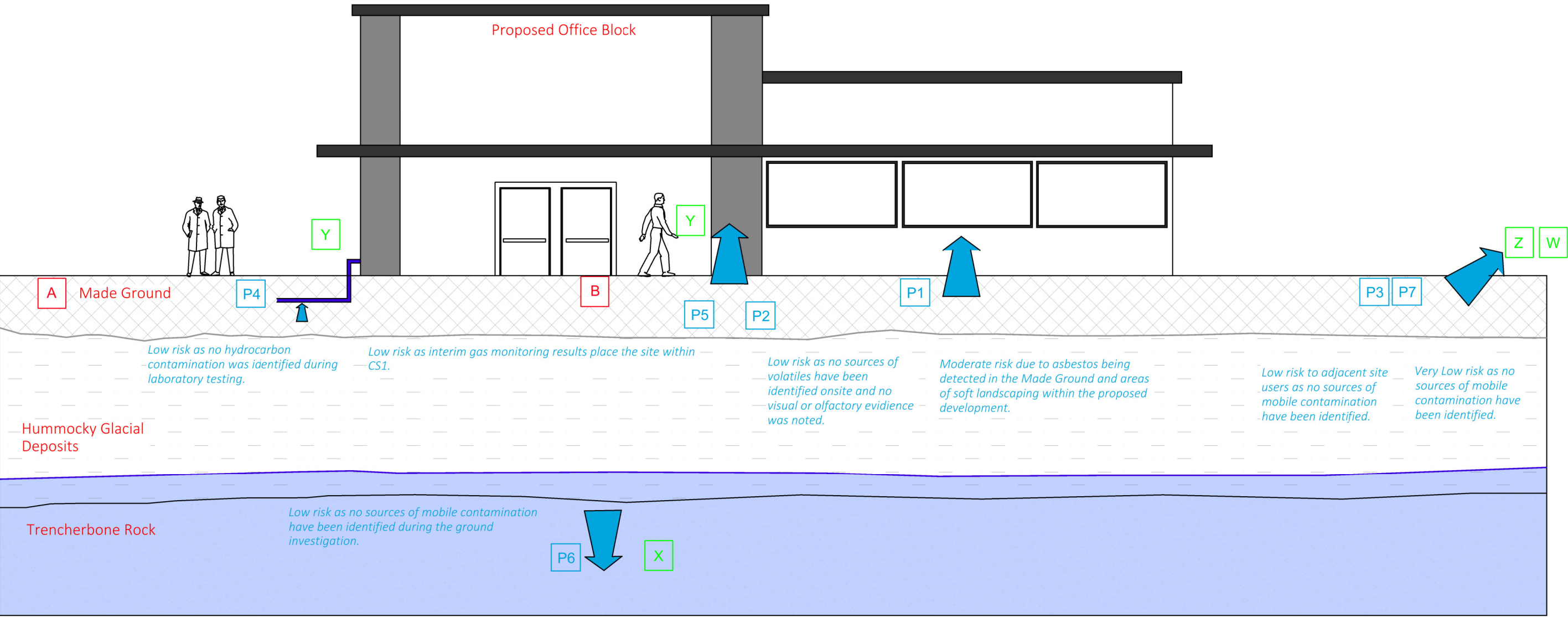


SOURCES	POLLUTION LINKAGES	RECEPTORS
A. Contaminated soils / Made ground. B. Ground gas.	P1. Ingestion of soil and dust. P2. Inhalation of vapour. P3. Inhalation of soil dust by adjacent site users. P4. Attacking of potable water supply pipe. P5. Migration and accumulation of ground gas in internal places. P6. Impaction of groundwater from soil contamination. P7. Migration of soil and groundwater contamination impacting surface waters.	W. Hollins Brook X. Groundwater within the Secondary A Aquifer. Y. Site end users. Z. Adjacent site users.



GROUNDTECH CONSULTING 	CLIENT	DATE				Status		Notes
	JD SPORTS	JANUARY 2022				Preliminary		
	PROJECT TITLE	SCALE				Draft		
	NEW OFFICE BLOCK, BURY	NTS				Issued		
	PLAN TITLE	PLAN NUMBER				For Comment		
	REVISED ILLUSTRATIVE CSM	GRO-21438-P06	Rev.	Details	Date	Approved		







APPENDIX 2 - Site Photographs



Photograph 1 – Site entrance.



Photograph 2 – Entrance area of site.



Photograph 3 – Tarmac area to the east of the site along with adjacent office block.



Photograph 4 - Area of former warehouse building.



Photograph 5 – Existing building on site.



Photograph 6 – Western part of the site.



APPENDIX 3 - Exploratory Hole Logs



GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

BH01

Sheet 1 of 5

Project Name: NEW OFFICE BLOCK

Project No.
GRO-21438

Co-ords: -

Hole Type
CP

Location: BURY

Level:

Scale
1:50

Client: JD SPORTS

Dates: 24/01/2022 -

Logged By
RR

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	ES		0.30			Stone.	
		0.30	D						
		0.50	ES						
		1.00	ES		0.90			MADE GROUND: Dark brown clayey gravelly medium to coarse sand. Gravel is angular to subangular fine to medium of mixed lithologies including brick.	
		1.20		N=13 (1,2/3,3,3,4)					
		1.20 - 1.65	D						
		2.00	ES					Medium dense orange brown slightly gravelly medium to coarse SAND. Gravel is angular to subangular fine to medium of mixed lithologies.	
		2.00		N=11 (1,2/2,2,3,4)					
		2.00 - 2.45	D						
		2.00 - 5.45	D						
		3.00		N=10 (1,1/2,2,3,3)					
		3.00 - 3.45	D						
		4.00		N=11 (1,2/2,3,3,3)					
		4.00 - 4.45	D						
		5.00		N=4 (1,0/1,1,1,1)				Becoming loose to very loose at 5.0m bgl.	
		6.00	D						
		6.50 - 6.95	U						
		7.00	D						
		8.00		N=4 (1,0/1,1,1,1)					
		8.00 - 8.45	D						
		9.50 - 9.95	U						
		10.00	D						

Continued on next sheet

Remarks

1. Location cleared by utility clearance. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 6.5m bgl. 4. Cable percussive drilling carried out from ground level to 20.0m bgl. 5. Rotary open hole drilling carried out from 20.0m bgl to 45.0m bgl. 6. Standpipe installed to 5.0m bgl, 1m plain and 4m slotted.





GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

BH01

Sheet 2 of 5

Project Name: NEW OFFICE BLOCK

Project No.
GRO-21438

Co-ords: -

Hole Type
CP

Location: BURY

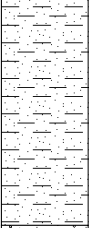
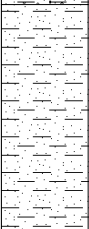
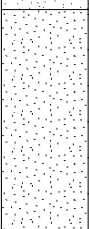
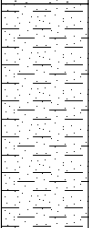
Level:

Scale
1:50

Client: JD SPORTS

Dates: 24/01/2022 -

Logged By
RR

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		11.00 - 11.45	D	N=7 (1,1/1,2,2,2)	11.50			Soft brown slightly gravelly sandy CLAY. Sand is fine to medium. Gravel is angular to subangular fine to medium of mixed lithologies.	11
		11.50							
		12.00	D						12
		12.50 - 12.95	U	N=24 (3,4/4,5,7,8)	12.50			Firm to stiff high strength brown sandy CLAY. Sand is fine to medium.	13
		12.50 - 12.95	U						
		13.00	D						
		13.00	D						
		14.00		N=17 (1,2/3,4,5,5)	15.00			Medium dense brown medium to coarse SAND.	15
		14.00 - 14.45	D						
		15.00 - 17.50	D						
		15.50		N=23 (2,3/4,5,7,7)	17.00			Firm to stiff brown CLAY with bands of sand. Sand is fine to medium.	17
		15.50 - 15.95	D						
		17.00							
		17.00 - 17.50	D	N=39 (4,5/7,8,10,14)	20.00				18
		18.50							
		18.50 - 18.95	D						
				N=31 (3,4/6,7,8,10)	20.00				19
		20.00							
		Continued on next sheet							20

Remarks

1. Location cleared by utility clearance. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 6.5m bgl. 4. Cable percussive drilling carried out from ground level to 20.0m bgl. 5. Rotary open hole drilling carried out from 20.0m bgl to 45.0m bgl. 6. Standpipe installed to 5.0m bgl, 1m plain and 4m slotted.





GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

BH01

Sheet 3 of 5

Project Name: NEW OFFICE BLOCK

Project No.
GRO-21438

Co-ords: -

Hole Type
CP

Location: BURY

Level:

Scale
1:50

Client: JD SPORTS

Dates: 24/01/2022 -

Logged By
RR

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		20.00 - 20.45	D					Firm to stiff brown CLAY with boulders.	21
									22
									23
									24
									25
					25.30			Red sandstone.	26
									27
									28
									29
									30

Continued on next sheet

Remarks

1. Location cleared by utility clearance. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 6.5m bgl. 4. Cable percussive drilling carried out from ground level to 20.0m bgl. 5. Rotary open hole drilling carried out from 20.0m bgl to 45.0m bgl. 6. Standpipe installed to 5.0m bgl, 1m plain and 4m slotted.





GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

BH01

Sheet 4 of 5

Project Name: NEW OFFICE BLOCK

Project No.
GRO-21438

Co-ords: -

Hole Type
CP

Location: BURY

Level:

Scale
1:50

Client: JD SPORTS

Dates: 24/01/2022 -

Logged By
RR

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
									31
									32
									33
									34
									35
									36
									37
									38
									39
									40

Continued on next sheet

Remarks

1. Location cleared by utility clearance. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 6.5m bgl. 4. Cable percussive drilling carried out from ground level to 20.0m bgl. 5. Rotary open hole drilling carried out from 20.0m bgl to 45.0m bgl. 6. Standpipe installed to 5.0m bgl, 1m plain and 4m slotted.





GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

BH01

Sheet 5 of 5

Project Name: NEW OFFICE BLOCK

Project No.
GRO-21438

Co-ords: -

Hole Type
CP

Location: BURY

Level:

Scale
1:50

Client: JD SPORTS

Dates: 24/01/2022 -

Logged By
RR

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					45.00				41
									42
									43
									44
									45
									46
									47
									48
									49
									50

Remarks

1. Location cleared by utility clearance. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 6.5m bgl. 4. Cable percussive drilling carried out from ground level to 20.0m bgl. 5. Rotary open hole drilling carried out from 20.0m bgl to 45.0m bgl. 6. Standpipe installed to 5.0m bgl, 1m plain and 4m slotted.





GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

BH02

Sheet 1 of 2

Project Name: NEW OFFICE BLOCK

Project No.
GRO-21438

Co-ords: -

Hole Type
CP

Location: BURY

Level:

Scale
1:50

Client: JD SPORTS

Dates: 27/01/2022 -

Logged By
RR

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.50	D		0.80			MADE GROUND: Brown gravelly clayey medium to coarse SAND. Gravel is angular to subangular medium to coarse of mixed lithologies including brick.	
		1.00	D					Loose orange brown slightly gravelly clayey medium to coarse SAND. Gravel is angular to subangular fine to medium of mixed lithologies.	1
		1.00	ES						
		1.20							
		1.20 - 1.65	D	N=7 (1,1/1,2,2,2)				Soft to firm brown sandy CLAY. Sand is fine to medium.	
		2.00							
		2.00 - 2.45	D	N=10 (1,2/1,3,3,3)					2
		3.00						Firm dark brown gravelly sandy CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to medium of mixed lithologies including coal and sandstone.	
		3.00 - 3.45	D	N=12 (2,3/2,3,3,4)					3
		4.00							
		4.00 - 4.45	D	N=7 (1,1/1,2,2,2)	4.10			Firm dark brown gravelly sandy CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to medium of mixed lithologies including coal and sandstone.	4
		5.00							
		5.00 - 5.45	D	N=3 (1,0/0,1,1,1)					5
		6.50 - 6.95	U		6.00			Firm dark brown gravelly sandy CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to medium of mixed lithologies including coal and sandstone.	6
		7.00	D						7
		8.00							
		8.00 - 8.45	D	N=14 (2,2/2,3,4,5)					8
		9.50 - 9.95	U					Firm dark brown gravelly sandy CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to medium of mixed lithologies including coal and sandstone.	9
		10.00	D						10

Continued on next sheet

Remarks

1. Location cleared by utility clearance. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 4.00m bgl. 5. Hole terminated at 20.0m bgl. 6. Standpipe installed to 5.0m bgl, 1m plain and 4m slotted.





GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

BH02

Sheet 2 of 2

Project Name: NEW OFFICE BLOCK

Project No.
GRO-21438

Co-ords: -

Hole Type
CP

Location: BURY

Level:

Scale
1:50

Client: JD SPORTS

Dates: 27/01/2022 -

Logged By
RR

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		11.00		N=32 (4,5/7,8,8,9)					11
		12.50 - 12.95	U						12
		14.00		N=44 (4,5/7,10,12,15)	14.00				14
		14.00 - 14.45	D					Very dense brown fine to medium SAND interbedded with firm to stiff dark brown sandy CLAY. Sand is fine to medium.	15
		15.50		N=40 (3,5/8,10,10,12)					16
		15.50 - 15.95	D						17
		17.00		N=40 (2,4/7,9,12,12)	17.50				17
		17.00 - 17.45	D						18
								End of borehole at 17.50 m	19
									20

Remarks

1. Location cleared by utility clearance. 2. Hand dug pit to 1.20m bgl. 3. Groundwater encountered at 4.00m bgl. 5. Hole terminated at 20.0m bgl. 6. Standpipe installed to 5.0m bgl, 1m plain and 4m slotted.





GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

BH03

Sheet 1 of 2

Project Name: NEW OFFICE BLOCK

Project No.
GRO-21438

Co-ords: -

Hole Type
CP

Location: BURY

Level:

Scale
1:50

Client: JD SPORTS

Dates: 26/01/2022 -

Logged By
RR

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.15			0.15			MADE GROUND: Tarmac.	
		0.30	D		0.40			MADE GROUND: Brown sandy angular to subangular fine to medium gravel of mixed lithologies including brick. Sand is medium to coarse.	
		0.50	ES						
		0.80	D						
		1.00	ES						
		1.20		N=13 (2,2/3,3,3,4)				MADE GROUND: Orange brown sandy angular to subangular fine to medium gravel of mixed lithologies including ash and brick. Sand is medium to coarse.	1
		1.20 - 1.65	D						
		2.00			1.80				
		2.00	ES	N=22 (3,3/22 for 275mm)				Medium dense dark brown gravelly medium to coarse SAND. Gravel is angular to subangular fine to medium of mixed lithologies including sandstone.	2
		2.00 - 2.45	D						
		3.00		N=8 (1,2/1,2,2,3)					
		3.00 - 3.45	D					Becoming loose at 3.0m bgl.	3
		4.00		N=4 (1 for 125mm/4 for 235mm)	4.00				
		4.00 - 4.45	D					Very soft to soft low strength dark brown sandy CLAY. Sand is fine to medium.	4
		5.00 - 5.45	U						5
		5.50	D						6
		6.50		N=21 (2,3/3,5,6,7)	6.80				
		6.50 - 6.95	D					Firm to stiff medium strength sandy CLAY. Sand is fine to medium.	7
		9.00 - 9.45	U						8
		9.50	D						9
									10

Continued on next sheet

Remarks

1. Location cleared by utility clearance. 2. Tarmac broken out to 0.15m bgl. 3. Hand dug pit to 1.20m bgl. 4. Groundwater encountered at 3.00m bgl rising to 2.90m bgl after 20 minutes. 5. Hole terminated at 15.0m bgl. 6. Hole backfilled with arisings.





GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

BH03

Sheet 2 of 2

Project Name: NEW OFFICE BLOCK

Project No.
GRO-21438

Co-ords: -

Hole Type
CP

Location: BURY

Level:

Scale
1:50

Client: JD SPORTS

Dates: 26/01/2022 -

Logged By
RR

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.50 10.50 - 10.95	D	N=30 (5,4/5,7,8,10)	10.30			Medium dense dark brown very clayey fine to medium SAND. <i>Becoming dense from 13.5m bgl.</i>	11
		12.00 12.00 - 12.45	D	N=26 (5,5/5,6,7,8)					
		13.50 13.50 - 13.95	D	N=39 (3,5/7,10,10,12)					
		15.00 15.00 - 15.45	D	N=47 (5,6/8,10,14,15)	15.00				
								End of borehole at 15.00 m	15
									16
									17
									18
									19
									20

Remarks

1. Location cleared by utility clearance. 2. Tarmac broken out to 0.15m bgl. 3. Hand dug pit to 1.20m bgl. 4. Groundwater encountered at 3.00m bgl rising to 2.90m bgl after 20 minutes. 5. Hole terminated at 15.0m bgl. 6. Hole backfilled with arisings.





GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

BH04

Sheet 1 of 5

Project Name: NEW OFFICE BLOCK

Project No.
GRO-21438

Co-ords: -

Hole Type
CP

Location: BURY

Level:

Scale
1:50

Client: JD SPORTS

Dates: 26/01/2022 -

Logged By
RR

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20 0.30 0.50	ES D ES		0.30			MADE GROUND: Grey concrete.	
		1.00 1.20 1.20 - 1.65	ES D	N=4 (1,1/1,1,1,1)	1.20			MADE GROUND: Brown sandy angular to subangular fine to medium gravel of mixed lithologies including brick. Sand is medium to coarse.	1
		2.00 2.00 2.00 - 2.45	ES D	N=8 (1,2/2,2,2,2)	2.00			Loose brown clayey sandy angular to subangular fine to medium GRAVEL of mixed lithologies including sandstone. Sand is medium to coarse.	2
		3.00 3.00 3.00 - 3.45	ES D	N=6 (1,1/1,1,2,2)				Loose brown slightly gravelly silty fine to medium SAND. Gravel is angular to subangular fine to medium of mixed lithologies.	3
		4.00 4.00 - 4.45	D	N=7 (1,1/1,2,2,2)	4.00			Soft brown sandy CLAY. Sand is fine to medium.	4
		5.00 - 5.45	U						5
		6.00 6.50 6.50 - 6.95	D D	N=8 (1,1/2,2,2,2)					6
		8.00 8.00 - 8.45	D	N=15 (2,2/3,3,4,5)	7.50			Medium dense brown fine to medium silty SAND.	8
		9.50		N=13 (1,2/3,3,3,4)					9
					10.00				10

Continued on next sheet

Remarks

1. Location cleared by utility clearance. 2. Concrete cored out to 0.30m bgl. 3. Groundwater encountered at 5.8m bgl. 4. Cable percussive drilling undertaken to 18.5m bgl. 5. Rotary open hole follow on undertaken from 18.5m bgl to 45.0m bgl. 6. Standpipe installed to 5.0m bgl., 1m plain and 4m slotted.





GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

BH04

Sheet 2 of 5

Project Name: NEW OFFICE BLOCK

Project No.
GRO-21438

Co-ords: -

Hole Type
CP

Location: BURY

Level:

Scale
1:50

Client: JD SPORTS

Dates: 26/01/2022 -

Logged By
RR

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		11.00 11.00 - 11.45	D	N=30 (2,4/5,7,8,10)	14.00			Dark brown slightly gravelly clayey SAND. Sand is medium to coarse. Gravel is angular to subangular fine to medium of mixed lithologies including coal.	11
		12.50 12.50 - 12.95	D	N=29 (3,4/4,5,8,12)					12
		14.00 - 14.45	U						13
		14.50 14.50 - 14.95	D	N=17 (2,3/4,4,4,5)				14	
		15.50 15.50 - 15.95	D	N=30 (2,5/6,6,8,10)	15.50		Medium dense dark brown very clayey fine to medium SAND.	15	
		17.00 - 17.45	U		16				
		17.50	D		17				
		18.50 18.50 - 18.95	D	N=32 (4,5/7,8,8,9)	18.50			Firm to stiff medium strength dark brown sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is angular to subangular fine to medium of mixed lithologies.	18
					19				
						Continued on next sheet			

Continued on next sheet

Remarks

1. Location cleared by utility clearance. 2. Concrete cored out to 0.30m bgl. 3. Groundwater encountered at 5.8m bgl. 4. Cable percussive drilling undertaken to 18.5m bgl. 5. Rotary open hole follow on undertaken from 18.5m bgl to 45.0m bgl. 6. Standpipe installed to 5.0m bgl., 1m plain and 4m slotted.





Borehole No.

BH04

Sheet 3 of 5

Project Name: NEW OFFICE BLOCK

Project No.	GRO-21438
-------------	-----------

Co-ords: -

Hole Type
CP

Location: BURY

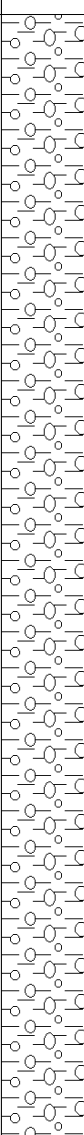
Level:

Scale
1:50

Client: JD SPORTS

Dates: 26/01/2022 -

Logged By
RR

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
Well 1					27.50				21
							22		
							23		
							24		
							25		
							26		
							27		
							28		
							29		
							30		
							Continued on next sheet		

Continued on next sheet

Remarks

1. Location cleared by utility clearance. 2. Concrete cored out to 0.30m bgl. 3. Groundwater encountered at 5.8m bgl. 4. Cable percussive drilling undertaken to 18.5m bgl. 5. Rotary open hole follow on undertaken from 18.5m bgl to 45.0m bgl. 6. Standpipe installed to 5.0m bgl., 1m plain and 4m slotted.





GROUNDTECH
CONSULTING

Borehole Log

Borehole No.

BH04

Sheet 4 of 5

Project Name: NEW OFFICE BLOCK

Project No.
GRO-21438

Co-ords: -

Hole Type
CP

Location: BURY

Level:

Scale
1:50

Client: JD SPORTS

Dates: 26/01/2022 -

Logged By
RR

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
									31
									32
									33
									34
									35
									36
									37
									38
									39
									40

Continued on next sheet

Remarks

1. Location cleared by utility clearance. 2. Concrete cored out to 0.30m bgl. 3. Groundwater encountered at 5.8m bgl. 4. Cable percussive drilling undertaken to 18.5m bgl. 5. Rotary open hole follow on undertaken from 18.5m bgl to 45.0m bgl. 6. Standpipe installed to 5.0m bgl., 1m plain and 4m slotted.





Borehole No.

BH04

Sheet 5 of 5

Project Name: NEW OFFICE BLOCK

Project No.
GRO-21438

Co-ords: -

Hole Type	CP
-----------	----

Location: BURY

Level:

Scale
1:50

Client: JD SPORTS

Dates: 26/01/2022 -

Logged By
RR

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					45.00				41
									42
									43
									44
									45
									46
									47
									48
									49
									50

Remarks	
---------	--

1. Location cleared by utility clearance. 2. Concrete cored out to 0.30m bgl. 3. Groundwater encountered at 5.8m bgl. 4. Cable percussive drilling undertaken to 18.5m bgl. 5. Rotary open hole follow on undertaken from 18.5m bgl to 45.0m bgl. 6. Standpipe installed to 5.0m bgl., 1m plain and 4m slotted.



Trial Pit Log

Trialpit No
TP01
Sheet 1 of 1

Project Name: NEW OFFICE BLOCK

Project No.
GRO-21438

Co-ords: -
Level:

Date
25/01/2022

Location: BURY

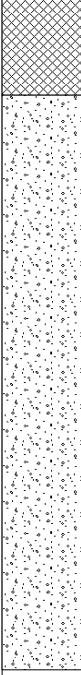
Dimensions
(m):

Depth
3.00

Scale
1:25

Logged
RR

Client: JD SPORTS

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.25	ES		0.25			MADE GROUND: Grey concrete.	
							MADE GROUND: Dark brown sandy angular to subangular fine to medium gravel of mixed lithologies including brick. Sand is medium to coarse.	
	0.70	ES		0.65			MADE GROUND: Black clayey sandy subangular to subrounded fine to medium gravel of mixed lithologies including tarmac and brick. Sand is medium to coarse.	1
	1.20	ES		1.10			Orange brown slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to medium of mixed lithologies including coal.	
	1.30	D						
	1.90	D						2
	2.00	D						
	2.50	D						
	3.00	D		3.00				3
							End of pit at 3.00 m	4
								5

Remarks: 1. Groundwater encountered at 2.7m bgl 2. Pit sides unstable 3. Pit backfilled with arisings

Stability:



Trial Pit Log

Trialpit No
TP02
Sheet 1 of 1

Project Name: NEW OFFICE BLOCK

Project No.
GRO-21438

Co-ords: -
Level:

Date
25/01/2022

Location: BURY

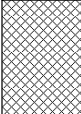
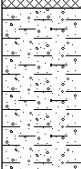
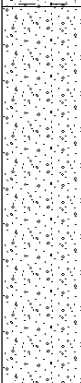
Dimensions
(m):

Depth
2.50

Scale
1:25

Logged
RR

Client: JD SPORTS

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
	0.35	ES		0.30			MADE GROUND: Grey concrete.	
	0.70 0.70	D ES		0.70			MADE GROUND: Dark brown gravelly medium to coarse sand with pockets of clay. Gravel is angular to subangular fine to coarse of mixed lithologies including brick and sandstone.	
							Soft orange brown sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subangular to subrounded fine to medium of mixed lithologies including sandstone.	1
	1.40 1.45	ES D		1.25			Orange brown slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to medium of mixed lithologies including sandstone and coal.	
	2.00	D						2
	2.50	D		2.50			End of pit at 2.50 m	3
								4
								5

Remarks: 1. Groundwater encountered at 2.0m bgl 2. Pit sides unstable 3. Pit backfilled with arisings

Stability:



Trial Pit Log

Trialpit No
TP03
Sheet 1 of 1

Project Name: NEW OFFICE BLOCK

Project No.
GRO-21438

Co-ords: -
Level:

Date
24/01/2022

Location: BURY

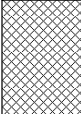
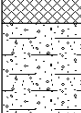
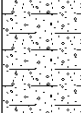
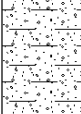
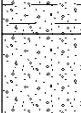
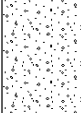
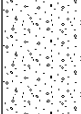
Dimensions
(m):

Depth
3.00

Scale
1:25

Logged
RR

Client: JD SPORTS

Water Strike	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
	Depth	Type	Results					
				0.30			MADE GROUND: Grey concrete.	
	0.55	ES					MADE GROUND: Dark brown sandy angular to subangular fine to medium gravel of mixed lithologies including brick. Sand is medium to coarse.	
	0.80	ES		0.75			Orange brown clayey slightly gravelly medium to coarse SAND with bands of grey. Gravel is angular to subangular fine to medium of mixed lithologies including sandstone and coal.	1
	1.00	D						
	1.50	D						
	1.90	ES		1.90			Orange brown slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to medium of mixed lithologies including sandstone and coal.	2
	2.00	D						
	2.50	D						
				3.00			End of pit at 3.00 m	3
								4
								5

Remarks: 1. Groundwater encountered at 1.6m bgl 2. Pit sides unstable 3. Pit backfilled with arisings

Stability:



APPENDIX 4 - Geo-Environmental Testing



Rebecca Rowlinson
Groundtech Consulting Ltd
First Floor, Lloyd House
Oxford Court
Greenfold Way
WN7 3XJ

t: 07449819886

e: rr@groundtechconsulting.com

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404

f: 01923 237404

e: reception@i2analytical.com

Analytical Report Number : 22-37451

Replaces Analytical Report Number: 22-37451, issue no. 1
Additional analysis undertaken.

Project / Site name:	New Office Block, Bury	Samples received on:	28/01/2022
Your job number:	GRO-21438	Samples instructed on/ Analysis started on:	04/02/2022
Your order number:	ORD-21438-2294	Analysis completed by:	17/03/2022
Report Issue Number:	2	Report issued on:	21/03/2022
Samples Analysed:	8 soil samples		

Signed:

Joanna Wawrzeczko
Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 22-37451
Project / Site name: New Office Block, Bury
Your Order No: ORD-21438-2294

Lab Sample Number				2160716	2160717	2160718	2160719	2160720
Sample Reference				TP01	TP01	TP02	TP03	BH01
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.25	0.70	0.35	0.55	0.50
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	38	35	56	36	< 0.1
Moisture Content	%	0.01	NONE	7.6	13	12	5.9	12
Total mass of sample received	kg	0.001	NONE	0.9	1	1	0.9	0.9

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	Amosite	-	Chrysotile	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Detected	Not-detected	Detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	< 0.001	-	0.005	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	< 0.001	-	0.005	-
Asbestos Analyst ID	N/A	N/A	N/A	SCA	SCA	SCA	SCA	SCA

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	10.8	7.6	9.6	9.6	8
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	2600	2700	1300	230	45
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	1.3	1.3	0.67	0.12	0.023
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	1290	1350	666	117	22.5
Organic Matter (automated)	%	0.1	MCERTS	1.8	3	1.8	1.1	1.1

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.29	0.44	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.29	0.22	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	2.5	0.62	0.66	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	0.63	0.23	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	3.8	0.93	0.83	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	3.5	0.8	0.82	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	2	0.48	0.43	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	1.4	0.36	0.41	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	2.1	0.47	0.33	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.86	0.27	0.23	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	2.1	0.43	0.41	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	1	0.24	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.3	0.26	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	21.8	5.75	4.12	< 0.80	< 0.80
-----------------------------	-------	-----	--------	------	------	------	--------	--------

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.4	11	7.1	7.3	6.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.6	< 0.2	0.4	< 0.2
Chromium (hexavalent)	mg/kg	4	NONE	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	18	18	17	28	14
Copper (aqua regia extractable)	mg/kg	1	MCERTS	34	27	15	28	24
Lead (aqua regia extractable)	mg/kg	1	MCERTS	53	75	110	24	14
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	14	15	13	36	15
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	130	86	79	93	60

Analytical Report Number: 22-37451
 Project / Site name: New Office Block, Bury
 Your Order No: ORD-21438-2294

Lab Sample Number				2160716	2160717	2160718	2160719	2160720
Sample Reference				TP01	TP01	TP02	TP03	BH01
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.25	0.70	0.35	0.55	0.50
Date Sampled				Deviating	Deviating	Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					

Monoaromatics & Oxygenates

Benzene	µg/kg	1	MCERTS	< 1.0	-	-	< 1.0	-
Toluene	µg/kg	1	MCERTS	< 1.0	-	-	< 1.0	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	< 1.0	-
p & m-xylene	µg/kg	1	MCERTS	< 1.0	-	-	< 1.0	-
o-xylene	µg/kg	1	MCERTS	< 1.0	-	-	< 1.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	-	< 1.0	-

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.001	MCERTS	< 0.001	-	-	< 0.001	-
TPH-CWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.001	MCERTS	< 0.001	-	-	< 0.001	-
TPH-CWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.001	MCERTS	< 0.001	-	-	< 0.001	-
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	-	-	< 1.0	-
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	-	-	< 2.0	-
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	-	-	< 8.0	-
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	-	-	< 8.0	-
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	MCERTS	< 10	-	-	< 10	-

TPH-CWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.001	MCERTS	< 0.001	-	-	< 0.001	-
TPH-CWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.001	MCERTS	< 0.001	-	-	< 0.001	-
TPH-CWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.001	MCERTS	< 0.001	-	-	< 0.001	-
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	-	-	< 1.0	-
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	< 2.0	-	-	< 2.0	-
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	-	-	< 10	-
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	48	-	-	< 10	-
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	MCERTS	53	-	-	< 10	-

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 22-37451
 Project / Site name: New Office Block, Bury
 Your Order No: ORD-21438-2294

Lab Sample Number				2160721	2160722	2160723
Sample Reference				BH02	BH03	BH04
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				1.00	1.00	0.50
Date Sampled				Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			
Stone Content	%	0.1	NONE	< 0.1	44	< 0.1
Moisture Content	%	0.01	NONE	15	7.4	9.5
Total mass of sample received	kg	0.001	NONE	1	0.9	1

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-
Asbestos Analyst ID	N/A	N/A	N/A	SCA	SCA	SCA

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.8	8.9	8.9
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	97	31	94
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.049	0.015	0.047
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	48.7	15.4	47.1
Organic Matter (automated)	%	0.1	MCERTS	1.4	0.6	0.9

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	< 0.80
-----------------------------	-------	-----	--------	--------	--------	--------

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	6.9	3.4	6.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.5
Chromium (hexavalent)	mg/kg	4	NONE	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	10	12	28
Copper (aqua regia extractable)	mg/kg	1	MCERTS	17	12	23
Lead (aqua regia extractable)	mg/kg	1	MCERTS	15	42	21
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	10	13	37
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	31	52	96

Analytical Report Number: 22-37451
Project / Site name: New Office Block, Bury
Your Order No: ORD-21438-2294

Lab Sample Number				2160721	2160722	2160723
Sample Reference				BH02	BH03	BH04
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				1.00	1.00	0.50
Date Sampled				Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status			
Monoaromatics & Oxygenates						
Benzene	µg/kg	1	MCERTS	-	< 1.0	-
Toluene	µg/kg	1	MCERTS	-	< 1.0	-
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	-
p & m-xylene	µg/kg	1	MCERTS	-	< 1.0	-
o-xylene	µg/kg	1	MCERTS	-	< 1.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	-

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.001	MCERTS	-	< 0.001	-
TPH-CWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.001	MCERTS	-	< 0.001	-
TPH-CWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.001	MCERTS	-	< 0.001	-
TPH-CWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	-	< 1.0	-
TPH-CWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	-	< 2.0	-
TPH-CWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	-	< 8.0	-
TPH-CWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	-	< 8.0	-
TPH-CWG - Aliphatic (EC5 - EC35) _{EH_CU+HS_1D_AL}	mg/kg	10	MCERTS	-	< 10	-

TPH-CWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.001	MCERTS	-	< 0.001	-
TPH-CWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.001	MCERTS	-	< 0.001	-
TPH-CWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.001	MCERTS	-	< 0.001	-
TPH-CWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	-	< 1.0	-
TPH-CWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	-	< 2.0	-
TPH-CWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	-	< 10	-
TPH-CWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	-	< 10	-
TPH-CWG - Aromatic (EC5 - EC35) _{EH_CU+HS_1D_AR}	mg/kg	10	MCERTS	-	< 10	-

U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number: 22-37451
Project / Site name: New Office Block, Bury
Your Order No: ORD-21438-2294

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006-PL based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
2160717	TP01	0.70	121	Loose Fibres	Amosite	< 0.001	< 0.001
2160719	TP03	0.55	143	Loose Fibrous Debris	Chrysotile	0.005	0.005

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

Analytical Report Number : 22-37451

Project / Site name: New Office Block, Bury

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2160716	TP01	None Supplied	0.25	Brown sandy clay with stones.
2160717	TP01	None Supplied	0.7	Brown clay and loam with stones.
2160718	TP02	None Supplied	0.35	Brown clay and loam with stones.
2160719	TP03	None Supplied	0.55	Grey clay and sand with stones.
2160720	BH01	None Supplied	0.5	Brown sand with gravel.
2160721	BH02	None Supplied	1	Brown sand with gravel.
2160722	BH03	None Supplied	1	Brown clay and sand with stones.
2160723	BH04	None Supplied	0.5	Grey clay and sand with gravel.

Analytical Report Number : 22-37451

Project / Site name: New Office Block, Bury

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazine followed by colorimetry.	In-house method	L080-PL	W	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Analytical Report Number : 22-37451

Project / Site name: New Office Block, Bury

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
----------------------	-------------------------------	-----------------------------	---------------	--------------------	----------------------

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Sample Deviation Report



Analytical Report Number : 22-37451

Project / Site name: New Office Block, Bury

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis. Please note that the associated result(s) may be unreliable and should be interpreted with care.

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
BH01	None Supplied	S	2160720	a	None Supplied	None Supplied	None Supplied
BH02	None Supplied	S	2160721	a	None Supplied	None Supplied	None Supplied
BH03	None Supplied	S	2160722	a	None Supplied	None Supplied	None Supplied
BH04	None Supplied	S	2160723	a	None Supplied	None Supplied	None Supplied
TP01	None Supplied	S	2160716	a	None Supplied	None Supplied	None Supplied
TP01	None Supplied	S	2160717	a	None Supplied	None Supplied	None Supplied
TP02	None Supplied	S	2160718	a	None Supplied	None Supplied	None Supplied
TP03	None Supplied	S	2160719	a	None Supplied	None Supplied	None Supplied



APPENDIX 5 - Geotechnical Testing



LABORATORY REPORT



4043

Contract Number: PSL22/0922

Report Date: 09 March 2022
Client's Reference: ORD-21438
Client Name: Groundtech Consulting
First Floor
Lloyd House
Orford Court
Greenfold Way
WN7 3XJ

For the attention of: Rebecca Rowlinson

Contract Title: New Office Block, Bury
Date Received: 7/2/2022
Date Commenced: 7/2/2022
Date Completed: 9/3/2022

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:

A Watkins
(Director)

R Berriman
(Quality Manager)

S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager)

S Eyre
(Senior Technician)

T Watkins
(Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
tel: +44 (0)844 815 6641
fax: +44 (0)844 815 6642
e-mail: rgunson@prosoils.co.uk
awatkins@prosoils.co.uk

Page 1 of

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
TP02		D	0.70		Brown sandy CLAY
BH01		D	6.00		Brown sandy CLAY
BH02		D	4.00		Brown sandy CLAY
BH03		D	6.50		Brown slightly gravelly sandy CLAY
BH04		D	4.00		Brown slightly gravelly sandy CLAY
BH01		U	6.50		Soft brown sandy CLAY
BH01		U	9.50		Soft brown slightly gravelly sandy CLAY
BH01		U	12.50		Stiff brown slightly gravelly sandy CLAY
BH02		U	6.50		Soft brown slightly gravelly sandy CLAY
BH02		U	9.50		Soft brown sandy CLAY
BH03		U	5.00		Soft brown slightly gravelly sandy CLAY
BH03		U	9.00		Firm brown very sandy CLAY
BH04		U	17.00		Firm brown slightly gravelly sandy CLAY
BH02		AMAL	14.00	17.00	Brown slightly gravelly slightly sandy CLAY
BH03		AMAL	10.50	13.50	Brown slightly gravelly very sandy CLAY



4043

PSL

Professional Soils Laboratory

New Office Block, Bury

Contract No:

PSL22/0922

Client Ref:

21438

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

[illegible]

SYMBOLS : NP : Non Plastic

*** : Liquid Limit and Plastic Limit Wet Sieved.**



4043

PSL

Professional Soils Laboratory

New Office Block, Bury

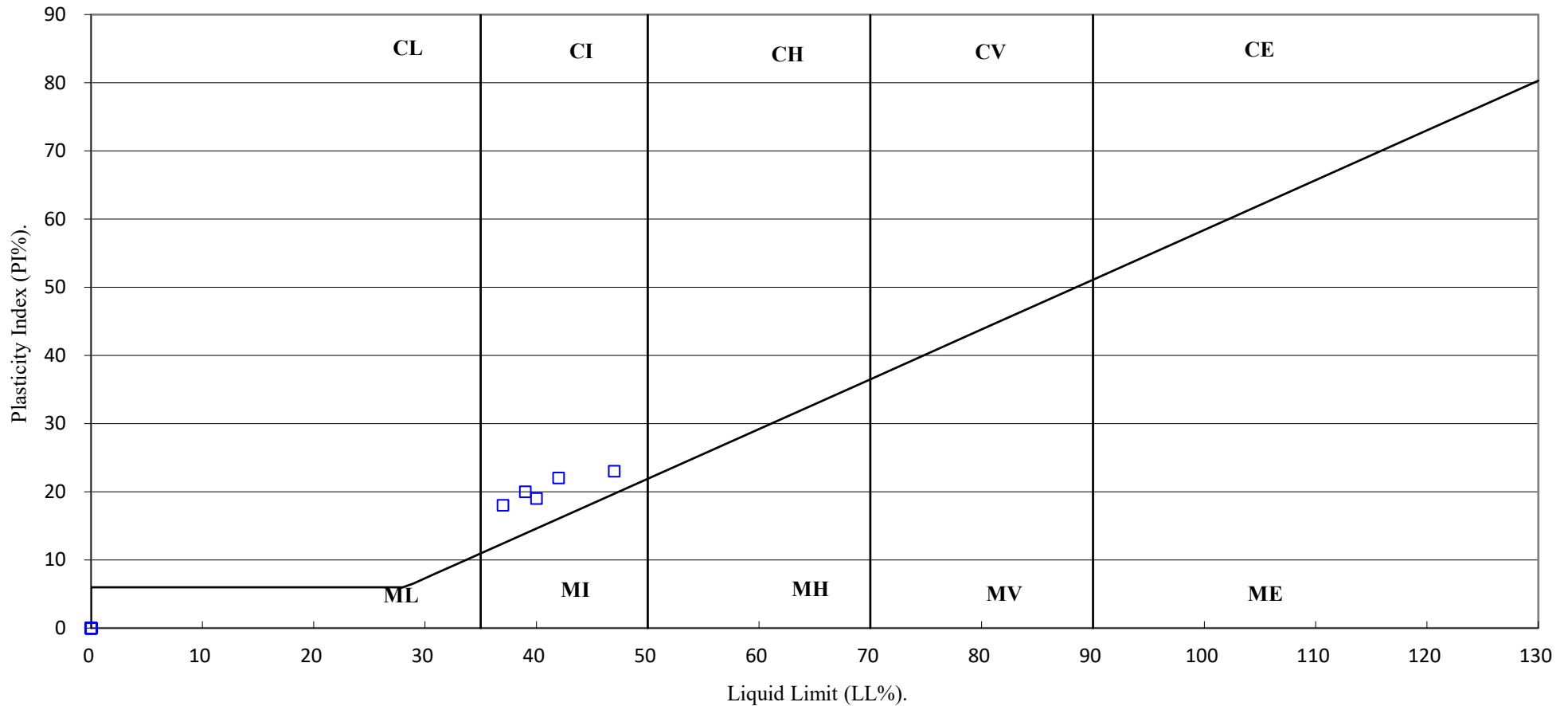
Contract No:

PSL22/0922

Client Ref:

21438

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



4043

PSL

Professional Soils Laboratory

New Office Block, Bury

Contract No:

PSL22/0922

Client Ref:

21438

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number:**BH02**

Top Depth (m):

14.00

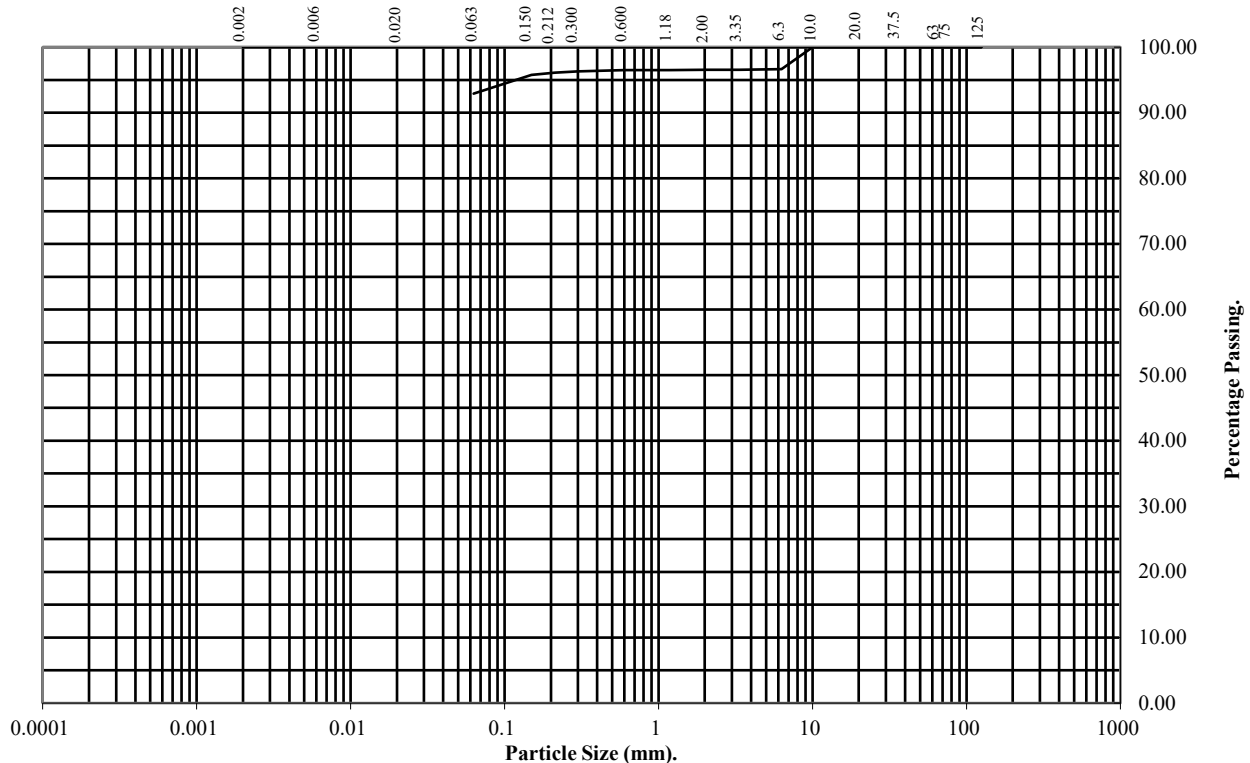
Sample Number:

Base Depth(m):

17.00

Sample Type:

AMAL



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	97
3.35	97
2	97
1.18	97
0.6	97
0.3	96
0.212	96
0.15	96
0.063	93

Soil Fraction	Total Percentage
Cobbles	0
Gravel	3
Sand	4
Silt/Clay	93

Remarks:

See Summary of Soil Descriptions



PSL

Professional Soils Laboratory

New Office Block, Bury

Contract No:

PSL22/0922

Client Ref:

21438

PARTICLE SIZE DISTRIBUTION TEST

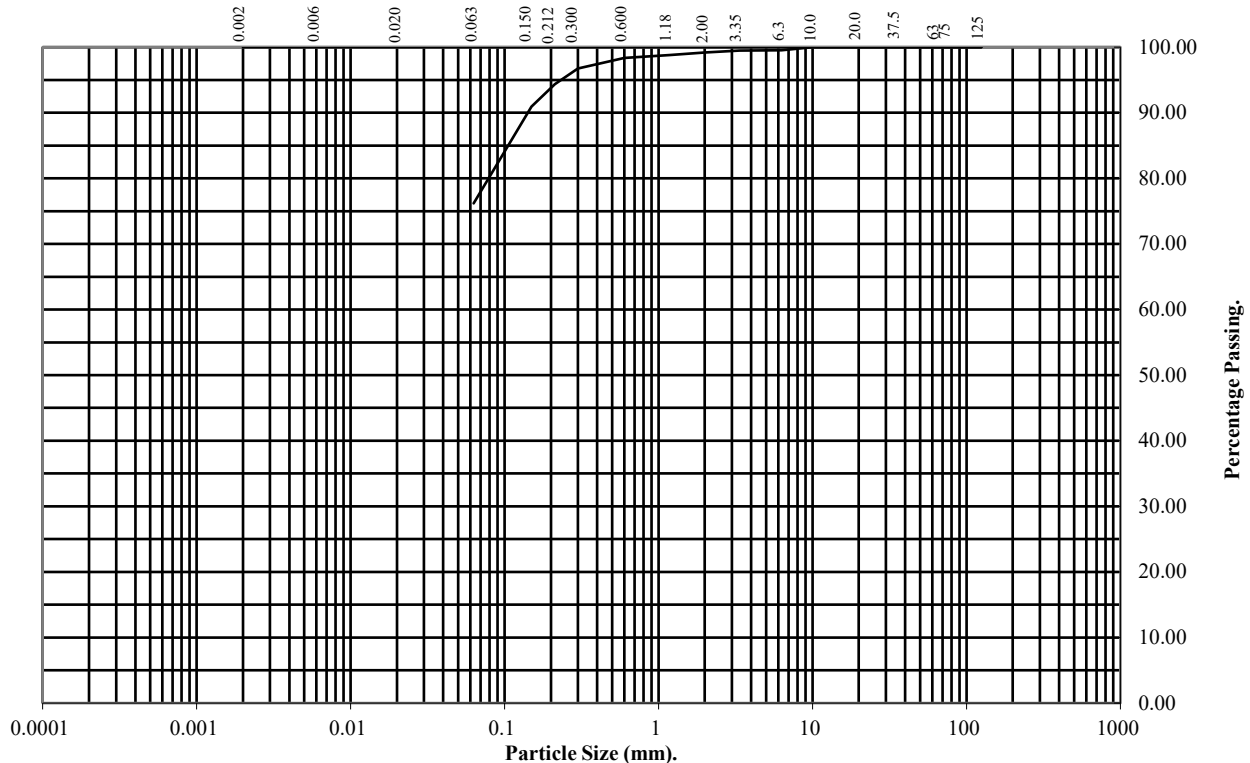
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: BH03 Top Depth (m): 10.50

Sample Number: Base Depth(m): 13.50

Sample Type: AMAL



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	99
1.18	99
0.6	98
0.3	97
0.212	94
0.15	91
0.063	76

Soil Fraction	Total Percentage
Cobbles	0
Gravel	1
Sand	23
Silt/Clay	76

Remarks:

See Summary of Soil Descriptions



PSL
Professional Soils Laboratory

New Office Block, Bury

Contract No:
PSL22/0922
Client Ref:
21438

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

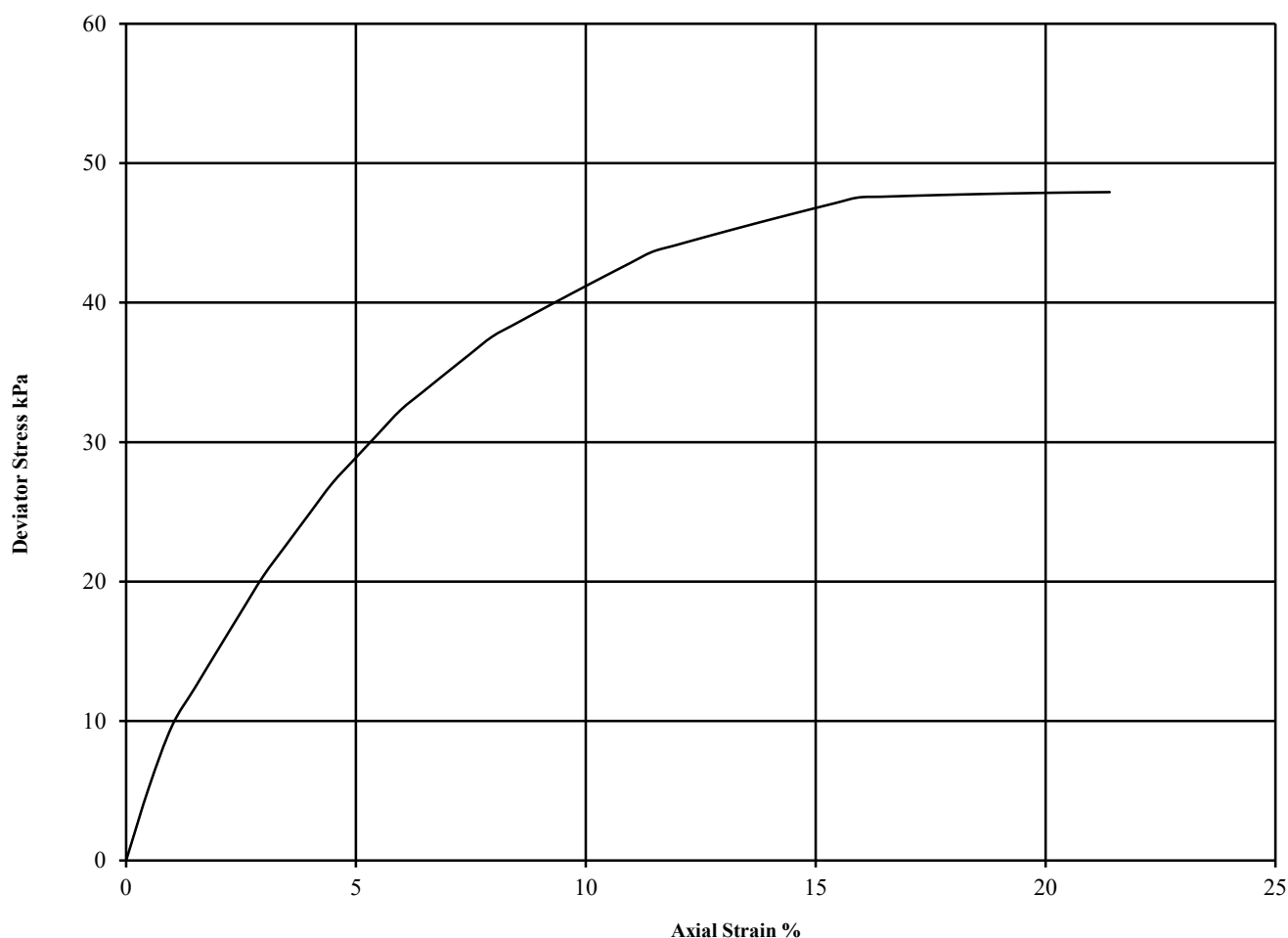
Hole Number: BH01

Top Depth (m): 6.50

Sample Number:

Base Depth (m):

Sample Type U



Diameter (mm):		103	Height (mm):		207	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.33 See summary of soil descriptions
				θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$			
1	30	1.96	1.51	130	48	24	21.4	Plastic	



4043

PSL
Professional Soils Laboratory

New Office Block, Bury

Contract No:

PSL22/0922

Client Ref:

21438

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

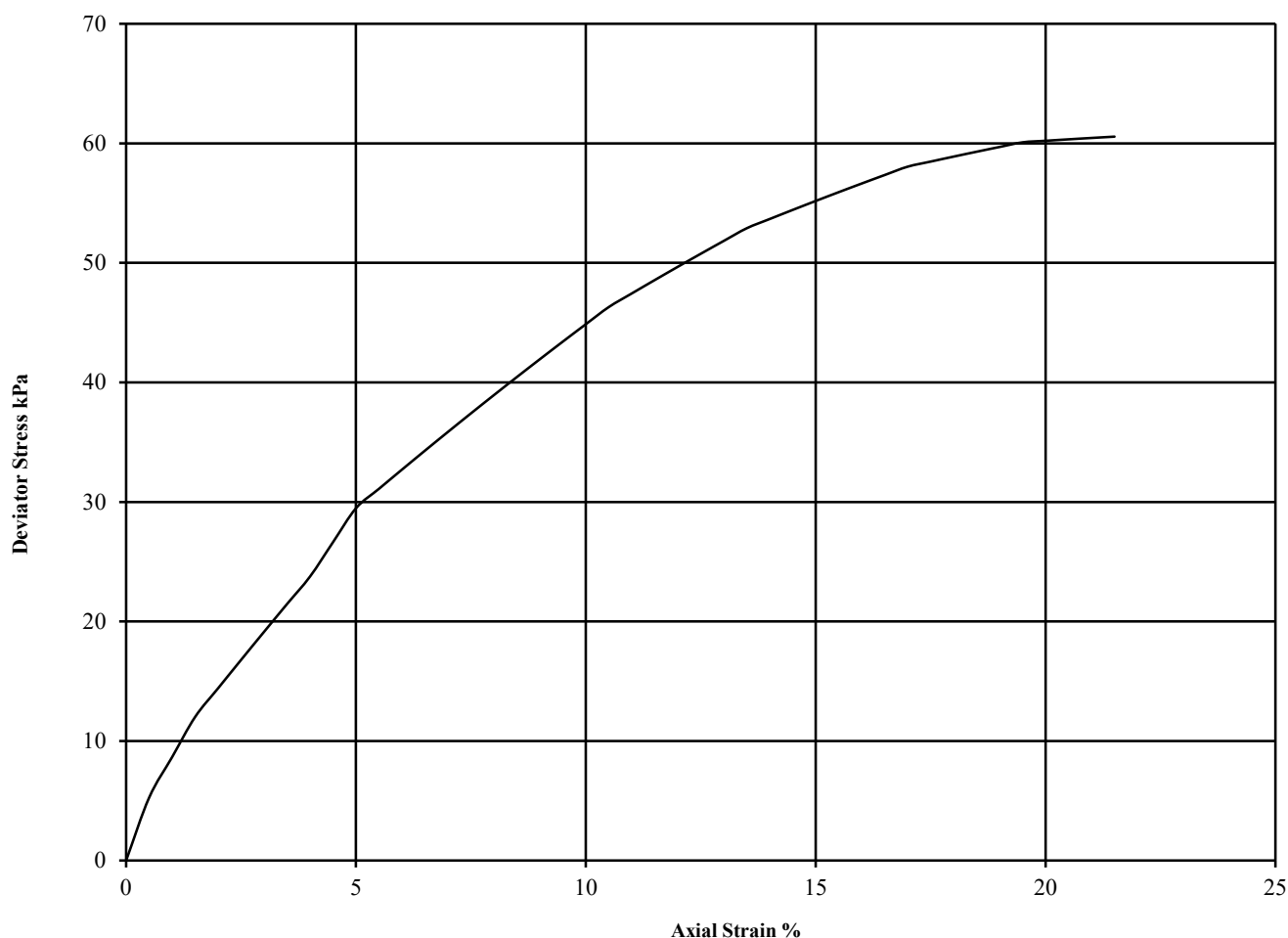
Hole Number: BH01

Top Depth (m): 9.50

Sample Number:

Base Depth (m):

Sample Type U



Diameter (mm):		103	Height (mm):		206	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.33 See summary of soil descriptions
				θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$			
1	25	2.05	1.64	190	61	30	21.5	Plastic	



4043

PSL

Professional Soils Laboratory

New Office Block, Bury

Contract No:

PSL22/0922

Client Ref:

21438

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

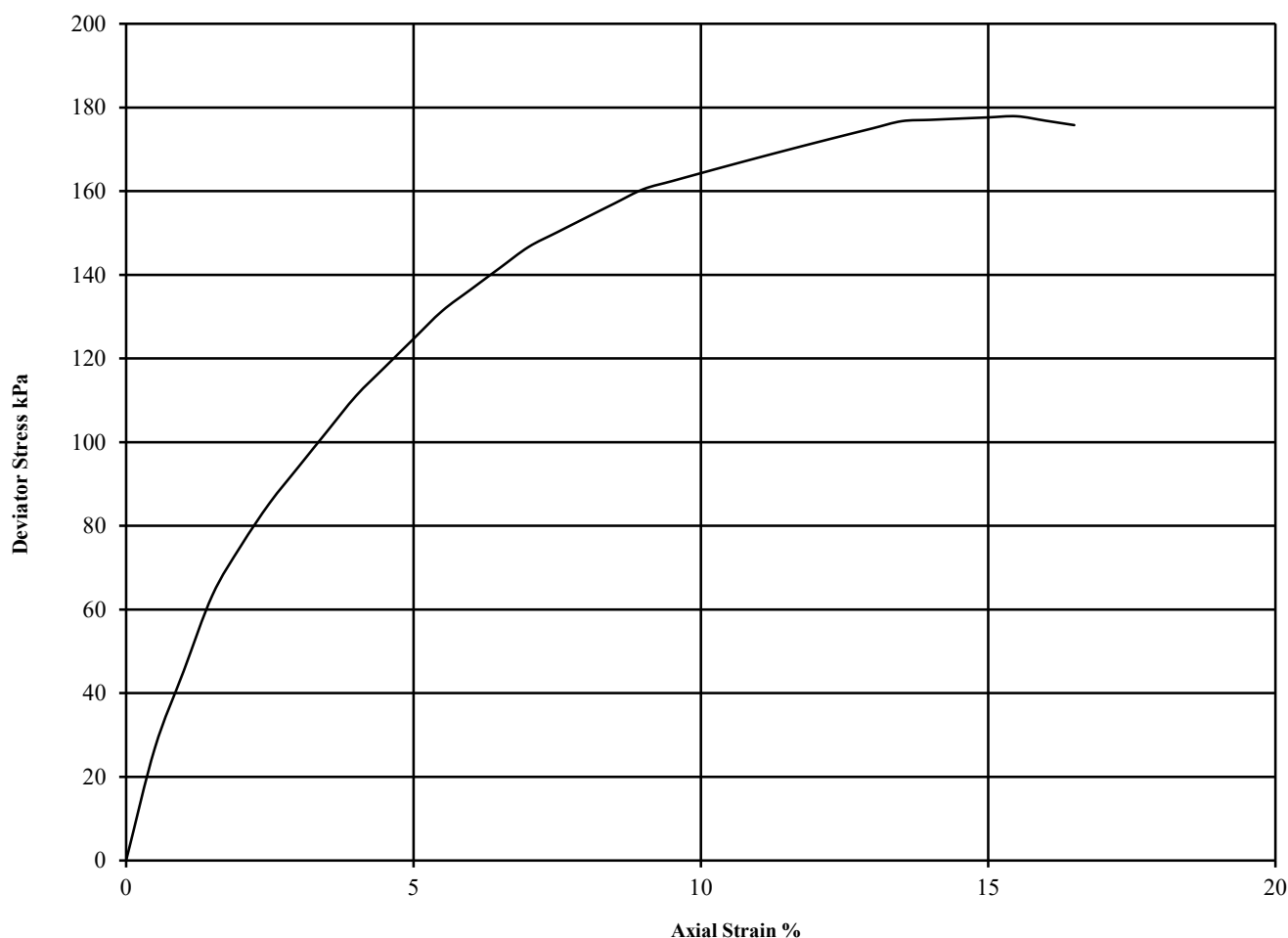
Hole Number: BH01

Top Depth (m): 12.50

Sample Number:

Base Depth (m):

Sample Type U



Diameter (mm):		38		Height (mm):		76		Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.77 See summary of soil descriptions		
1	20	2.10	1.74	250	$(\theta_1 - \theta_3)_f$ 178	$\frac{1}{2}(\theta_1 - \theta_3)_f$ 89	15.5	Plastic			



4043

PSL

Professional Soils Laboratory

New Office Block, Bury

Contract No:

PSL22/0922

Client Ref:

21438

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

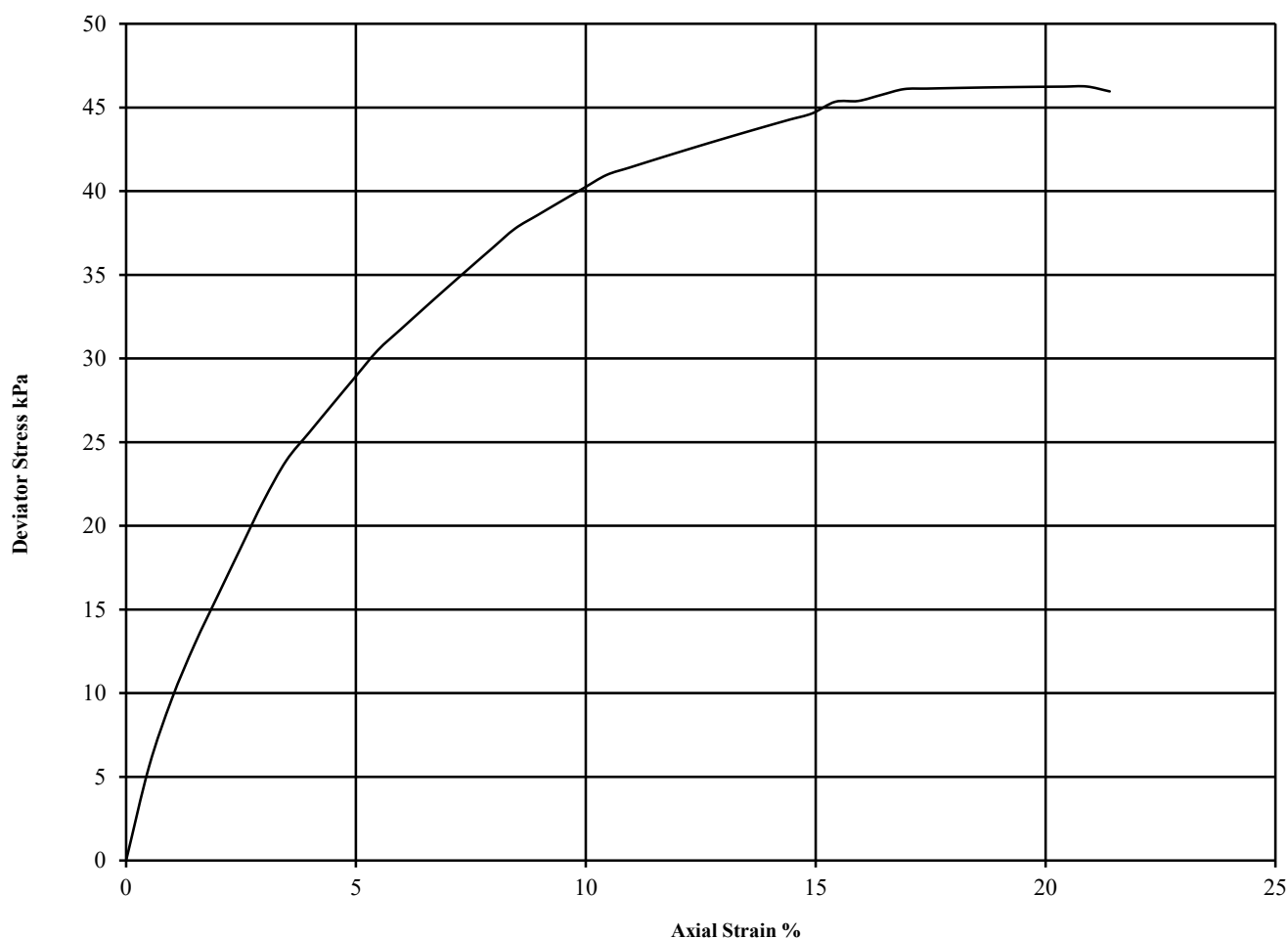
Hole Number: BH02

Top Depth (m): 6.50

Sample Number:

Base Depth (m):

Sample Type U



Diameter (mm):		103	Height (mm):		207	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.33 See summary of soil descriptions
				θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$			
1	29	1.97	1.53	130	46	23	20.9	Plastic	



4043

PSL

Professional Soils Laboratory

New Office Block, Bury

Contract No:

PSL22/0922

Client Ref:

21438

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

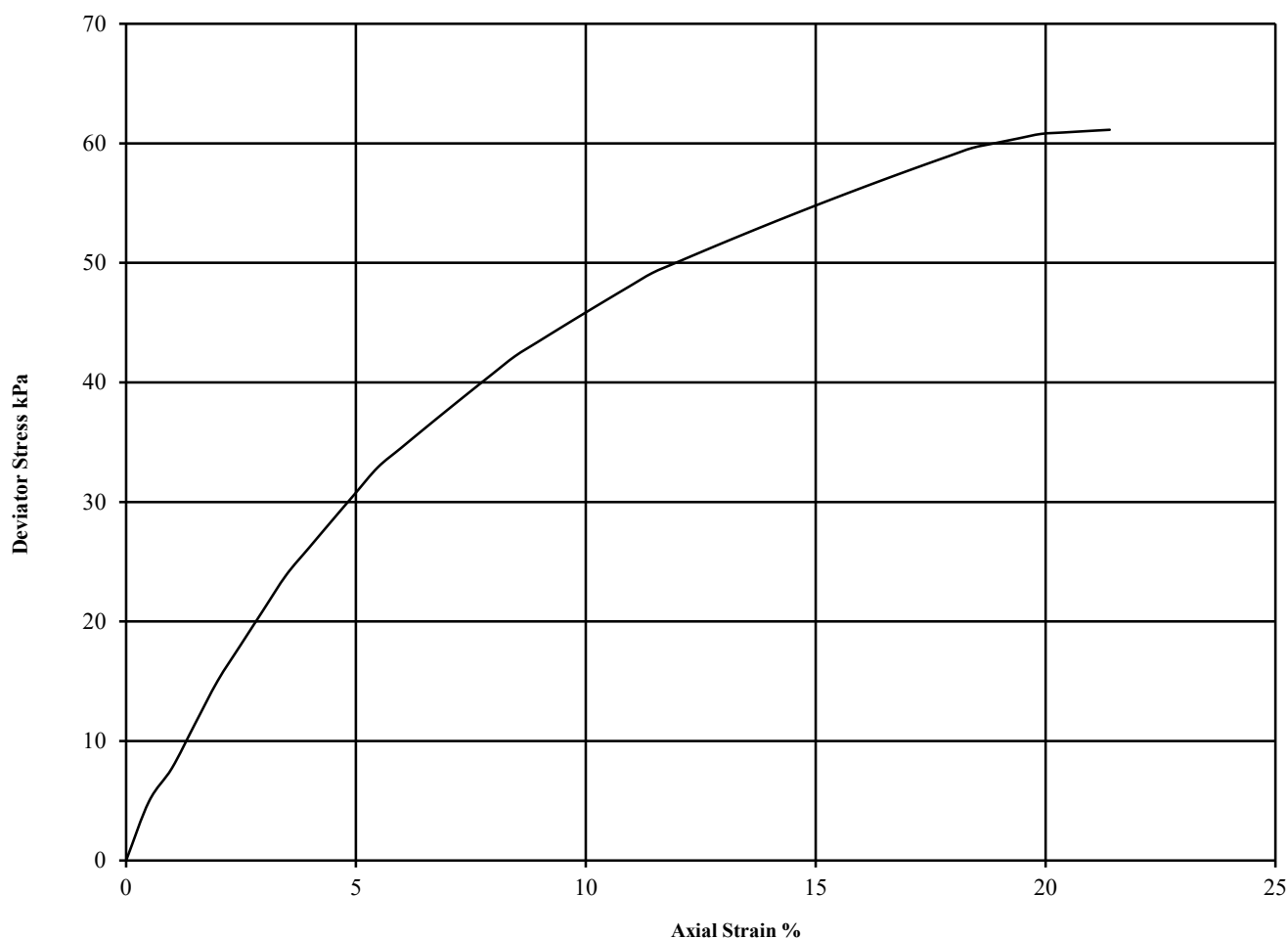
Hole Number: BH02

Top Depth (m): 9.50

Sample Number:

Base Depth (m):

Sample Type U



Diameter (mm):		103	Height (mm):		207	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.33 See summary of soil descriptions
				θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$			
1	29	1.98	1.53	190	61	31	21.4	Plastic	



4043

PSL

Professional Soils Laboratory

New Office Block, Bury

Contract No:

PSL22/0922

Client Ref:

21438

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

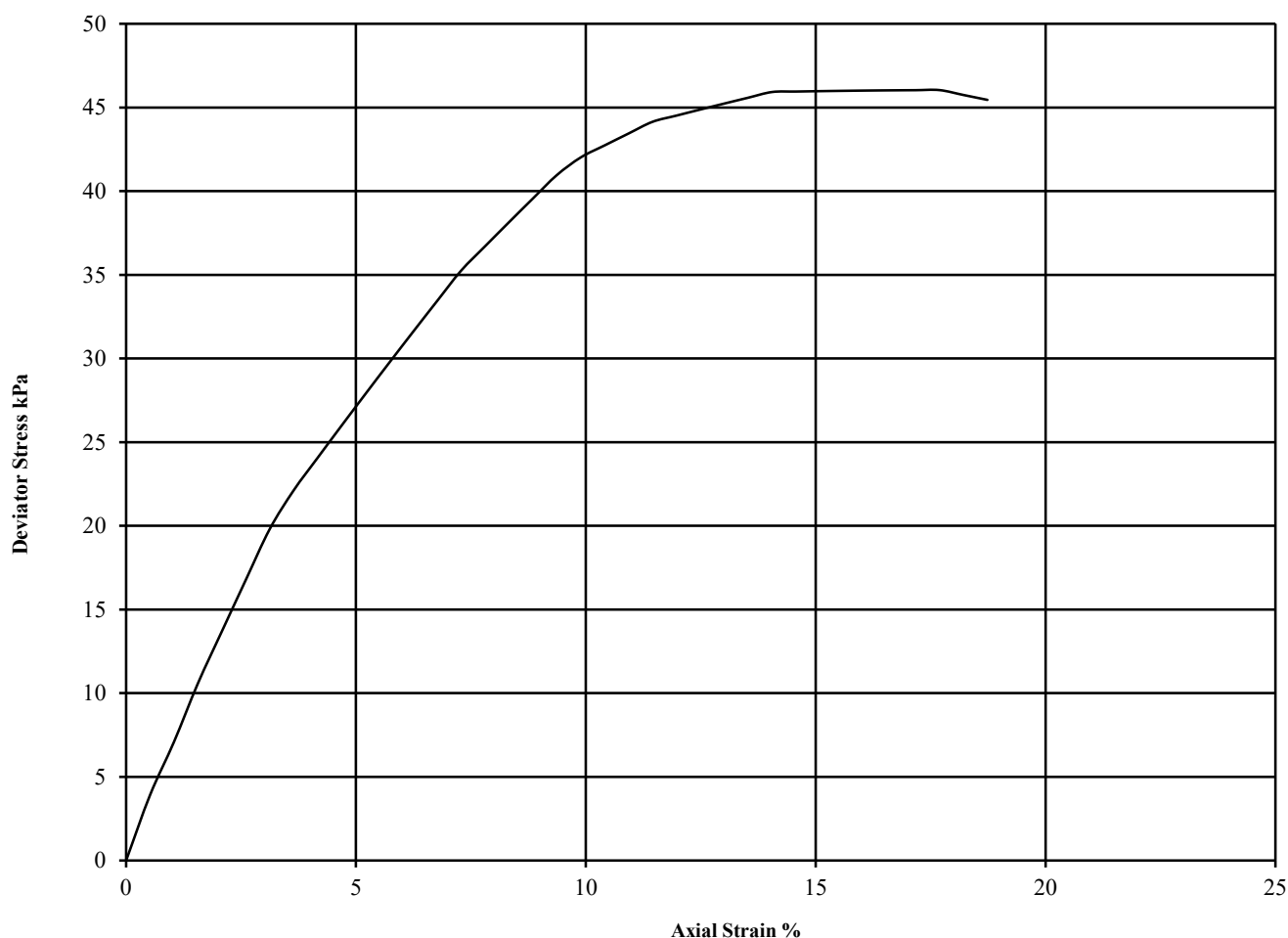
Hole Number: BH03

Top Depth (m): 5.00

Sample Number:

Base Depth (m):

Sample Type U



Diameter (mm):		102	Height (mm):		196	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.34 See summary of soil descriptions
				θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$			
1	27	1.95	1.54	100	46	23	17.7	Plastic	



4043

PSL

Professional Soils Laboratory

New Office Block, Bury

Contract No:

PSL22/0922

Client Ref:

21438

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

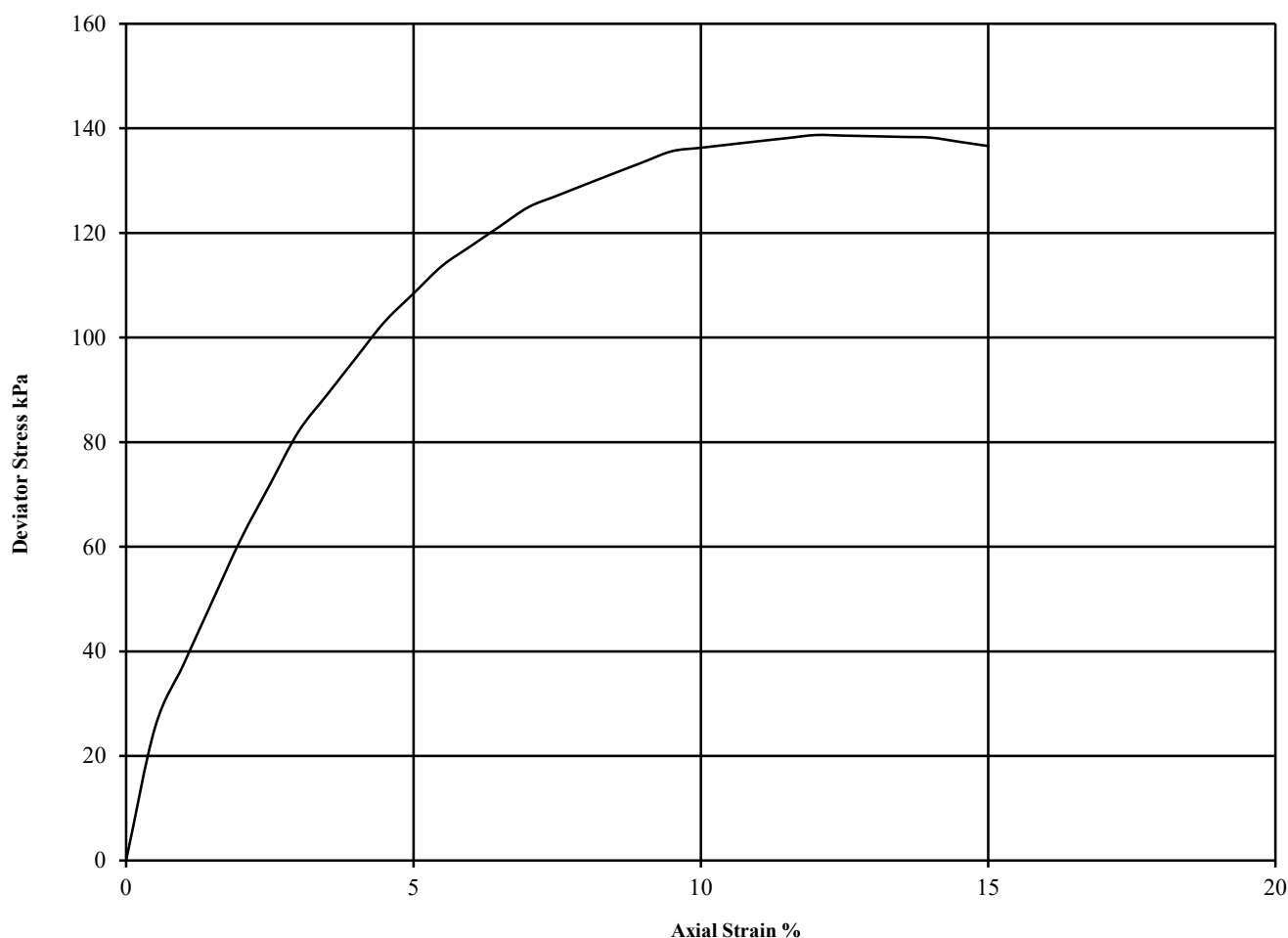
Hole Number: BH03

Top Depth (m): 9.00

Sample Number:

Base Depth (m):

Sample Type U



Diameter (mm):		38	Height (mm):		76	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.83 See summary of soil descriptions
				θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$			
1	14	2.18	1.92	180	139	69	12.0	Plastic	



4043

PSL

Professional Soils Laboratory

New Office Block, Bury

Contract No:

PSL22/0922

Client Ref:

21438

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION

WITHOUT MEASUREMENT OF PORE PRESSURE

BS1377 : Part7 : 1990: Clause 8

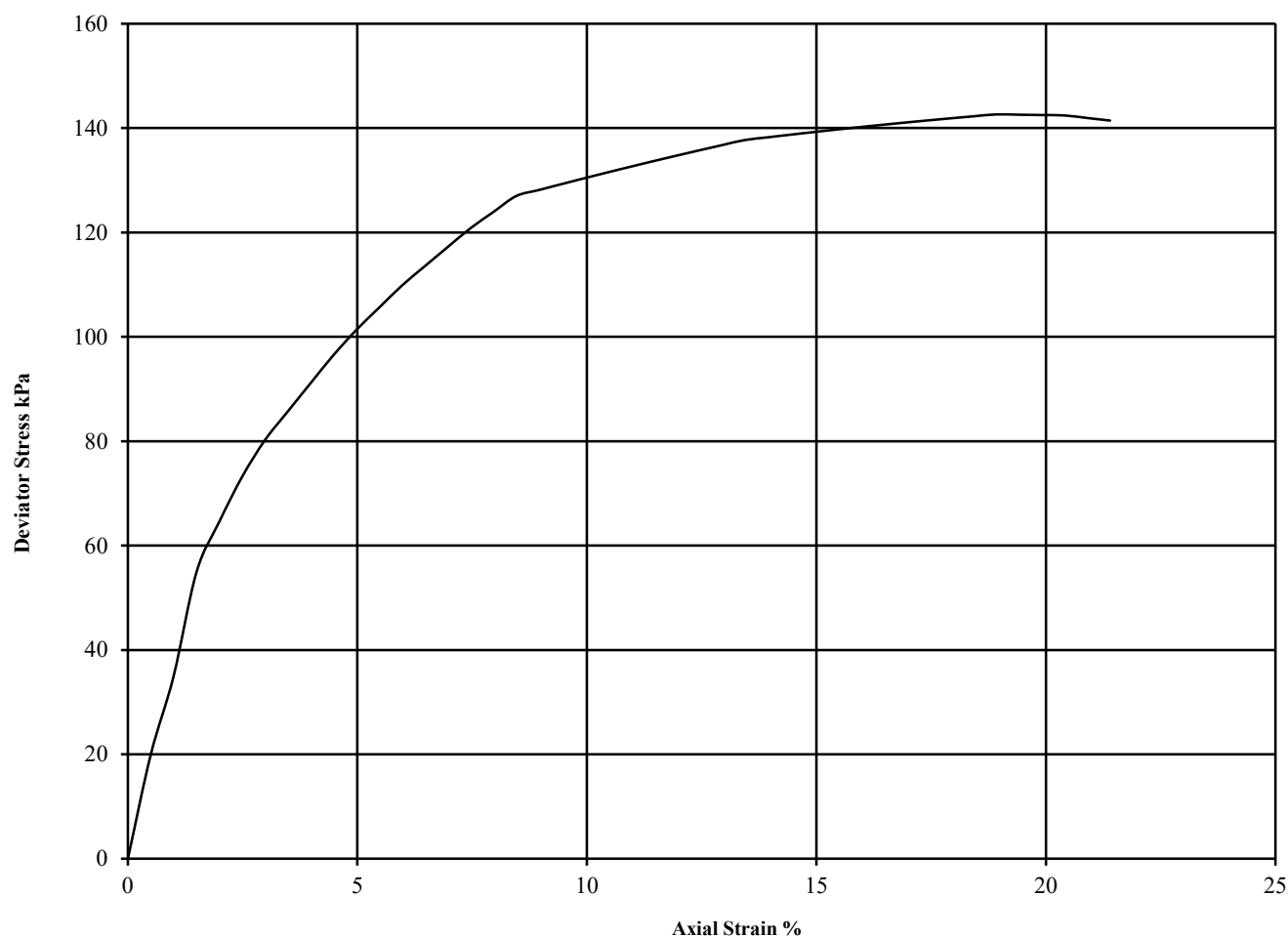
Hole Number: BH04

Top Depth (m): 17.00

Sample Number:

Base Depth (m):

Sample Type U



Diameter (mm):		103	Height (mm):		207	Test:	UU Single Stage		Remarks:
Specimen	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Cell Pressure (kPa)	Corr. Max. Deviator Stress (kPa)	Shear Strength Cu (kPa)	Failure Strain (%)	Mode of Failure	Undisturbed Sample Sample taken from top of tube Rate of strain = 2 %/min Latex Membrane used 0.2 mm thick, Correction applied 0.33 See summary of soil descriptions
				θ_3	$(\theta_1 - \theta_3)_f$	$\frac{1}{2}(\theta_1 - \theta_3)_f$			
1	26	1.99	1.58	340	143	71	18.9	Plastic	



PSL
Professional Soils Laboratory

New Office Block, Bury

Contract No:

PSL22/0922

Client Ref:

21438



APPENDIX 6 - Interim Permanent Gas Monitoring Results

Pressure Trend:	Falling	Weather:	Rain			Equipment:	GFM 436
Ambient:	O ₂ (%v/v)	CH ₄ (%v/v)	CO ₂ (%v/v)	LEL	H ₂ S (ppm)	CO (ppm)	
Start	20.5	0.0	0.0	0.0	0.0	0.0	
Finish	20.6	0.0	0.0	0.0	0.0	0.0	

BH Ref.	Gas Flow Rate (l/hr)		Borehole Pressure (mb)	Methane (%v/v)			Carbon Dioxide (%v/v)		Oxygen (%v/v)		Hydrogen Sulphide (ppm)		Carbon Monoxide (ppm)		Q _{hg} CO ₂ (l/hr)	Q _{hg} CH ₄ (l/hr)	Atmos Press (mb)	PID (ppm)	Sheen (Y/N)	Depth to Water (m bgl)
	Peak	Steady		Peak	Steady	LEL	Peak	Steady	Peak	Steady	Peak	Steady	Peak	Steady						
BH01	0.0	0.0	0.00	0.0	0.0	0.0	4.3	3.3	12.3	14.8	0.0	0.0	0.0	0.0	0.0043	0.0000	1008	-	N	4.00
BH02	0.0	0.0	0.00	0.0	0.0	0.0	0.5	0.3	17.0	17.1	0.0	0.0	0.0	0.0	0.0005	0.0000	1008	-	N	0.47
BH04	0.0	0.0	0.00	0.0	0.0	0.0	1.2	0.8	15.7	17.2	0.0	0.0	0.0	0.0	0.0012	0.0000	1008	-	N	0.86
Notes:																				

APPENDIX 7 - Plate Load Testing Results



LABORATORY REPORT



4043

Contract Number: PSL22/0517

Report Date: 25 January 2022

Client's Reference:

Client Name: Groundtech Consulting
First Floor
Lloyd House
Orford Court
Greenfold Way
WN7 3XJ

For the attention of: Rebecca Rowlinson

Contract Title: Pilsworth Road, Bury

Date Received: 24/1/2022

Date Commenced: 24/1/2022

Date Completed: 25/1/2022

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:

A Watkins
(Director)

R Berriman
(Quality Manager)

S Royle
(Laboratory Manager)

L Knight
(Senior Technician)

S Eyre
(Senior Technician)


T Watkins
(Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
tel: +44 (0)844 815 6641
fax: +44 (0)844 815 6642
e-mail: awatkins@prosoils.co.uk
rberriman@prosoils.co.uk

Page 1 of

VERTICAL DEFORMATION TESTS.

BS 1377 : Part 9 : 1990.

Date of Test: 24-Jan-22

Test Position: PBT 1

Depth (m): 0.50

Plate Area (m²): 0.1625971

Type of Kentledge: Wheeled

Maximum Applied Pressure (kPa):

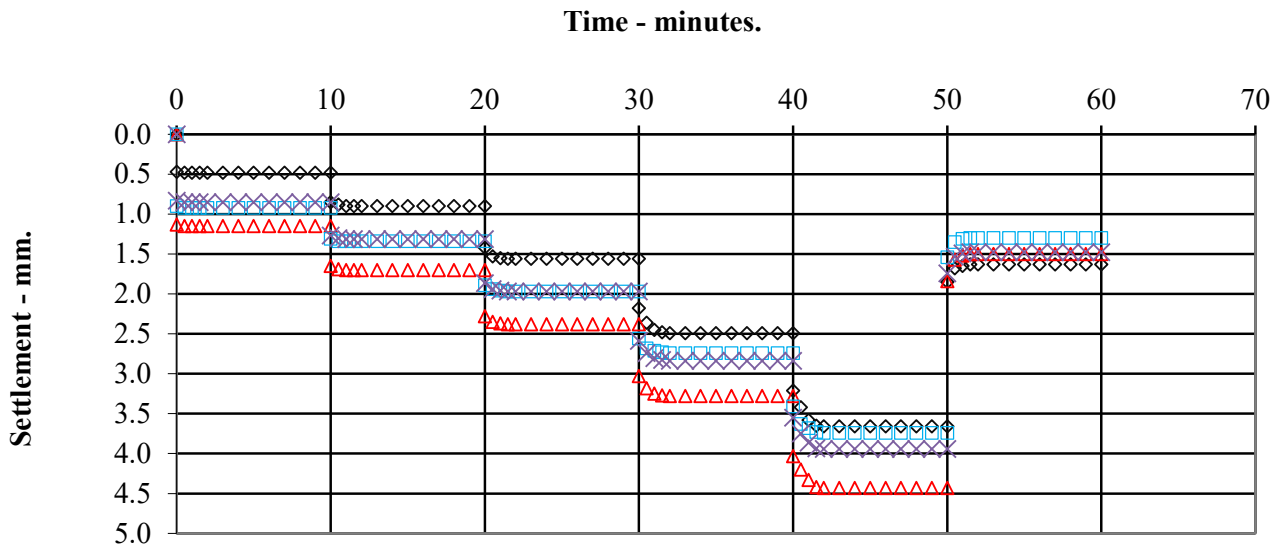
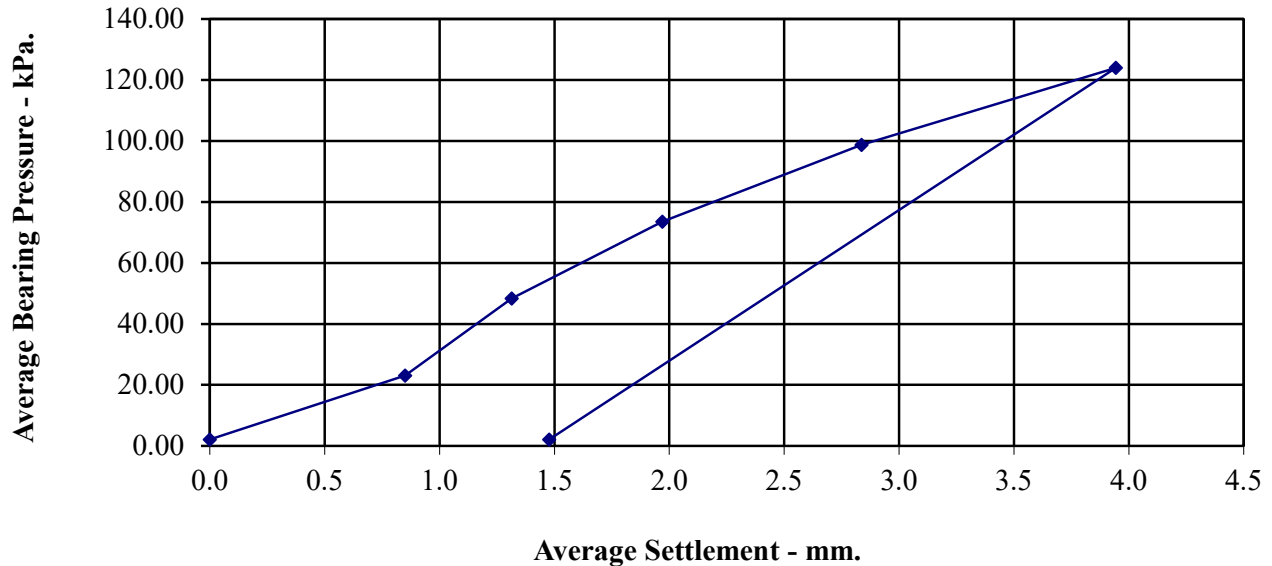
123.97

Maximum Deformation (mm):

3.94

Description:

Brown CLAY.



◇ Settlement Gauge 1 △ Settlement Gauge 2 □ Settlement Gauge 3 × Average Settlement

Calculation of Equivalent CBR Value from Plate Bearing Test

Design Manual for Roads and Bridges Volume 7 Section 2 Chapter 4

Incorporating IAN 73/06

Date of Test 24-Jan-22

Test Position PBT 1

Depth (m) 0.50

Description Brown CLAY.

Maximum Deflection 3.94 mm

Deflection required for CBR value 1.25 mm

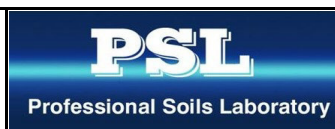
Load at 1.25mm 45 kN/m²

Plate diameter 455 mm

Conversion factor for plate diameter 0.629

K₇₆₂(modulus of subgrade reaction)
calculated using 1.25mm settlement 22.6 kN/m²/mm

CBR Value 2.1 %



Pilsworth Road, Bury

Contract No:

PSL22/0517

Client Ref:

VERTICAL DEFORMATION TESTS.

BS 1377 : Part 9 : 1990.

Date of Test: 24-Jan-22

Test Position: PBT 2

Depth (m): 0.50

Plate Area (m2): 0.1625971

Type of Kentledge: Wheeled

Maximum Applied Pressure (kPa):

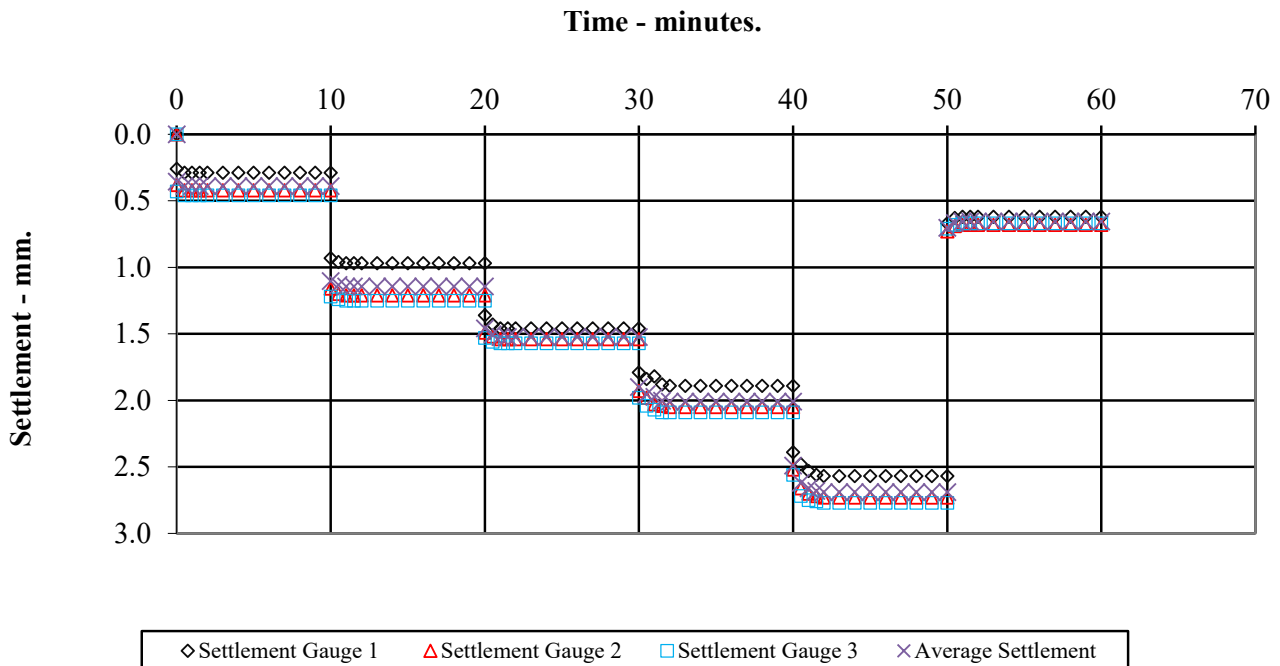
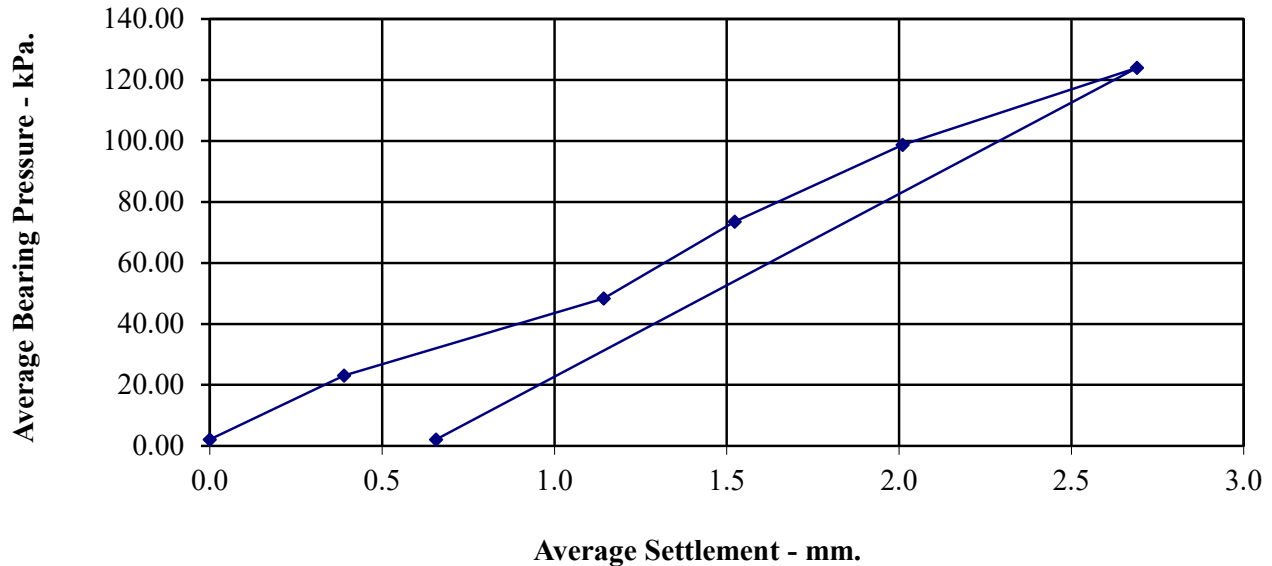
123.97

Maximum Deformation (mm):

2.69

Description:

Brown sandy CLAY.

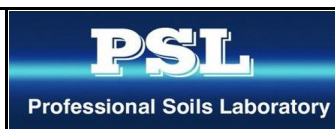


Calculation of Equivalent CBR Value from Plate Bearing Test

Design Manual for Roads and Bridges Volume 7 Section 2 Chapter 4

Incorporating IAN 73/06

Date of Test	24-Jan-22	
Test Position	PBT 2	
Depth (m)	0.50	
Description	Brown sandy CLAY.	
Maximum Deflection	2.69	mm
Deflection required for CBR value	1.25	mm
Load at 1.25mm	55	kN/m ²
Plate diameter	455	mm
Conversion factor for plate diameter	0.629	
K ₇₆₂ (modulus of subgrade reaction) calculated using 1.25mm settlement	27.9	kN/m ² /mm
CBR Value	3.1	%



Pilsworth Road, Bury

Contract No:

PSL22/0517

Client Ref:

VERTICAL DEFORMATION TESTS.

BS 1377 : Part 9 : 1990.

Date of Test: 24-Jan-22

Test Position: PBT 3

Depth (m): 0.50

Plate Area (m²): 0.1625971

Type of Kentledge: Wheeled

Maximum Applied Pressure (kPa):

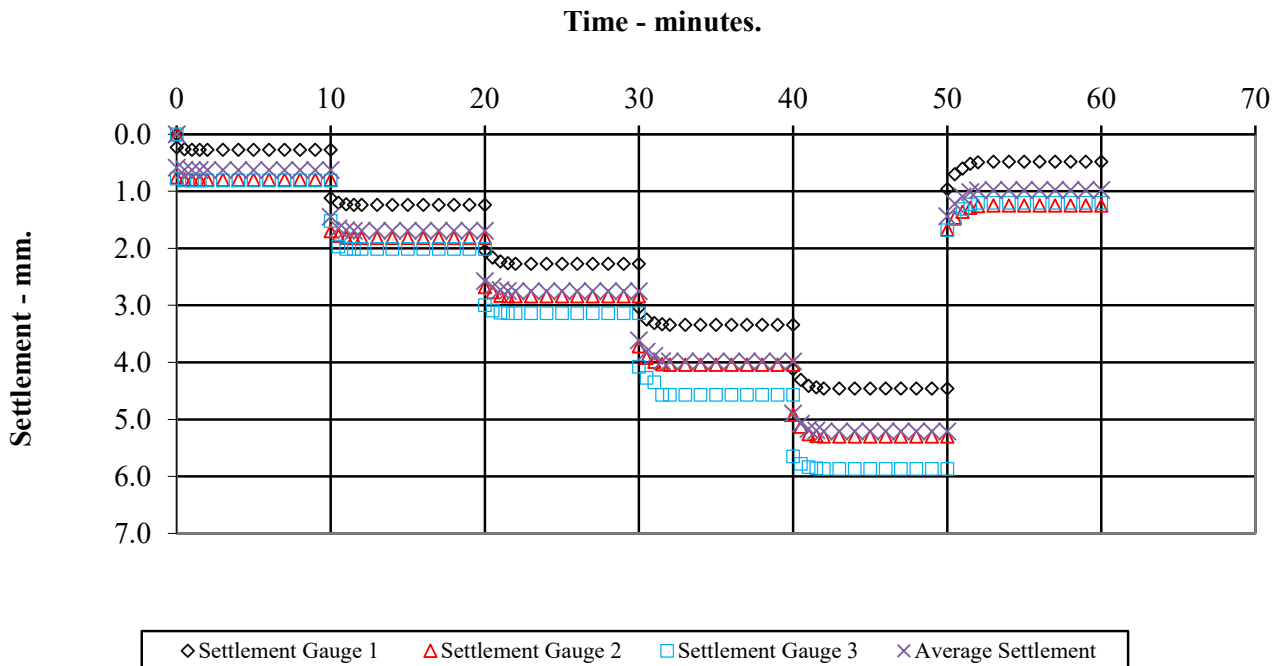
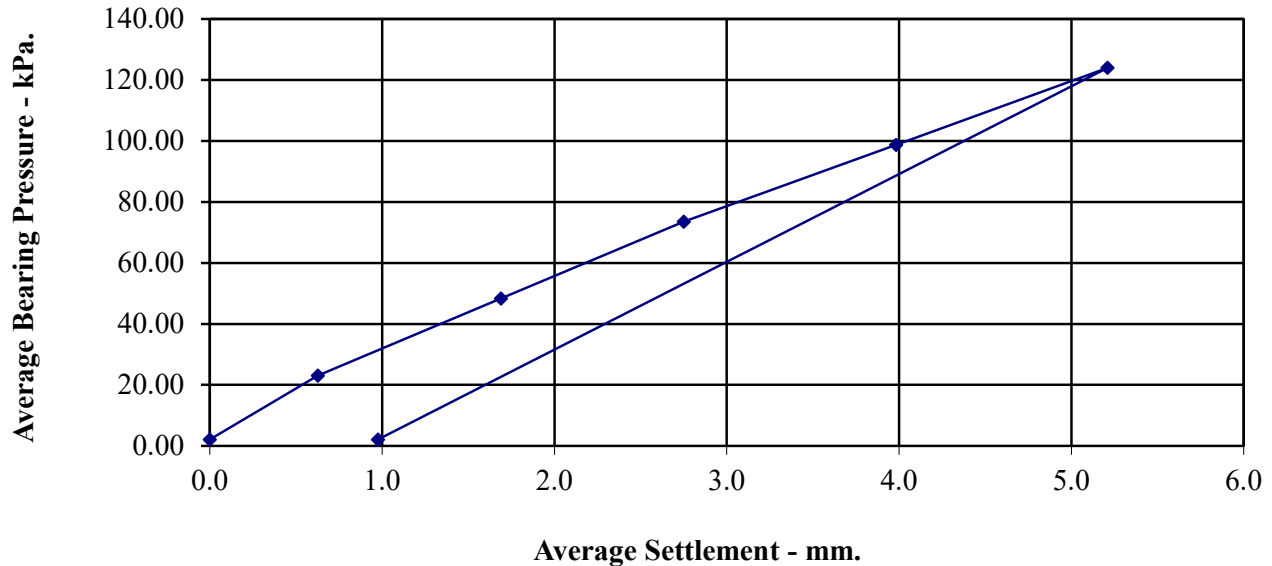
123.97

Maximum Deformation (mm):

5.21

Description:

Brown CLAY.



Calculation of Equivalent CBR Value from Plate Bearing Test

Design Manual for Roads and Bridges Volume 7 Section 2 Chapter 4

Incorporating IAN 73/06

Date of Test 24-Jan-22

Test Position PBT 3

Depth (m) 0.50

Description Brown CLAY.

Maximum Deflection 5.21 mm

Deflection required for CBR value 1.25 mm

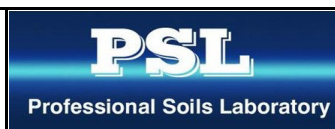
Load at 1.25mm 38 kN/m²

Plate diameter 455 mm

Conversion factor for plate diameter 0.629

K₇₆₂(modulus of subgrade reaction)
calculated using 1.25mm settlement 19.1 kN/m²/mm

CBR Value 1.6 %



Pilsworth Road, Bury

Contract No:

PSL22/0517

Client Ref:

VERTICAL DEFORMATION TESTS.

BS 1377 : Part 9 : 1990.

Date of Test: 24-Jan-22

Test Position: PBT 4

Depth (m): 0.70

Plate Area (m2): 0.1625971

Type of Kentledge: Wheeled

Maximum Applied Pressure (kPa):

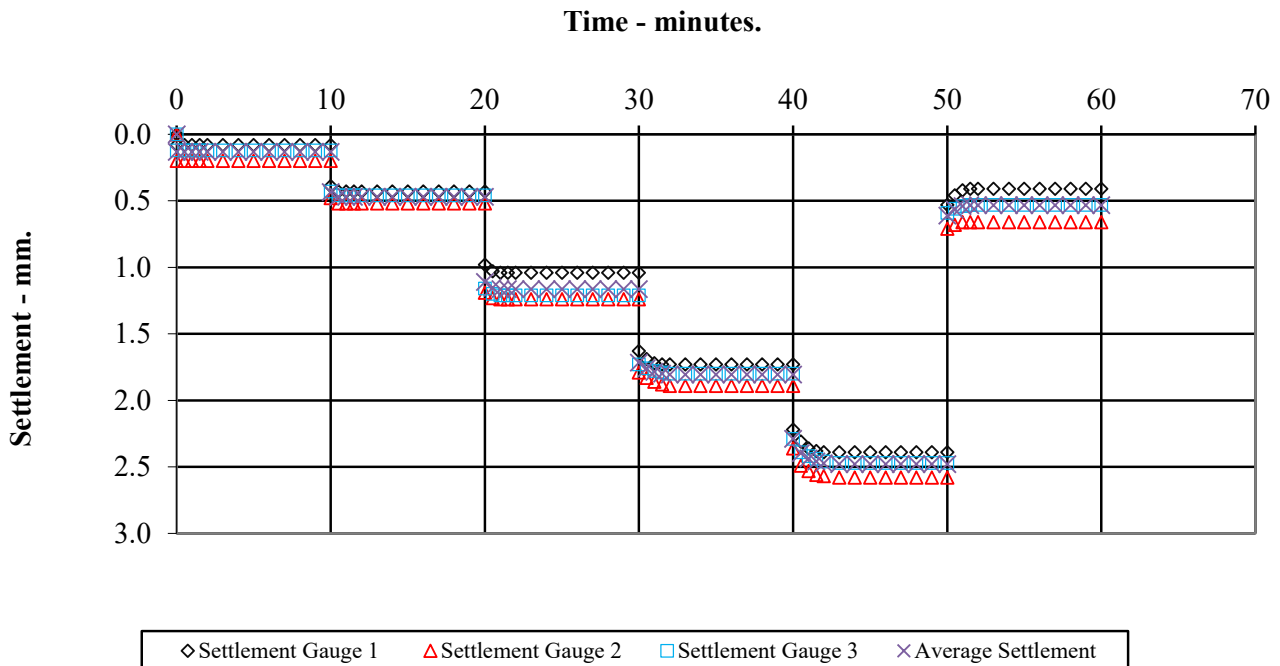
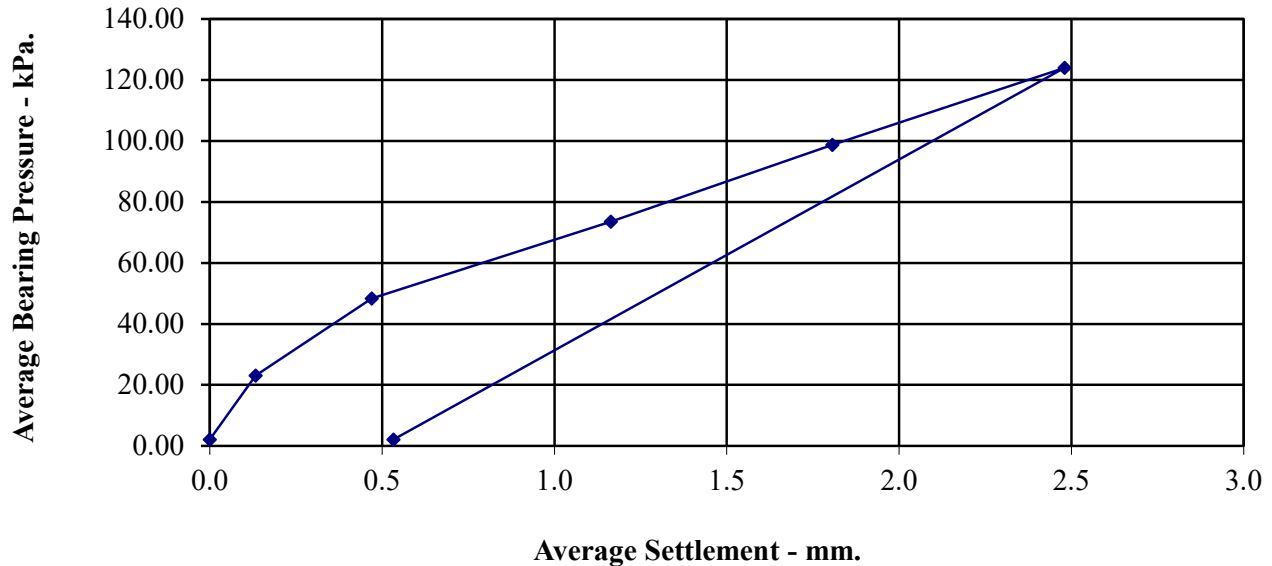
123.97

Maximum Deformation (mm):

2.48

Description:

Brown sandy CLAY.

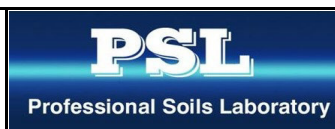


Calculation of Equivalent CBR Value from Plate Bearing Test

Design Manual for Roads and Bridges Volume 7 Section 2 Chapter 4

Incorporating IAN 73/06

Date of Test	24-Jan-22	
Test Position	PBT 4	
Depth (m)	0.70	
Description	Brown sandy CLAY.	
Maximum Deflection	2.48	mm
Deflection required for CBR value	1.25	mm
Load at 1.25mm	77	kN/m ²
Plate diameter	455	mm
Conversion factor for plate diameter	0.629	
K ₇₆₂ (modulus of subgrade reaction) calculated using 1.25mm settlement	38.7	kN/m ² /mm
CBR Value	5.4	%



Pilsworth Road, Bury

Contract No:

PSL22/0517

Client Ref:

VERTICAL DEFORMATION TESTS.

BS 1377 : Part 9 : 1990.

Date of Test: 24-Jan-22

Test Position: PBT 5

Depth (m): 0.60

Plate Area (m2): 0.1625971

Type of Kentledge: Wheeled

Maximum Applied Pressure (kPa):

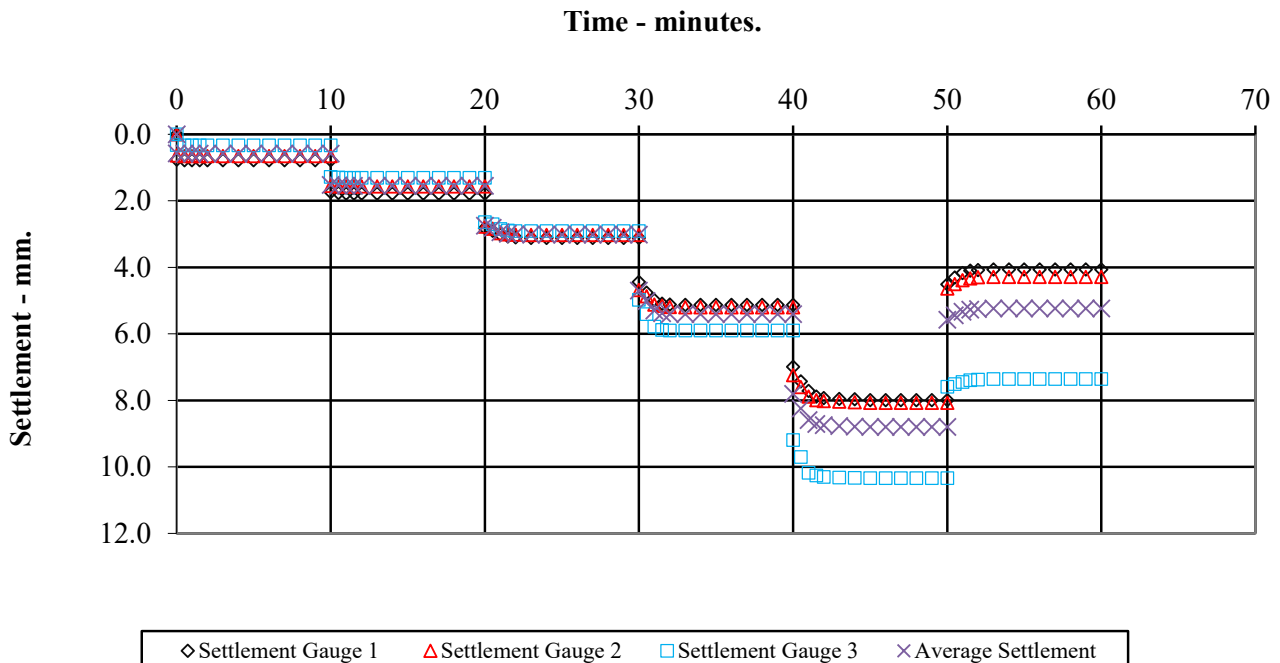
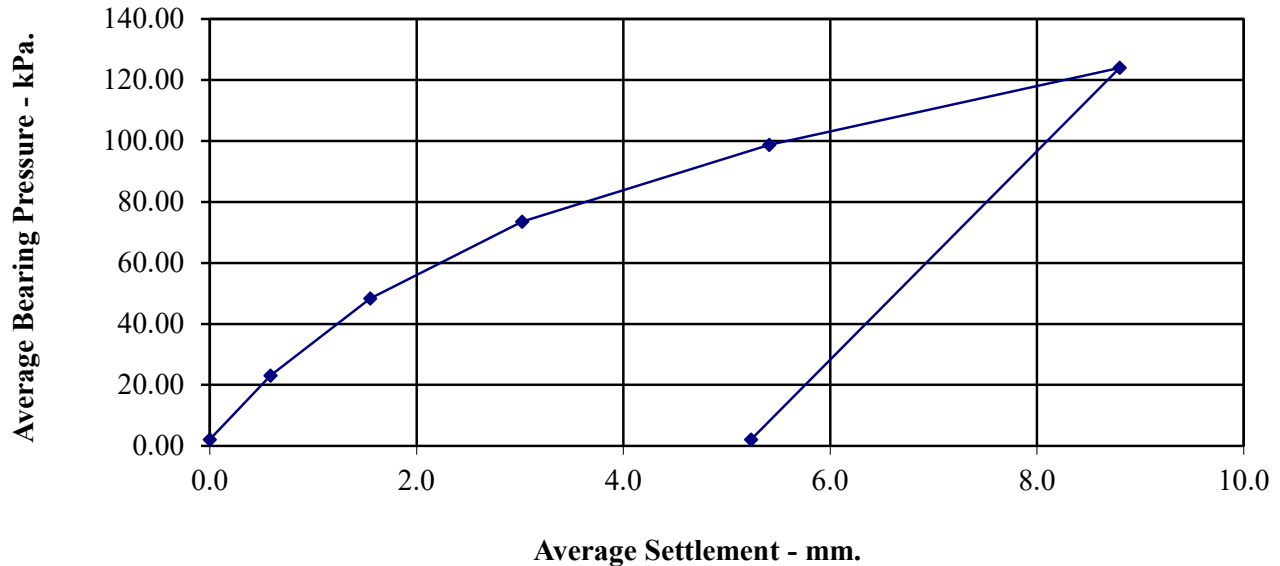
123.97

Maximum Deformation (mm):

8.80

Description:

Brown CLAY.



Calculation of Equivalent CBR Value from Plate Bearing Test

Design Manual for Roads and Bridges Volume 7 Section 2 Chapter 4

Incorporating IAN 73/06

Date of Test 24-Jan-22

Test Position PBT 5

Depth (m) 0.60

Description Brown CLAY.

Maximum Deflection 8.80 mm

Deflection required for CBR value 1.25 mm

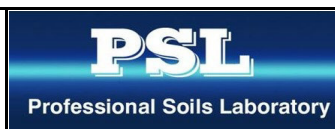
Load at 1.25mm 40 kN/m²

Plate diameter 455 mm

Conversion factor for plate diameter 0.629

K₇₆₂(modulus of subgrade reaction)
calculated using 1.25mm settlement 20.3 kN/m²/mm

CBR Value 1.8 %



Pilsworth Road, Bury

Contract No:

PSL22/0517

Client Ref:



APPENDIX 8 - Soil Percolation Testing Results

SOIL PERCOLATION TEST

Sheet 1 of 2

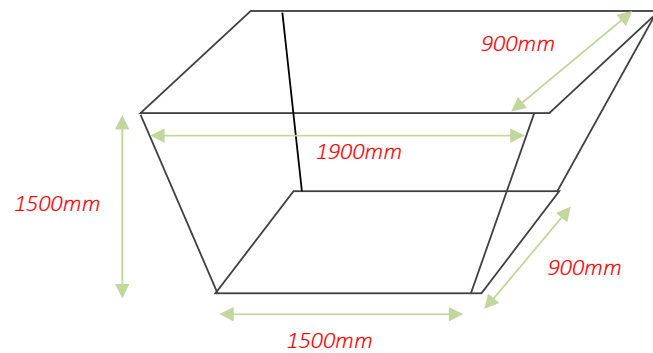
Date of Test: 25/01/2022

POSITION: SuDS1
TEST 1

Weather: Sunny, clear

Engineer: R Rowlinson
Checked: R Wyatt

Trial Pit Measurements



Test Data

Time Elapsed (mins)	Depth to Water Level (mm)
0	1210
1	1210
2	1210
3	1220
4	1220
5	1230
10	1270
20	1320
40	1390
60	1430
75	1500

Pit Depth (mm): 1500

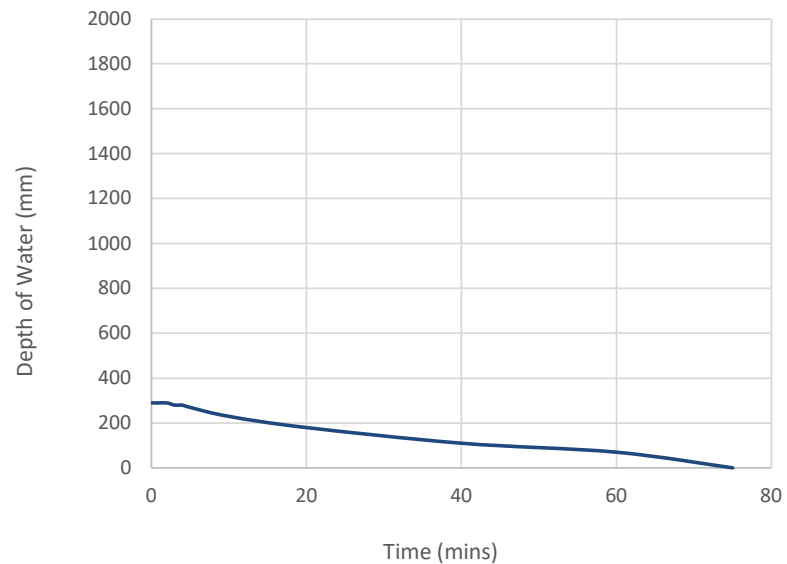
Pit Details: Open with no stone filling

Groundwater Level: NGW

SOIL PERCOLATION TEST

POSITION: SuDS1
TEST 1

Depth vs Time



Volume of Pit (m ³)	2.565
Void Ratio of Infill	1
Volume of Infill (m ³)	N/A
Volume of Water in Pit (m ³)	0.4959

Compliance Check:

Water Level at 75% effective depth (mm)	217.5
Water Level at 25% effective depth (mm)	72.5

Compliant with BRE 365

Soil Infiltration Rate Calculation

Water Level 1	290
Water Level 2	0
Time to Drain from Level 1 to Level 2 (mins)	75
Volume of water discharged (m ³)	0.4959

Discharge Area (m ²)	2.522
----------------------------------	-------

Soil Infiltration Rate (m/min)	0.0026217
--------------------------------	-----------

Soil Infiltration Rate (m/sec)	4.37E-05
--------------------------------	----------

NEW OFFICE BLOCK, BURY
GRO-21438
AVID

SOIL PERCOLATION TEST



Sheet 1 of 2

Date of Test: 26/01/2022

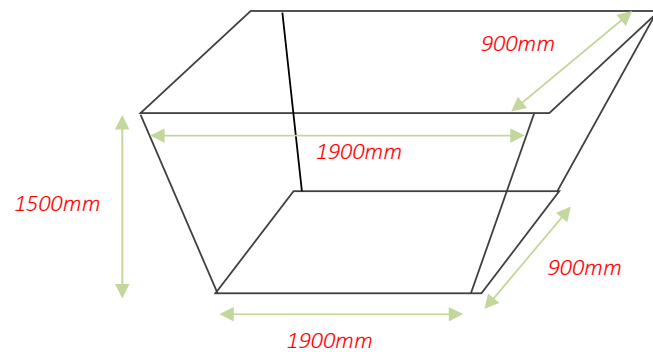
POSITION: SuDS1
TEST 2

Weather: Sunny, clear

Engineer: R Rowlinson

Checked: R Wyatt

Trial Pit Measurements



Test Data

Time Elapsed (mins)	Depth to Water Level (mm)
0	1160
1	1160
2	1160
3	1160
4	1170
5	1170
10	1190
20	1230
40	1260
60	1270
80	1330
100	1410
120	1500

Pit Depth (mm): 1500

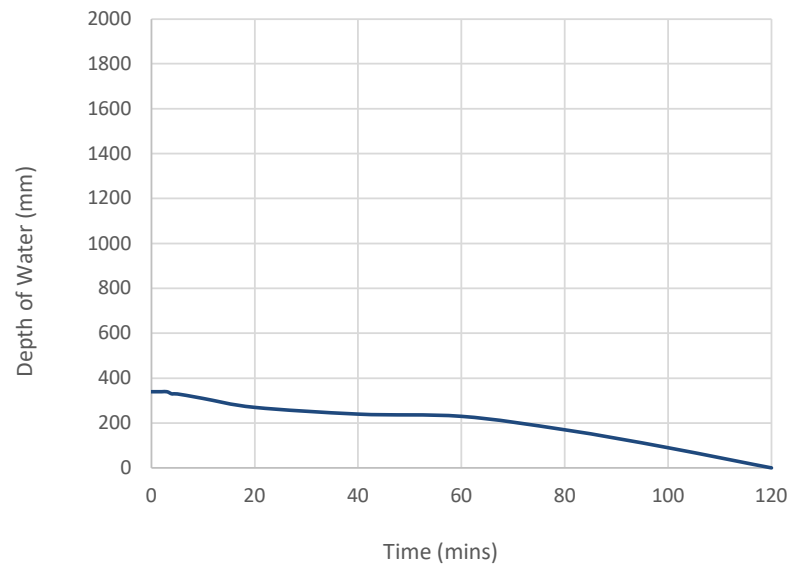
Pit Details: Open with no stone filling

Groundwater Level: NGW

SOIL PERCOLATION TEST

POSITION: SuDS1
TEST 2

Depth vs Time



Volume of Pit (m ³)	2.565
Void Ratio of Infill	1
Volume of Infill (m ³)	N/A
Volume of Water in Pit (m ³)	0.5814

Compliance Check:

Water Level at 75% effective depth (mm)	255
Water Level at 25% effective depth (mm)	85

Compliant with BRE 365

Soil Infiltration Rate Calculation

Water Level 1	340
Water Level 2	0
Time to Drain from Level 1 to Level 2 (mins)	120
Volume of water discharged (m ³)	0.5814

Discharge Area (m ²)	2.662
----------------------------------	-------

Soil Infiltration Rate (m/min)	0.0018201
--------------------------------	-----------

Soil Infiltration Rate (m/sec)	3.03E-05
--------------------------------	----------

NEW OFFICE BLOCK, BURY
GRO-21438
AVID

SOIL PERCOLATION TEST



Sheet 1 of 2

Date of Test: 25/01/2022

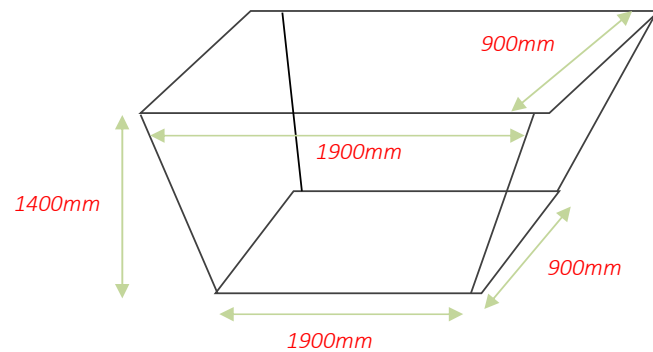
POSITION: SuDS1
TEST 3

Weather: Sunny, clear

Engineer: R Rowlinson

Checked: R Wyatt

Trial Pit Measurements



Test Data

Time Elapsed (mins)	Depth to Water Level (mm)
0	1220
1	1230
2	1240
3	1250
4	1250
5	1250
10	1270
20	1330
40	1330
60	1330

Pit Depth (mm): 1400

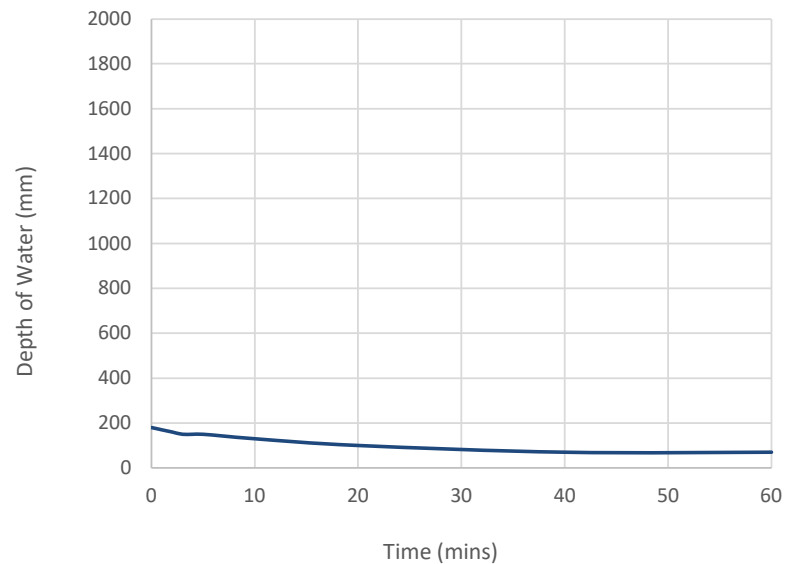
Pit Details: Open with no stone filling

Groundwater Level: NGW

SOIL PERCOLATION TEST

POSITION: SuDS1
TEST 3

Depth vs Time



Volume of Pit (m ³)	2.394
Void Ratio of Infill	1
Volume of Infill (m ³)	N/A
Volume of Water in Pit (m ³)	0.3078

Compliance Check:

Water Level at 75% effective depth (mm)	135
Water Level at 25% effective depth (mm)	45

Test not BRE 365 compliant with BRE 365 - insufficient time to drain past 25% effective depth

Soil Infiltration Rate Calculation

Water Level 1	180
Water Level 2	70
Time to Drain from Level 1 to Level 2 (mins)	60
Volume of water discharged (m ³)	0.1881

Discharge Area (m ²)	2.41
----------------------------------	------

Soil Infiltration Rate (m/min)	0.0013008
--------------------------------	-----------

Soil Infiltration Rate (m/sec)	2.17E-05
--------------------------------	----------

Sheet 1 of 2

Date of Test: 18/01/2022

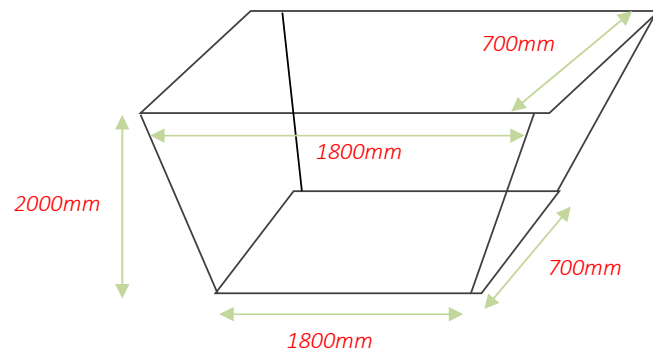
POSITION: SuDS2
TEST 1

Weather: Sunny, clear

Engineer: R Rowlinson

Checked: R Wyatt

Trial Pit Measurements



Test Data

Time Elapsed (mins)	Depth to Water Level (mm)
0	1100
1	1100
2	1100
3	1100
4	1100
5	1100
10	1100
18	1100
30	1100
64	1102
108	1102
120	1102

Pit Depth (mm): 2000

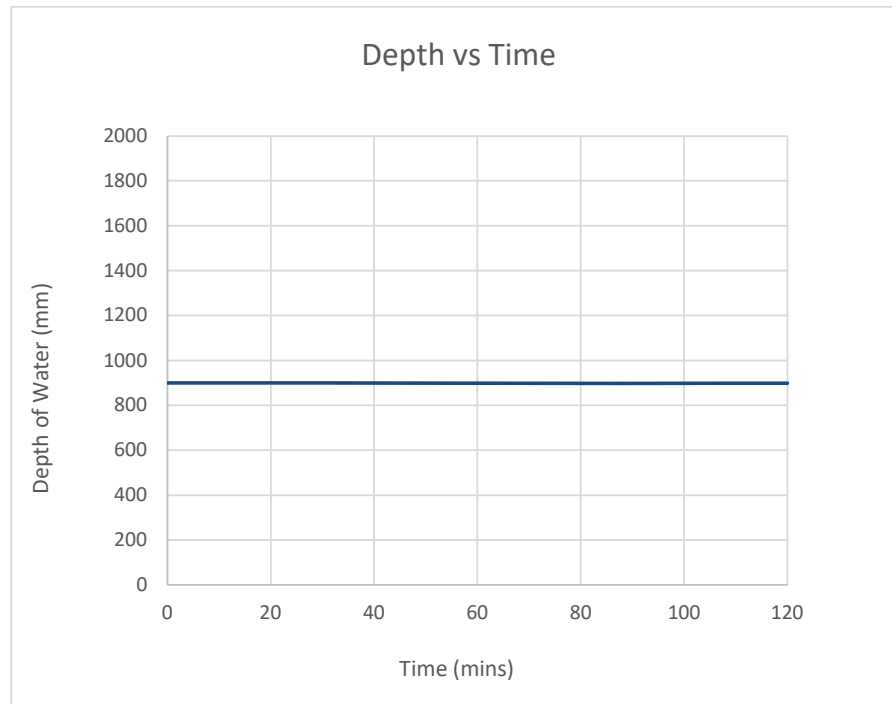
Pit Details: Open with no stone filling

Groundwater Level: NGW

SOIL PERCOLATION TEST

Sheet 2 of 2

POSITION: SuDS2
TEST 1



Volume of Pit (m ³)	2.52
Void Ratio of Infill	1
Volume of Infill (m ³)	N/A
Volume of Water in Pit (m ³)	1.134

Compliance Check:

Water Level at 75% effective depth (mm)	675
Water Level at 25% effective depth (mm)	225

Test not BRE 365 compliant with BRE 365 - insufficient time to drain past 25% effective depth

Soil Infiltration Rate Calculation

Water Level 1	900
Water Level 2	898
Time to Drain from Level 1 to Level 2 (mins)	120
Volume of water discharged (m ³)	0.00252

Discharge Area (m ²)	5.76
----------------------------------	------

Soil Infiltration Rate (m/min)	3.646E-06
--------------------------------	-----------

Soil Infiltration Rate (m/sec)	6.08E-08
--------------------------------	----------

Sheet 1 of 2

Date of Test: 18/01/2022

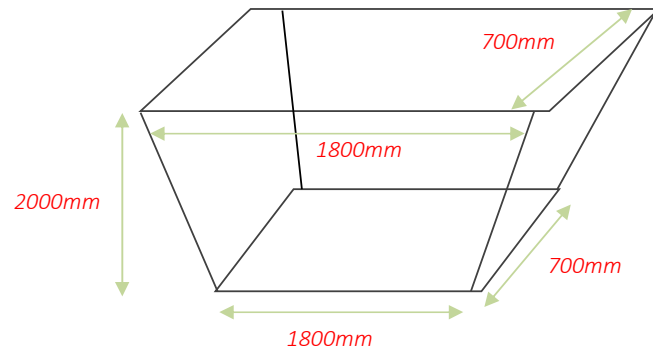
POSITION: SuDS2
TEST 2

Weather: Sunny, clear

Engineer: R Rowlinson

Checked: R Wyatt

Trial Pit Measurements



Test Data

Time Elapsed (mins)	Depth to Water Level (mm)
0	1002
25	1004
65	1005
105	1005
120	1005

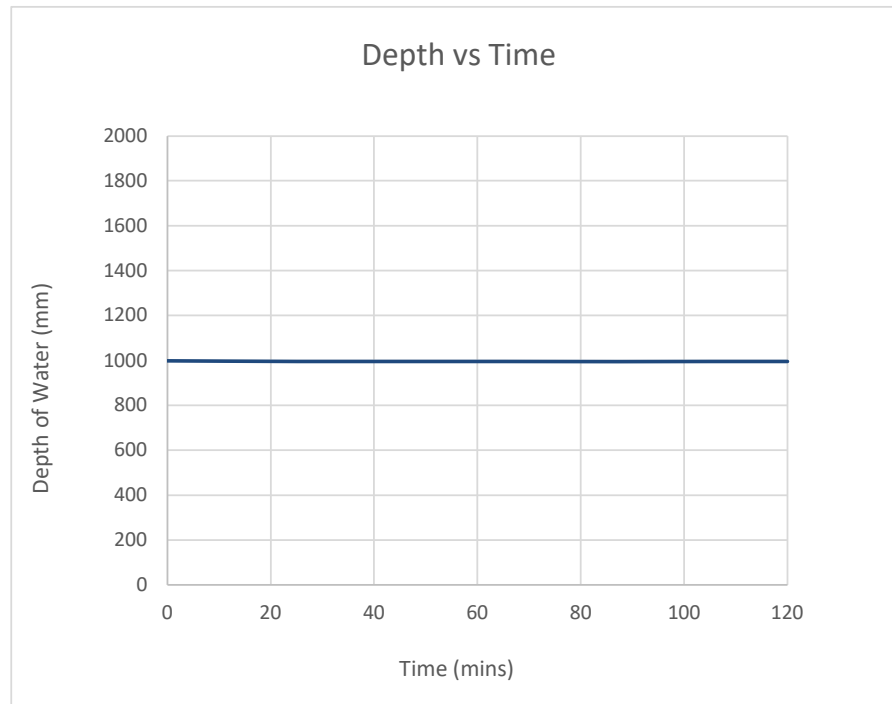
Pit Depth (mm): 2000

Pit Details: Open with no stone filling

Groundwater Level: NGW

SOIL PERCOLATION TEST

POSITION: SuDS2
TEST 2



Volume of Pit (m ³)	2.52
Void Ratio of Infill	1
Volume of Infill (m ³)	N/A
Volume of Water in Pit (m ³)	1.25748

Compliance Check:

Water Level at 75% effective depth (mm)	748.5
Water Level at 25% effective depth (mm)	249.5

Test not BRE 365 compliant with BRE 365 - insufficient time to drain past 25% effective depth

Soil Infiltration Rate Calculation

Water Level 1	998
Water Level 2	995
Time to Drain from Level 1 to Level 2 (mins)	120
Volume of water discharged (m ³)	0.00378

Discharge Area (m ²)	6.25
----------------------------------	------

Soil Infiltration Rate (m/min)	5.04E-06
--------------------------------	----------

Soil Infiltration Rate (m/sec)	8.40E-08
--------------------------------	----------

TURPINS HOLLOW, BOWDON
GRO-21404
MR RIZWAN ALI

SOIL PERCOLATION TEST



Sheet 1 of 2

Date of Test: 30/11/2021

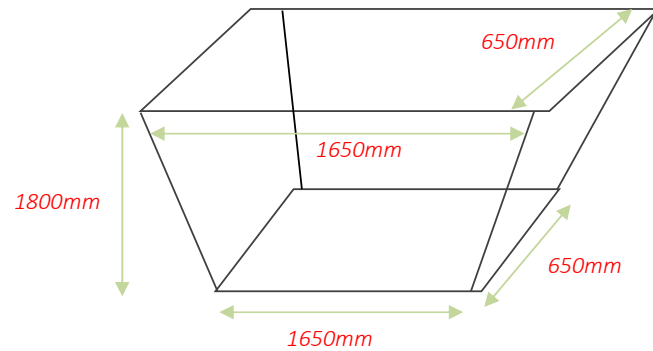
POSITION: SuDS2
TEST 3

Weather: Sunny, clear

Engineer: L Harrison

Checked: R Wyatt

Trial Pit Measurements



Test Data

Time Elapsed (mins)

Depth to Water Level (mm)

0
60
120

640
640.5
641

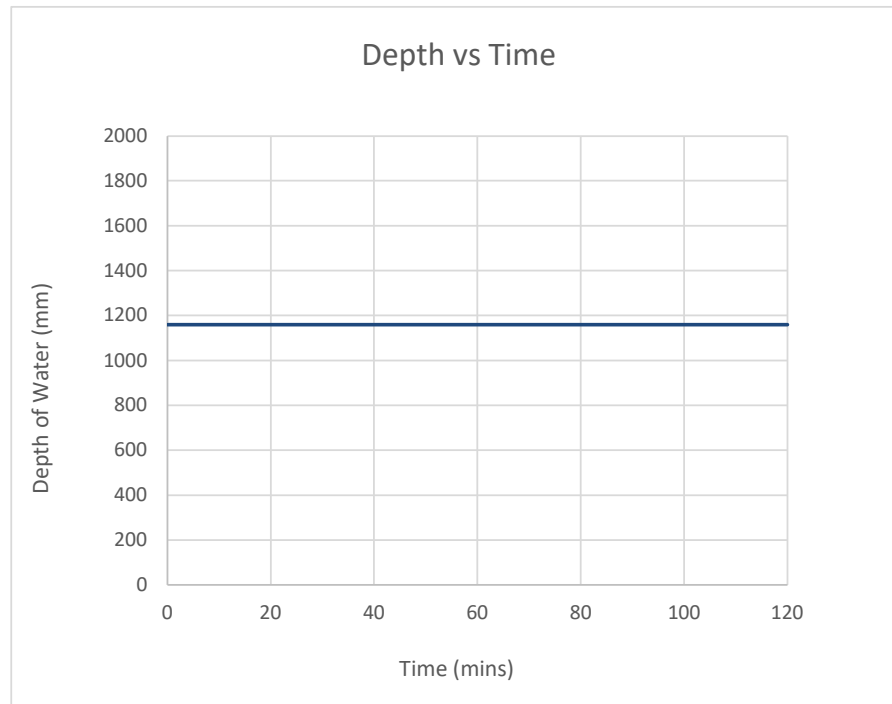
Pit Depth (mm): 1800

Pit Details: Open with no stone filling

Groundwater Level: NGW

SOIL PERCOLATION TEST

POSITION: SuDS2
TEST 3



Volume of Pit (m ³)	1.9305
Void Ratio of Infill	1
Volume of Infill (m ³)	N/A
Volume of Water in Pit (m ³)	1.2441

Compliance Check:

Water Level at 75% effective depth (mm)	870
Water Level at 25% effective depth (mm)	290

Test not BRE 365 compliant with BRE 365 - insufficient time to drain past 25% effective depth

Soil Infiltration Rate Calculation

Water Level 1	1160
Water Level 2	1159
Time to Drain from Level 1 to Level 2 (mins)	120
Volume of water discharged (m ³)	0.0010725

Discharge Area (m ²)	6.4085
----------------------------------	--------

Soil Infiltration Rate (m/min)	1.395E-06
--------------------------------	-----------

Soil Infiltration Rate (m/sec)	2.32E-08
--------------------------------	----------

APPENDIX 9 - Generic Screening Values (Commercial End Use)

APPENDIX 10 - CIRIA Risk Assessment Methodology

Contaminated Land Risk Assessment

Contaminated Land Risk Assessment is a technique that identifies and considers the associated risk, determines whether the risks are significant and whether action needs to be taken. The four main stages of risk assessment are:

Hazard Identification ➡ Hazard Assessment ➡ Risk Estimation ➡ Risk Evaluation

LCRM outlines the framework to be followed for risk assessment in the UK. The framework is designed to be consistent with UK legislation and policies including planning. The starting point of the risk assessment is to identify the context of the problem and the objectives of the process.

Formulating and developing a conceptual model for the site is an important requirement of risk assessment, this supports the identification and assessment of pollutant linkages. Development of the conceptual model forms the main part of preliminary risk assessment, and the model is subsequently refined or revised as more information and understanding is obtained through the risk assessment process.

Risk is a combination of the likelihood of an event occurring and the magnitude of its consequences. Therefore, both the likelihood and the consequences of an event must be taken into account when assessing risk.

The risk assessment process needs to take into account the degree of confidence required in decisions. Identification of uncertainties is an essential step in risk assessment.

The likelihood of an event is classified on a four-point system using the following terms and definitions from CIRIA C552:

- **High likelihood:** There is a pollution linkage and an event appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution;
- **Likely:** There is a pollution linkage and all the elements are present and in the right place, which means it is probable that an event will occur. Circumstances are such that the event is not inevitable, but possible in the short term and likely over the long term;
- **Low likelihood:** There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain even over a longer period such event would take place, and is less likely in the short term;
- **Unlikely:** There is a pollution linkage but circumstances are such that it is improbable the event would occur even in the long term.

The severity is also classified using a system based on CIRIA C552. The terms and definitions are:

- **Severe:** Short term (acute) risk to human health likely to result in 'significant harm' as defined by the Environment Protection Act 1990, Part IIA. Short-term risk of pollution of sensitive water resources. Catastrophic damage to buildings or property. A short-term risk to a particular ecosystem or organism forming part of that ecosystem (note definition of ecosystem in 'Draft Circular on Contaminated Land', DETR 2000);
Examples – High concentrations of contaminant on surface of recreation area, major spillage of contaminants from site into controlled waters, explosion causing building to collapse;

- **Medium:** Chronic damage to human health ('significant harm' as defined in DETR 2000). Pollution of sensitive water resources. A significant change in a particular ecosystem or organism forming part of that ecosystem (note definition of ecosystem in 'Draft Circular on Contaminated Land', DETR 2000);
Examples - Concentrations of contaminants exceed the generic assessment criteria, leaching of contaminants from a site to a Principal or Secondary Aquifer, death of species within a designated nature reserve;
- **Mild:** Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ('significant harm' as defined in 'Draft Circular on Contaminated Land', DETR 2000). Damage to sensitive buildings, structures, services or the environment;
Examples – Pollution of non-classified groundwater or damage to buildings rendering it unsafe to occupy.
- **Minor:** harm, not necessarily significant harm, which may result in financial loss or expenditure to resolve. Non-permanent health effects to human health (easily prevented by use of personal protective clothing etc). Easily repairable effects of damage to buildings, structures and services.
Examples – Presence of contaminants at such concentrations PPE is required during site work, loss of plants in landscaping scheme or discolouration of concrete.

Once the likelihood and severity have been determined, a risk category can be assigned using the table below.

		Consequences			
		Severe	Medium	Mild	Minor
Probability	Highly likely	Very high	High	Moderate	Moderate/low
	Likely	High	Moderate	Moderate/low	Low
	Low likelihood	Moderate	Moderate/low	Low	Very low
	Unlikely	Moderate/low	Low	Very Low	Very low

Definitions of the risk categories obtained from the above table are as follows together with an assessment of the further work that might be required:

- **Very high:** There is a high probability that severe harm could arise to a designated receptor from an identified hazard or there is evidence that severe harm is currently happening. This risk, if realised, could result in substantial liability. Urgent investigation and remediation are likely to be required;
- **High:** Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation is required and remedial works may be necessary in the short term and are likely over the longer term;
- **Moderate:** It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it would be more likely to be relatively mild. Investigation is normally required to clarify the risk and determine the liability. Some remedial works may be required in the longer term;
- **Low:** It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild;
- **Very Low:** There is a low possibility that harm could arise to a receptor. In the event of such harm being realised, it is not likely to be severe.

APPENDIX 11 - JIWG Receptor Decision Tool

Decision Support Tool for Receptor Risk Ranking

Stage 1		Score
Hazard Identification		
Select ACM type (run model for each type to generate 'Worst Case' output)	Loose fibrous asbestos debris	3
Extent of degradation of ACMs	Disaggregated (dominated by loose fibrous material; extreme degradation in ACM and/or free asbestos fibres/fibre bundles)	4
Friability and degree of bonding by matrix (ACM matrix, not ground materials)	Friable ACM or ACM with fibres not firmly linked in a matrix	2
Distribution of Visible Asbestos Across Affected Area	No visible ACMs/fibre bundles	0
Asbestos fibre type	Chrysotile alone	0
Sub-total		9
Hazard ranking		Low

No warranty, expressed or implied, or reliance, is provided in relation to the use of this tool.
It is contingent on users to satisfy themselves that the output from the tool is relevant and appropriate to the assessment being made.



Stage 2		Score
Emission Factors		
Amount of asbestos fibre in selected ACM/fibre type as % of host material	Very Low quantities - 0.001 to 0.01 %wt/wt	1
Respirable fibre index for ACM - RIVM report 711701034 (2003)	Medium	3
Activity type and effect on deterioration of ACMs	Low disturbance, minimal deterioration expected	2
Best description of primary host material matrix	Coarse to Fine Gravel	3
Sub-total		9
Exposure ranking		Low

Stage 3 Pathway and Receptor Sensitivity		Score
Receptor category	Construction	No score required
Age of Receptor	Infant (under 5)	4
Duration of exposure/site occupancy	> 1hr <10 hr daily exposure (e.g. part-time to full time occupational exposure or extended daily recreational exposure)	3
Receptor ranking		7 High
Combined hazard, exposure and receptor ranking		Medium
Pathway: Distance of Receptor from Source	In or within 10m of area of disturbance	4
Pathway: Depth to impacted material	Material buried at shallow depth, potential to be disturbed by excavation	C
Pathway ranking		4C Low
Overall ranking		Low



Joint Industry Working Group

Asbestos in Soil and Construction & Demolition Materials

Project Reference	
Site Name	NEW OFFICE BLOCK, BURY
Client	
Run by	CALLUM HOLDEN
Date	23-Mar-22
Reviewed by	
Characterisation of scenario being evaluated	
Interpretation of scenario ranking by DST	



APPENDIX 12 - Waste Classification Report

Waste Classification Report

HazWasteOnline™ classifies waste as either **hazardous** or **non-hazardous** based on its chemical composition, related legislation and the rules and data defined in the current UK or EU technical guidance (Appendix C) (note that HP 9 Infectious is not assessed). It is the responsibility of the classifier named below to:

- understand the origin of the waste
- select the correct List of Waste code(s)
- confirm that the list of determinands, results and sampling plan are fit for purpose
- select and justify the chosen metal species (Appendix B)
- correctly apply moisture correction and other available corrections
- add the meta data for their user-defined substances (Appendix A)
- check that the classification engine is suitable with respect to the national destination of the waste (Appendix C)



8SSFK-H0JF0-HOEN2

To aid the reviewer, the laboratory results, assumptions and justifications managed by the classifier are highlighted in pale yellow.

Job name

22-37451_HWOL_Results

Description/Comments

Project

GRO-21438

Site

NEW OFFICE BLOCK, BURY

Classified by

Name: **Bradley Massey**
Date: **28 Feb 2022 08:49 GMT**
Telephone: **01618 201368**
Company: **Groundtech Consulting Limited**
First Floor, Lloyd House, Orford Court,
Greenfold Way
Leigh
WN7 3XJ

HazWasteOnline™ provides a two day, hazardous waste classification course that covers the use of the software and both basic and advanced waste classification techniques. Certification has to be renewed every 3 years.

HazWasteOnline™ Certification:

Course: **Hazardous Waste Classification**

Date

Job summary

#	Sample name	Depth [m]	Classification Result	Hazard properties	Page
1	TP01---0.25		Non Hazardous		2
2	TP01---0.70		Non Hazardous		4
3	TP02---0.35		Non Hazardous		6
4	TP03---0.55		Non Hazardous		8
5	BH01---0.50		Non Hazardous		10
6	BH02---1.00		Non Hazardous		12
7	BH03---1.00		Non Hazardous		14
8	BH04---0.50		Non Hazardous		16

Related documents

#	Name	Description
1	22-37451_HWOL_Results.hwol	.hwol file used to create the Job

Report

Created by: Bradley Massey

Created date: 28 Feb 2022 08:49 GMT

Appendices	Page
Appendix A: Classifier defined and non GB MCL determinands	18
Appendix B: Rationale for selection of metal species	19
Appendix C: Version	20

Classification of sample: TP01---0.25

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
TP01---0.25	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
7.6% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 7.6% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	pH				10.8	pH		10.8	pH	10.8 pH		
2	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<4	mg/kg	2.27	<9.08	mg/kg	<0.000908 %		<LOD
	024-017-00-8											
3	naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
4	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8									
5	acenaphthene				0.29	mg/kg		0.268	mg/kg	0.0000268 %	✓	
		201-469-6	83-32-9									
6	fluorene				0.29	mg/kg		0.268	mg/kg	0.0000268 %	✓	
		201-695-5	86-73-7									
7	phenanthrene				2.5	mg/kg		2.31	mg/kg	0.000231 %	✓	
		201-581-5	85-01-8									
8	anthracene				0.63	mg/kg		0.582	mg/kg	0.0000582 %	✓	
		204-371-1	120-12-7									
9	fluoranthene				3.8	mg/kg		3.511	mg/kg	0.000351 %	✓	
		205-912-4	206-44-0									
10	pyrene				3.5	mg/kg		3.234	mg/kg	0.000323 %	✓	
		204-927-3	129-00-0									
11	benzo[a]anthracene				2	mg/kg		1.848	mg/kg	0.000185 %	✓	
	601-033-00-9	200-280-6	56-55-3									
12	chrysene				1.4	mg/kg		1.294	mg/kg	0.000129 %	✓	
	601-048-00-0	205-923-4	218-01-9									
13	benzo[a]pyrene; benzo[def]chrysene				2.1	mg/kg		1.94	mg/kg	0.000194 %	✓	
	601-032-00-3	200-028-5	50-32-8									
14	indeno[123-cd]pyrene				1	mg/kg		0.924	mg/kg	0.0000924 %	✓	
		205-893-2	193-39-5									
15	dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-041-00-2	200-181-8	53-70-3									
16	benzo[ghi]perylene				1.3	mg/kg		1.201	mg/kg	0.00012 %	✓	
		205-883-8	191-24-2									
17	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }				9.4	mg/kg	1.895	16.455	mg/kg	0.00165 %	✓	
	033-005-00-1											

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
18	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }			1	<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
	048-001-00-5									
19	copper { copper(II) chloride dihydrate }				34 mg/kg	2.683	84.282 mg/kg	0.00843 %	✓	
		231-210-2	10125-13-0							
20	mercury { mercury difulminate }				<0.3 mg/kg	1.419	<0.426 mg/kg	<0.0000426 %		<LOD
	080-005-00-2	211-057-8	628-86-4							
21	nickel { nickel diiodide }				14 mg/kg	5.324	68.875 mg/kg	0.00689 %	✓	
	028-029-00-4	236-666-6	13462-90-3							
22	lead { lead di(acetate) }			1	53 mg/kg	1.57	76.881 mg/kg	0.0049 %	✓	
	082-005-00-8	206-104-4	301-04-2							
23	selenium { nickel selenate }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	028-031-00-5	239-125-2	15060-62-5							
24	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }				130 mg/kg	4.398	528.279 mg/kg	0.0528 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
25	benzene				<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
26	ethylbenzene				<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
27	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
28	toluene				<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
29	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				18 mg/kg	1.462	26.308 mg/kg	0.00263 %		
		215-160-9	1308-38-9							
30	benzo[bk]fluoranthene				2.96 mg/kg		2.735 mg/kg	0.000274 %	✓	
		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9							
31	xylene				<2 µg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
Total:								0.0806 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP01---0.70

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
TP01---0.70	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
13% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 13% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	pH				7.6	pH		7.6	pH	7.6 pH		
2	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<4	mg/kg	2.27	<9.08	mg/kg	<0.000908 %		<LOD
	024-017-00-8											
3	naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
4	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8									
5	acenaphthene				0.44	mg/kg		0.383	mg/kg	0.0000383 %	✓	
		201-469-6	83-32-9									
6	fluorene				0.22	mg/kg		0.191	mg/kg	0.0000191 %	✓	
		201-695-5	86-73-7									
7	phenanthrene				0.62	mg/kg		0.539	mg/kg	0.0000539 %	✓	
		201-581-5	85-01-8									
8	anthracene				0.23	mg/kg		0.2	mg/kg	0.00002 %	✓	
		204-371-1	120-12-7									
9	fluoranthene				0.93	mg/kg		0.809	mg/kg	0.0000809 %	✓	
		205-912-4	206-44-0									
10	pyrene				0.8	mg/kg		0.696	mg/kg	0.0000696 %	✓	
		204-927-3	129-00-0									
11	benzo[a]anthracene				0.48	mg/kg		0.418	mg/kg	0.0000418 %	✓	
	601-033-00-9	200-280-6	56-55-3									
12	chrysene				0.36	mg/kg		0.313	mg/kg	0.0000313 %	✓	
	601-048-00-0	205-923-4	218-01-9									
13	benzo[a]pyrene; benzo[def]chrysene				0.43	mg/kg		0.374	mg/kg	0.0000374 %	✓	
	601-032-00-3	200-028-5	50-32-8									
14	indeno[123-cd]pyrene				0.24	mg/kg		0.209	mg/kg	0.0000209 %	✓	
		205-893-2	193-39-5									
15	dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-041-00-2	200-181-8	53-70-3									
16	benzo[ghi]perylene				0.26	mg/kg		0.226	mg/kg	0.0000226 %	✓	
		205-883-8	191-24-2									
17	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }				11	mg/kg	1.895	18.131	mg/kg	0.00181 %	✓	
	033-005-00-1											

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
18	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }			1	0.6 mg/kg		0.522 mg/kg	0.0000522 %	✓	
	048-001-00-5									
19	copper { copper(II) chloride dihydrate }				27 mg/kg	2.683	63.018 mg/kg	0.0063 %	✓	
		231-210-2	10125-13-0							
20	mercury { mercury difulminate }				<0.3 mg/kg	1.419	<0.426 mg/kg	<0.0000426 %		<LOD
	080-005-00-2	211-057-8	628-86-4							
21	nickel { nickel diiodide }				15 mg/kg	5.324	69.482 mg/kg	0.00695 %	✓	
	028-029-00-4	236-666-6	13462-90-3							
22	lead { lead di(acetate) }			1	75 mg/kg	1.57	102.436 mg/kg	0.00653 %	✓	
	082-005-00-8	206-104-4	301-04-2							
23	selenium { nickel selenate }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	028-031-00-5	239-125-2	15060-62-5							
24	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }				86 mg/kg	4.398	329.053 mg/kg	0.0329 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
25	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				18 mg/kg	1.462	26.308 mg/kg	0.00263 %		
		215-160-9	1308-38-9							
26	benzo[bk]fluoranthene				0.74 mg/kg		0.644 mg/kg	0.0000644 %	✓	
		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9							
Total:								0.0589 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP02---0.35

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
TP02---0.35	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
12% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 12% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	pH				9.6	pH		9.6	pH	9.6 pH		
2	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<4	mg/kg	2.27	<9.08	mg/kg	<0.000908 %		<LOD
	024-017-00-8											
3	naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
4	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8									
5	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9									
6	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7									
7	phenanthrene				0.66	mg/kg		0.581	mg/kg	0.0000581 %	✓	
		201-581-5	85-01-8									
8	anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		204-371-1	120-12-7									
9	fluoranthene				0.83	mg/kg		0.73	mg/kg	0.000073 %	✓	
		205-912-4	206-44-0									
10	pyrene				0.82	mg/kg		0.722	mg/kg	0.0000722 %	✓	
		204-927-3	129-00-0									
11	benzo[a]anthracene				0.43	mg/kg		0.378	mg/kg	0.0000378 %	✓	
	601-033-00-9	200-280-6	56-55-3									
12	chrysene				0.41	mg/kg		0.361	mg/kg	0.0000361 %	✓	
	601-048-00-0	205-923-4	218-01-9									
13	benzo[a]pyrene; benzo[def]chrysene				0.41	mg/kg		0.361	mg/kg	0.0000361 %	✓	
	601-032-00-3	200-028-5	50-32-8									
14	indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-893-2	193-39-5									
15	dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-041-00-2	200-181-8	53-70-3									
16	benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-883-8	191-24-2									
17	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }				7.1	mg/kg	1.895	11.837	mg/kg	0.00118 %	✓	
	033-005-00-1											

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
18	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }			1	<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
	048-001-00-5									
19	copper { copper(II) chloride dihydrate }				15 mg/kg	2.683	35.412 mg/kg	0.00354 %	✓	
		231-210-2	10125-13-0							
20	mercury { mercury difulminate }				<0.3 mg/kg	1.419	<0.426 mg/kg	<0.0000426 %		<LOD
	080-005-00-2	211-057-8	628-86-4							
21	nickel { nickel diiodide }				13 mg/kg	5.324	60.91 mg/kg	0.00609 %	✓	
	028-029-00-4	236-666-6	13462-90-3							
22	lead { lead di(acetate) }			1	110 mg/kg	1.57	151.966 mg/kg	0.00968 %	✓	
	082-005-00-8	206-104-4	301-04-2							
23	selenium { nickel selenate }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	028-031-00-5	239-125-2	15060-62-5							
24	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }				79 mg/kg	4.398	305.744 mg/kg	0.0306 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
25	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				17 mg/kg	1.462	24.846 mg/kg	0.00248 %		
		215-160-9	1308-38-9							
26	benzo[bk]fluoranthene				0.56 mg/kg		0.493 mg/kg	0.0000493 %	✓	
		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9							
Total:								0.0552 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: TP03---0.55

✔ **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
TP03---0.55	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
5.9% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 5.9% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	pH				9.6	pH		9.6	pH	9.6 pH		
2	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<4	mg/kg	2.27	<9.08	mg/kg	<0.000908 %		<LOD
	024-017-00-8											
3	naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
4	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8									
5	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9									
6	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7									
7	phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-581-5	85-01-8									
8	anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		204-371-1	120-12-7									
9	fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-912-4	206-44-0									
10	pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		204-927-3	129-00-0									
11	benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-033-00-9	200-280-6	56-55-3									
12	chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-048-00-0	205-923-4	218-01-9									
13	benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-032-00-3	200-028-5	50-32-8									
14	indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-893-2	193-39-5									
15	dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-041-00-2	200-181-8	53-70-3									
16	benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-883-8	191-24-2									
17	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }				7.3	mg/kg	1.895	13.014	mg/kg	0.0013 %	✓	
	033-005-00-1											

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
18	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }			1	0.4 mg/kg		0.376 mg/kg	0.0000376 %	✓	
	048-001-00-5									
19	copper { copper(II) chloride dihydrate }				28 mg/kg	2.683	70.685 mg/kg	0.00707 %	✓	
		231-210-2	10125-13-0							
20	mercury { mercury difulminate }				<0.3 mg/kg	1.419	<0.426 mg/kg	<0.0000426 %		<LOD
	080-005-00-2	211-057-8	628-86-4							
21	nickel { nickel diiodide }				36 mg/kg	5.324	180.366 mg/kg	0.018 %	✓	
	028-029-00-4	236-666-6	13462-90-3							
22	lead { lead di(acetate) }			1	24 mg/kg	1.57	35.455 mg/kg	0.00226 %	✓	
	082-005-00-8	206-104-4	301-04-2							
23	selenium { nickel selenate }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	028-031-00-5	239-125-2	15060-62-5							
24	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }				93 mg/kg	4.398	384.876 mg/kg	0.0385 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
25	benzene				<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
26	ethylbenzene				<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
27	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
28	toluene				<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
29	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				28 mg/kg	1.462	40.924 mg/kg	0.00409 %		
		215-160-9	1308-38-9							
30	benzo[bk]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9							
31	xylene				<2 µg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
Total:								0.0726 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH01---0.50

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
BH01---0.50	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
12% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 12% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	pH		PH		8	pH		8	pH	8pH		
2	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<4	mg/kg	2.27	<9.08	mg/kg	<0.000908 %		<LOD
	024-017-00-8											
3	naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
4	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8									
5	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9									
6	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7									
7	phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-581-5	85-01-8									
8	anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		204-371-1	120-12-7									
9	fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-912-4	206-44-0									
10	pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		204-927-3	129-00-0									
11	benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-033-00-9	200-280-6	56-55-3									
12	chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-048-00-0	205-923-4	218-01-9									
13	benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-032-00-3	200-028-5	50-32-8									
14	indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-893-2	193-39-5									
15	dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-041-00-2	200-181-8	53-70-3									
16	benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-883-8	191-24-2									
17	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }				6.9	mg/kg	1.895	11.504	mg/kg	0.00115 %	✓	
	033-005-00-1											

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
18	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }			1	<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
	048-001-00-5									
19	copper { copper(II) chloride dihydrate }				24 mg/kg	2.683	56.66 mg/kg	0.00567 %	✓	
		231-210-2	10125-13-0							
20	mercury { mercury difulminate }				<0.3 mg/kg	1.419	<0.426 mg/kg	<0.0000426 %		<LOD
	080-005-00-2	211-057-8	628-86-4							
21	nickel { nickel diiodide }				15 mg/kg	5.324	70.281 mg/kg	0.00703 %	✓	
	028-029-00-4	236-666-6	13462-90-3							
22	lead { lead di(acetate) }			1	14 mg/kg	1.57	19.341 mg/kg	0.00123 %	✓	
	082-005-00-8	206-104-4	301-04-2							
23	selenium { nickel selenate }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	028-031-00-5	239-125-2	15060-62-5							
24	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }				60 mg/kg	4.398	232.21 mg/kg	0.0232 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
25	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				14 mg/kg	1.462	20.462 mg/kg	0.00205 %		
		215-160-9	1308-38-9							
26	benzo[bk]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9							
Total:								0.0416 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH02---1.00

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
BH02---1.00	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
15% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 15% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	pH				7.8	pH		7.8	pH	7.8 pH		
2	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<4	mg/kg	2.27	<9.08	mg/kg	<0.000908 %		<LOD
	024-017-00-8											
3	naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
4	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8									
5	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9									
6	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7									
7	phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-581-5	85-01-8									
8	anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		204-371-1	120-12-7									
9	fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-912-4	206-44-0									
10	pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		204-927-3	129-00-0									
11	benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-033-00-9	200-280-6	56-55-3									
12	chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-048-00-0	205-923-4	218-01-9									
13	benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-032-00-3	200-028-5	50-32-8									
14	indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-893-2	193-39-5									
15	dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-041-00-2	200-181-8	53-70-3									
16	benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-883-8	191-24-2									
17	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }				6.9	mg/kg	1.895	11.111	mg/kg	0.00111 %	✓	
	033-005-00-1											

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
18	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }			1	<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
	048-001-00-5									
19	copper { copper(II) chloride dihydrate }				17 mg/kg	2.683	38.766 mg/kg	0.00388 %	✓	
		231-210-2	10125-13-0							
20	mercury { mercury difulminate }				<0.3 mg/kg	1.419	<0.426 mg/kg	<0.0000426 %		<LOD
	080-005-00-2	211-057-8	628-86-4							
21	nickel { nickel diiodide }				10 mg/kg	5.324	45.257 mg/kg	0.00453 %	✓	
	028-029-00-4	236-666-6	13462-90-3							
22	lead { lead di(acetate) }			1	15 mg/kg	1.57	20.016 mg/kg	0.00128 %	✓	
	082-005-00-8	206-104-4	301-04-2							
23	selenium { nickel selenate }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	028-031-00-5	239-125-2	15060-62-5							
24	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }				31 mg/kg	4.398	115.885 mg/kg	0.0116 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
25	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				10 mg/kg	1.462	14.616 mg/kg	0.00146 %		
		215-160-9	1308-38-9							
26	benzo[bk]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9							
Total:								0.0251 %		

Key

- User supplied data
- Determinand values ignored for classification, see column 'Conc. Not Used' for reason
- Determinand defined or amended by HazWasteOnline (see Appendix A)
-  Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
- <LOD** Below limit of detection
- ND** Not detected
- CLP: Note 1 Only the metal concentration has been used for classification

Classification of sample: BH03---1.00

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
BH03---1.00	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
7.4% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 7.4% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	pH				8.9	pH		8.9	pH	8.9 pH		
2	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<4	mg/kg	2.27	<9.08	mg/kg	<0.000908 %		<LOD
	024-017-00-8											
3	naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
4	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8									
5	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9									
6	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7									
7	phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-581-5	85-01-8									
8	anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		204-371-1	120-12-7									
9	fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-912-4	206-44-0									
10	pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		204-927-3	129-00-0									
11	benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-033-00-9	200-280-6	56-55-3									
12	chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-048-00-0	205-923-4	218-01-9									
13	benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-032-00-3	200-028-5	50-32-8									
14	indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-893-2	193-39-5									
15	dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-041-00-2	200-181-8	53-70-3									
16	benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-883-8	191-24-2									
17	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }				3.4	mg/kg	1.895	5.965	mg/kg	0.000596 %	✓	
	033-005-00-1											

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
18	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }			1	<0.2 mg/kg		<0.2 mg/kg	<0.00002 %		<LOD
	048-001-00-5									
19	copper { copper(II) chloride dihydrate }				12 mg/kg	2.683	29.811 mg/kg	0.00298 %	✓	
		231-210-2	10125-13-0							
20	mercury { mercury difulminate }				<0.3 mg/kg	1.419	<0.426 mg/kg	<0.0000426 %		<LOD
	080-005-00-2	211-057-8	628-86-4							
21	nickel { nickel diiodide }				13 mg/kg	5.324	64.094 mg/kg	0.00641 %	✓	
	028-029-00-4	236-666-6	13462-90-3							
22	lead { lead di(acetate) }			1	42 mg/kg	1.57	61.056 mg/kg	0.00389 %	✓	
	082-005-00-8	206-104-4	301-04-2							
23	selenium { nickel selenate }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	028-031-00-5	239-125-2	15060-62-5							
24	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }				52 mg/kg	4.398	211.769 mg/kg	0.0212 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
25	benzene				<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-020-00-8	200-753-7	71-43-2							
26	ethylbenzene				<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-023-00-4	202-849-4	100-41-4							
27	tert-butyl methyl ether; MTBE; 2-methoxy-2-methylpropane				<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	603-181-00-X	216-653-1	1634-04-4							
28	toluene				<1 µg/kg		<0.001 mg/kg	<0.0000001 %		<LOD
	601-021-00-3	203-625-9	108-88-3							
29	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				12 mg/kg	1.462	17.539 mg/kg	0.00175 %		
		215-160-9	1308-38-9							
30	benzo[bk]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9							
31	xylene				<2 µg/kg		<0.002 mg/kg	<0.0000002 %		<LOD
	601-022-00-9	202-422-2 [1] 203-396-5 [2] 203-576-3 [3] 215-535-7 [4]	95-47-6 [1] 106-42-3 [2] 108-38-3 [3] 1330-20-7 [4]							
Total:								0.0381 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
•	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Classification of sample: BH04---0.50

 **Non Hazardous Waste**
Classified as **17 05 04**
in the List of Waste

Sample details

Sample name:	LoW Code:
BH04---0.50	Chapter: 17: Construction and Demolition Wastes (including excavated soil from contaminated sites)
Moisture content:	Entry: 17 05 04 (Soil and stones other than those mentioned in 17 05 03)
9.5% (wet weight correction)	

Hazard properties

None identified

Determinands

Moisture content: 9.5% Wet Weight Moisture Correction applied (MC)

#	Determinand			CLP Note	User entered data		Conv. Factor	Compound conc.		Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number									
1	pH				8.9	pH		8.9	pH	8.9 pH		
2	chromium in chromium(VI) compounds { chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex }				<4	mg/kg	2.27	<9.08	mg/kg	<0.000908 %		<LOD
	024-017-00-8											
3	naphthalene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-052-00-2	202-049-5	91-20-3									
4	acenaphthylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-917-1	208-96-8									
5	acenaphthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-469-6	83-32-9									
6	fluorene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-695-5	86-73-7									
7	phenanthrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		201-581-5	85-01-8									
8	anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		204-371-1	120-12-7									
9	fluoranthene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-912-4	206-44-0									
10	pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		204-927-3	129-00-0									
11	benzo[a]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-033-00-9	200-280-6	56-55-3									
12	chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-048-00-0	205-923-4	218-01-9									
13	benzo[a]pyrene; benzo[def]chrysene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-032-00-3	200-028-5	50-32-8									
14	indeno[123-cd]pyrene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-893-2	193-39-5									
15	dibenz[a,h]anthracene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
	601-041-00-2	200-181-8	53-70-3									
16	benzo[ghi]perylene				<0.05	mg/kg		<0.05	mg/kg	<0.000005 %		<LOD
		205-883-8	191-24-2									
17	arsenic { arsenic acid and its salts with the exception of those specified elsewhere in this Annex }				6.6	mg/kg	1.895	11.316	mg/kg	0.00113 %	✓	
	033-005-00-1											

#	Determinand			CLP Note	User entered data	Conv. Factor	Compound conc.	Classification value	MC Applied	Conc. Not Used
	EU CLP index number	EC Number	CAS Number							
18	cadmium { cadmium compounds, with the exception of cadmium sulphoselenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex }			1	0.5 mg/kg		0.453 mg/kg	0.0000453 %	✓	
	048-001-00-5									
19	copper { copper(II) chloride dihydrate }				23 mg/kg	2.683	55.842 mg/kg	0.00558 %	✓	
		231-210-2	10125-13-0							
20	mercury { mercury difulminate }				<0.3 mg/kg	1.419	<0.426 mg/kg	<0.0000426 %		<LOD
	080-005-00-2	211-057-8	628-86-4							
21	nickel { nickel diiodide }				37 mg/kg	5.324	178.284 mg/kg	0.0178 %	✓	
	028-029-00-4	236-666-6	13462-90-3							
22	lead { lead di(acetate) }			1	21 mg/kg	1.57	29.836 mg/kg	0.0019 %	✓	
	082-005-00-8	206-104-4	301-04-2							
23	selenium { nickel selenate }				<1 mg/kg	2.554	<2.554 mg/kg	<0.000255 %		<LOD
	028-031-00-5	239-125-2	15060-62-5							
24	zinc { zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2] }				96 mg/kg	4.398	382.092 mg/kg	0.0382 %	✓	
	030-006-00-9	231-793-3 [1] 231-793-3 [2]	7446-19-7 [1] 7733-02-0 [2]							
25	chromium in chromium(III) compounds { chromium(III) oxide (worst case) }				28 mg/kg	1.462	40.924 mg/kg	0.00409 %		
		215-160-9	1308-38-9							
26	benzo[bk]fluoranthene				<0.1 mg/kg		<0.1 mg/kg	<0.00001 %		<LOD
		[1] 205-911-9 [2] 205-916-6	[1] 205-99-2 [2] 207-08-9							
Total:								0.0701 %		

Key

	User supplied data
	Determinand values ignored for classification, see column 'Conc. Not Used' for reason
	Determinand defined or amended by HazWasteOnline (see Appendix A)
	Speciated Determinand - Unless the Determinand is Note 1, the Conversion Factor is used to calculate the compound concentration
<LOD	Below limit of detection
ND	Not detected
CLP: Note 1	Only the metal concentration has been used for classification

Appendix A: Classifier defined and non GB MCL determinands

■ pH (CAS Number: PH)

Description/Comments: Appendix C4
Data source: WM3 1st Edition 2015
Data source date: 25 May 2015
Hazard Statements: None.

■ acenaphthylene (EC Number: 205-917-1, CAS Number: 208-96-8)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 17 Jul 2015
Hazard Statements: Acute Tox. 4; H302 , Acute Tox. 1; H330 , Acute Tox. 1; H310 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315

■ acenaphthene (EC Number: 201-469-6, CAS Number: 83-32-9)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Aquatic Chronic 2; H411

■ fluorene (EC Number: 201-695-5, CAS Number: 86-73-7)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 06 Aug 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

■ phenanthrene (EC Number: 201-581-5, CAS Number: 85-01-8)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 06 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Carc. 2; H351 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410 , Skin Irrit. 2; H315

■ anthracene (EC Number: 204-371-1, CAS Number: 120-12-7)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 17 Jul 2015
Hazard Statements: Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Skin Sens. 1; H317 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

■ fluoranthene (EC Number: 205-912-4, CAS Number: 206-44-0)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 21 Aug 2015
Hazard Statements: Acute Tox. 4; H302 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

■ pyrene (EC Number: 204-927-3, CAS Number: 129-00-0)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 2014
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 21 Aug 2015
Hazard Statements: Skin Irrit. 2; H315 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

■ indeno[123-cd]pyrene (EC Number: 205-893-2, CAS Number: 193-39-5)

Description/Comments: Data from C&L Inventory Database
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 06 Aug 2015
Hazard Statements: Carc. 2; H351

■ benzo[ghi]perylene (EC Number: 205-883-8, CAS Number: 191-24-2)

Description/Comments: Data from C&L Inventory Database; SDS Sigma Aldrich 28/02/2015
Data source: <http://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>
Data source date: 23 Jul 2015
Hazard Statements: Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

• **cadmium compounds, with the exception of cadmium sulposelenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex**

GB MCL index number: 048-001-00-5

Description/Comments: Worst Case: IARC considers cadmium compounds Group 1; Carcinogenic to humans

Additional Hazard Statement(s): Carc. 1A; H350

Reason for additional Hazards Statement(s):

20 Nov 2021 - Carc. 1A; H350 hazard statement sourced from: IARC Group 1 (23, Sup 7, 100C) 2012

• **copper(II) chloride dihydrate** (EC Number: 231-210-2, CAS Number: 10125-13-0)

Description/Comments: C&L for copper (II) chloride (anhydrous) CAS 7447-39-4

Data source:

Data source date: 03 Nov 2016

Hazard Statements: Skin Irrit. 2; H315 , Acute Tox. 4; H302 , Eye Dam. 1; H318 , Acute Tox. 4; H312 , STOT SE 3; H335 , Eye Irrit. 2; H319 , Acute Tox. 3; H301 , Acute Tox. 4; H332 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

• **lead di(acetate)** (EC Number: 206-104-4, CAS Number: 301-04-2)

GB MCL index number: 082-005-00-8

Description/Comments: IARC considers lead compounds Group 2A; Probably carcinogenic to humans; Lead REACH Consortium, following MCL protocols, considers many simple lead compounds to be Carcinogenic category 2.

Additional Hazard Statement(s): Carc. 2; H351

Reason for additional Hazards Statement(s):

20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2A (Sup 7, 87) 2006; Lead REACH Consortium www.reach-lead.eu/substanceinformation.html. Review date 29/09/2015

• **ethylbenzene** (EC Number: 202-849-4, CAS Number: 100-41-4)

GB MCL index number: 601-023-00-4

Description/Comments:

Additional Hazard Statement(s): Carc. 2; H351

Reason for additional Hazards Statement(s):

20 Nov 2021 - Carc. 2; H351 hazard statement sourced from: IARC Group 2B (77) 2000

• **chromium(III) oxide (worst case)** (EC Number: 215-160-9, CAS Number: 1308-38-9)

Description/Comments: Data from C&L Inventory Database

Data source: <https://echa.europa.eu/information-on-chemicals/cl-inventory-database/-/discli/details/33806>

Data source date: 17 Jul 2015

Hazard Statements: Acute Tox. 4; H332 , Acute Tox. 4; H302 , Eye Irrit. 2; H319 , STOT SE 3; H335 , Skin Irrit. 2; H315 , Resp. Sens. 1; H334 , Skin Sens. 1; H317 , Repr. 1B; H360FD , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

• **benzo[bk]fluoranthene** (EC Number: [1] 205-911-9 [2] 205-916-6, CAS Number: [1] 205-99-2 [2] 207-08-9)

Description/Comments: Combined data from harmonised entries in CLP for benzo[b] and benzo[k]fluoranthene; C&L Inventory Database

Data source: <https://echa.europa.eu/web/guest/information-on-chemicals/cl-inventory-database>

Data source date: 02 Mar 2017

Hazard Statements: Carc. 1B; H350 , Aquatic Acute 1; H400 , Aquatic Chronic 1; H410

Appendix B: Rationale for selection of metal species

chromium in chromium(VI) compounds {chromium (VI) compounds, with the exception of barium chromate and of compounds specified elsewhere in this Annex}

Worst case scenario

arsenic {arsenic acid and its salts with the exception of those specified elsewhere in this Annex}

Worst case scenario

cadmium {cadmium compounds, with the exception of cadmium sulposelenide (xCdS.yCdSe), reaction mass of cadmium sulphide with zinc sulphide (xCdS.yZnS), reaction mass of cadmium sulphide with mercury sulphide (xCdS.yHgS), and those specified elsewhere in this Annex}

Worst case scenario

copper {copper(II) chloride dihydrate}

Worst case scenario

mercury {mercury difulminate}

Worst case scenario

nickel {nickel diiodide}

Worst case scenario

lead {lead di(acetate)}

Worst case scenario

selenium {nickel selenate}

Worst case scenario

zinc {zinc sulphate (hydrous) (mono-, hexa- and hepta hydrate); [1] zinc sulphate (anhydrous) [2]}

Worst case scenario

chromium in chromium(III) compounds {chromium(III) oxide (worst case)}

Worst case scenario

Appendix C: Version

HazWasteOnline Classification Engine: **WM3 1st Edition v1.2.GB - Oct 2021**

HazWasteOnline Classification Engine Version: 2022.25.4995.9469 (25 Jan 2022)

HazWasteOnline Database: 2022.25.4995.9469 (25 Jan 2022)

This classification utilises the following guidance and legislation:

WM3 v1.2.GB - Waste Classification - 1st Edition v1.2.GB - Oct 2021

CLP Regulation - Regulation 1272/2008/EC of 16 December 2008

1st ATP - Regulation 790/2009/EC of 10 August 2009

2nd ATP - Regulation 286/2011/EC of 10 March 2011

3rd ATP - Regulation 618/2012/EU of 10 July 2012

4th ATP - Regulation 487/2013/EU of 8 May 2013

Correction to 1st ATP - Regulation 758/2013/EU of 7 August 2013

5th ATP - Regulation 944/2013/EU of 2 October 2013

6th ATP - Regulation 605/2014/EU of 5 June 2014

WFD Annex III replacement - Regulation 1357/2014/EU of 18 December 2014

Revised List of Waste 2014 - Decision 2014/955/EU of 18 December 2014

7th ATP - Regulation 2015/1221/EU of 24 July 2015

8th ATP - Regulation (EU) 2016/918 of 19 May 2016

9th ATP - Regulation (EU) 2016/1179 of 19 July 2016

10th ATP - Regulation (EU) 2017/776 of 4 May 2017

HP14 amendment - Regulation (EU) 2017/997 of 8 June 2017

13th ATP - Regulation (EU) 2018/1480 of 4 October 2018

14th ATP - Regulation (EU) 2020/217 of 4 October 2019

15th ATP - Regulation (EU) 2020/1182 of 19 May 2020

The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use)(Amendment etc.) (EU Exit)

Regulations 2020 - UK: 2020 No. 1567 of 16th December 2020

The Waste and Environmental Permitting etc. (Legislative Functions and Amendment etc.) (EU Exit) Regulations 2020 - UK:

2020 No. 1540 of 16th December 2020

GB MCL List - version 1.1 of 09 June 2021



APPENDIX 13 - Contaminated Land Legislative Background

Legislative Background

Environmental liabilities and risks have been evaluated in terms of a source -pathway - target relationship in accordance with the approach set out in:

- The 1995 Environment Act;
- The Contaminated Land (England) Regulations 2000;
- The DETR circular 02/2000 Environmental Protection Act 1990: Part IIA Contaminated Land.

Contaminated land is defined within the legislative framework as land which is in such condition by reason of substances in, on or under the land that:

- 1) Significant harm is being caused or there is a significant possibility of such harm being caused;
- 2) Significant pollution of controlled waters is being or is likely to be caused.

The potential for harm is based on the presence of three factors:

- **Source** - substances that are potential contaminants or pollutants that may cause harm;
- **Pathway** - a potential route by which contaminants can move from the source to the receptor;
- **Receptor** - a receptor that may be harmed, for example the water environment, humans and water.

Where a source, pathway and target are all present a pollutant linkage exists and there is potential for harm to be caused. The presence of a source does not automatically imply that a contamination problem exists, since contamination must be defined in terms of pollutant linkages and unacceptable risk of harm. The nature and importance of both pathways and receptors are site specific and will vary according to the intended end use of the site, its characteristics and its surroundings.

The key principle which supports the SPR approach is 'suitable for use' criteria. This requires remedial action only where contamination is considered to pose unacceptable actual or potential risks to health or the environment and, taking into account the proposed use of the site.

Relevant Guidance Documents

This report has been prepared in accordance with the list of guidance below however the list is not exhaustive:

- CLR11 – Model Procedures;
- Contamination and Environmental Matters - Their implications for Property Professionals (2nd Edition RICS Nov 2003);
- Brownfields – Managing the development of previously developed land – A client's guide, CIRIA 2002;
- DEFRA and Environment Agency publications CLR7 – 10, supported by the TOX guides and SGV guides, dated March 2002;
- DETR Circular 02/2000, Contaminated Land: Implementation of Part IIA of the Environmental Protection Act 1990;
- Environment Agency technical advice to third parties on Pollution of Controlled Waters for Part IIA of the EPA1990, May 2002;

Relevant Legislative Documents

The following is a non-exhaustive list of legislative framework documents that has been considered in the production of this report:

- The Environment Act (1995);
- The Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance (2012);
- The Environment Protection Act (1990);
- The Contaminated Land (England) Act (2000);
- Contaminated Land (England) Regulations (2012);
- The Water Resources Act (1991);
- The Pollution Prevention and Control (England and Wales) Regulations (2000);
- The Landfill Regulations (England and Wales) Regulations (2002);
- The Landfill (England and Wales) (Amendment) Regulations (2004);
- Health and Safety at Work Act;



APPENDIX 14 - Limitations

Limitations

This contract was completed by Groundtech Consulting on the basis of a defined programme and scope of works and terms and conditions agreed with the client. This report was compiled with due skill and care, taking into consideration the project brief provided, project objectives, agreed scope of works, prevailing site conditions and budget allocation.

Other than that defined in the paragraph above, Groundtech Consulting provides no other accountability or warranty whether express or implied, is made in relation to the services. Unless otherwise agreed this report has been prepared exclusively for the use and reliance of the client in accordance with generally accepted industry practices and for the intended purposes as stated in the agreement under which this work was completed. This report may not be relied upon, or transferred to, by any other party without the written agreement of a Director of Groundtech Consulting. A third party who relies on this report, does so at their own and sole risk and no liability to such parties is provided by Groundtech Consulting.

It is the understanding of Groundtech Consulting that this report is to be used for the intended purpose as set out in the introduction. The purpose was instrumental in determining the scope and level of the services provided. Should the purpose of the report or the proposed end use of the site change, this report will no longer be directly applicable, and its validity readdressed. No reliance upon the report in the revised situation should be assumed by the client without the permission of Groundtech Consulting.

The report was written in 2022, later changes in legislation, statutory requirements and industry best practices have not been considered and this should be allowed for. Ground conditions can also change and should be investigated if there is any significant delay in acting on the findings of this report. The period of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions in this report should not be relied upon in the future without the written confirmation from Groundtech Consulting that it is safe to do so.

The observations and conclusions outlined in this report are based exclusively on the services that were provided as set out in the agreement between the client and Groundtech Consulting.

Groundtech Consulting are not liable for the existence of any condition, the discovery of which would require additional investigation outside the agreed scope of works or core competency. The services provided are based upon Groundtech Consulting observations of existing physical conditions at the site gained from site reconnaissance together with interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The findings and recommendations contained in this report are based in part upon information provided by third parties, and Groundtech Consulting assume the information to be correct.

No responsibility can be accepted for errors for third party information presented in this report. Groundtech Consulting were not authorised to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the services. Groundtech Consulting are not liable for any inaccurate information, misrepresentation of data or conclusions, which may inform the scope of investigation undertaken by Groundtech Consulting and forms the contract with the client.

Where field investigations have been carried out these have been restricted to a level of detail required to achieve the stated objectives of the work. Ground conditions can also be variable due to its heterogeneous



properties and as investigation exploratory locations only allow examination of the ground at discrete locations. The potential exists for ground conditions to be encountered which are different to those considered in this report, particularly between exploratory holes. The extent of the limited area depends on the soil and groundwater conditions, together with other constraints such as the position of any existing structures and underground utilities. Geo-Environmental testing was carried out for a limited number of parameters [as stipulated in the contract] based on an understanding of the available operational and historical information, and it should not be inferred that other chemical species are not present.

The groundwater conditions entered on the exploratory hole records are those observed at the time of investigation. The groundwater level often has not had time to reach equilibrium and a monitoring period is required. Furthermore, groundwater levels are subject to seasonal variation or changes in local drainage conditions and higher groundwater levels may occur at other times of the year than were recorded during this investigation.

Any site drawings provided in this report are not meant to be an accurate base plan, but are preliminary and used to present the general relative locations of features on, and surrounding, the site.



Phase 2 Site Investigation

Hollins Brook Way Junction, Bury

for

JD Plc



01/12/2021



COMPLEX CHALLENGES ...
MADE SIMPLE

Phase 2 Site Investigation

Hollins Brook Way Junction Expansion, Bury

DESCRIPTION	DATE	AUTHOR	REVIEWED BY	APPROVED BY
Phase 2 Site Investigation Report	01/12/21	Reece McGuinness 	Alex Smiles 	Alex Smiles 
REVISION	DESCRIPTION	DATE	AUTHOR	APPROVED BY
REV 1.				
REV 2.				
Report Reference	4251-ROC-ZZ-XX-RP-ES-PH2SI			
Report Status	FINAL			



CONTENTS

1.0	INTRODUCTION	3
1.1	BACKGROUND	3
1.2	TERMS OF REFERENCE	3
1.3	OBJECTIVES	3
2.0	LIMITATIONS OF STUDY ASSESSMENT	4
3.0	BACKGROUND INFORMATION	5
3.1	SITE DESCRIPTION	5
3.2	GEOLOGICAL CHARACTERISTICS	5
3.3	SITE HISTORY AND ENVIRONMENTAL CHARACTERISTICS	5
4.0	SITE INVESTIGATION DESIGN	6
5.0	SITE INVESTIGATION FIELDWORKS	7
6.0	ENCOUNTERED GROUND CONDITIONS	8
6.1	GROUND CONDITIONS OVERVIEW	8
6.2	GROUNDWATER & CONTAMINATION OBSERVATIONS	10
6.3	BELOW GROUND OBSTRUCTIONS	10
6.4	TRLDCP TESTING	10
6.5	GAS MAIN DELINEATION.	11
7.0	LABORATORY TESTING	12
8.0	GEO-ENVIRONMENTAL ASSESSMENT	13
8.1	ASSESSMENT OF SOIL CONTAMINATION	17
8.2	GROUND GAS RISK ASSESSMENT	18
8.3	CONTROLLED WATERS	18
8.4	BELOW GROUND CONCRETE CONSTRUCTION	18
8.5	BELOW GROUND UTILITIES AND SERVICE RUNS	18
9.0	REFINED CONCEPTUAL SITE MODEL	19
10.0	GEOTECHNICAL & FOUNDATION DESIGN ASSESSMENT	23
10.1	NEW ROAD DESIGN	23
10.2	GENERAL COMMENTS	24
11.0	CONCLUSIONS & RECOMMENDATIONS	25
	APPENDIX A – SITE DRAWINGS	26
	APPENDIX B – EXPLORATORY HOLE LOGSHEETS	27
	APPENDIX C – CHEMICAL TESTING RESULTS	28
	APPENDIX D – GEOTECHNICAL TESTING RESULTS	29



COMPLEX CHALLENGES ...
MADE SIMPLE

1.0 Introduction

1.1 Background

- 1.1.1 RoC Consulting has been appointed by JD Plc to conduct a Phase 2 Site Investigation at Hollins Brook Way, Bury (the site). It is understood that the site is to form part of a road widening works in accordance with Eddisons drawings (ref: 3288-F01) provided within Appendix A.
- 1.1.2 The following assessment has been completed to support design and planning requirements for the site's future use as a highway.
- 1.1.3 The scope of the report and its assessment has been based around the site's redevelopment proposals as outlined in the Eddisons Potential Site Access plans. It should be noted that any subsequent revision of the proposed redevelopment or site boundary away from the above-mentioned drawing may result in the full or partial re-interpretation of this report and assessment.

1.2 Terms of Reference

- 1.2.1 The Phase 2 Site Investigation was carried out following receipt of an instruction from Giles Selby of JD Plc.

1.3 Objectives

- 1.3.1 The scope of works has been tailored to meet both planning and design requirements to assist with the site's redevelopment. These considerations include:
 - 1) Design a programme of site investigation works to establish ground conditions beneath the site and target known or suspected sources of contamination.
 - 2) Completion of site investigation field works including the formation of x3 window sample boreholes to establish the site's geology, as well as 2 TRLDGP tests to inform road and pavement design.
 - 3) Completion of x3 vacuum excavated / hand dug slit trenches to locate the high-pressure gas main beneath the site.
 - 4) Completion of geo-environmental and geotechnical laboratory analysis of soil samples to determine physical and chemical characteristics.
 - 5) Completion of a detailed geotechnical assessment of site conditions to inform road design.
 - 6) Completion of a geo-environmental assessment utilising information provided by both the current phase of site investigation works sufficient in its scope to assist with the discharge of contaminated land related planning conditions.



COMPLEX CHALLENGES ...
MADE SIMPLE

2.0 Limitations of Study Assessment

- 2.0.1 The report has been produced by RoC Consulting for the client solely for the purposes of a review of information for the above-mentioned site. It may not be used by any person for any other purpose other than that specified without the express written permission of RoC Consulting. Any liability arising out of its use by a third party for purposes not wholly connected with the above shall be the responsibility of that party who shall indemnify RoC Consulting against all claims, costs, damages and losses arising out of such use.
- 2.0.2 This report is written in the context of an agreed scope of work and should not be used in a different context. The report should be read in its entirety. Furthermore, new information, improved practices and changes in legislation may require re-interpretation of this report in whole or in part after its original issue. RoC Consulting reserve the right to alter their conclusions and recommendations in the light of further information that may become available.
- 2.0.3 Ground conditions can change rapidly, especially in areas of made ground, however, it is assumed that the ground conditions observed are typical and representative of the site as a whole. The ground conditions have been determined from a limited number of exploratory holes formed across the property, therefore, only a small percentage of the total area of the property has been investigated. Interpolation between exploratory holes has enabled a general picture of the subsurface conditions to be produced.
- 2.0.4 Conclusions drawn from the ground investigation should be read in this context. RoC Consulting cannot accept responsibility for any situations resulting from locally unforeseen ground conditions occurring between exploratory holes.
- 2.0.5 RoC Consulting has exercised all reasonable due skill, care and diligence when collating the design and subsequent execution of ground investigation works. It should be noted we cannot anticipate the requirements and actions of the regulatory authorities when designing and implementing ground investigation works and, whilst thorough consideration has been given to all geo-environmental and geotechnical concerns; further additional fieldworks or assessment may be required at their request.

3.0 Background Information

3.0.1 The overview below outlines the most salient points / considerations.

3.1 Site Description

3.1.1 The site is located circa 2.40km to the south east of Bury town centre on the Pilsbury Industrial Estate. The northern portion of the site is comprised of rough vegetated land and the rest of the site comprises disused asphalt car parking. Surrounding land use is predominantly commercial with the site being surrounded by the JD Campus offices to the south and east, residential housing to the west and various other commercial uses to the north. Photographs of the site are provided within Appendix A.

3.2 Geological Characteristics

3.2.1 Review of publicly available BGS geological map records indicate the site is underlain by the following:

Drift Geology: Hummocky (Moundy) Glacial Deposits.

Solid Geology: Trencherbone Rock - Sandstone

3.3 Site History and Environmental Characteristics

3.3.1 Historical records dated 1844 to 1846 indicate the site was occupied by fields and a bleach works and print works are located circa 220m to the south of the site. The site remained as fields until some time between 1964-2000 when a warehouse was constructed adjacent the site and the site became a car park and area of soft landscaping associated with the warehouse. In 2020 the warehouse was demolished however the car park and area of soft landscaping remain.

3.3.2 The MAGIC Map Groundwater Vulnerability Map indicates the drift geology is classified as a Secondary A Aquifer with the underlying sandstone bedrock also classed as a Secondary A Aquifer. The site is not said to be located within any Environment Agency Source Protection Zones or close proximity to any sensitive water abstraction points.

3.3.3 The nearest surface water feature is indicated 210m to the south in the form of Hollins Brook. No measurable water quality or flow rates are available for this feature. There is also a lake / pond like feature 120m to the southeast of the site.

3.3.4 There is a historic landfill site located circa 200m to the north east of the site known as Roach Bank. The license for the site was issued in 1991 and surrendered in 2002. Records indicate the landfill was only permitted to receive inert waste. There are two landfills of significant size ~500m to the east of the site, namely the Pilsworth North and Pilsworth South Landfill Sites operated by Viridor Waste Management Ltd.

3.3.5 The site is not said to be located in an area deemed to be at risk from flooding or extreme flooding events from either land or sea.

4.0 Site Investigation Design

General

- 4.0.1 The RoC intrusive investigation was designed and completed to investigate any potential geo-environmental issues as well as provide geotechnical information to facilitate new road design.
- 4.0.2 The site investigation works comprised the formation of three window sample boreholes to a depth of 5.45mbgl, two TRLDGP tests and three slit trenches.
- 4.0.3 Window sample boreholes and TRLDGP tests were located within the footprint of the proposed road widening works to establish ground conditions and support road design. The three slit trenches were located to delineate the location of the high-pressure gas main beneath the site.
- 4.0.4 Samples of soil collected during the investigation works are to be analysed for a variety of determinants associated with the pattern of current / historic industrial activity across the site as outlined within the preliminary conceptual site model.
- 4.0.5 Table 4.0 provided below provides location justification for each exploratory hole formed during the site investigation fieldworks. The purposes of this table are to illustrate the targeting of potential sources of contamination during the Phase 2 site investigation works.

Table 4.0: Borehole Locations & Justification

BH/WS ID.	Reason for selection
WS101	Provide information on ground conditions in the area of the proposed road widening works.
WS102	
WS103	
DCP101	
DCP102	
ST101	Locate and confirm the alignment of the high-pressure gas main through the site.
ST102	
ST103	

- 4.0.6 Exploratory hole locations are shown on RoC Consulting drawing ES101 (Current Site) and ES102 (Prop Development) provided within Appendix A.

5.0 Site Investigation Fieldworks

- 5.0.1 Site investigation fieldworks were completed on the 27th of October 2021 by drilling contractors Earth Engineering. Boreholes were formed using a Competitor 150, while slit trenches were formed by vacuum excavation or hand dug.
- 5.0.2 Information with respect to buried services was obtained from relevant providers prior to commencement of the investigation works. However, as a precautionary measure all exploratory hole locations were scanned with a Cable Avoidance Tool prior to the commencement of works. In addition, hand dug service pits were completed to a depth of 1.2mbgl at all borehole locations deemed to fall in close proximity to the suspected location of possible buried service runs / infrastructure.
- 5.0.3 An engineer from cadent was present to trace the high-pressure gas main and perform a watching brief on the slit trenching works to expose the gas main.
- 5.0.4 Soil samples were collected for subsequent chemical and geotechnical laboratory analysis. Soil samples used for geotechnical analysis were collected in 500g plastic sample tubs and U70 sample tubes. Samples collected for chemical testing were collected in 300g glass jars and 500g plastic sample tubs. Samples were obtained from both made ground and natural strata to assess the overall quality of underlying soils. In situ soil strength was investigated using Standard Penetration Tests (SPT).
- 5.0.5 The shallow soils encountered during construction of the boreholes were described and logged by a suitably qualified engineer in accordance with BS 5930: Code of Practice for Site Investigations (the log sheets for which have been provided within Appendix B).

6.0 Encountered Ground Conditions

- 6.0.1 The following ground conditions are summarised from the exploratory holes formed during the ROC Consulting site investigation. The following represents an overview of encountered ground conditions and it is recommended reference be made to the borehole and trial pit log sheets provided within Appendix B for a detailed strata description; all depths shown are given in metres below ground level (mbgl) unless otherwise stated).

6.1 Ground Conditions Overview

Made Ground

- 6.1.1 Made ground was reported at all exploratory hole locations the details of which is provided in table 6.1 below:

Table 6.1: Made Ground Strata Description

Strata description	Made ground was encountered at surface level in WS101 and WS102 as asphalt ranging in thickness from 0.05 to 0.10mbgl. Asphalt was underlain by a limestone gravel subbase to circa 0.20mbgl. At WS103 Topsoil was encountered at the surface to 0.20mbgl and underlain by a granular demolition fill material containing brick and limestone to 0.80mbgl this was also encountered in WS101 and WS102 to 0.50 and 0.70mbgl respectively. In WS101 a thin layer of demolition fill material contained within a clay matrix was encountered at 0.50 to 0.75mbgl. No SPTs were undertaken within demolition fill material, however anecdotally there was difficulty in forming handpits through the made ground. No groundwater strikes were encountered within the made ground deposits.		
Max Depth	0.80mbgl	Min Depth	0.60mbgl
Mean Depth	0.75mbgl	SPT Range	N/A

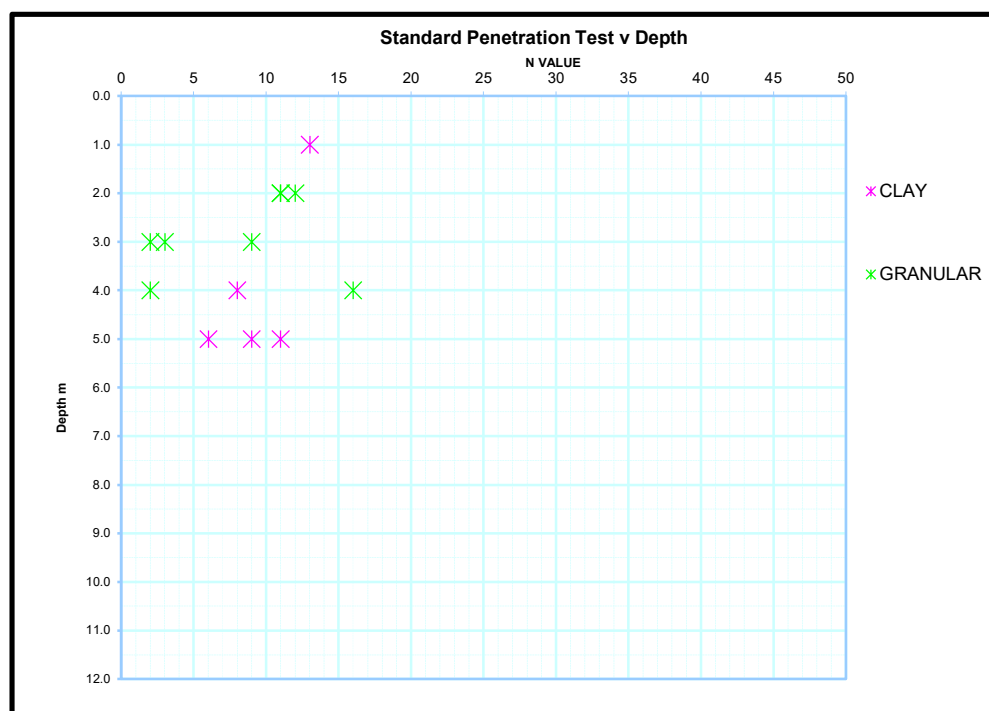
Hummocky Glacial Deposits Sand / Clay

- 6.1.2 Natural soils were reported at the base of made ground deposits at all exploratory hole locations clay and sand deposits were found to alternate throughout the borehole as described in Table 6.2 and table 6.3.

**COMPLEX CHALLENGES ...
MADE SIMPLE**

Table 6.2 Hummocky Glacial Deposits

Strata description	Immediately underlying made ground deposits at all boreholes was interbedded sand and clay deposits. Clay was generally comprised of and orangish brown / brown sandy clay / gravelly clay. Sand deposits were found to comprise a light brown / brown fine to medium sand / gravelly silty sand. SPT values ranged from 2 to 16 in clay deposits and 2 to 16 in sand deposits. Figure 6.1 below indicates SPT N values in both clay and granular material correlated to depth. It can be seen there is no correlation between strength of soils and depth. Groundwater was not encountered within glacial clay deposits / sand deposits.		
Max Depth	5.45mbgl (unproven)	Min Depth	N/A
Mean Depth	N/A	SPT Range	2-16



Weathered Bedrock

6.1.3 Weathered bedrock was not encountered during the site investigation works.

6.2 Groundwater & Contamination Observations

- 6.2.1 No visual or olfactory evidence of contamination was encountered during the site investigation works.
- 6.2.2 Groundwater not encountered during the site investigation works.

6.3 Below ground obstructions

- 6.3.1 No below ground obstruction were encountered during the site investigation works.

6.4 TRLDGP Testing

- 6.4.1 DCP testing was conducted through the dropping of an 8kg hammer from a height of 575mm and recording the resulting penetration of a 20mm cone through the ground. CBR values have been calculated from the number of blows per millimetre. The reported CBR values are banded based on the number of blows recorded for each increment.
- 6.4.2 The tests, which were completed in accordance with the method detailed in the Design Manual for Roads and Bridges Volume 7 Section 3 Part 2 HD29/08 and were extended to depths between 0.050 – 0.950m through the ground.
- 6.4.3 Table 6.4 below summarises calculated CBR values for ranges of depths recorded at each location within proposed areas of redevelopment (excluding existing structure), with >5% CBR being acceptable.

Table 6.4: Dynamic Cone Penetrometer Analysis and Calculated CBR%

Location ID	Start Depth (mm)	End Depth (mm)	Calculated CBR%
<i>Proposed Staff Car Park and Access Route</i>			
DCP101	0	460	1
	460	709	5
	709	950	2
DCP102	0	295	3
	295	481	12
	481	570	33
	570	830	13
	830	950	22



COMPLEX CHALLENGES ... MADE SIMPLE

6.5 Gas Main Delineation.

- 6.5.1 The high-pressure gas main present below the site was exposed by vacuum and hand excavation techniques. It was discovered that a protective concrete slab (c.900m in width) was present above the pipe along the entirety of the proposed junction works and beyond.
- 6.5.2 While the detailed design of the proposed junction widening is yet to be finalised anecdotally it is evident that the made ground and deleterious material present on site will be removed with an increase in level required to tie the future junction works in with the existing Hollinsbrook Way. This will serve to increase the existing depth of cover to the gas main and it is unlikely there will be an increase in overburden pressure due to the presence of the concrete protection pad.
- 6.5.3 Images of the slit trenching works are available in Appendix A along with sections and plans of the gas main construction in drawing ES103 and ES104.

7.0 Laboratory Testing

- 7.0.1 To establish the physical and chemical properties of underlying soils, a programme of laboratory analysis was completed utilising samples obtained during site investigation works. This analysis comprised the testing of soil samples to assist with the estimation of risks posed by contaminated land related concerns.

Chemical Testing

- 7.0.2 RoC Consulting submitted a total of 6 soil samples to a UKAS accredited testing facility for analysis against a range of determinands synonymous with the site's former industrial activity.

Determinands	No. of Tests
Toxic and phytotoxic metals and metalloids	6
Total & Speciated Polycyclic Aromatic Hydrocarbons (PAH),	6
Other inorganic substances (e.g. Sulphate, Cyanide etc)	6
Asbestos ID	6
Hydrocarbons	3
Water Soluble Sulfate & pH	6

- 7.0.3 Copies of chemical testing results have been provided within Appendix C.

Geotechnical Testing

- 7.0.4 A programme of geotechnical laboratory analysis was also completed on tub and undisturbed soil samples obtained during site investigation works.

Plasticity Index

- 7.0.5 A total of 3 soil samples were tested for the determination of the clay / silt's plasticity index. The depth range of samples tested varied from 0.80 to 1.00m with a mean depth of 0.87mbgl. The plasticity index range varied between 4 and 16% with a mean value of 11%. These results indicate clays to be of a low plastic nature.

Undrained Shear Strength

- 7.0.6 A total of 2 glacial clay samples were tested for the determination of undrained shear strength from a depth of 1.00mbgl. Shear strength results vary between 103 and 194kPa with a mean value of 148.5kPa. These results indicate shallow clay strengths vary between high to very high strength
- 7.0.7 Results from geotechnical laboratory testing have been provided within Appendix D.

8.0 Geo-Environmental Assessment

- 8.0.1 The results from the intrusive Phase 2 ground investigation have been used to complete a refined assessment of risks posed by ground contamination and ground stability issues beneath the site. The assessment considers these risks both in terms of the site's current arrangement and usage, as well as any potential future development (and associated construction process).
- 8.0.2 The assessment has been collated with reference to various statutory and non-statutory guidance documents relating to land contamination and ground stability. Specifically, the assessment has been conducted in accordance with the Environment Agency Land Contamination Risk Management (LCRM) guidance relating to the "Tier 2 Generic Quantitative Risk assessment" process (revised April 2021).
- 8.0.3 In accordance with this method, a Refined Conceptual Model has been collated for the site based on the results of the desktop review. This model is based around the Source / Pathway / Receptor methodology as outlined in Fig 8.0.

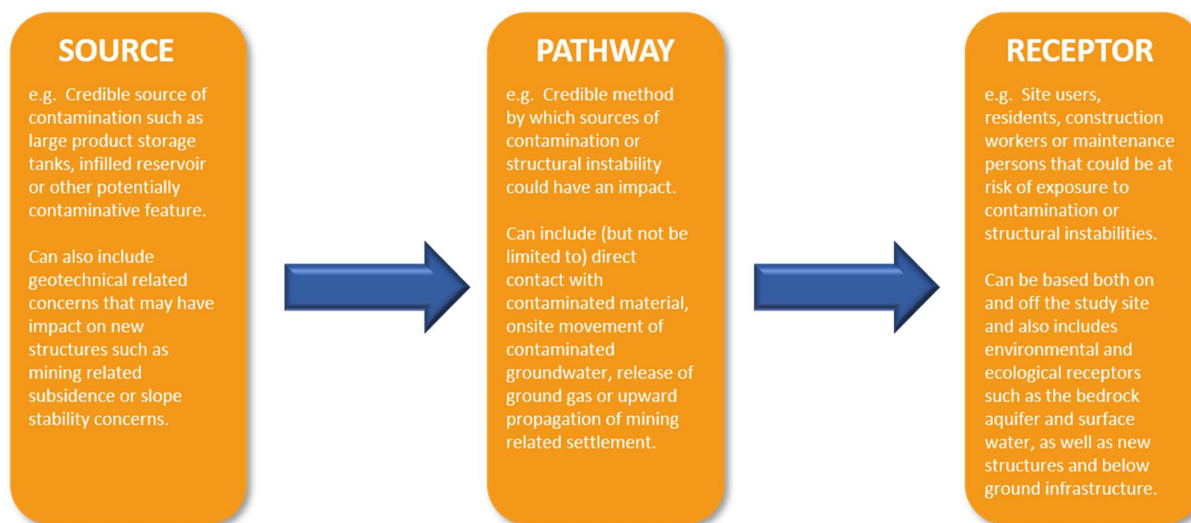


Figure 8.0 Source Pathway Receptor Diagram

- 8.0.4 Risk assessment is the process of collating known information on a hazard or set hazards in order to establish actual or potential risks to receptors. The receptor may be human health, controlled waters, a sensitive local ecosystem or even construction materials. Receptors can be connected with the hazard under consideration via one or several exposure pathways (e.g., the pathway of direct skin contact and oral exposure).

COMPLEX CHALLENGES ... MADE SIMPLE

- 8.0.5 Risks are generally managed by isolating or removing the hazard, isolating the receptor, or by intercepting the exposure pathway. Without the three essential components of a source (hazard), pathway and receptor, there is deemed to be no risk. In other words, the mere presence of a hazard at a site does not mean that there will necessarily be risks.
- 8.0.6 Potential sources of contamination have been identified across the site, where applicable, based on observations and information obtained during the desktop review. These sources are defined based on the results from site investigation fieldworks and subsequent laboratory analysis of samples / monitoring works.
- 8.0.7 The risk assessment has been completed with reference to the guidance outlined within CIRIA 552 "Contaminated land risk assessment. A good practice guide". This risk assessment methodology considers the potential consequence / severity of risks that may be present within soils in comparison with the likelihood of exposure to or and occurrence of said risk. A range of risk classifications are provided within CIRIA 552 further details of which are provided in Table 8.0 below.

Table 8.0: Definition of risk class and consequence

Risk Class	Definition	Example
Minor	Potential for harm, although not significant, which may result in financial loss to resolve. Ground conditions where the use of PPE would readily mitigate risks posed to human health.	Low level contamination hotspots within made ground / demolition fill materials. Stunted or impeded plant growth due to poor soil quality.
Mild	Pollution of non-sensitive water resources or damage to crops, plant growth, below ground utilities or structures.	Perched groundwater contamination overlying low permeability aquifer or aggressive sulphate concentrations in soils.
Medium	Sources of contamination identified on site have the potential to cause both long and short-term health effects on site residents / users. Alternatively (or in conjunction with) sources of contamination may have the potential to impact surface or groundwater quality or impede vegetation growth.	Elevated concentrations of hydrocarbon contamination reported within topsoil tested within residential gardens as a result of inadequate or incomplete previous remediation works. Movement of contaminated groundwater from leaking below ground storage tank into adjacent surface water course.
Severe	Sources of contamination pose a credible and acute risk to human health with potential for "Significant Harm" occurring as defined by the Part IIA of the Environmental Protection Act (1990). Alternatively (or in conjunction with risks posed to human health) sources of contamination may pose an immediate risk to controlled water resources or ecosystems.	Grossly contaminated soils are encountered or disturbed during excavation works, causing an immediate release of toxic soil vapour and leachate / contaminated groundwater flow across adjacent land.

- 8.0.8 As previously discussed the contaminated land risk assessment model evaluates the severity of risks that may be present within soils / groundwaters in the context of threats posed to identified receptors before deriving the actual risk rating based on the probability of occurrence. Table 8.1 (provided overleaf) outlines the range likelihood of risk.

COMPLEX CHALLENGES ... MADE SIMPLE

Table 8.1: Probability Assessment

Classification	Definition
High likelihood	A credible pollutant linkage has been identified and it is very likely contaminants will impact identified receptors in both the short or long term (or is already actively doing so). The potential for harm to be caused is thus highly likely.
Likely	Pollutant linkages between the sources of contamination and identified receptors are present and it is considered likely they will become active given the right set of circumstances (e.g. contaminants currently buried below ground that are likely to be exposed or disturbed during construction / excavation works. The circumstances are such that an event is not inevitable, however it is possible in the short term and likely over the longer term.
Low likelihood	A theoretical pollutant linkage has been identified that has the potential to exposure receptors to contaminants under the correct circumstances. However, the likelihood of such an event occurring is not a certainty, even in the long term
Unlikely	There is no / minimal likelihood a pollutant linkage would occur, even over the long term.

8.0.9 The risk assessment process is a combination of probability and consequence, recognising that it may be possible to have a significant source of contamination beneath a site (such as a large below ground chemical storage tank) that may only present a relatively moderate to low risk (owing to the fact it may be contained within a secure concrete bund). Table 8.2 indicates how the actual nature of risk is established with Table 8.3 illustrating how the risk is interpreted in the context of contaminated land risk assessment.

Table 8.2: Risk Definition

		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	

Table 8.3: Description of risks posed

Risk Definition	Description
Very High	Active pollutant linkages between a significant source of contamination and identified receptors have been established and there is a high likelihood of severe harm occurring to said receptors unless immediate investigation and remediation action is not taken.
High Risk	Harm is likely to arise to receptors from an identified hazard in the short and long term. Urgent investigation of the contaminant issue will be required, and remedial treatment is likely.
Moderate Risk	The possibility of harm has been identified toward receptors under the right circumstances, although the severity of harm would be relatively mild. Further investigation of identified issues would be prudent and possible need for remedial measures in the long term.
Low Risk	It is possible harm could arise to a designated receptor from identified hazard, but it is likely (if realised) any harm would be (at worst) mild.
Very Low Risk	No significant pollutant linkages have been identified and the possibility of harm occurring to receptors is low.

8.0.10 The Tier 2 risk assessment process can be divided based on the receptor group in question between:

- 1) Risks posed to human health by soil contamination (both construction persons and future site users).
- 2) Risks posed to human health by hazardous ground gas ingress (both construction persons and future site users).
- 3) Risks posed to controlled waters by soil or groundwater contamination (both surface water features and bedrock aquifers).
- 4) Risks posed to new building construction by aggressive ground conditions (namely elevated sulphate concentrations).

8.0.11 It is noted the site is to be used as part of a road widening scheme. This future use creates limited potential for contaminant exposure pathways with the only credible receptors being construction workers during the construction of the road widening scheme.

8.0.12 Appropriate assessment have been completed for each of the above utilising the latest statutory and non-statutory guidance documents; for details of risks posed to human health refer to Section 8.1 (soils) and Section 8.2 (ground gas), for details of risks posed to controlled waters refer to Section 8.3 and risks posed to new structures refer to Section 8.4.

8.1 Assessment of Soil Contamination

- 8.1.1 In order to estimate the risks posed to human health from soil contamination, a quantitative risk assessment has been completed utilising the latest Environment Agency CLEA methodology. The assessment utilises the chemical testing results obtained during the site investigation fieldworks to characterise site conditions and facilitate the completion of the risk assessment process.
- 8.1.2 The assessment is based on the comparison of soil chemical testing results with published Environment Agency Category Four Screening Levels (C4SL's) under the proposed end use scenario to determine the sites suitability for use. C4SL values represent the highest acceptable values for contaminants within site soils under the proposed end use and are derived using the Environment Agency CLEA risk assessment methodology. A result in exceedance of a C4SL level may indicate the presence of contaminants within site soils and require further assessment.
- 8.1.3 It is noted only a limited number of C4SL values have been derived by the Environment Agency for use and reference has been made to LQM/CIEH Suitable For Use Values (S4UL's) for a wider range of other contaminants (Heavy Metals, Poly Aromatic Hydrocarbons, TPH, SVOC and VOC's) to increase the depth and robustness of our assessment.
- 8.1.4 Chemical testing results are compared against C4SL and S4UL values for each determinant with any results reported in exceedance of screening criteria identified and their significance reviewed. When determining the significance of any exceedances within the dataset the magnitude and frequency of the exceedance need to be considered, for example, a single exceedance of a screening value may be considered a localised hotspot whereas consistently elevated levels of a substance at multiple locations across the site may indicate a more prevalent contamination issue.
- 8.1.5 In addition to this assessment, an Asbestos Identification test (via the visual inspection method) has been completed on all samples of made ground obtained during the investigation to determine risks posed. Any positive occurrences of Asbestos will be subject to quantification analysis to further assess the extent and significance of risks posed.
- 8.1.6 As required, for each exceedance reference will be made to the Conceptual Site Model to establish the most likely source of contaminants and initial commentary given as to the likely scope of remedial measures. In addition, reference will also be made to the assumptions used to derive generic assessment criteria (C4SL and S4UL values) to determine their comparability with the proposed end use.
- 8.1.7 For the purposes of this assessment we have assumed a "Commercial" end use scenario when reviewing chemical testing data against C4SL / S4UL values; a "worst case" Soil Organic Matter content value of 1% has been assumed for the initial assessment.

Summary and Assessment of Risks Posed by Soil Contamination

- 8.1.8 Results from chemical testing analysis indicate there were no exceedances of determinands when screened against a commercial end use scenario. As such the site is not considered to pose a risk toward future users or construction persons during the development process.

8.2 Ground Gas Risk Assessment

- 8.2.1 As the future site is to form part of a road it has not been deemed necessary to complete a ground gas risk assessment. However, it is advised that during the construction works any construction workers working below ground or within enclosed spaces carry suitable personal ground gas monitoring equipment and wear appropriate PPE as a precaution.

8.3 Controlled Waters

- 8.3.1 It is understood the site is underlain by a Secondary A Aquifer and is not said to be located within any Environment Agency Zone source protection zones or in close proximity to sensitive groundwater abstraction boreholes. The nearest surface water feature is indicated 210m to the south and is not considered to be at risk of contaminant migration from the study site due to the lack of any sources of contamination encountered on site.

8.4 Below Ground Concrete Construction

- 8.4.1 Peak potential sulphate concentrations range between <10 and 457 with soil pH values ranging between 8.01 and 8.99. Based on these results, it is considered that well compacted buried concrete should be designed in accordance with Class DS-1 AC1s requirements as specified in BRE Digest Special Digest 1:2005 *Concrete in aggressive ground: Version 3*.

8.5 Below Ground Utilities and Service Runs

- 8.5.1 The precise location of below ground utilities has not currently been defined. Given that no sources of contamination were encountered within site soils it is deemed unlikely that protective barrier pipes will be required.

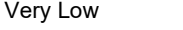


COMPLEX CHALLENGES ...
MADE SIMPLE

9.0 Refined Conceptual Site Model

9.0.1 The Environmental Protection Act Part IIA: 1990, defines contamination as land containing levels of contamination which form a risk to human health, controlled waters or other ecosystems. Therefore, contamination in exceedance of the relevant screening values is considered a source. Table 9.0 assesses and summarises the sources, pathways and receptors that may exist at the site;

Table 9.0: Refined Conceptual Site Model

Table 9.0		Refined Conceptual Site Model					
Source		Pathway	Receptor	Severity	Probability	Risk definition	Comments
On Site	Current Ground Conditions, including Made Ground	Dermal contact and / or ingestion; inhalation of vapours / dusts	Current Site Users	Minor	Unlikely	Very Low	Given the site is currently disused and the absence of any sources of contamination within site soils when screened against a “commercial” end use it is deemed there is a very low level of risk to current site users.
			Construction workers	Minor	Low Likelihood	Very Low	Given the absence of any sources of contamination within site soils when screened against a “commercial” end use, it is considered the risks posed to construction personnel, by exposure to site soils, can be adequately mitigated against via the use of full PPE and the adoption of good hygiene and site practices.* Appropriate personal ground gas detection equipment should be deployed by all site operatives when working in below ground or confined spaces.
			Future Site Users	Minor	Unlikely	Very Low	The site is to be developed to comprise an area of highway and it is considered future site users are not at risk of exposure to sources of contamination as outlined above. Therefore the risk to future site users is deemed to be very low.
			Ecological	Minor	Unlikely	Very Low	There is likely to be minimal soft landscaping adjacent the proposed area of highway and given the absence of any contamination within sampled soils it is deemed there is very low risk to any
							



COMPLEX CHALLENGES ... MADE SIMPLE

Table 9.0		Refined Conceptual Site Model					
Source	Pathway	Receptor	Severity	Probability	Risk definition	Comments	
						potential ecological receptors e.g. plants and trees planted adjacent the highway.	
On site	Current Ground Conditions	Leaching of contaminated soil & impact beneath site	Controlled Waters: Aquifer	Minor	Unlikely	Very Low	The underlying drift and bedrock aquifers are both classed as Secondary B Aquifers. There are no SPZs or surface water features that are deemed to be at risk of contaminant ingress due to no contaminants being encountered during the site investigation works.
			Adjacent Sites	Minor	Unlikely	Very Low	There are no identified sensitive land uses in close vicinity to the site, nor were any sources of contamination identified during site investigation works. Therefore the risk to adjacent sites is deemed to be very low.
		Below ground service runs	Below ground infrastructure & construction	Minor	Unlikely	Very Low	All below ground concrete structures to be designed in accordance with a Class DS-1 AC-1s requirements as specified in BRE Digest Special Digest 1:2005 Concrete in aggressive ground: Version 3.
Off site	Potentially Contaminative Sources; Controlled waters and ground gas generation [adjacent landfills, peat bogs etc]	Leaching of contaminated soil onto site	Controlled Waters: Aquifer	Medium	Unlikely	Very Low	There is not deemed to be any potentially contaminative land uses in close proximity to the site that may leach into site soil and impact upon the underlying Secondary A aquifer.
			Controlled Waters: Surface Water	Minor	Unlikely	Very Low	No surface water features are located on site.
			Current Site Users	Minor	Unlikely	Very Low	No significant sources of offsite contamination have been identified.
			Construction Workers	Minor	Unlikely	Very Low	
			Future Site Users	Minor	Unlikely	Very Low	



**COMPLEX CHALLENGES ...
MADE SIMPLE**

Table 9.0		Refined Conceptual Site Model					
Source	Pathway	Receptor	Severity	Probability	Risk definition	Comments	
	Ground Gas Migration / Accumulation	Current Site Users	Minor	Unlikely	Very Low	No significant sources of offsite ground gas generation have been identified.	
		Construction Workers	Minor	Unlikely	Very Low		
		Future Site Users	Minor	Unlikely	Very Low		

*Any sources of contamination uncovered during site development works should be brought to the immediate attention of RoC Consulting for consideration and comment.



COMPLEX CHALLENGES ... MADE SIMPLE

Soil Contamination Remedial Requirements

- 9.0.2 Following completion of investigation works chemical testing of site soils has failed to reveal any specific sources of contamination that could require specific remedial measures.
- 9.0.3 It is recommended all construction contractors take reasonable precautions to control environmental impacts that may occur as a result of redevelopment works with respect of soil and groundwater quality. These measures should include (and not be limited to):
- 1) Any sources of contamination uncovered during site development works should be brought to the immediate attention of RoC Consulting for consideration and comment. As required, the findings and recommendations of the current assessment may require amendment to reflect changes in site condition.
 - 2) The operation of plant, refuelling facilities and general basement excavation works should include appropriate provision to reduce the risk of leakage / spillage, particularly into the site's groundwater table or exposed natural soils.
 - 3) Appropriate dust mitigation measures should be deployed during basement excavation works, particularly when handling and excavating made ground deposits.
 - 4) All excavated materials stockpiled should be periodically dampened down to control dust release. Similarly, the disposal of any material from site should be completed using covered wagons.

Ground Water Remedial Requirements

- 9.0.4 No sources of soil contamination have been revealed during ground investigation works. Given the sites locality and proximity to sensitive water / ground water receptors it is not considered any risks are posed to controlled water resources.

Ground Gas Protection Measures

- 9.0.5 As the proposals for the site are for the widening of Hollins Brook Way there are no requirements for ground gas protection measures.

10.0 Geotechnical & Foundation Design Assessment

Background Information

- 10.0.1 It is understood the site is to form part of proposed widening works for Hollins Brook Way.
- 10.0.2 Site investigations indicate made ground was encountered at all 3 locations comprising asphalt and car park built up underlain by demolition fill at 0.70mbgl at WS101 and WS102 respectively. At WS103 topsoil underlain by demolition fill was encountered to a depth of 0.80mbgl. Natural soils were found underlying made ground material and comprised alternating bands of clay and granular material (predominantly sand).
- 10.0.3 SPT tests in natural strata varied from 2 to 16. Samples were taken from the first metre of natural soils for geotechnical testing including Atterberg 1 Point and Undrained Triaxial testing. The plasticity of shallow cohesive soils was found to be low while the shear strength as indicated by the Undrained Triaxial tests was deemed to be high to very high. groundwater was encountered during site investigation works.
- 10.0.4 TRL DCP testing has established CBR values within the upper 1.0m ranging between 1 and 33% with values typically around 3-5%.

10.1 New Road Design

- 10.1.1 It is not recommended the proposed road be constructed on top of made ground deposits. The variable composition and in situ strength of these materials is such that unacceptable levels of total and differential settlement will occur as a result.
- 10.1.2 It is noted the proposed junction expansion will likely require an increase in site levels over and above those currently noted on site to tie into existing levels at Hollins Brook Way to the north. This will require the stripping of topsoil, vegetation and other deleterious material from the site surface in the area of new highway with any increase in levels completed using suitable granular engineering fill material.
- 10.1.3 The aforementioned High Pressure gas main is present beneath the road alignment and is covered with a concrete protection slab. The trial holes formed to date indicate this slab is present across the entire area of the proposed new expansion, although this will need to be confirmed and agreed with Cadent Gas as part of any build over agreement. Given the junction construction will require an increase in cover over the top of this asset, and assuming Cadent Gas can consent with a build over agreement, we consider it is unlikely the new road construction requires the diversion or any further protective measures to be employed over this asset.

COMPLEX CHALLENGES ... MADE SIMPLE

- 10.1.4 Any upfilling and road construction should be rolled and compacted in accordance with the Series 600 specification for earthworks and subject to confirmatory CBR testing at regular intervals throughout. A minimum 5% CBR should be attained at the formation level.
- 10.1.5 Peak potential sulphate concentrations range between <10 and 457 with soil pH values ranging between 8.01 and 8.99. Based on these results, it is considered that well compacted buried concrete should be designed in accordance with Class DS-1 AC1s requirements as specified in BRE Digest Special Digest 1:2005 *Concrete in aggressive ground: Version 3*.

10.2 General Comments

- 10.2.1 No entry should be permitted into excavations exceeding 1.2m depth without appropriate risk assessments, shoring and support. Whilst groundwater was not encountered in significant volumes during site investigation works the presence of a perched water table cannot be precluded. Appropriate provisions should be made to dewater excavations as and when required.
- 10.2.2 Similarly it is not recommended foundation excavations to underlying clay be left open and exposed to the elements as rainwater ingress will damage and reduce its strength (and subsequent bearing capacity). Similarly, no vehicular movements should be permitted within exposed foundation locations.
- 10.2.3 The geotechnical assessment has been collated based on the proposed development type, layout and likely loadings at the time of report publication. It should be noted that future alterations to these proposals or loadings (including alterations in the site layout or new building scale) will require the re-interpretation of the current assessment. In such an instance updated design information should be provided to RoC Consulting and the current assessment updated accordingly.

11.0 Conclusions & Recommendations

- 11.0.1 The site is to form part of the proposed road widening works for Hollins Brook Way.
- 11.0.2 Site investigations have revealed made ground present at all 3 locations comprising asphalt and car park built up underlain by demolition fill at 0.70mbgl at WS101 and WS102 respectively. At WS103 topsoil underlain by demolition fill was encountered to a depth of 0.80mbgl. Natural soils were found underlying made ground material and comprised alternating bands of clay and granular material (predominantly sand).
- 11.0.3 SPT tests in natural strata varied from 2 to 16. Samples were taken from the first metre of natural soils for geotechnical testing including Atterberg 1 Point and Undrained Triaxial testing. The plasticity of shallow cohesive soils was found to be low while the shear strength as indicated by the Undrained Triaxial tests was deemed to be high to very high. groundwater was encountered during site investigation works.
- 11.0.4 Chemical assessment of site soils has failed to reveal any sources of soil contamination when compared against a “Commercial” end use scenario. Due care and attention should be taken at all times when excavating site soils and any suspected sources of contamination identified brought to the immediate attention of RoC Consulting.
- 11.0.5 It is not recommended the proposed road be constructed on top of made ground deposits as differential settlement may occur as a result. Site levels are likely to be increase to tie site levels into those on Hollins Brook Way. This should be carried out using suitable granular engineering fill; with the removal of deleterious materials / topsoil and a minimum 5% CBR value attained at formation level.
- 11.0.6 A High-Pressure gas main is present beneath the road alignment and is covered with a concrete protection slab across the entirety of the proposed works. Given the junction construction will require an increase in cover over the top of this asset, and assuming Cadent Gas can consent with a build over agreement, we consider it is unlikely the new road construction requires the diversion or any further protective measures to be employed over this asset.
- 11.0.7 As required, any suspected sources of contamination discovered during the site development (outside those discussed in this report) should be brought to the attention of RoC Consulting and their implications assessed. Depending on the extent and severity, the findings and assessment of the current study may require re-interpretation and a remediation strategy proposed to support the sites development.
- 11.0.8 Copies of the current report should be submitted to the local planning authority for consideration and comment. As required, any feedback received from the local authority should be passed back to RoC Consulting for review.



COMPLEX CHALLENGES ...
MADE SIMPLE

APPENDIX A – Site Drawings