at 2.5m = 270kPa</u> End of pit at 2.50 m			
Remarks: Trial pit remained dry and stable.									
Stability: Stable									



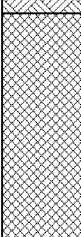
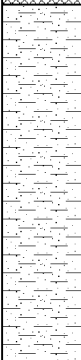
 Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No TP227 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 10/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m): Depth 0.70		Scale 1:25 Logged KT	
Client: BoKlok Housing Ltd.									

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.20	ES				 Grass over brown silty slightly clayey slightly gravelly MADE GROUND. Gravel is fine to coarse sub-angular brick, and fine to medium sub-rounded to sub-angular flint. <i>Concrete slab (300mm thick) encountered at 0.1m</i> <i>50mm thick E-W plastic pipe encountered at 0.3m along southern site of pit</i>	
	0.35	ES		0.40			
				0.70			
							End of pit at 0.70 m

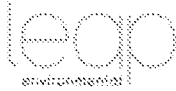
Remarks: Trial pit remained dry and stable.



Stability: Stable

 Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No TP228 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 10/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m): Depth 2.30		Scale 1:25 Logged ADC	
Client: BoKlok Housing Ltd.									
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.15	ES	N=13	0.05			Grass over brown clayey sandy TOPSOIL Brown REWORKED CLAY with fragments of wood, brick, and concrete.		
	0.35	ES							
	1.20	D		0.80				Firm orangish brown slightly sandy CLAY <i>Hand Pen at 1m = 110kPa</i>	
	2.20	D		2.00			Medium dense orange brown very clayey SAND		
				2.30			End of pit at 2.30 m		
Remarks: Trial pit remained dry and stable.									
Stability: Stable									



 Leap Environmental Ltd The Atrium, Curtis Road Dorking, Surrey RH4 1XA www.leapenvironmental.com				Trial Pit Log				Trialpit No TP229 Sheet 1 of 1	
Project Name: Elmgrove Road Additional PAH Testing and Gas Monitoring				Project No. LP2466		Co-ords: - Level:		Date 12/02/2021	
Location: Land off Elmgrove Road, Littlehampton, BN17 6AH						Dimensions (m):		Scale 1:25	
Client: BoKlok Housing Ltd.						Depth 0.50		Logged KT	
Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
	Depth	Type	Results						
	0.10	ES		0.15			Grass over brown silty sandy gravelly TOPSOIL. Gravel is fine sub-rounded flint, and fine sub-rounded to sub-angular brick.		
	0.50	ES		0.50			Brown sandy silty gravelly MADE GROUND. Gravel is occasional coarse blacktop, fine to coarse sub-rounded flint, fine to cobble-sized sub-rounded to sub-angular brick. <i>Yellow warning tape present at 0.5m</i> <i>Dead electric cable oriented east-west at 0.5m. Cable Avoidance Tool did not detect signal.</i> <i>0.5m wide ballast layer running north-south through centre of pit at 0.5mbgl</i> End of pit at 0.50 m		
							1		
							2		
							3		
							4		
							5		
Remarks: Pit terminated due to unknown cable encountered at 0.5m. Pit remained dry and stable									
Stability: Stable									

