Groundsure
LOCATION INTELLIGENCE

Hydrock Consultants Ltd

HYDROCK CONSULTANTS LTD, OVER COURT BARNS, OVER LANE,
ALMONDSBURY, BS32 4DF

Groundsure Reference:	GS-5746912
Your Reference:	C-10730-C_Fort_Halstead_PO_P028025
Report Date	14 Jan 2019
Report Delivery Method:	Email - pdf

Geo Insight

Address: LAND WEST OF 41, FORT ROAD, HALSTEAD, SEVENOAKS, TN14 7BS

Dear Sir/ Madam,

Thank you for placing your order with Groundsure. Please find enclosed the **Groundsure Geo Insight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above Groundsure reference number.

Yours faithfully,

Managing Director
Groundsure Limited

Enc.
Groundsure Geo Insight

Geo Insight

Address:	**LAND WEST OF 41, FORT ROAD, HALSTEAD, SEVENOAKS, TN14 7BS**
Date:	**14 Jan 2019**
Reference:	**GS-5746912**
Client:	**Hydrock Consultants Ltd**

NW N NE

W E

SW S SE

Aerial Photograph Capture date:	09-Aug-2015
Grid Reference:	549845,159348
Site Size:	62.86ha

Contents Page

Contents Page ... 3
Overview of Findings ... 5
1:10,000 Scale Availability ... 8
Availability of 1:10,000 Scale Geology Mapping ... 9
1 Geology (1:10,000 scale) ... 10
1.1 Artificial Ground map (1:10,000 scale) ... 10
1. Geology 1:10,000 scale ... 11
1.1 Artificial Ground ... 11
1.2 Superficial Deposits and Landslips map (1:10,000 scale) ... 12
1.2 Superficial Deposits and Landslips ... 13
1.2.1 Superficial Deposits/ Drift Geology ... 13
1.2.2 Landslip ... 13
1.3 Bedrock and linear features map (1:10,000 scale) ... 14
1.3 Bedrock and linear features ... 15
1.3.1 Bedrock/ Solid Geology ... 15
1.3.2 Linear features ... 15
2 Geology 1:50,000 Scale ... 16
2.1 Artificial Ground map ... 16
2. Geology 1:50,000 scale ... 17
2.1 Artificial Ground ... 17
2.1.1 Artificial/ Made Ground ... 17
2.1.2 Permeability of Artificial Ground ... 17
2.2 Superficial Deposits and Landslips map (1:50,000 scale) ... 18
2.2 Superficial Deposits and Landslips ... 19
2.2.1 Superficial Deposits/ Drift Geology ... 19
2.2.2 Permeability of Superficial Ground ... 19
2.2.3 Landslip ... 19
2.2.4 Landslip Permeability ... 20
2.3 Bedrock and linear features map (1:50,000 scale) ... 21
2.3 Bedrock, Solid Geology & linear features ... 22
2.3.1 Bedrock/Solid Geology ... 22
2.3.2 Permeability of Bedrock Ground ... 22
2.3.3 Linear features ... 23
3 Radon Data ... 24
3.1 Radon Affected Areas ... 24
3.2 Radon Protection ... 24
4 Ground Workings map ... 25
4 Ground Workings ... 26
4.1 Historical Surface Ground Working Features derived from Historical Mapping ... 26
4.2 Historical Underground Working Features derived from Historical Mapping ... 28
4.3 Current Ground Workings ... 30
5 Mining, Extraction & Natural Cavities ... 32
5.1 Historical Mining ... 32
5.2 Coal Mining ... 33
5.3 Johnson Poole and Bloomer ... 33
5.4 Non-Coal Mining ... 33
5.5 Non-Coal Mining Cavities ... 34
5.6 Natural Cavities ... 34
5.7 Brine Extraction ... 35
5.8 Gypsum Extraction ... 35
5.9 Tin Mining ... 35
5.10 Clay Mining ... 35
6 Natural Ground Subsidence ... 36
6.1 Shrink-Swell Clay map ... 36
6.2 Landslides map ... 37
6.3 Ground Dissolution of Soluble Rocks map ... 38
6.4 Compressible Deposits map ... 39
6.5 Collapsible Deposits map ... 40
6.6 Running Sand map ... 41

6 Natural Ground Subsidence..... 42
6.1 Shrink-Swell Clays.....42
6.2 Landslides.....43
6.3 Ground Dissolution of Soluble Rocks.....46
6.4 Compressible Deposits.....48
6.5 Collapsible Deposits.....48
6.6 Running Sands.....48
7 Borehole Records..... 51
8 Estimated Background Soil Chemistry..... 54
9 Railways and Tunnels map..... 55
9 Railways and Tunnels..... 56
9.1 Tunnels 56
9.2 Historical Railway and Tunnel Features 56
9.3 Historical Railways.....58
9.4 Active Railways.....58
9.5 Railway Projects.....58

Overview of Findings

The Groundsure Geo Insight provides high quality geo-environmental information that allows geo-environmental professionals and their clients to make informed decisions and be forewarned of potential ground instability problems that may affect the ground investigation, foundation design and possibly remediation options that could lead to possible additional costs.

The report is based on the BGS 1:50,000 and 1:10,000 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Non-coal mining data and Borehole Records, Coal Authority data including brine extraction areas, PBA non-coal mining and natural cavities database, Johnson Poole and Bloomer mining data and Groundsure's unique database including historical surface ground and underground workings.

For further details on each dataset, please refer to each individual section in the report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Geology 1:10,000 Scale		
1.1 Artificial Ground	1.1 Is there any Artificial Ground/ Made Ground present beneath the study site at 1:10,000 scale?	No
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site at 1:10,000 scale?*	Yes
	1.2.2 Are there any records of landslip within 500m of the study site boundary at 1:10,000 scale?	No
1.3 Bedrock, Solid Geology and linear features	1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	1.3.2 Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale?	No

Section 2: Geology 1:50,000 Scale		
2.1 Artificial Ground	2.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	No
	2.1.2 Are there any records relating to permeability of artificial ground within the study site*boundary?	No
2.2 Superficial Geology and Landslips	2.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?*	Yes
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	Yes
	2.2.3 Are there any records of landslip within 500m of the study site boundary?	No
	2.2.4 Are there any records relating to permeability of landslips within the study site* boundary?	No

Groundsure
LOCATION INTELLIGENCE

Section 2: Geology 1:50,000 Scale

2.3 Bedrock, Solid Geology and linear features	2.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	2.3.2 Are there any records relating to permeability of bedrock ground within the study site boundary?	Yes
	2.3.3 Are there any records of linear features within 500m of the study site boundary?	No

Section 3: Radon

3. Radon	3.1Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
	3.2Radon Protection	No radon protective measures are necessary.

Section 4: Ground Workings	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	5	5	58	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	15	0	18
4.3 Current Ground Workings	0	0	2	2	1

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	0	0	8	0	15
5.2 Coal Mining	0	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
5.4 Non-Coal Mining*	3	0	1	0	3
5.5 Non–Coal Mining Cavities	0	0	0	0	0
5.5 Natural Cavities	1	0	5	0	4

Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Tin Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0

Section 6: Natural Ground Subsidence	On-site
6.1 Shrink-Swell Clay	Low
6.2 Landslides	Moderate
6.3 Ground Dissolution of Soluble Rocks	Moderate
6.4 Compressible Deposits	Negligible
6.5 Collapsible Deposits	Very Low
6.5 Running Sand	Negligible

Section 7: Borehole Records	On-site	0-50m	51-250
7 BGS Recorded Boreholes	3	1	32

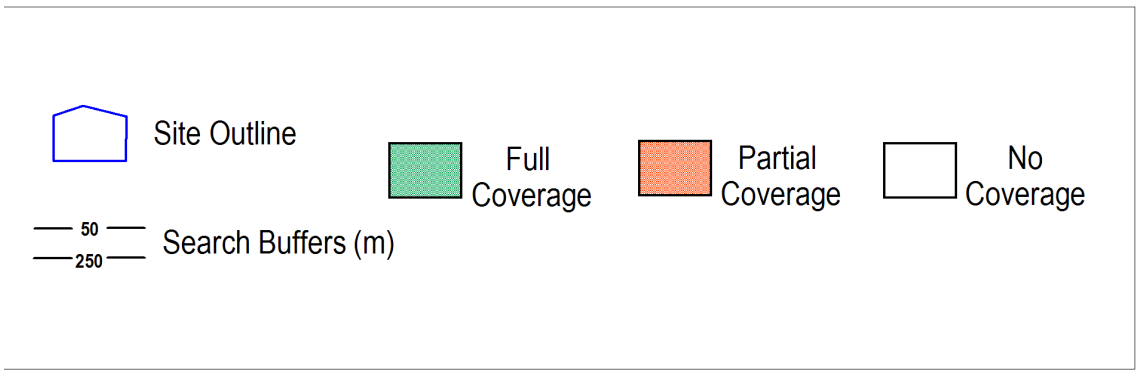
Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250
8 Records of Background Soil Chemistry	24	9	0

Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500
9.1 Tunnels	0	0	1	Not Searched
9.2 Historical Railway and Tunnel Features	0	0	27	Not Searched
9.3 Historical Railways	0	0	0	Not Searched
9.4 Active Railways	0	0	10	Not Searched
9.5 Railway Projects	0	0	0	0

1:10,000 Scale Availability

1_10,000 Availability Legend

© Crown copyright and database rights 2019.
Ordnance Survey licence 100035207.



Availability of 1:10,000 Scale Geology Mapping

The following information represents the availability of the key components of the 1:10,000 scale geological data.

ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	No deposits are mapped	No coverage	No coverage	No coverage
2	0.0	Some deposits are mapped	Full	Full	No coverage
3	0.0	Some deposits are mapped	Full	Full	No coverage
4	238.0	Some deposits are mapped	Full	Full	No coverage

Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not all themes are mapped or available on every map sheet. Therefore a coverage layer showing the availability of the four themes is presented above.

The definitions of coverage are as follows:

Geology	Full Coverage	Partial Coverage	No Coverage
Bedrock	The whole tile has been mapped	Some but not all the tile has been mapped	No coverage
Superficial	The whole tile has been mapped	Some but not all of the tile has been mapped	No coverage
Artificial	Some deposits are mapped on this tile	-	No deposits are mapped
Mass Movement	Some deposits are mapped on this tile	-	No coverage

1 Geology (1:10,000 scale).

1.1 Artificial Ground map (1:10,000 scale)

Artificial Ground Legend

© Crown copyright and database rights 2019.
Ordnance Survey licence 100035207.

Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Disturbed Ground (undivided)

Worked Ground (undivided)

Landscaped Ground (undivided)

Infilled Ground

Reclaimed Ground

1. Geology 1:10,000 scale

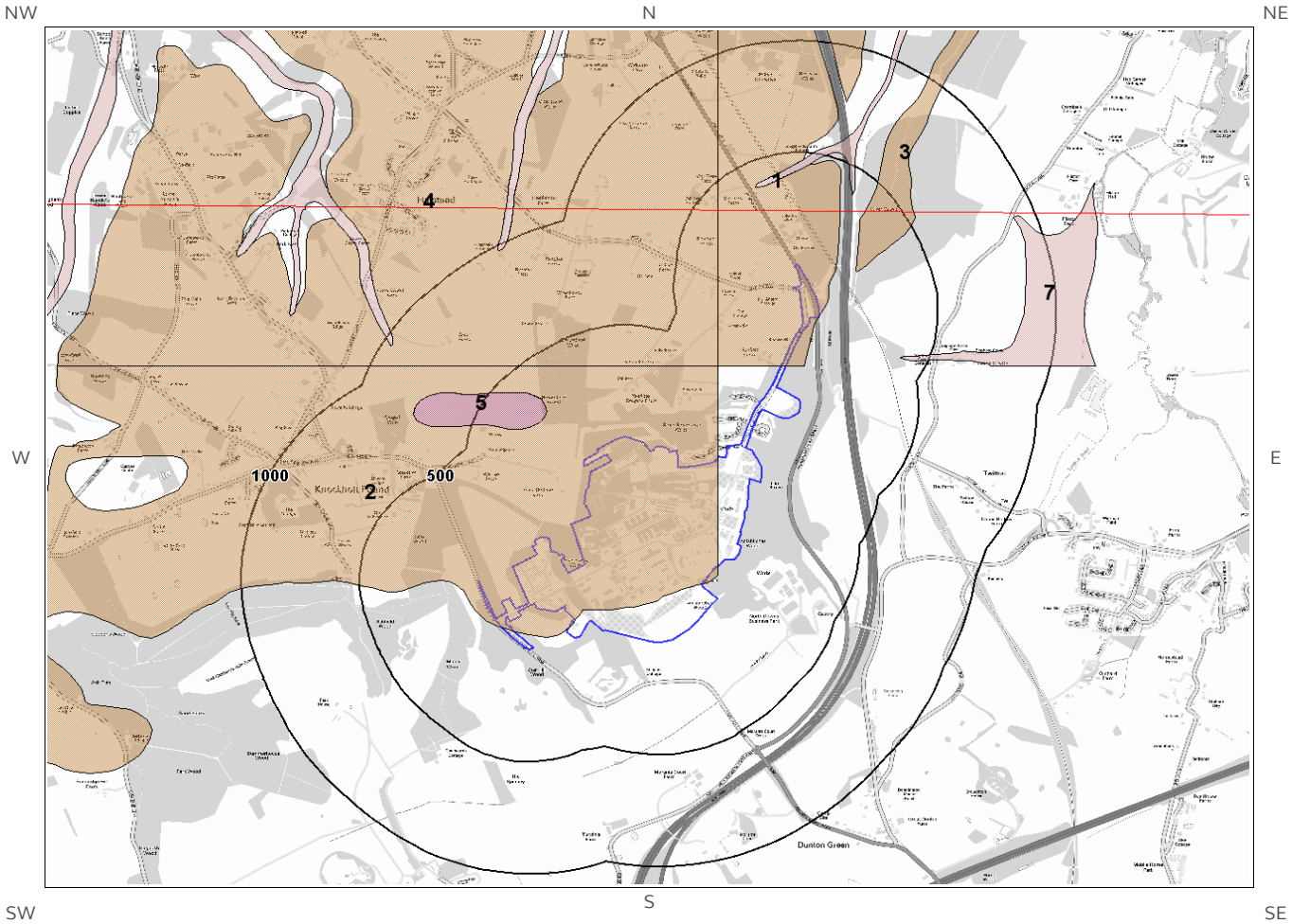
1.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

Are there any records of Artificial/ Made Ground within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance	Direction	LEX Code	Description	Rock Description
1	42.0	E	WGR-VOID	Worked Ground (Undivided)	Void
2	92.0	E	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
3	156.0	E	WGR-VOID	Worked Ground (Undivided)	Void
4	158.0	S	WGR-VOID	Worked Ground (Undivided)	Void
5	174.0	S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
6	235.0	NW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
7	248.0	E	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
8A	333.0	W	WGR-VOID	Worked Ground (Undivided)	Void
9A	352.0	SW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
10	383.0	NE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

1.2 Superficial Deposits and Landslips map (1:10,000 scale)



Artificial Ground Legend

© Crown copyright and database rights 2019.
Ordnance Survey licence 100035207.

Site Outline

500
1000
Search Buffers (m)

1.2 Superficial Deposits and Landslips

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping

1.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary at 1:10,000 scale? Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	CWF-C	Clay-with-flints Formation - Clay	Clay
2	0.0	On Site	CWF-DMTN	Clay-with-flints Formation - Diamicton	Diamicton
3	201.0	E	CWF-C	Clay-with-flints Formation - Clay	Clay
4	238.0	NW	CWF-C	Clay-with-flints Formation - Clay	Clay
5	253.0	NW	DBLB-XSV	Disturbed Blackheath Beds - Sand And Gravel	Sand And Gravel
6	378.0	N	HEAD-DMTN	Head - Diamicton	Diamicton
7	387.0	SE	HEAD-DMTN	Head - Diamicton	Diamicton

1.2.2 Landslip

Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale?

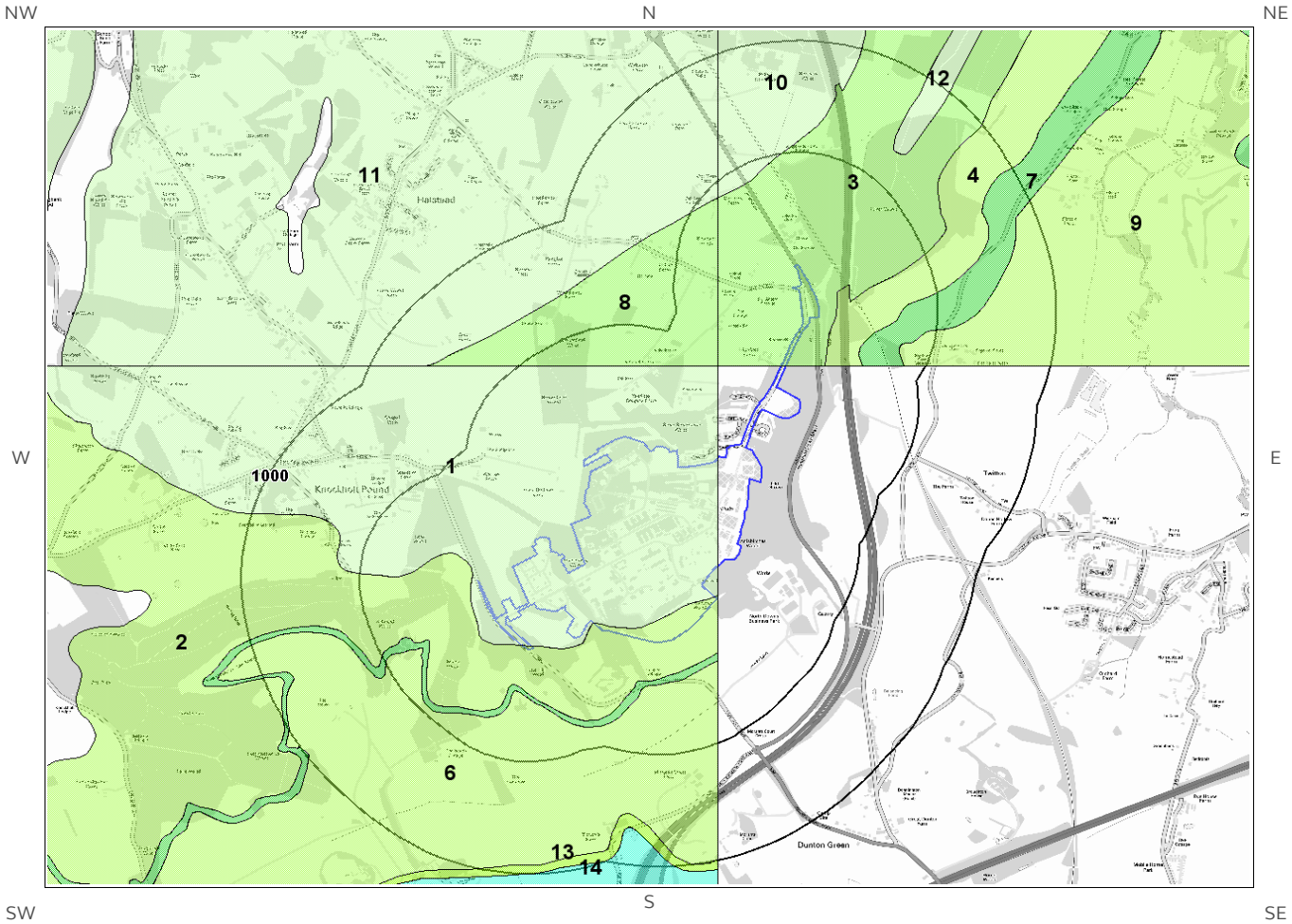
No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:10,000 scale

This Geology shows the main components as discrete layers, these are: Artificial / Made Ground, Superficial / Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

1.3 Bedrock and linear features map (1:10,000 scale)



Bedrock and linear features Legend

© Crown copyright and database rights 2019.
Ordnance Survey licence 100035207.

Site Outline

500
1000
Search Buffers (m)

1.3 Bedrock and linear features

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

1.3.1 Bedrock/ Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary at 1:10,000 scale.

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1	0.0	On Site	LSNCK-CHLK	Lewes Nodular Chalk Formation, Seaford Chalk Formation And Newhaven Chalk Formation (undifferentiated) - Chalk	Campanian Age - Turonian Age
2	0.0	On Site	HNCK-CHLK	Holywell Nodular Chalk Formation And New Pit Chalk Formation (undifferentiated) - Chalk	Turonian Age - Cenomanian Age
3	0.0	On Site	LECH-CHLK	Lewes Nodular Chalk Formation - Chalk	Coniacian Age - Turonian Age
4	65.0	E	NPCH-CHLK	New Pit Chalk Formation - Chalk	Turonian Age
5	141.0	SE	MR-CHLK	Melbourn Rock Member - Chalk	Turonian Age - Cenomanian Age
6	173.0	SE	WZCK-CHLK	West Melbury Marly Chalk Formation And Zig Zag Chalk Formation (undifferentiated) - Chalk	Cenomanian Age
7	219.0	SE	HCK-CHLK	Holywell Nodular Chalk Formation - Chalk	Turonian Age - Cenomanian Age
8	238.0	NW	LECH-CHLK	Lewes Nodular Chalk Formation - Chalk	Coniacian Age - Turonian Age
9	366.0	E	WZCK-CHLK	West Melbury Marly Chalk Formation And Zig Zag Chalk Formation (undifferentiated) - Chalk	Cenomanian Age
10	424.0	NW	SECK-CHLK	Seaford Chalk Formation - Chalk	Santonian Age - Coniacian Age
11	447.0	NW	SECK-CHLK	Seaford Chalk Formation - Chalk	Santonian Age - Coniacian Age

1.3.2 Linear features

Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale? No

Database searched and no data found at this scale.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of great Britain at 1:10,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2 Geology 1:50,000 Scale

2.1 Artificial Ground map

© Crown copyright and database rights 2019.
Ordnance Survey licence 100035207.

Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Disturbed Ground (undivided)

Worked Ground (undivided)

Landscaped Ground (undivided)

Infilled Ground

Reclaimed Ground

2. Geology 1:50,000 scale

2.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 287

2.1.1 Artificial/ Made Ground

Are there any records of Artificial/ Made Ground within 500m of the study site boundary? Yes

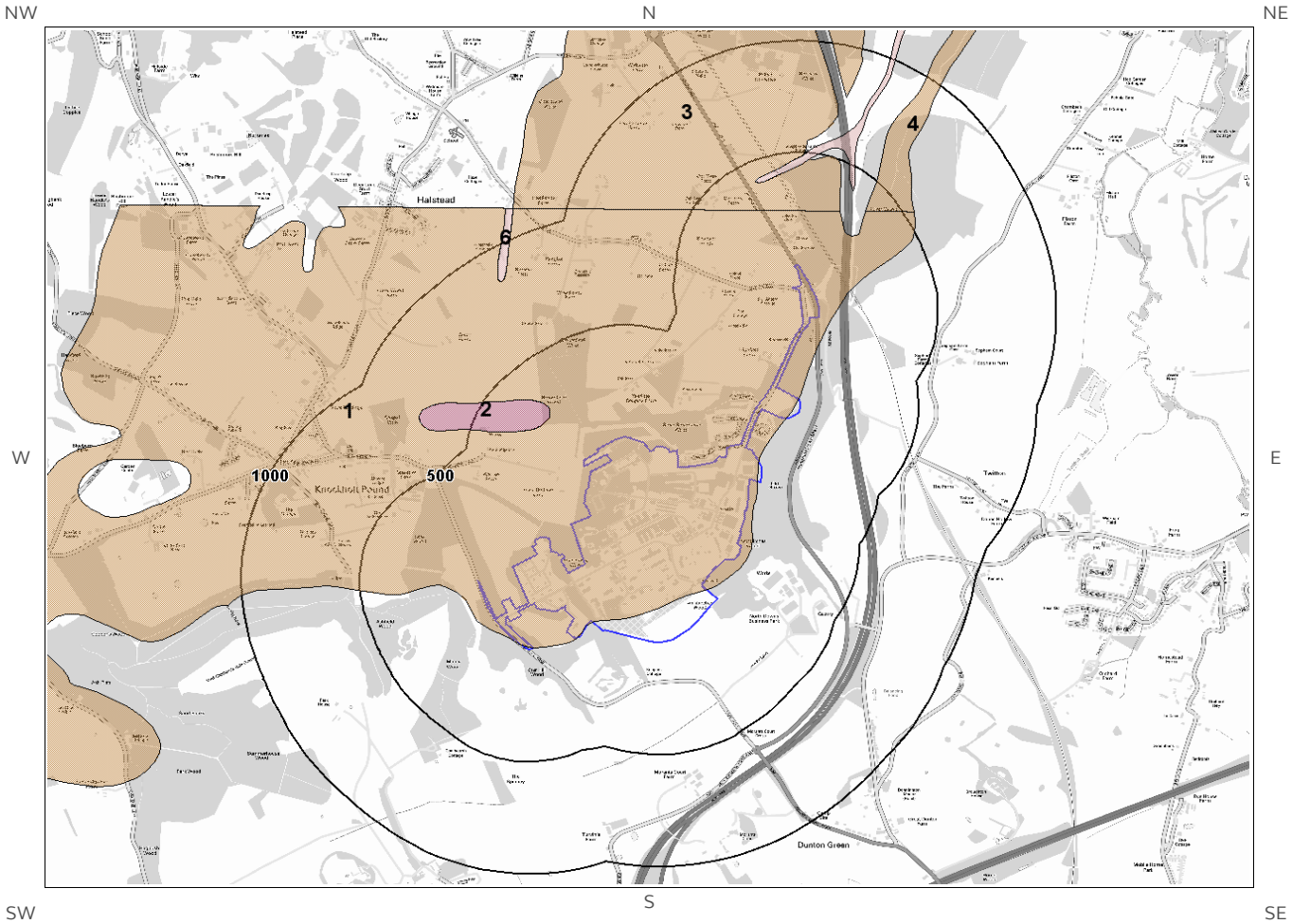
ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	246.0	N	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
2	294.0	NE	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID
3	400.0	NE	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

2.1.2 Permeability of Artificial Ground

Are there any records relating to permeability of artificial ground within the study site boundary? No

Database searched and no data found.

2.2 Superficial Deposits and Landslips map (1:50,000 scale)



© Crown copyright and database rights 2019.
Ordnance Survey licence 100035207.

Site Outline

500
1000
Search Buffers (m)

2.2 Superficial Deposits and Landslips

2.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary? Yes

ID	Distance	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	CWF-XCZSV	CLAY-WITH-FLINTS FORMATION	CLAY, SILT, SAND AND GRAVEL
2	238.0	NW	DBLB-XSV	DISTURBED BLACKHEATH BEDS	SAND AND GRAVEL
3	240.0	N	CWF-XCZSV	CLAY-WITH-FLINTS FORMATION	CLAY, SILT, SAND AND GRAVEL
4	369.0	NE	CWF-XCZSV	CLAY-WITH-FLINTS FORMATION	CLAY, SILT, SAND AND GRAVEL
5	397.0	N	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL

2.2.2 Permeability of Superficial Ground

Are there any records relating to permeability of superficial ground within the study site boundary? Yes

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Mixed	High	Very Low
0.0	On Site	Mixed	High	Very Low
0.0	On Site	Mixed	High	Very Low

2.2.3 Landslip

Are there any records of Landslip within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

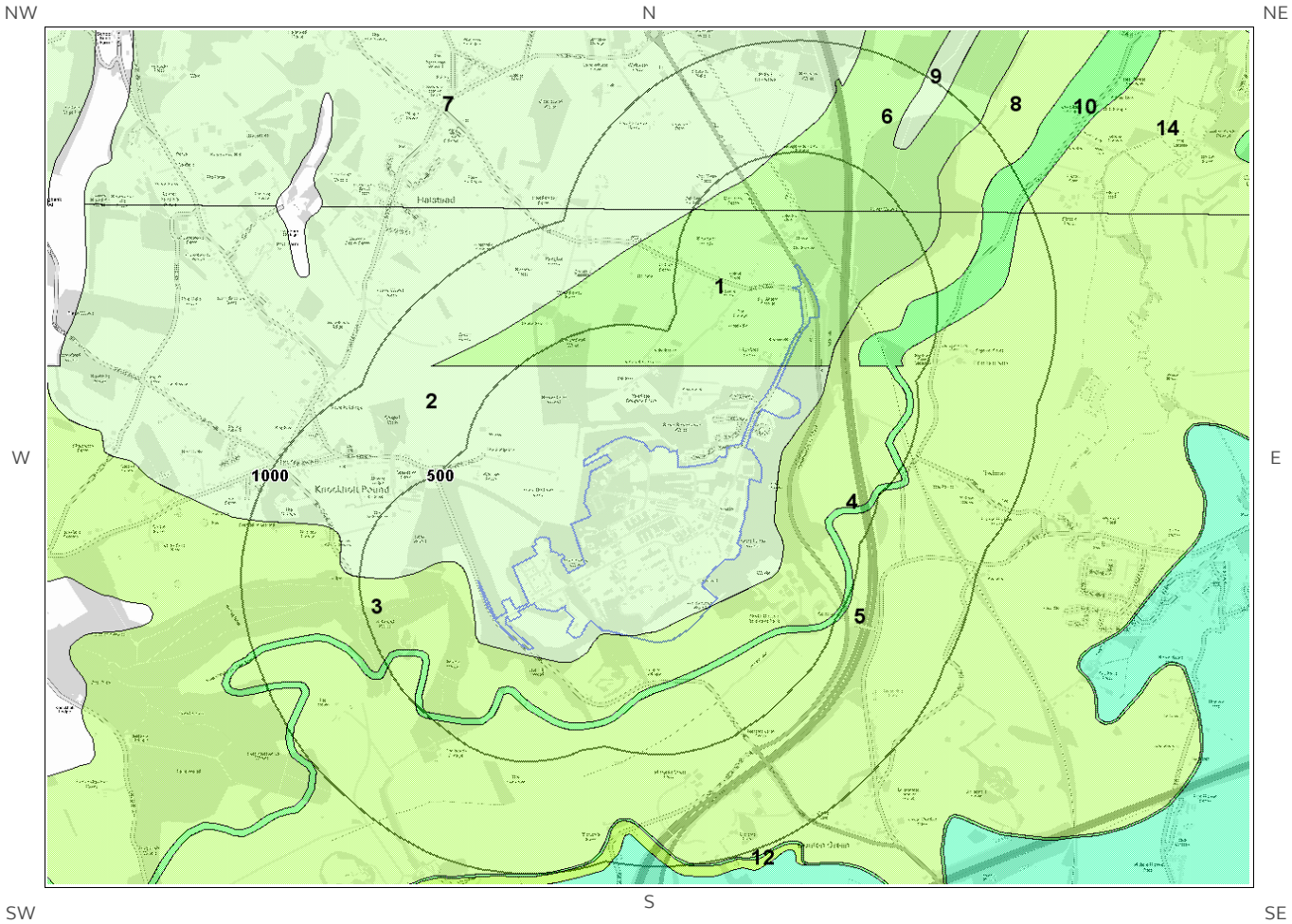
This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2.2.4 Landslip Permeability

Are there any records relating to permeability of landslips within the study site boundary? No

Database searched and no data found.

2.3 Bedrock and linear features map (1:50,000 scale)



© Crown copyright and database rights 2019.
Ordnance Survey licence 100035207.

Site Outline

500
1000
Search Buffers (m)

2.3 Bedrock, Solid Geology & linear features

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 287

2.3.1 Bedrock/Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary:

ID	Distance	Direction	LEX Code	Rock Description	Rock Age
1	0.0	On Site	LECH-CHLK	LEWES NODULAR CHALK FORMATION - CHALK	TURONIAN
2	0.0	On Site	LSNCK-CHLK	LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION AND NEWHAVEN CHALK FORMATION (UNDIFFERENTIATED) - CHALK	TURONIAN
3	0.0	On Site	HNCK-CHLK	HOLYWELL NODULAR CHALK FORMATION AND NEW PIT CHALK FORMATION (UNDIFFERENTIATED) - CHALK	CENOMANIAN
4	163.0	SE	MR-CHLK	MELBOURN ROCK MEMBER - CHALK	CENOMANIAN
5	192.0	SE	WZCK-CHLK	WEST MELBURY MARLY CHALK FORMATION AND ZIG ZAG CHALK FORMATION (UNDIFFERENTIATED) - CHALK	CENOMANIAN
6	240.0	N	LECH-CHLK	LEWES NODULAR CHALK FORMATION - CHALK	TURONIAN
7	442.0	NW	LSNCK-CHLK	LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION AND NEWHAVEN CHALK FORMATION (UNDIFFERENTIATED) - CHALK	TURONIAN

2.3.2 Permeability of Bedrock Ground

Are there any records relating to permeability of bedrock ground within the study site boundary? Yes

Distance	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Fracture	Very High	Very High
0.0	On Site	Fracture	Very High	Very High
0.0	On Site	Fracture	Very High	Very High
0.0	On Site	Fracture	Very High	Very High
13.0	SE	Fracture	Very High	Very High

2.3.3 Linear features

Are there any records of linear features within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nation wide coverage.

3 Radon Data

3.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

3.2 Radon Protection

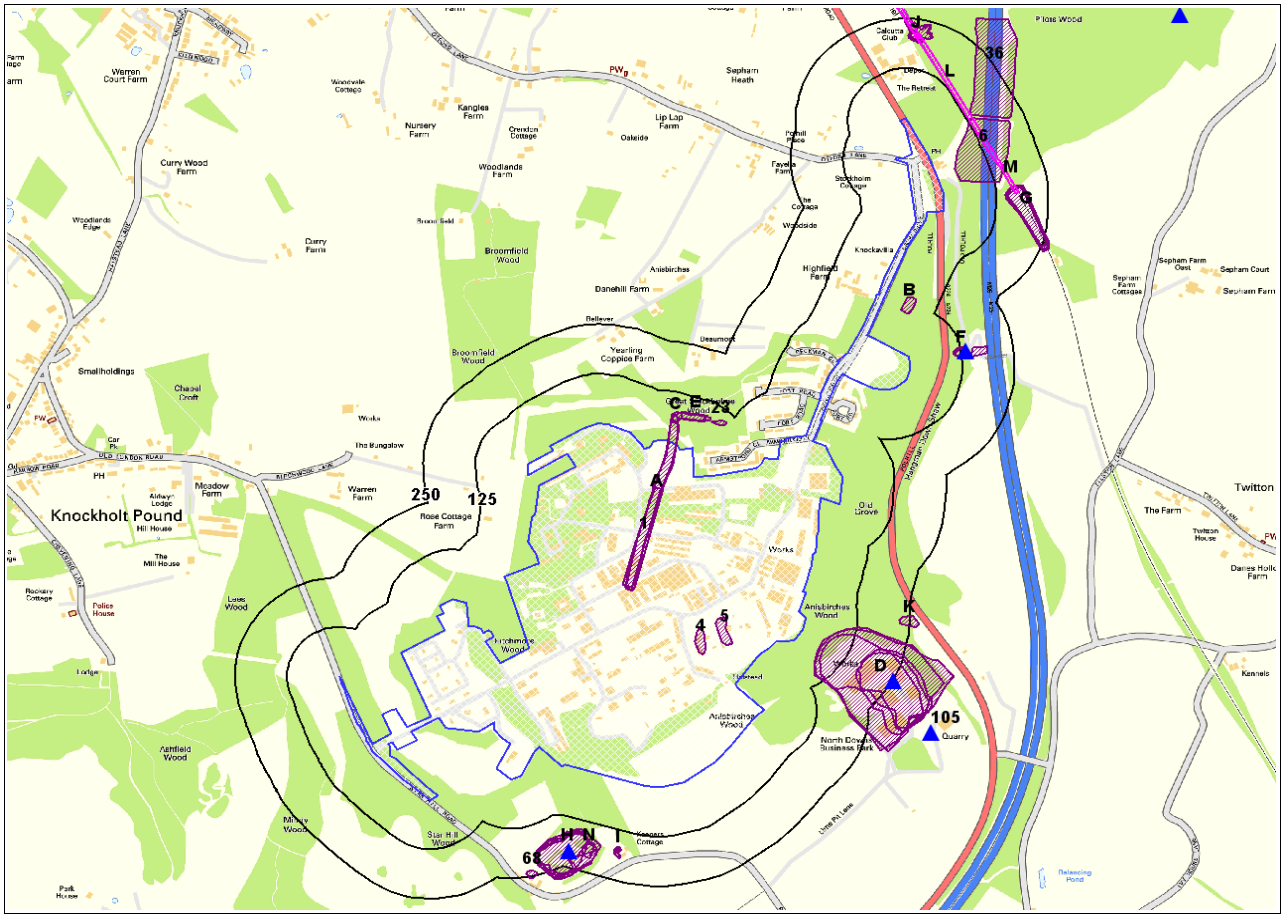
Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

---

4 Ground Workings map

NW N NE

W E



SW S SE

Ground Workings Legend

© Crown copyright and database rights 2019.
Ordnance Survey licence 100035207.

Site Outline

125
250
Search Buffers (m)

Historic Surface Ground Workings

Historic Underground Workings

Current Ground Workings

4 Ground Workings

4.1 Historical Surface Ground Working Features derived from Historical Mapping

This dataset is based on Groundsure's unique Historical Land Use Database derived from 1:10,560 and 1:10,000 scale historical mapping

Are there any Historical Surface Ground Working Features within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Use	Date
1	0.0	On Site	549716 159393	Unspecified Heap	1981
2A	0.0	On Site	549736 159487	Unspecified Heap	1961
3A	0.0	On Site	549734 159473	Unspecified Heap	1907
4	0.0	On Site	549849 159131	Unspecified Heap	1981
5	0.0	On Site	549906 159157	Unspecified Heap	1981
6	47.0	E	550525 160372	Cuttings	1988
7B	47.0	SE	550347 159981	Pond	1987
8B	47.0	SE	550347 159981	Pond	1968
9B	47.0	SE	550347 159981	Pond	1983
10B	47.0	SE	550347 159981	Pond	1973
11C	52.0	N	549790 159696	Unspecified Heap	1932
12C	52.0	N	549790 159696	Unspecified Heap	1940
13C	52.0	N	549790 159696	Unspecified Heap	1907
14C	52.0	N	549822 159698	Unspecified Heap	1895
15D	56.0	SE	550289 159012	Unspecified Quarry	1973
16D	56.0	SE	550289 159012	Unspecified Quarry	1968
17D	62.0	SE	550277 159009	Unspecified Quarry	1983
18D	62.0	SE	550277 159009	Unspecified Quarry	1987
19E	66.0	N	549838 159699	Unspecified Heap	1932
20E	66.0	N	549838 159699	Unspecified Heap	1940
21E	66.0	N	549838 159699	Unspecified Heap	1907

ID	Distance (m)	Direction	NGR	Use	Date
22D	68.0	SE	550259 159023	Unspecified Quarry	1961
23	81.0	NE	549893 159684	Unspecified Heap	1907
24F	108.0	E	550472 159863	Unspecified Pit	1983
25F	108.0	E	550472 159863	Unspecified Pit	1987
26F	108.0	E	550472 159863	Unspecified Pit	1973
27F	108.0	E	550472 159863	Unspecified Pit	1968
28F	108.0	E	550472 159863	Unspecified Pit	1961
29F	111.0	E	550475 159860	Unspecified Pit	1938
30F	111.0	E	550475 159860	Unspecified Pit	1938
31F	112.0	E	550475 159860	Unspecified Quarry	1869
32F	112.0	E	550475 159860	Unspecified Pit	1907
33F	112.0	E	550475 159860	Unspecified Pit	1940
34F	112.0	E	550475 159860	Unspecified Pit	1932
35F	112.0	E	550475 159860	Old Chalk Pit	1895
36	138.0	NE	550550 160580	Cuttings	1988
37F	146.0	E	550515 159864	Cuttings	1987
38G	147.0	E	550629 160204	Cuttings	1961
39G	147.0	E	550629 160204	Cuttings	1988
40G	147.0	E	550629 160204	Cuttings	1967
41G	148.0	E	550632 160201	Cuttings	1938
42H	148.0	S	549534 158601	Unspecified Old Quarry	1895
43G	149.0	E	550631 160207	Cuttings	1936
44G	149.0	E	550631 160207	Cuttings	1907
45G	149.0	E	550631 160207	Cuttings	1895
46G	153.0	E	550634 160198	Cuttings	1868
47H	154.0	S	549518 158597	Unspecified Pit	1981
48H	154.0	S	549518 158597	Unspecified Pit	1961
49H	156.0	S	549527 158592	Unspecified Old Quarry	1907
50H	158.0	S	549520 158593	Unspecified Pit	1936

ID	Distance (m)	Direction	NGR	Use	Date
51H	159.0	S	549529 158588	Unspecified Quarry	1869
52D	164.0	SE	550311 159012	Unspecified Quarry	1895
53D	166.0	SE	550311 159004	Unspecified Quarry	1869
54I	167.0	S	549651 158599	Unspecified Ground Workings	1907
55I	168.0	S	549651 158599	Unspecified Ground Workings	1869
56N	175.0	S	549583 158604	Pond	1961
57J	192.0	N	550364 160658	Unspecified Heap	1932
58J	193.0	N	550364 160659	Unspecified Heap	1907
59J	193.0	N	550362 160660	Unspecified Heap	1938
60J	193.0	N	550362 160660	Unspecified Heap	1938
61J	194.0	N	550376 160671	Unspecified Pit	1869
62J	194.0	N	550364 160660	Unspecified Heap	1940
63J	194.0	N	550362 160661	Unspecified Ground Workings	1961
64J	195.0	N	550371 160677	Unspecified Heaps	1895
65K	225.0	E	550348 159182	Unspecified Heap	1987
66K	225.0	E	550348 159182	Unspecified Heap	1973
67K	225.0	E	550348 159182	Unspecified Heap	1983
68	237.0	S	549445 158543	Unspecified Pit	1895

4.2 Historical Underground Working Features derived from Historical Mapping

This data is derived from the Groundsure unique Historical Land Use Database. It contains data derived from 1:10,000 and 1:10,560 historical Ordnance Survey Mapping and includes some natural topographical features (Shake Holes for example) as well as manmade features that may have implications for ground stability. Underground and mining features have been identified from surface features such as shafts. The distance that these extend underground is not shown.

Are there any Historical Underground Working Features within 1000m of the study site boundary? Yes

The following Historical Underground Working Features are provided by Groundsure:

ID	Distance (m)	Direction	NGR	Use	Date
69L	127.0	NE	549976 161316	Tunnel	1932
70L	127.0	NE	549976 161316	Tunnel	1907

ID	Distance (m)	Direction	NGR	Use	Date
71L	127.0	NE	549976 161316	Tunnel	1895
72L	127.0	NE	549976 161316	Tunnel	1938
73L	127.0	NE	549976 161316	Tunnel	1869
74M	152.0	E	550593 160296	Tunnel	1868
75M	152.0	E	550593 160296	Tunnel	1907
76J	203.0	N	550371 160661	Air Shaft	1988
77J	203.0	N	550371 160661	Air Shaft	1967
78J	205.0	N	550370 160662	Air Shaft	1869
79J	206.0	N	550368 160663	Air Shaft	1938
80J	206.0	N	550368 160663	Air Shaft	1895
81J	206.0	N	550368 160663	Air Shaft	1932
82J	206.0	N	550368 160663	Air Shaft	1907
83J	207.0	N	550365 160664	Air Shaft	1955
Not shown	578.0	N	550158 161007	Air Shaft	1938
Not shown	578.0	N	550158 161007	Air Shaft	1907
Not shown	578.0	N	550158 161007	Air Shaft	1932
Not shown	578.0	N	550158 161007	Air Shaft	1895
Not shown	578.0	N	550158 161007	Air Shaft	1869
Not shown	578.0	N	550161 161010	Air Shaft	1967
Not shown	578.0	N	550161 161010	Air Shaft	1988
Not shown	580.0	N	550155 161008	Air Shaft	1955
Not shown	888.0	NW	549686 161796	Tunnel	1975
Not shown	888.0	NW	549686 161796	Tunnel	1990
Not shown	888.0	NW	549686 161796	Tunnel	1955
Not shown	972.0	NW	549953 161352	Air Shaft	1869
Not shown	975.0	NW	549951 161353	Air Shaft	1938
Not shown	975.0	NW	549951 161353	Air Shaft	1907
Not shown	976.0	NW	549953 161356	Air Shaft	1975
Not shown	976.0	NW	549953 161356	Air Shaft	1990

ID	Distance (m)	Direction	NGR	Use	Date
Not shown	977.0	NW	549951 161355	Air Shaft	1932
Not shown	979.0	NW	549952 161358	Air Shaft	1895

4.3 Current Ground Workings

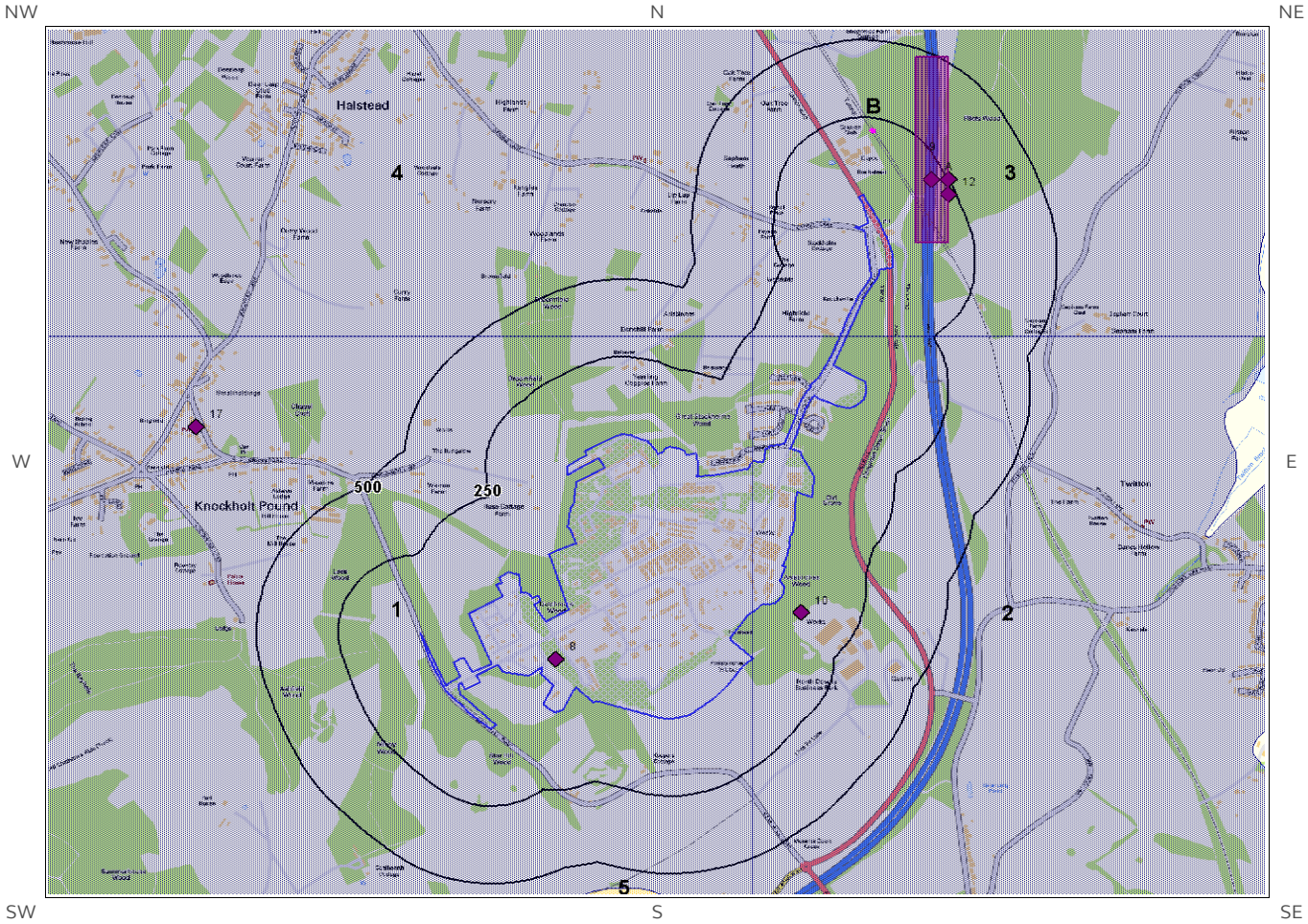
This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

Are there any BGS Current Ground Workings within 1000m of the study site boundary? Yes

The following Current Ground Workings information is provided by British Geological Survey:

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
102F	136.0	E	550483 159864	Chalk	Hangman Down Shaw Chalk Pit	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
103N	211.0	S	549533 158600	Chalk	The Beacon	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
104D	252.0	SE	550309 159031	Chalk	Dunton Green Lime Works	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
105	402.0	E	550400 158900	Chalk	Dunton Green	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
106	696.0	NE	550994 160713	Chalk	Pilots Wood	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

5 Mining, Extraction & Natural Cavities map



Mining, Extraction and Natural Cavities Legend

© Crown copyright and database rights 2019.
Ordnance Survey licence 100035207.

Site Outline

250
500
Search Buffers (m)

Historical Mining

Non-Coal Mining Cavities

Natural Cavities (point data)

Natural Cavities (polygon data)

Non-Coal Mining

Highly likely

Likely

Unlikely

Highly unlikely

Rare

5 Mining, Extraction & Natural Cavities

5.1 Historical Mining

This dataset is derived from Groundsure unique Historical Land-use Database that are indicative of mining or extraction activities.

Are there any Historical Mining areas within 1000m of the study site boundary? Yes

The following Historical Mining information is provided by Groundsure:

ID	Distance (m)	Direction	NGR	Details	Date
18B	203.0	N	550371 160661	Air Shaft	1988
19B	203.0	N	550371 160661	Air Shaft	1967
20B	205.0	N	550370 160662	Air Shaft	1869
21B	206.0	N	550368 160663	Air Shaft	1938
22B	206.0	N	550368 160663	Air Shaft	1932
23B	206.0	N	550368 160663	Air Shaft	1907
24B	206.0	N	550368 160663	Air Shaft	1895
25B	207.0	N	550365 160664	Air Shaft	1955
Not shown	578.0	N	550158 161007	Air Shaft	1932
Not shown	578.0	N	550158 161007	Air Shaft	1869
Not shown	578.0	N	550158 161007	Air Shaft	1938
Not shown	578.0	N	550158 161007	Air Shaft	1895
Not shown	578.0	N	550158 161007	Air Shaft	1907
Not shown	578.0	N	550161 161010	Air Shaft	1988
Not shown	578.0	N	550161 161010	Air Shaft	1967
Not shown	580.0	N	550155 161008	Air Shaft	1955
Not shown	972.0	NW	549953 161352	Air Shaft	1869
Not shown	975.0	NW	549951 161353	Air Shaft	1907
Not shown	975.0	NW	549951 161353	Air Shaft	1938
Not shown	976.0	NW	549953 161356	Air Shaft	1975

ID	Distance (m)	Direction	NGR	Details	Date
Not shown	976.0	NW	549953 161356	Air Shaft	1990
Not shown	977.0	NW	549951 161355	Air Shaft	1932
Not shown	979.0	NW	549952 161358	Air Shaft	1895

5.2 Coal Mining

This dataset provides information as to whether the study site lies within a known coal mining affected area as defined by the coal authority.

Are there any Coal Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.3 Johnson Poole and Bloomer

This dataset provides information as to whether the study site lies within an area where JPB hold information relating to mining.

Are there any JPB Mining areas within 1000m of the study site boundary? No

The following information provided by JPB is not represented on mapping: Database searched and no data found.

5.4 Non-Coal Mining

This dataset provides information as to whether the study site lies within an area which may have been subject to non-coal historic mining.

Are there any Non-Coal Mining areas within 1000m of the study site boundary? Yes

The following non-coal mining information is provided by the BGS:

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
1	0.0	On Site	Not available	Chalk	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
2	0.0	On Site	Not available	Chalk	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
3	0.0	On Site	Not available	Chalk	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
4	238.0	NW	Not available	Chalk	Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered
5	556.0	S	Not available	Sand\Chalk	Small scale underground mining may have occurred; mine adits, shafts and tunnels may be present. Potential for localised difficult ground conditions are at a level where they should be considered
Not shown	766.0	S	Not available	Sand\Chalk	Small scale underground mining may have occurred; mine adits, shafts and tunnels may be present. Potential for localised difficult ground conditions are at a level where they should be considered
Not shown	806.0	S	Not available	Sand	Small scale underground mining may have occurred; mine adits, shafts and tunnels may be present. Potential for localised difficult ground conditions are at a level where they should be considered

5.5 Non-Coal Mining Cavities

This dataset provides information from the Peter Brett Associates (PBA) mining cavities database (compiled for the national study entitled "Review of mining instability in Great Britain, 1990" PBA has also continued adding to this database) on mineral extraction by mining.

Are there any Non-Coal Mining cavities within 1000m of the study site boundary? No

Database searched and no data found.

5.6 Natural Cavities

This dataset provides information based on the Peter Brett Associates natural cavities database. The dataset is made up of points and polygons. Where polygons are used these represent an area in which it is expected the cavities could be found. It does not indicate that cavities are present everywhere within the polygon, and caution should be used in the interpretation of this data.

Are there any Natural Cavities within 1000m of the study site boundary? Yes

The following Natural Cavities information provided by Peter Brett Associates:

ID	Distance (m)	Direction	NGR	Superficial Deposits	Bedrock Deposits	Cavity Type and Number
8	0.0	On Site	549400 158950	Clay-with-Flints	Chalk Group	Solution Pipe x 3
9	78.0	E	550550 160600	-	Chalk Group, Thanet Sand Formation	Solution Pipe x 4
10	83.0	SE	550150 159100	-	Chalk Group	Solution Pipe x 3
11A	205.0	NE	550550 160500	Clay-with-Flints	Chalk Group	Solution Pipe x 1
12	224.0	NE	550600 160450	Clay-with-Flints	Chalk Group	Solution Pipe x 1

ID	Distance (m)	Direction	NGR	Superficial Deposits	Bedrock Deposits	Cavity Type and Number
13A	248.0	NE	550600 160500	Clay-with-Flints	Chalk Group	Solution Pipe x 1
Not shown	616.0	N	550500 161050	-	Chalk Group	Solution Pipe x 1
Not shown	665.0	N	550500 161100	-	Chalk Group	Solution Pipe x 1
Not shown	860.0	N	550450 161550	Clay-with-Flints	Chalk Group	Solution Pipe x 30
17	949.0	NW	548300 159700	-	Chalk Group	Vadose Cave x 1

5.7 Brine Extraction

This data provides information from the Cheshire Brine Subsidence Compensation Board.

Are there any Brine Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.8 Gypsum Extraction

This dataset provides information on Gypsum extraction from British Gypsum records.

Are there any Gypsum Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

5.9 Tin Mining

This dataset provides information on tin mining areas and is derived from tin mining records. This search is based upon postcode information to a sector level..

Are there any Tin Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

5.10 Clay Mining

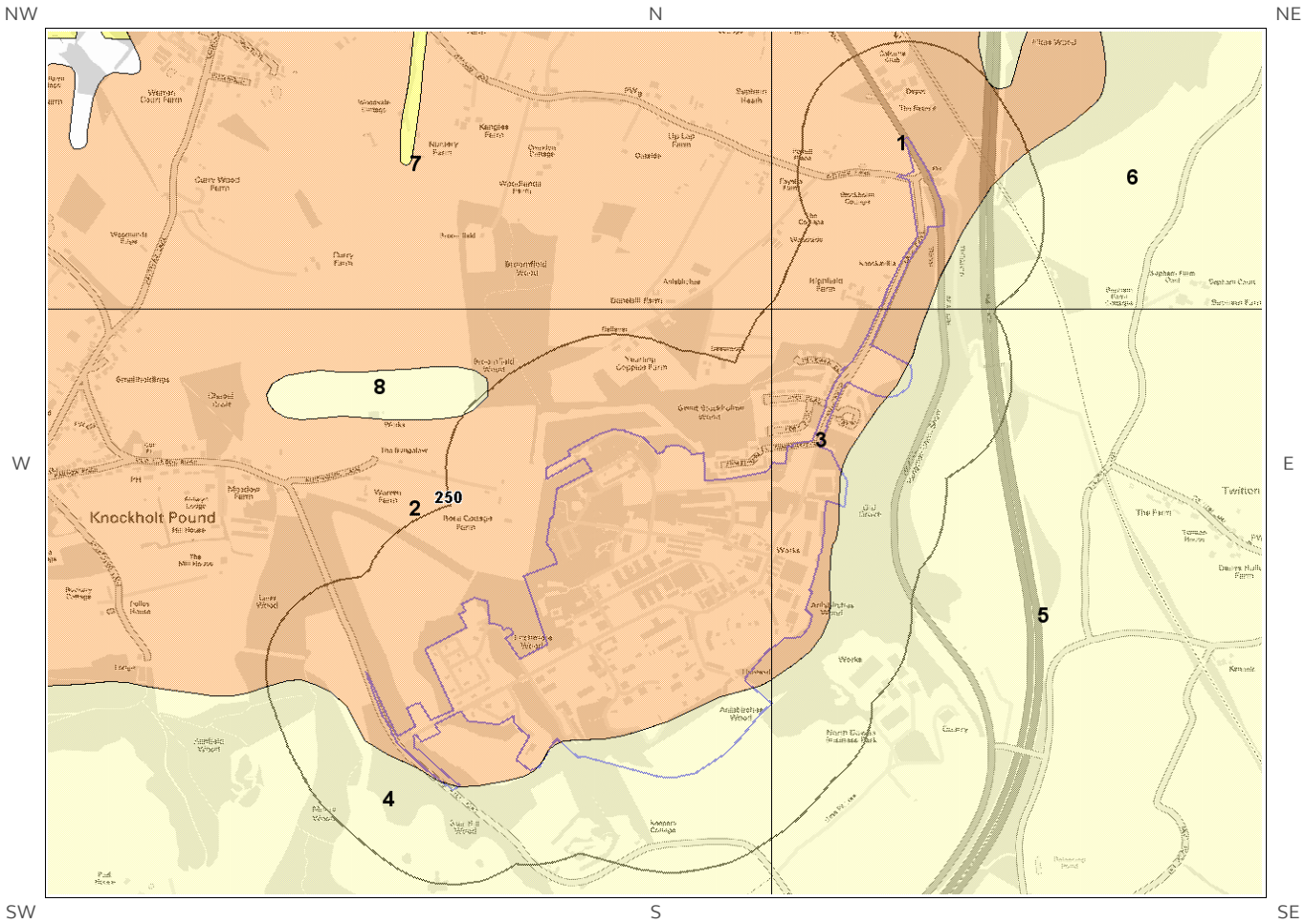
This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

Are there any Clay Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

6 Natural Ground Subsidence

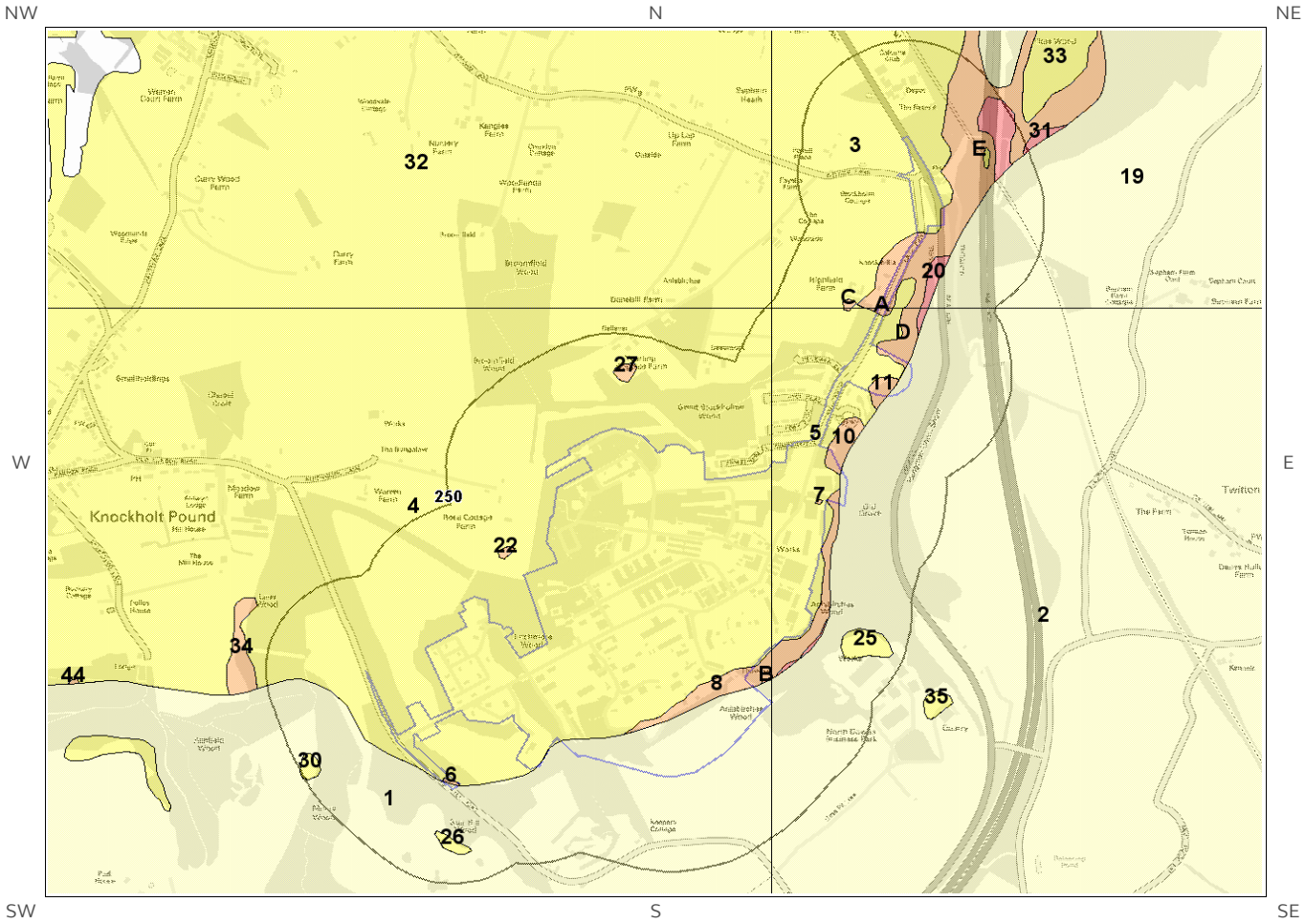
6.1 Shrink-Swell Clay map



Shrink Swell Clay Legend

© Crown copyright and database rights 2019.
Ordnance Survey licence 100035207.

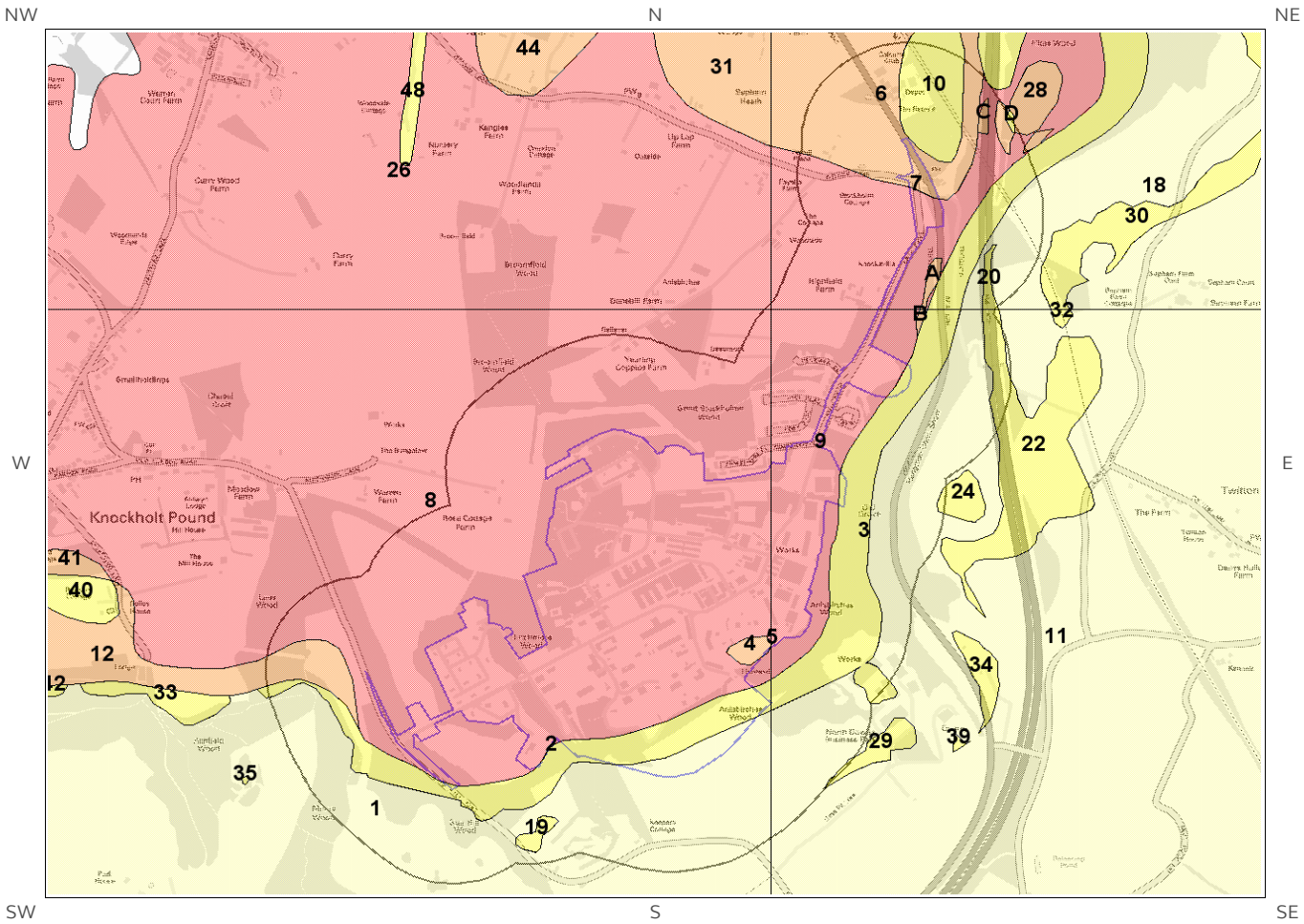
6.2 Landslides map



Landslides Legend

© Crown copyright and database rights 2019.
Ordnance Survey licence 100035207.

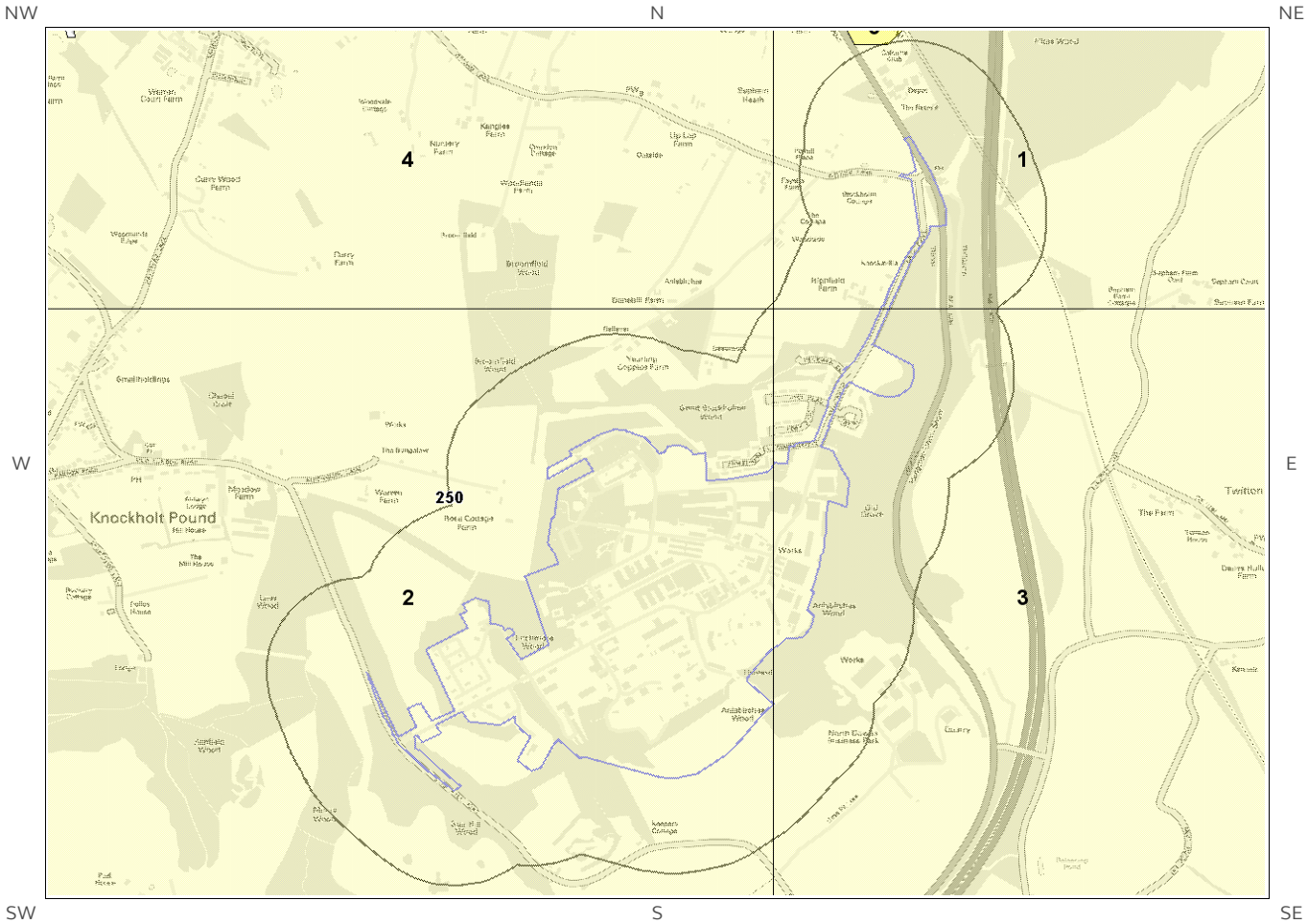
6.3 Ground Dissolution of Soluble Rocks map



Ground Dissolution
Soluble Rocks Legend

© Crown copyright and database rights 2019.
Ordnance Survey licence 100035207.

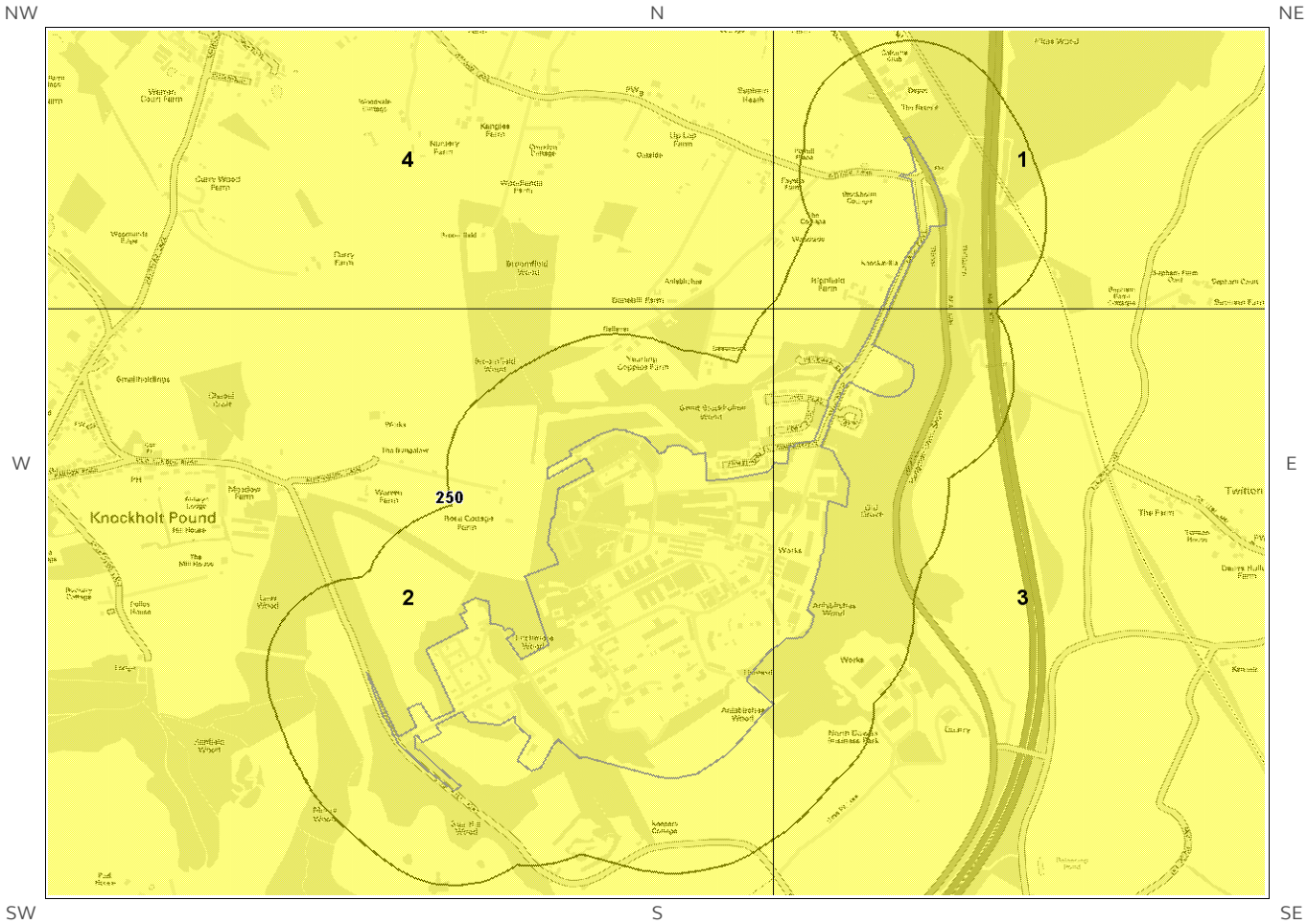
6.4 Compressible Deposits map



Compressible Deposits Legend

© Crown copyright and database rights 2019.
Ordnance Survey licence 100035207.

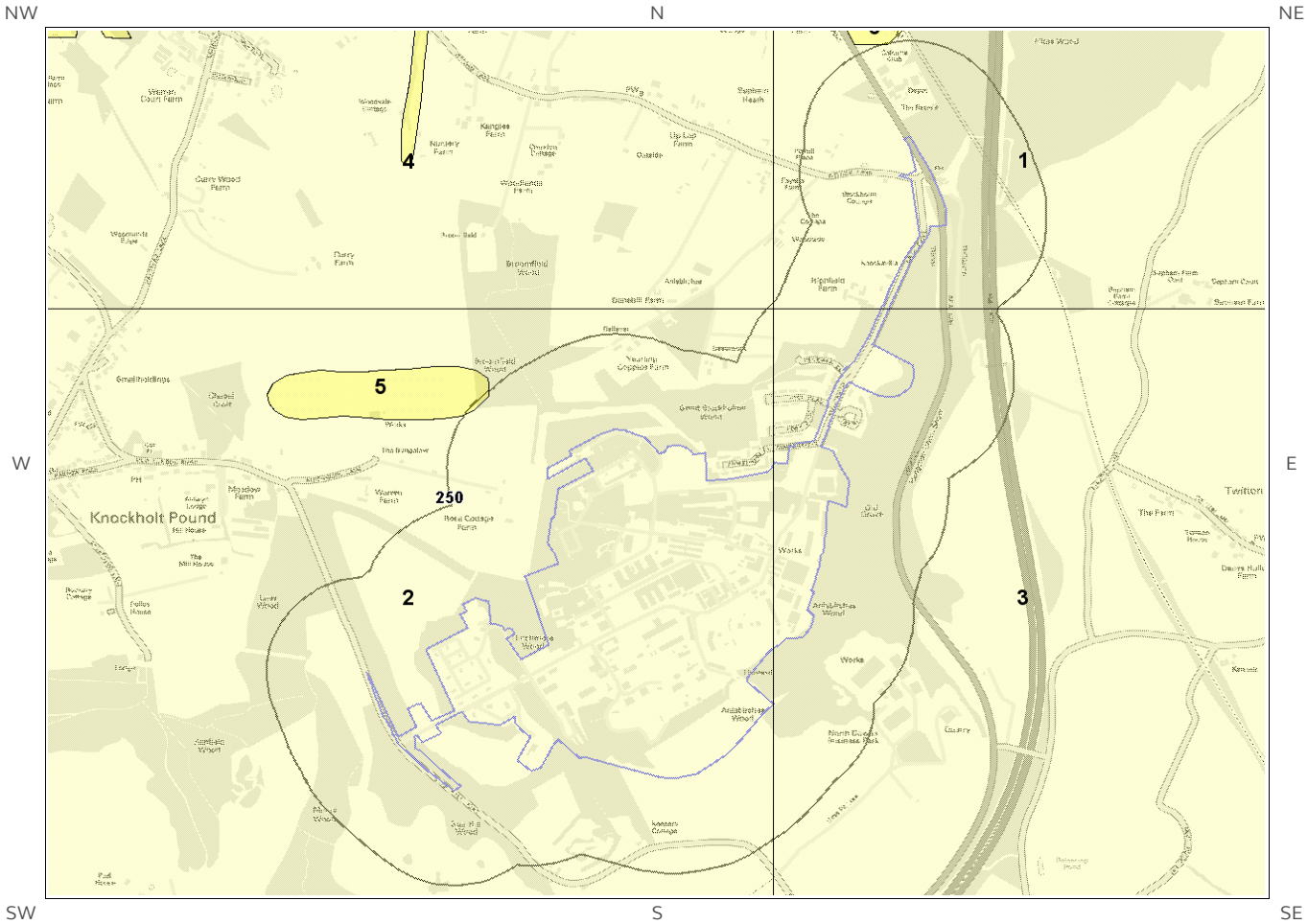
6.5 Collapsible Deposits map



Collapsible Deposits Legend

© Crown copyright and database rights 2019.
Ordnance Survey licence 100035207.

6.6 Running Sand map



Running Sand Legend

© Crown copyright and database rights 2019.
Ordnance Survey licence 100035207.

6 Natural Ground Subsidence

The National Ground Subsidence rating is obtained through the 6 natural ground stability hazard datasets, which are supplied by the British Geological Survey (BGS).

The following GeoSure data represented on the mapping is derived from the BGS Digital Geological map of Great Britain at 1:50,000 scale.

What is the maximum hazard rating of natural subsidence within the study site*[*] boundary? Moderate

6.1 Shrink-Swell Clays

The following Shrink Swell information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Low	Ground conditions predominantly medium plasticity. Do not plant trees with high soil moisture demands near to buildings. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a possible increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a possible increase in insurance risk, especially during droughts or where vegetation with high moisture demands is present.
2	0.0	On Site	Low	Ground conditions predominantly medium plasticity. Do not plant trees with high soil moisture demands near to buildings. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a possible increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a possible increase in insurance risk, especially during droughts or where vegetation with high moisture demands is present.
3	0.0	On Site	Low	Ground conditions predominantly medium plasticity. Do not plant trees with high soil moisture demands near to buildings. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a possible increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a possible increase in insurance risk, especially during droughts or where vegetation with high moisture demands is present.

* This includes an automatically generated 50m buffer zone around the site

ID	Distance (m)	Direction	Hazard Rating	Details
4	0.0	On Site	Negligible	Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.
5	0.0	On Site	Negligible	Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.
6	48.0	SE	Negligible	Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.

6.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for slope instability identified. No special actions required to avoid problems due to landslides. No special ground investigation required and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.
2	0.0	On Site	Negligible	No indicators for slope instability identified. No special actions required to avoid problems due to landslides. No special ground investigation required and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.
3	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.
4	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

ID	Distance (m)	Direction	Hazard Rating	Details
5	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.
6	0.0	On Site	Low	Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property - no significant increase in insurance risk due to natural slope instability problems.
7	0.0	On Site	Low	Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property - no significant increase in insurance risk due to natural slope instability problems.
8	0.0	On Site	Low	Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property - no significant increase in insurance risk due to natural slope instability problems.
9	0.0	On Site	Low	Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property - no significant increase in insurance risk due to natural slope instability problems.
10	0.0	On Site	Low	Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property - no significant increase in insurance risk due to natural slope instability problems.
11	0.0	On Site	Low	Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property - no significant increase in insurance risk due to natural slope instability problems.
12E	0.0	On Site	Low	Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property - no significant increase in insurance risk due to natural slope instability problems.

ID	Distance (m)	Direction	Hazard Rating	Details
13D	0.0	On Site	Low	Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property - no significant increase in insurance risk due to natural slope instability problems.
14A	0.0	On Site	Low	Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property - no significant increase in insurance risk due to natural slope instability problems.
15A	3.0	SE	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.
16B	14.0	NE	Moderate	Significant potential for slope instability with relatively small changes in ground conditions. Avoid large amounts of water entering the ground through pipe leakage or soak-aways. Do not undercut or place large amounts of material on slopes without technical advice. For new build - consider the potential and consequences of ground movement during excavations, or consequence of changes to loading or drainage. For existing property - probable increase in insurance risk is likely due to potential natural slope instability after changes to ground conditions such as a very long, excessively wet winter.
17	33.0	SE	Moderate	Significant potential for slope instability with relatively small changes in ground conditions. Avoid large amounts of water entering the ground through pipe leakage or soak-aways. Do not undercut or place large amounts of material on slopes without technical advice. For new build - consider the potential and consequences of ground movement during excavations, or consequence of changes to loading or drainage. For existing property - probable increase in insurance risk is likely due to potential natural slope instability after changes to ground conditions such as a very long, excessively wet winter.
18B	47.0	NE	Moderate	Significant potential for slope instability with relatively small changes in ground conditions. Avoid large amounts of water entering the ground through pipe leakage or soak-aways. Do not undercut or place large amounts of material on slopes without technical advice. For new build - consider the potential and consequences of ground movement during excavations, or consequence of changes to loading or drainage. For existing property - probable increase in insurance risk is likely due to potential natural slope instability after changes to ground conditions such as a very long, excessively wet winter.

ID	Distance (m)	Direction	Hazard Rating	Details
19	48.0	SE	Negligible	No indicators for slope instability identified. No special actions required to avoid problems due to landslides. No special ground investigation required and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.
20	49.0	SE	Moderate	Significant potential for slope instability with relatively small changes in ground conditions. Avoid large amounts of water entering the ground through pipe leakage or soak-aways. Do not undercut or place large amounts of material on slopes without technical advice. For new build - consider the potential and consequences of ground movement during excavations, or consequence of changes to loading or drainage. For existing property - probable increase in insurance risk is likely due to potential natural slope instability after changes to ground conditions such as a very long, excessively wet winter.

6.3 Ground Dissolution of Soluble Rocks

The following Ground Dissolution information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.
2	0.0	On Site	Very Low	Significant soluble rocks are present. Problems unlikely except with considerable surface or subsurface water flow. No special actions required to avoid problems due to soluble rocks. No special ground investigation required or increased construction costs are likely. An increase in financial risk due to potential problems with soluble rocks is unlikely.
3	0.0	On Site	Very Low	Significant soluble rocks are present. Problems unlikely except with considerable surface or subsurface water flow. No special actions required to avoid problems due to soluble rocks. No special ground investigation required or increased construction costs are likely. An increase in financial risk due to potential problems with soluble rocks is unlikely.
4	0.0	On Site	Low	Significant soluble rocks are present. Low possibility of subsidence occurring naturally, but may be possible in adverse conditions such as high surface or subsurface water flow. Consider implications for stability when changes to drainage or new construction are planned. For new build - site investigation should consider potential for dissolution problems on the site and its surroundings. Care should be taken with local drainage into the bedrock. Some possibility groundwater pollution. For existing property - possible increase in insurance risk due to soluble rocks.
5	0.0	On Site	Low	Significant soluble rocks are present. Low possibility of subsidence occurring naturally, but may be possible in adverse conditions such as high surface or subsurface water flow. Consider implications for stability when changes to drainage or new construction are planned. For new build - site investigation should consider potential for dissolution problems on the site and its surroundings. Care should be taken with local drainage into the bedrock. Some possibility groundwater pollution. For existing property - possible increase in insurance risk due to soluble rocks.

ID	Distance (m)	Direction	Hazard Rating	Details
6	0.0	On Site	Low	Significant soluble rocks are present. Low possibility of subsidence occurring naturally, but may be possible in adverse conditions such as high surface or subsurface water flow. Consider implications for stability when changes to drainage or new construction are planned. For new build - site investigation should consider potential for dissolution problems on the site and its surroundings. Care should be taken with local drainage into the bedrock. Some possibility groundwater pollution. For existing property - possible increase in insurance risk due to soluble rocks.
7	0.0	On Site	Moderate	Very significant soluble rocks are present, with a moderate possibility of local natural subsidence due to high surface or subsurface water flow. Do not load the land or undertake building work before obtaining specialist advice. Do not dispose of drainage to the ground. Some possibility groundwater pollution. Maintain drainage infrastructure. For new build - specialist site investigation and stability assessment may be necessary before construction. Construction work may cause subsidence. Increased construction costs are likely. For existing property - probable increase in insurance risk due to soluble rocks.
8	0.0	On Site	Moderate	Very significant soluble rocks are present, with a moderate possibility of local natural subsidence due to high surface or subsurface water flow. Do not load the land or undertake building work before obtaining specialist advice. Do not dispose of drainage to the ground. Some possibility groundwater pollution. Maintain drainage infrastructure. For new build - specialist site investigation and stability assessment may be necessary before construction. Construction work may cause subsidence. Increased construction costs are likely. For existing property - probable increase in insurance risk due to soluble rocks.
9	0.0	On Site	Moderate	Very significant soluble rocks are present, with a moderate possibility of local natural subsidence due to high surface or subsurface water flow. Do not load the land or undertake building work before obtaining specialist advice. Do not dispose of drainage to the ground. Some possibility groundwater pollution. Maintain drainage infrastructure. For new build - specialist site investigation and stability assessment may be necessary before construction. Construction work may cause subsidence. Increased construction costs are likely. For existing property - probable increase in insurance risk due to soluble rocks.
10	4.0	NE	Very Low	Significant soluble rocks are present. Problems unlikely except with considerable surface or subsurface water flow. No special actions required to avoid problems due to soluble rocks. No special ground investigation required or increased construction costs are likely. An increase in financial risk due to potential problems with soluble rocks is unlikely.
11	13.0	SE	Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.
12	38.0	W	Low	Significant soluble rocks are present. Low possibility of subsidence occurring naturally, but may be possible in adverse conditions such as high surface or subsurface water flow. Consider implications for stability when changes to drainage or new construction are planned. For new build - site investigation should consider potential for dissolution problems on the site and its surroundings. Care should be taken with local drainage into the bedrock. Some possibility groundwater pollution. For existing property - possible increase in insurance risk due to soluble rocks.
13	48.0	SE	Very Low	Significant soluble rocks are present. Problems unlikely except with considerable surface or subsurface water flow. No special actions required to avoid problems due to soluble rocks. No special ground investigation required or increased construction costs are likely. An increase in financial risk due to potential problems with soluble rocks is unlikely.
14A	49.0	SE	Low	Significant soluble rocks are present. Low possibility of subsidence occurring naturally, but may be possible in adverse conditions such as high surface or subsurface water flow. Consider implications for stability when changes to drainage or new construction are planned. For new build - site investigation should consider potential for dissolution problems on the site and its surroundings. Care should be taken with local drainage into the bedrock. Some possibility groundwater pollution. For existing property - possible increase in insurance risk due to soluble rocks.

6.4 Compressible Deposits

The following Compressible Deposits information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.
2	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.
3	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

6.5 Collapsible Deposits

The following Collapsible Rocks information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.
2	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.
3	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

6.6 Running Sands

The following Running Sands information provided by the British Geological Survey:

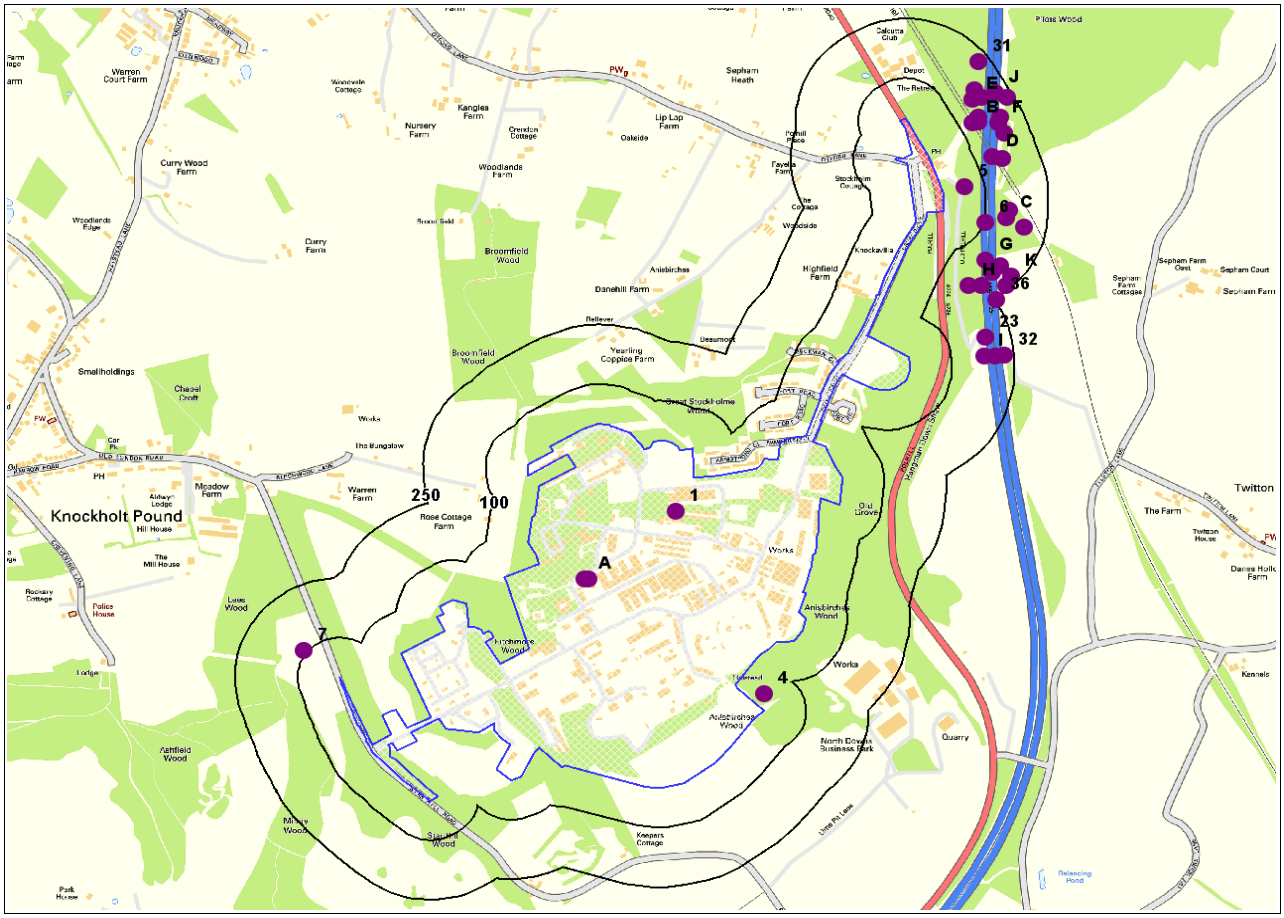
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.
2	0.0	On Site	Negligible	No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.
3	0.0	On Site	Negligible	No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

7 Borehole Records map

NW N NE

W E

SW S SE



Borehole Records Legend

© Crown copyright and database rights 2019.
Ordnance Survey licence 100035207.

Site Outline

Borehole Locations

125
250
Search Buffers (m)

7 Borehole Records

The systematic analysis of data extracted from the BGS Borehole Records database provides the following information.

Records of boreholes within 250m of the study site boundary: 36

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	0.0	On Site	549790 159460	TQ45NW19	12.19	FORT HALSTEAD
2A	0.0	On Site	549570 159290	TQ45NE230	13.72	FORT HALSTEAD
3A	0.0	On Site	549580 159290	TQ45NW20	13.72	FORT HALSTEAD
4	30.0	NE	550000 159000	TQ55NW240	17.37	TWITTON, A
5	52.0	E	550480 160280	TQ56SW97	10.45	BH 10280 M25 SAWLEY SEVENOAKS
6	104.0	E	550530 160190	TQ56SW34	10.0	M25 SWANLEY TO SEVENOAKS BH9060/2
7	108.0	NW	548900 159110	TQ45NE166	-1.0	KNOCKHOLT 1
8B	132.0	NE	550500 160440	TQ56SW31	29.0	M25 SWANLEY TO SEVENOAKS BH8790/2
9D	140.0	E	550546 160356	TQ56SW96	15.5	BH 10200 M25 SAWLEY SEVENOAKS
10B	144.0	NE	550512 160444	TQ56SW94	10.45	BH 10110 M25 SAWLEY SEVENOAKS
11B	149.0	NE	550512 160455	TQ56SW93	30.45	BH 10101 M25 SAWLEY SEVENOAKS
12C	151.0	E	550580 160200	TQ56SW33	8.0	M25 SWANLEY TO SEVENOAKS BH9060/1
13C	155.0	E	550586 160220	TQ56SW130	3.0	TP10330 M25 SWANLEY SEVENOAKS
14G	159.0	SE	550530 160095	TQ56SW122	4.0	TP 36 M25 SAWLEY SEVENOAKS
15D	160.0	E	550570 160350	TQ56SW32	30.0	M25 SWANLEY TO SEVENOAKS BH8900
16E	161.0	NE	550500 160500	TQ56SW38	15.0	FORT HALSTEAD RARDE BHS1-15
17H	173.0	SE	550490 160030	TQ56SW37	12.0	M25 SWANLEY TO SEVENOAKS BH9200/3
18E	177.0	NE	550503 160525	TQ56SW89	23.0	BH 10020 M25 SAWLEY SEVENOAKS
19I	179.0	E	550527 159853	TQ55NW113	25.0	M25 SWANLEY-SEVENOAKS BH10702
20E	183.0	NE	550521 160506	TQ56SW91	12.45	BH 10050 M25 SAWLEY SEVENOAKS
21F	184.0	NE	550560 160440	TQ56SW30	26.0	M25 SWANLEY TO SEVENOAKS BH8790/1
22F	188.0	E	550575 160415	TQ56SW95	12.45	BH 10140 M25 SAWLEY SEVENOAKS

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
23	189.0	E	550530 159900	TQ55NW50	8.0	M25 SWANLEY TO SEVENOAKS BH9300
24G	194.0	SE	550565 160080	TQ56SW98	8.0	BH 9300 M25 SAWLEY SEVENOAKS
25H	194.0	SE	550547 160064	TQ56SW133	4.0	TP10510 M25 SWANLEY SEVENOAKS
26F	196.0	NE	550566 160454	TQ56SW92	24.45	BH 10100 M25 SAWLEY SEVENOAKS
27C	197.0	E	550623 160178	TQ56SW131	3.0	TP10370 M25 SWANLEY SEVENOAKS
28H	201.0	SE	550520 160030	TQ56SW36	10.0	M25 SWANLEY TO SEVENOAKS BH9200/2
29I	204.0	E	550553 159853	TQ55NW112	25.27	M25 SWANLEY-SEVENOAKS BH10701
30J	217.0	NE	550554 160517	TQ56SW90	12.95	BH 10040 M25 SAWLEY SEVENOAKS
31	222.0	NE	550512 160595	TQ56SW128	4.0	TP 9960 M25 SWANLEY SEVENOAKS
32	227.0	E	550575 159855	TQ55NW111	20.2	M25 SWANLEY-SEVENOAKS BH10700
33K	231.0	SE	550592 160054	TQ56SW134	3.0	TP1052 M25 SWANLEY SEVENOAKS
34J	236.0	NE	550583 160506	TQ56SW123	2.0	TP 102 M25 SWANLEY SEVENOAKS
35K	241.0	SE	550580 160030	TQ56SW35	10.0	M25 SWANLEY TO SEVENOAKS BH9200/1
36	247.0	SE	550555 159995	TQ55NW120	3.0	M25 SWANLEY-SEVENOAKS TP 37

The borehole records are available using the hyperlinks below: Please note that if the donor of the borehole record has requested the information be held as commercial-in-confidence, the additional data will be held separately by the BGS and a formal request must be made for its release.

#1: scans.bgs.ac.uk/sobi_scans/boreholes/621113
#2A: scans.bgs.ac.uk/sobi_scans/boreholes/757666
#3A: scans.bgs.ac.uk/sobi_scans/boreholes/621114
#4: scans.bgs.ac.uk/sobi_scans/boreholes/2083412
#5: scans.bgs.ac.uk/sobi_scans/boreholes/742404
#6: scans.bgs.ac.uk/sobi_scans/boreholes/742338
#8B: scans.bgs.ac.uk/sobi_scans/boreholes/742335
#9D: scans.bgs.ac.uk/sobi_scans/boreholes/742403
#10B: scans.bgs.ac.uk/sobi_scans/boreholes/742401
#11B: scans.bgs.ac.uk/sobi_scans/boreholes/742400
#12C: scans.bgs.ac.uk/sobi_scans/boreholes/742337
#13C: scans.bgs.ac.uk/sobi_scans/boreholes/742437
#14G: scans.bgs.ac.uk/sobi_scans/boreholes/742429
#15D: scans.bgs.ac.uk/sobi_scans/boreholes/742336
#16E: scans.bgs.ac.uk/sobi_scans/boreholes/742342
#17H: scans.bgs.ac.uk/sobi_scans/boreholes/742341
#18E: scans.bgs.ac.uk/sobi_scans/boreholes/742396
#19I: scans.bgs.ac.uk/sobi_scans/boreholes/755393
#20E: scans.bgs.ac.uk/sobi_scans/boreholes/742398
#21F: scans.bgs.ac.uk/sobi_scans/boreholes/742334
#22F: scans.bgs.ac.uk/sobi_scans/boreholes/742402
#23: scans.bgs.ac.uk/sobi_scans/boreholes/755330
#24G: scans.bgs.ac.uk/sobi_scans/boreholes/742405
#25H: scans.bgs.ac.uk/sobi_scans/boreholes/742440
#26F: scans.bgs.ac.uk/sobi_scans/boreholes/742399
#27C: scans.bgs.ac.uk/sobi_scans/boreholes/742438
#28H: scans.bgs.ac.uk/sobi_scans/boreholes/742340
#29I: scans.bgs.ac.uk/sobi_scans/boreholes/755392
#30J: scans.bgs.ac.uk/sobi_scans/boreholes/742397
#31: scans.bgs.ac.uk/sobi_scans/boreholes/742435
#32: scans.bgs.ac.uk/sobi_scans/boreholes/755391
#33K: scans.bgs.ac.uk/sobi_scans/boreholes/742441
#34J: scans.bgs.ac.uk/sobi_scans/boreholes/742430
#35K: scans.bgs.ac.uk/sobi_scans/boreholes/742339
#36: scans.bgs.ac.uk/sobi_scans/boreholes/755400

8 Estimated Background Soil Chemistry

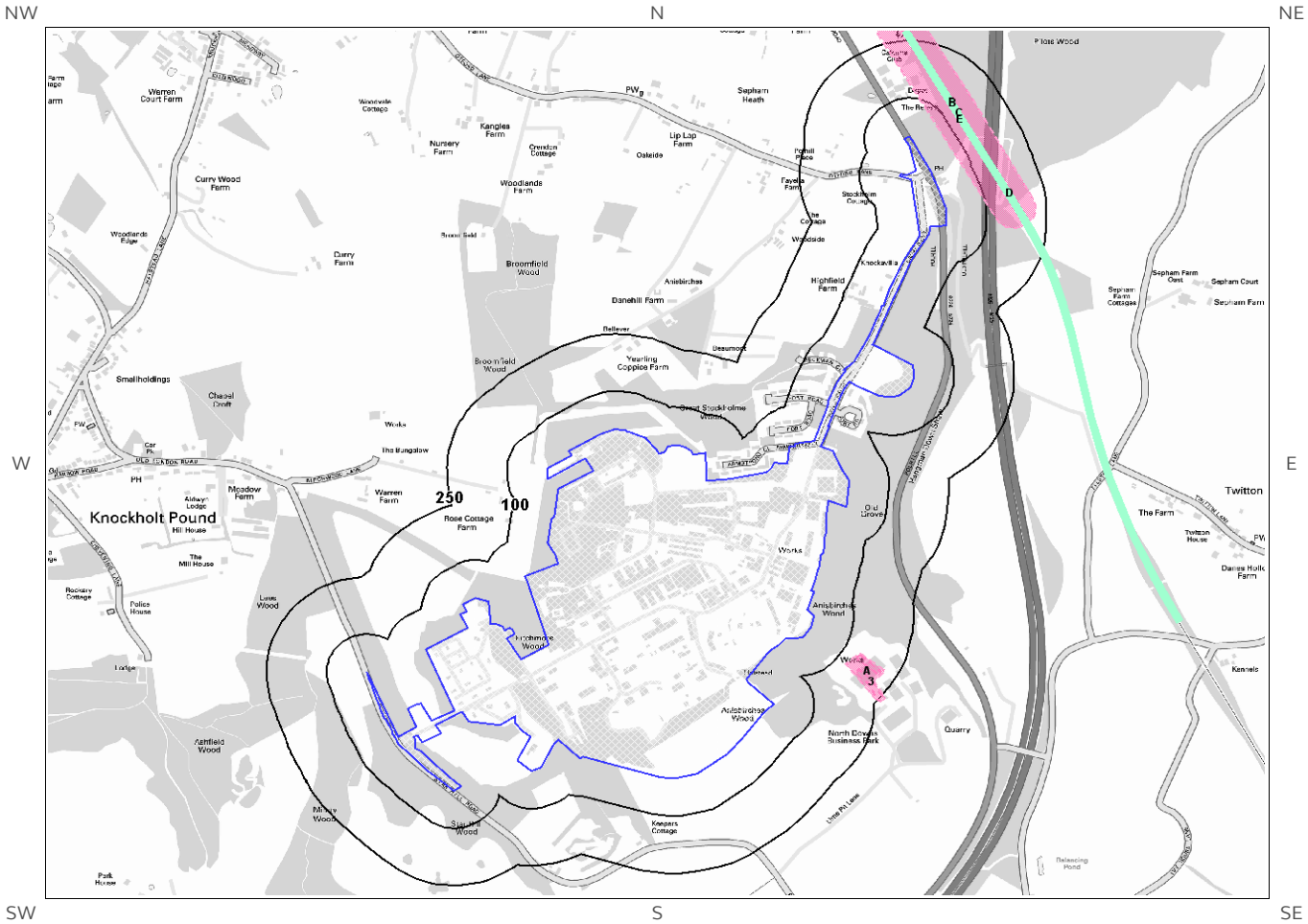
Records of background estimated soil chemistry within 250m of the study site boundary: 33

For further information on how this data is calculated and limitations upon its use, please see the Groundsure Geo Insight User Guide, available on request.

Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	W	Sediment	<15 mg/kg	<1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg	<100 mg/kg
13.0	SE	Sediment	<15 mg/kg	<1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg	<100 mg/kg
13.0	SE	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
24.0	S	Sediment	<15 mg/kg	<1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg	<100 mg/kg
30.0	NE	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
38.0	W	Sediment	<15 mg/kg	<1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg	<100 mg/kg
39.0	SE	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
42.0	W	Sediment	<15 mg/kg	<1.8 mg/kg	40 - 60 mg/kg	15 - 30 mg/kg	<100 mg/kg
45.0	N	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg
48.0	SE	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	100 - 200 mg/kg

*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

9 Railways and Tunnels map



Railways and Tunnels Legend

© Crown copyright and database rights 2019.
Ordnance Survey licence 100035207.
© OpenStreetMapContributors

Site Outline

250 500 Search Buffers (m)

Underground or Partially Underground Railway / Subway System

Railway Tunnel (OS Mapping)

Abandoned or Dismantled Railway (OpenStreetMap)

Railway Track (OS Mapping)

Railway Track (OpenStreetMap)

High Speed 2

High Speed 2 Revised Proposed Route

Crossrail 1

Railway and/or Tunnel Feature from Historical Mapping

9 Railways and Tunnels

9.1 Tunnels

This data is derived from OpenStreetMap and provides information on the possible locations of underground railway systems in the UK - the London Underground, the Tyne & Wear Metro and the Glasgow Subway.

Have any underground railway lines been identified within the study site boundary? No

Have any underground railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels map.

This data is derived from Ordnance Survey mapping and provides information on the possible locations of railway tunnels forming part of the UK overground railway network.

Have any other railway tunnels been identified within the site boundary? No

Have any other railway tunnels been identified within 250m of the site boundary? Yes

Distance (m)	Direction	Detail
132	NE	Railway Tunnel

Any records that have been identified are represented on the Railways and Tunnels map.

9.2 Historical Railway and Tunnel Features

This data is derived from Groundsure's unique Historical Land-use Database and contains features relating to tunnels, railway tracks or associated works that have been identified from historical Ordnance Survey mapping.

Have any historical railway or tunnel features been identified within the study site boundary? No

Have any historical railway or tunnel features been identified within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Details	Date
16E	72	NE	550301 160768	Tunnel	1988
17E	72	NE	550301 160768	Tunnel	1961
18E	72	NE	550301 160768	Tunnel	1967
19F	126	NE	549975 161312	Tunnel	1938

ID	Distance (m)	Direction	NGR	Details	Date
20F	127	NE	549976 161316	Tunnel	1907
21F	127	NE	549976 161316	Tunnel	1932
22F	127	NE	549976 161316	Tunnel	1869
23F	127	NE	549976 161316	Tunnel	1940
24F	127	NE	549976 161316	Tunnel	1895
1A	128	SE	550229 159030	Railway Sidings	1961
4B	128	NE	550277 160806	Tunnel	1932
5B	128	NE	550277 160806	Tunnel	1896
6B	128	NE	550277 160806	Tunnel	1909
7B	128	NE	550277 160806	Tunnel	1939
8C	129	NE	550387 160631	Tunnel	1961
9C	130	NE	550388 160632	Tunnel	1997
10B	130	NE	550278 160807	Tunnel	1869
11C	131	NE	550388 160632	Tunnel	1984
2A	141	SE	550238 159061	Railway Sidings	1936
12D	152	E	550590 160299	Tunnel	1909
13D	152	E	550590 160299	Tunnel	1936
14D	152	E	550590 160299	Tunnel	1869
15D	152	E	550590 160299	Tunnel	1896
25D	152	E	550592 160295	Tunnel	1938
26D	152	E	550593 160296	Tunnel	1907
27D	152	E	550593 160296	Tunnel	1936
3	163	SE	550241 159009	Railway Sidings	1936

Any records that have been identified are represented on the Railways and Tunnels map.

9.3 Historical Railways

This data is derived from OpenStreetMap and provides information on the possible alignments of abandoned or dismantled railway lines in proximity to the study site.

Have any historical railway lines been identified within the study site boundary? No

Have any historical railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels map.

9.4 Active Railways

These datasets are derived from Ordnance Survey mapping and OpenStreetMap and provide information on the possible locations of active railway lines in proximity to the study site.

Have any active railway lines been identified within the study site boundary? No

Have any active railway lines been identified within 250m of the study site boundary? Yes

Distance (m)	Direction	Name	Type
131	NE	South Eastern Main Line	Rail
131	NE	South Eastern Main Line	Rail
136	NE	South Eastern Main Line	Rail
136	NE	South Eastern Main Line	Rail
175	E	Not given	Multi Track
175	E	Not given	Multi Track
179	E	South Eastern Main Line	Rail
179	E	South Eastern Main Line	Rail
183	E	South Eastern Main Line	Rail
183	E	South Eastern Main Line	Rail

Multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels map.

9.5 Railway Projects

These datasets provide information on the location of large scale railway projects High Speed 2 and Crossrail 1 .

Is the study site within 5km of the route of the High Speed 2 rail project? No

Is the study site within 500m of the route of the Crossrail 1 rail project? No

Further information on proximity to these routes, the project construction status and associated works can be obtained through the purchase of a Groundsure HS2 and Crossrail 1 Report.

The route data has been digitised from publicly available maps by Groundsure. The route as provided relates to the Crossrail 1 project only, and does not include any details of the Crossrail 2 project, as final details of the route for Crossrail 2 are still under consultation.

Please note that this assessment takes account of both the original Phase 2b proposed route and the amended route proposed in 2016. As the Phase 2b route is still under consultation, Groundsure are providing information on both options until the final route is formally confirmed. Practitioners should take account of this uncertainty when advising clients.

Contact Details

Groundsure Helpline

Telephone: 08444 159 000
info@groundsure.com

British Geological Survey Enquiries

Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email:**enquiries@bgs.ac.uk**
Web:**www.bgs.ac.uk**
BGS Geological Hazards Reports and general geological enquiries

British Gypsum

British Gypsum Ltd
East Leake
Loughborough
Leicestershire
LE12 6HX

The Coal Authority

200 Lichfield Lane
Mansfield
Notts NG18 4RG
Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk

Public Health England

Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
https://www.gov.uk/government/organisations/public-health-england
Email: **enquiries@phe.gov.uk**
Main switchboard: 020 7654 8000

Johnson Poole & Bloomer Limited

Harris and Pearson Building, Brettel Lane
Brierley Hill, West Midlands
DY5 3LH
Tel: +44 (0) 1384 262 000
Email:**enquiries.gs@jpb.co.uk**
Website: **www.jpb.co.uk**

Ordnance Survey

Adanac Drive, Southampton
SO16 0AS

Tel: 08456 050505
Website: http://www.ordnancesurvey.co.uk/

Getmapping PLC

Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444
Website:**http://www1.getmapping.com/**

Peter Brett Associates

Caversham Bridge House
Waterman Place
Reading
Berkshire RG1 8DN
Tel: +44 (0)118 950 0761 E-mail:**reading@pba.co.uk**
Website:**http://www.peterbrett.com/home**

Acknowledgements: Ordnance Survey © Crown Copyright and/or Database Right. All Rights Reserved. Licence Number [03421028]. This report has been prepared in accordance with the Groundsure Ltd standard Terms and Conditions of business for work of this nature.

Standard Terms and Conditions

Groundsure's Terms and Conditions can be viewed online at this link:
https://www.groundsure.com/terms-and-conditions-may25-2018

Appendix E

Geotechnical Test Results

2718

geotechnical

Hydrock Consultants
Over Court Barns
Over Lane
Almondsbury
Bristol
BS32 4DF

For the attention of Wayne Lewis

Version No.	1
Page No.	1 of 59
Date of Issue	31/08/2016

TEST REPORT

PROJECT/SITE	Fort Halstead	Samples received	11/08/2016
GEL REPORT NUMBER	32218	Schedule received	11/08/2016
Your ref/PO:	0	Testing commenced	17/08/2016
Test report refers to	Schedule 1	Status	Final

SUMMARY OF RESULTS ATTACHED

TEST METHOD & DESCRIPTION	QUANTITY	ACCREDITED TEST
BS EN ISO 17892-1: 2014:5. Water Content	37	YES
BS1377: Part 2: 1990:4.2-4.4&5.2-5.4, Liquid & Plastic Limits	37	YES
BS1377: Part 2: 1990:9.2, Particle Size Distribution - Wet Sieve	39	YES
BS1377: Part 4: 1990:3, Dry Density/Moisture Content Relationship	6	YES
BS1377: Part 4: 1990:6, Chalk Crushing Value (CCV)	6	NO
BS1377: Part 4: 1990:7, California Bearing Ratio (CBR)	6	YES

Remarks

This report may not be partially reproduced without written permission from this laboratory.

Approved Signatories:

S Robinson (Client Manager) C Andrew (Client Manager)
W Jones (Technical Support) J Hanson (Director) N Parry (Director)

Geotechnical Engineering Ltd
Centurion House
Olympus Park, Quedgeley
Gloucester GL2 4NF

www.geoeng.co.uk
geotech@geoeng.co.uk
TEL: 01452 527743
Fax: 01452 729314

Registered number: 00700739
VAT Number: 682 5857 89

Payments: Geotechnical Engineering Limited
Sort code: 30-15-99 **Bank account**: 00072116

Geotechnical Engineering Limited

LIQUID AND PLASTIC LIMITS

BS.1377 : PART 2 : 1990 : 4 and 5

CLIENT HYDROCK

SITE FORT HALSTEAD

borehole /trial pit no.	sample no./type	sample depth (m)	specimen depth (m)	natural water content (%)	specimen preparation and test method	fraction >0.425 mm (%)	liquid limit (%)	plastic limit (%)	plasticity index (%)	description and remarks
TP503	D	1.00	1.00	21.10	BXE	16	44	18	26	Orangish brown slightly sandy slightly gravelly CLAY
TP506	D	0.50	0.50	24.80	BXE	26	76	29	47	Reddish brown slightly sandy slightly gravelly CLAY with rare rootlets
TP506	D	1.50	1.50	20.30	BXE	3	48	20	28	Orangish brown slightly sandy slightly gravelly CLAY
TP510	D	0.50	0.50	23.60	BXE	1	52	19	33	Orangish brown slightly sandy CLAY
TP510	D	1.50	1.50	23.10	BXE	2	48	20	28	Orangish brown slightly sandy CLAY
TP510	D	2.50	2.50	23.70	BXE	1	53	21	32	Orangish brown slightly sandy CLAY
TP512	D	0.50	0.50	21.10	BXE	46	81	31	50	Orangish brown slightly sandy gravelly CLAY
TP518	D	1.50	1.50	31.20	BXE	36	89	37	52	Dark reddish brown slightly sandy slightly gravelly CLAY
TP521	D	0.80	0.80	25.30	BXE	4	60	24	36	Reddish brown slightly sandy slightly gravelly CLAY
TP522	D	1.00	1.00	24.70	BXE	21	67	29	38	Reddish brown slightly sandy slightly gravelly CLAY
TP522	D	2.00	2.00	38.40	BXE	2	91	37	54	Reddish brown slightly sandy slightly gravelly CLAY
TP522	D	3.00	3.00	34.50	BXE	14	85	33	52	Brown slightly sandy slightly gravelly CLAY
TP523	D	0.40	0.40	16.90	BXE	27	36	19	17	Brown slightly sandy slightly gravelly silty CLAY
TP523	D	0.80	0.80	35.60	BXE	2	82	31	51	Brown and reddish brown slightly sandy slightly gravelly CLAY
TP523	D	2.00	2.00	28.20	BXE	4	68	26	42	Reddish brown mottled brown slightly sandy slightly gravelly CLAY
TP524	D	0.50	0.50	33.20	BXE	18	82	32	50	Reddish brown mottled brown slightly sandy slightly gravelly CLAY
TP526	D	0.50	0.50	44.40	BXE	6	91	38	53	Dark reddish brown slightly sandy slightly gravelly CLAY
TP529	D	0.50	0.50	16.40	BXE	37	46	20	26	Brown slightly sandy slightly gravelly CLAY
TP529	D	1.50	1.50	24.40	BXE	13	64	28	36	Reddish brown slightly sandy slightly gravelly CLAY

general remarks
natural water content determined in accordance with BS EN ISO 17892 - 1 : 2014 (unless specified)
NP denotes non plastic
# denotes sample tested is smaller than that which is recommended in accordance with BS1377 or BS EN ISO 17892

specimen preparation		test method	CONTRACT	CHECKED
A - as received	D - oven dried (60oC)	X - cone penetrometer (test 4.3)	**32218**	**SR**
B - washed on 0.425mm sieve	E - oven dried (105oC)	Y - cone penetrometer (test 4.4)		
C - air dried	F - not known	Z - casagrande apparatus (test 4.5)		

Geotechnical Engineering Limited

LIQUID AND PLASTIC LIMITS

BS.1377 : PART 2 : 1990 : 4 and 5

CLIENT HYDROCK

SITE FORT HALSTEAD

borehole /trial pit no.	sample no./type	sample depth (m)	specimen depth (m)	natural water content (%)	specimen preparation and test method	fraction >0.425 mm (%)	liquid limit (%)	plastic limit (%)	plasticity index (%)	description and remarks
TP530	D	0.50	0.50	26.40	BXE	36	61	26	35	Brown slightly sandy gravelly CLAY
TP530	D	1.50	1.50	26.40	BXE	69	42	20	22	Off white slightly sandy clayey GRAVEL (chalk)
TP531	D	2.00	2.00	19.90	BXE	0	35	25	10	Light reddish brown slightly clayey SAND
TP533	D	1.50	1.50	21.50	BXE	1	42	18	24	Light reddish brown mottled grey slightly gravelly sandy CLAY
TP533	D	2.00	2.00	16.70	BXE	2	37	23	14	Light reddish brown mottled grey slightly gravelly sandy CLAY
TP534	D	1.50	1.50	20.10	BXE	54	86	33	53	Dark orangish brown slightly sandy gravelly CLAY
TP535	D	2.10	2.10	28.10	BYE	81	32	22	10	Off white slightly sandy clayey GRAVEL (chalk)
TP537	D	1.50	1.50	32.40	BXE	12	86	34	52	Reddish brown slightly sandy slightly gravelly CLAY
TP537	D	2.50	2.50	32.30	BXE	20	88	36	52	Reddish brown slightly sandy slightly gravelly CLAY
TP541	D	1.50	1.50	36.00	BXE	7	88	36	52	Reddish brown slightly sandy slightly gravelly CLAY
TP542	D	1.00	1.00	31.60	BXE	1	72	30	42	Reddish brown mottled brown slightly sandy slightly gravelly CLAY
TP545	D	0.50	0.50	18.10	BXE	35	33	19	14	Greyish brown slightly sandy slightly gravelly CLAY
TP551	D	1.50	1.50	42.60	BXE	12	94	39	55	Reddish brown slightly sandy slightly gravelly CLAY
TP560	D	0.50	0.50	38.50	BXE	6	91	36	55	Reddish brown slightly sandy slightly gravelly CLAY
TP560	D	1.50	1.50	41.50	BXE	8	99	39	60	Reddish brown slightly sandy slightly gravelly CLAY
TP561	D	0.50	0.50	15.10	BXE	14	98	39	59	Reddish brown slightly sandy slightly gravelly CLAY
TP566	D	0.30	0.30	21.80	BXE	15	61	25	36	Reddish brown slightly sandy slightly gravelly CLAY
TP566	D	1.00	1.00	38.10	BXE	10	97	37	60	Reddish brown slightly sandy slightly gravelly CLAY

general remarks

natural water content determined in accordance with BS EN ISO 17892 - 1 : 2014 (unless specified)

NP denotes non plastic

# denotes sample tested is smaller than that which is recommended in accordance with BS1377 or BS EN ISO 17892

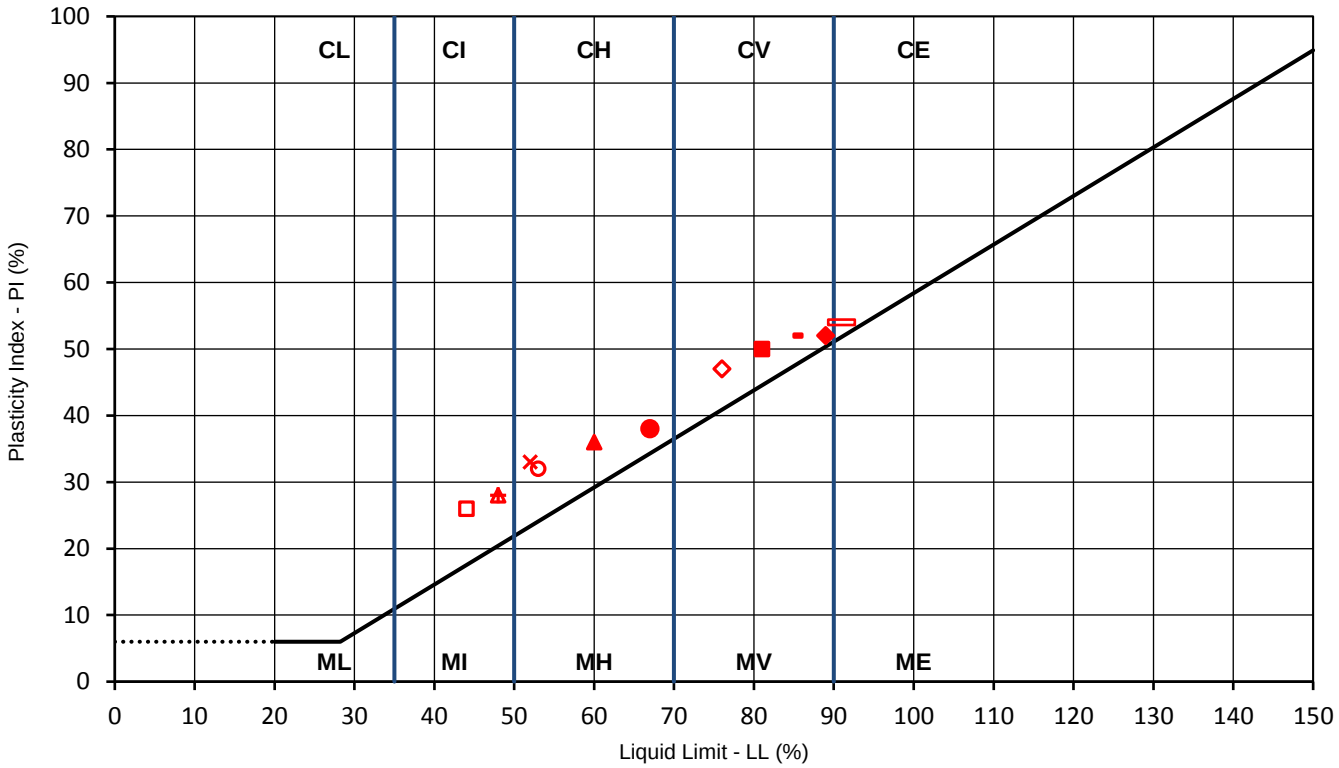
specimen preparation		test method	CONTRACT	CHECKED
A - as received	D - oven dried (60oC)	X - cone penetrometer (test 4.3)	**32218**	**SR**
B - washed on 0.425mm sieve	E - oven dried (105oC)	Y - cone penetrometer (test 4.4)		
C - air dried	F - not known	Z - casagrande apparatus (test 4.5)		

Geotechnical Engineering Limited

ATTERBERG LINE PLOT

CLIENT HYDROCK

SITE FORT HALSTEAD



	BH/TP No.	depth (m)	LL	PL	PI	remarks
□	TP503	1.00	44	18	26	
◇	TP506	0.50	76	29	47	
△	TP506	1.50	48	20	28	
×	TP510	0.50	52	19	33	
+	TP510	1.50	48	20	28	
○	TP510	2.50	53	21	32	
■	TP512	0.50	81	31	50	
◆	TP518	1.50	89	37	52	
▲	TP521	0.80	60	24	36	
●	TP522	1.00	67	29	38	
▭	TP522	2.00	91	37	54	
▪	TP522	3.00	85	33	52	

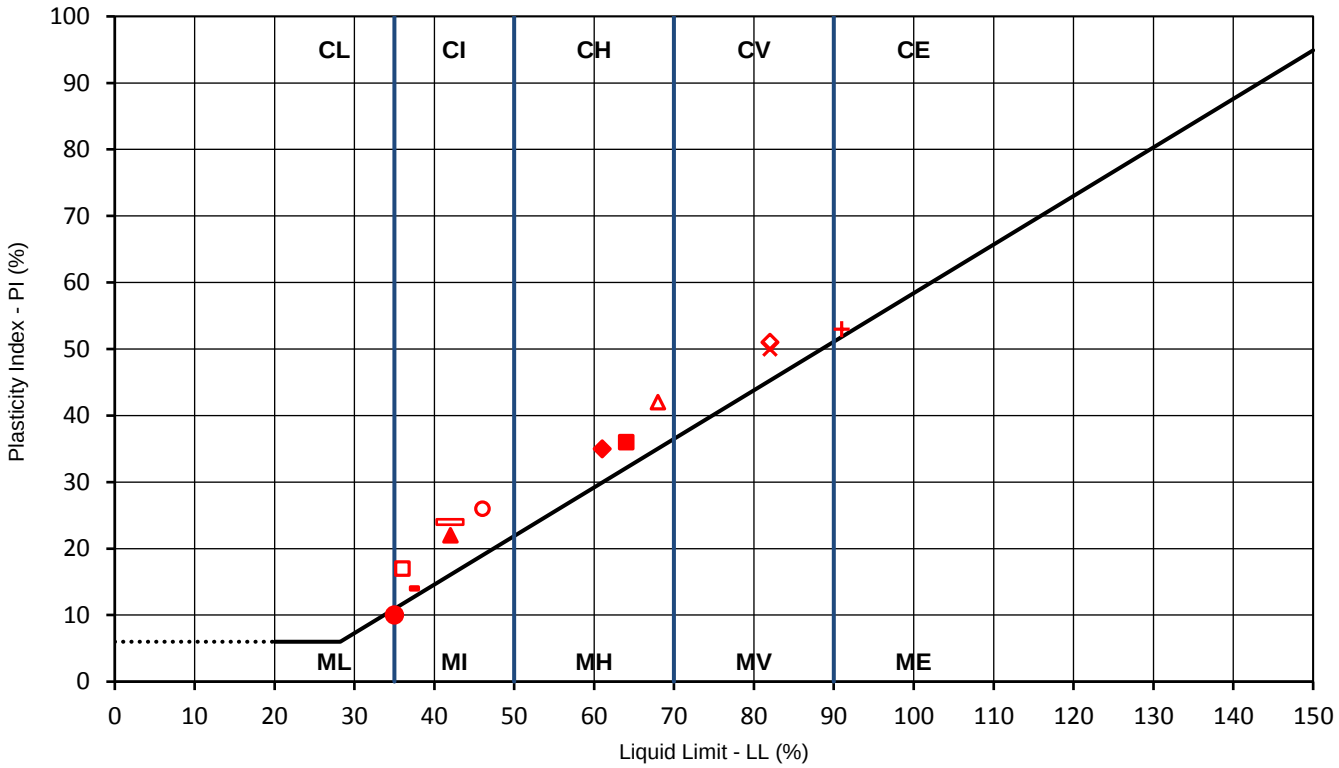
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

ATTERBERG LINE PLOT

CLIENT HYDROCK

SITE FORT HALSTEAD



	BH/TP No.	depth (m)	LL	PL	PI	remarks
□	TP523	0.40	36	19	17	
◇	TP523	0.80	82	31	51	
△	TP523	2.00	68	26	42	
×	TP524	0.50	82	32	50	
+	TP526	0.50	91	38	53	
○	TP529	0.50	46	20	26	
■	TP529	1.50	64	28	36	
◆	TP530	0.50	61	26	35	
▲	TP530	1.50	42	20	22	
●	TP531	2.00	35	25	10	
▭	TP533	1.50	42	18	24	
▪	TP533	2.00	37	23	14	

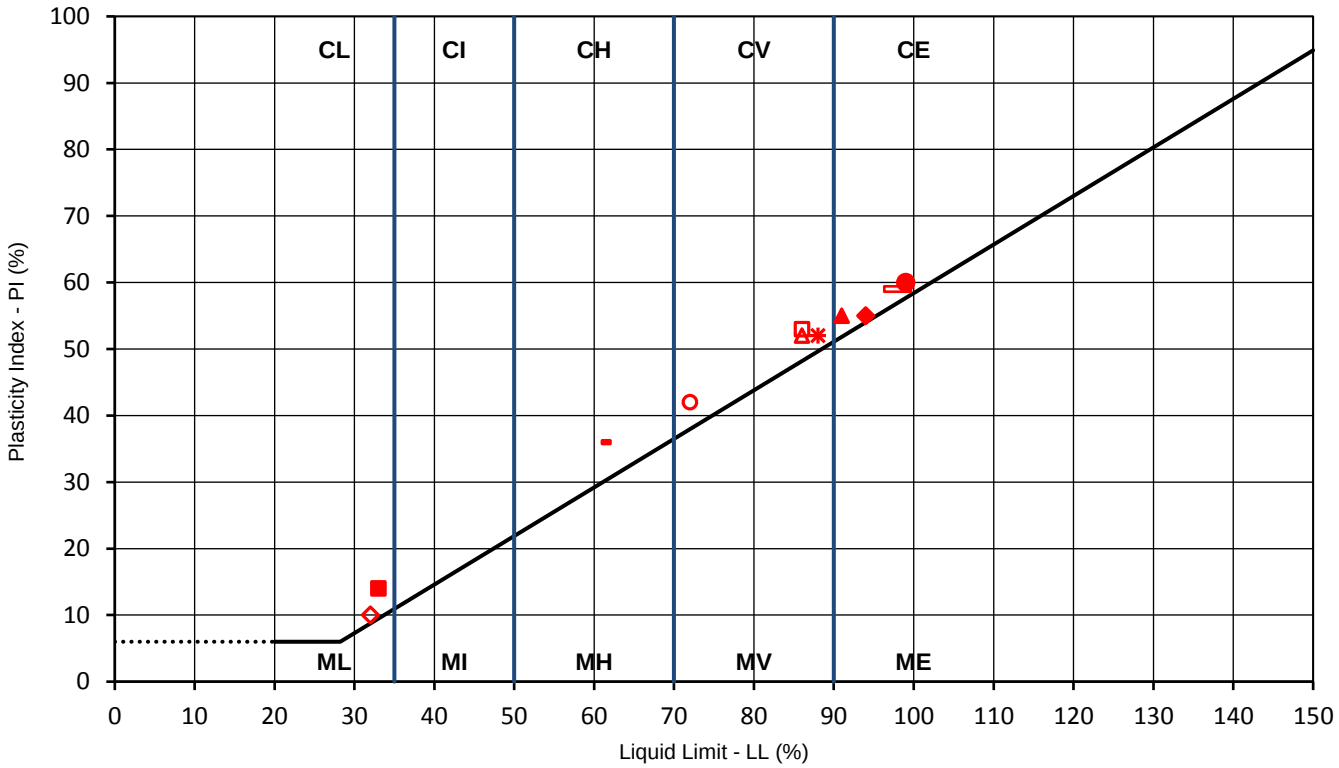
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

ATTERBERG LINE PLOT

CLIENT HYDROCK

SITE FORT HALSTEAD



	BH/TP No.	depth (m)	LL	PL	PI	remarks
□	TP534	1.50	86	33	53	
◇	TP535	2.10	32	22	10	
△	TP537	1.50	86	34	52	
×	TP537	2.50	88	36	52	
+	TP541	1.50	88	36	52	
○	TP542	1.00	72	30	42	
■	TP545	0.50	33	19	14	
◆	TP551	1.50	94	39	55	
▲	TP560	0.50	91	36	55	
●	TP560	1.50	99	39	60	
▭	TP561	0.50	98	39	59	
▪	TP566	0.30	61	25	36	

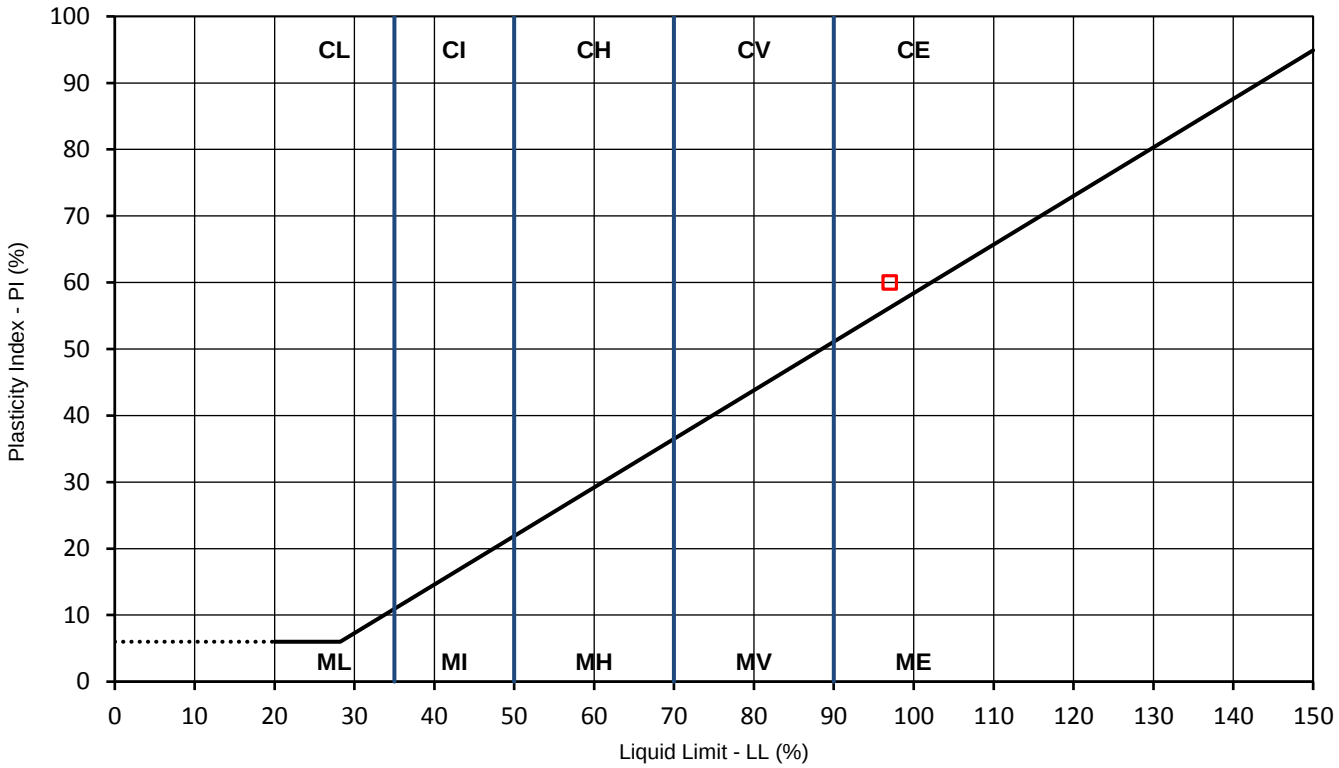
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

ATTERBERG LINE PLOT

CLIENT HYDROCK

SITE FORT HALSTEAD



	BH/TP No.	depth (m)	LL	PL	PI	remarks
◻	TP566	1.00	97	37	60	

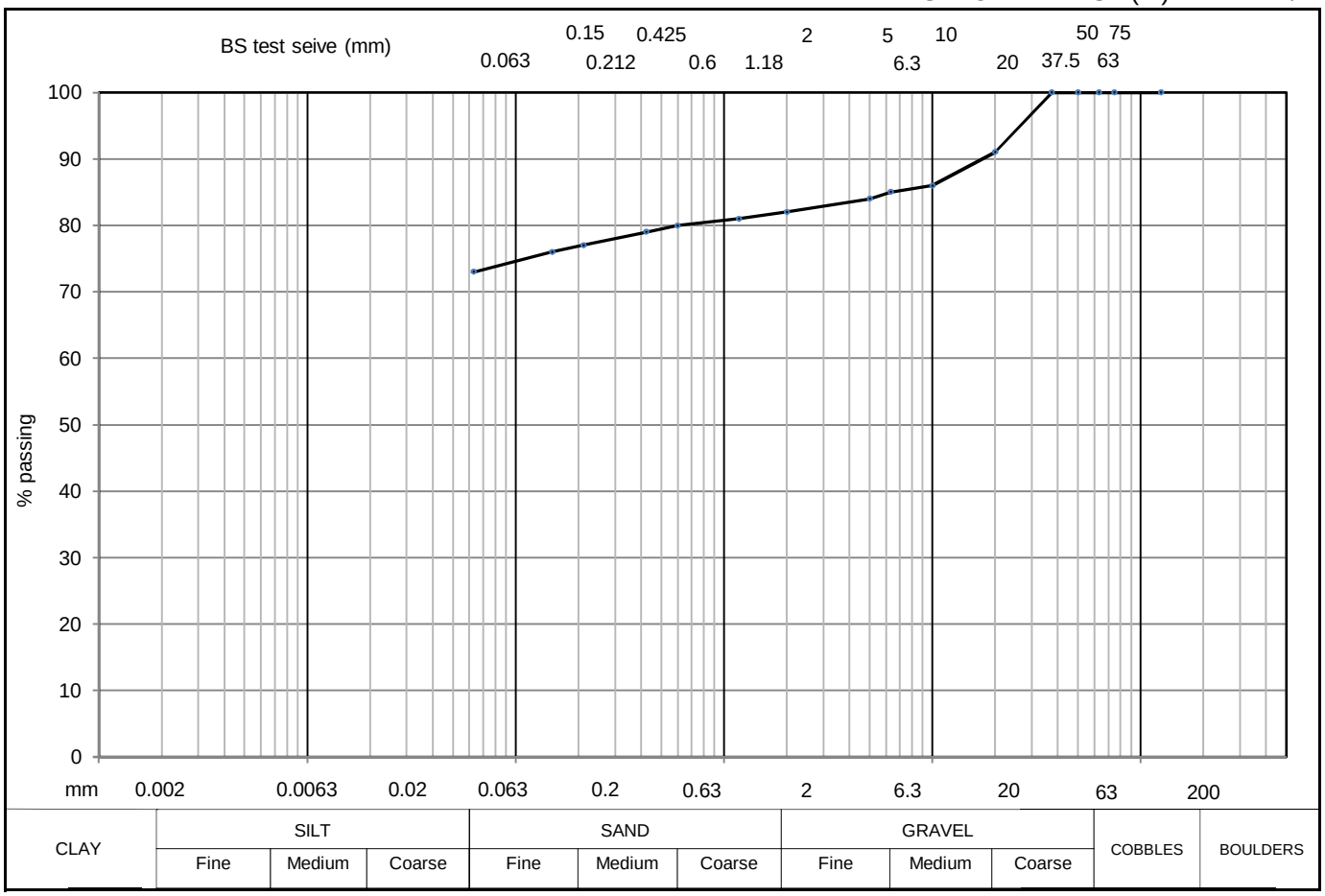
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP507
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	2.40
DESCRIPTION	Brown slightly sandy slightly gravelly CLAY	SPECIMEN TOP (m)	2.40
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	73
SAND	9
GRAVEL	18
COBBLE & BOULDER	0
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	84	20	
75		2	82	6	
63		1.18	81	2	
50		0.6	80		
37.5	100	0.425	79		
20	91	0.212	77		
10	86	0.15	76		
6.3	85	0.063	73		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

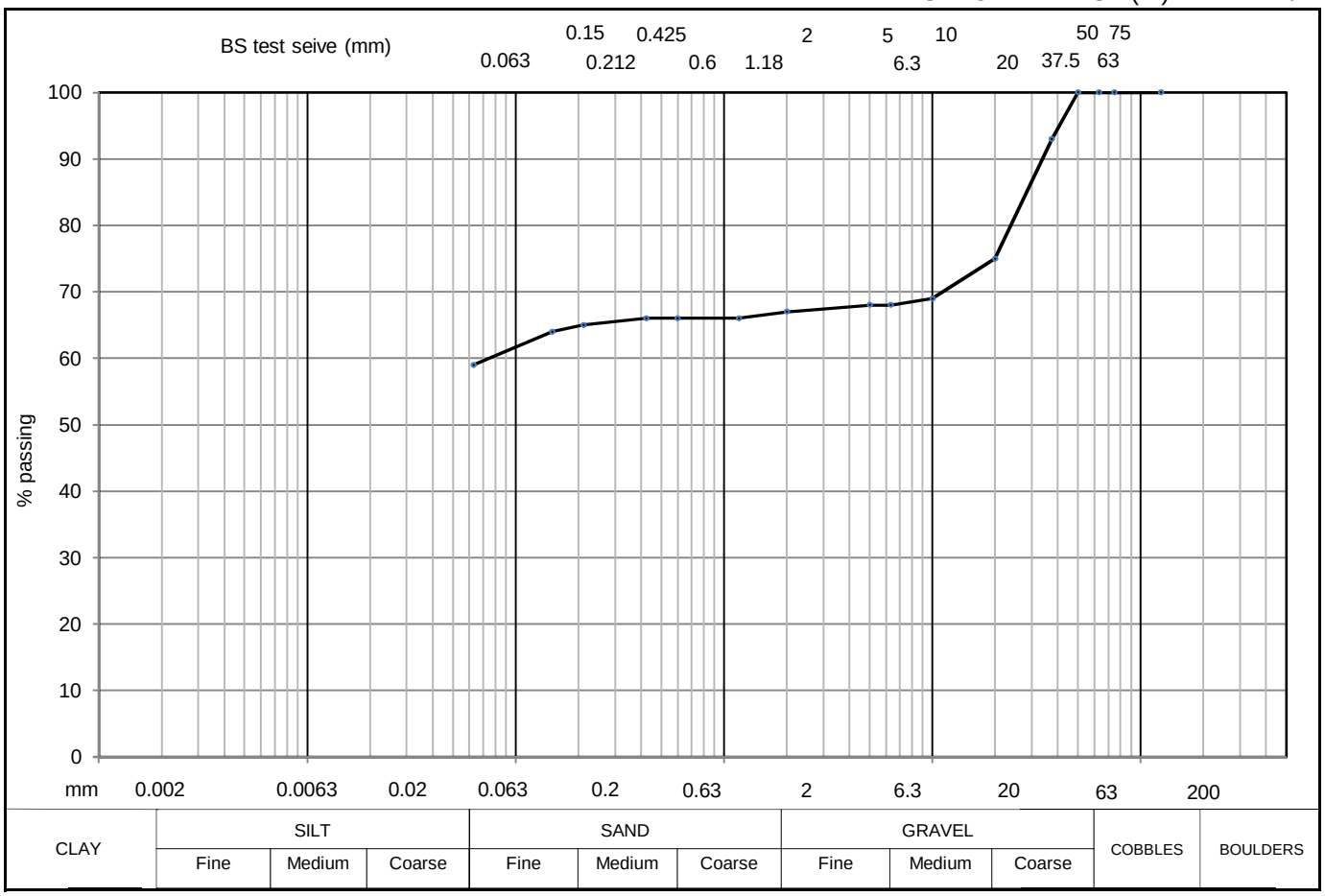
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP507
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	3.00
DESCRIPTION	Orangish brown slightly sandy slightly gravelly CLAY	SPECIMEN TOP (m)	3.00
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	59
SAND	8
GRAVEL	33
COBBLE & BOULDER	0
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	68	20	
75		2	67	6	
63		1.18	66	2	
50	100	0.6	66		
37.5	93	0.425	66		
20	75	0.212	65		
10	69	0.15	64		
6.3	68	0.063	59		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

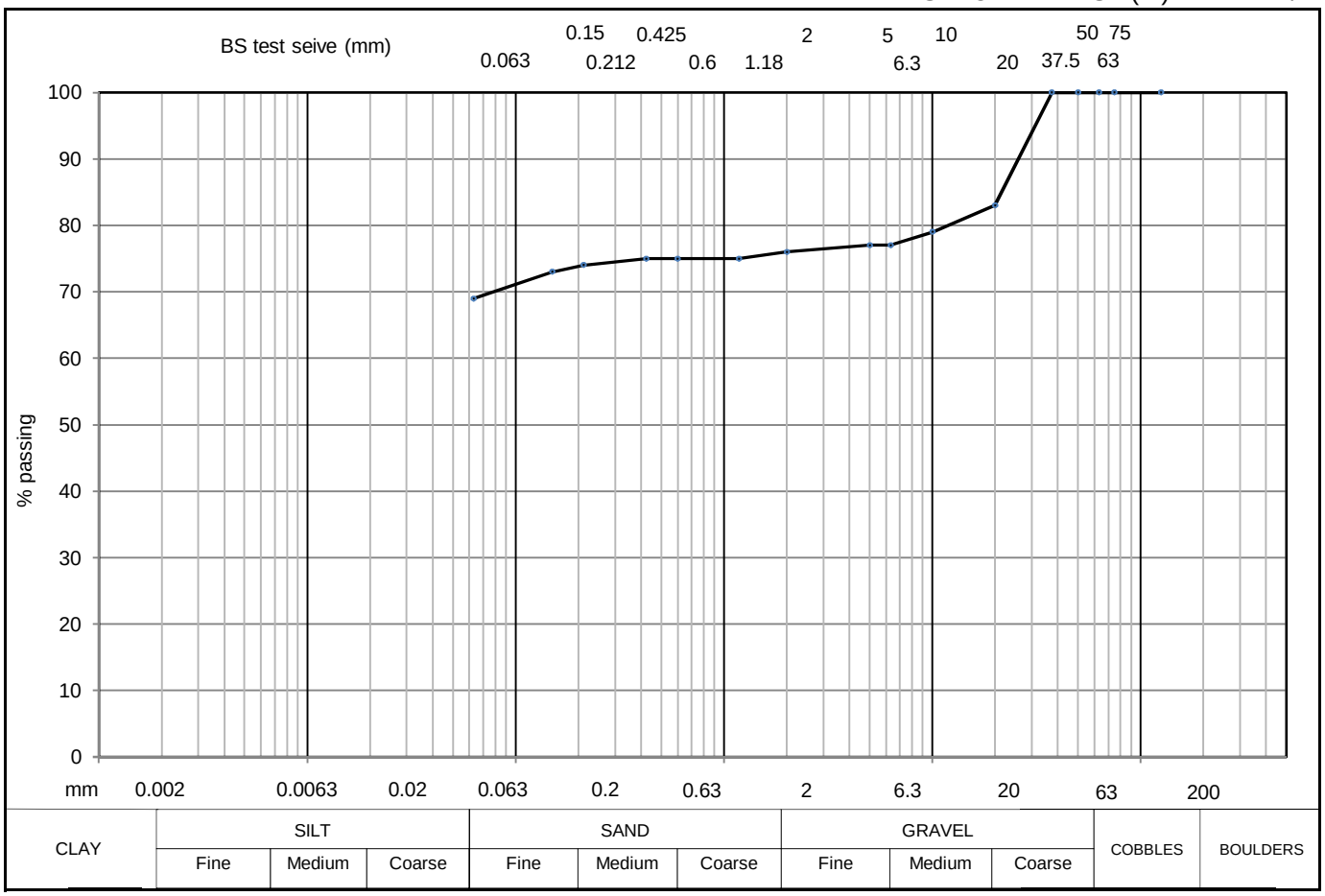
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP508
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	0.60
DESCRIPTION	Orangish brown slightly sandy slightly gravelly CLAY	SPECIMEN TOP (m)	0.60
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	69
SAND	7
GRAVEL	24
COBBLE & BOULDER	0
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	77	20	
75		2	76	6	
63		1.18	75	2	
50		0.6	75		
37.5	100	0.425	75		
20	83	0.212	74		
10	79	0.15	73		
6.3	77	0.063	69		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

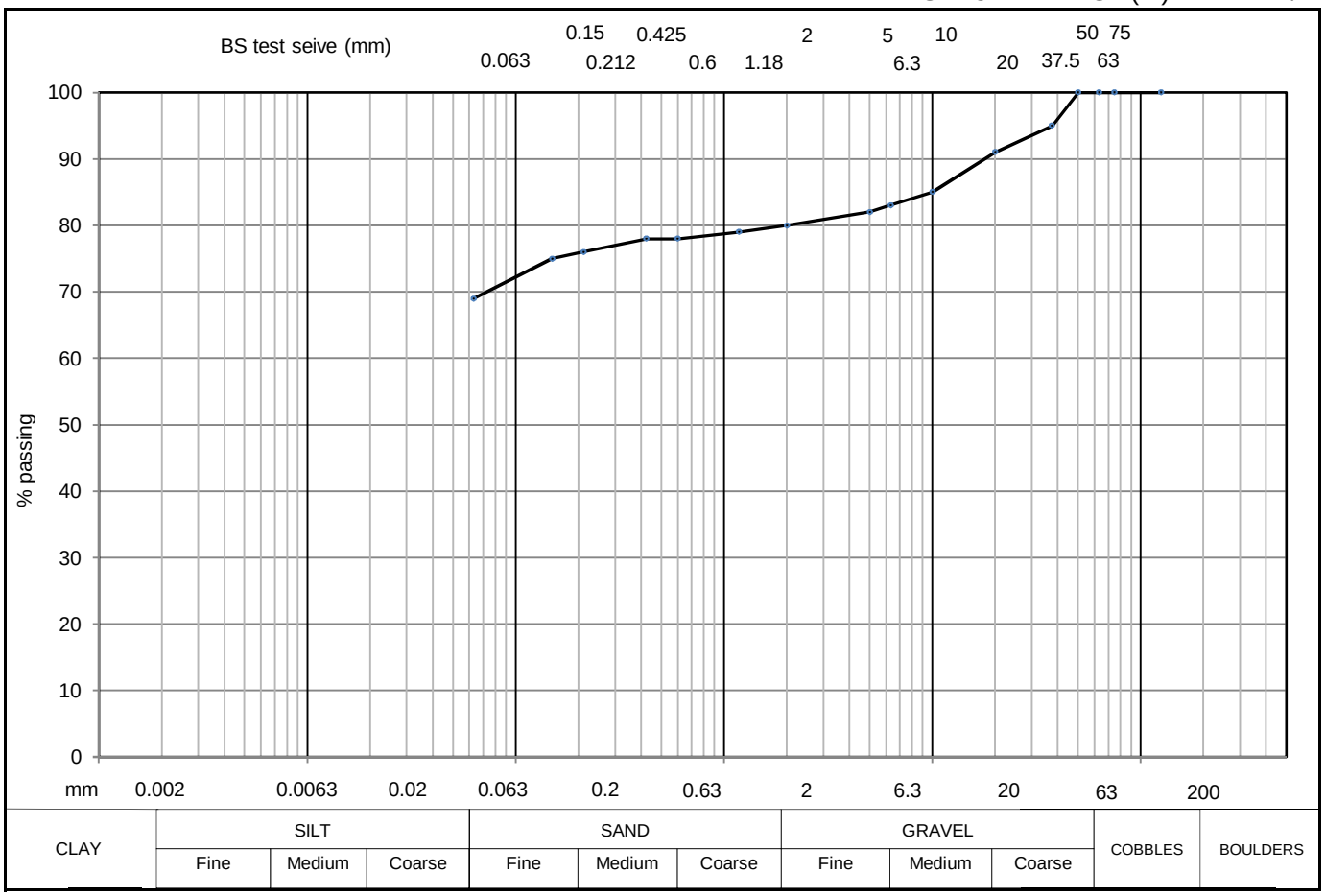
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP508
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	1.70
DESCRIPTION	Orangish brown slightly sandy slightly gravelly CLAY	SPECIMEN TOP (m)	1.70
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	69
SAND	11
GRAVEL	20
COBBLE & BOULDER	0
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	82	20	
75		2	80	6	
63		1.18	79	2	
50	100	0.6	78		
37.5	95	0.425	78		
20	91	0.212	76		
10	85	0.15	75		
6.3	83	0.063	69		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

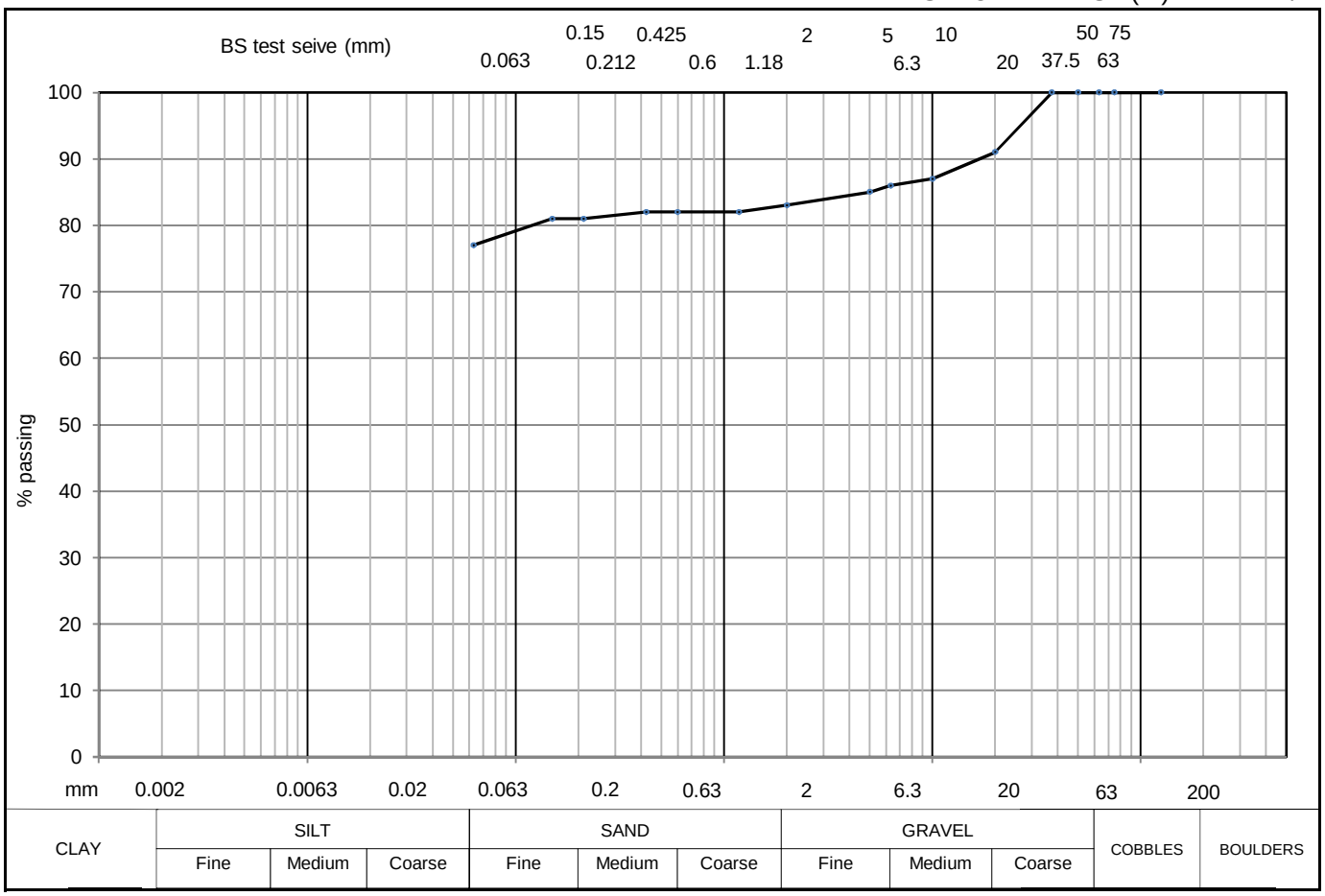
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP509
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	0.80
DESCRIPTION	Orangish brown slightly sandy slightly gravelly CLAY	SPECIMEN TOP (m)	0.80
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	77
SAND	6
GRAVEL	17
COBBLE & BOULDER	0
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	85	20	
75		2	83	6	
63		1.18	82	2	
50		0.6	82		
37.5	100	0.425	82		
20	91	0.212	81		
10	87	0.15	81		
6.3	86	0.063	77		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

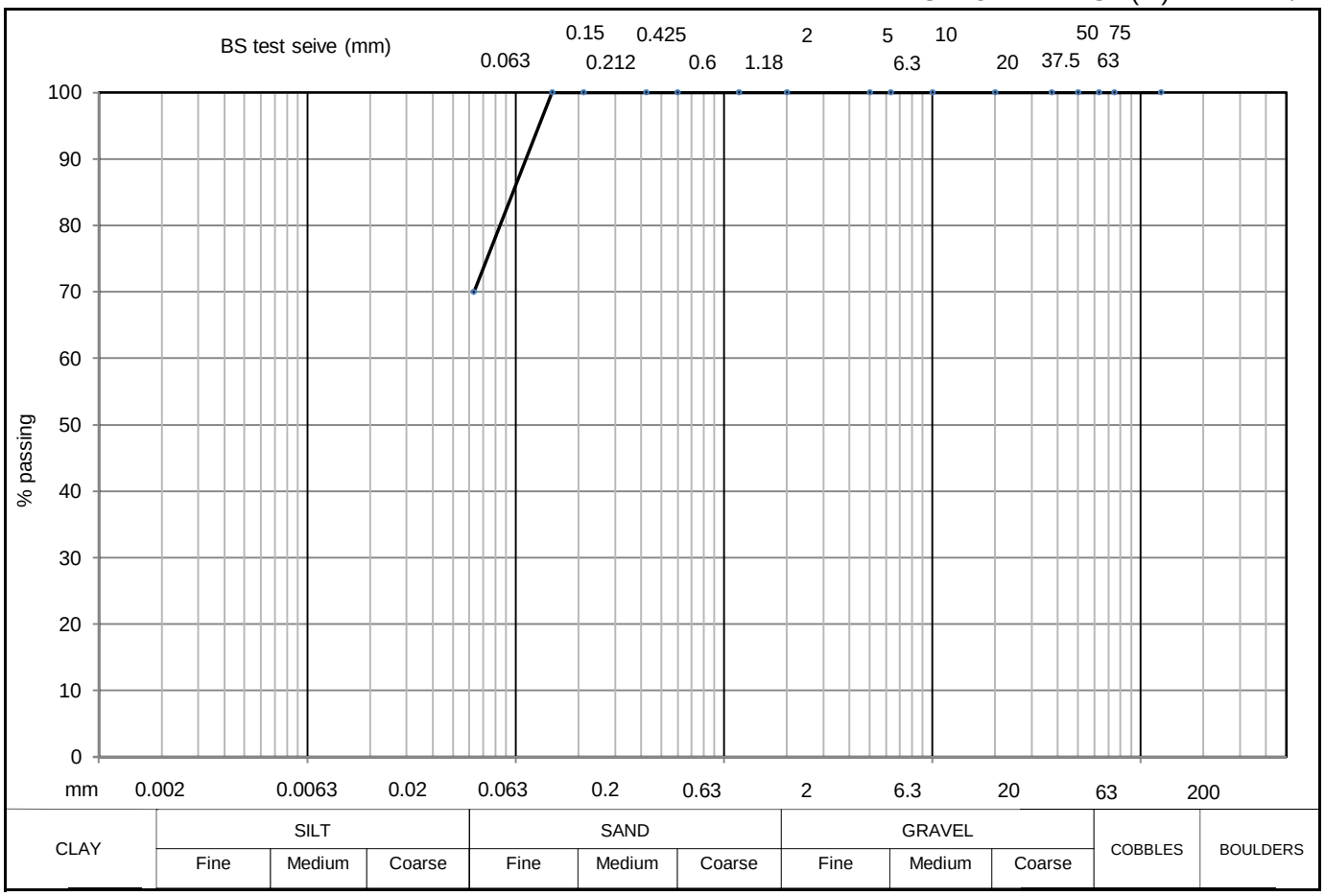
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP509
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	2.70
DESCRIPTION	Reddish brown slightly sandy CLAY	SPECIMEN TOP (m)	2.70
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	70
SAND	30
GRAVEL	0
COBBLE & BOULDER	0
test method(s)	9.2

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5		20	
75		2		6	
63		1.18		2	
50		0.6			
37.5		0.425			
20		0.212			
10		0.15	100		
6.3		0.063	70		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

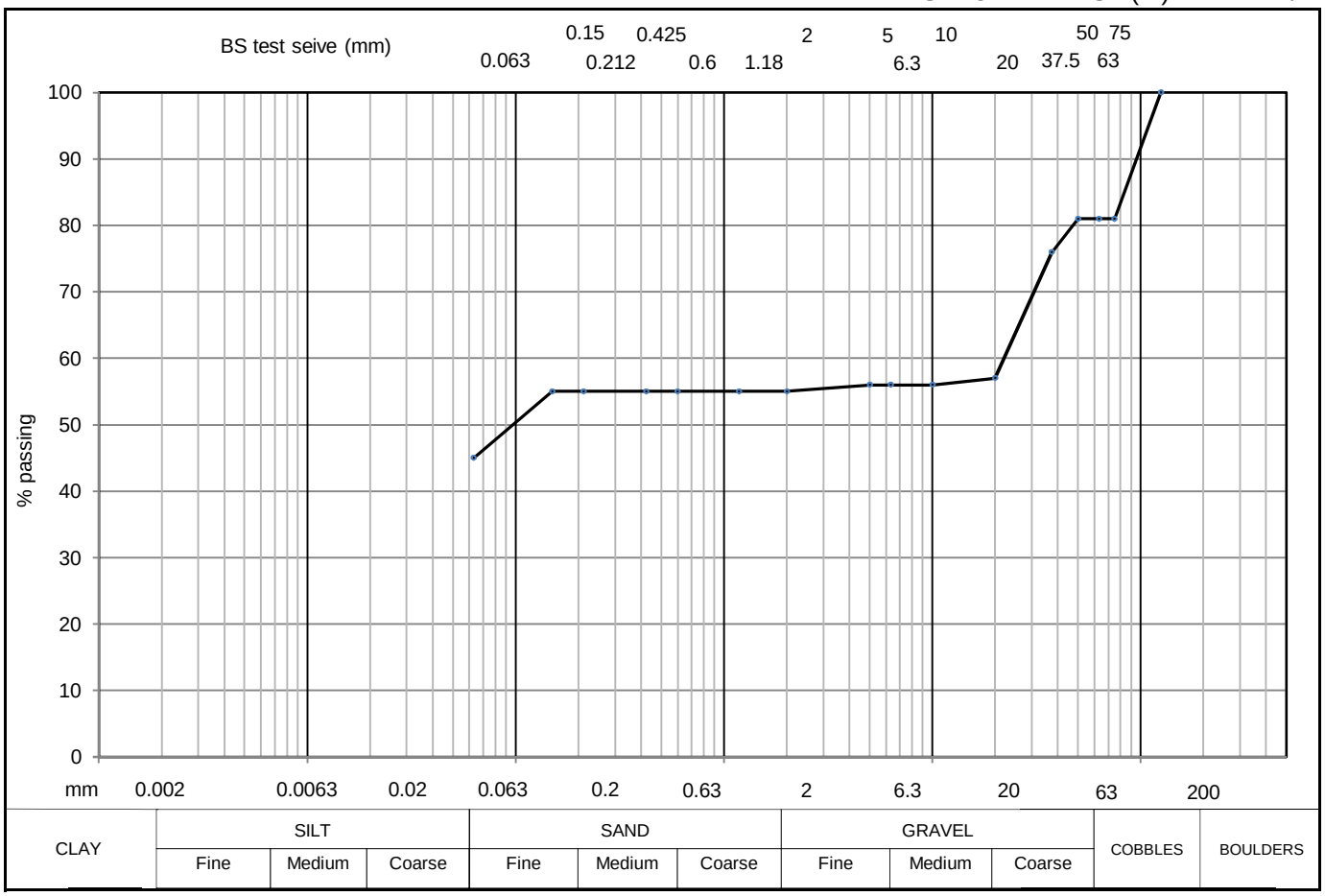
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP512
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	0.50
DESCRIPTION	Orangish brown slightly sandy gravelly CLAY with medium cobble content	SPECIMEN TOP (m)	0.50
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	45
SAND	10
GRAVEL	26
COBBLE & BOULDER	19
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150	100	5	56	20	
75	81	2	55	6	
63	81	1.18	55	2	
50	81	0.6	55		
37.5	76	0.425	55		
20	57	0.212	55		
10	56	0.15	55		
6.3	56	0.063	45		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

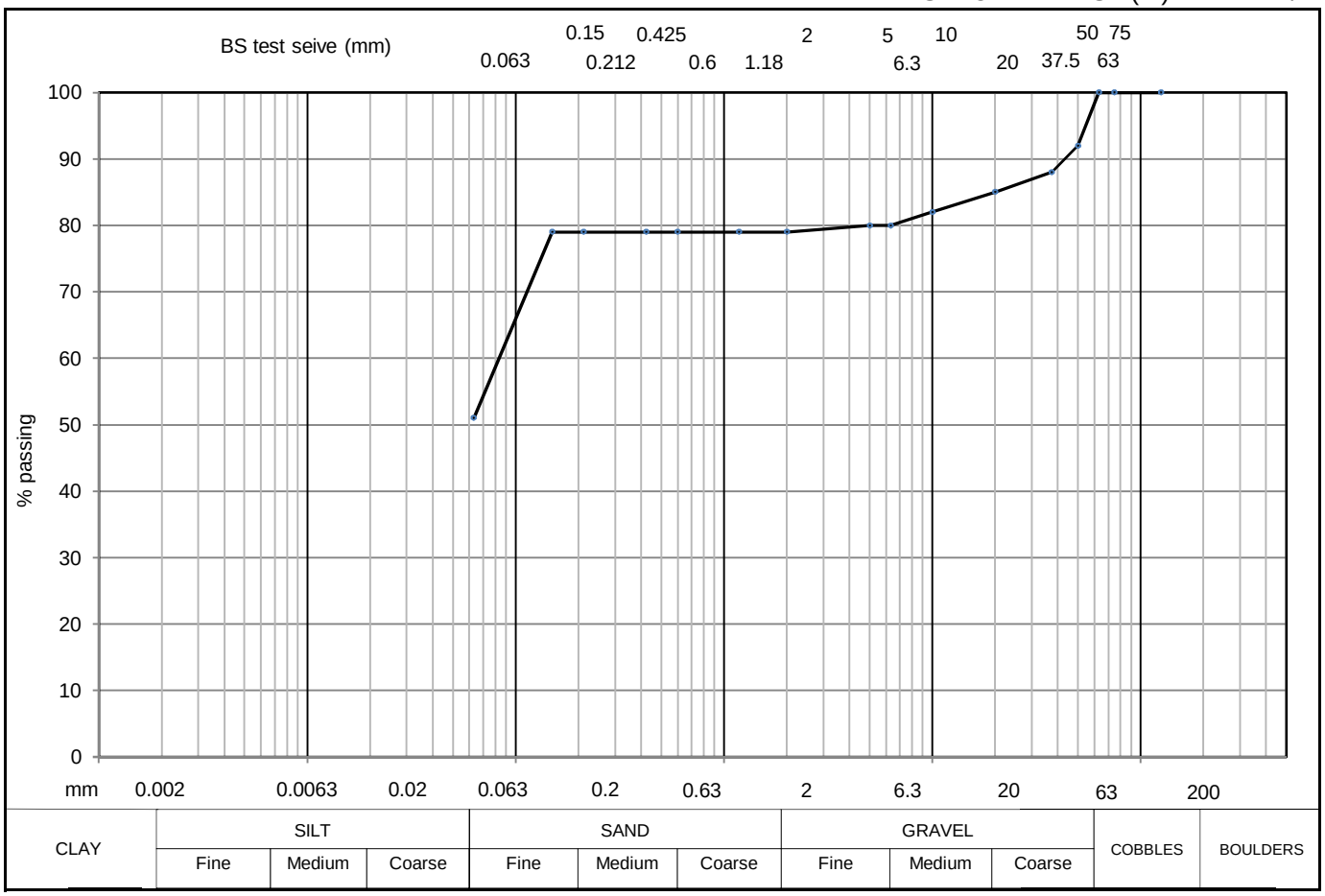
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP512
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	1.50
DESCRIPTION	Orangish brown slightly sandy slightly gravelly CLAY	SPECIMEN TOP (m)	2.50
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	51
SAND	28
GRAVEL	21
COBBLE & BOULDER	0
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	80	20	
75		2	79	6	
63	100	1.18	79	2	
50	92	0.6	79		
37.5	88	0.425	79		
20	85	0.212	79		
10	82	0.15	79		
6.3	80	0.063	51		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

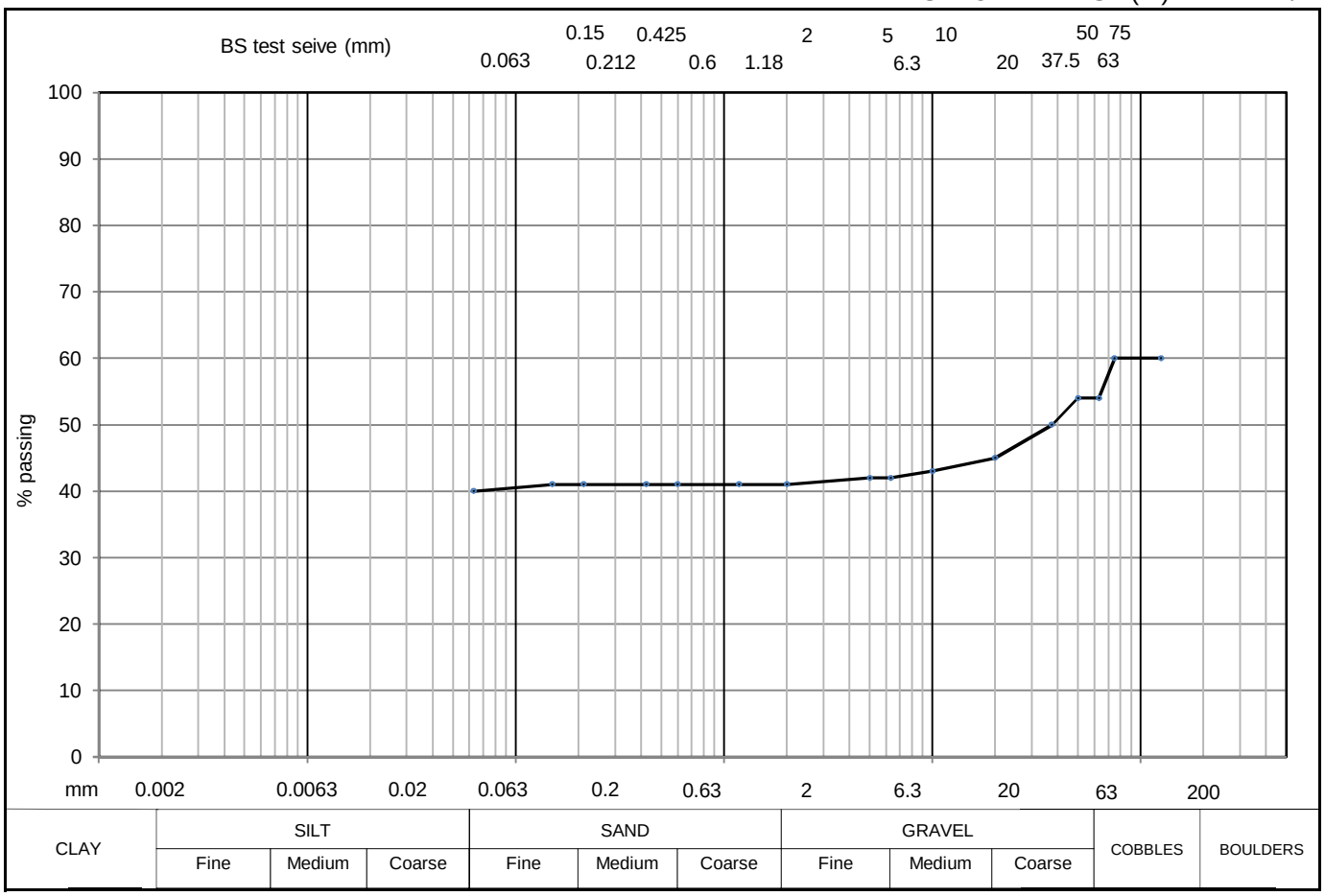
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP519
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	0.50
DESCRIPTION	Orangish brown slightly sandy gravelly CLAY with high cobble content	SPECIMEN TOP (m)	0.50
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	40
SAND	1
GRAVEL	13
COBBLE & BOULDER	46
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150	60	5	42	20	
75	60	2	41	6	
63	54	1.18	41	2	
50	54	0.6	41		
37.5	50	0.425	41		
20	45	0.212	41		
10	43	0.15	41		
6.3	42	0.063	40		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

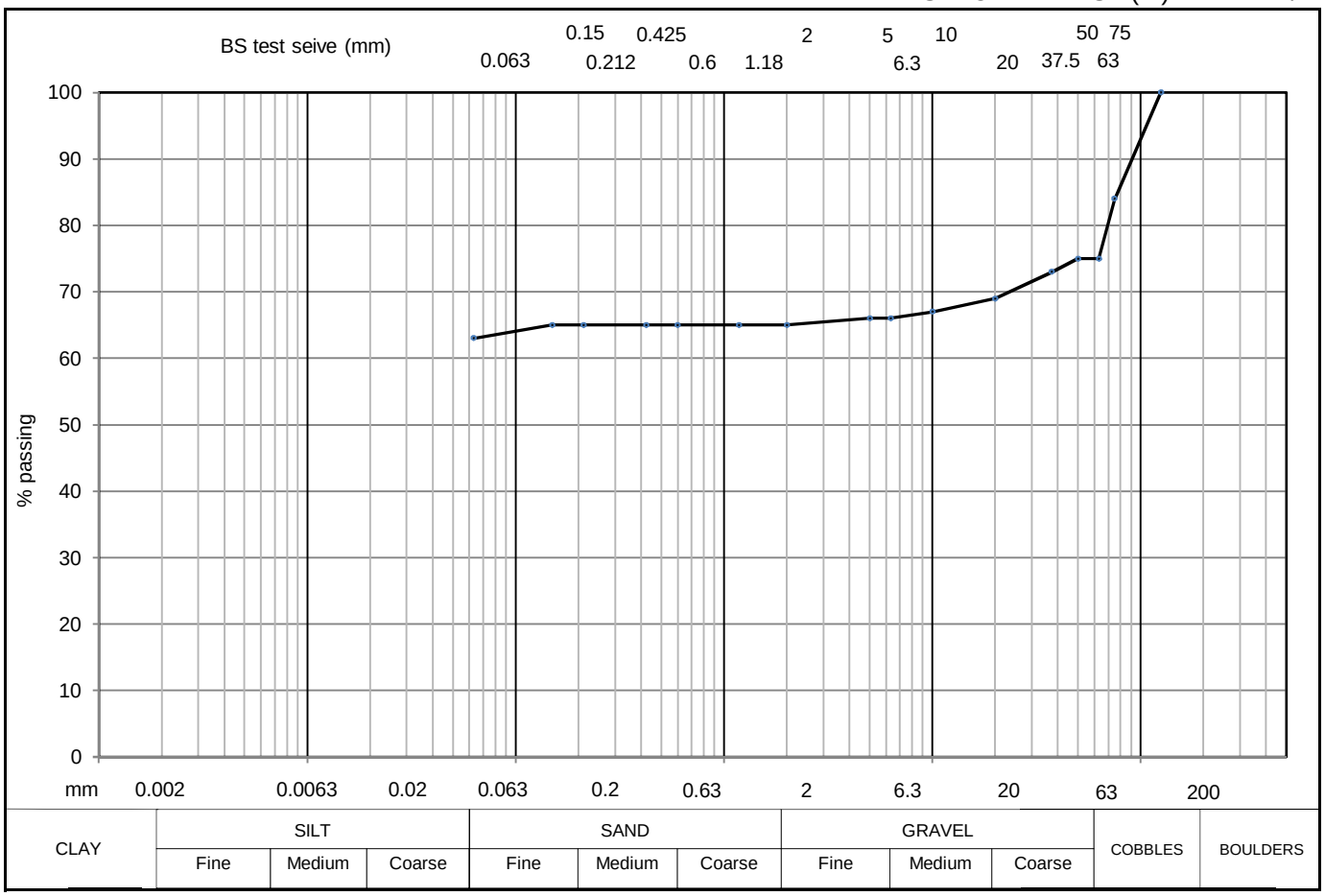
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP519
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	1.50
DESCRIPTION	Orangish brown slightly sandy slightly gravelly CLAY with high cobble content	SPECIMEN TOP (m)	1.50
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	63
SAND	2
GRAVEL	10
COBBLE & BOULDER	25
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150	100	5	66	20	
75	84	2	65	6	
63	75	1.18	65	2	
50	75	0.6	65		
37.5	73	0.425	65		
20	69	0.212	65		
10	67	0.15	65		
6.3	66	0.063	63		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

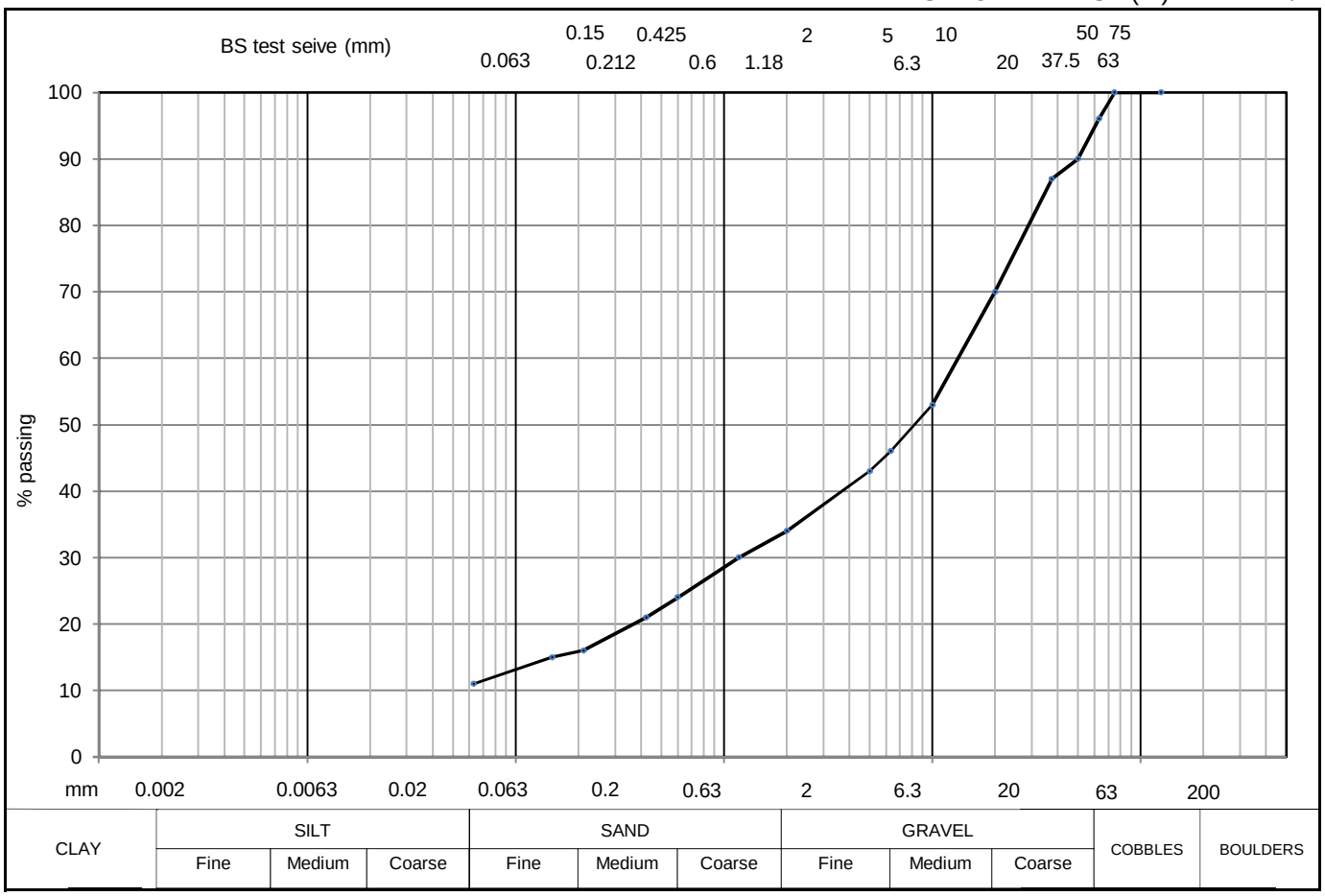
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP521
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	0.30
DESCRIPTION	Greyish brown silty very sandy GRAVEL with low cobble content	SPECIMEN TOP (m)	0.30
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	11
SAND	23
GRAVEL	62
COBBLE & BOULDER	4
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	43	20	
75	100	2	34	6	
63	96	1.18	30	2	
50	90	0.6	24		
37.5	87	0.425	21		
20	70	0.212	16		
10	53	0.15	15		
6.3	46	0.063	11		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

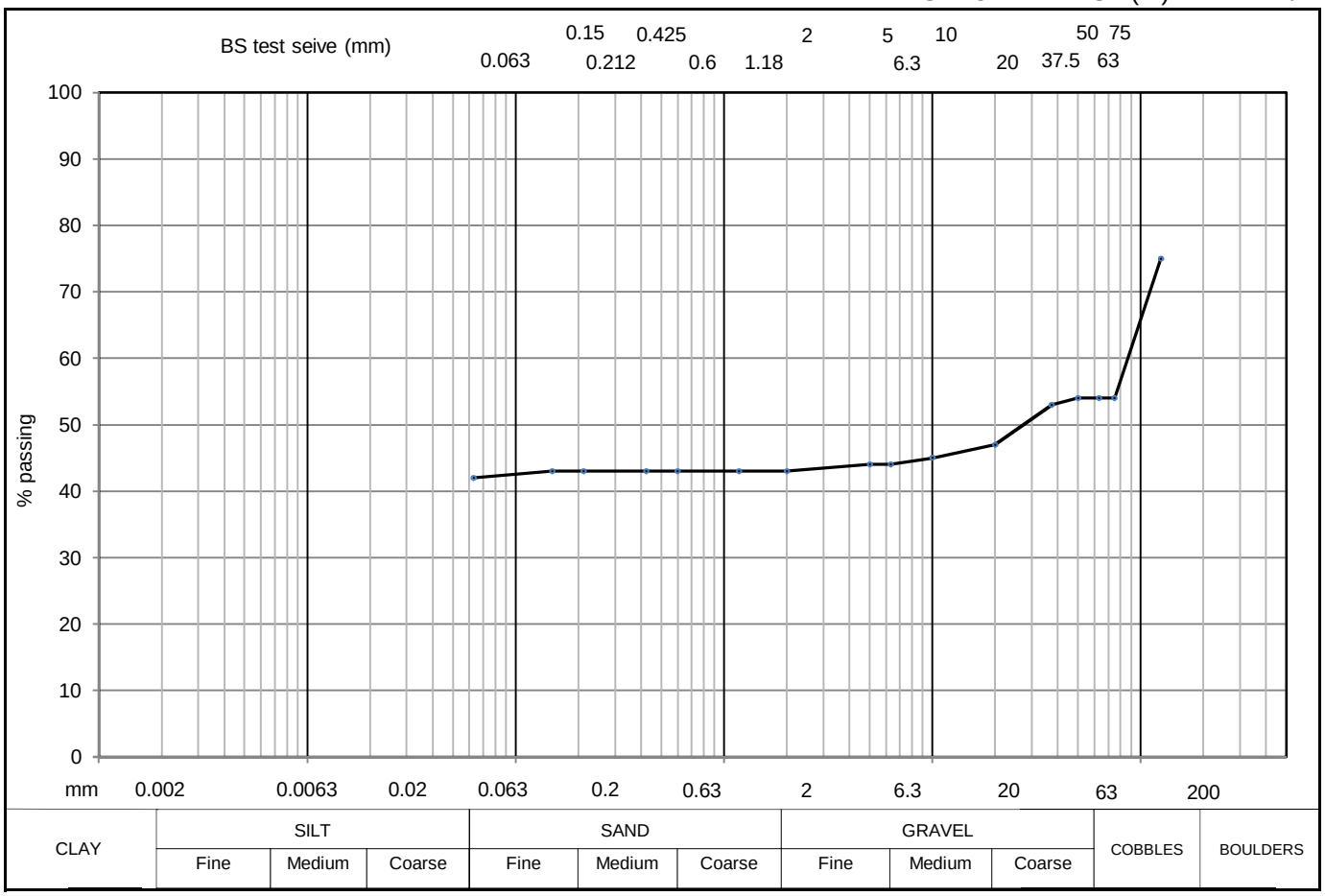
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP521
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	2.00
DESCRIPTION	Orangish brown slightly sandy slightly gravelly CLAY with high cobble content	SPECIMEN TOP (m)	2.00
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	42
SAND	1
GRAVEL	11
COBBLE & BOULDER	46
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150	75	5	44	20	
75	54	2	43	6	
63	54	1.18	43	2	
50	54	0.6	43		
37.5	53	0.425	43		
20	47	0.212	43		
10	45	0.15	43		
6.3	44	0.063	42		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

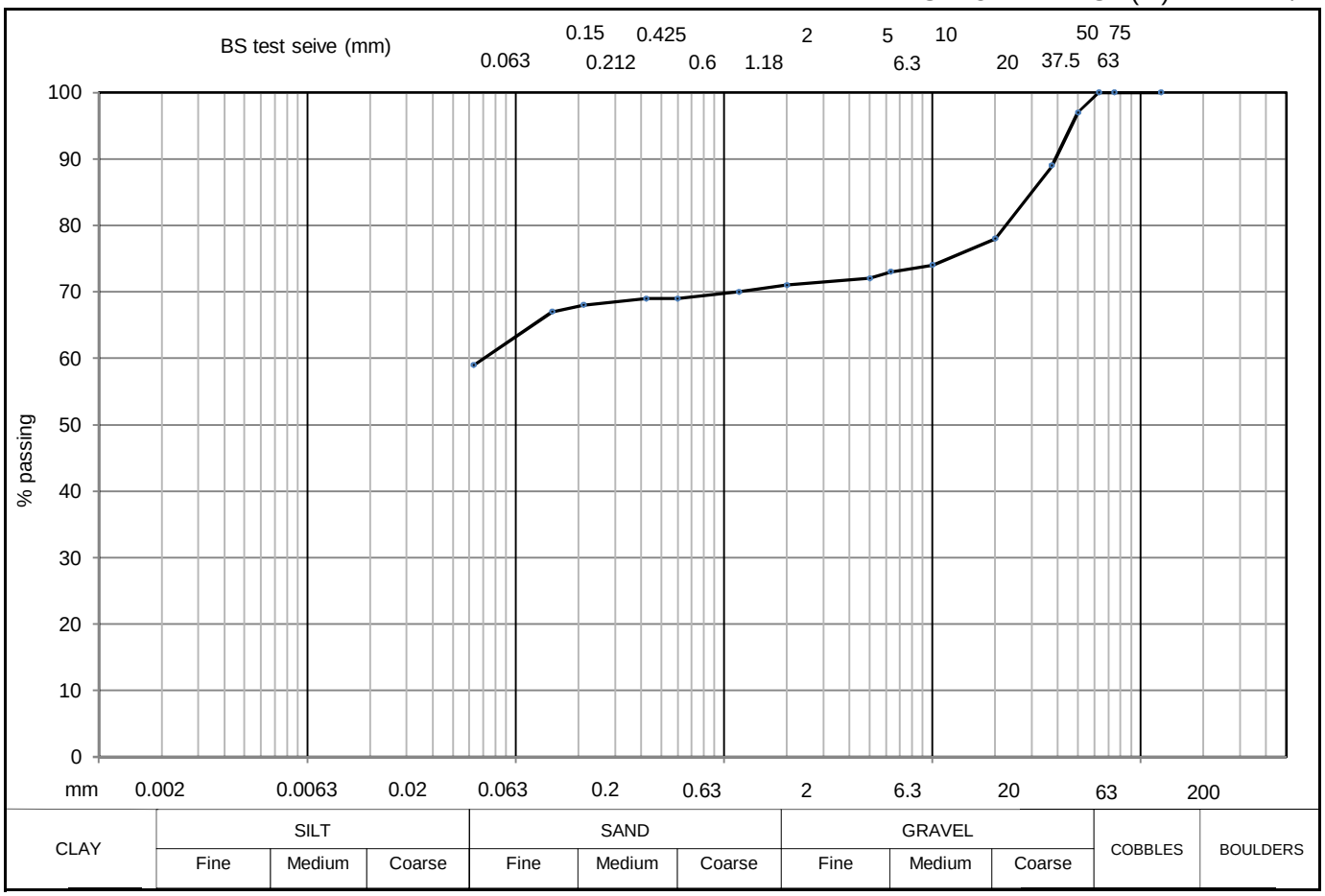
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP523
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	0.40
DESCRIPTION	Brown slightly sandy slightly gravelly CLAY	SPECIMEN TOP (m)	0.40
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	59
SAND	12
GRAVEL	29
COBBLE & BOULDER	0
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	72	20	
75		2	71	6	
63	100	1.18	70	2	
50	97	0.6	69		
37.5	89	0.425	69		
20	78	0.212	68		
10	74	0.15	67		
6.3	73	0.063	59		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

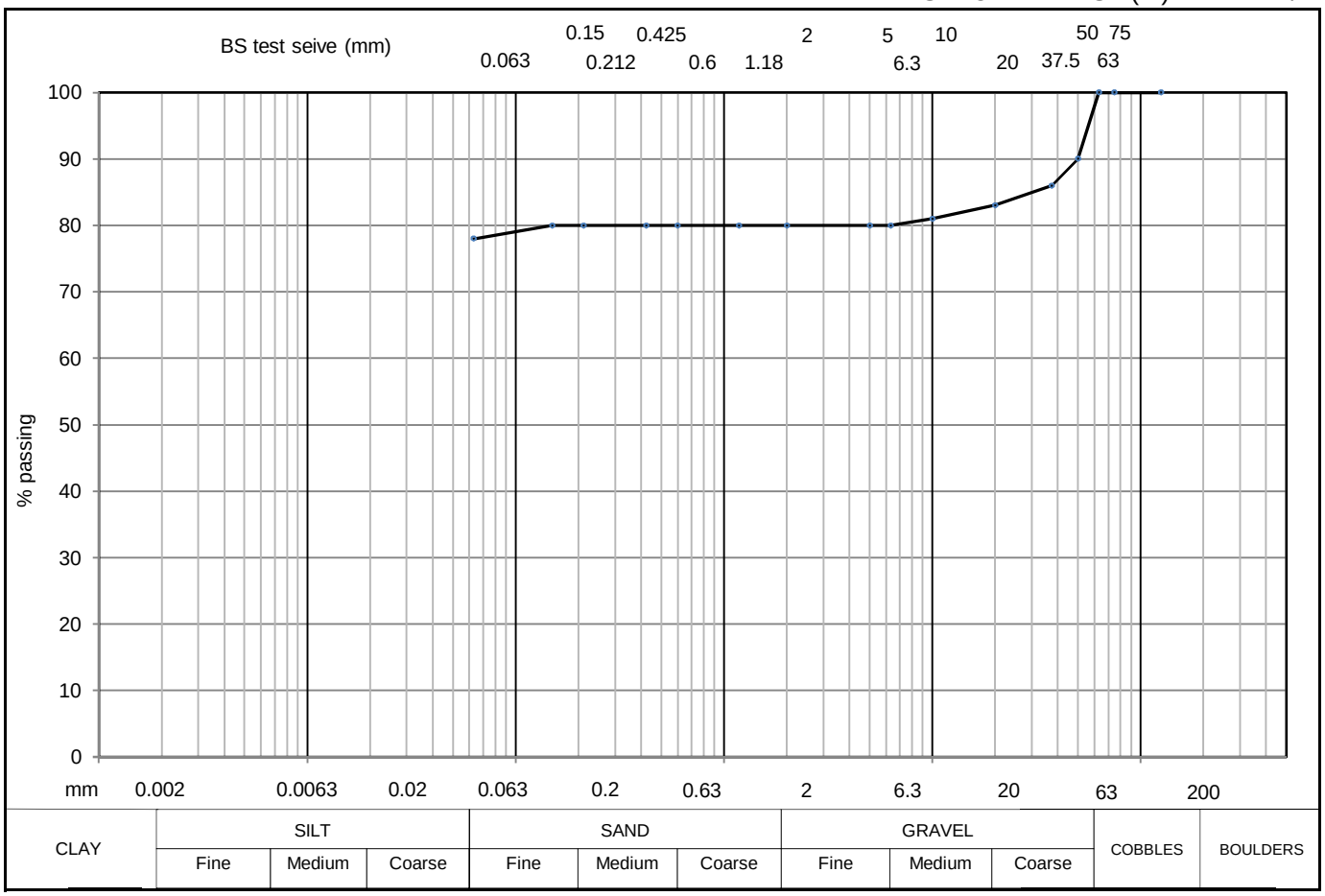
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP526
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	0.80
DESCRIPTION	Brown slightly sandy slightly gravelly CLAY	SPECIMEN TOP (m)	0.80
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	78
SAND	2
GRAVEL	20
COBBLE & BOULDER	0
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	80	20	
75		2	80	6	
63	100	1.18	80	2	
50	90	0.6	80		
37.5	86	0.425	80		
20	83	0.212	80		
10	81	0.15	80		
6.3	80	0.063	78		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

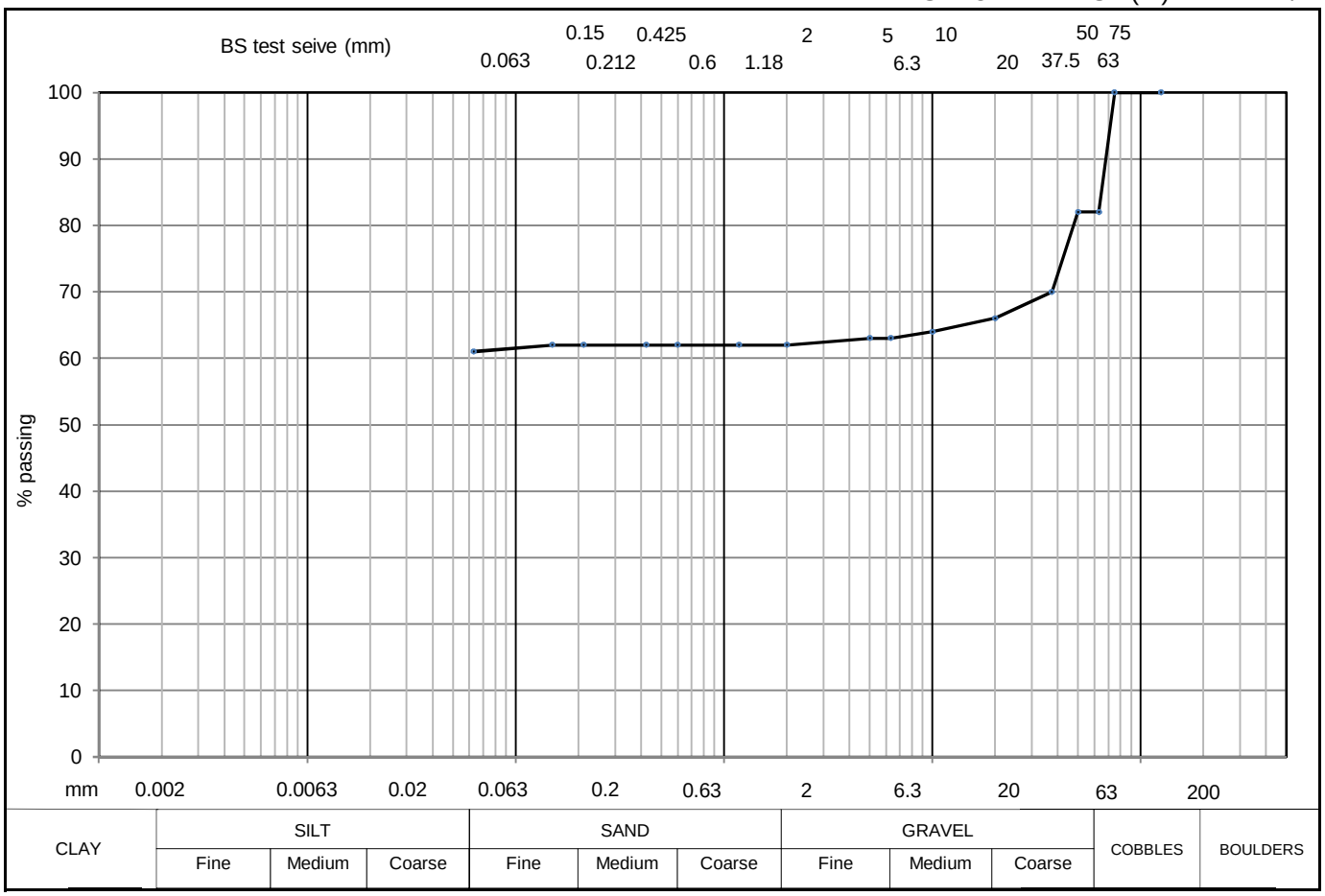
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP527
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	0.50
DESCRIPTION	Reddish brown slightly sandy gravelly CLAY with medium cobble content	SPECIMEN TOP (m)	0.50
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	61
SAND	1
GRAVEL	20
COBBLE & BOULDER	18
test method(s)	9.2

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	63	20	
75	100	2	62	6	
63	82	1.18	62	2	
50	82	0.6	62		
37.5	70	0.425	62		
20	66	0.212	62		
10	64	0.15	62		
6.3	63	0.063	61		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

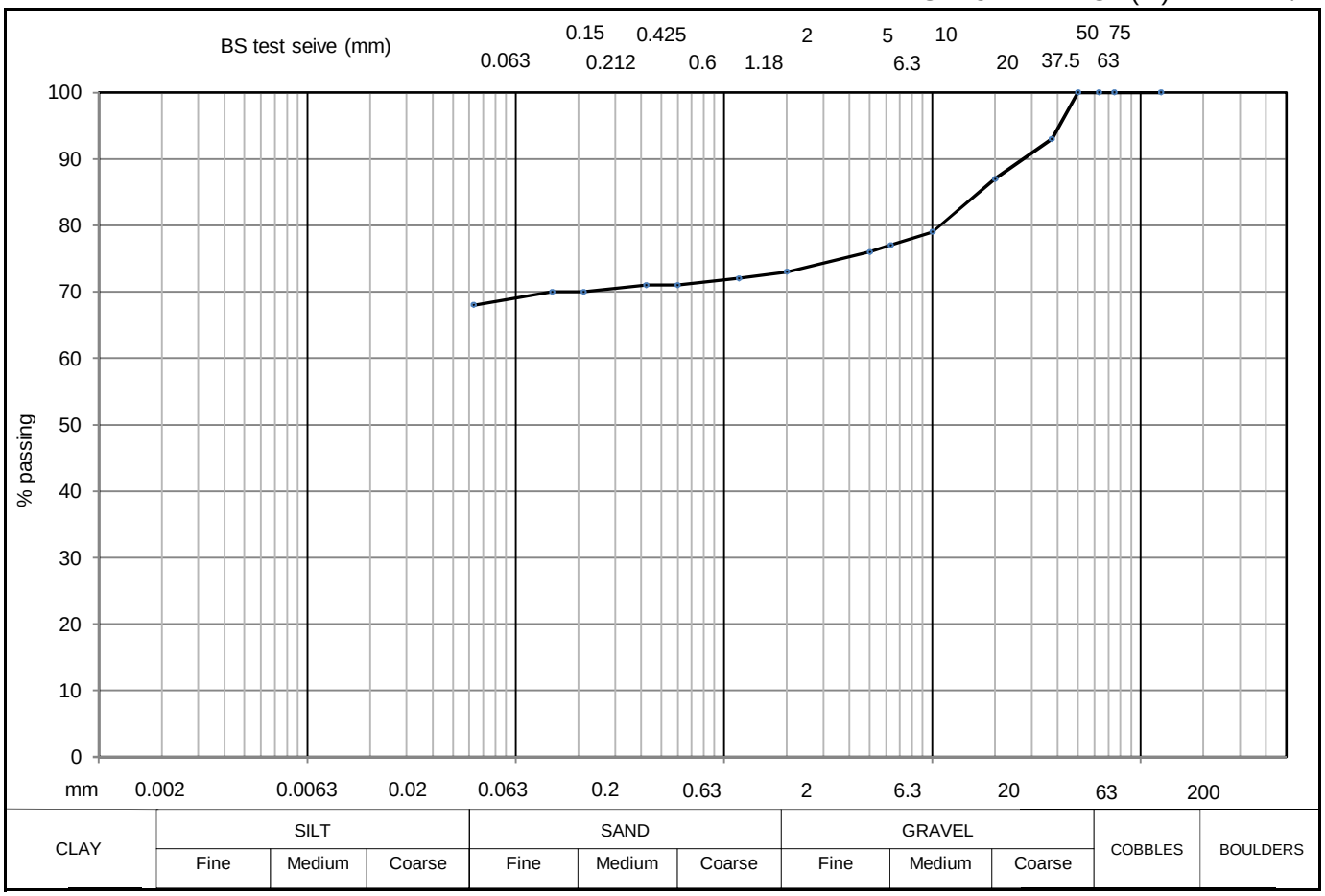
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP529
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	0.50
DESCRIPTION	Brown slightly sandy slightly gravelly CLAY	SPECIMEN TOP (m)	0.50
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	68
SAND	5
GRAVEL	27
COBBLE & BOULDER	0
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	76	20	
75		2	73	6	
63		1.18	72	2	
50	100	0.6	71		
37.5	93	0.425	71		
20	87	0.212	70		
10	79	0.15	70		
6.3	77	0.063	68		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

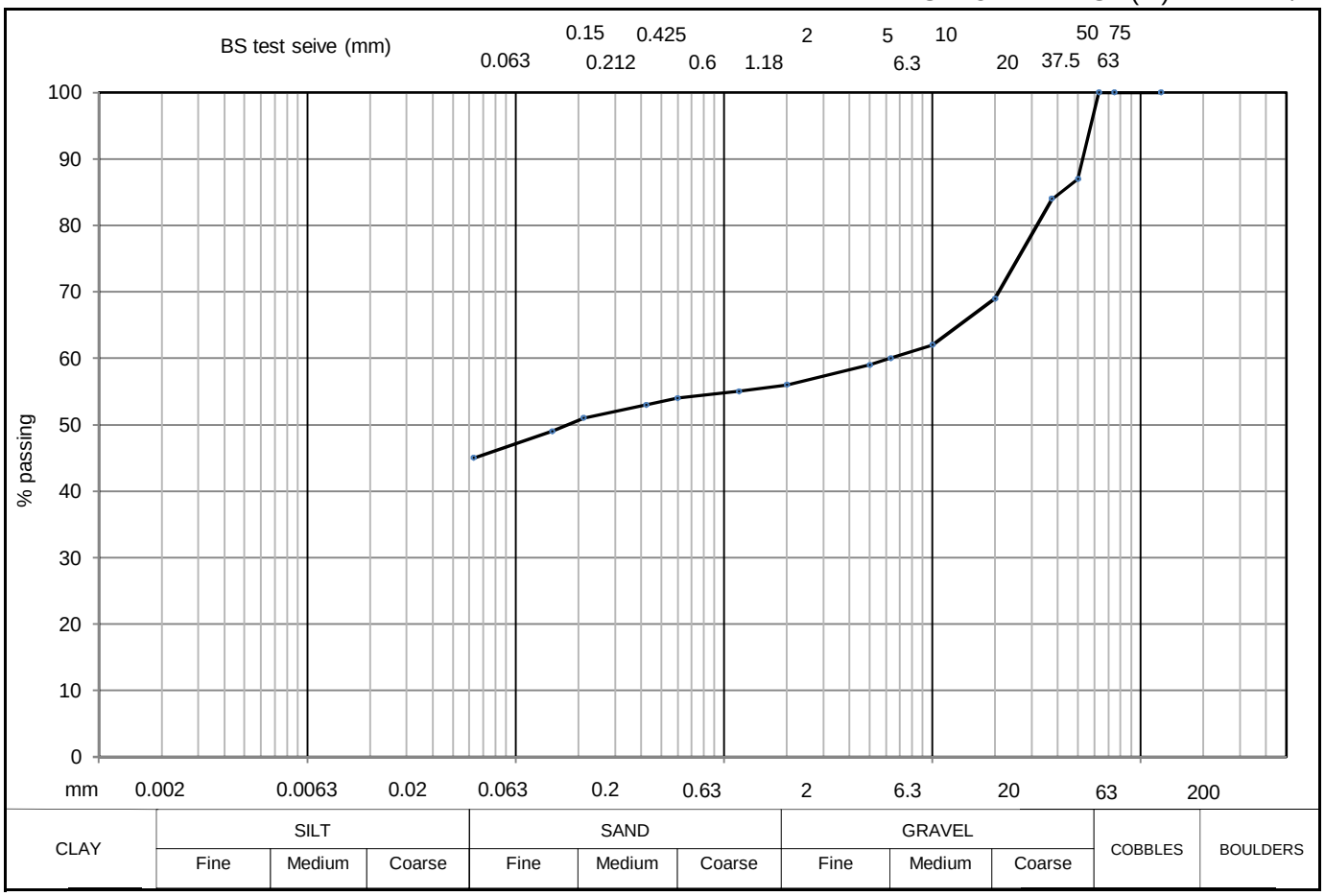
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP530
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	0.80
DESCRIPTION	Brown slightly sandy gravelly CLAY with occasional rootlets	SPECIMEN TOP (m)	0.80
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	45
SAND	11
GRAVEL	44
COBBLE & BOULDER	0
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	59	20	
75		2	56	6	
63	100	1.18	55	2	
50	87	0.6	54		
37.5	84	0.425	53		
20	69	0.212	51		
10	62	0.15	49		
6.3	60	0.063	45		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

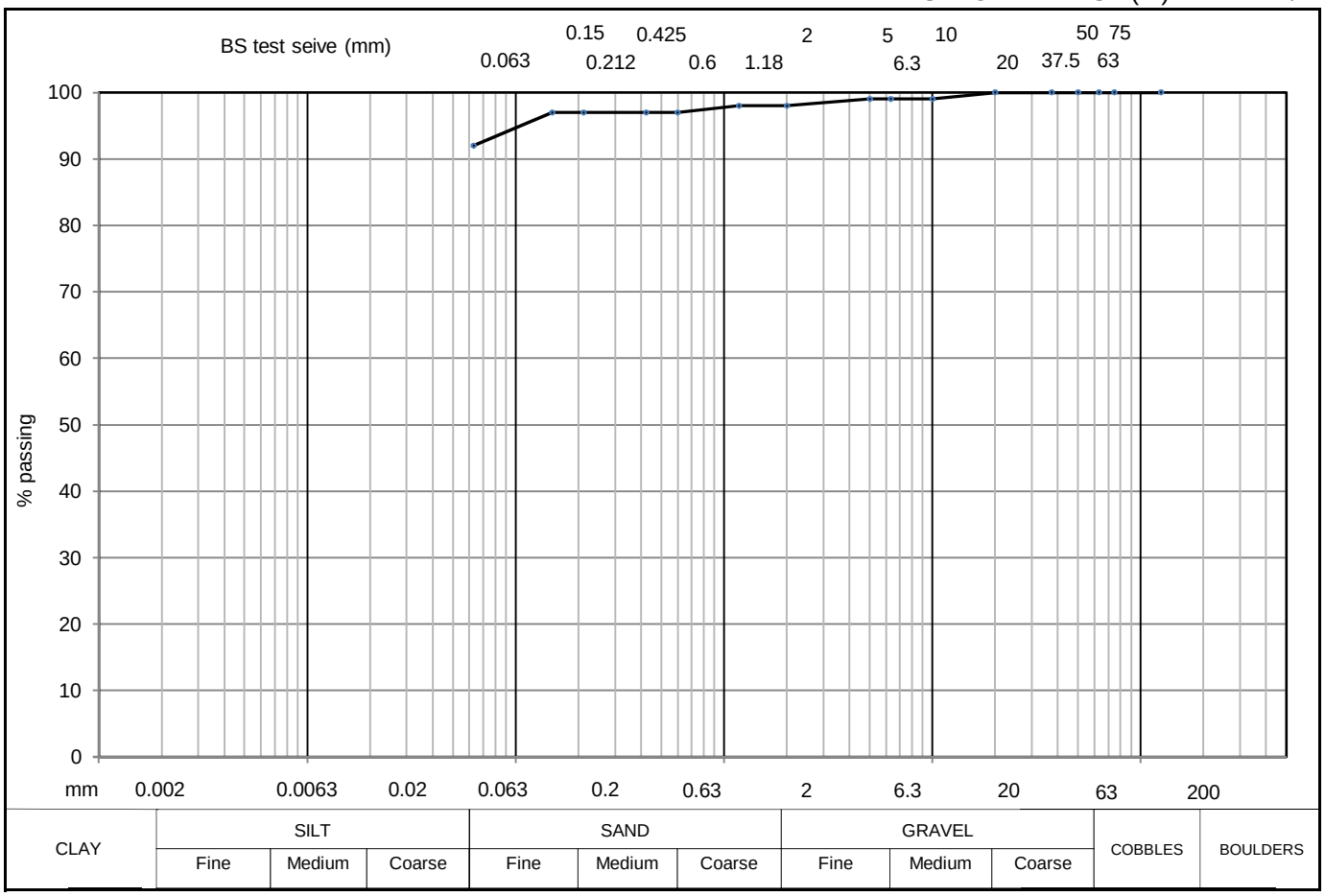
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP530
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	1.80
DESCRIPTION	Light brown slightly sandy slightly gravelly silty CLAY	SPECIMEN TOP (m)	1.80
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	92
SAND	6
GRAVEL	2
COBBLE & BOULDER	0
test method(s)	9.2

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	99	20	
75		2	98	6	
63		1.18	98	2	
50		0.6	97		
37.5		0.425	97		
20	100	0.212	97		
10	99	0.15	97		
6.3	99	0.063	92		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

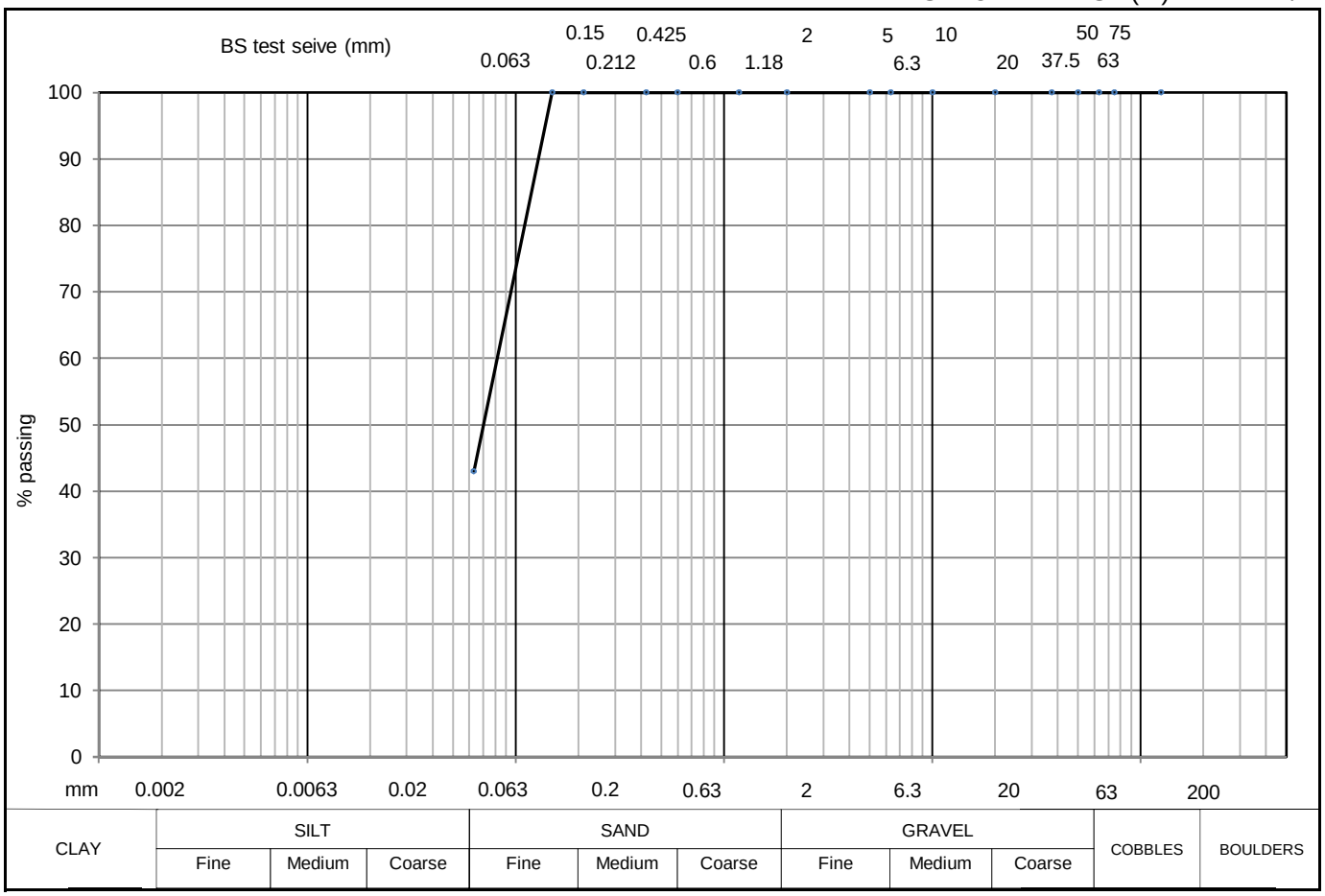
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP532
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	1.50
DESCRIPTION	Reddish brown sandy CLAY	SPECIMEN TOP (m)	1.50
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	43
SAND	57
GRAVEL	0
COBBLE & BOULDER	0
test method(s)	9.2

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5		20	
75		2		6	
63		1.18		2	
50		0.6			
37.5		0.425			
20		0.212			
10		0.15	100		
6.3		0.063	43		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

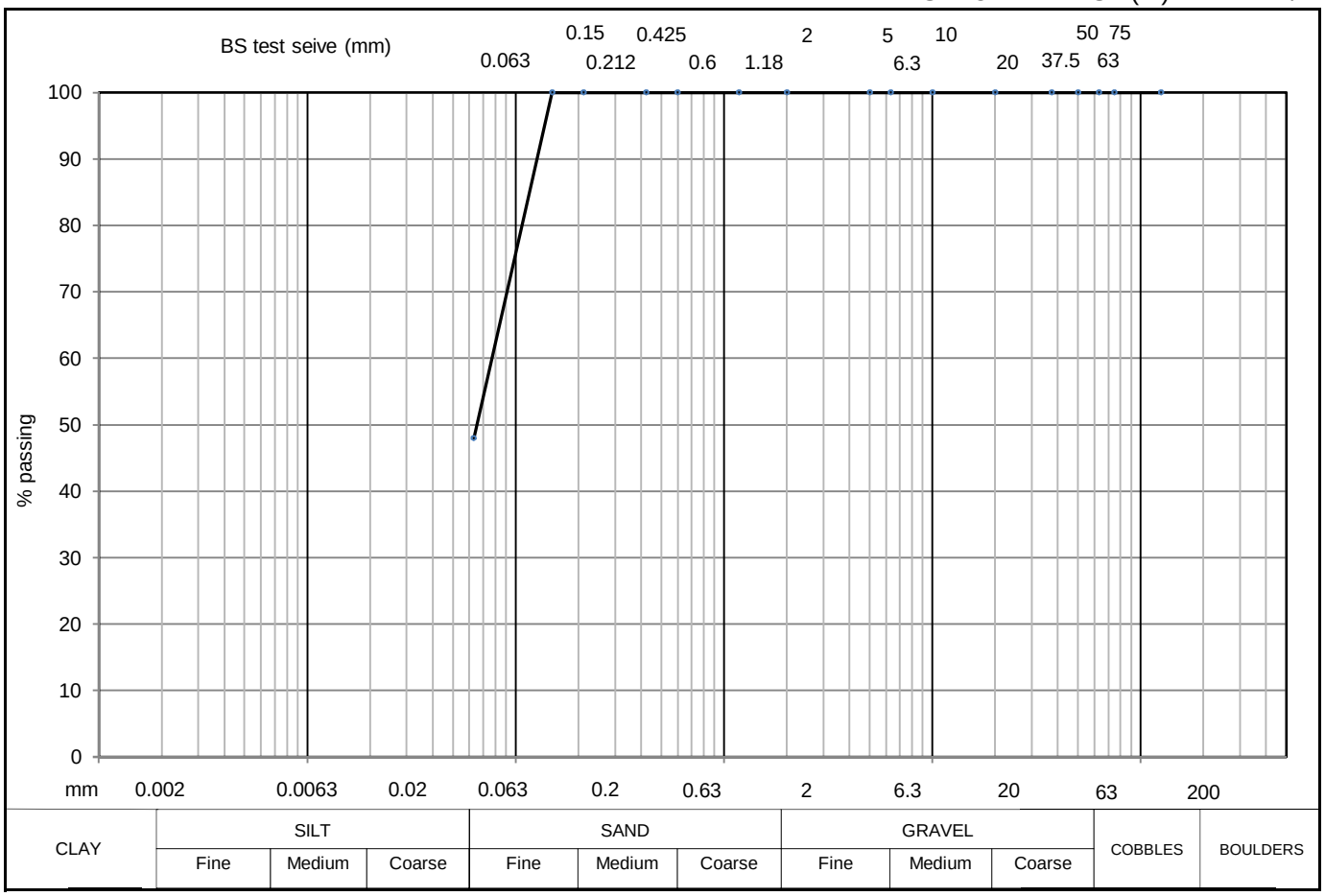
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP533
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	1.50
DESCRIPTION	Light brown sandy CLAY	SPECIMEN TOP (m)	1.50
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	48
SAND	52
GRAVEL	0
COBBLE & BOULDER	0
test method(s)	9.2

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5		20	
75		2		6	
63		1.18		2	
50		0.6			
37.5		0.425			
20		0.212			
10		0.15	100		
6.3		0.063	48		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

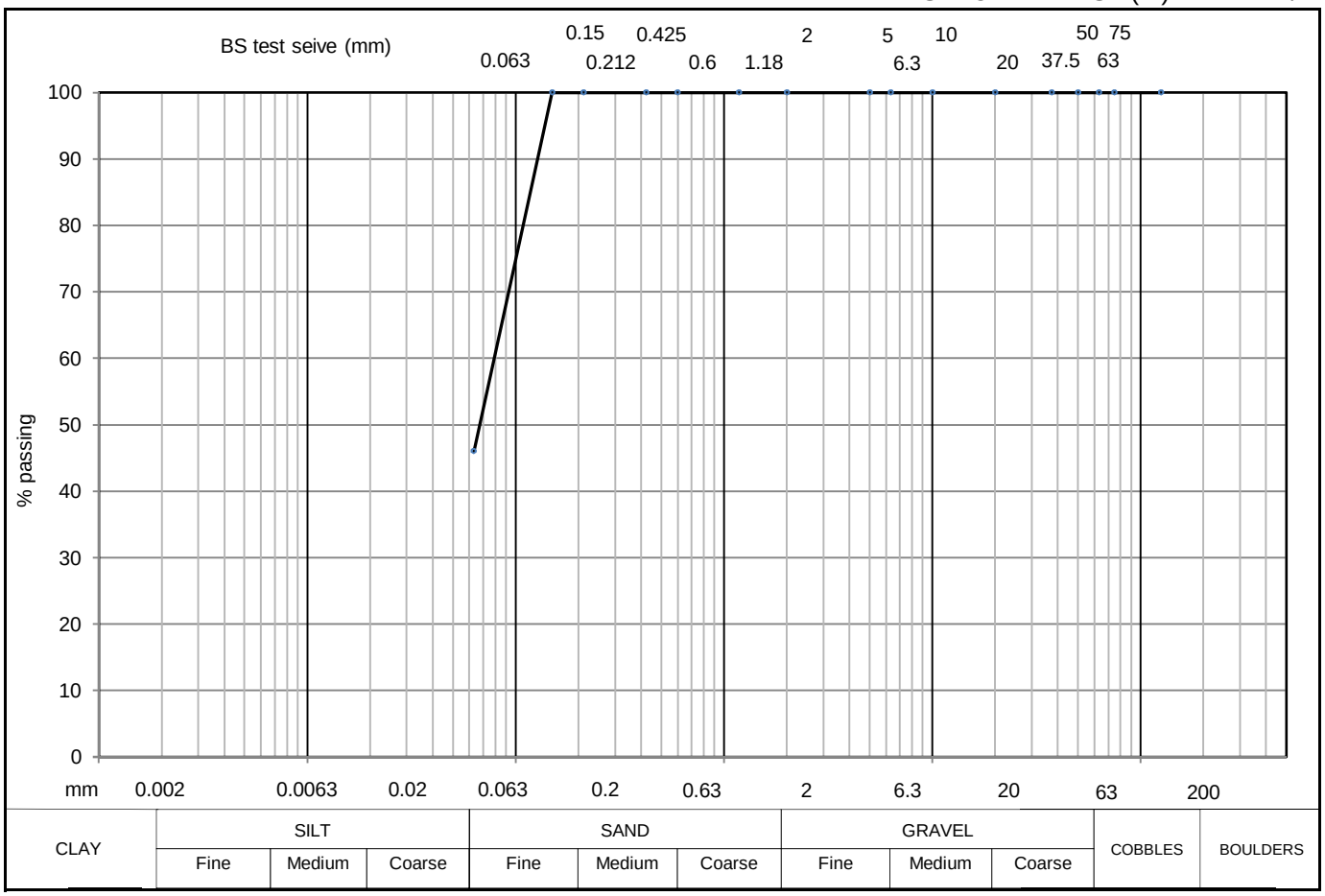
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP533
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	2.00
DESCRIPTION	Light brown sandy CLAY	SPECIMEN TOP (m)	2.00
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	46
SAND	54
GRAVEL	0
COBBLE & BOULDER	0
test method(s)	9.2

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5		20	
75		2		6	
63		1.18		2	
50		0.6			
37.5		0.425			
20		0.212			
10		0.15	100		
6.3		0.063	46		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

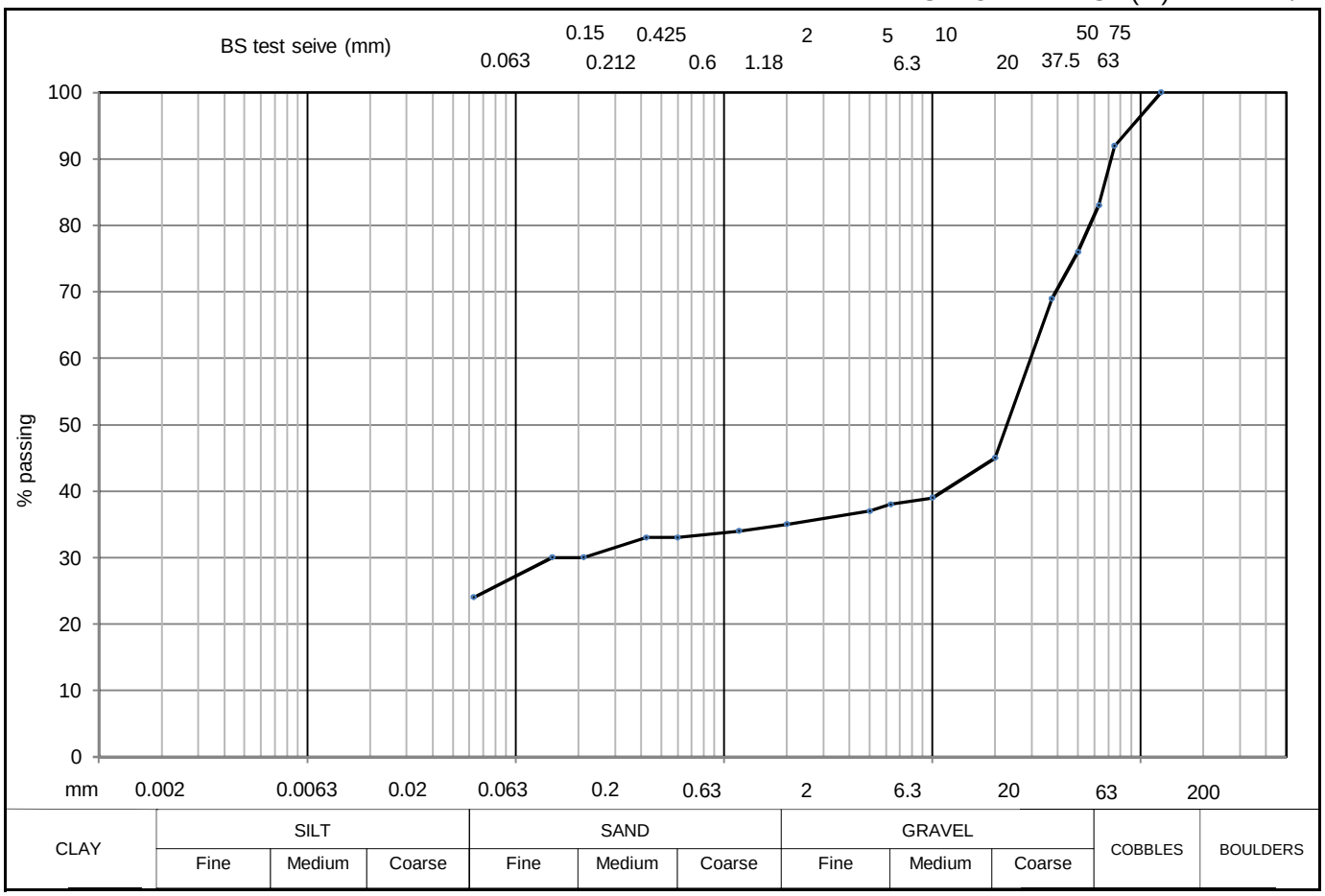
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP534
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	0.50
DESCRIPTION	Brown sandy very clayey GRAVEL with medium cobble content	SPECIMEN TOP (m)	0.50
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	24
SAND	11
GRAVEL	48
COBBLE & BOULDER	17
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150	100	5	37	20	
75	92	2	35	6	
63	83	1.18	34	2	
50	76	0.6	33		
37.5	69	0.425	33		
20	45	0.212	30		
10	39	0.15	30		
6.3	38	0.063	24		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

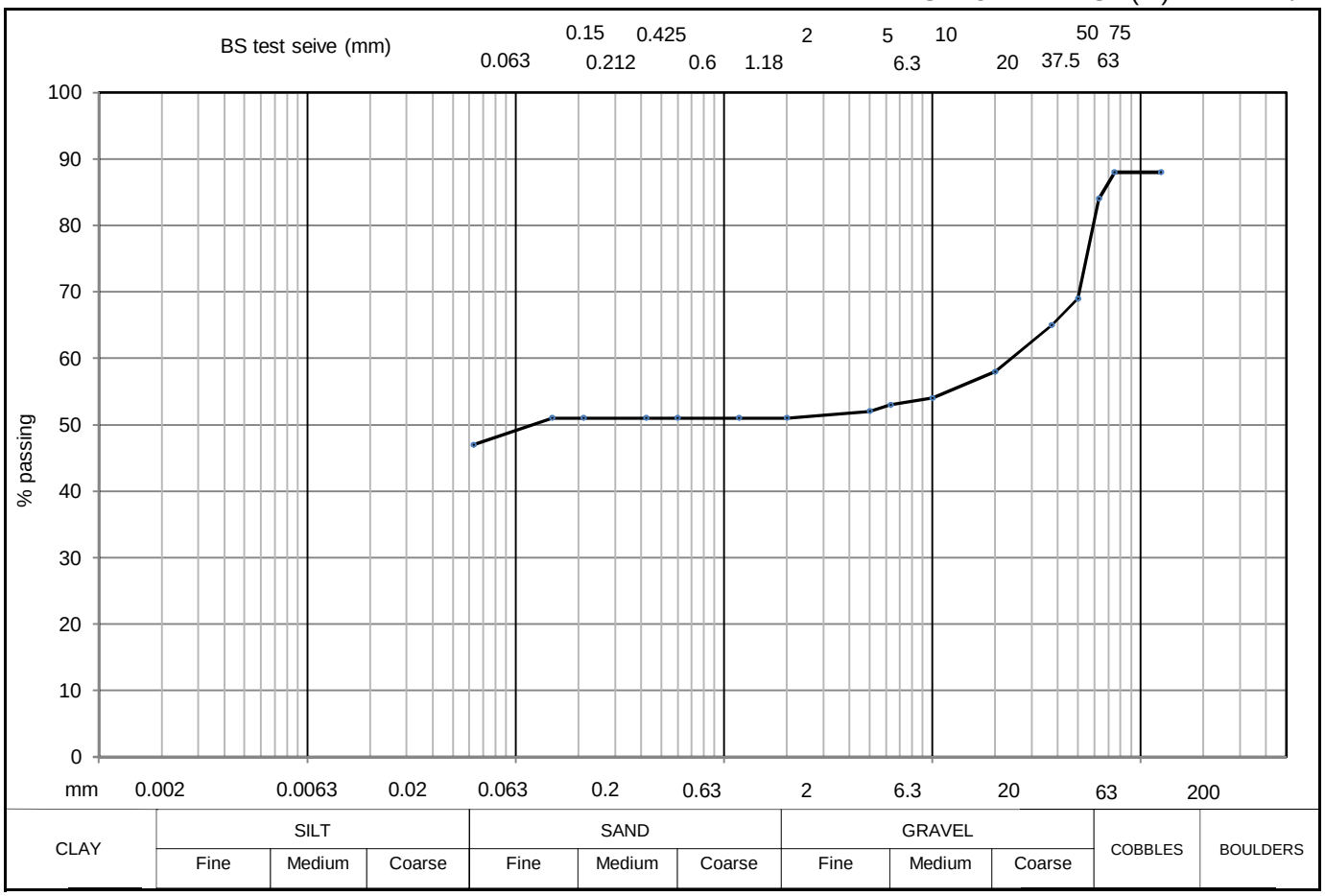
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP534
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	1.50
DESCRIPTION	Brown slightly sandy gravelly CLAY with medium cobble content	SPECIMEN TOP (m)	1.50
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	47
SAND	4
GRAVEL	33
COBBLE & BOULDER	16
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150	88	5	52	20	
75	88	2	51	6	
63	84	1.18	51	2	
50	69	0.6	51		
37.5	65	0.425	51		
20	58	0.212	51		
10	54	0.15	51		
6.3	53	0.063	47		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

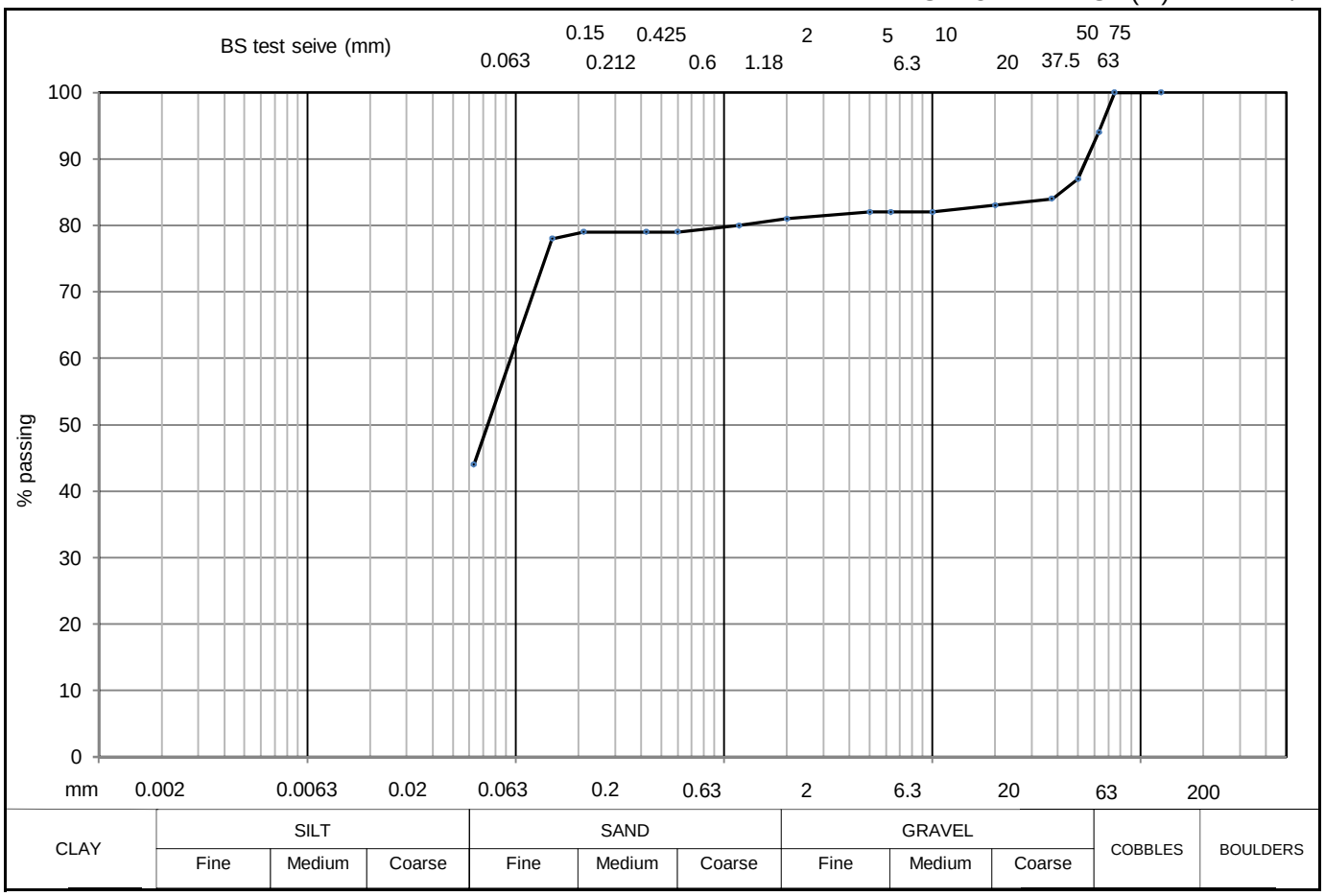
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP535
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	0.50
DESCRIPTION	Orangish brown sandy slightly gravelly CLAY with medium cobble content	SPECIMEN TOP (m)	0.50
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	44
SAND	37
GRAVEL	13
COBBLE & BOULDER	6
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	82	20	
75	100	2	81	6	
63	94	1.18	80	2	
50	87	0.6	79		
37.5	84	0.425	79		
20	83	0.212	79		
10	82	0.15	78		
6.3	82	0.063	44		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

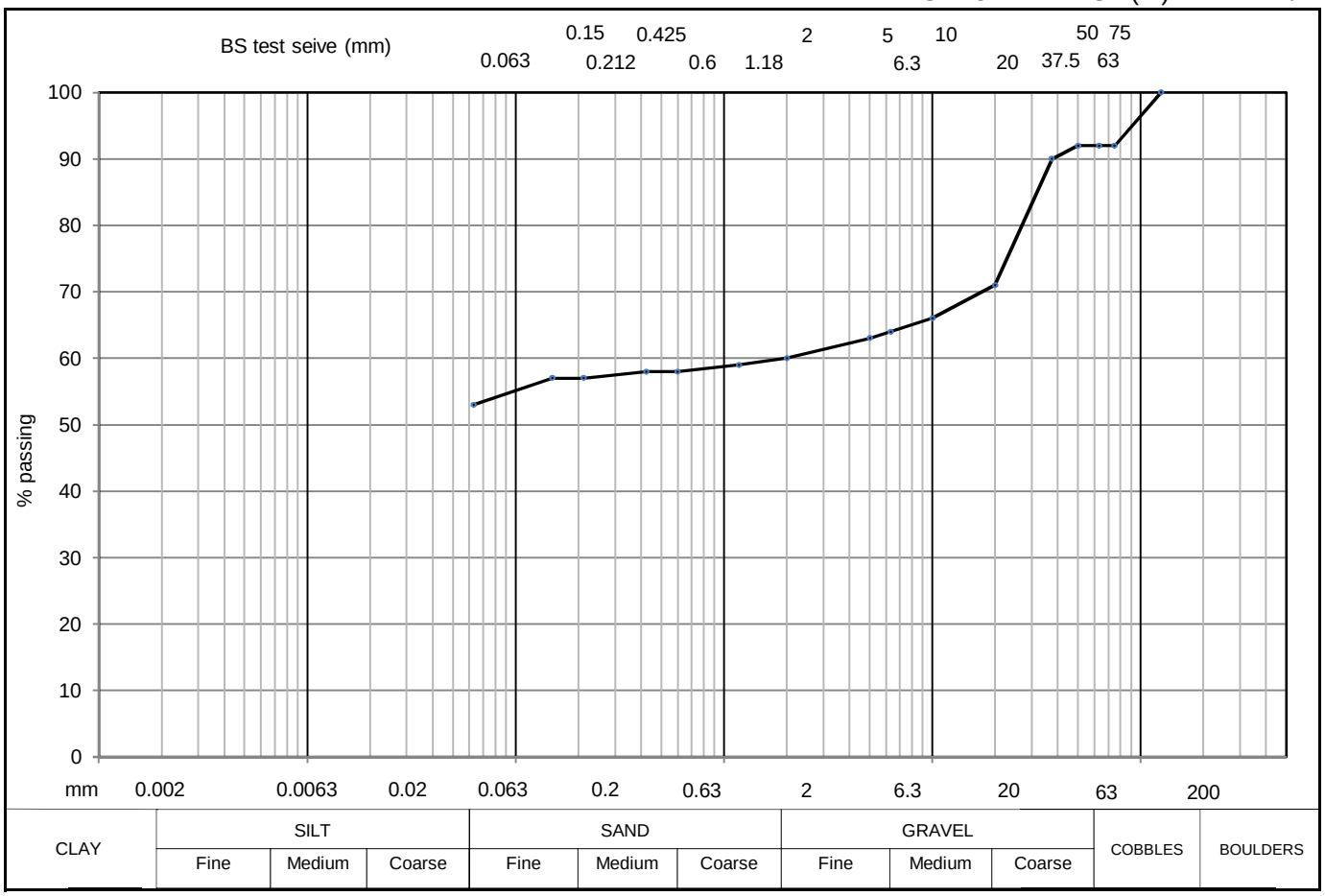
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP540
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	0.50
DESCRIPTION	Brown slightly sandy slightly gravelly CLAY with medium cobble content	SPECIMEN TOP (m)	0.50
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	53
SAND	7
GRAVEL	32
COBBLE & BOULDER	8
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150	100	5	63	20	
75	92	2	60	6	
63	92	1.18	59	2	
50	92	0.6	58		
37.5	90	0.425	58		
20	71	0.212	57		
10	66	0.15	57		
6.3	64	0.063	53		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

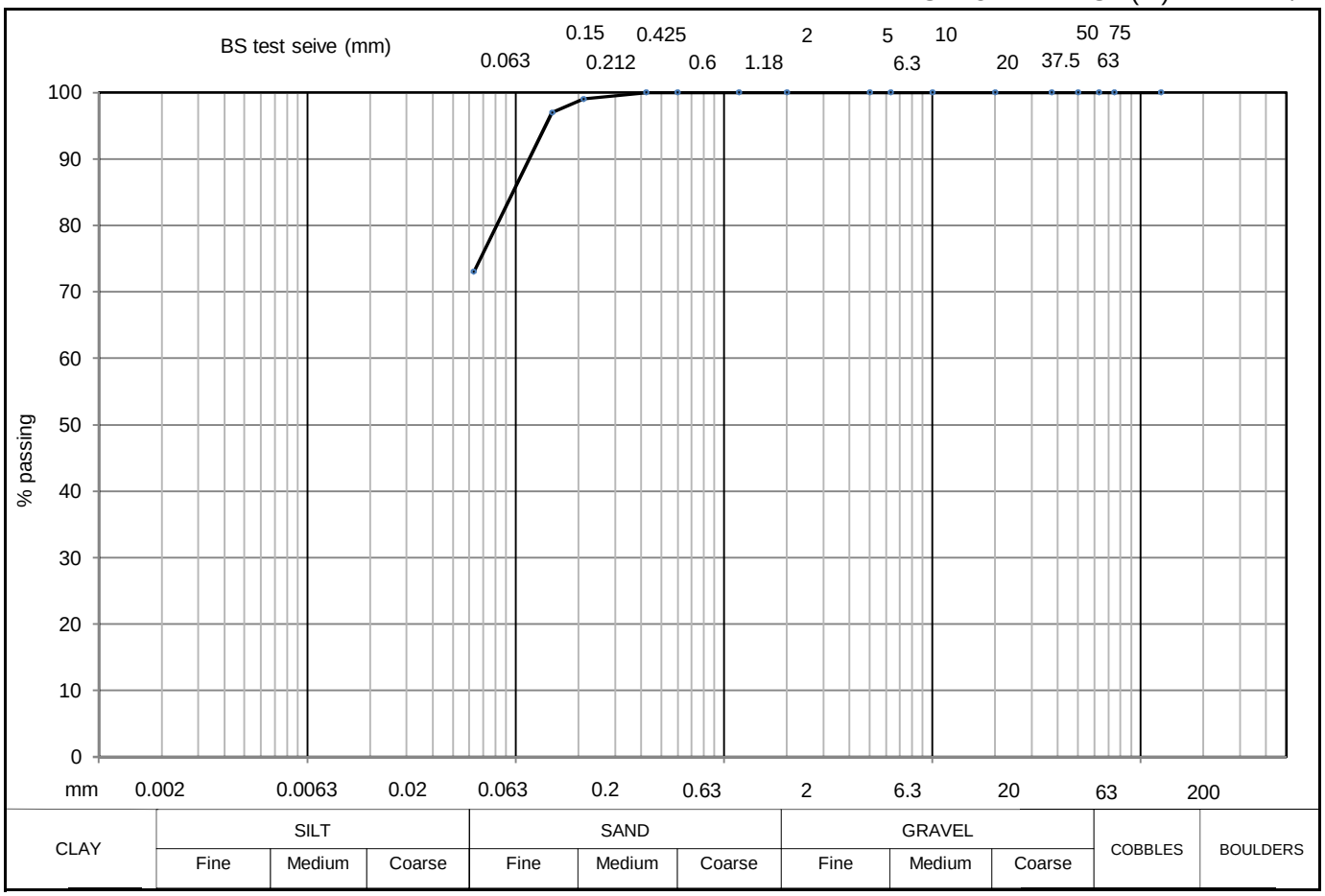
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP540
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	1.50
DESCRIPTION	Reddish brown mottled light brown slightly sandy CLAY with rare rootlets	SPECIMEN TOP (m)	1.50
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	73
SAND	27
GRAVEL	0
COBBLE & BOULDER	0
test method(s)	9.2

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5		20	
75		2		6	
63		1.18		2	
50		0.6			
37.5		0.425	100		
20		0.212	99		
10		0.15	97		
6.3		0.063	73		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

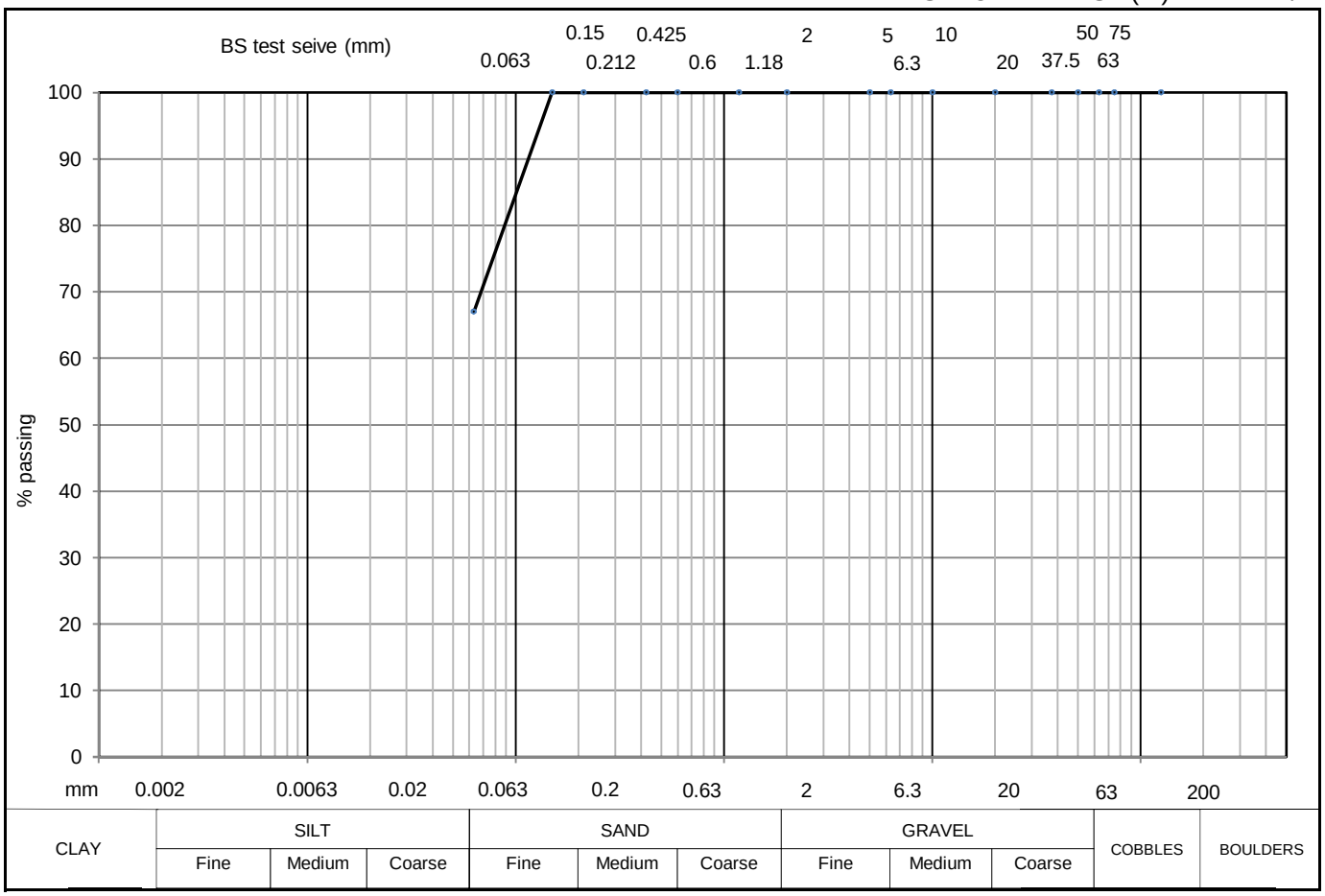
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP540
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	2.50
DESCRIPTION	Orangish brown sandy silty CLAY	SPECIMEN TOP (m)	2.50
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	67
SAND	33
GRAVEL	0
COBBLE & BOULDER	0
test method(s)	9.2

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5		20	
75		2		6	
63		1.18		2	
50		0.6			
37.5		0.425			
20		0.212			
10		0.15	100		
6.3		0.063	67		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

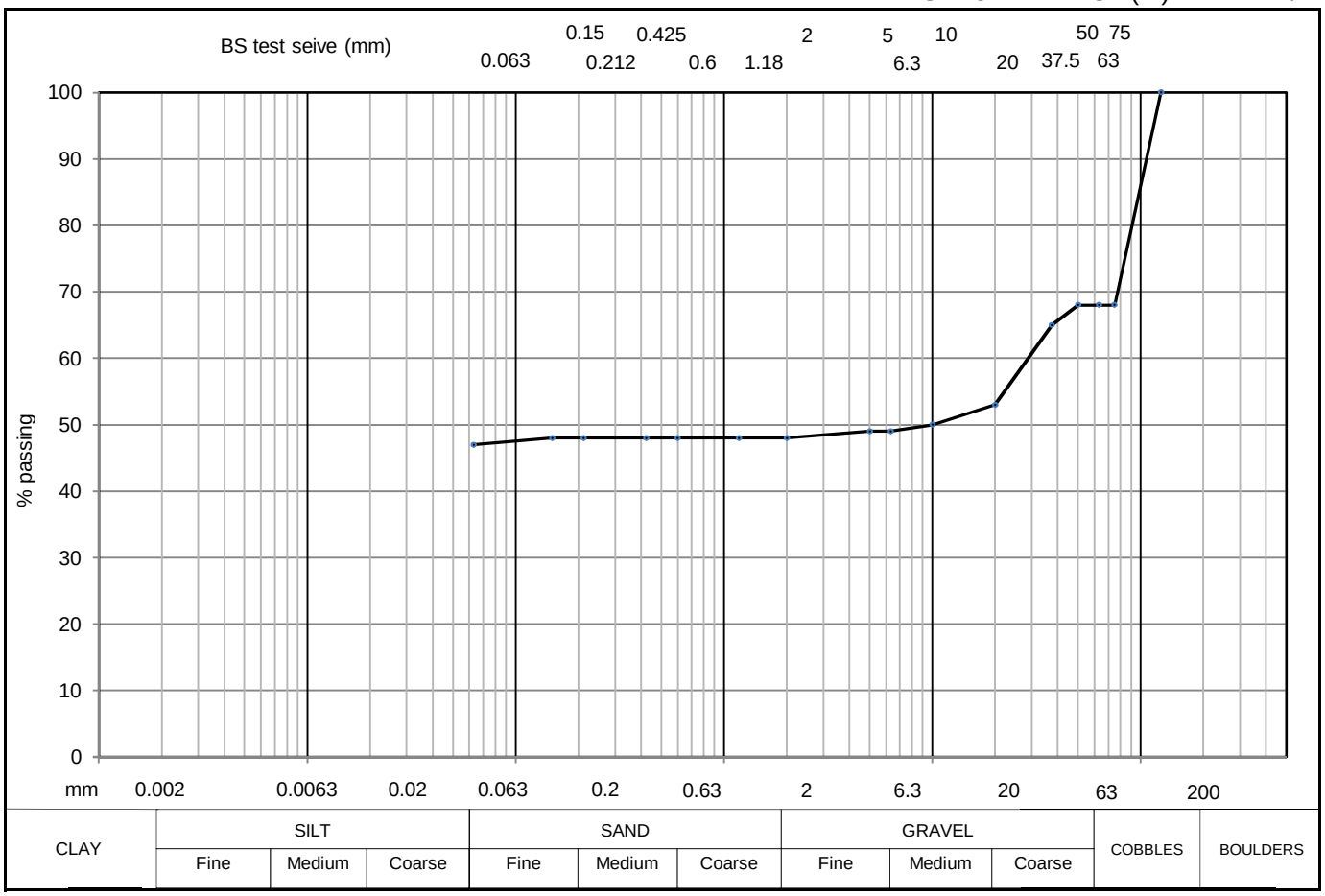
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP541
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	0.50
DESCRIPTION	Brown slightly sandy gravelly CLAY with high cobble content	SPECIMEN TOP (m)	0.50
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	47
SAND	1
GRAVEL	20
COBBLE & BOULDER	32
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150	100	5	49	20	
75	68	2	48	6	
63	68	1.18	48	2	
50	68	0.6	48		
37.5	65	0.425	48		
20	53	0.212	48		
10	50	0.15	48		
6.3	49	0.063	47		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

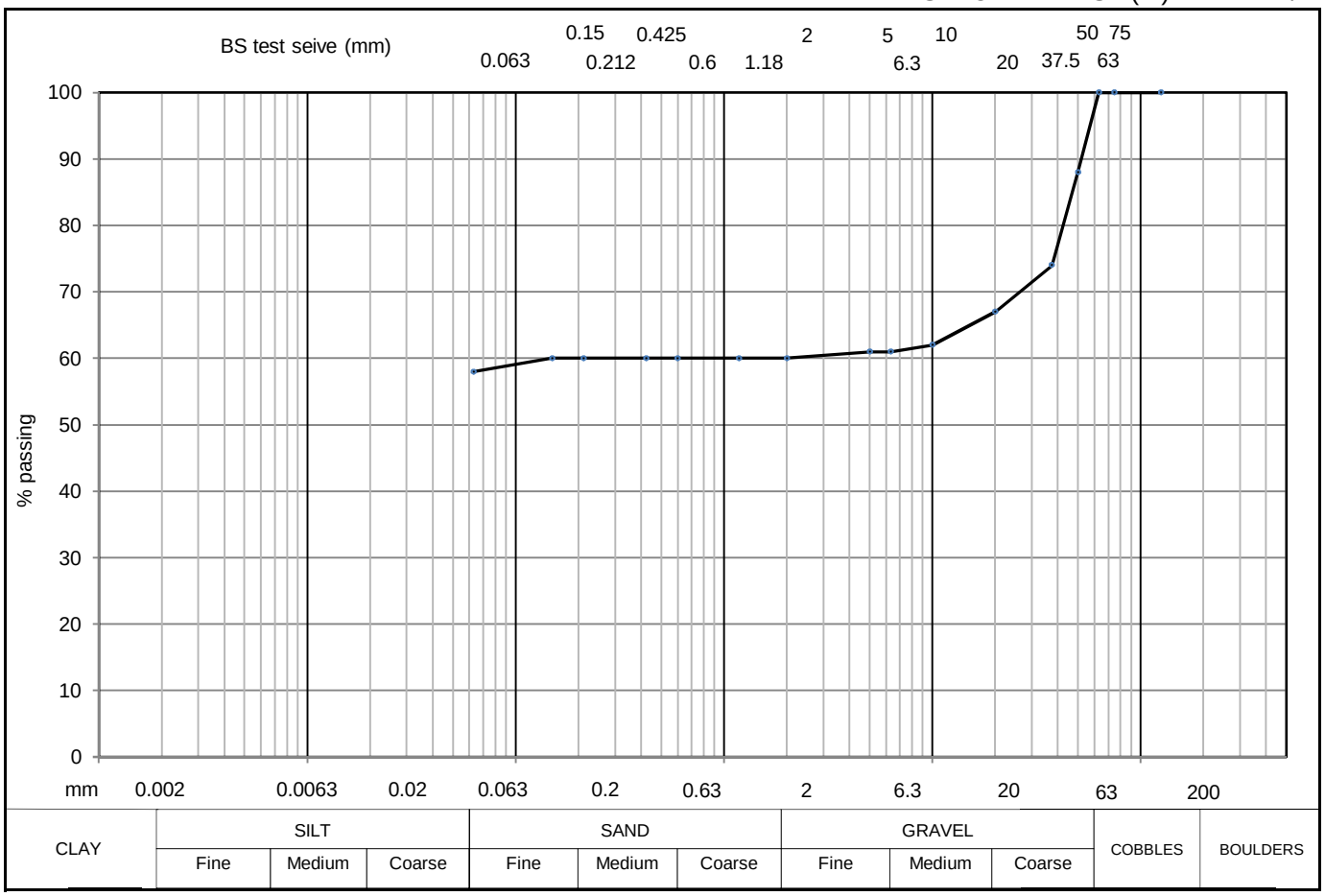
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP541
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	2.50
DESCRIPTION	Brown slightly sandy gravelly CLAY	SPECIMEN TOP (m)	1.50
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	58
SAND	2
GRAVEL	40
COBBLE & BOULDER	0
test method(s)	9.2#

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	61	20	
75		2	60	6	
63	100	1.18	60	2	
50	88	0.6	60		
37.5	74	0.425	60		
20	67	0.212	60		
10	62	0.15	60		
6.3	61	0.063	58		

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

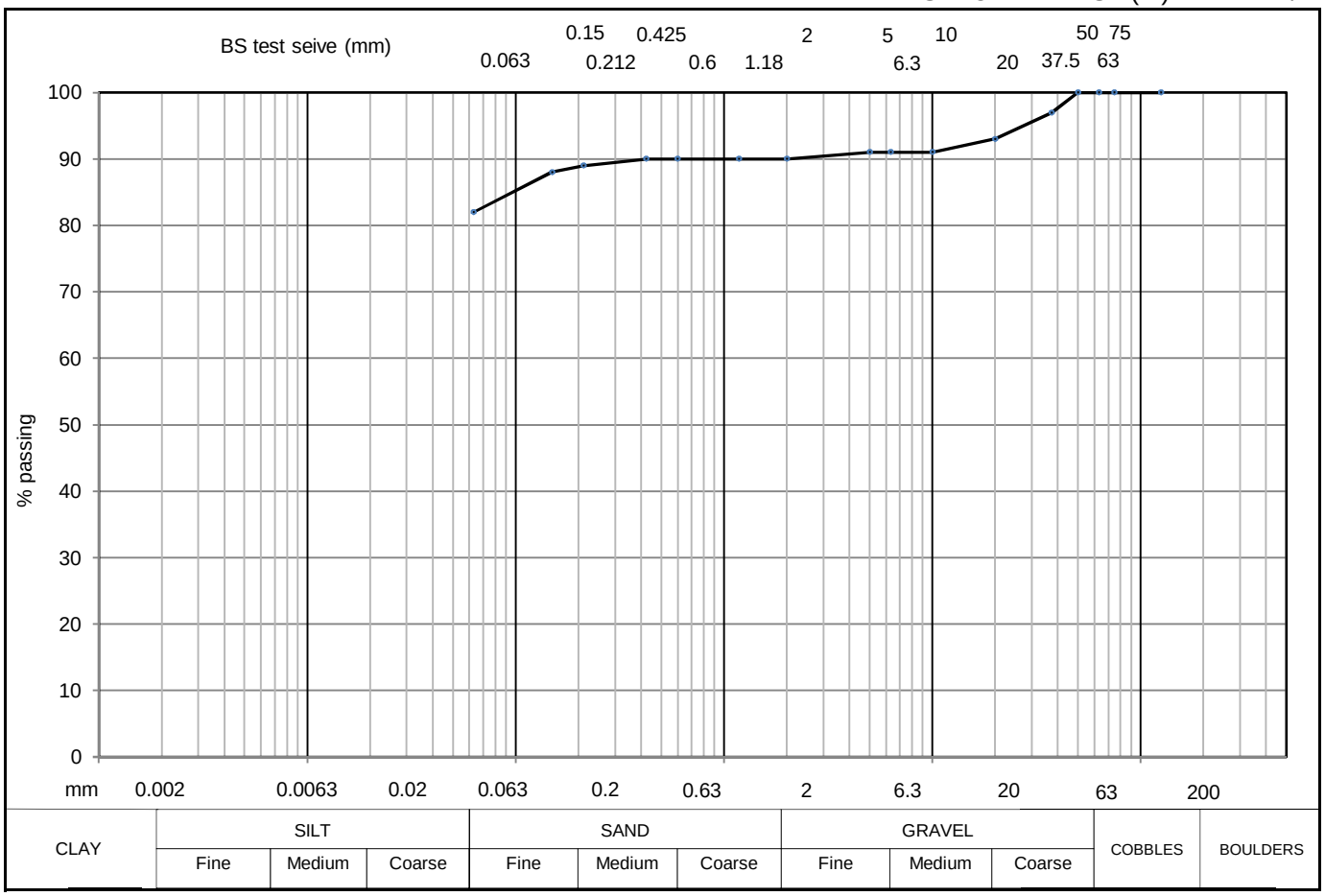
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP544
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	0.50
DESCRIPTION	Brown slightly sandy slightly gravelly CLAY	SPECIMEN TOP (m)	0.50
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	82
SAND	8
GRAVEL	10
COBBLE & BOULDER	0
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	91	20	
75		2	90	6	
63		1.18	90	2	
50	100	0.6	90		
37.5	97	0.425	90		
20	93	0.212	89		
10	91	0.15	88		
6.3	91	0.063	82		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

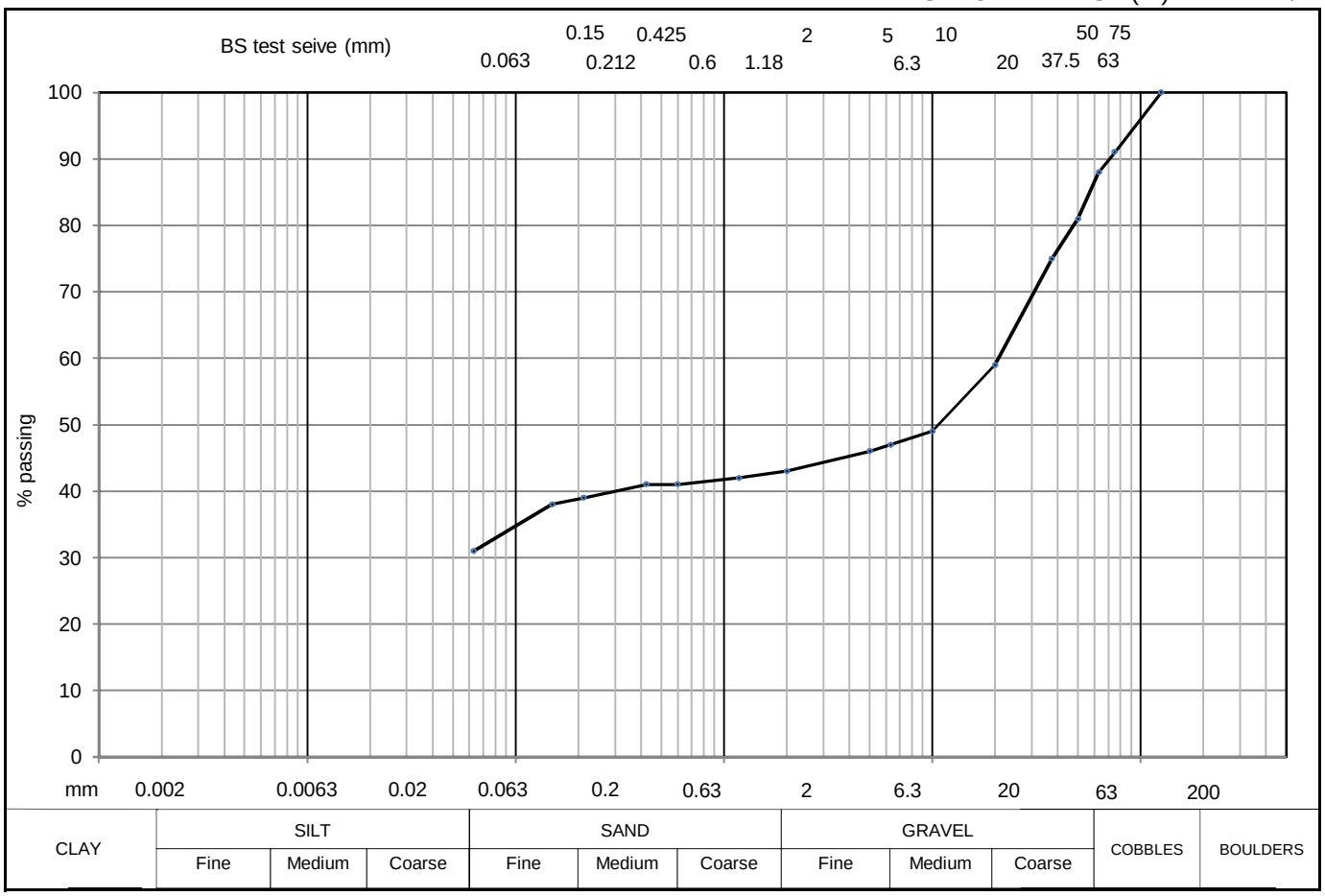
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP546
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	0.30
DESCRIPTION	Brown very clayey sandy GRAVEL with medium cobble content	SPECIMEN TOP (m)	0.30
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	31
SAND	12
GRAVEL	45
COBBLE & BOULDER	12
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150	100	5	46	20	
75	91	2	43	6	
63	88	1.18	42	2	
50	81	0.6	41		
37.5	75	0.425	41		
20	59	0.212	39		
10	49	0.15	38		
6.3	47	0.063	31		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

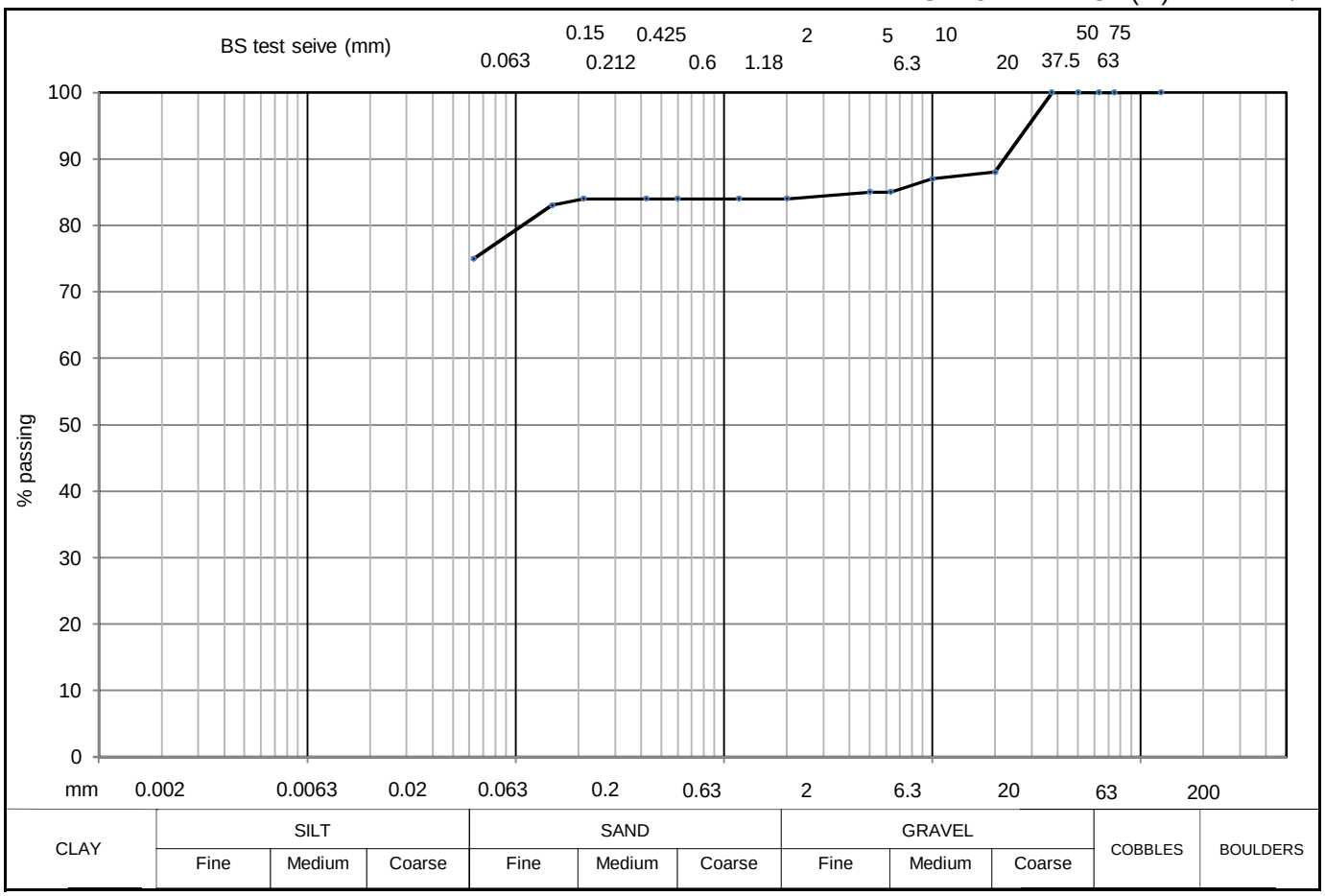
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP550
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	0.60
DESCRIPTION	Orangish brown slightly sandy slightly gravelly silty CLAY	SPECIMEN TOP (m)	0.60
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	75
SAND	9
GRAVEL	16
COBBLE & BOULDER	0
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	85	20	
75		2	84	6	
63		1.18	84	2	
50		0.6	84		
37.5	100	0.425	84		
20	88	0.212	84		
10	87	0.15	83		
6.3	85	0.063	75		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

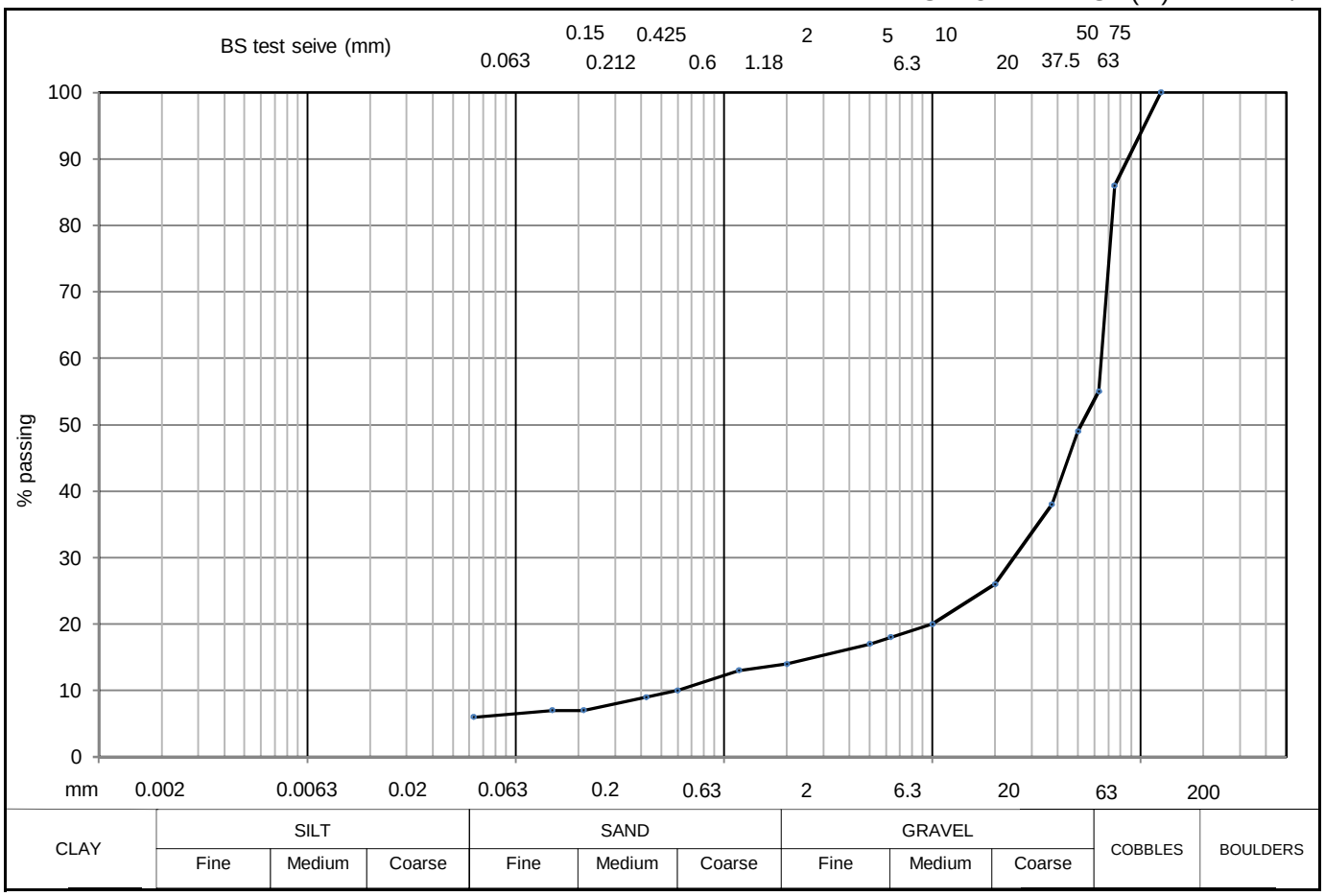
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP551
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	0.50
DESCRIPTION	Light brown clayey sandy very gravelly COBBLES	SPECIMEN TOP (m)	0.50
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	6
SAND	8
GRAVEL	41
COBBLE & BOULDER	45
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150	100	5	17	20	
75	86	2	14	6	
63	55	1.18	13	2	
50	49	0.6	10		
37.5	38	0.425	9		
20	26	0.212	7		
10	20	0.15	7		
6.3	18	0.063	6		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

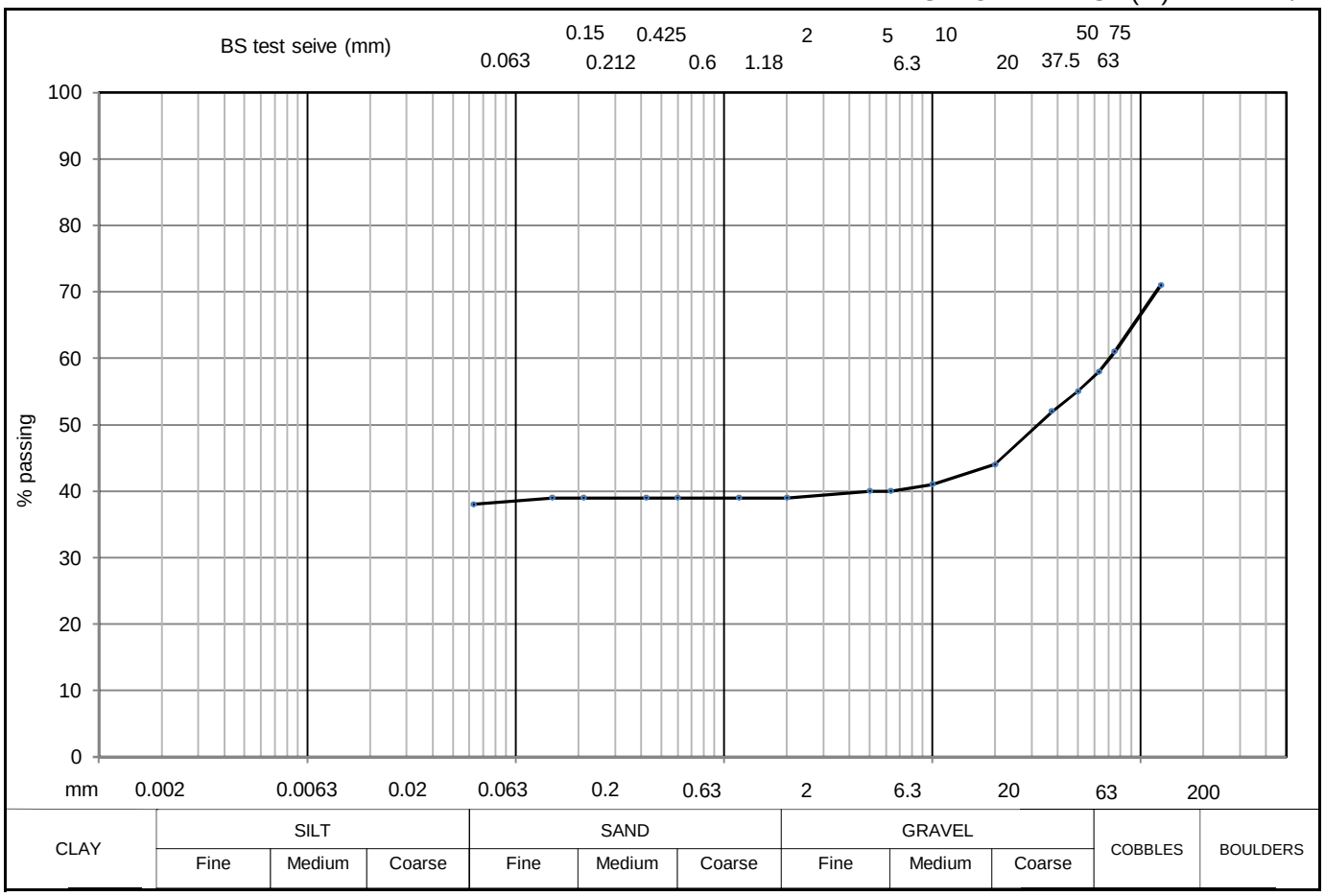
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP551
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	1.50
DESCRIPTION	Orangish brown slightly sandy slightly gravelly CLAY with high cobble content	SPECIMEN TOP (m)	1.50
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	38
SAND	1
GRAVEL	19
COBBLE & BOULDER	42
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150	71	5	40	20	
75	61	2	39	6	
63	58	1.18	39	2	
50	55	0.6	39		
37.5	52	0.425	39		
20	44	0.212	39		
10	41	0.15	39		
6.3	40	0.063	38		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

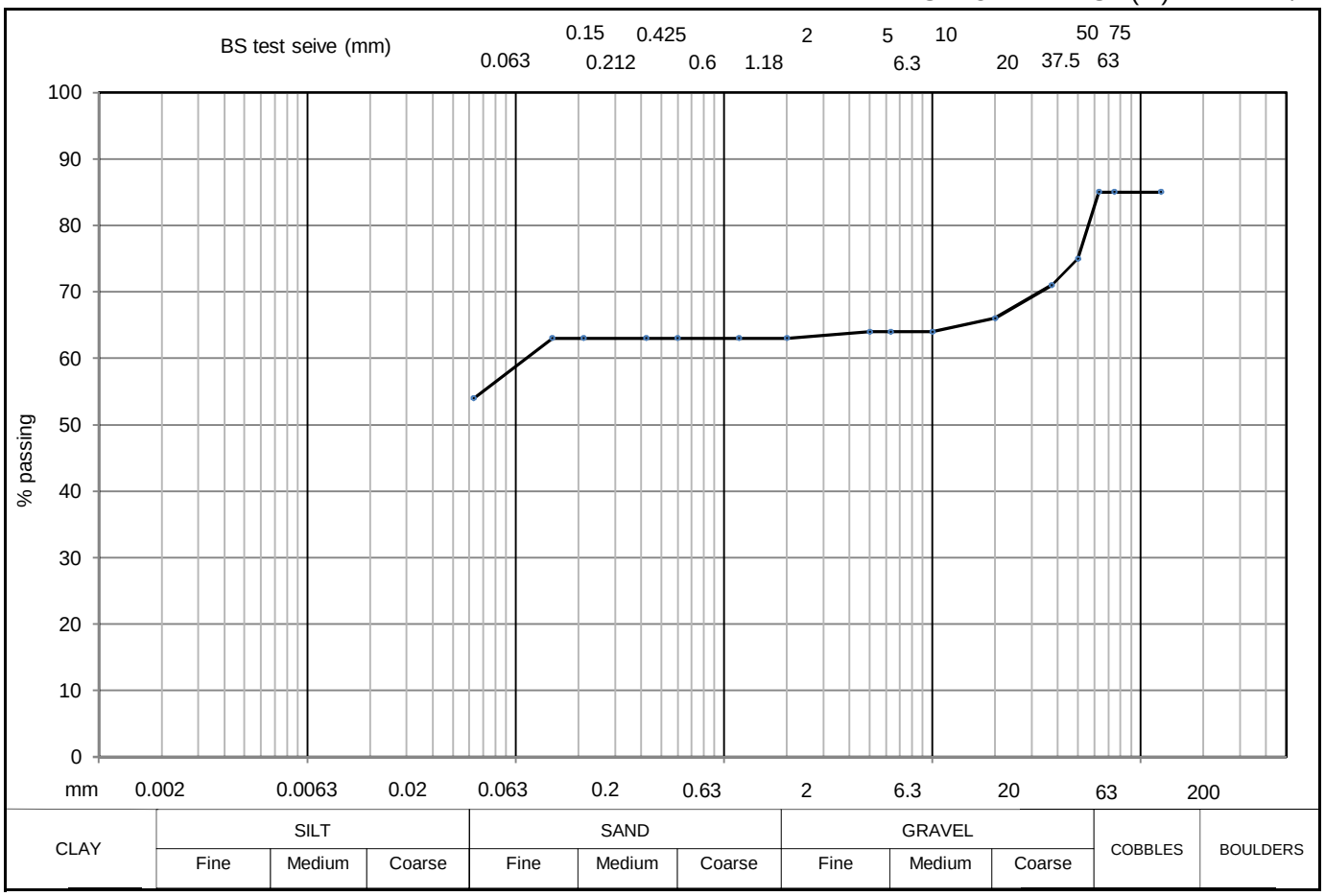
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP555
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	1.20
DESCRIPTION	Brown slightly sandy slightly gravelly CLAY with medium cobble content	SPECIMEN TOP (m)	1.20
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	54
SAND	9
GRAVEL	22
COBBLE & BOULDER	15
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150	85	5	64	20	
75	85	2	63	6	
63	85	1.18	63	2	
50	75	0.6	63		
37.5	71	0.425	63		
20	66	0.212	63		
10	64	0.15	63		
6.3	64	0.063	54		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

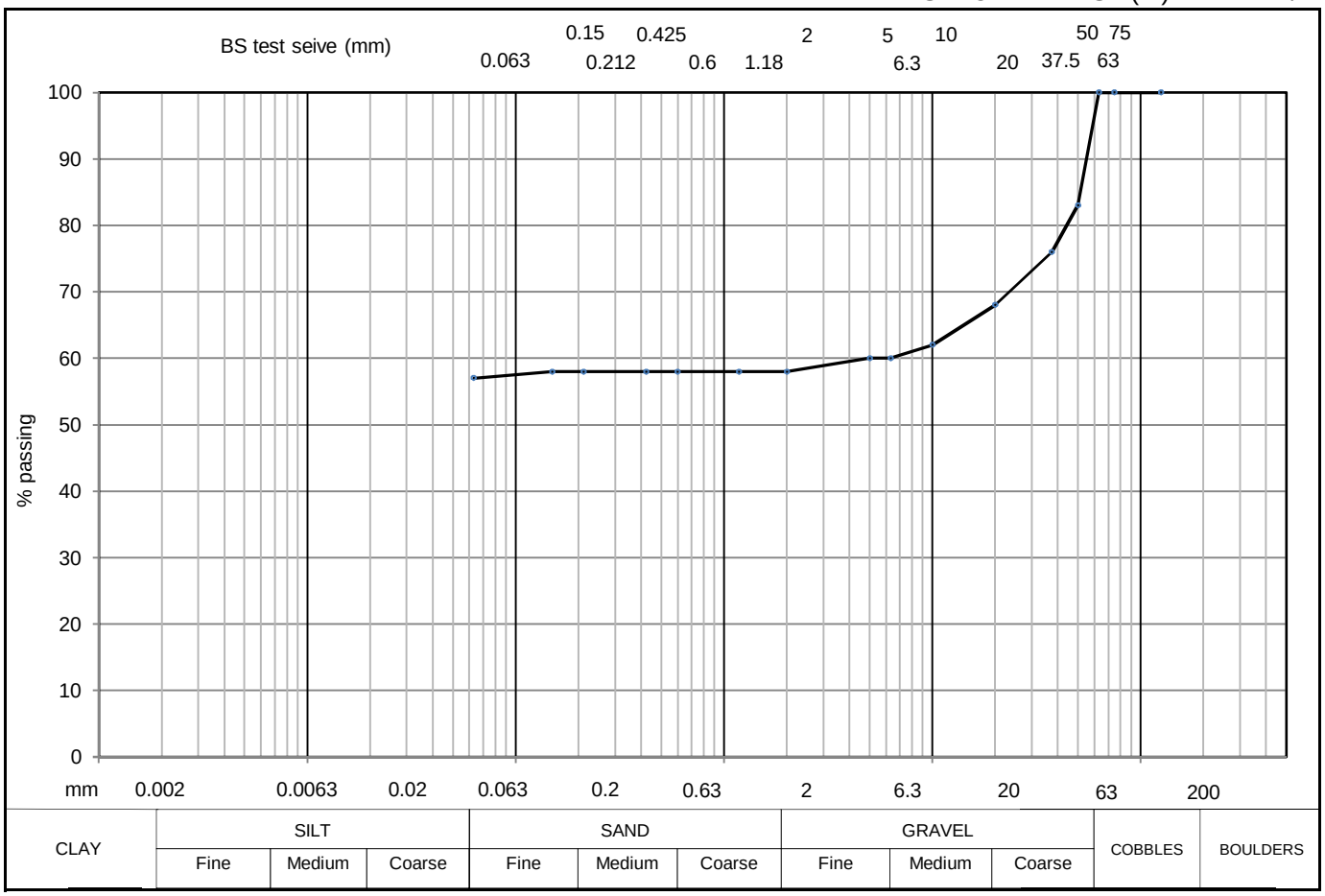
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP561
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	0.50
DESCRIPTION	Brown slightly sandy gravelly CLAY	SPECIMEN TOP (m)	0.50
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	57
SAND	1
GRAVEL	42
COBBLE & BOULDER	0
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	60	20	
75		2	58	6	
63	100	1.18	58	2	
50	83	0.6	58		
37.5	76	0.425	58		
20	68	0.212	58		
10	62	0.15	58		
6.3	60	0.063	57		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

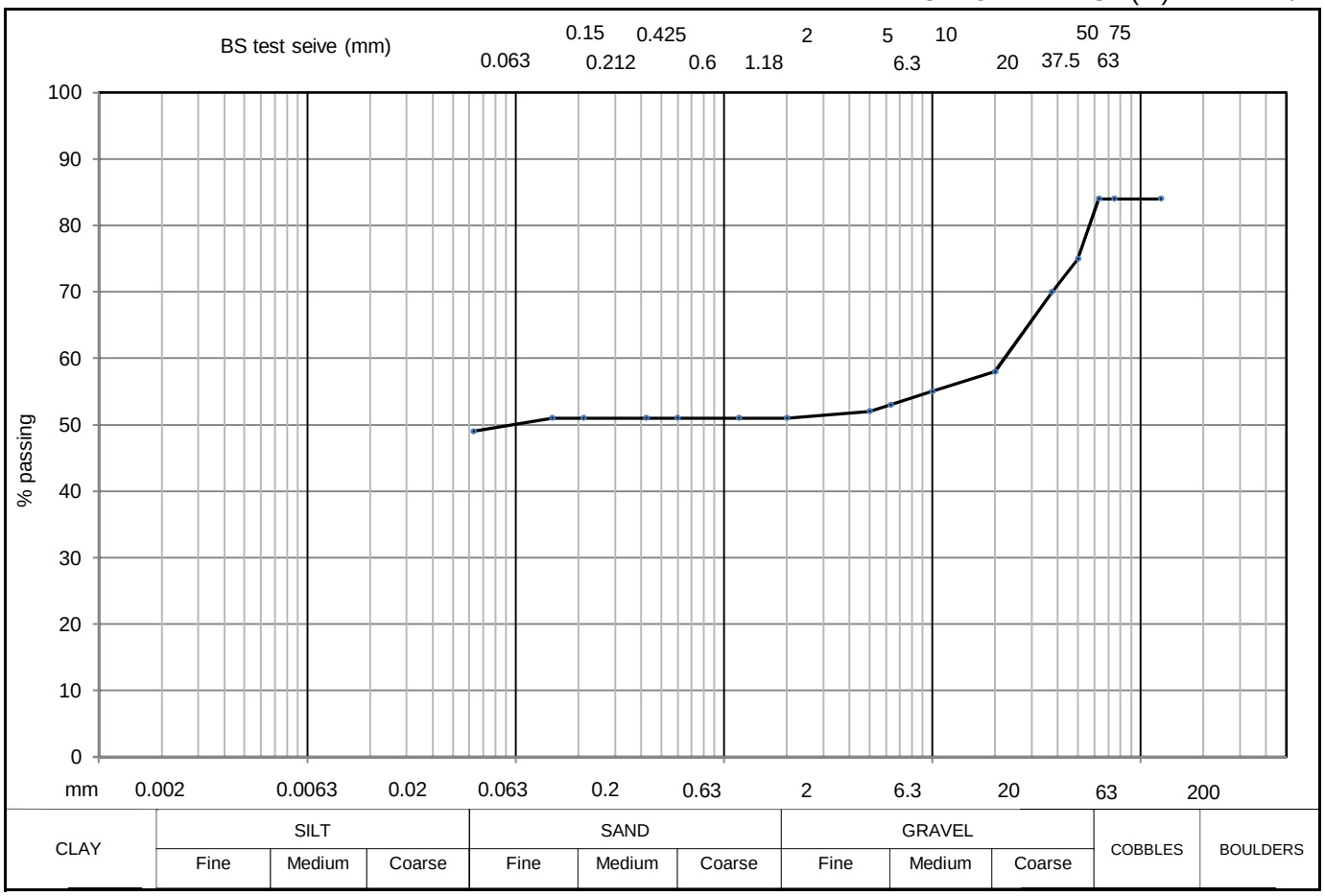
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP561
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	1.50
DESCRIPTION	Orangish brown slightly sandy gravelly CLAY with medium cobble content	SPECIMEN TOP (m)	1.50
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	49
SAND	2
GRAVEL	33
COBBLE & BOULDER	16
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150	84	5	52	20	
75	84	2	51	6	
63	84	1.18	51	2	
50	75	0.6	51		
37.5	70	0.425	51		
20	58	0.212	51		
10	55	0.15	51		
6.3	53	0.063	49		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

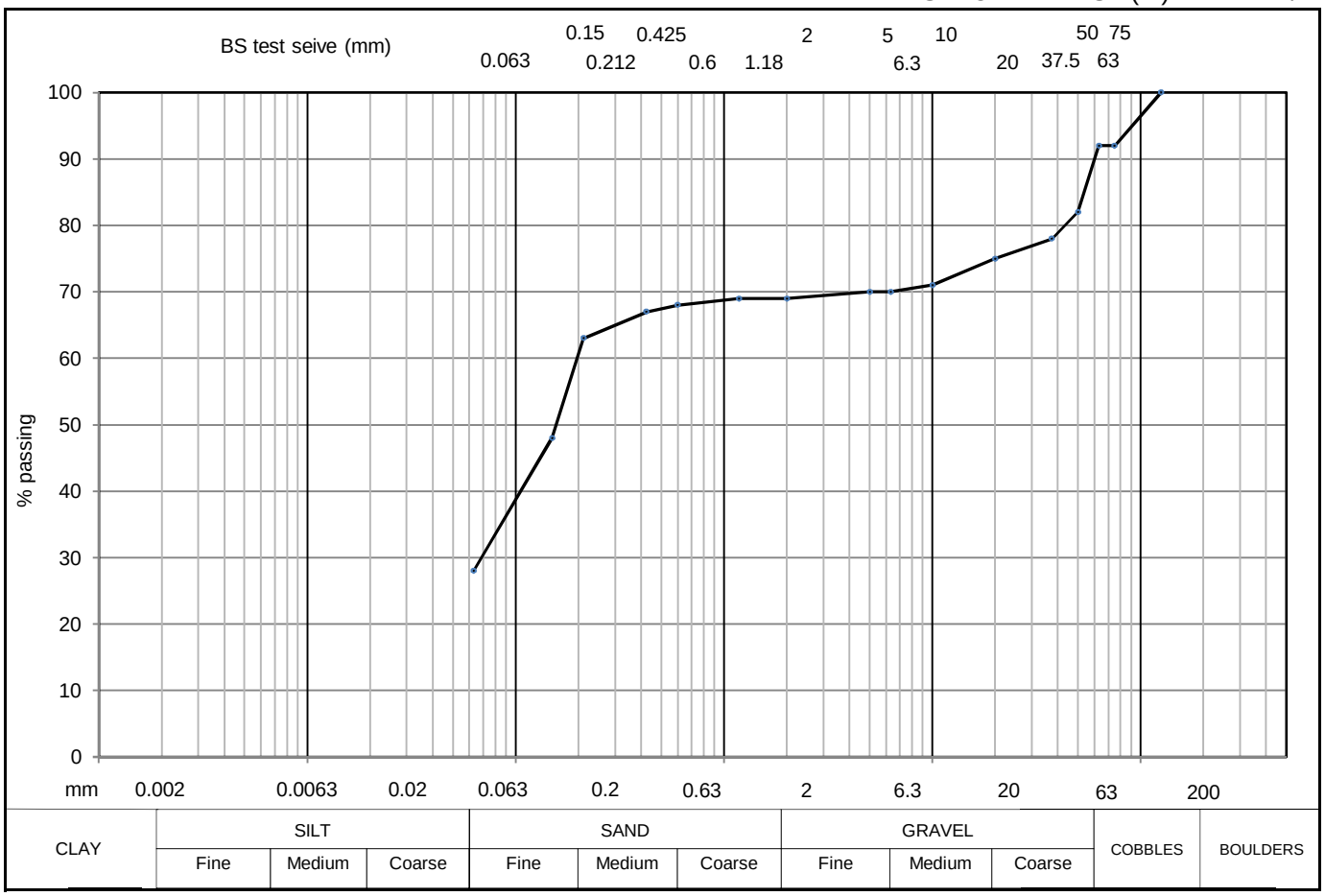
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP565
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	1.00
DESCRIPTION	Orangish brown very clayey very gravelly SAND with medium cobble content	SPECIMEN TOP (m)	1.00
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	28
SAND	41
GRAVEL	23
COBBLE & BOULDER	8
test method(s)	9.2#

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150	100	5	70	20	
75	92	2	69	6	
63	92	1.18	69	2	
50	82	0.6	68		
37.5	78	0.425	67		
20	75	0.212	63		
10	71	0.15	48		
6.3	70	0.063	28		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

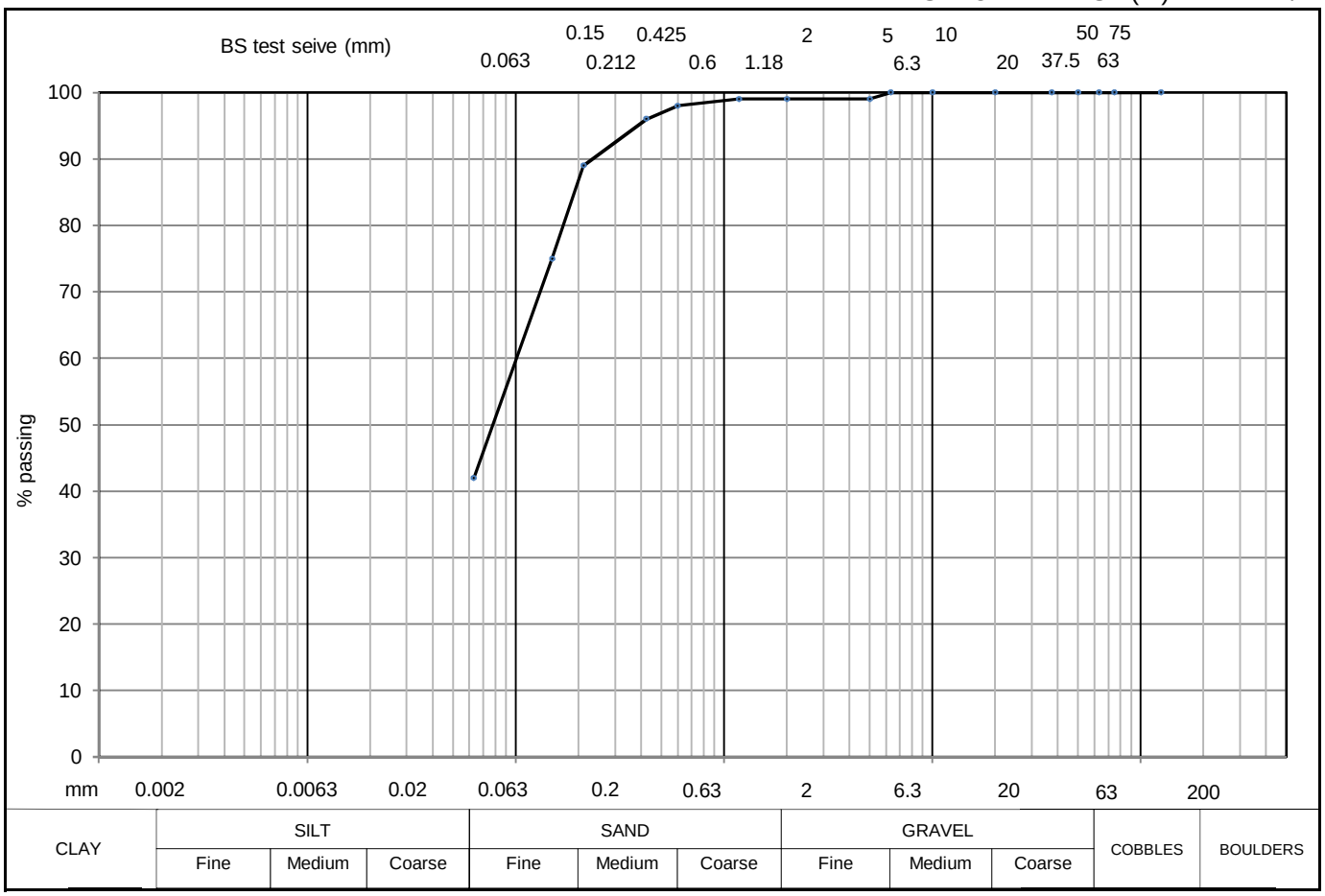
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

PARTICLE SIZE DISTRIBUTION

BS. 1377 : Part 2 : 1990 : 9

CLIENT	HYDROCK	BH/TP No.	TP565
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	1.50
DESCRIPTION	Orangish brown slightly gravelly sandy CLAY	SPECIMEN TOP (m)	1.50
		SPECIMEN BASE (m)	N/A



soil type	% fraction
CLAY	
SILT	
SILT & CLAY	42
SAND	57
GRAVEL	1
COBBLE & BOULDER	0
test method(s)	9.2

test method

9.2 - wet seiving

9.3 - dry seiving

9.4 - sedimentation by pipette

9.5 - sedimentation by hydrometer

BS test sieve (mm)	% passing	BS test sieve (mm)	% passing	BS test sieve (µm)	% finer
150		5	99	20	
75		2	99	6	
63		1.18	99	2	
50		0.6	98		
37.5		0.425	96		
20		0.212	89		
10		0.15	75		
6.3	100	0.063	42		

remarks

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

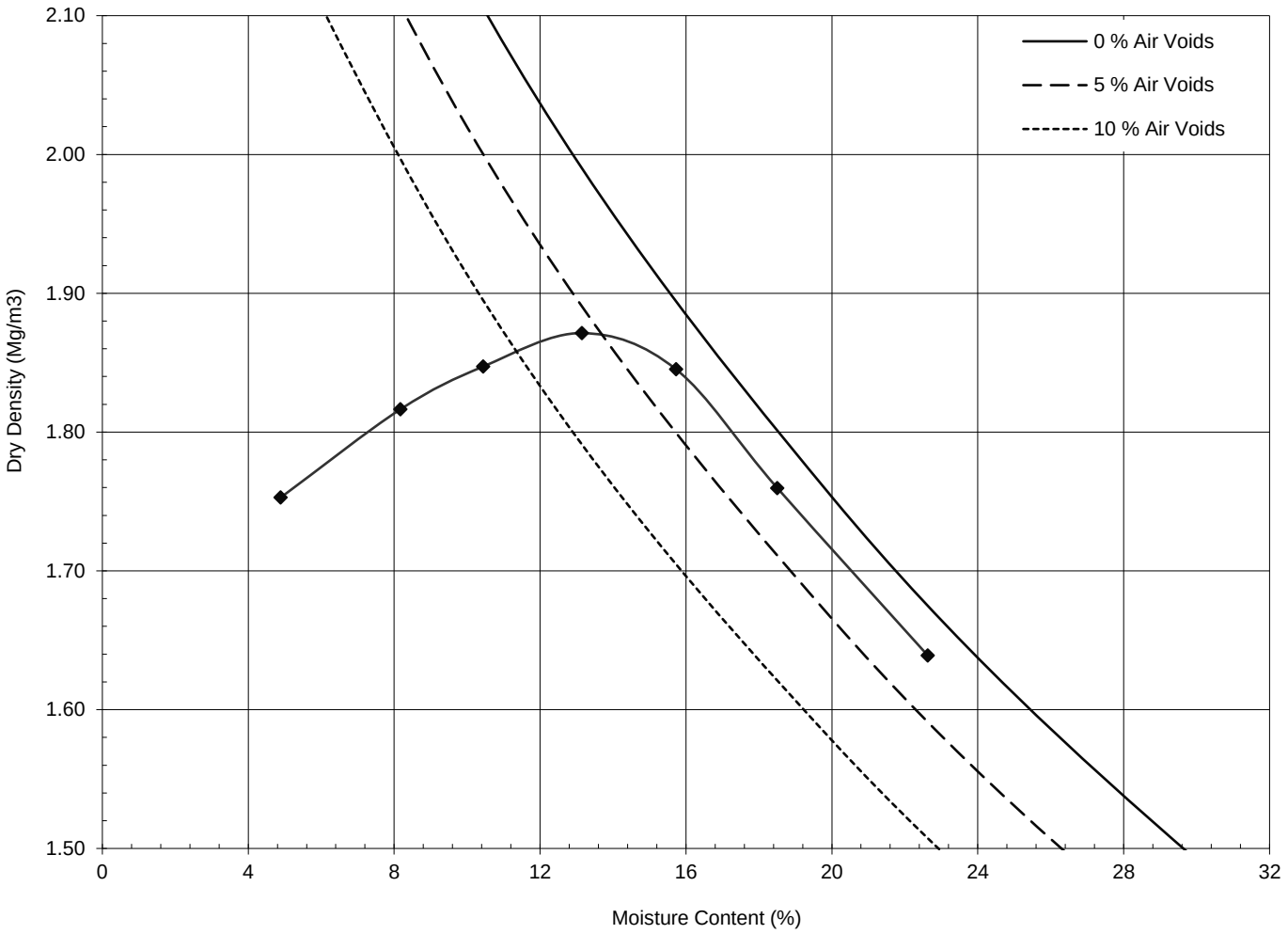
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

DRY DENSITY/MOISTURE CONTENT RELATIONSHIP

BS. 1377 : Part 4 : 1990 : 3

CLIENT	HYDROCK	BH/TP No.	TP507
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
DESCRIPTION	Orangish brown slightly sandy slightly gravelly CLAY	SAMPLE DEPTH (m)	3.00
		SPECIMEN DEPTH (m)	3.00



test method		3.5.4.1 4.5kg dynamic compaction - 1L mould			
preparation procedure		3.2.5.3 (grading zone 5)			
sample preparation		C R			
proportion retained on 37.5mm sieve	%	6	initial moisture content	%	23
proportion retained on 20mm sieve	%	15	maximum dry density	(Mg/m3)	1.87
particle density	(Mg/m3)	#2.70	optimum moisture content	%	13

remarks

# denotes particle density has been assigned an assumed value

C denotes sample has been chopped to pass 20mm sieve

S denotes sample has been shredded to pass 20mm sieve

R denotes sample material has been recycled between/for points

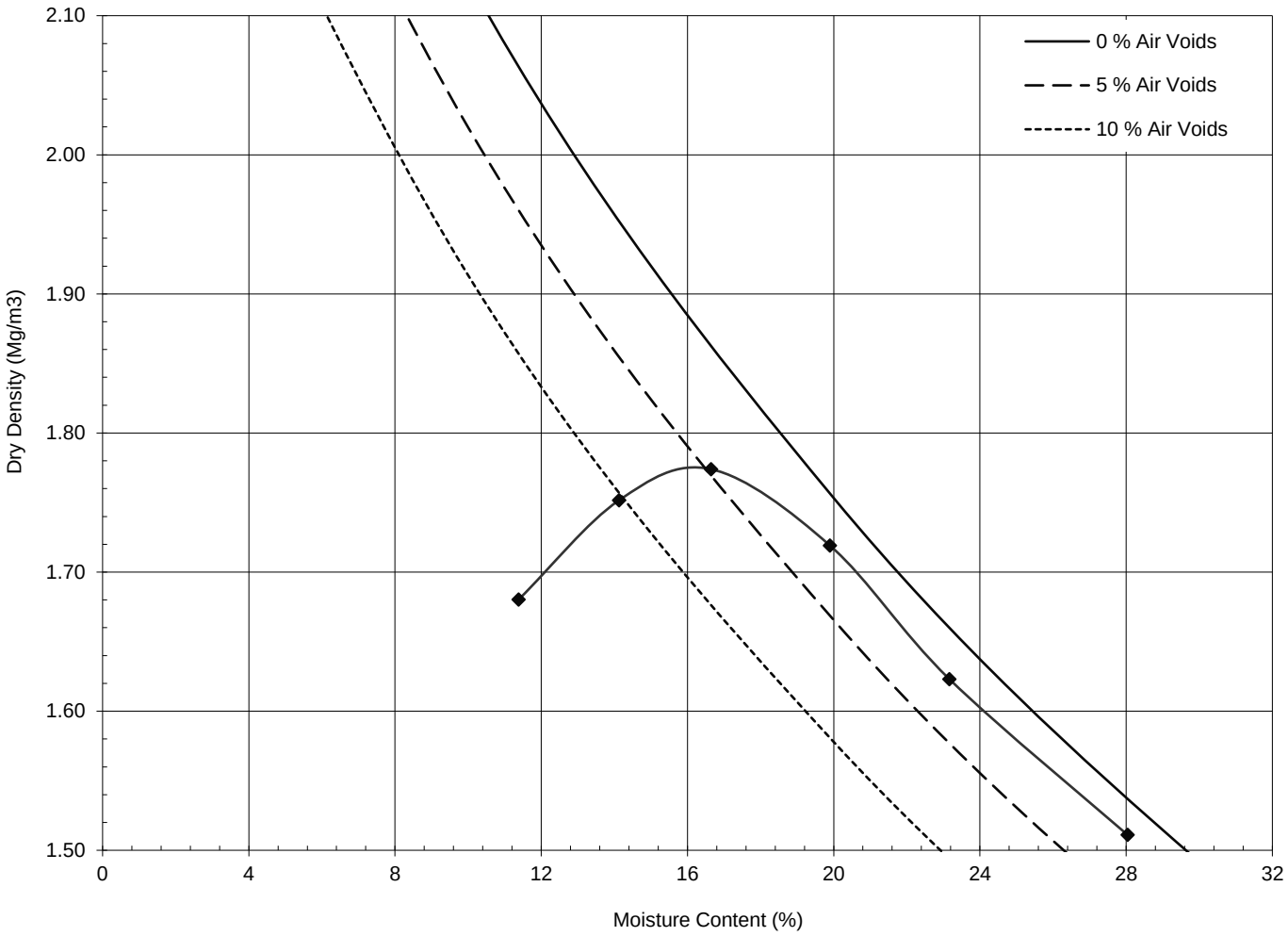
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

DRY DENSITY/MOISTURE CONTENT RELATIONSHIP

BS. 1377 : Part 4 : 1990 : 3

CLIENT	HYDROCK	BH/TP No.	TP508
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
DESCRIPTION	Orangish brown slightly sandy slightly gravelly CLAY	SAMPLE DEPTH (m)	1.70
		SPECIMEN DEPTH (m)	1.70



test method		3.5.4.1 4.5kg dynamic compaction - 1L mould			
preparation procedure		3.2.4.2 (grading zone 2)			
sample preparation		C R			
proportion retained on 37.5mm sieve	%	0	initial moisture content	%	23
proportion retained on 20mm sieve	%	3	maximum dry density	(Mg/m3)	1.77
particle density	(Mg/m3)	#2.70	optimum moisture content	%	18

remarks

# denotes particle density has been assigned an assumed value

C denotes sample has been chopped to pass 20mm sieve

S denotes sample has been shredded to pass 20mm sieve

R denotes sample material has been recycled between/for points

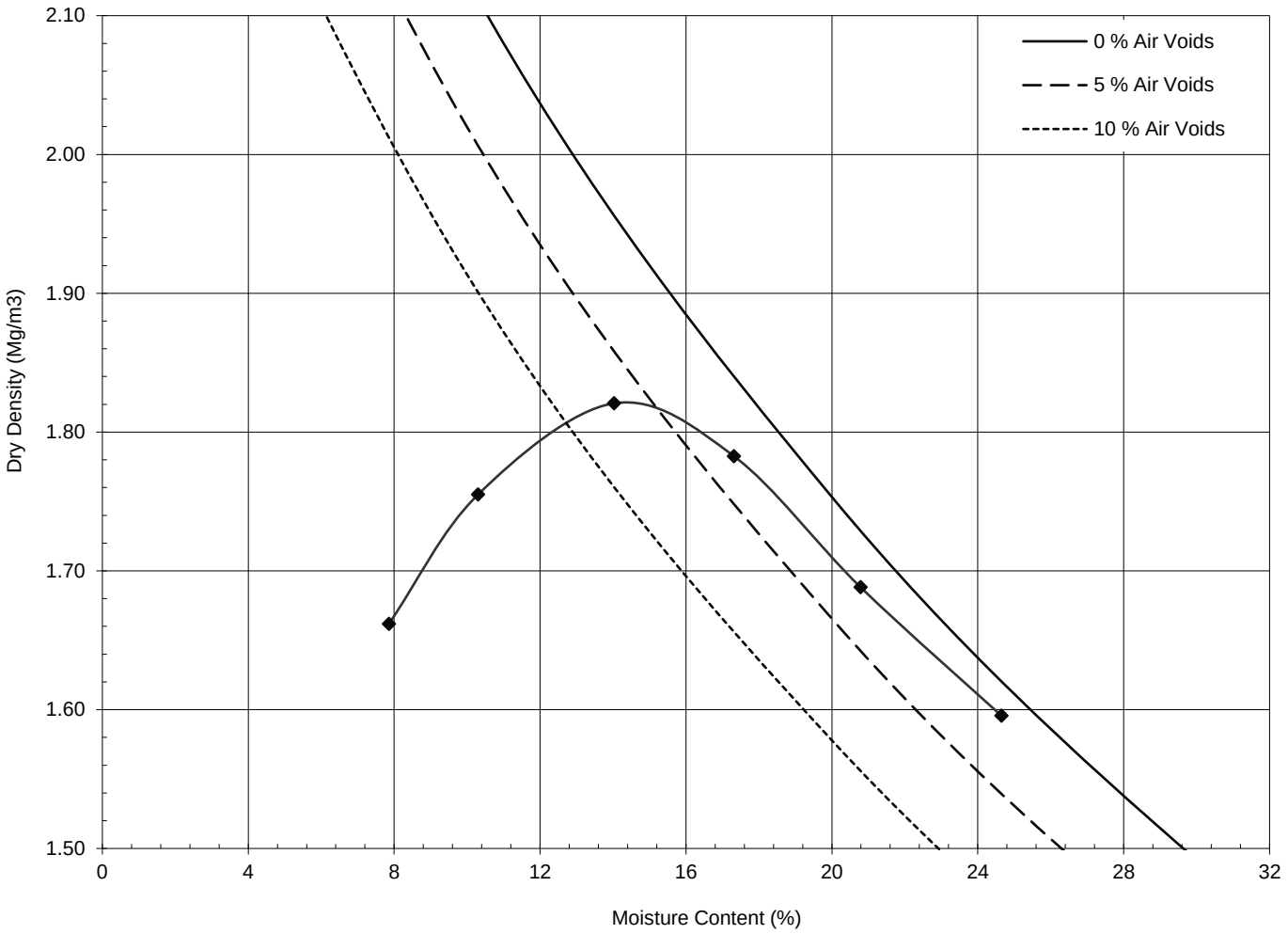
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

DRY DENSITY/MOISTURE CONTENT RELATIONSHIP

BS. 1377 : Part 4 : 1990 : 3

CLIENT	HYDROCK	BH/TP No.	TP509
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
DESCRIPTION	Reddish brown slightly sandy CLAY	SAMPLE DEPTH (m)	2.70
		SPECIMEN DEPTH (m)	2.70



test method		3.5.4.1 4.5kg dynamic compaction - 1L mould			
preparation procedure		3.2.4.1 (grading zone 1)			
sample preparation		C R			
proportion retained on 37.5mm sieve	%	0	initial moisture content	%	25
proportion retained on 20mm sieve	%	0	maximum dry density	(Mg/m3)	1.82
particle density	(Mg/m3)	#2.70	optimum moisture content	%	16

remarks

# denotes particle density has been assigned an assumed value

C denotes sample has been chopped to pass 20mm sieve

S denotes sample has been shredded to pass 20mm sieve

R denotes sample material has been recycled between/for points

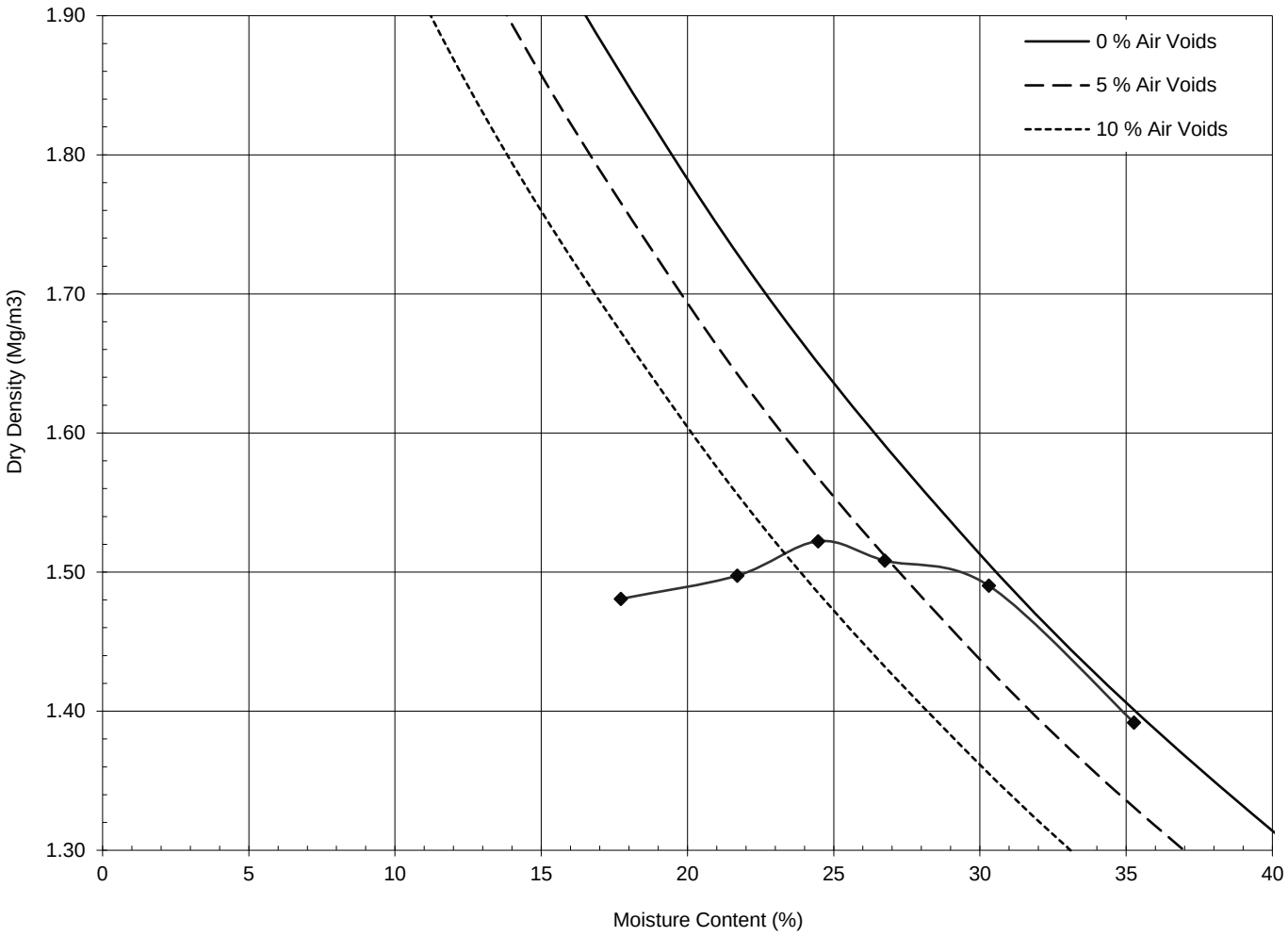
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

DRY DENSITY/MOISTURE CONTENT RELATIONSHIP

BS. 1377 : Part 4 : 1990 : 3

CLIENT	HYDROCK	BH/TP No.	TP519
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
DESCRIPTION	Orangish brown slightly sandy gravelly CLAY	SAMPLE DEPTH (m)	1.50
		SPECIMEN DEPTH (m)	1.50



test method		3.5.4.1 4.5kg dynamic compaction - 1L mould			
preparation procedure		Grading zone X (Test not applicable)			
sample preparation		C R			
proportion retained on 37.5mm sieve	%	21	initial moisture content	%	
proportion retained on 20mm sieve	%	1	maximum dry density	(Mg/m3)	1.52
particle density	(Mg/m3)	#2.77	optimum moisture content	%	26

remarks

# denotes particle density has been assigned an assumed value

C denotes sample has been chopped to pass 20mm sieve

S denotes sample has been shredded to pass 20mm sieve

R denotes sample material has been recycled between/for points

Non standard test carried out.

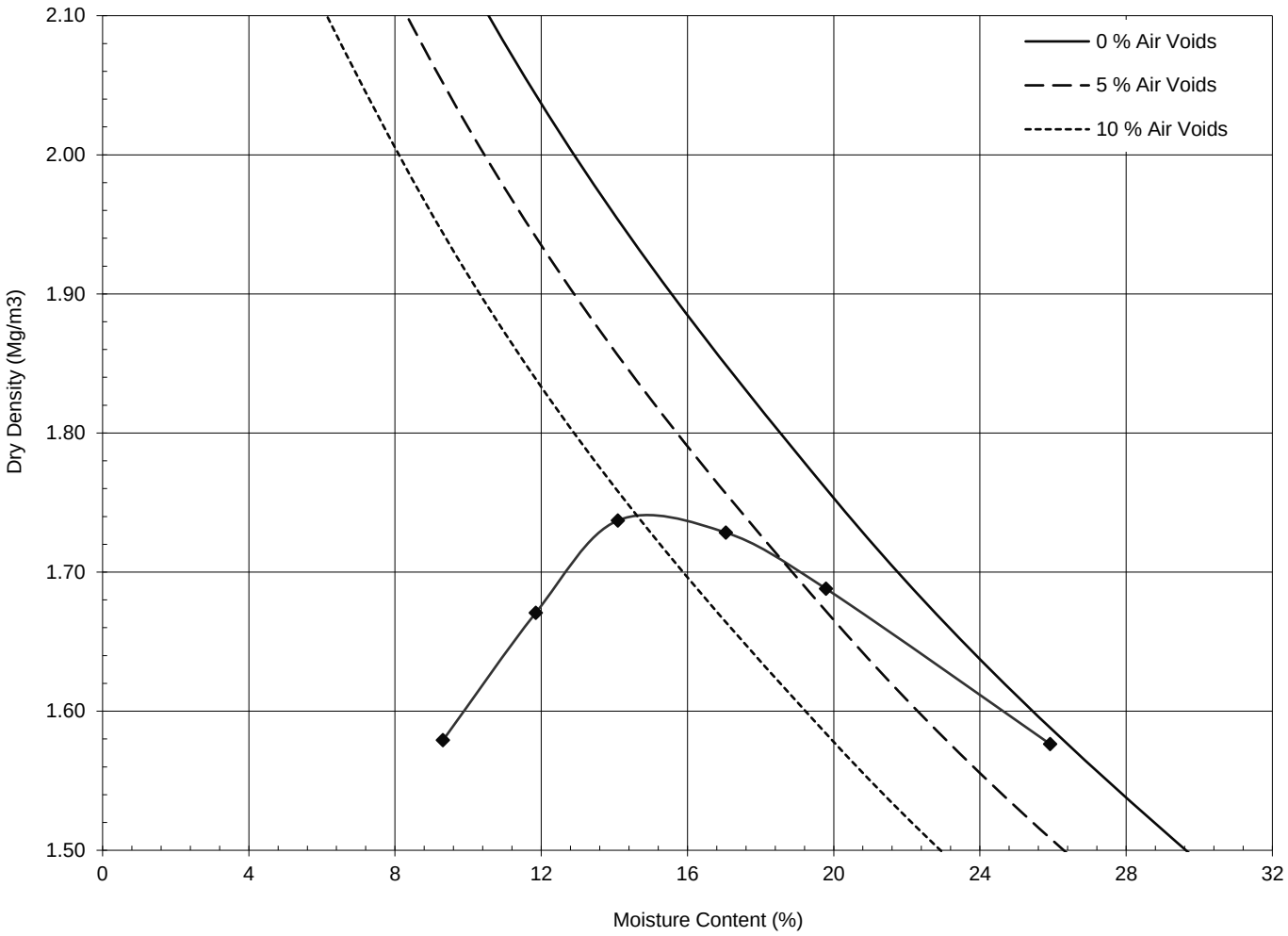
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

DRY DENSITY/MOISTURE CONTENT RELATIONSHIP

BS. 1377 : Part 4 : 1990 : 3

CLIENT	HYDROCK	BH/TP No.	TP530
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
DESCRIPTION	Brown slightly sandy gravelly CLAY with occasional rootlets	SAMPLE DEPTH (m)	0.80
		SPECIMEN DEPTH (m)	0.80



test method		3.5.4.1 4.5kg dynamic compaction - 1L mould			
preparation procedure		Grading zone X (Test not applicable)			
sample preparation		C R			
proportion retained on 37.5mm sieve	%	13	initial moisture content	%	26
proportion retained on 20mm sieve	%	12	maximum dry density	(Mg/m3)	1.74
particle density	(Mg/m3)	#2.70	optimum moisture content	%	16

remarks

# denotes particle density has been assigned an assumed value

C denotes sample has been chopped to pass 20mm sieve

S denotes sample has been shredded to pass 20mm sieve

R denotes sample material has been recycled between/for points

Non standard test carried out.

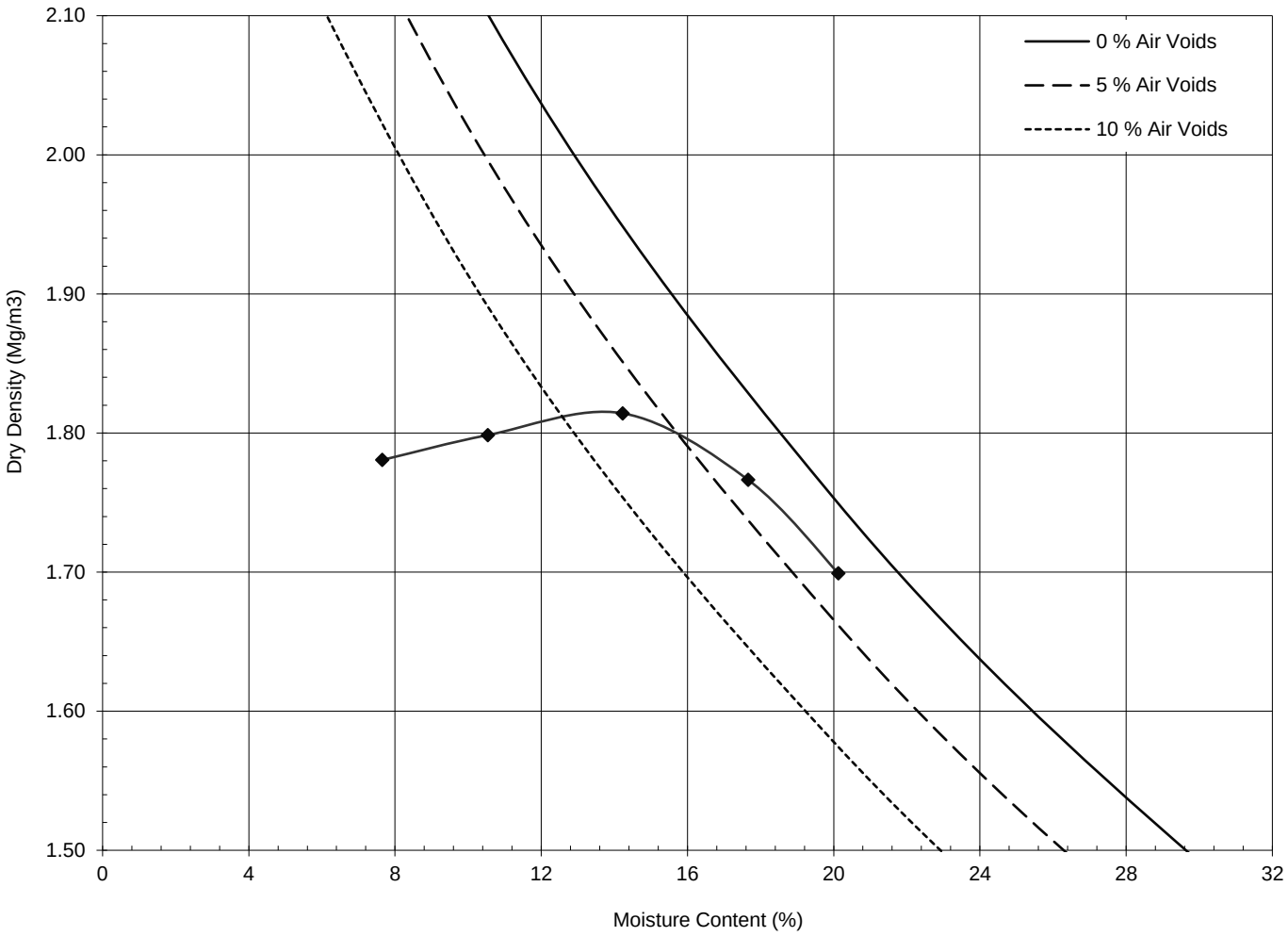
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

DRY DENSITY/MOISTURE CONTENT RELATIONSHIP

BS. 1377 : Part 4 : 1990 : 3

CLIENT	HYDROCK	BH/TP No.	TP532
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
DESCRIPTION	Reddish brown slightly sandy CLAY	SAMPLE DEPTH (m)	1.50
		SPECIMEN DEPTH (m)	1.50



test method		3.5.4.1 4.5kg dynamic compaction - 1L mould			
preparation procedure		3.2.4.1 (grading zone 1)			
sample preparation		C R			
proportion retained on 37.5mm sieve	%	0	initial moisture content	%	18
proportion retained on 20mm sieve	%	0	maximum dry density	(Mg/m3)	1.81
particle density	(Mg/m3)	2.7	optimum moisture content	%	14

remarks

# denotes particle density has been assigned an assumed value

C denotes sample has been chopped to pass 20mm sieve

S denotes sample has been shredded to pass 20mm sieve

R denotes sample material has been recycled between/for points

CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

CHALK CRUSHING VALUE (CCV)

BS.1377 : Part 4 : 1990 : 6

CLIENT HYDROCK

SITE FORT HALSTEAD

borehole /trial pit no.	sample no./type	sample depth (m)	specimen depth (m)	original fraction >10mm (%)	nmc & smc* (%)	CCV	average CCV	description and remarks
TP526	B	1.20	1.20	54	28.0	3.3 3.6 3.5 3.5	3.5	Off white CHALK #
TP527	B	1.50	1.50	28	21.1	3.3 3.1 3.3 3.1	3.2	Off white CHALK #
TP535	B	2.20	2.20	92	28.1	3.3 3.0 3.3 3.3 3.4 3.2	3.3	Off white CHALK
TP537	B	3.30	3.30	0	24.1	3.3 3.6 3.5 3.4 3.4 3.6	3.5	Off white CHALK
TP543	B	0.60	0.60	60	28.2	3.8 3.6 3.6 3.7	3.6	Off white CHALK #
TP556	B	0.50	0.50	63	26.4	3.3 3.2 3.4 3.2	3.3	Off white CHALK #

general remarks:

test carried out at natural moisture content unless specified otherwise

# denotes sample tested is smaller than that which is recommended in accordance with BS1377

moisture contents:-

(a) natural moisture content determined in accordance with BS1377:Part 2:1990:3.2

(b) saturation moisture content (* if required) determined in accordance with BS1377:Part 2:1990:3.3

CONTRACT	CHECKED
32218	**SR**

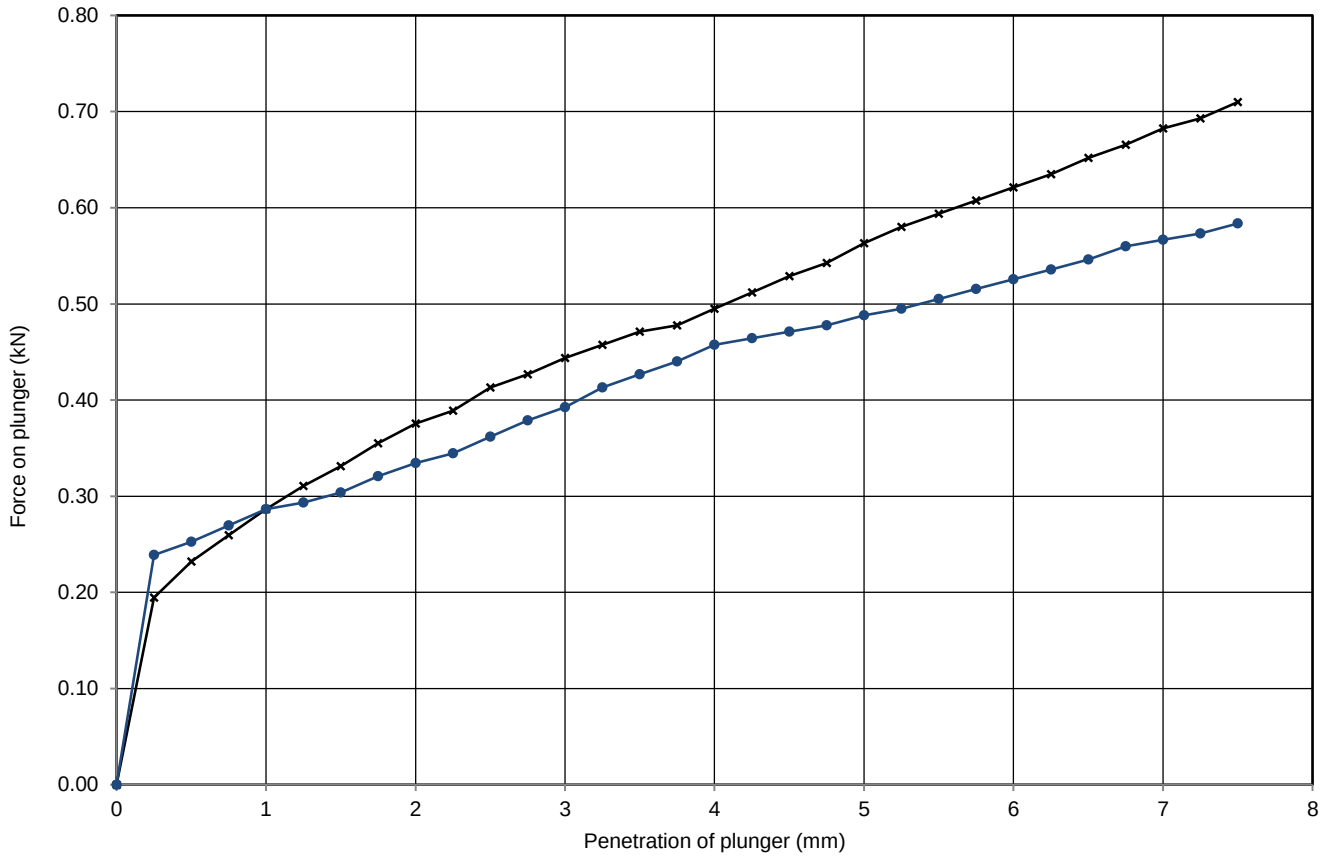
Geotechnical Engineering Ltd, Centurion House, Olympus Park, Quedgeley, Gloucester. GL2 4NF. Tel. 01452 527743 32218.GPJ 31/08/2016 11:37:53

Geotechnical Engineering Limited

CALIFORNIA BEARING RATIO

BS. 1377 : Part 4 : 1990 : 7

CLIENT	HYDROCK	BH/TP No.	TP508
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	0.60
DESCRIPTION	Orangish brown slightly sandy gravelly CLAY	SPECIMEN DEPTH (m	0.60



sample preparation:	Dynamic compaction - 2.5kg rammer with specified effort		
proportion > 20mm removed (%)	16.6	sample condition	Unsoaked
surcharge mass (kg)	10	amount of swell (mm)	
INITIAL CONDITIONS		FINAL CONDITIONS	
moisture content (%)	24	moisture content top (%)	25
bulk density (Mg/m3)	4.18	moisture content base (%)	25
dry density (Mg/m3)	3.37		

remarks

results

CBR value top (%)	3.1
CBR value base (%)	2.7
average CBR value (%)	2.90

Top

Base

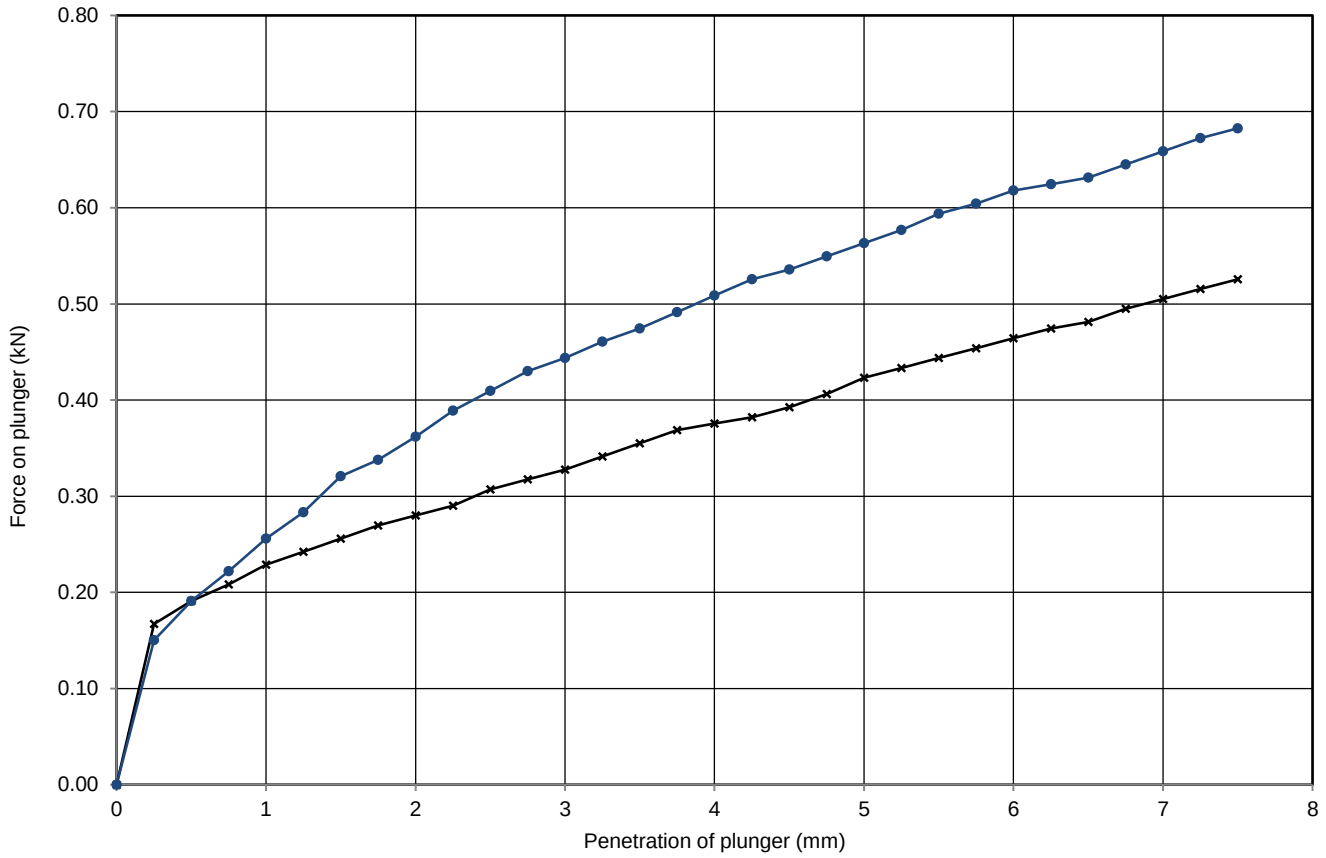
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

CALIFORNIA BEARING RATIO

BS. 1377 : Part 4 : 1990 : 7

CLIENT	HYDROCK	BH/TP No.	TP509
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	0.80
DESCRIPTION	Orangish brown slightly sandy slightly gravelly CLAY	SPECIMEN DEPTH (m	0.80



sample preparation:	Dynamic compaction - 2.5kg rammer with specified effort		
proportion > 20mm removed (%)	9.4	sample condition	Unsoaked
surcharge mass (kg)	10	amount of swell (mm)	
INITIAL CONDITIONS		FINAL CONDITIONS	
moisture content (%)	25	moisture content top (%)	26
bulk density (Mg/m3)	1.97	moisture content base (%)	25
dry density (Mg/m3)	1.57		

remarks

results

CBR value top (%)	2.3
CBR value base (%)	3.1
average CBR value (%)	

Top

Base

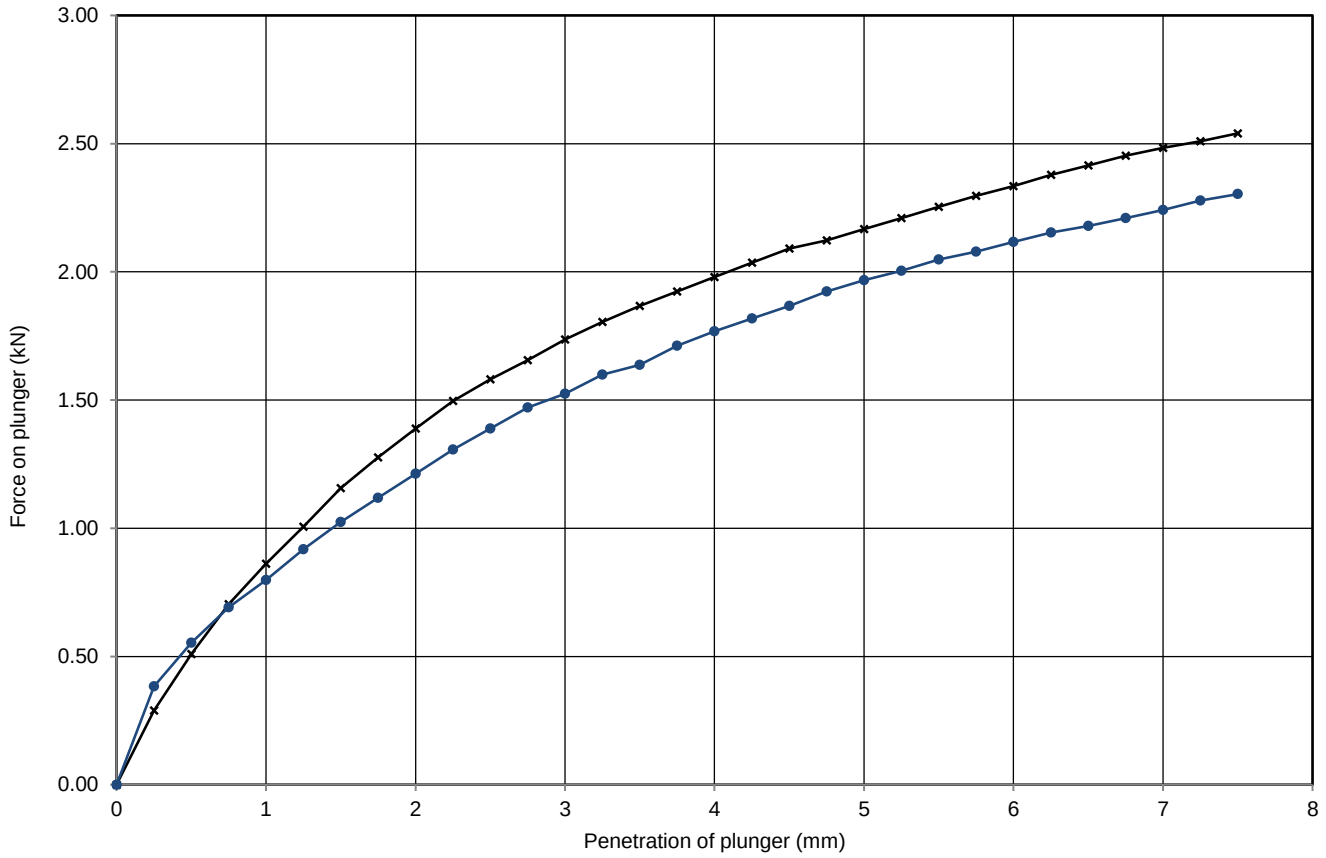
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

CALIFORNIA BEARING RATIO

BS. 1377 : Part 4 : 1990 : 7

CLIENT	HYDROCK	BH/TP No.	TP521
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	0.80
DESCRIPTION	Reddish brown slightly sandy slightly gravelly CLAY	SPECIMEN DEPTH (m	0.80



sample preparation:	Dynamic compaction - 2.5kg rammer with specified effort		
proportion > 20mm removed (%)	11.6	sample condition	Unsoaked
surcharge mass (kg)	10	amount of swell (mm)	
INITIAL CONDITIONS		FINAL CONDITIONS	
moisture content (%)	27	moisture content top (%)	27
bulk density (Mg/m3)	1.90	moisture content base (%)	26
dry density (Mg/m3)	1.50		

remarks

results

CBR value top (%)	12
CBR value base (%)	11
average CBR value (%)	11.00

Top

Base

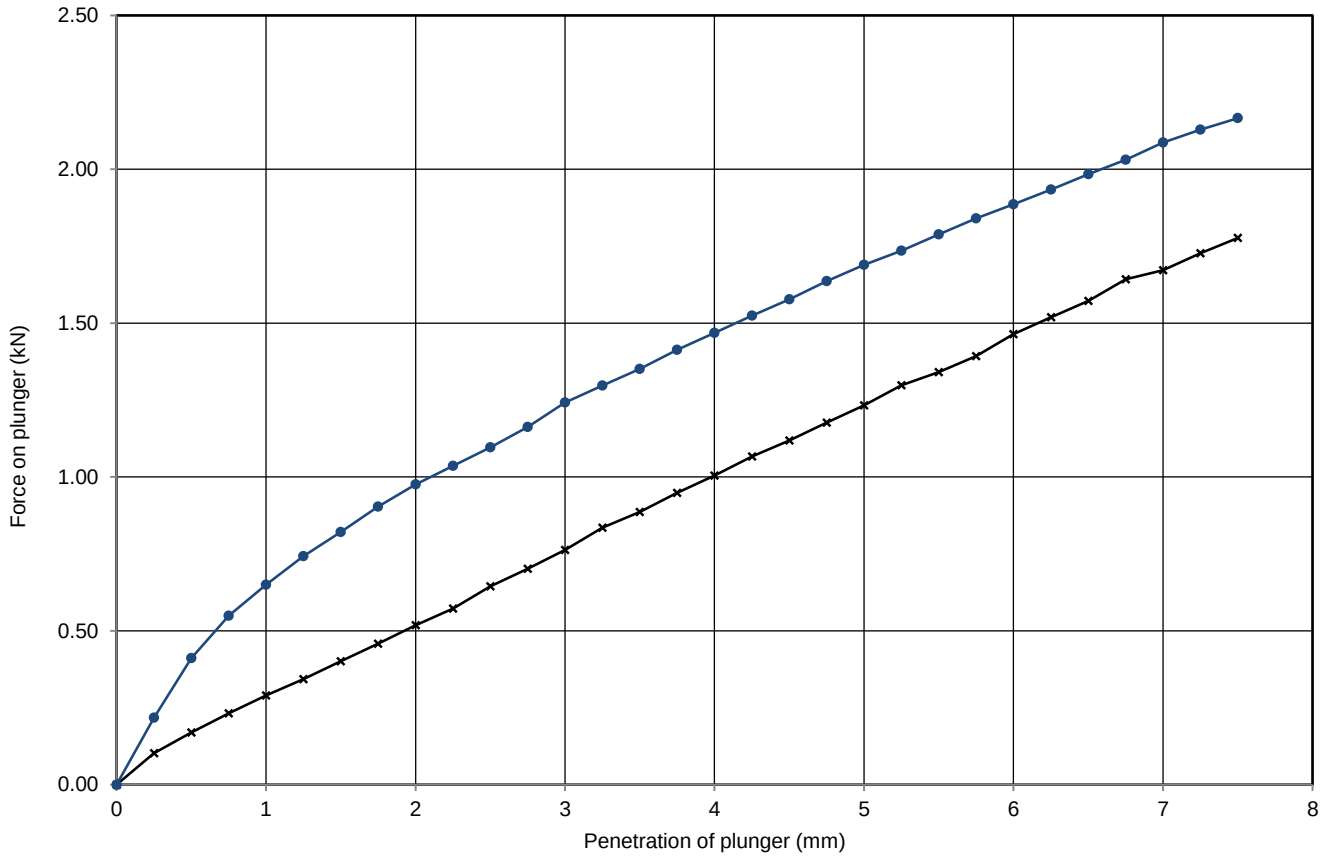
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

CALIFORNIA BEARING RATIO

BS. 1377 : Part 4 : 1990 : 7

CLIENT	HYDROCK	BH/TP No.	TP523
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	0.40
DESCRIPTION	Brown slightly sandy slightly gravelly CLAY	SPECIMEN DEPTH (m	0.40



sample preparation:	Dynamic compaction - 2.5kg rammer with specified effort		
proportion > 20mm removed (%)	22.6	sample condition	Unsoaked
surcharge mass (kg)	10	amount of swell (mm)	
INITIAL CONDITIONS		FINAL CONDITIONS	
moisture content (%)	16	moisture content top (%)	19
bulk density (Mg/m3)	2.01	moisture content base (%)	18
dry density (Mg/m3)	1.73		

remarks

results

CBR value top (%)	6.2
CBR value base (%)	8.4
average CBR value (%)	

Top

Base

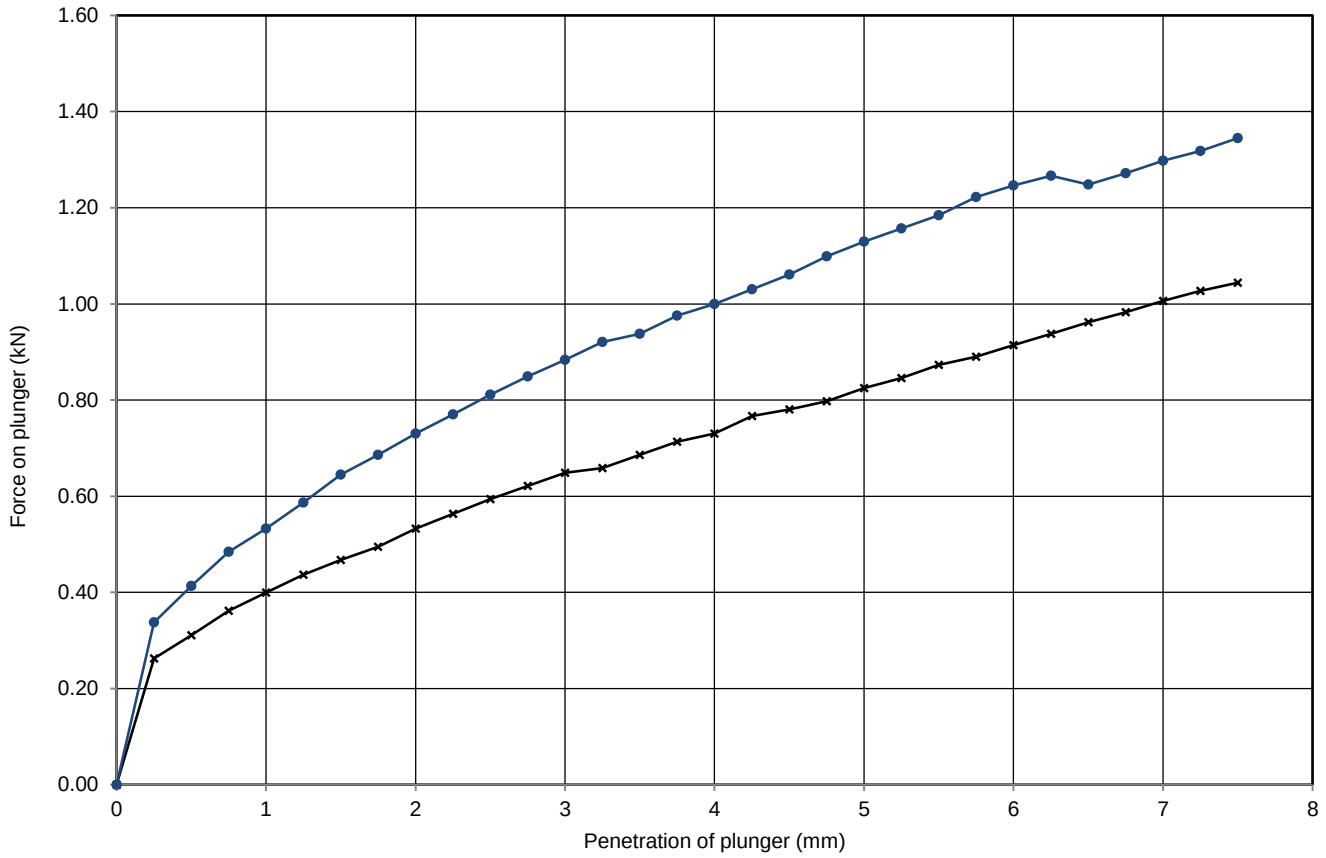
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

CALIFORNIA BEARING RATIO

BS. 1377 : Part 4 : 1990 : 7

CLIENT	HYDROCK	BH/TP No.	TP529
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	0.50
DESCRIPTION	Brown slightly sandy slightly gravelly CLAY	SPECIMEN DEPTH (m	0.50



sample preparation:	Dynamic compaction - 2.5kg rammer with specified effort		
proportion > 20mm removed (%)	12.7	sample condition	Unsoaked
surcharge mass (kg)	10	amount of swell (mm)	
INITIAL CONDITIONS		FINAL CONDITIONS	
moisture content (%)	17	moisture content top (%)	20
bulk density (Mg/m3)	1.98	moisture content base (%)	19
dry density (Mg/m3)	1.70		

remarks

results

CBR value top (%)	4.5
CBR value base (%)	6.1
average CBR value (%)	

Top

Base

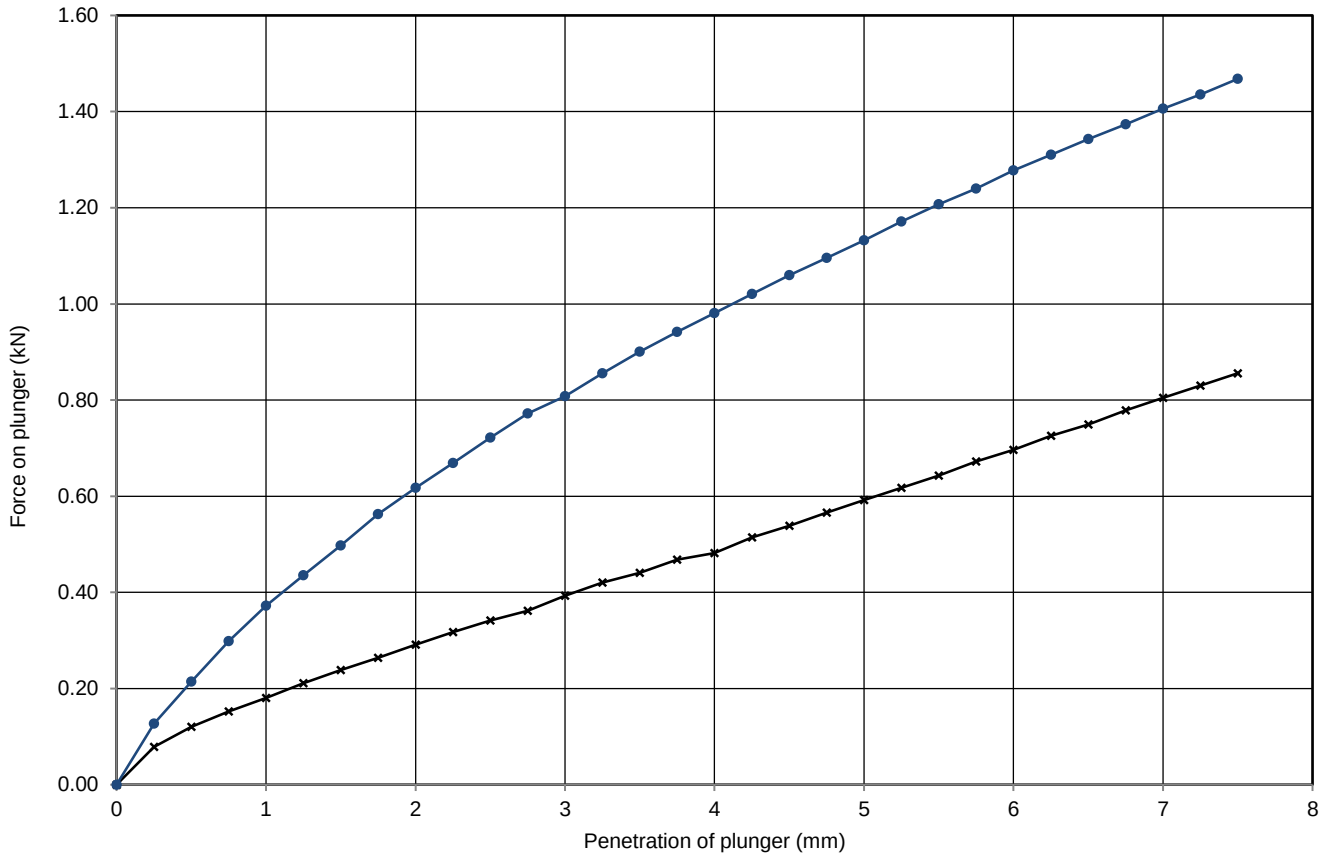
CONTRACT	CHECKED
32218	**SR**

Geotechnical Engineering Limited

CALIFORNIA BEARING RATIO

BS. 1377 : Part 4 : 1990 : 7

CLIENT	HYDROCK	BH/TP No.	TP533
SITE	FORT HALSTEAD	SAMPLE No./TYPE	B
		SAMPLE DEPTH (m)	1.50
DESCRIPTION	Light brown sandy CLAY	SPECIMEN DEPTH (m	1.50



sample preparation:	Dynamic compaction - 2.5kg rammer with specified effort		
proportion > 20mm removed (%)	0.0	sample condition	Unsoaked
surcharge mass (kg)	10	amount of swell (mm)	
INITIAL CONDITIONS		FINAL CONDITIONS	
moisture content (%)	21	moisture content top (%)	22
bulk density (Mg/m3)	1.93	moisture content base (%)	22
dry density (Mg/m3)	1.59		

remarks

results

CBR value top (%)	3
CBR value base (%)	5.7
average CBR value (%)	

Top

Base

CONTRACT	CHECKED
32218	**SR**

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

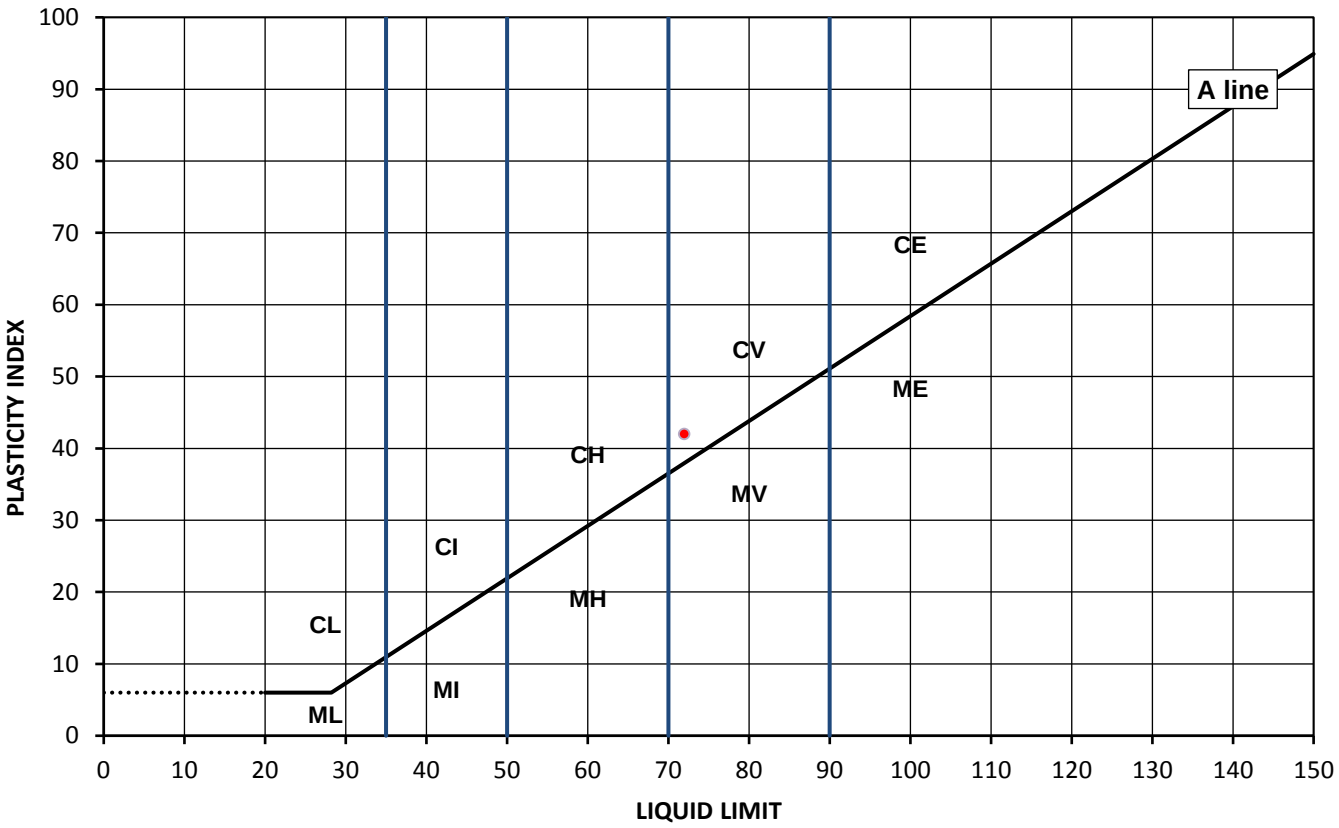
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112598	Depth Top [m]:	1.40
Hole No.:	BH601	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Yellowish brown slightly gravelly CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
25	72	30	42	90



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

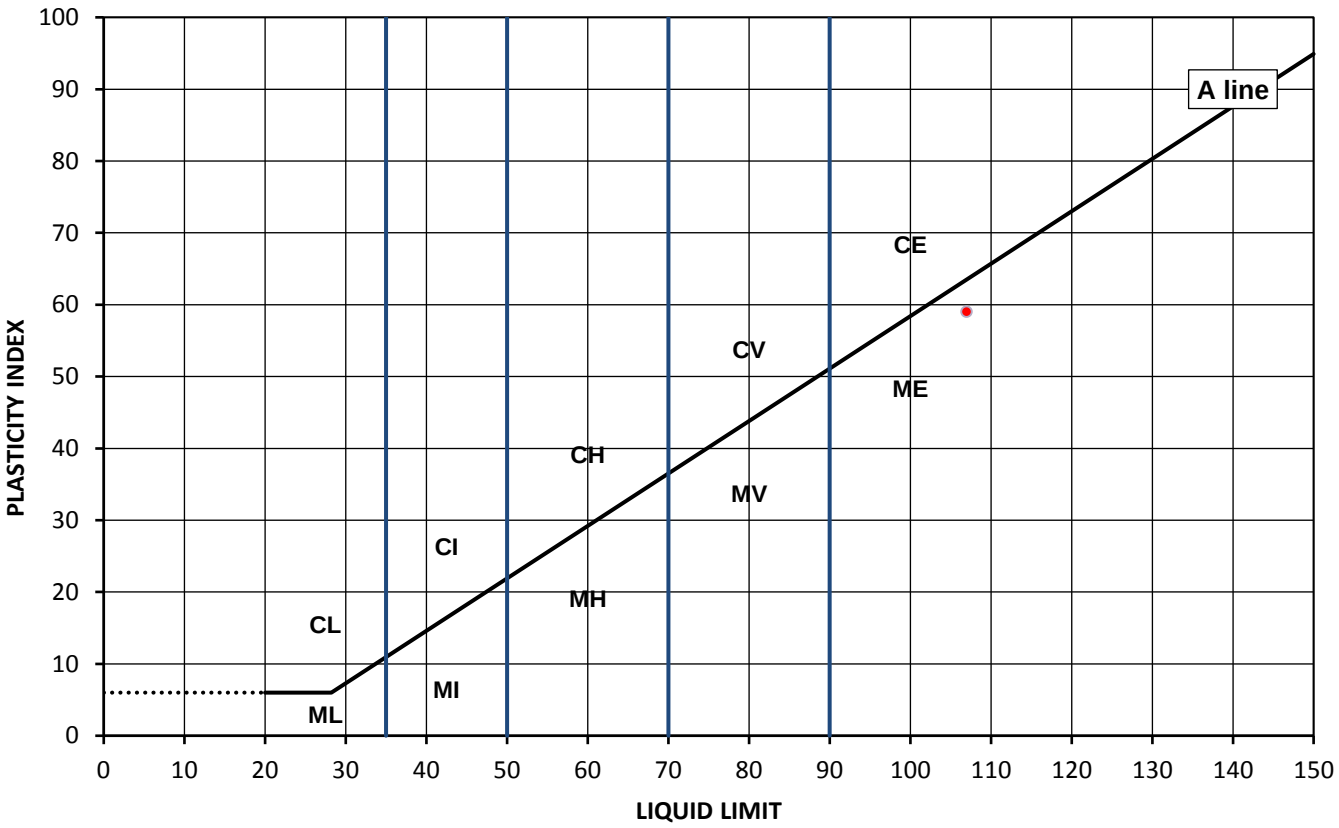
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112599	Depth Top [m]:	2.40
Hole No.:	BH601	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Brown slightly gravelly slightly organic CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
29	107	48	59	95



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

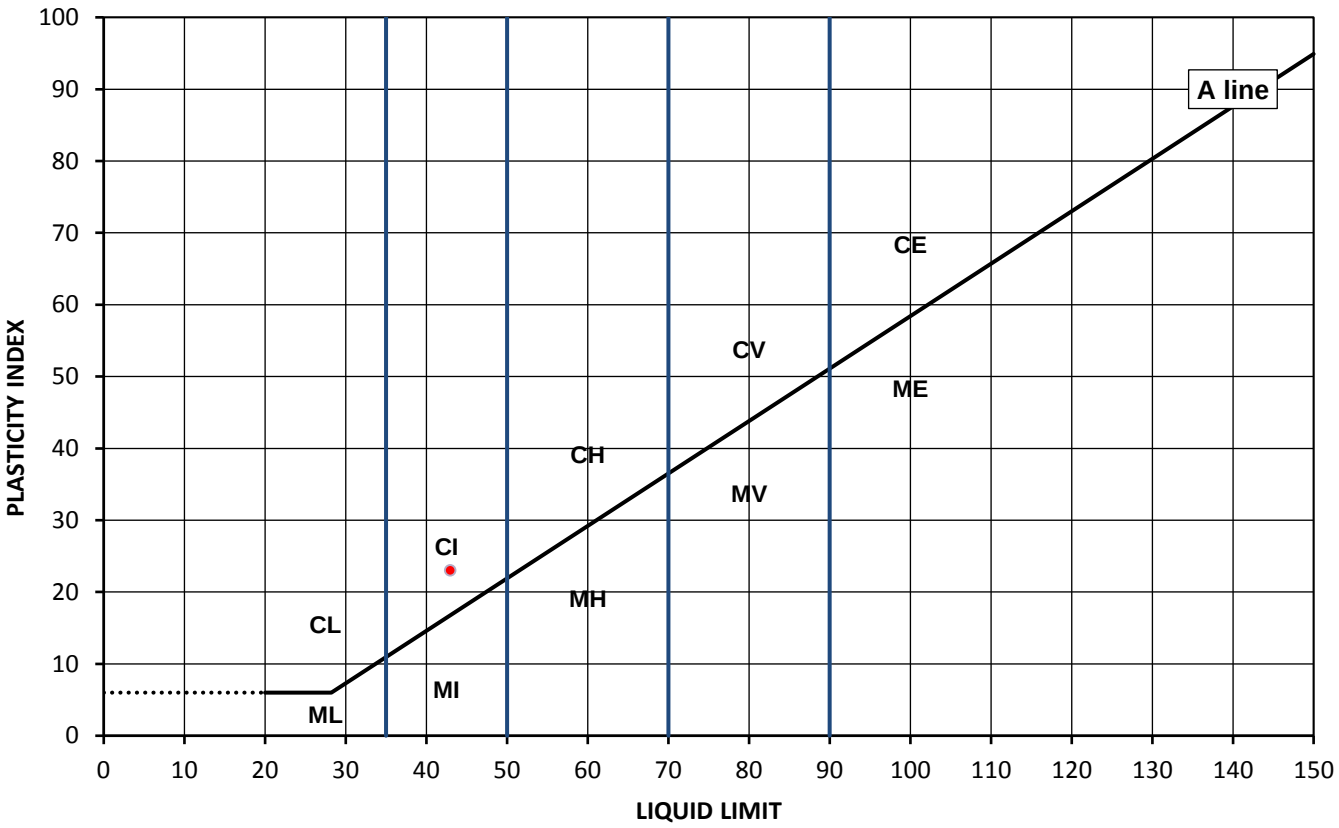
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112600	Depth Top [m]:	1.10
Hole No.:	BH602	Depth Base [m]:	1.40
Sample Reference:	Not Given	Sample Type:	B
Soil Description:	Yellowish brown gravelly sandy CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
20	43	20	23	62



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

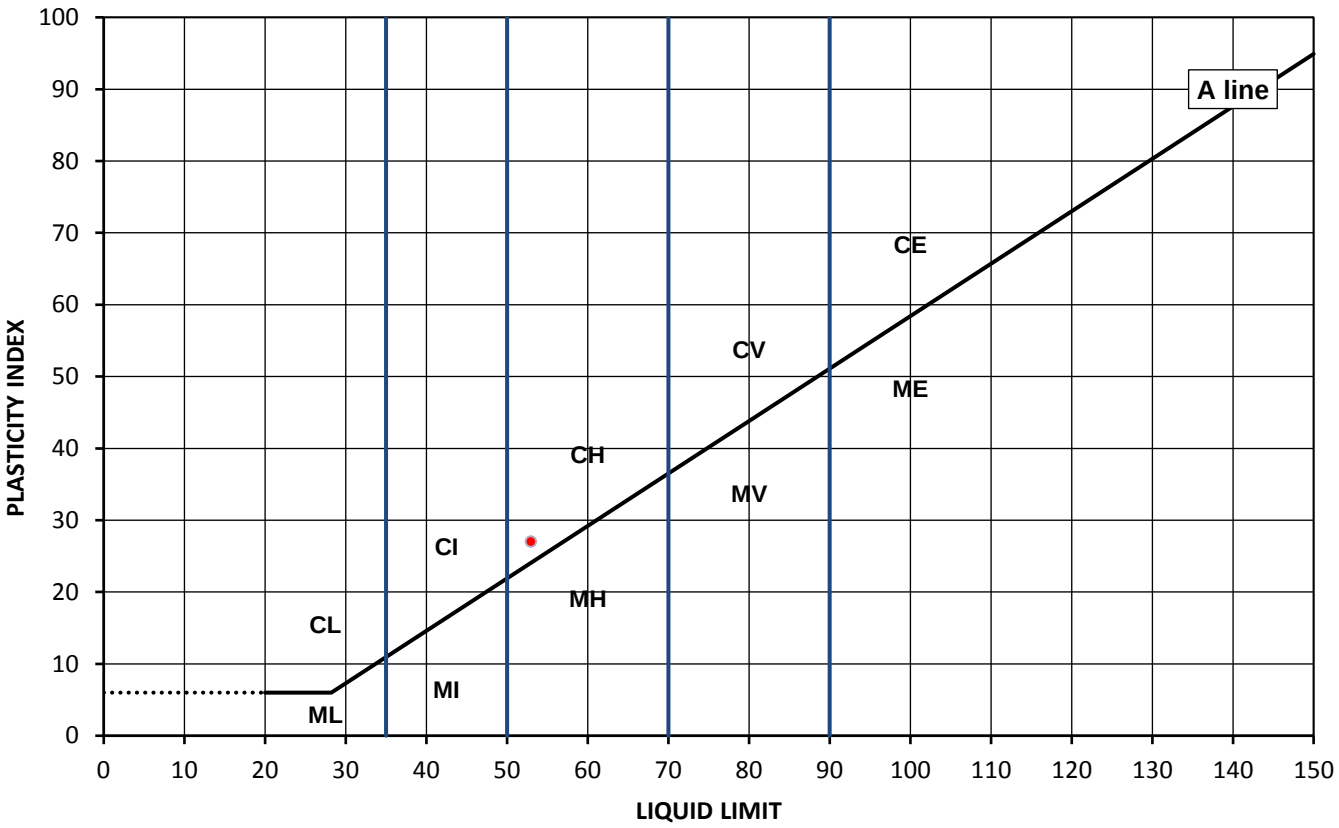
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112601	Depth Top [m]:	1.00
Hole No.:	BH603	Depth Base [m]:	1.40
Sample Reference:	Not Given	Sample Type:	B
Soil Description:	Yellowish brown slightly gravelly slightly sandy CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
30	53	26	27	69



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

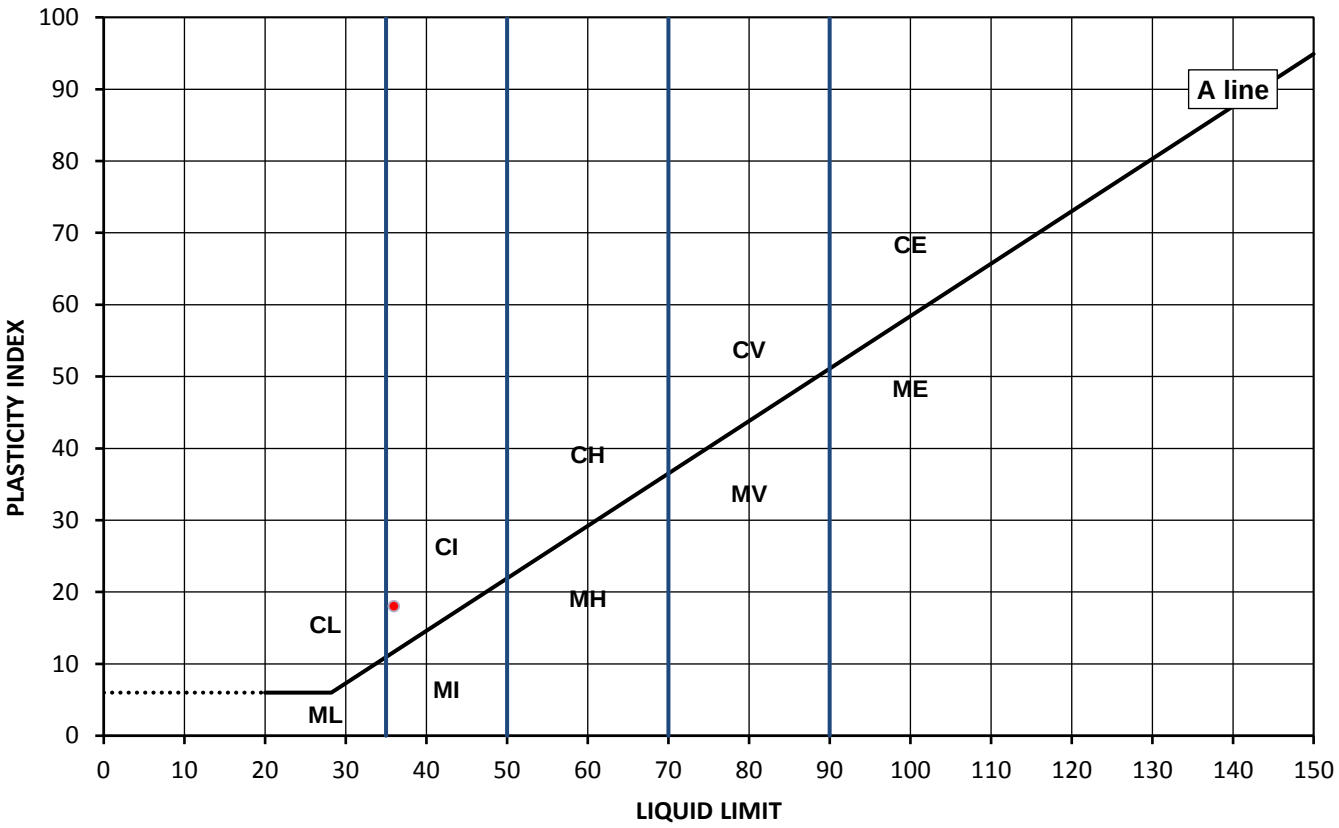
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112602	Depth Top [m]:	1.50
Hole No.:	BH603	Depth Base [m]:	2.00
Sample Reference:	Not Given	Sample Type:	B
Soil Description:	Orangish brown sandy CLAY		
Sample Preparation:	Tested in natural condition		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
19	36	18	18	100



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

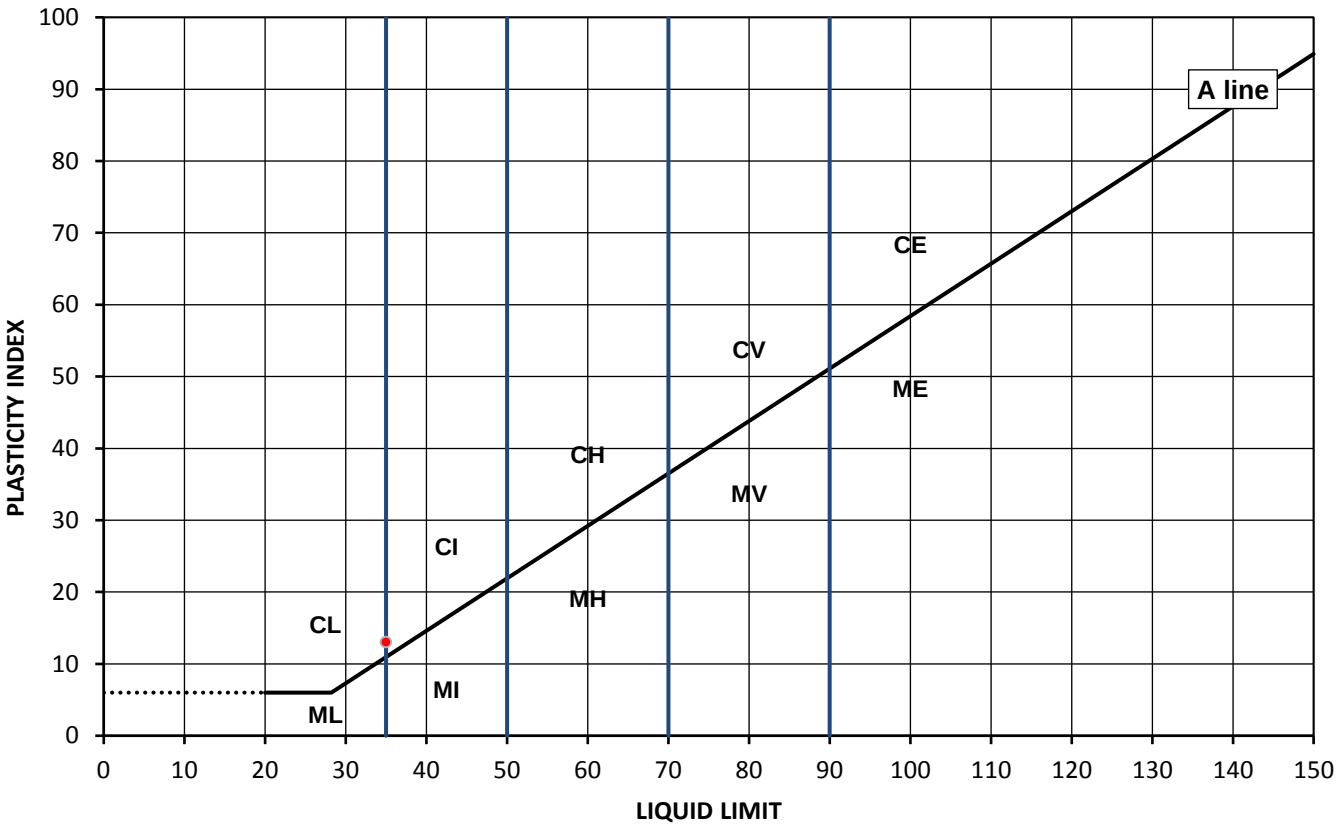
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112604	Depth Top [m]:	4.40
Hole No.:	BH603	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Yellow sandy CLAY		
Sample Preparation:	Tested in natural condition		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
13	35	22	13	100



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

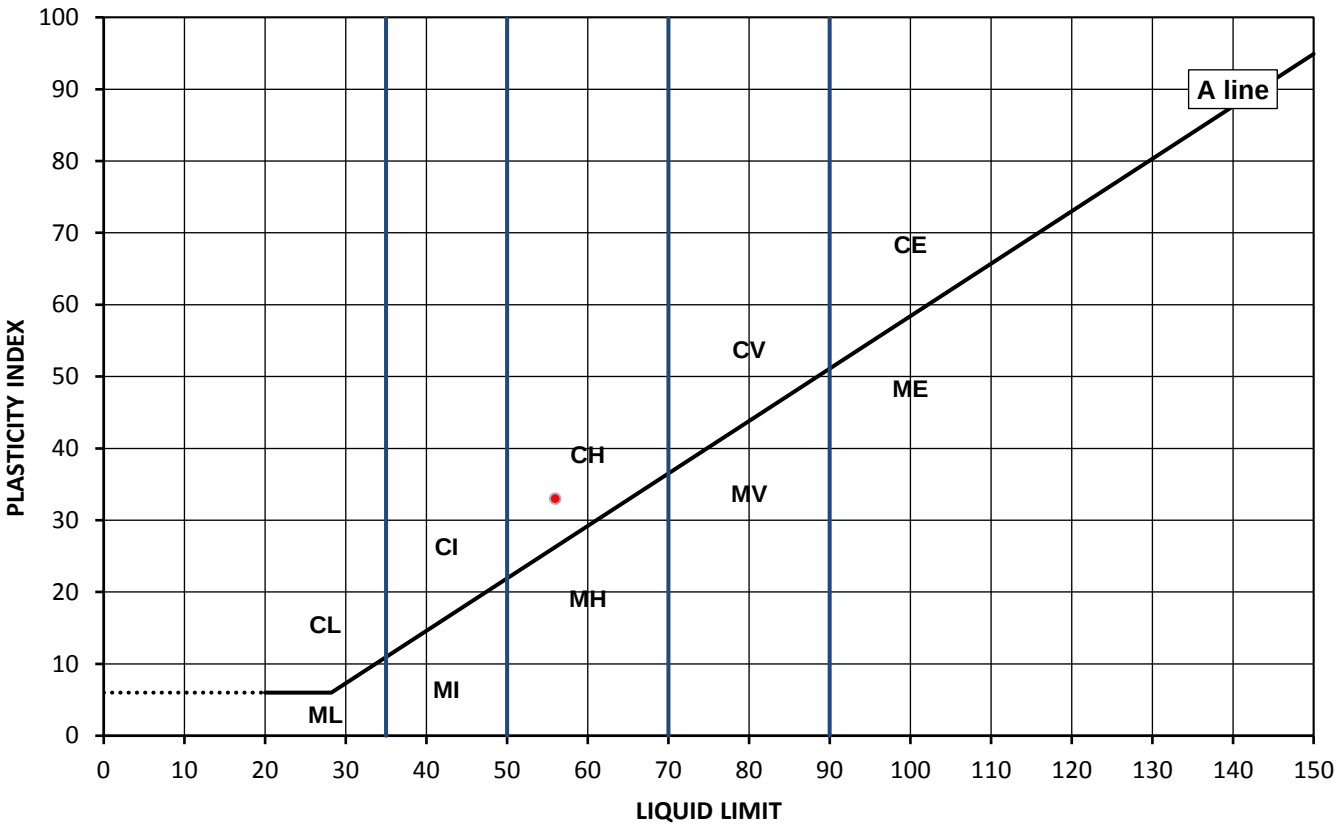
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112606	Depth Top [m]:	2.90
Hole No.:	BH604	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Orangish brown slightly sandy CLAY		
Sample Preparation:	Tested in natural condition		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
22	56	23	33	100



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

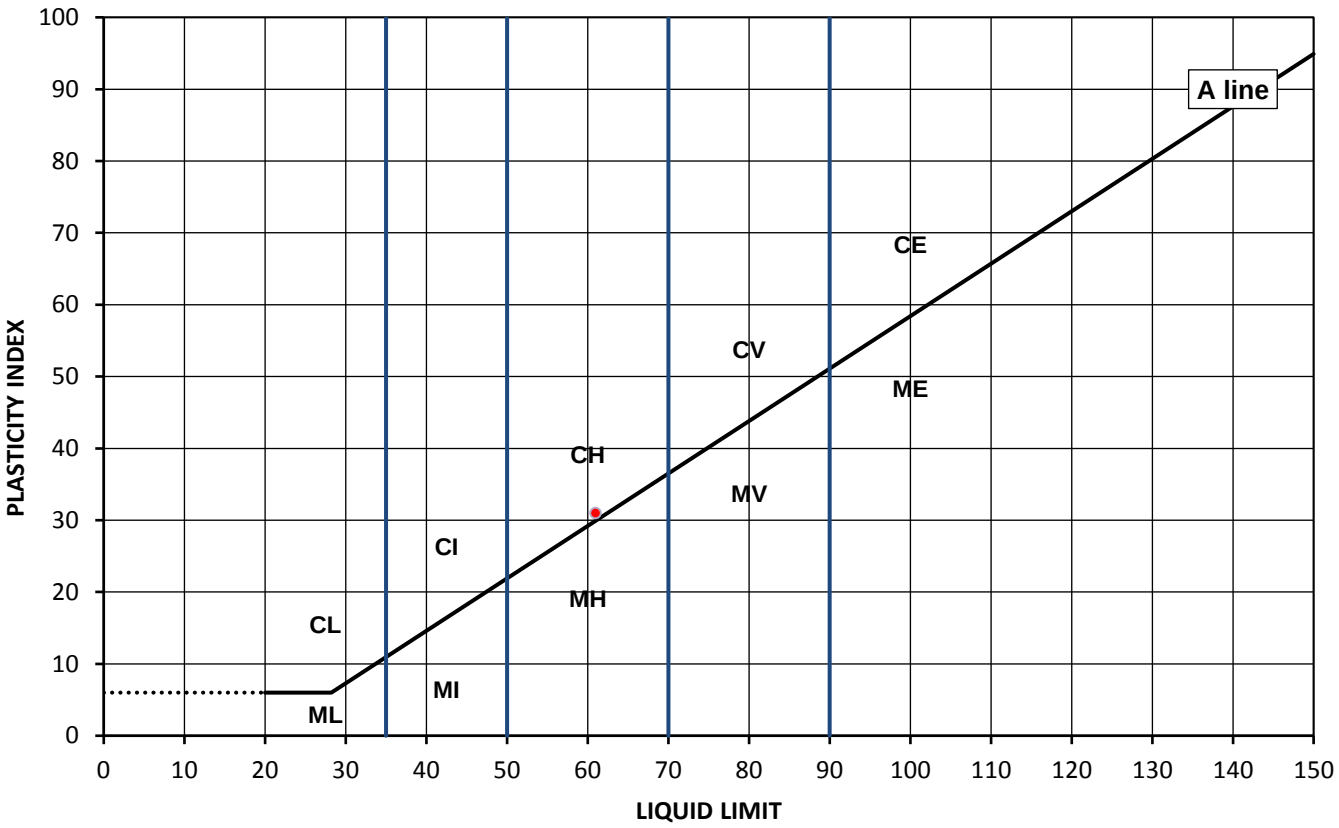
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112607	Depth Top [m]:	5.40
Hole No.:	BH604	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Yellowish brown slightly gravelly CLAY		
Sample Preparation:	Tested after >425um removed by hand		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
28	61	30	31	96



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

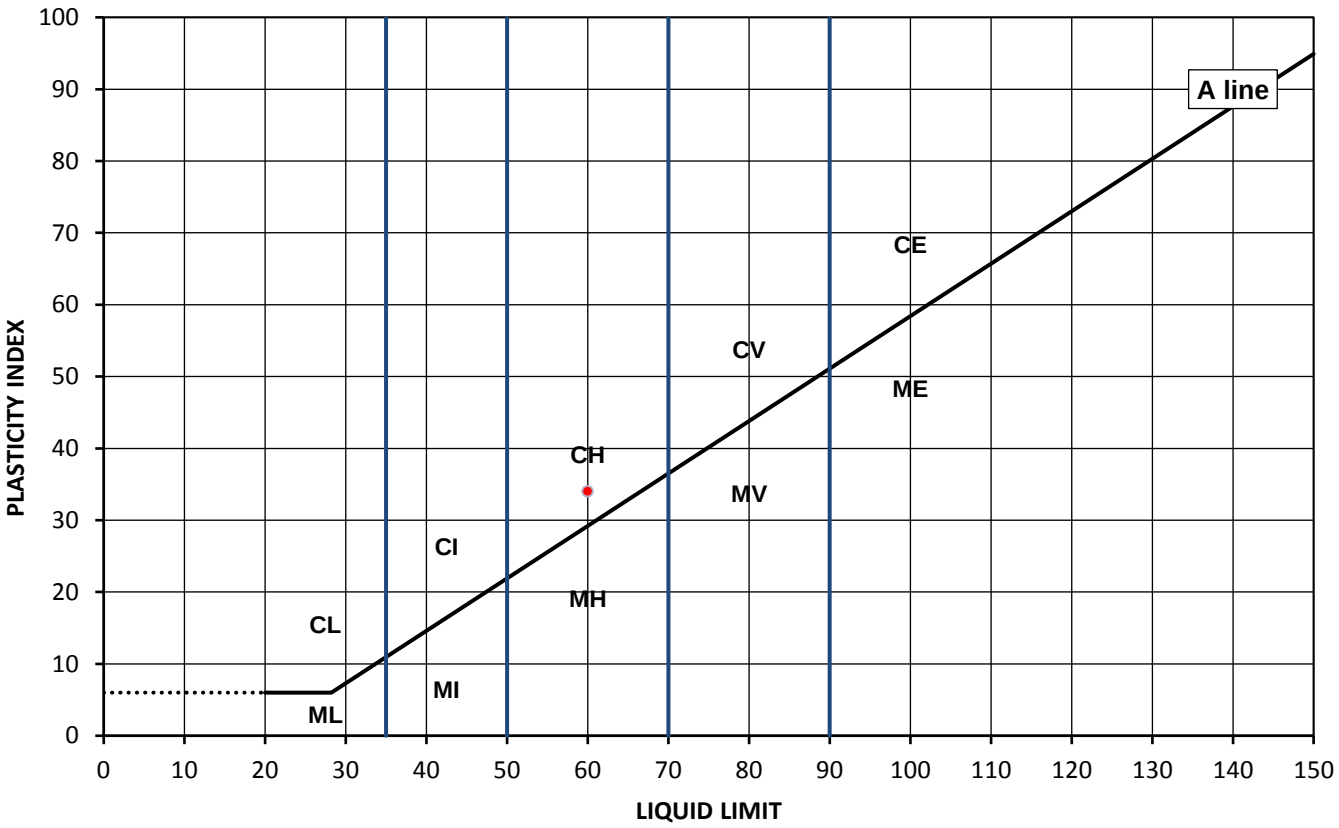
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112608	Depth Top [m]:	6.90
Hole No.:	BH604	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Light grey mottled brown CLAY		
Sample Preparation:	Tested in natural condition		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
22	60	26	34	100



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

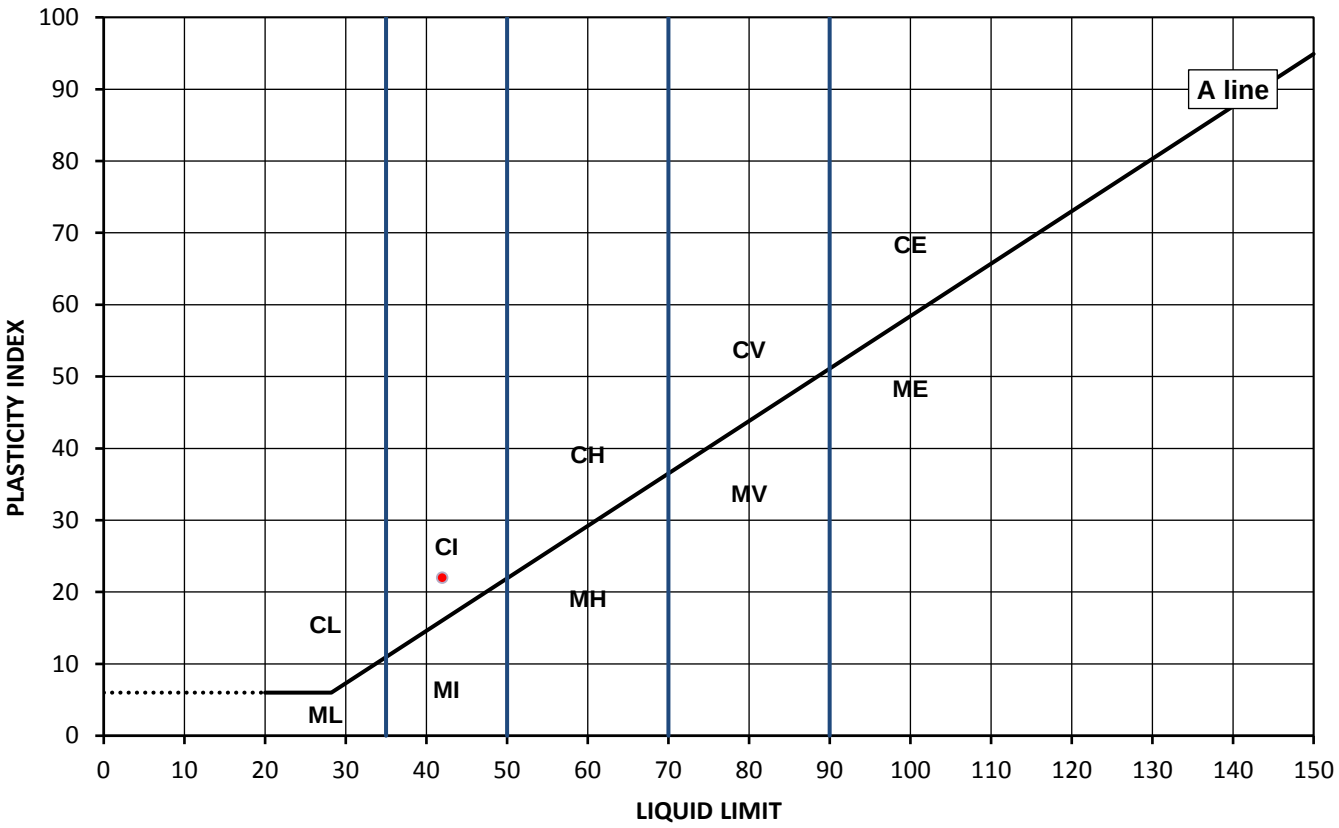
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112611	Depth Top [m]:	1.50
Hole No.:	BH605	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Brown slightly gravelly sandy CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
20	42	20	22	88



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

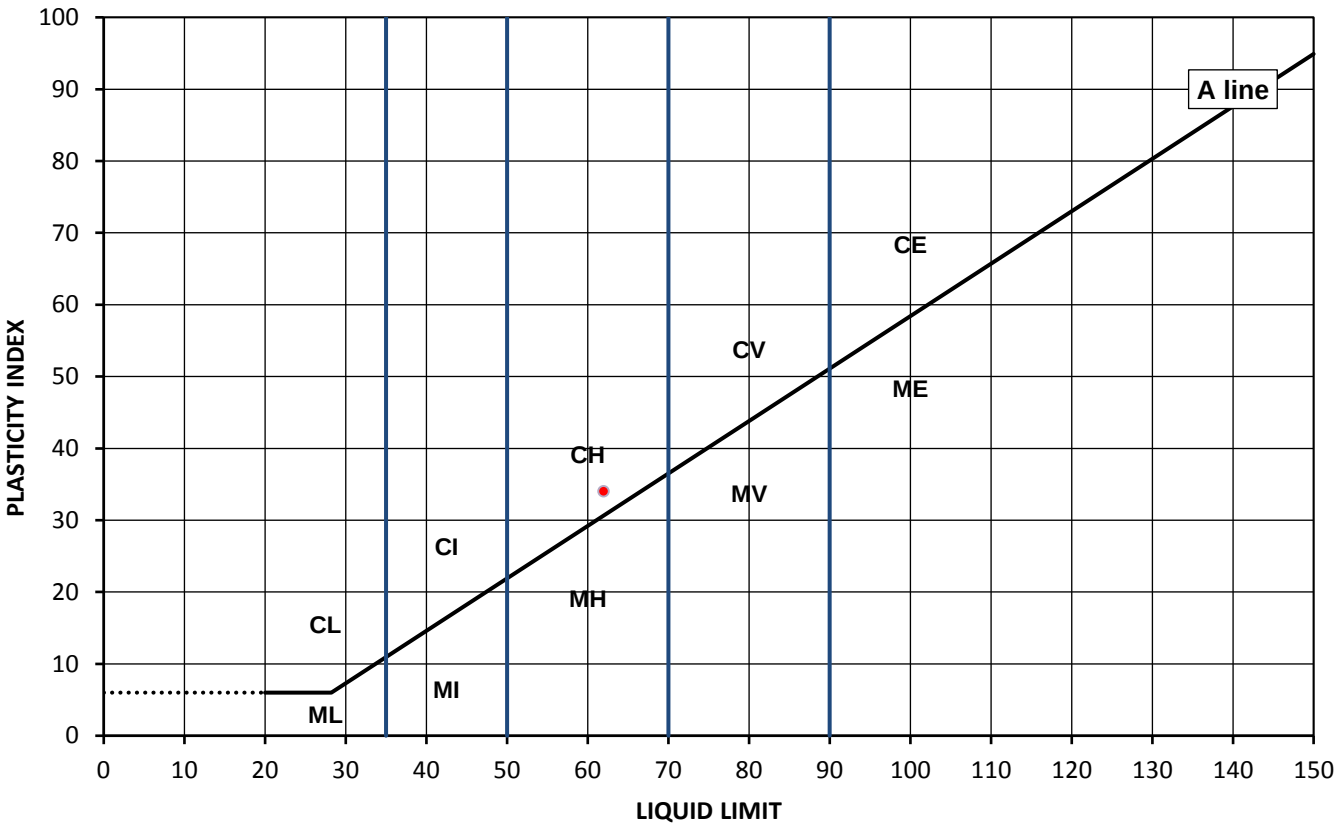
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112612	Depth Top [m]:	3.40
Hole No.:	BH605	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Orangish brown slightly gravelly CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
25	62	28	34	93



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

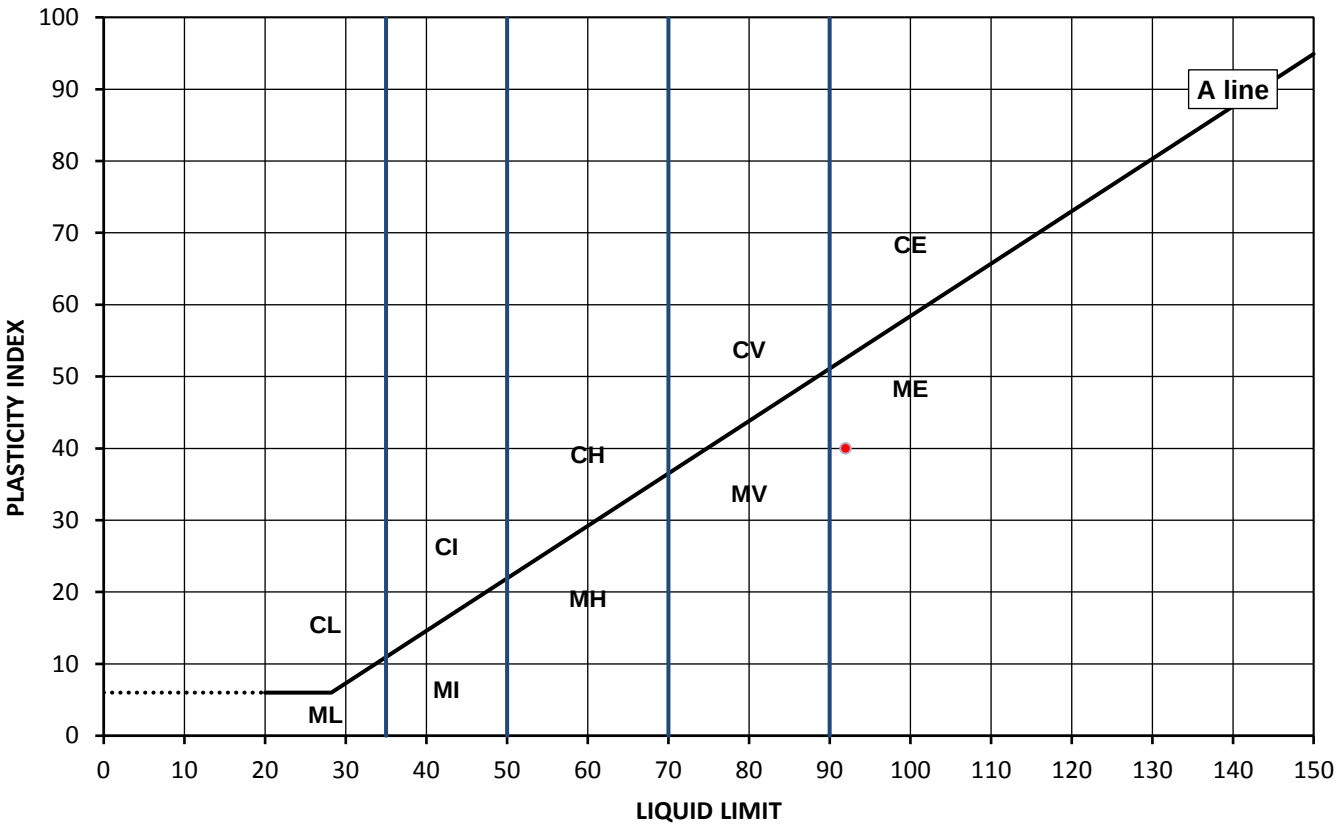
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112613	Depth Top [m]:	5.90
Hole No.:	BH605	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Orangish brown slightly gravelly slightly organic CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
43	92	52	40	96



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

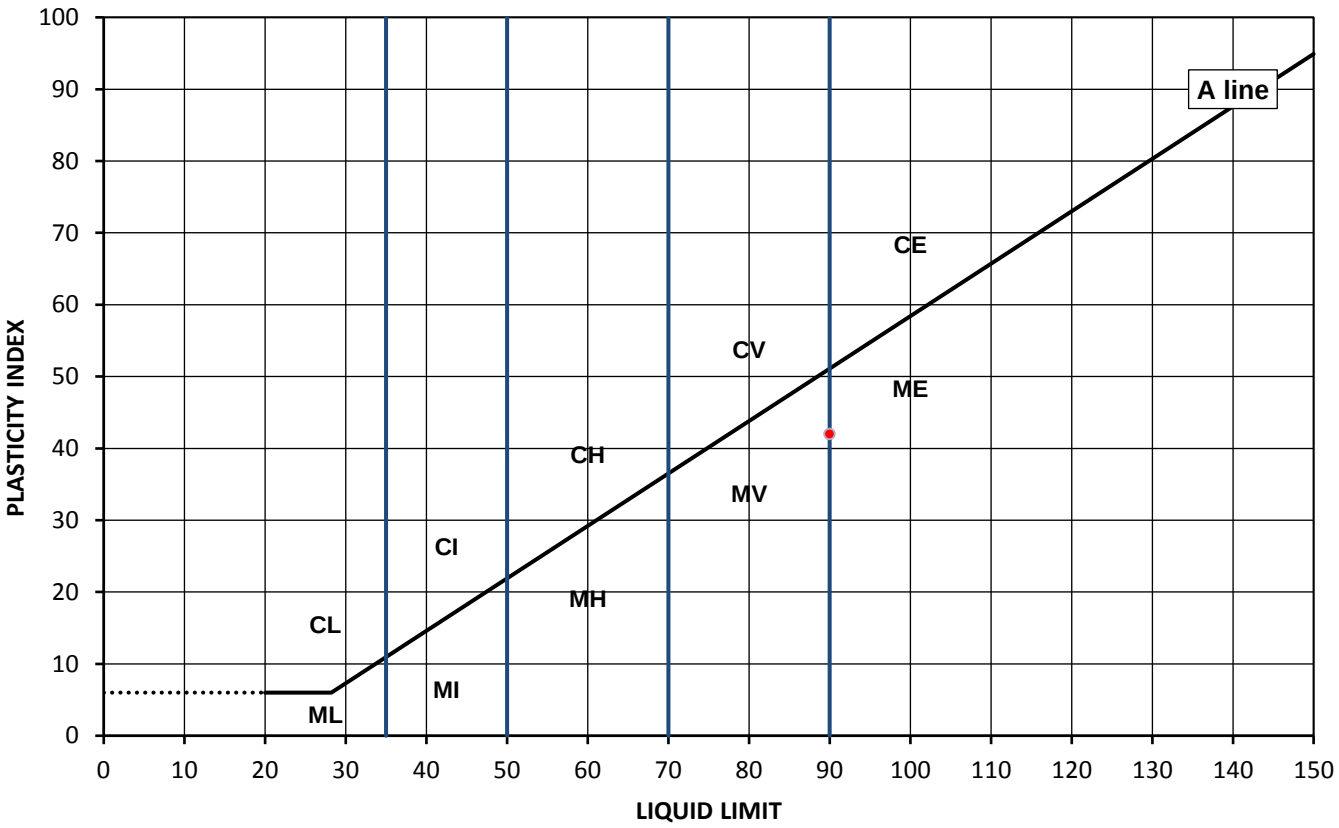
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112614	Depth Top [m]:	1.50
Hole No.:	BH606	Depth Base [m]:	2.00
Sample Reference:	Not Given	Sample Type:	B
Soil Description:	Yellowish brown slightly gravelly slightly organic CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
45	90	48	42	96



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

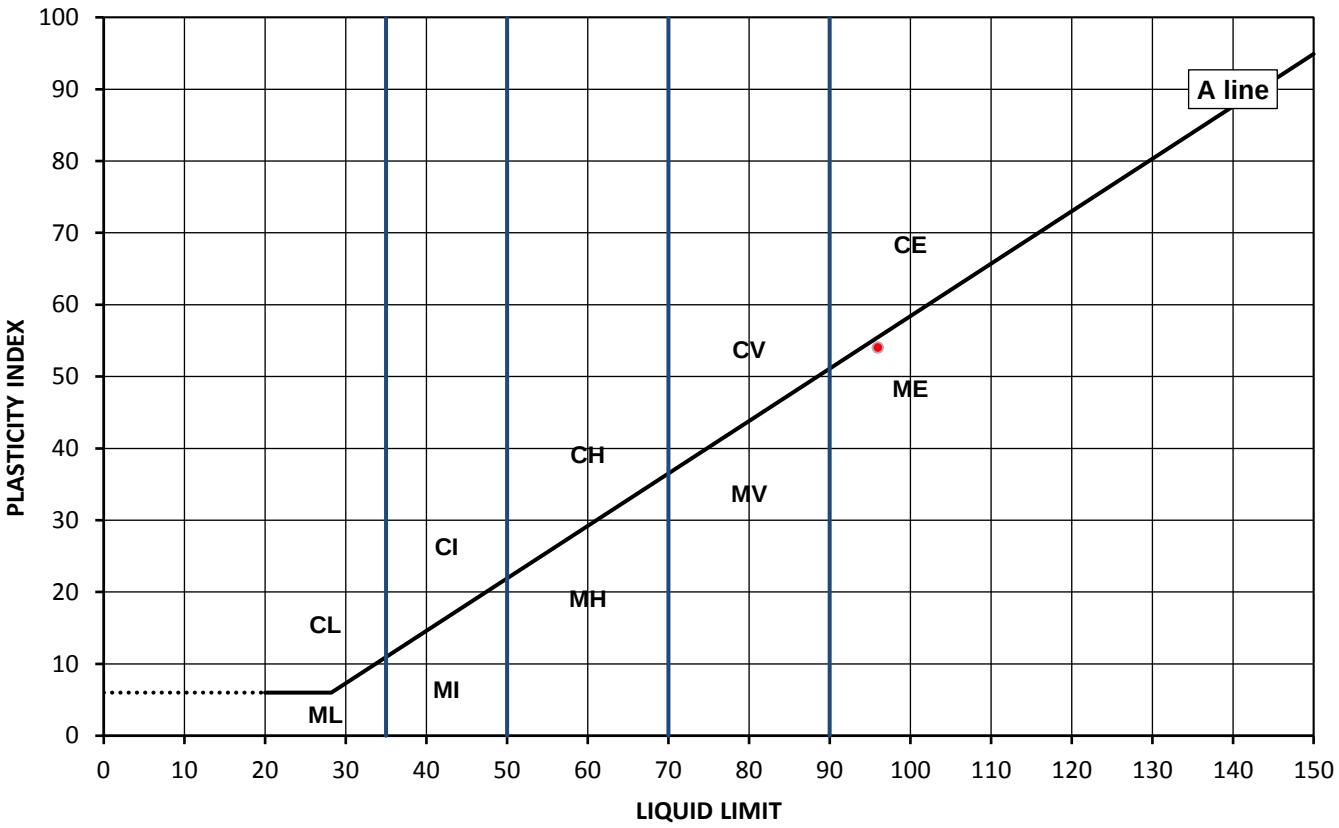
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112616	Depth Top [m]:	3.40
Hole No.:	BH606	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Yellowish brown slightly gravelly slightly organic CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
38	96	42	54	70



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

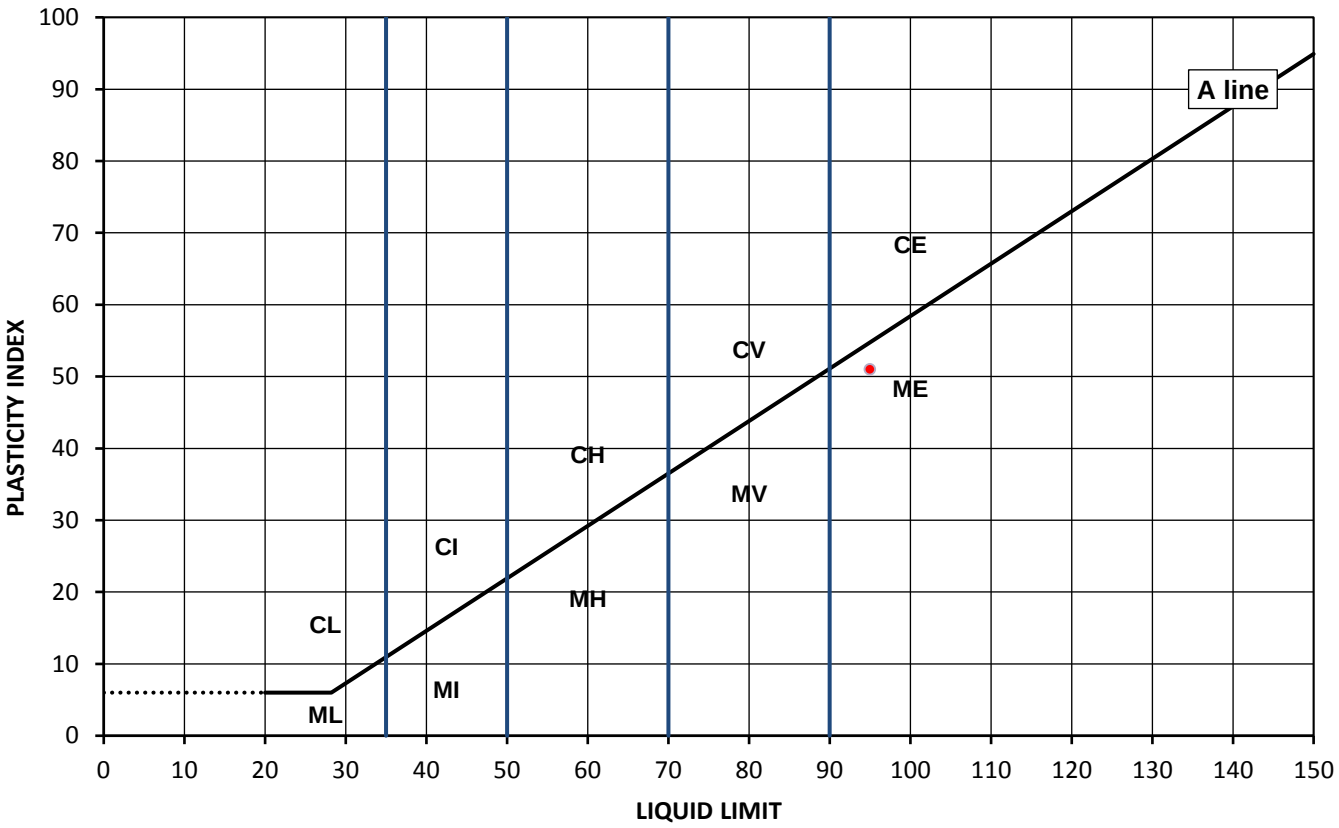
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112617	Depth Top [m]:	5.90
Hole No.:	BH606	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Brown slightly gravelly slightly organic CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
36	95	44	51	75



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

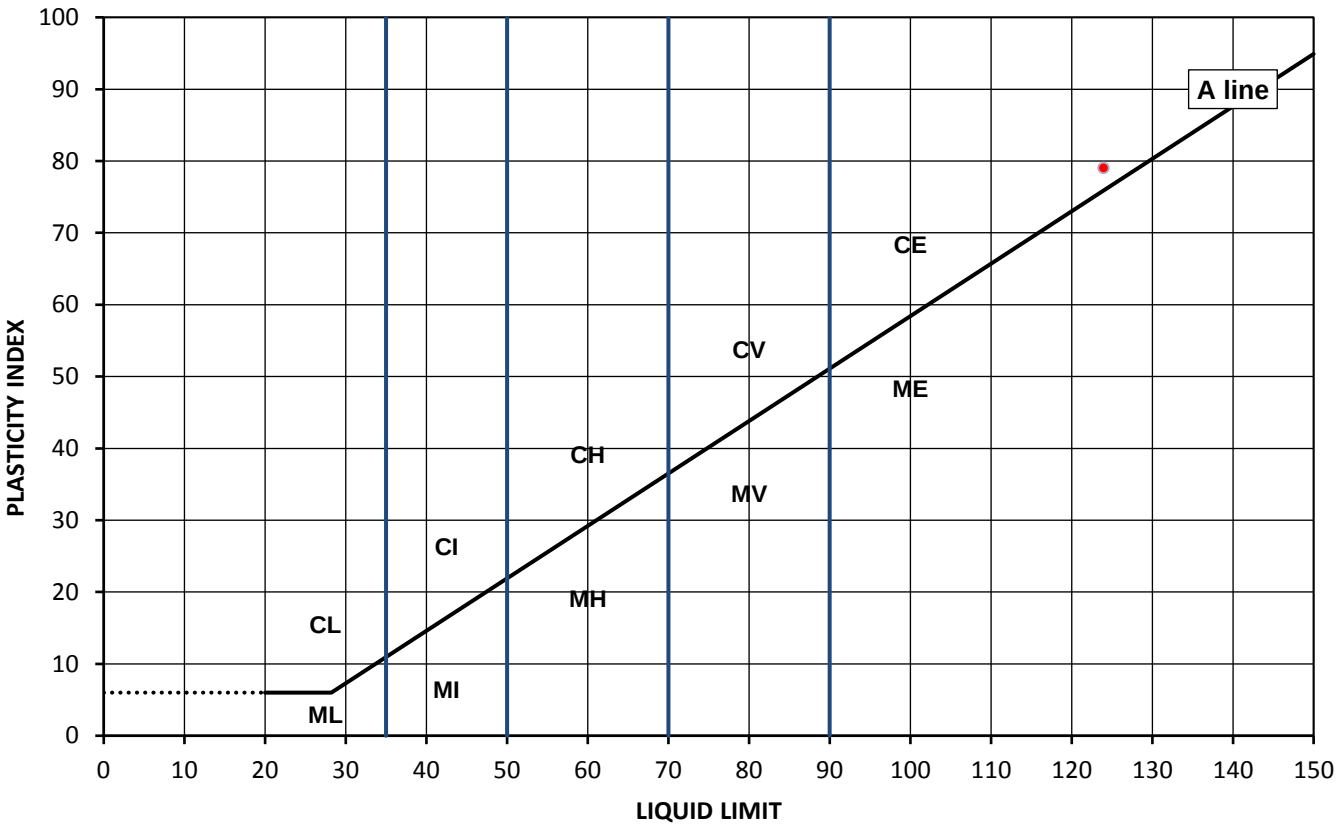
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112626	Depth Top [m]:	1.00
Hole No.:	TP607	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Orangish brown slightly organic CLAY		
Sample Preparation:	Tested in natural condition		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
53	124	45	79	100



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

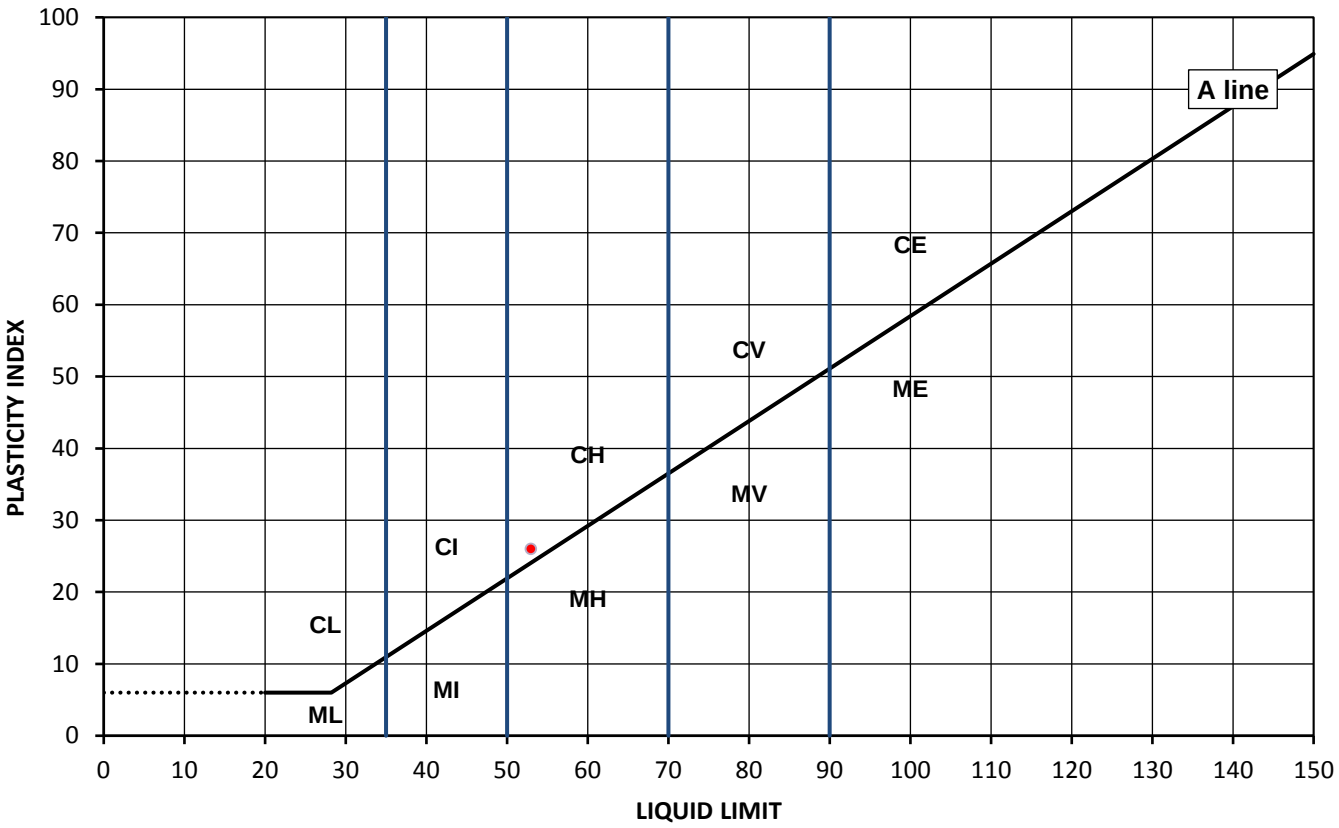
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112628	Depth Top [m]:	1.50
Hole No.:	TP608	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Brown slightly gravelly slightly sandy CLAY with fragments of chalk		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
24	53	27	26	89



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

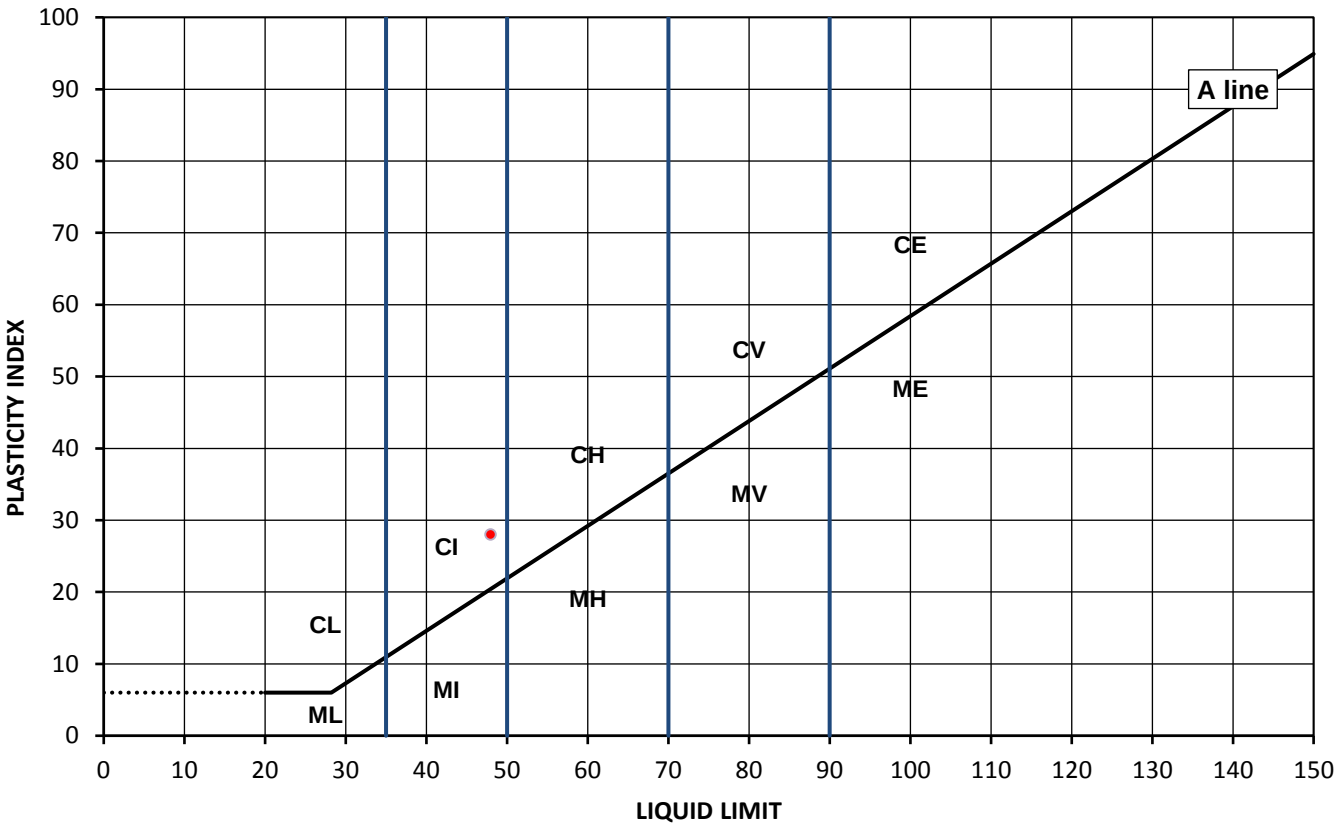
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112629	Depth Top [m]:	2.20
Hole No.:	TP608	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Yellowish brown slightly gravelly slightly sandy CLAY		
Sample Preparation:	Tested after >425um removed by hand		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
22	48	20	28	99



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

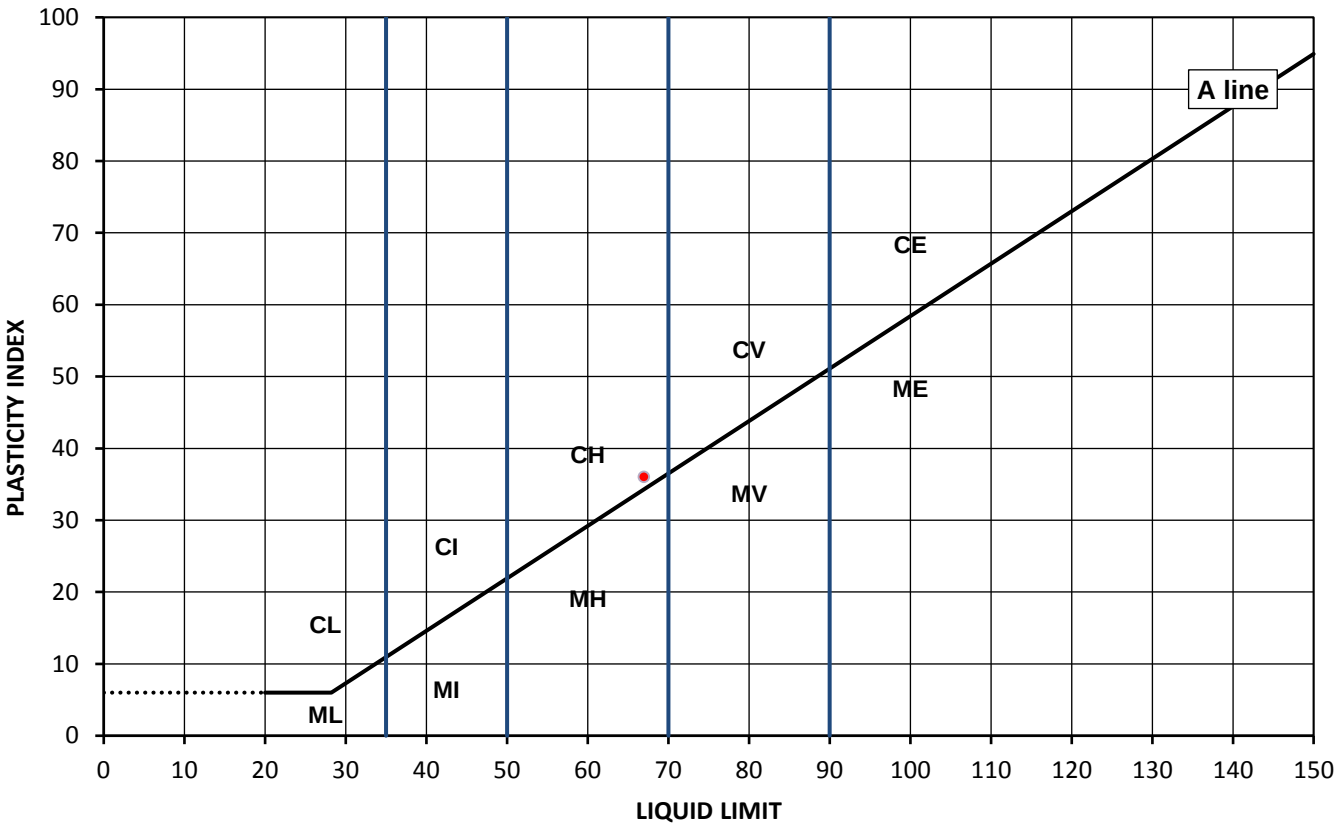
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112637	Depth Top [m]:	1.00
Hole No.:	TP614	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Soil Description:	Reddish brown slightly gravelly CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
35	67	31	36	98



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

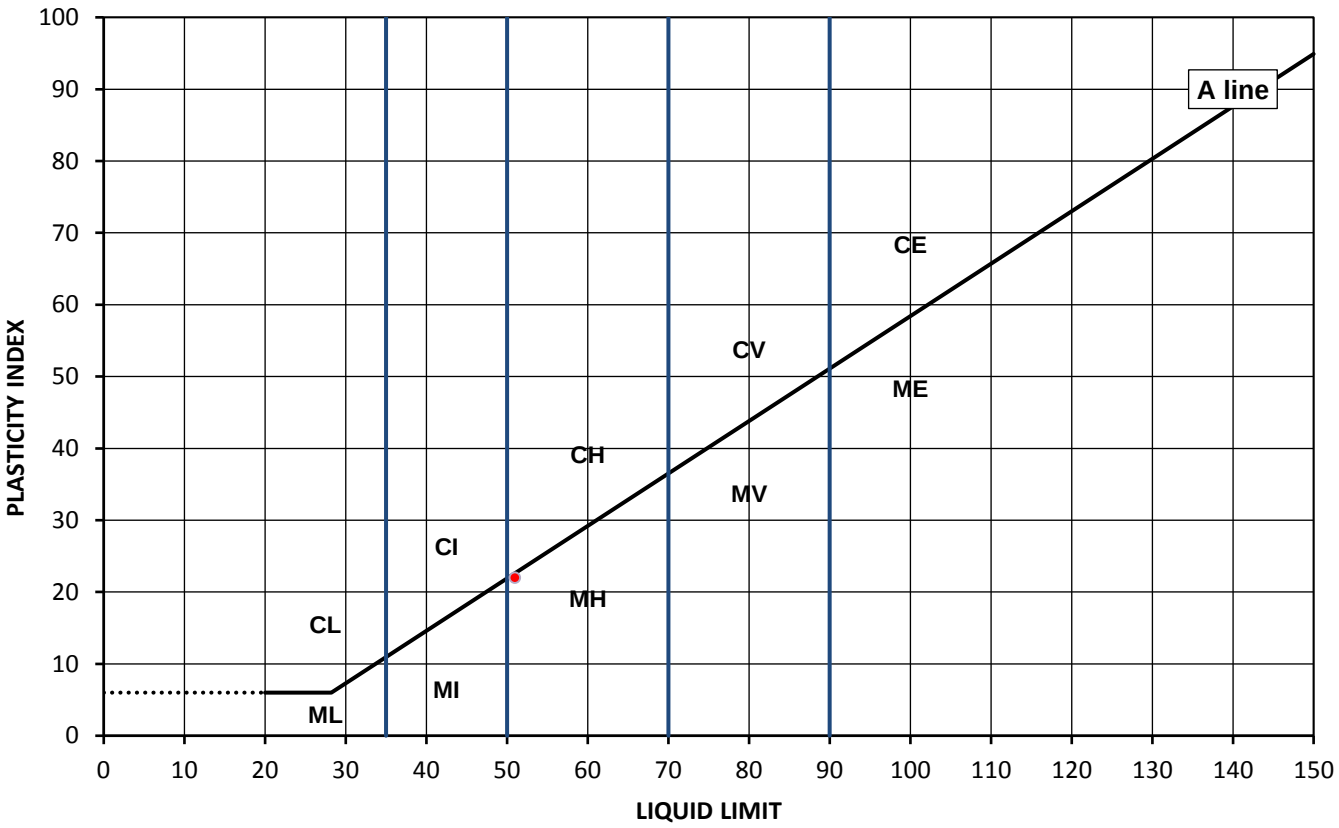
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112642	Depth Top [m]:	0.30
Hole No.:	WS601	Depth Base [m]:	0.50
Sample Reference:	Not Given	Sample Type:	B
Soil Description:	Dark brown very gravelly slightly sandy CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
10	51	29	22	39



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

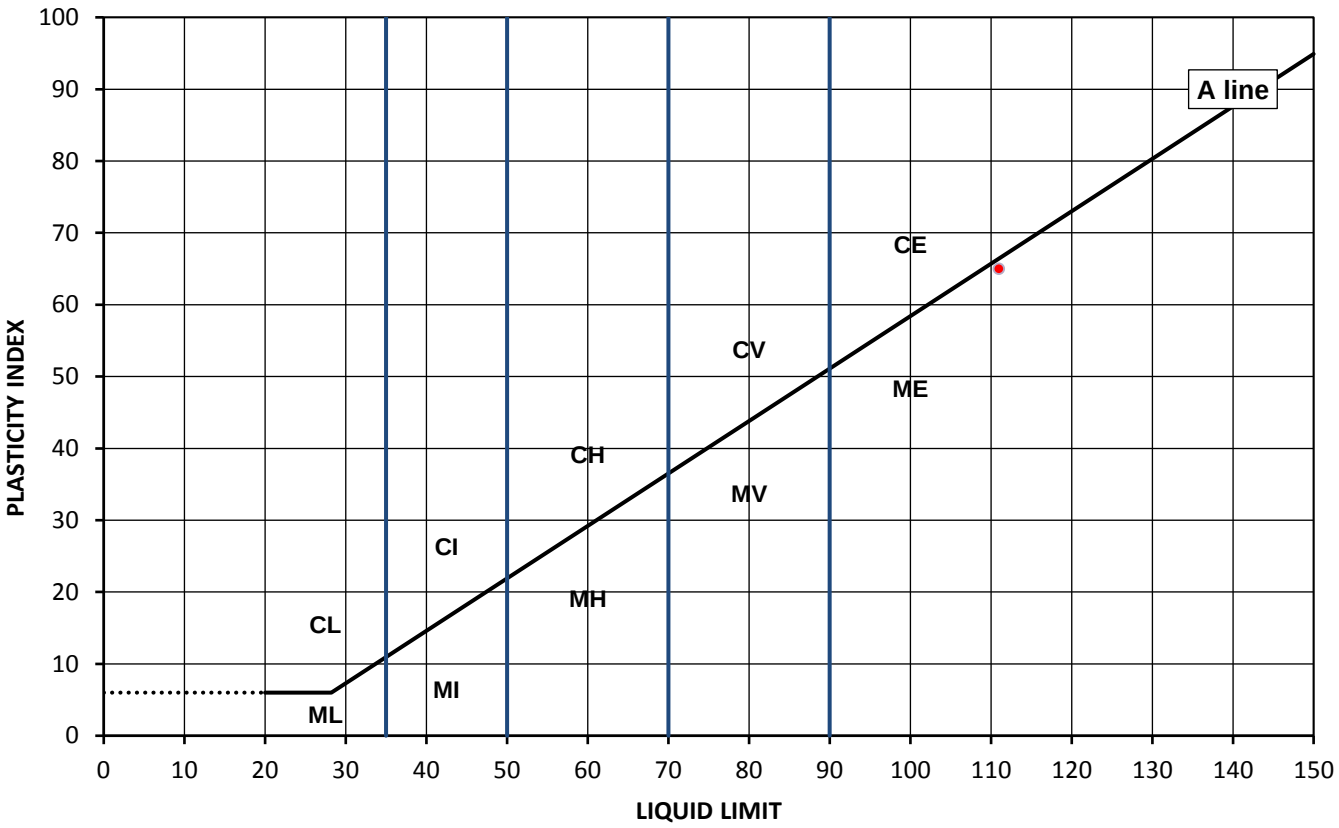
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112643	Depth Top [m]:	0.80
Hole No.:	WS601	Depth Base [m]:	1.00
Sample Reference:	Not Given	Sample Type:	B
Soil Description:	Orangish brown slightly gravelly slightly organic CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
46	111	46	65	86



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

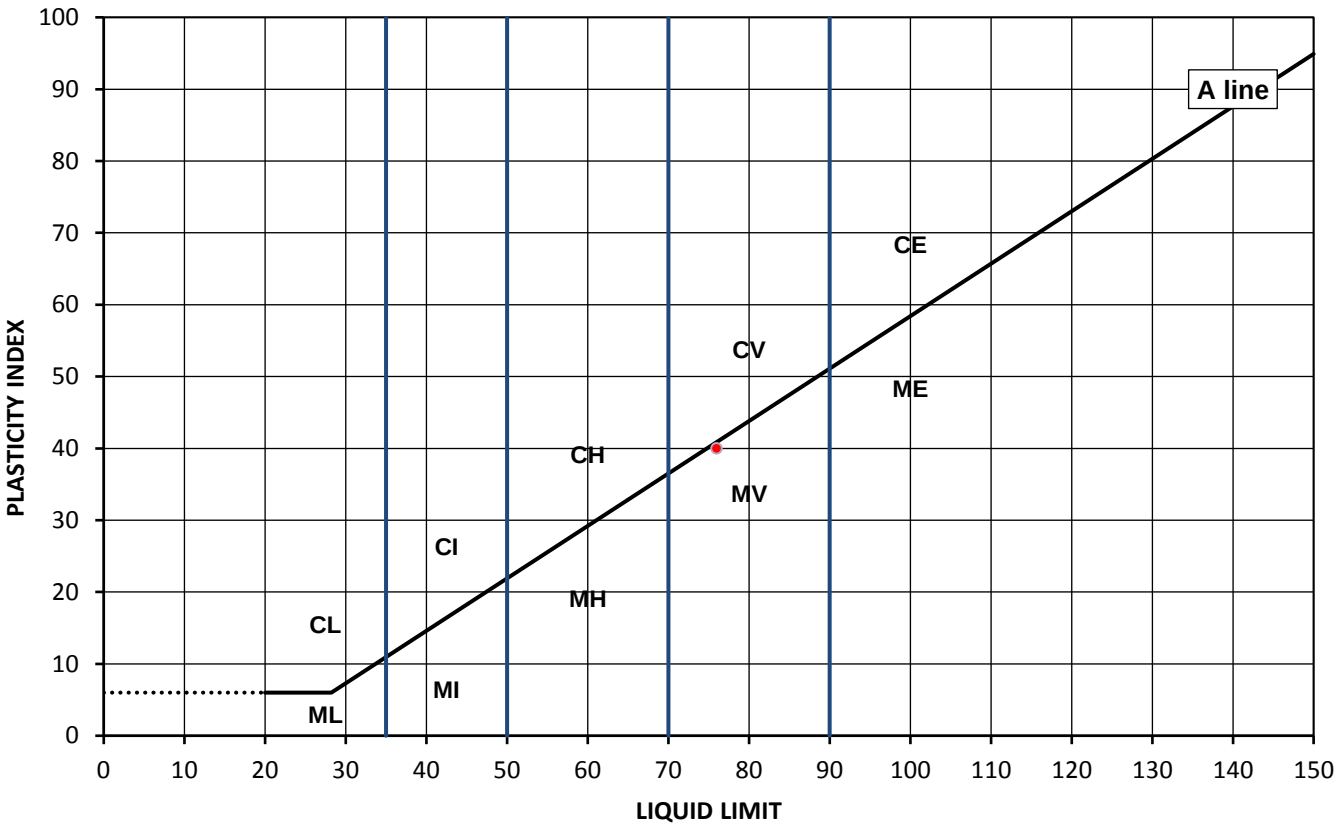
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112644	Depth Top [m]:	0.50
Hole No.:	WS602	Depth Base [m]:	0.60
Sample Reference:	Not Given	Sample Type:	B
Soil Description:	Orangish brown slightly gravelly CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
23	76	36	40	65



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

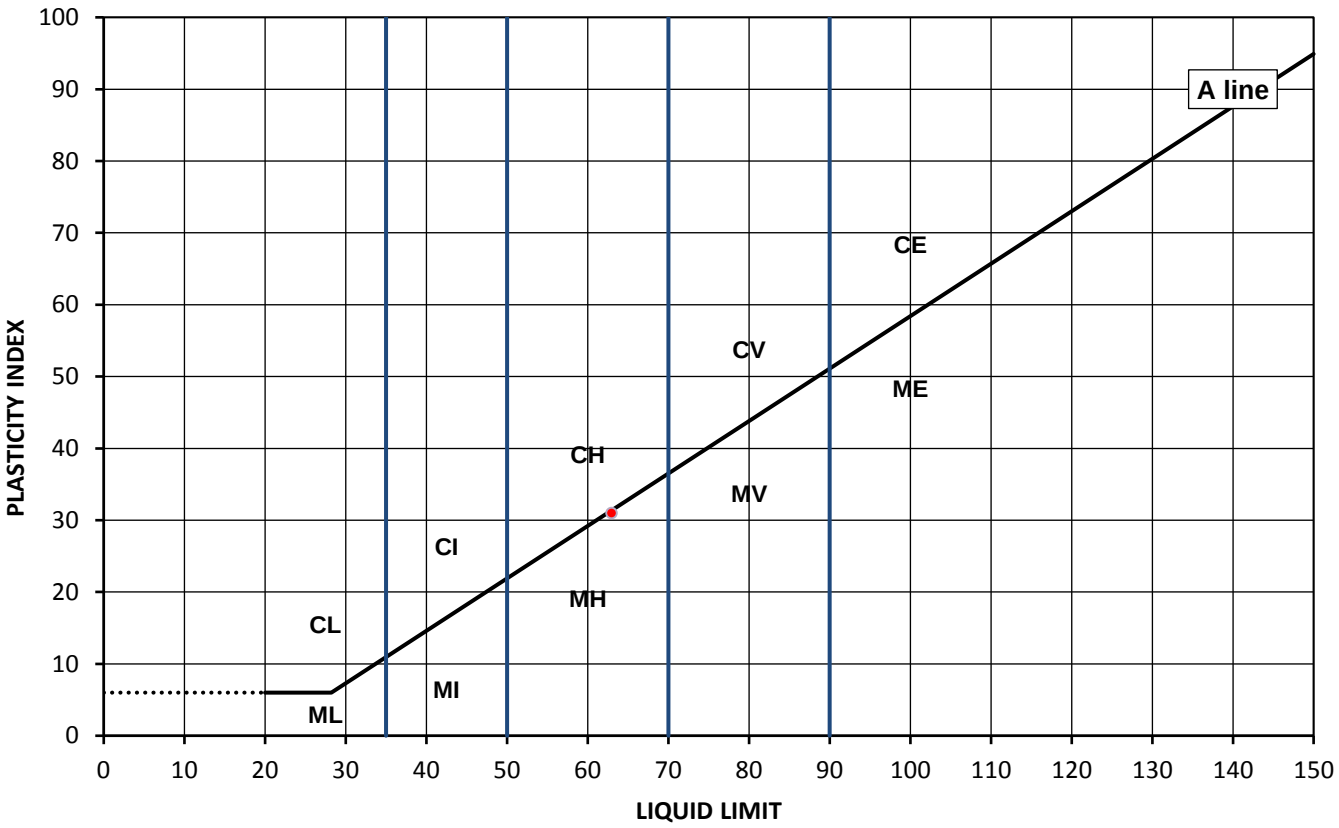
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112645	Depth Top [m]:	1.50
Hole No.:	WS604	Depth Base [m]:	2.00
Sample Reference:	Not Given	Sample Type:	B
Soil Description:	Orangish brown slightly gravelly CLAY with fragments of chalk		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
33	63	32	31	96



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

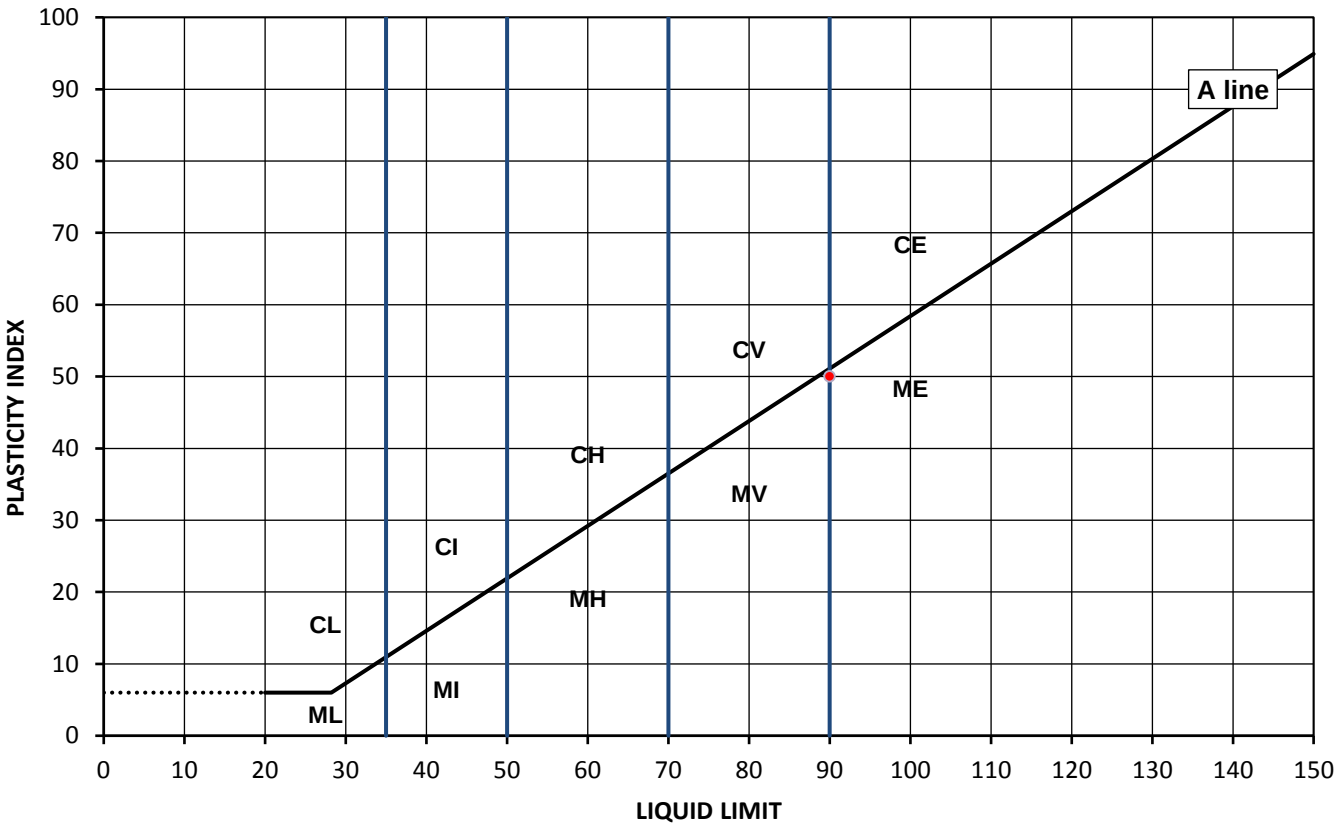
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112646	Depth Top [m]:	0.70
Hole No.:	WS605	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Soil Description:	Brown slightly gravelly CLAY with fragments of chalk		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
37	90	40	50	88



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

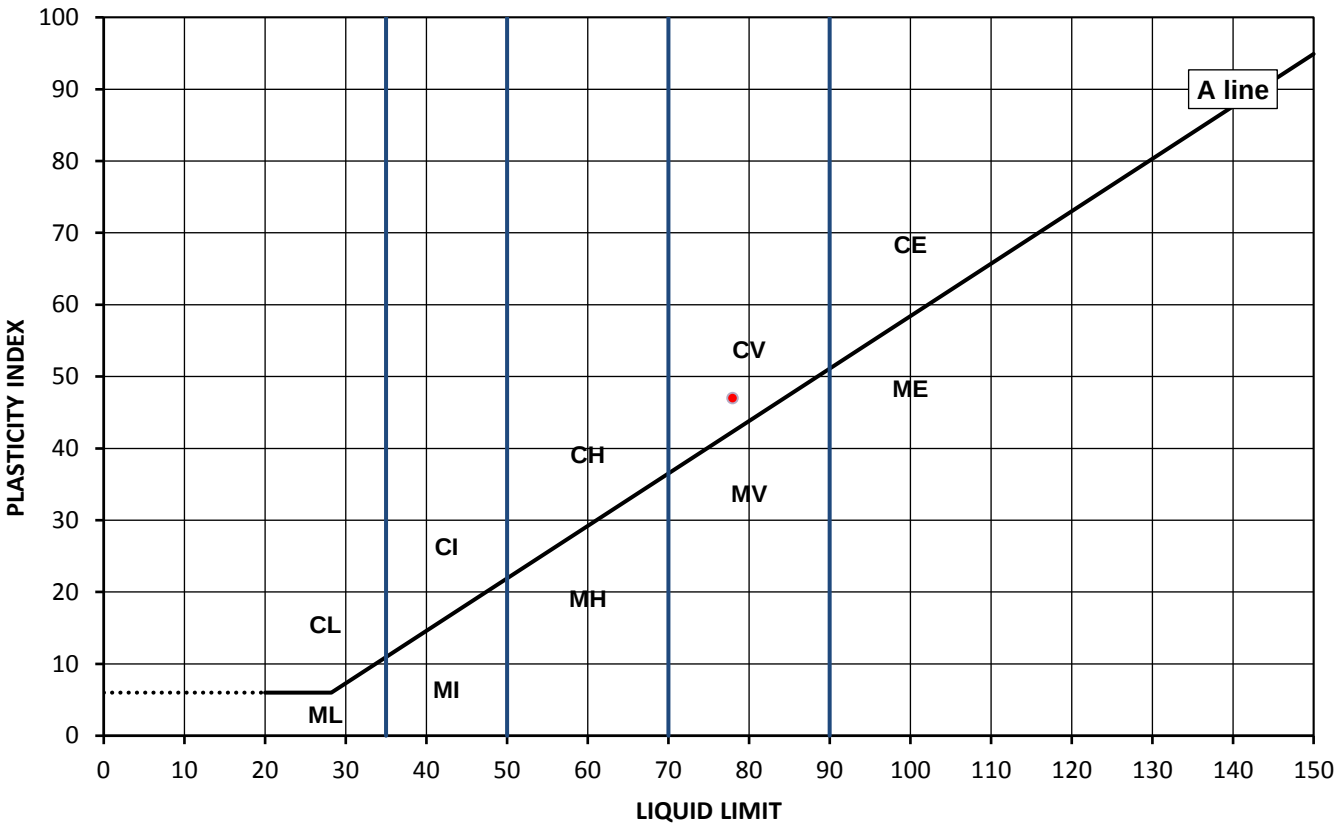
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112647	Depth Top [m]:	1.00
Hole No.:	WS606	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Soil Description:	Yellowish brown slightly gravelly CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
22	78	31	47	96



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

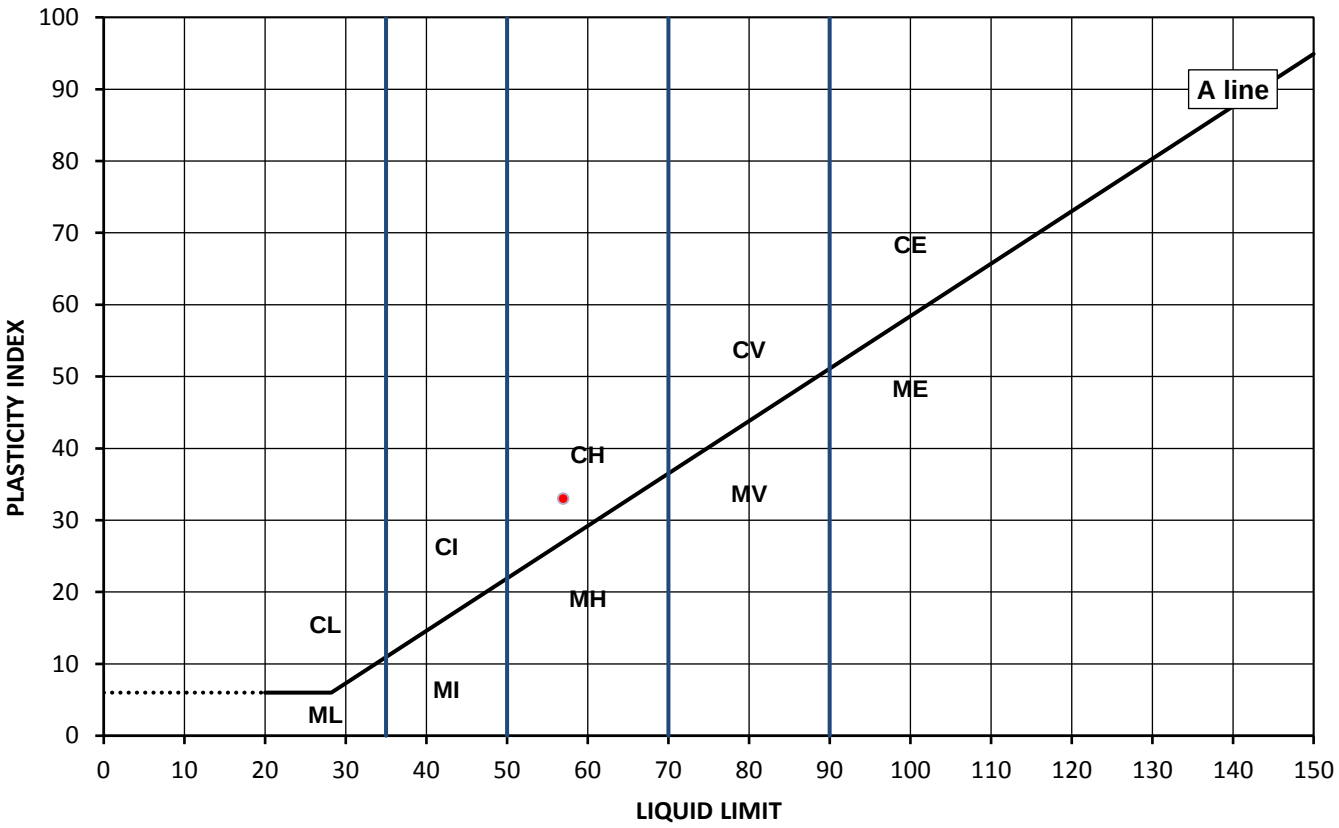
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112649	Depth Top [m]:	4.00
Hole No.:	WS607	Depth Base [m]:	5.00
Sample Reference:	Not Given	Sample Type:	B
Soil Description:	Yellowish brown slightly sandy CLAY		
Sample Preparation:	Tested in natural condition		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
23	57	24	33	100



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

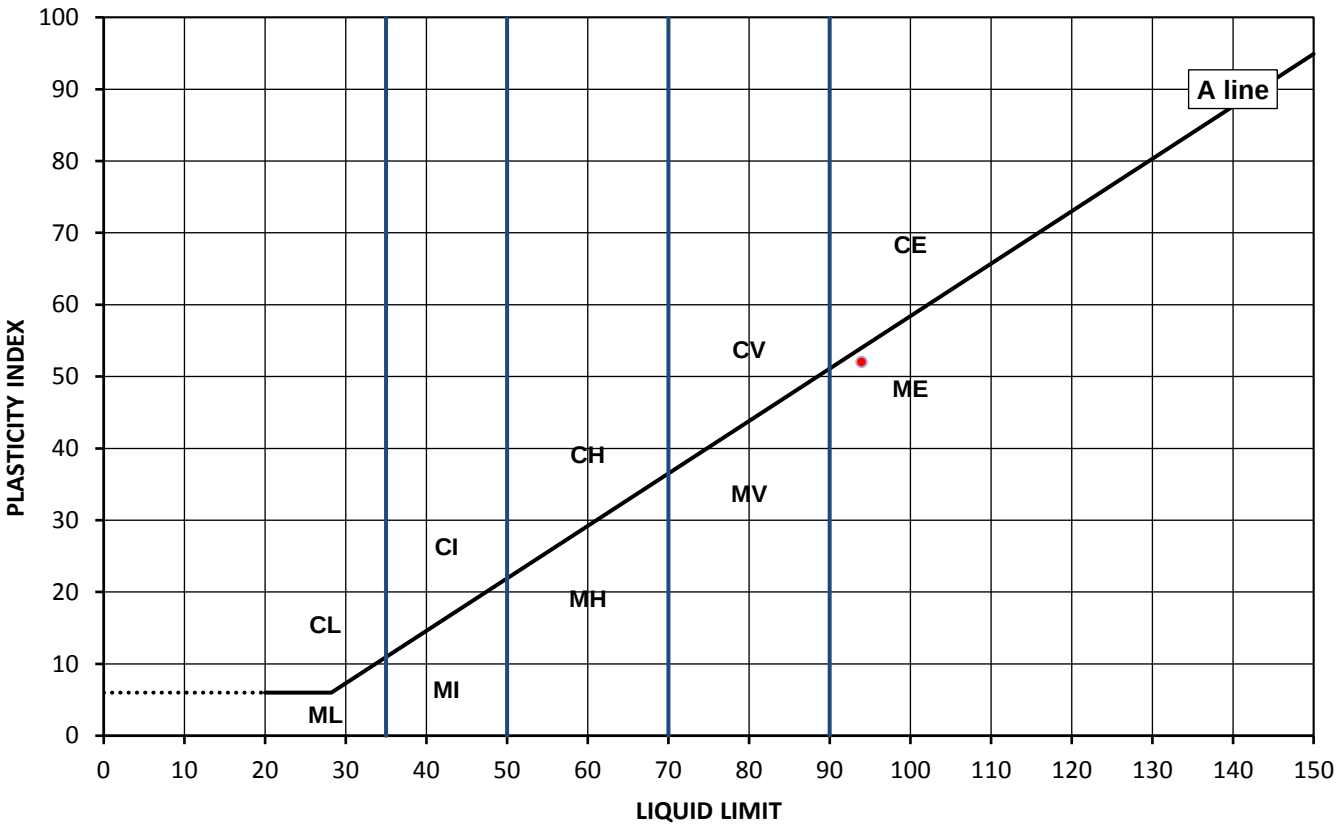
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112650	Depth Top [m]:	1.50
Hole No.:	WS608	Depth Base [m]:	2.00
Sample Reference:	Not Given	Sample Type:	B
Soil Description:	Orangish brown slightly gravelly slightly organic CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
38	94	42	52	84



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

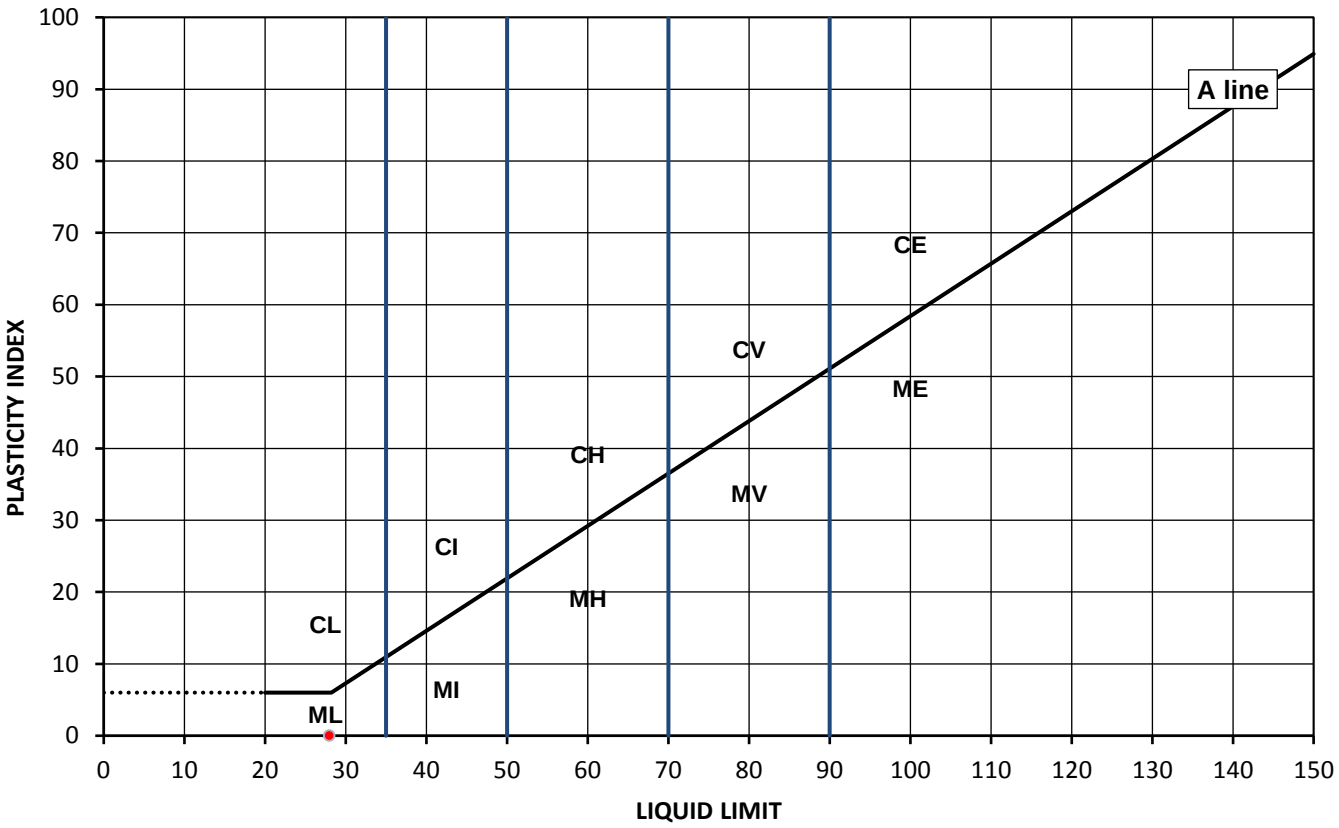
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112651	Depth Top [m]:	3.00
Hole No.:	WS608	Depth Base [m]:	3.50
Sample Reference:	Not Given	Sample Type:	B
Soil Description:	Cream colour slightly gravelly CHALK		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
27	28	NP	NP	99



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks: NP – non plastic

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

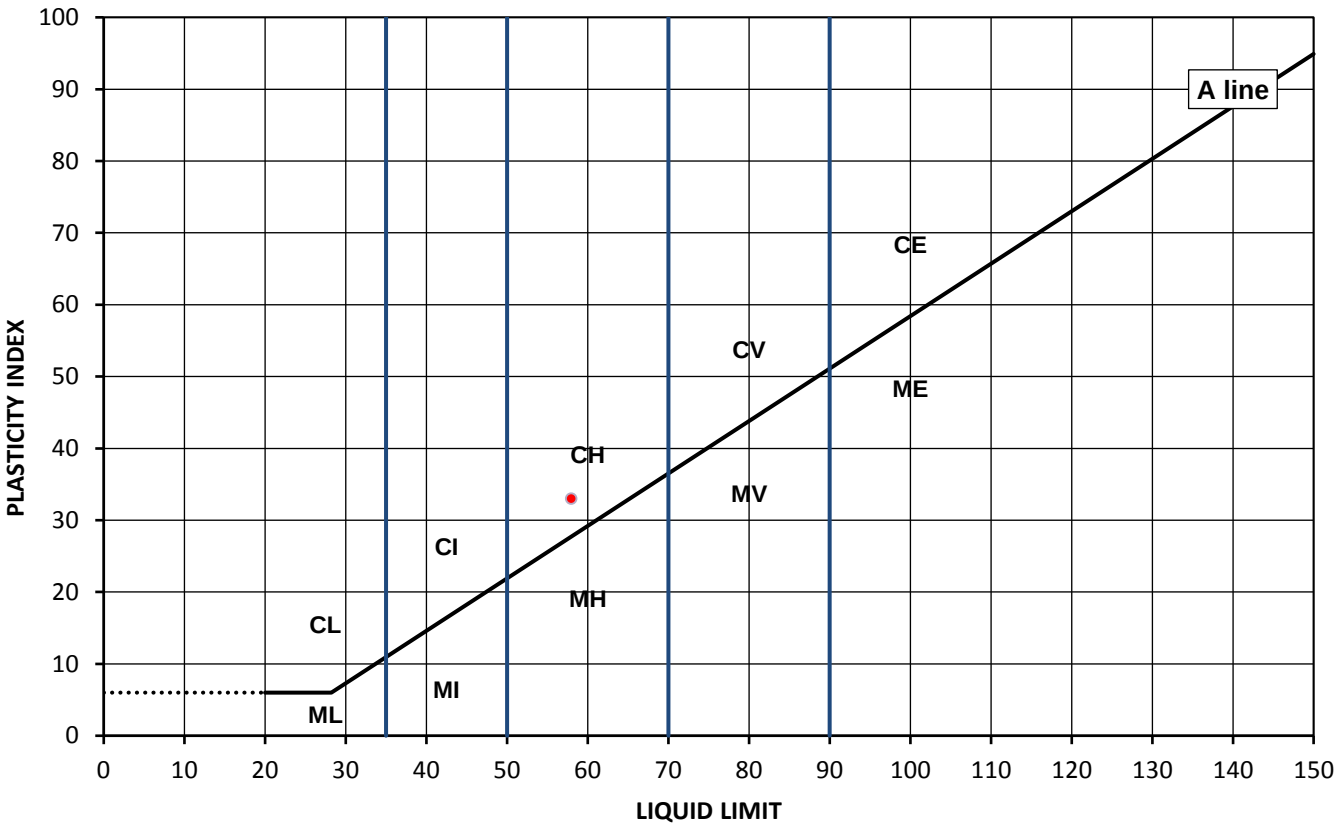
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results

Laboratory Reference:	1112652	Depth Top [m]:	0.90
Hole No.:	WS610	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Soil Description:	Yellowish brown slightly gravelly slightly sandy CLAY		
Sample Preparation:	Tested after washing to remove >425um		

As Received Moisture Content [%]	Liquid Limit [%]	Plastic Limit [%]	Plasticity Index [%]	% Passing 425µm BS Test Sieve
24	58	25	33	79



Legend, based on BS 5930:2015 Code of practice for site investigations

		Plasticity		Liquid Limit
C	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		H	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	O	append to classification for organic material (eg CHO)	

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 232.3

"Opinions and interpretations expressed here in are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

SUMMARY REPORT

Summary of Classification Test Results

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

Environmental Science

UKAS TESTING 4041

Tested in Accordance with:

MC by BS 1377-2: 1990: Clause 3.2; Atterberg by BS 1377-2: 1990: Clause 4.3, Clause 4.4 and 5; PD by BS 1377-2: 1990: Clause 8.2

Client: Hydrock Consultants Ltd
Client Address: 2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD
Contact: Wayne Lewis
Site Name: Fort Halstead
Site Address: Not Given

Client Reference: C-10730-C
Job Number: 18-22027
Date Sampled: Not Given
Date Received: 23/11/2018
Date Tested: 17/12/2018
Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	MC#	Atterberg#				Density		Total Porosity				
		Reference	Depth Top	Depth Base	Type				% Passing 425um	LL	PL	PI	bulk	PD					
			m	m				%	%	%	%	%	Mg/m3	Mg/m3	%				
1112598	BH601	Not Given	1.40	Not Given	D	Yellowish brown slightly gravelly CLAY	Atterberg 1 Point	25	90	72	30	42							
1112599	BH601	Not Given	2.40	Not Given	D	Brown slightly gravelly slightly organic CLAY	Atterberg 1 Point	29	95	107	48	59							
1112600	BH602	Not Given	1.10	1.40	B	Yellowish brown gravelly sandy CLAY	Atterberg 1 Point	20	62	43	20	23							
1112601	BH603	Not Given	1.00	1.40	B	Yellowish brown slightly gravelly slightly sandy CLAY	Atterberg 1 Point	30	69	53	26	27							
1112602	BH603	Not Given	1.50	2.00	B	Orangish brown sandy CLAY	Atterberg 1 Point	19	100	36	18	18							
1112604	BH603	Not Given	4.40	Not Given	D	Yellow sandy CLAY	Atterberg 1 Point	13	100	35	22	13							
1112606	BH604	Not Given	2.90	Not Given	D	Orangish brown slightly sandy CLAY	Atterberg 1 Point	22	100	56	23	33							
1112607	BH604	Not Given	5.40	Not Given	D	Yellowish brown slightly gravelly CLAY	Atterberg 1 Point	28	96	61	30	31							
1112608	BH604	Not Given	6.90	Not Given	D	Light grey mottled brown CLAY	Atterberg 1 Point	22	100	60	26	34							
1112611	BH605	Not Given	1.50	Not Given	D	Brown slightly gravelly sandy CLAY	Atterberg 1 Point	20	88	42	20	22							

Note: # UKAS accredited; NP - Non plastic

Comments:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 234.5

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

SUMMARY REPORT

Summary of Classification Test Results

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

Environmental Science

UKAS TESTING 4041

Tested in Accordance with:

MC by BS 1377-2: 1990: Clause 3.2; Atterberg by BS 1377-2: 1990: Clause 4.3, Clause 4.4 and 5; PD by BS 1377-2: 1990: Clause 8.2

Client: Hydrock Consultants Ltd

Client Address: 2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD

Contact: Wayne Lewis

Site Name: Fort Halstead

Site Address: Not Given

Client Reference: C-10730-C

Job Number: 18-22027

Date Sampled: Not Given

Date Received: 23/11/2018

Date Tested: 17/12/2018

Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	MC#	Atterberg#				Density		Total Porosity				
		Reference	Depth Top	Depth Base	Type				% Passing 425um	LL	PL	PI	bulk	PD					
			m	m				%	%	%	%	%	Mg/m3	Mg/m3	%				
1112612	BH605	Not Given	3.40	Not Given	D	Orangish brown slightly gravelly CLAY	Atterberg 1 Point	25	93	62	28	34							
1112613	BH605	Not Given	5.90	Not Given	D	Orangish brown slightly gravelly slightly organic CLAY	Atterberg 1 Point	43	96	92	52	40							
1112614	BH606	Not Given	1.50	2.00	B	Yellowish brown slightly gravelly slightly organic CLAY	Atterberg 1 Point	45	96	90	48	42							
1112616	BH606	Not Given	3.40	Not Given	D	Yellowish brown slightly gravelly slightly organic CLAY	Atterberg 1 Point	38	70	96	42	54							
1112617	BH606	Not Given	5.90	Not Given	D	Brown slightly gravelly slightly organic CLAY	Atterberg 1 Point	36	75	95	44	51							
1112626	TP607	Not Given	1.00	Not Given	D	Orangish brown slightly organic CLAY	Atterberg 1 Point	53	100	124	45	79							
1112628	TP608	Not Given	1.50	Not Given	D	Brown slightly gravelly slightly sandy CLAY with fragments of chalk	Atterberg 1 Point	24	89	53	27	26							
1112629	TP608	Not Given	2.20	Not Given	D	Yellowish brown slightly gravelly slightly sandy CLAY	Atterberg 1 Point	22	99	48	20	28							
1112637	TP614	Not Given	1.00	Not Given	D	Reddish brown slightly gravelly CLAY	Atterberg 1 Point	35	98	67	31	36							
1112642	WS601	Not Given	0.30	0.50	B	Dark brown very gravelly slightly sandy CLAY	Atterberg 1 Point	10	39	51	29	22							

Note: # UKAS accredited; NP - Non plastic

Comments:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 234.5

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

SUMMARY REPORT

Summary of Classification Test Results

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

Environmental Science

4041

Tested in Accordance with:

MC by BS 1377-2: 1990: Clause 3.2; Atterberg by BS 1377-2: 1990: Clause 4.3, Clause 4.4 and 5; PD by BS 1377-2: 1990: Clause 8.2

Client: Hydrock Consultants Ltd

Client Address: 2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD

Contact: Wayne Lewis

Site Name: Fort Halstead

Site Address: Not Given

Client Reference: C-10730-C

Job Number: 18-22027

Date Sampled: Not Given

Date Received: 23/11/2018

Date Tested: 17/12/2018

Sampled By: Not Given

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	MC#	Atterberg#				Density		Total Porosity				
		Reference	Depth Top	Depth Base	Type				% Passing 425um	LL	PL	PI	bulk	PD					
			m	m				%	%	%	%	%	Mg/m3	Mg/m3	%				
1112643	WS601	Not Given	0.80	1.00	B	Orangish brown slightly gravelly slightly organic CLAY	Atterberg 1 Point	46	86	111	46	65							
1112644	WS602	Not Given	0.50	0.60	B	Orangish brown slightly gravelly CLAY	Atterberg 1 Point	23	65	76	36	40							
1112645	WS604	Not Given	1.50	2.00	B	Orangish brown slightly gravelly CLAY with fragments of chalk	Atterberg 1 Point	33	96	63	32	31							
1112646	WS605	Not Given	0.70	Not Given	B	Brown slightly gravelly CLAY with fragments of chalk	Atterberg 1 Point	37	88	90	40	50							
1112647	WS606	Not Given	1.00	Not Given	B	Yellowish brown slightly gravelly CLAY	Atterberg 1 Point	22	96	78	31	47							
1112649	WS607	Not Given	4.00	5.00	B	Yellowish brown slightly sandy CLAY	Atterberg 1 Point	23	100	57	24	33							
1112650	WS608	Not Given	1.50	2.00	B	Orangish brown slightly gravelly slightly organic CLAY	Atterberg 1 Point	38	84	94	42	52							
1112651	WS608	Not Given	3.00	3.50	B	Cream colour slightly gravelly CHALK	Atterberg 1 Point	27	99	28	NP	NP							
1112652	WS610	Not Given	0.90	Not Given	B	Yellowish brown slightly gravelly slightly sandy CLAY	Atterberg 1 Point	24	79	58	25	33							

Note: # UKAS accredited; NP - Non plastic

Comments:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 234.5

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

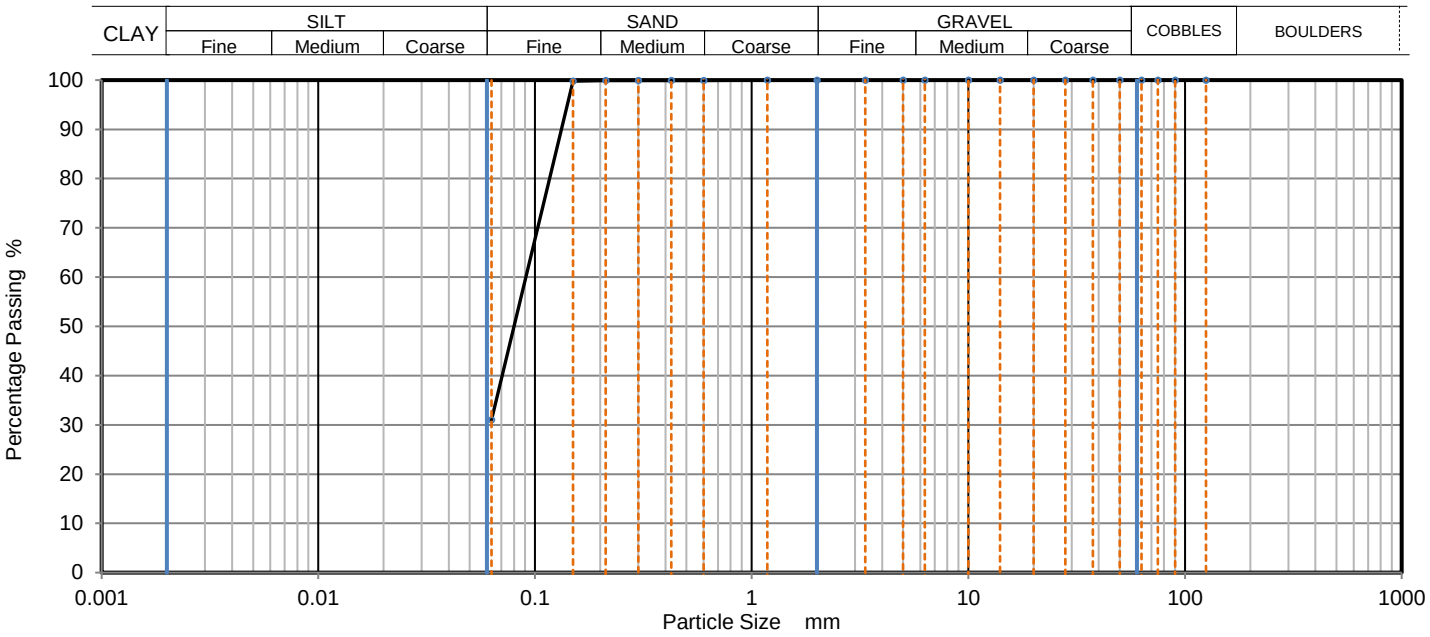
i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

4041

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

Laboratory Reference:	1112603	Depth Top [m]:	3.50
Hole No.:	BH603	Depth Base [m]:	4.00
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Yellowish brown very clayey SAND		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	100		
0.212	100		
0.15	100		
0.063	32		

Dry Mass of sample [g]: 388

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.00
Sand	68.50
Fines <0.063mm	31.50

Grading Analysis		
D100	mm	2
D60	mm	0.0905
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 100.10

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

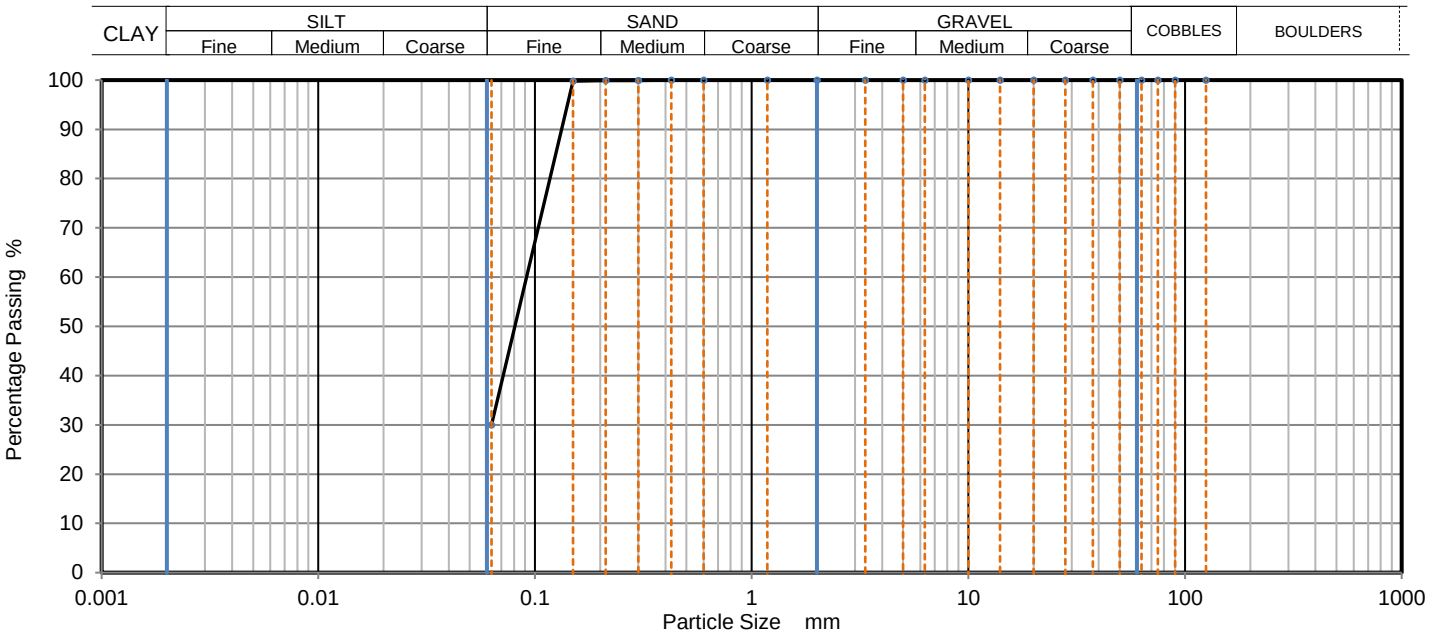
i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

4041

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

Laboratory Reference:	1112605	Depth Top [m]:	5.00
Hole No.:	BH603	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Yellowish brown very clayey SAND		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	100		
0.212	100		
0.15	100		
0.063	31		

Dry Mass of sample [g]: 330

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.00
Sand	69.40
Fines <0.063mm	30.60

Grading Analysis		
D100	mm	1.18
D60	mm	0.0911
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 100.10

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

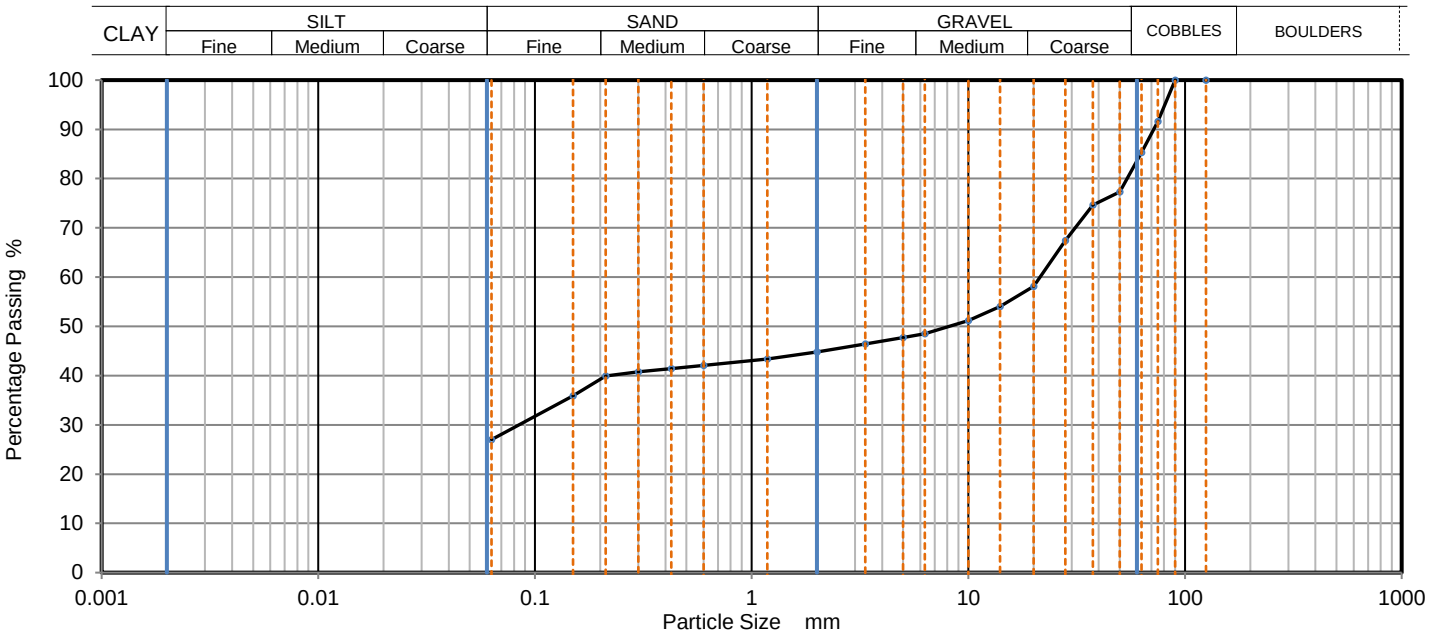
i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

4041

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

Laboratory Reference:	1112609	Depth Top [m]:	8.10
Hole No.:	BH604	Depth Base [m]:	8.60
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Brown sandy very clayey GRAVEL with cobbles		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	92		
63	85		
50	77		
37.5	75		
28	67		
20	58		
14	54		
10	51		
6.3	49		
5	48		
3.35	46		
2	45		
1.18	43		
0.6	42		
0.425	41		
0.3	41		
0.212	40		
0.15	36		
0.063	28		

Dry Mass of sample [g]: 9817

Sample Proportions	% dry mass
Very coarse	14.70
Gravel	40.50
Sand	17.30
Fines <0.063mm	27.50

Grading Analysis		
D100	mm	90
D60	mm	21.4
D30	mm	0.0814
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks: The material submitted - fails to meet the minimum mass requirements as stated in BS1377 Part 2 Table 3

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 100.10

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

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

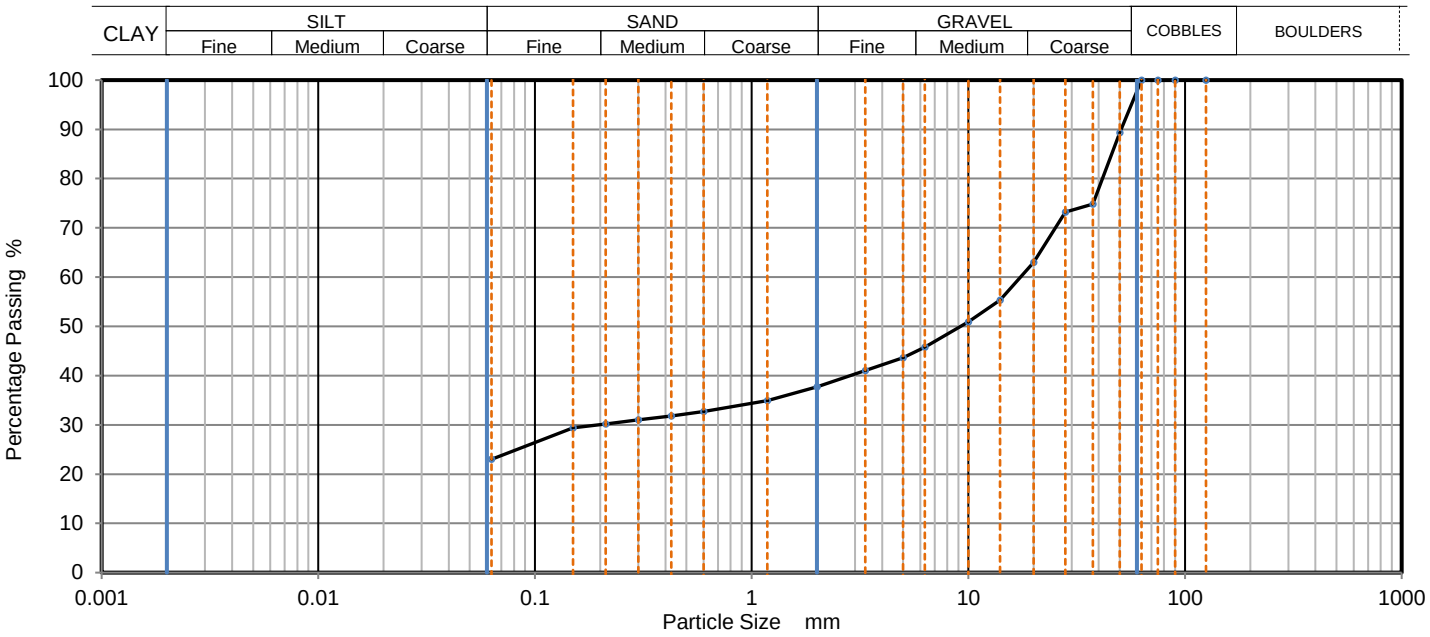
UKAS TESTING 4041

Environmental Science

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

Laboratory Reference:	1112610	Depth Top [m]:	11.00
Hole No.:	BH604	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Brown sandy very clayey GRAVEL		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	89		
37.5	75		
28	73		
20	63		
14	55		
10	51		
6.3	46		
5	44		
3.35	41		
2	38		
1.18	35		
0.6	33		
0.425	32		
0.3	31		
0.212	30		
0.15	29		
0.063	23		

Dry Mass of sample [g]: 10299

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	62.30
Sand	14.50
Fines <0.063mm	23.20

Grading Analysis		
D100	mm	63
D60	mm	17.4
D30	mm	0.195
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks: The material submitted - fails to meet the minimum mass requirements as stated in BS1377 Part 2 Table 3

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 100.10

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

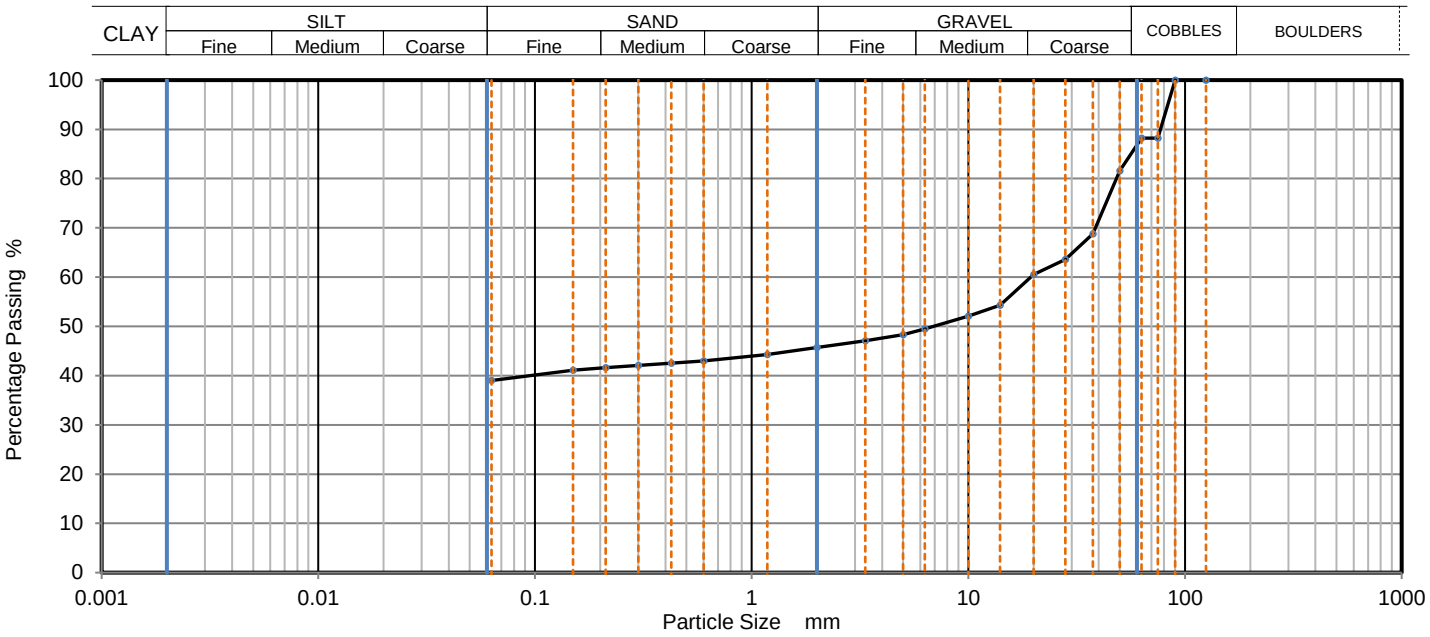
i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

4041

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

Laboratory Reference:	1112615	Depth Top [m]:	2.50
Hole No.:	BH606	Depth Base [m]:	3.00
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Orangish brown slightly sandy very clayey GRAVEL with cobbles		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	88		
63	88		
50	82		
37.5	69		
28	64		
20	61		
14	54		
10	52		
6.3	50		
5	48		
3.35	47		
2	46		
1.18	44		
0.6	43		
0.425	43		
0.3	42		
0.212	42		
0.15	41		
0.063	39		

Dry Mass of sample [g]: 5872

Sample Proportions	% dry mass
Very coarse	11.80
Gravel	42.50
Sand	6.50
Fines <0.063mm	39.20

Grading Analysis		
D100	mm	90
D60	mm	19.5
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks: The material submitted - fails to meet the minimum mass requirements as stated in BS1377 Part 2 Table 3

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 100.10

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

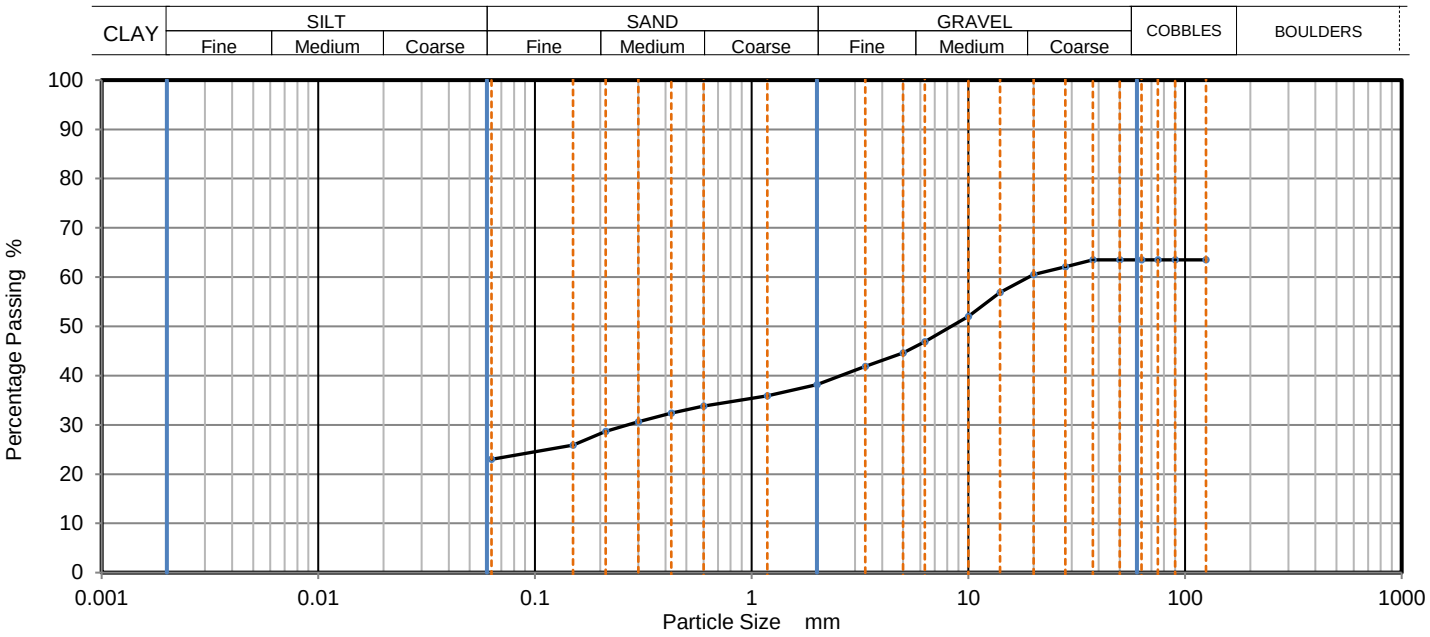
i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

UKAS TESTING 4041

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

Laboratory Reference:	1112622	Depth Top [m]:	1.30
Hole No.:	TP603	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Light grey mootled white CHALK with flintstone		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	64		
90	64		
75	64		
63	64		
50	64		
37.5	64		
28	62		
20	61		
14	57		
10	52		
6.3	47		
5	45		
3.35	42		
2	38		
1.18	36		
0.6	34		
0.425	32		
0.3	31		
0.212	29		
0.15	26		
0.063	24		

Dry Mass of sample [g]: 6007

Sample Proportions	% dry mass
Very coarse	36.50
Gravel	25.30
Sand	14.70
Fines <0.063mm	23.50

Grading Analysis		
D100	mm	
D60	mm	19.1
D30	mm	0.27
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks: The material submitted - fails to meet the minimum mass requirements as stated in BS1377 Part 2 Table 3

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 100.10

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

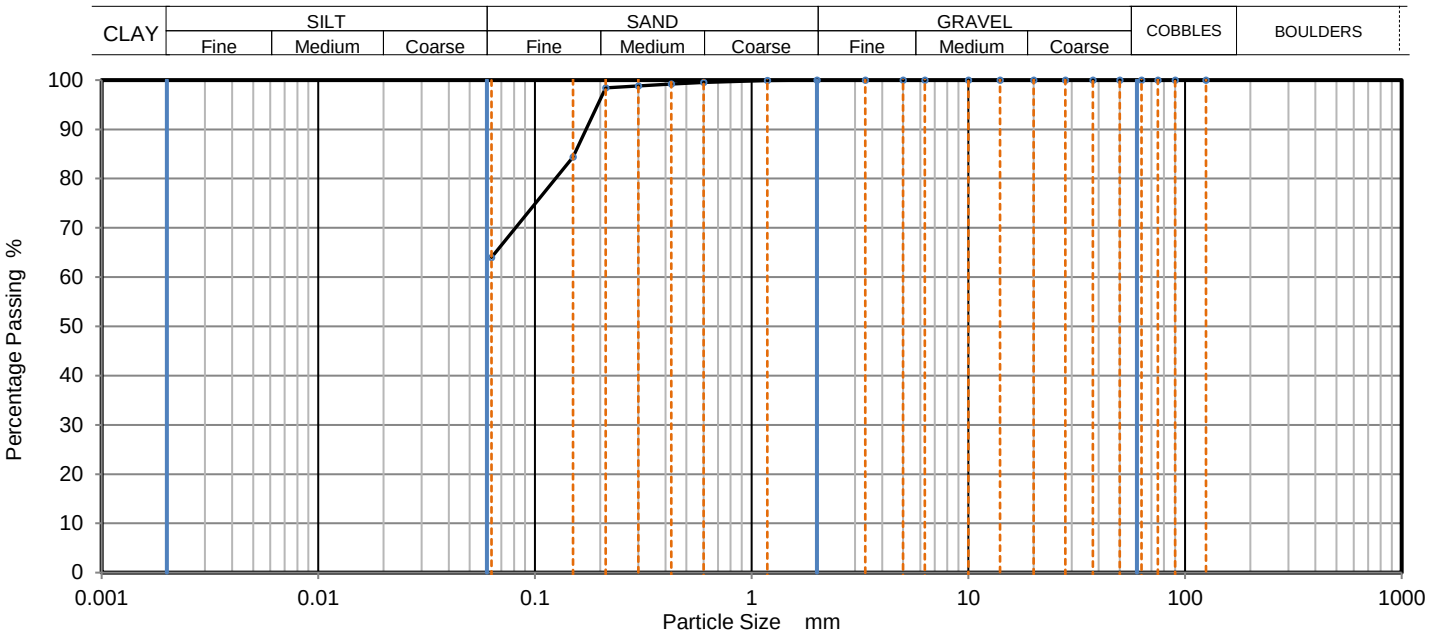
i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

4041

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

Laboratory Reference:	1112623	Depth Top [m]:	1.00
Hole No.:	TP605	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Orangish brown very sandy CLAY		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	99		
0.212	98		
0.15	84		
0.063	65		

Dry Mass of sample [g]: 285

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.00
Sand	35.20
Fines <0.063mm	64.80

Grading Analysis		
D100	mm	2
D60	mm	
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 100.10

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

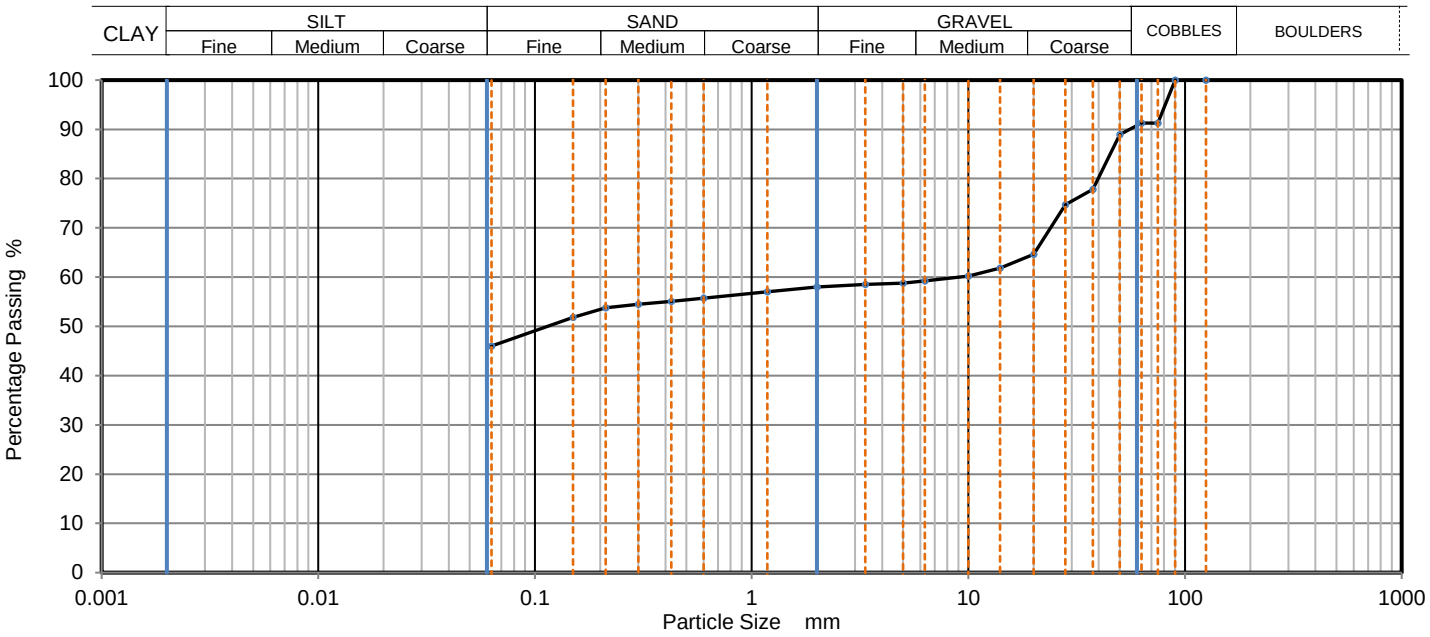
i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

UKAS TESTING 4041

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

Laboratory Reference:	1112633	Depth Top [m]:	1.00
Hole No.:	TP611	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Brown sandy very gravelly CLAY		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	91		
63	91		
50	89		
37.5	78		
28	75		
20	65		
14	62		
10	60		
6.3	59		
5	59		
3.35	59		
2	58		
1.18	57		
0.6	56		
0.425	55		
0.3	55		
0.212	54		
0.15	52		
0.063	46		

Dry Mass of sample [g]: 5990

Sample Proportions	% dry mass
Very coarse	8.70
Gravel	33.40
Sand	12.00
Fines <0.063mm	46.00

Grading Analysis		
D100	mm	90
D60	mm	9.02
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks: The material submitted - fails to meet the minimum mass requirements as stated in BS1377 Part 2 Table 3

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 100.10

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

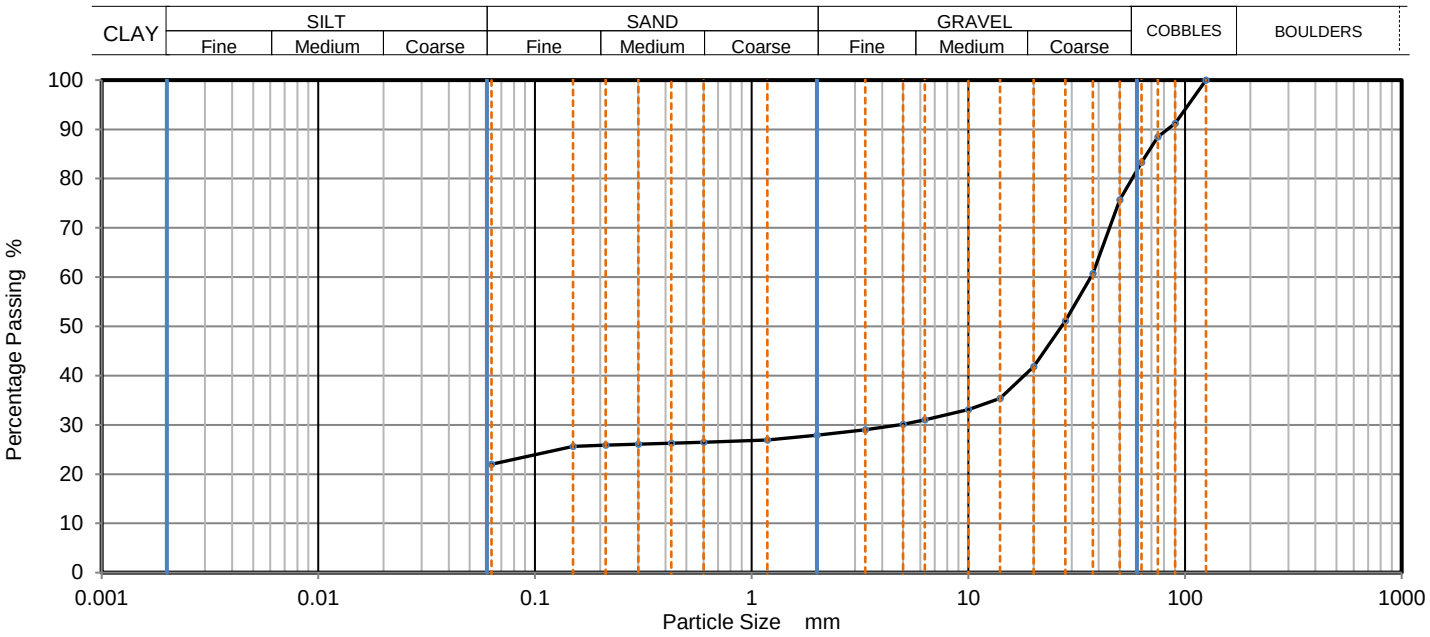
i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

UKAS TESTING 4041

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

Laboratory Reference:	1112638	Depth Top [m]:	1.50
Hole No.:	TP615	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Brown clayey slightly sandy GRAVEL with cobbles		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	91		
75	89		
63	83		
50	76		
37.5	61		
28	51		
20	42		
14	35		
10	33		
6.3	31		
5	30		
3.35	29		
2	28		
1.18	27		
0.6	27		
0.425	26		
0.3	26		
0.212	26		
0.15	26		
0.063	23		

Dry Mass of sample [g]: 14950

Sample Proportions	% dry mass
Very coarse	16.70
Gravel	55.40
Sand	5.20
Fines <0.063mm	22.70

Grading Analysis		
D100	mm	125
D60	mm	36.7
D30	mm	4.82
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks: The material submitted - fails to meet the minimum mass requirements as stated in BS1377 Part 2 Table 3

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 100.10

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

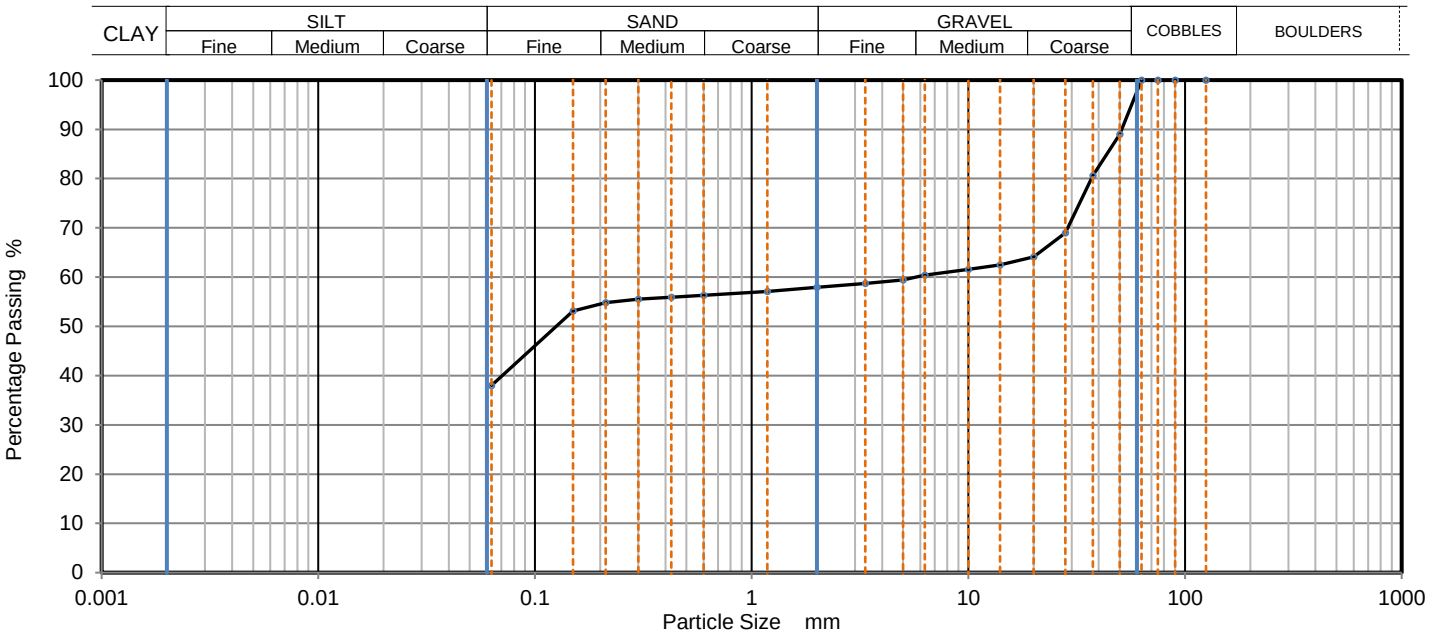
i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

4041

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

Laboratory Reference:	1112648	Depth Top [m]:	1.50
Hole No.:	WS606	Depth Base [m]:	2.00
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Yellowish brown very clayey sandy GRAVEL with fragments of chalk		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	89		
37.5	81		
28	69		
20	64		
14	63		
10	62		
6.3	60		
5	59		
3.35	59		
2	58		
1.18	57		
0.6	56		
0.425	56		
0.3	56		
0.212	55		
0.15	53		
0.063	39		

Dry Mass of sample [g]: 5348

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	42.10
Sand	19.20
Fines <0.063mm	38.60

Grading Analysis		
D100	mm	63
D60	mm	5.74
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks: The material submitted - fails to meet the minimum mass requirements as stated in BS1377 Part 2 Table 3

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 100.10

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of California Bearing Ratio

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

4041

Tested in Accordance with: BS 1377-4: 1990: Clause 7

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	27/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

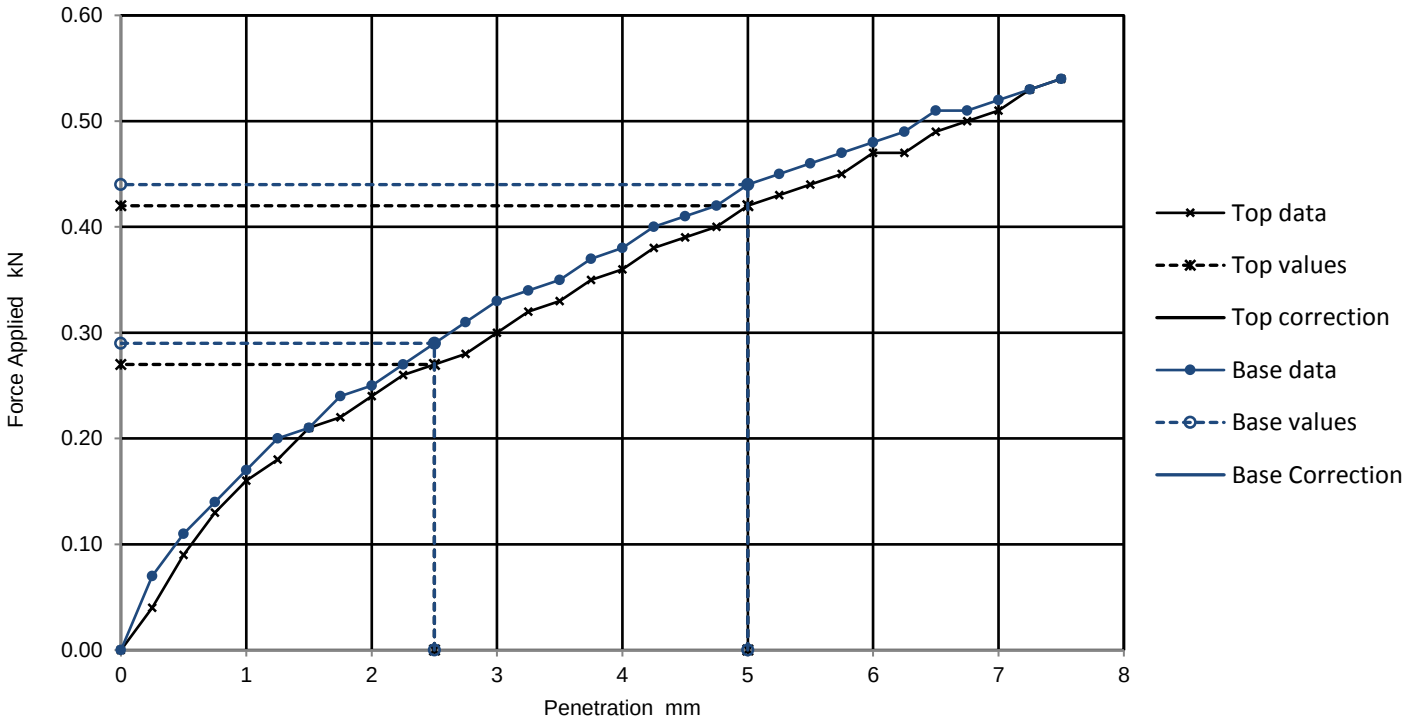
Laboratory Reference:	1112618	Depth Top [m]:	0.55
Hole No.:	TP601	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Yellowish brown slightly gravelly CLAY		

Specimen Preparation:

Condition	Remoulded	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 4.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	11 %	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.89	Mg/m3	Surcharge applied	8	kg
	Dry density	1.45	Mg/m3		4.8	kPa
	Moisture content	31	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	2.0	2.1	2.1	2.2	31
BASE	No	2.2	2.2	2.2		29

Remarks:

Test/ Specimen specific remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 108.10

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of California Bearing Ratio

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

4041

Tested in Accordance with: BS 1377-4: 1990: Clause 7

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	27/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

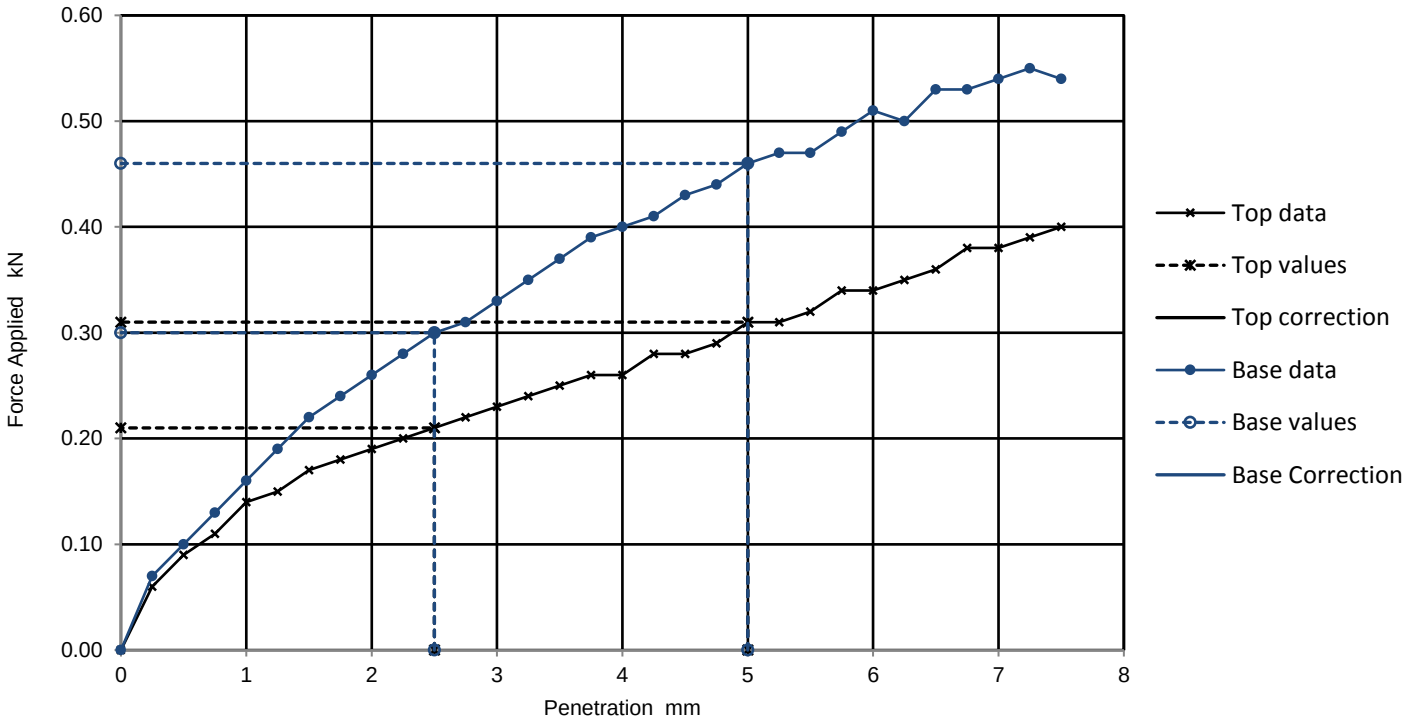
Laboratory Reference:	1112619	Depth Top [m]:	0.80
Hole No.:	TP601	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Yellowish brown slightly gravelly CLAY		

Specimen Preparation:

Condition	Remoulded	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 4.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	3 %	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.97	Mg/m3	Surcharge applied	8	kg
	Dry density	1.52	Mg/m3		4.9	kPa
	Moisture content	30	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	1.6	1.6	1.6		24
BASE	No	2.3	2.3	2.3		27

Remarks:

Test/ Specimen specific remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 108.10

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of California Bearing Ratio

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

4041

Tested in Accordance with: BS 1377-4: 1990: Clause 7

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	27/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

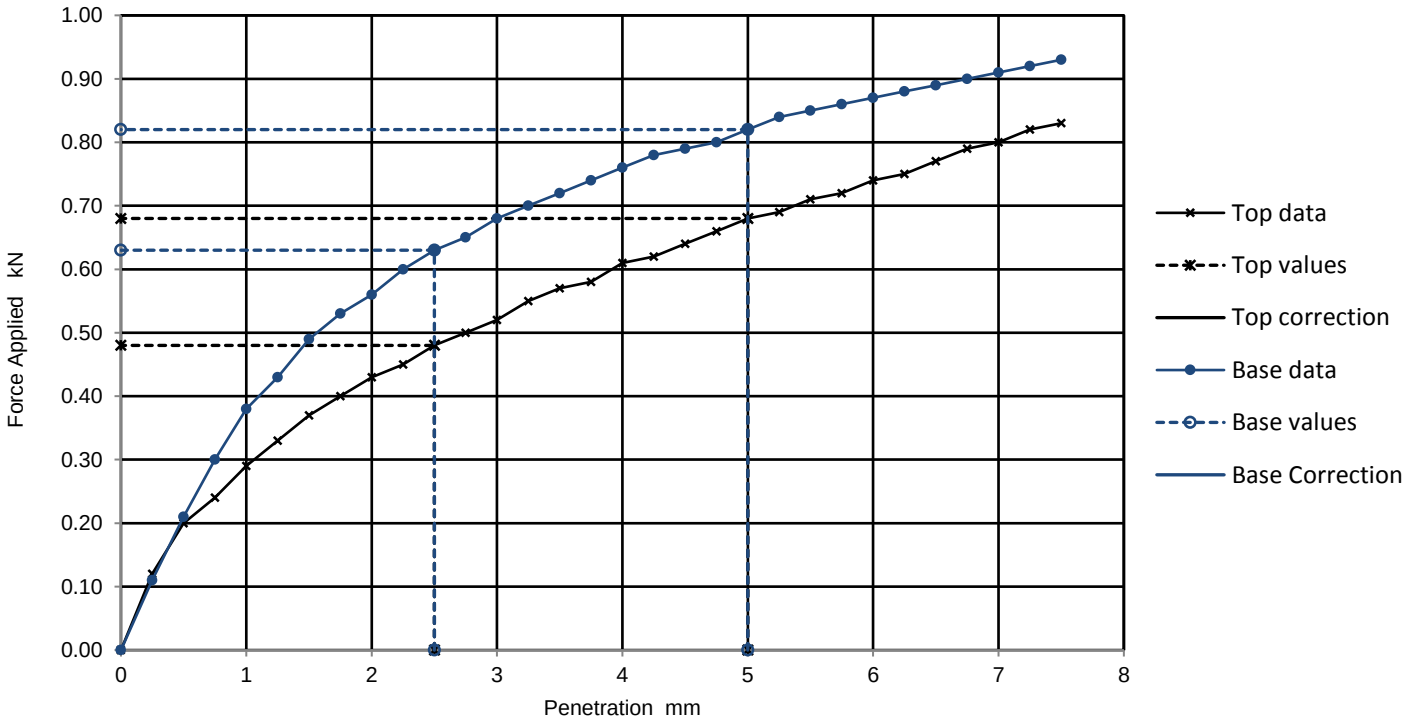
Laboratory Reference:	1112620	Depth Top [m]:	1.20
Hole No.:	TP602	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Orangish brown gravelly CLAY		

Specimen Preparation:

Condition	Remoulded	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 4.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	36 %	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.76	Mg/m3	Surcharge applied	8	kg
	Dry density	1.22	Mg/m3		4.9	kPa
	Moisture content	44	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	3.6	3.4	3.6		43
BASE	No	4.8	4.1	4.8		43

Remarks:	Test carried out with > 25 % retained on 20mm as per clause 7.2.1.2	Test/ Specimen specific remarks:	

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 108.10

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of California Bearing Ratio

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

4041

Tested in Accordance with: BS 1377-4: 1990: Clause 7

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	27/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

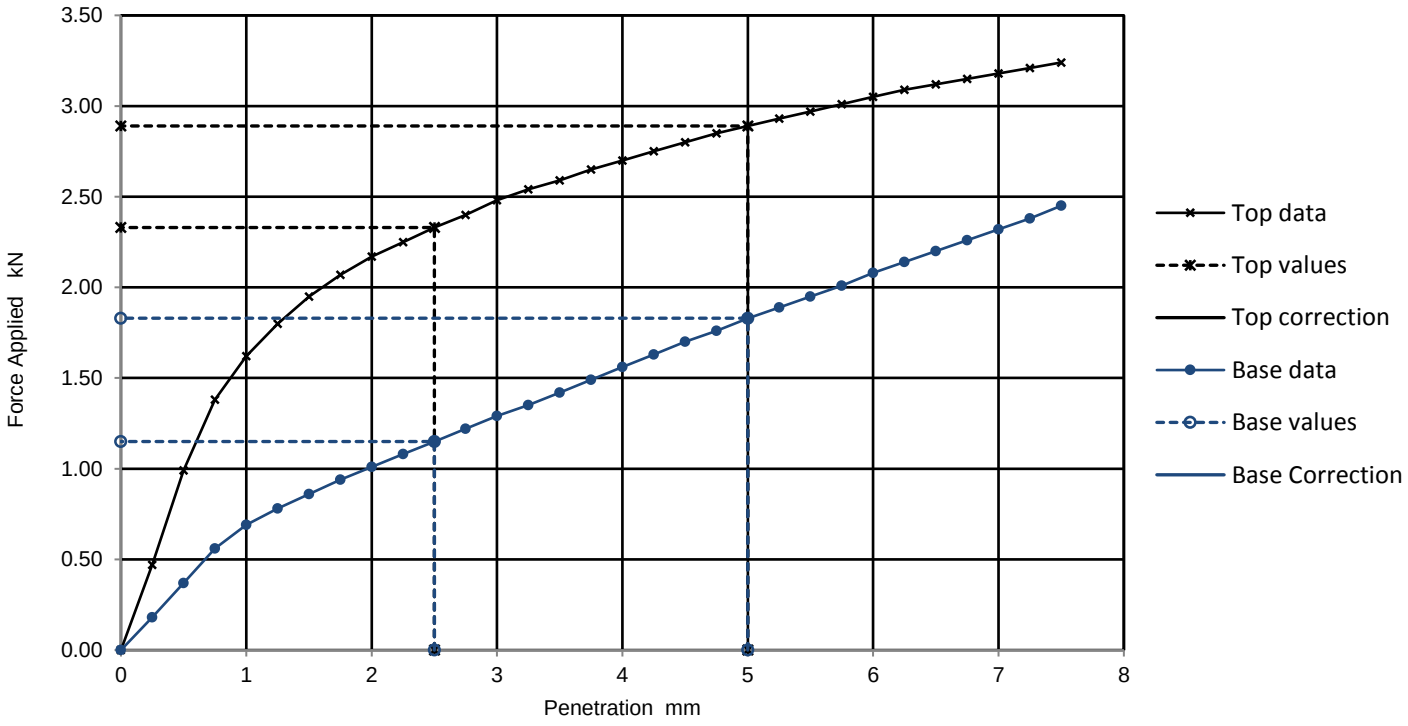
Laboratory Reference:	1112621	Depth Top [m]:	2.30
Hole No.:	TP602	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Orangish brown slightly sandy gravelly CLAY		

Specimen Preparation:

Condition	Remoulded	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 4.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	27 %	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.71	Mg/m3	Surcharge applied	8	kg
	Dry density	1.27	Mg/m3		4.9	kPa
	Moisture content	34	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	18.0	14.0	18.0		34
BASE	No	8.7	9.2	9.2		32

Remarks: Test carried out with > 25 % retained on 20mm as per clause 7.2.1.2

Test/ Specimen specific remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 108.10

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of California Bearing Ratio

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

4041

Tested in Accordance with: BS 1377-4: 1990: Clause 7

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	27/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

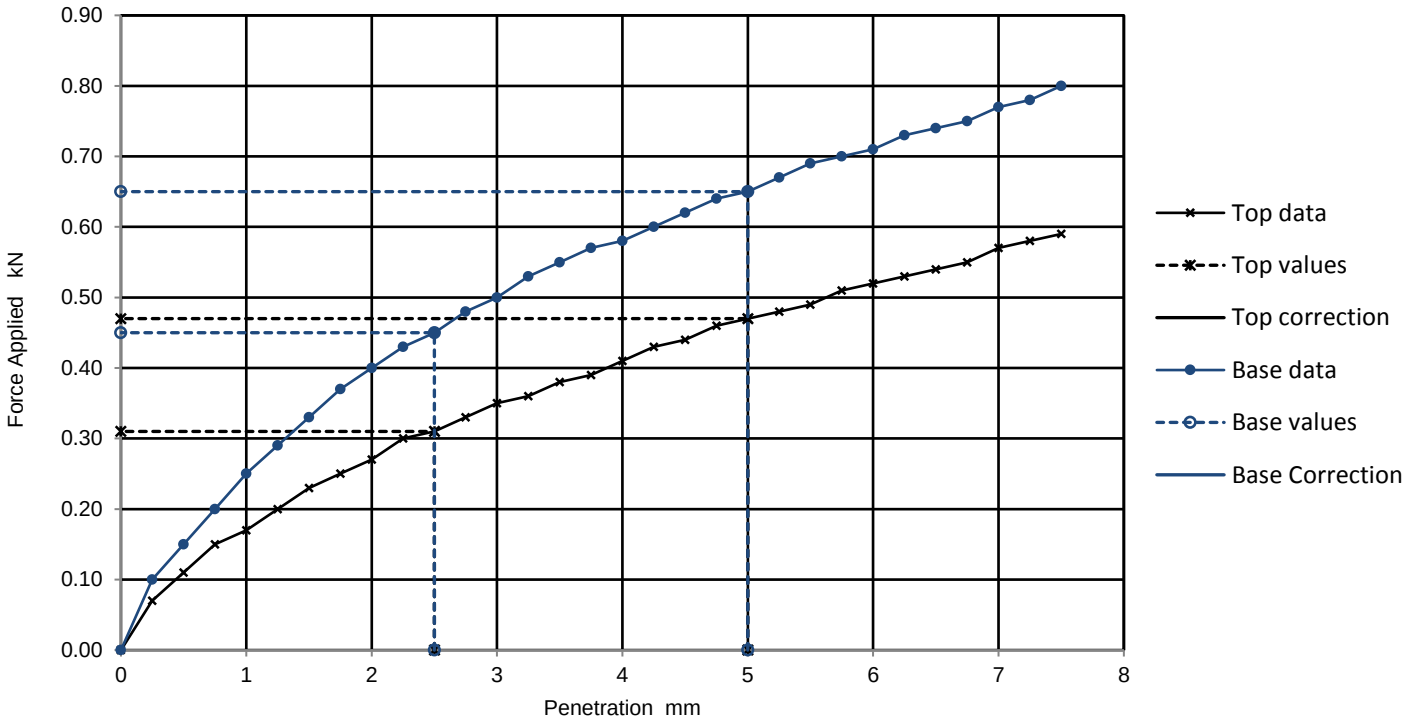
Laboratory Reference:	1112624	Depth Top [m]:	1.50
Hole No.:	TP605	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Yellowish brown slightly sandy CLAY		

Specimen Preparation:

Condition	Remoulded	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 4.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	0 %	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.94	Mg/m3	Surcharge applied	8	kg
	Dry density	1.54	Mg/m3		4.8	kPa
	Moisture content	26	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	2.3	2.4	2.4		26
BASE	No	3.4	3.3	3.4		25

Remarks:

Test/ Specimen specific remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 108.10

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of California Bearing Ratio

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

4041

Tested in Accordance with: BS 1377-4: 1990: Clause 7

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	27/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

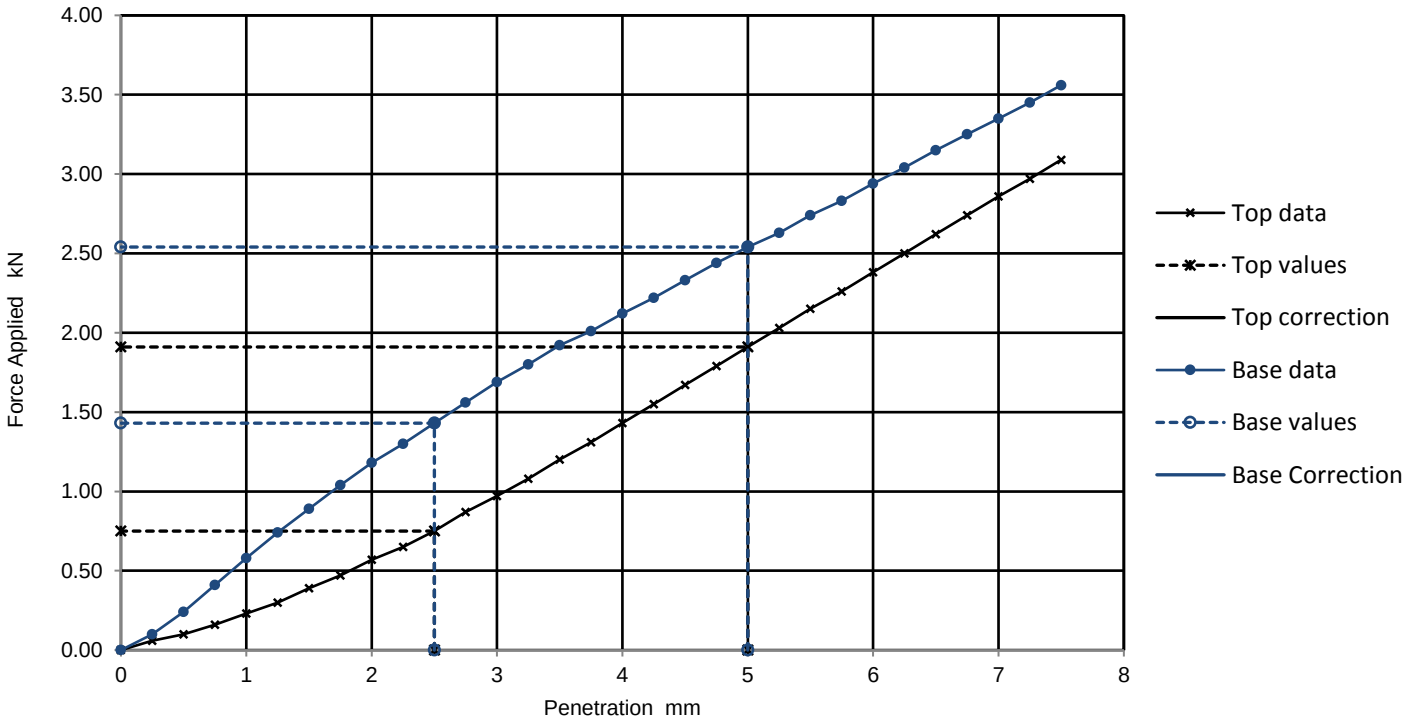
Laboratory Reference:	1112625	Depth Top [m]:	1.00
Hole No.:	TP606	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	White gravelly CHALK		

Specimen Preparation:

Condition	Remoulded	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 4.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	76 %	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.88	Mg/m3	Surcharge applied	8	kg
	Dry density	1.46	Mg/m3		4.8	kPa
	Moisture content	28	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	5.7	9.6	9.6		26
BASE	No	11.0	13.0	13.0		28

Remarks:	Test carried out with > 25 % retained on 20mm as per clause 7.2.1.2	Test/ Specimen specific remarks:	Natural material is gravelly CHALK. The material has been fragmented.

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 108.10

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of California Bearing Ratio

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

4041

Tested in Accordance with: BS 1377-4: 1990: Clause 7

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	27/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

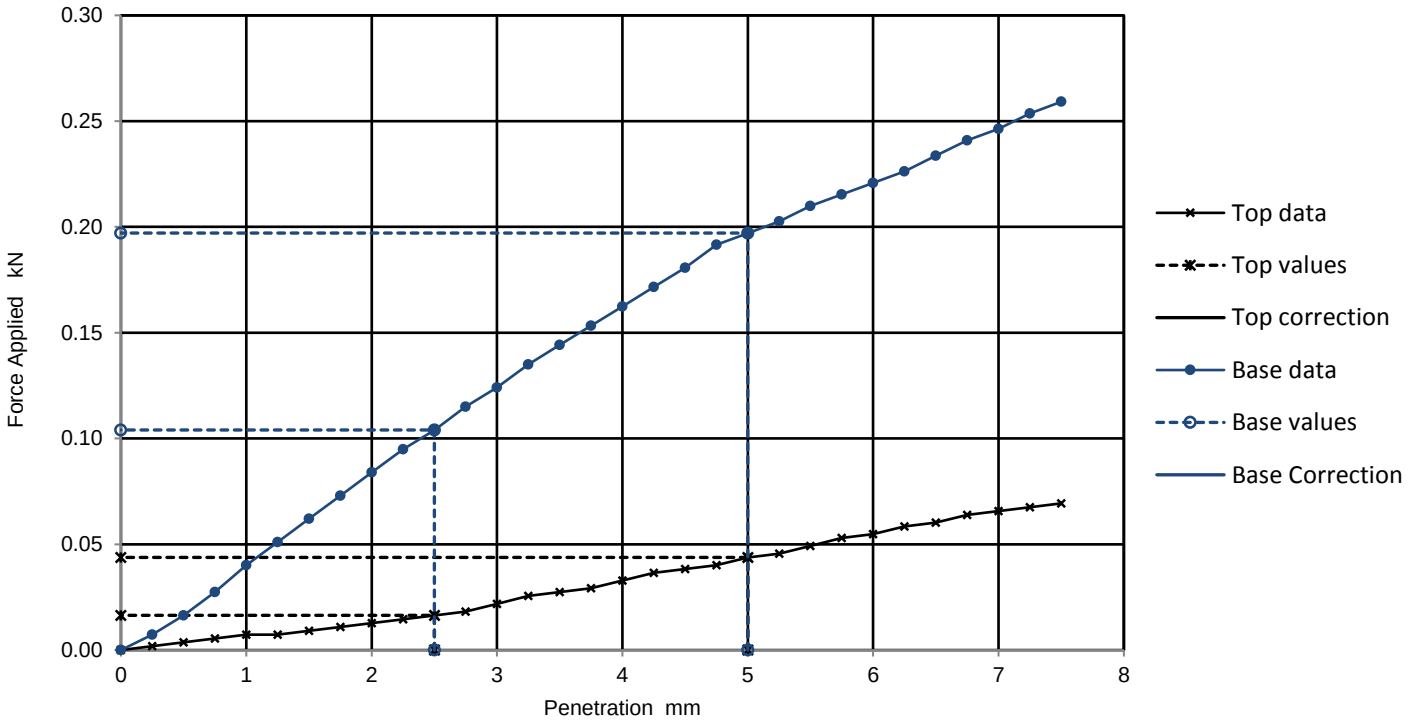
Test Results:

Laboratory Reference:	1112627	Depth Top [m]:	1.50
Hole No.:	TP607	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Cream color clayey gravelly CHALK		

Specimen Preparation:

Condition	Remoulded			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 4.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		49	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	1.90	Mg/m3	Surcharge applied	8	kg
	Dry density	1.45	Mg/m3		4.9	kPa
	Moisture content	31	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	0.1	0.2	0.2		30
BASE	No	0.8	1.0	1.0		31

Remarks: Test carried out with > 25 % retained on 20mm as per clause 7.2.1.2

Test/ Specimen specific remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 108.10

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of California Bearing Ratio

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

4041

Tested in Accordance with: BS 1377-4: 1990: Clause 7

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	27/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

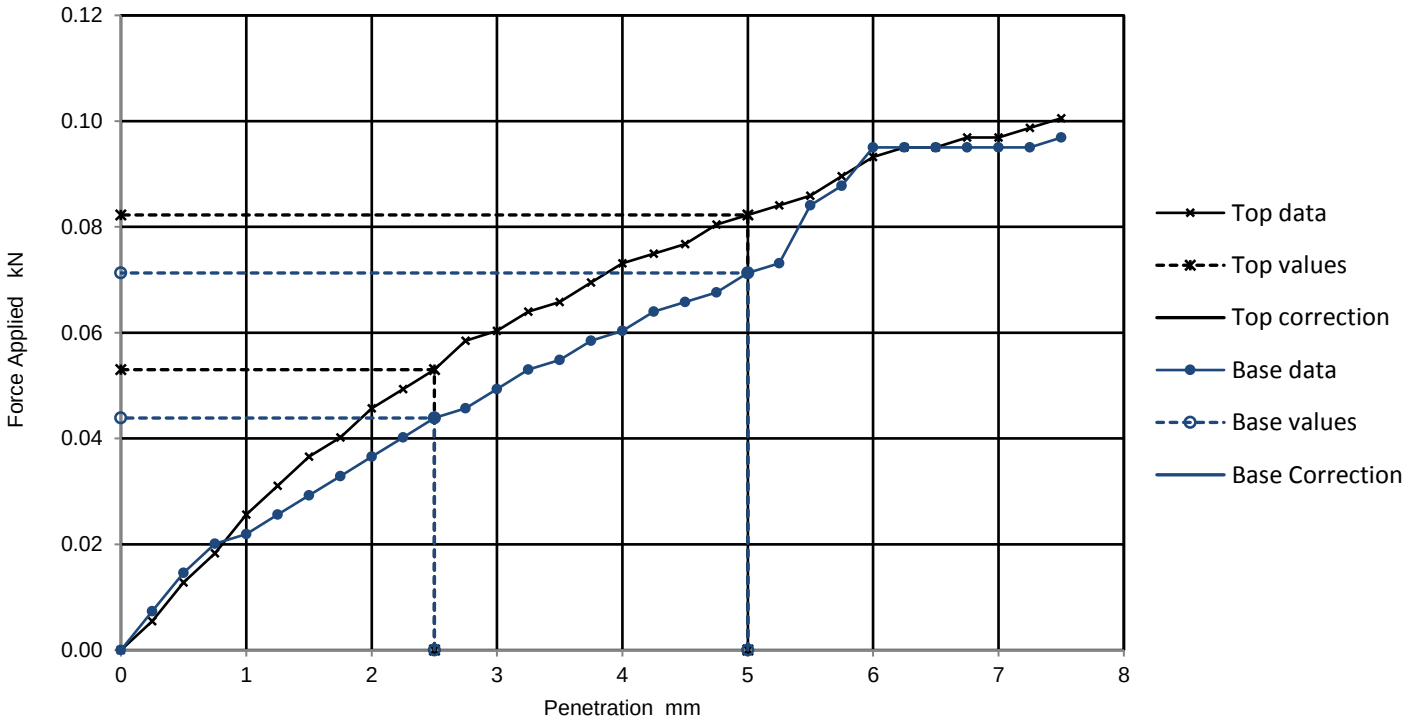
Laboratory Reference:	1112630	Depth Top [m]:	0.60
Hole No.:	TP609	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Brown gravelly CLAY		

Specimen Preparation:

Condition	Remoulded	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 4.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	45 %	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.89	Mg/m3	Surcharge applied	8	kg
	Dry density	1.49	Mg/m3		4.9	kPa
	Moisture content	27	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	0.4	0.4	0.4	0.4	27
BASE	No	0.3	0.4	0.4		28

Remarks:	Test carried out with > 25 % retained on 20mm as per clause 7.2.1.2	Test/ Specimen specific remarks:	Insufficient amount of material to test initial MC; Initial MC assumed to be equal to Top MC

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 108.10

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of California Bearing Ratio

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

4041

Tested in Accordance with: BS 1377-4: 1990: Clause 7

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	27/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

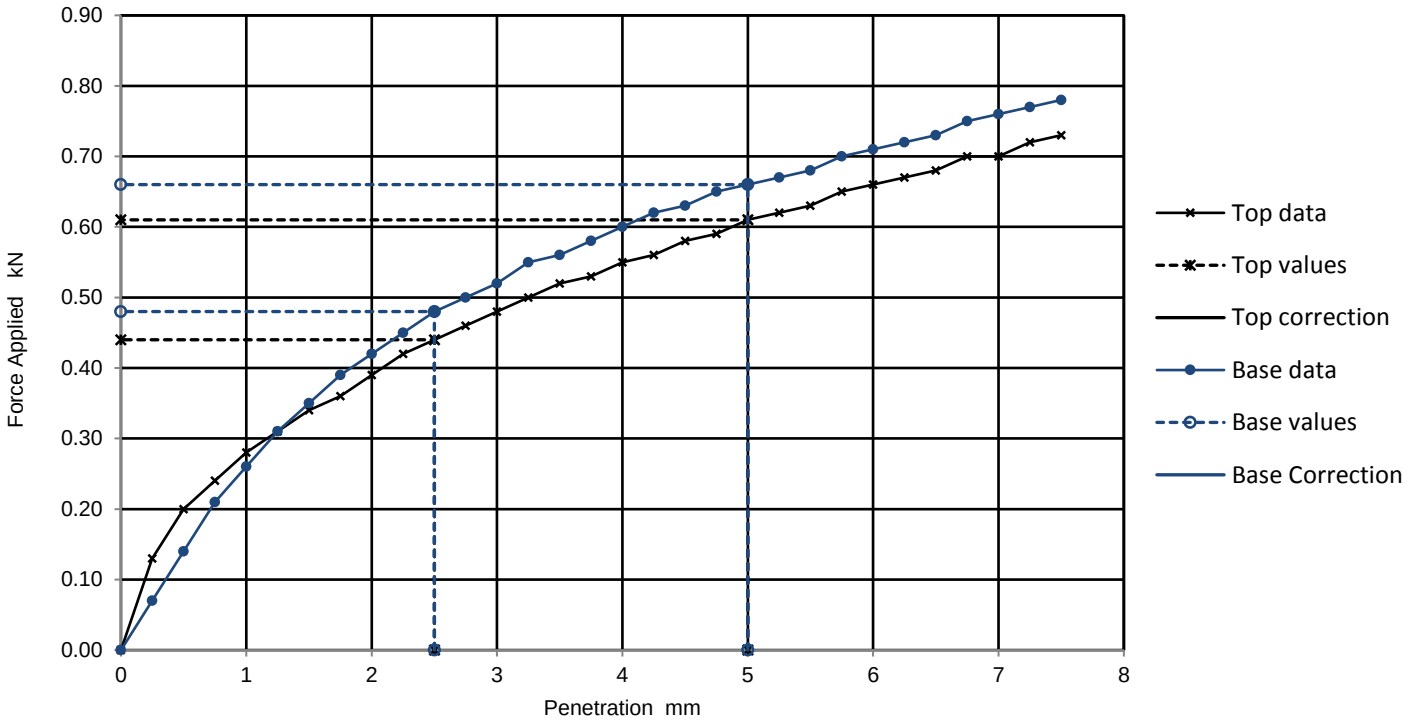
Laboratory Reference:	1112631	Depth Top [m]:	0.90
Hole No.:	TP610	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Yellowish brown slightly gravelly CLAY		

Specimen Preparation:

Condition	Remoulded	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 4.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	7 %	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.01	Mg/m3	Surcharge applied	8	kg
	Dry density	1.62	Mg/m3		4.9	kPa
	Moisture content	24	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	3.3	3.1	3.3	3.5	23
BASE	No	3.6	3.3	3.6		23

Remarks:

Test/ Specimen specific remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 108.10

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of California Bearing Ratio

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

4041

Tested in Accordance with: BS 1377-4: 1990: Clause 7

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	27/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

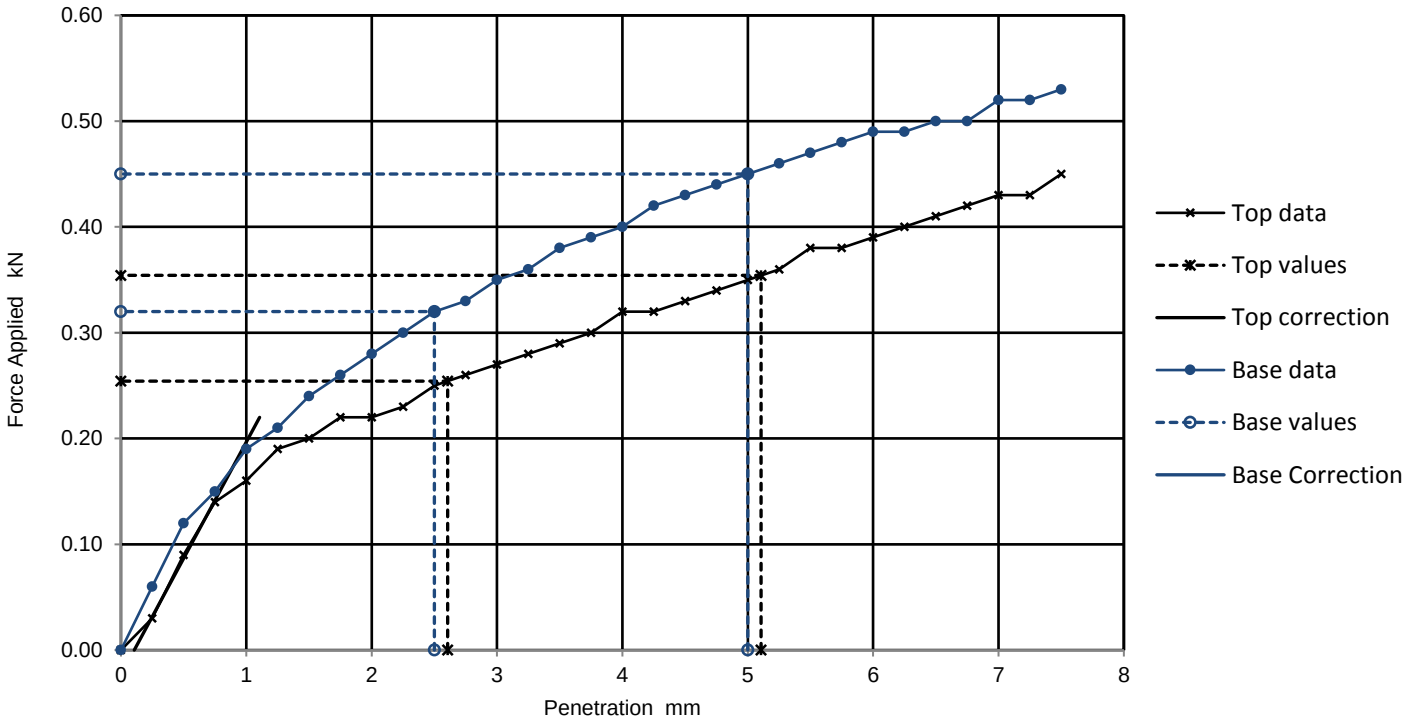
Laboratory Reference:	1112632	Depth Top [m]:	2.30
Hole No.:	TP610	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Orangish brown slightly gravelly CLAY		

Specimen Preparation:

Condition	Remoulded	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 4.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	32 %	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.71	Mg/m3	Surcharge applied	8	kg
	Dry density	1.15	Mg/m3		4.9	kPa
	Moisture content	49	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	Yes	1.9	1.8	1.9		48
BASE	No	2.4	2.3	2.4		49

Remarks: Test carried out with > 25 % retained on 20mm as per clause 7.2.1.2

Test/ Specimen specific remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 108.10

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of California Bearing Ratio

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

4041

Tested in Accordance with: BS 1377-4: 1990: Clause 7

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	27/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

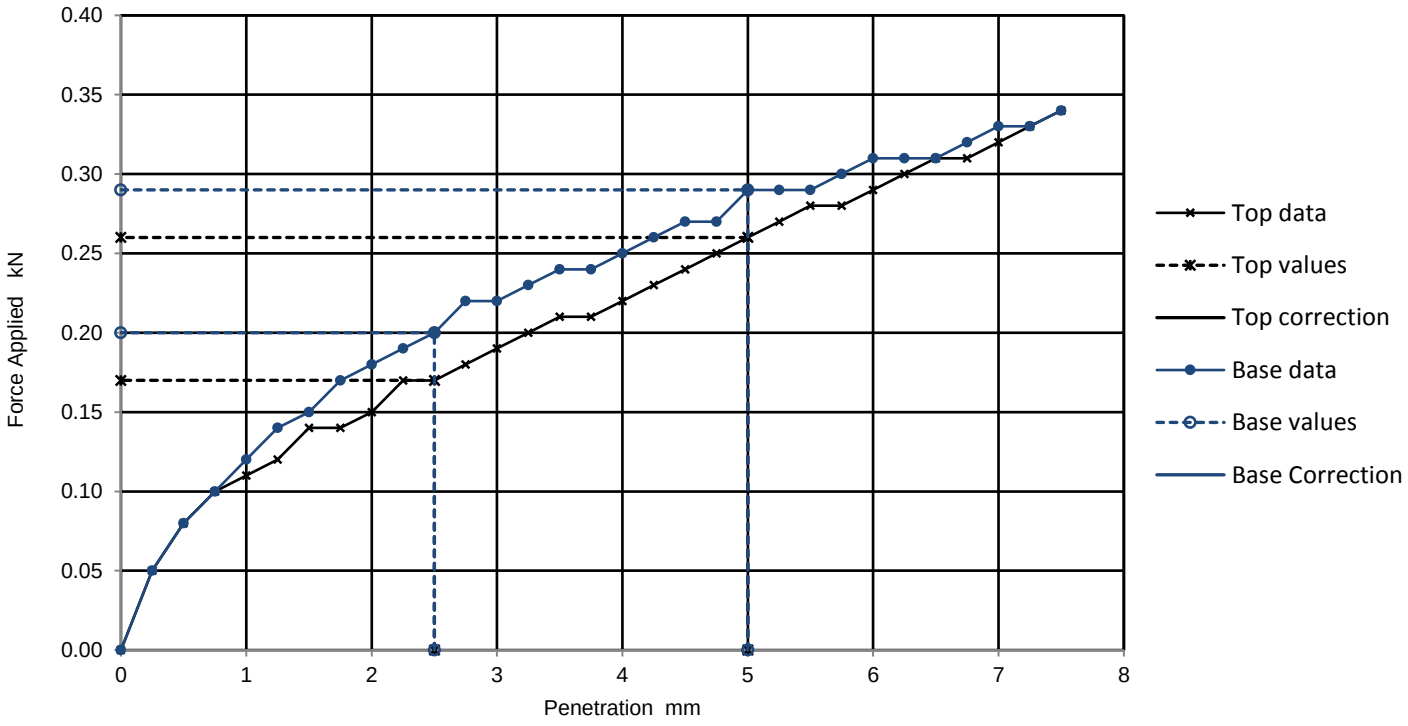
Laboratory Reference:	1112634	Depth Top [m]:	1.40
Hole No.:	TP612	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Orange slightly gravelly CLAY		

Specimen Preparation:

Condition	Remoulded	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 4.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	1 %	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.85	Mg/m3	Surcharge applied	8	kg
	Dry density	1.36	Mg/m3		4.9	kPa
	Moisture content	36	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	1.3	1.3	1.3	1.4	35
BASE	No	1.5	1.5	1.5		37

Remarks:

Test/ Specimen specific remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 108.10

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of California Bearing Ratio

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

4041

Tested in Accordance with: BS 1377-4: 1990: Clause 7

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	27/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

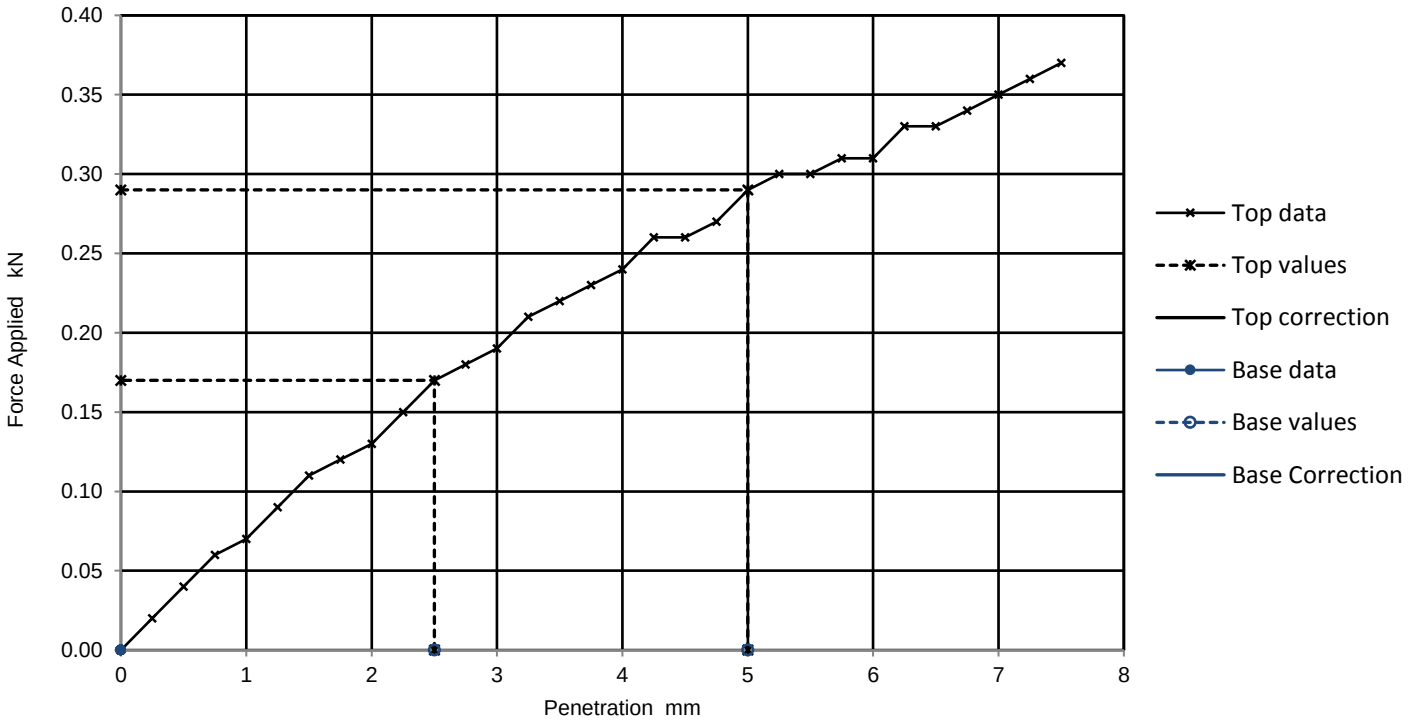
Test Results:

Laboratory Reference:	1112635	Depth Top [m]:	0.80
Hole No.:	TP613	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Yellowish brown slightly gravelly CLAY		

Specimen Preparation:

Condition	Remoulded	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 4.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	13 %	Dry density after soaking	Mg/m3
Initial Specimen details	Bulk density 2.00 Mg/m3	Surcharge applied	kg
	Dry density 1.62 Mg/m3		kPa
	Moisture content 23 %		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	1.3	1.5	1.5		23
BASE						

Remarks:	Insufficient amount of material to fill CBR Mould. Top only tested. Unable to attach surcharge discs	Test/ Specimen specific remarks:	

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 108.10

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of California Bearing Ratio

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

4041

Tested in Accordance with: BS 1377-4: 1990: Clause 7

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	27/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

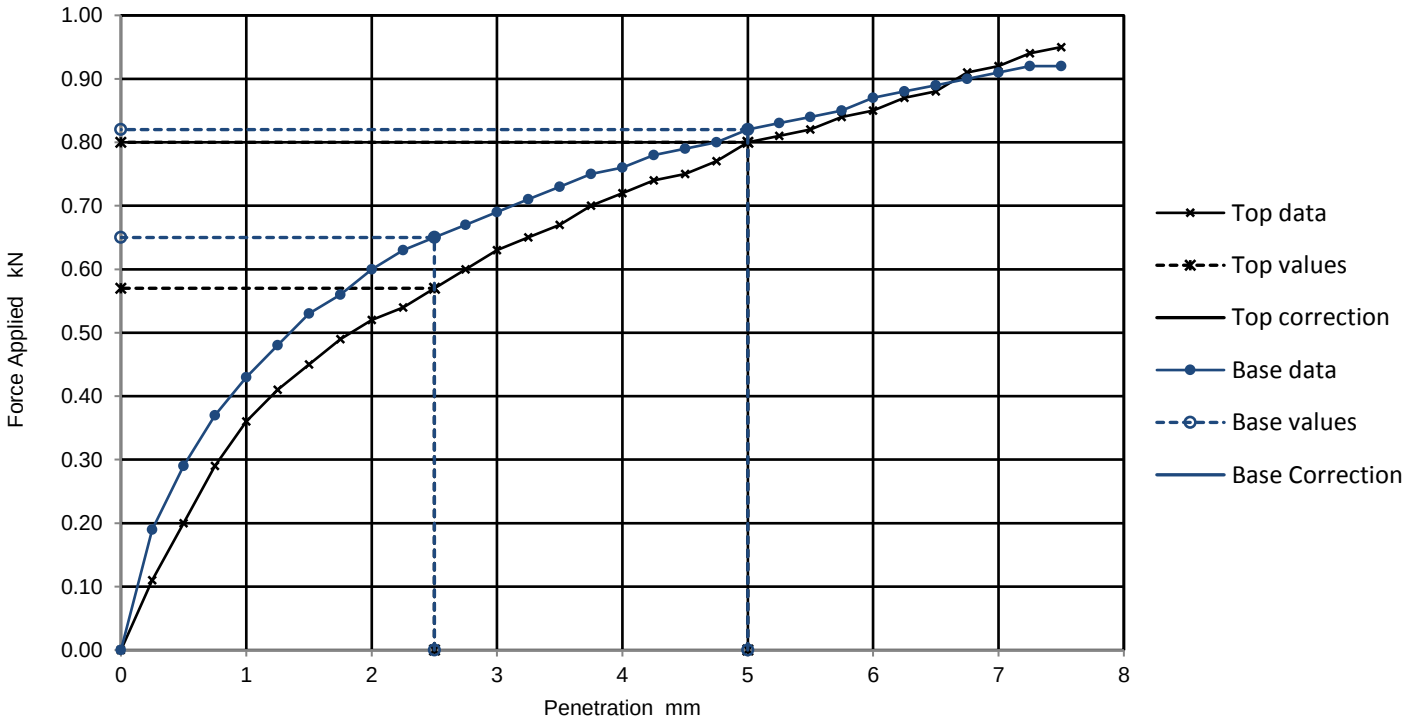
Laboratory Reference:	1112636	Depth Top [m]:	3.50
Hole No.:	TP613	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Orange slightly gravelly sandy CLAY		

Specimen Preparation:

Condition	Remoulded	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 4.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	20 %	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.83	Mg/m3	Surcharge applied	8	kg
	Dry density	1.33	Mg/m3		4.8	kPa
	Moisture content	38	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	4.3	4.0	4.3	4.6	34
BASE	No	4.9	4.1	4.9		34

Remarks:

Test/ Specimen specific remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 108.10

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of California Bearing Ratio

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

4041

Tested in Accordance with: BS 1377-4: 1990: Clause 7

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	27/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

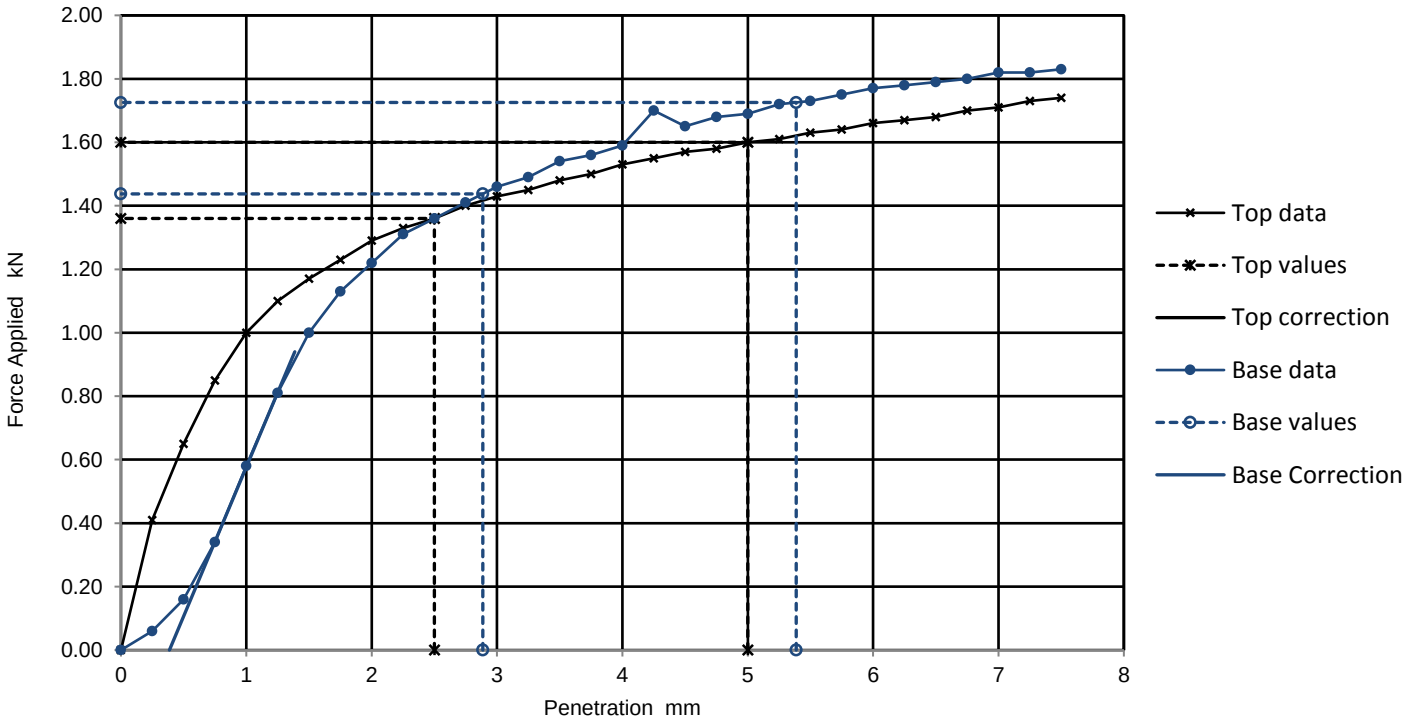
Laboratory Reference:	1112639	Depth Top [m]:	2.00
Hole No.:	TP615	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Orangish brown slightly gravelly CLAY		

Specimen Preparation:

Condition	Remoulded	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 4.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	3 %	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.85	Mg/m3	Surcharge applied	8	kg
	Dry density	1.41	Mg/m3		4.9	kPa
	Moisture content	31	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	10.0	8.0	10.0	11.0	30
BASE	Yes	11.0	8.6	11.0		29

Remarks:

Test/ Specimen specific remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 108.10

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of California Bearing Ratio

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

4041

Tested in Accordance with: BS 1377-4: 1990: Clause 7

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	27/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

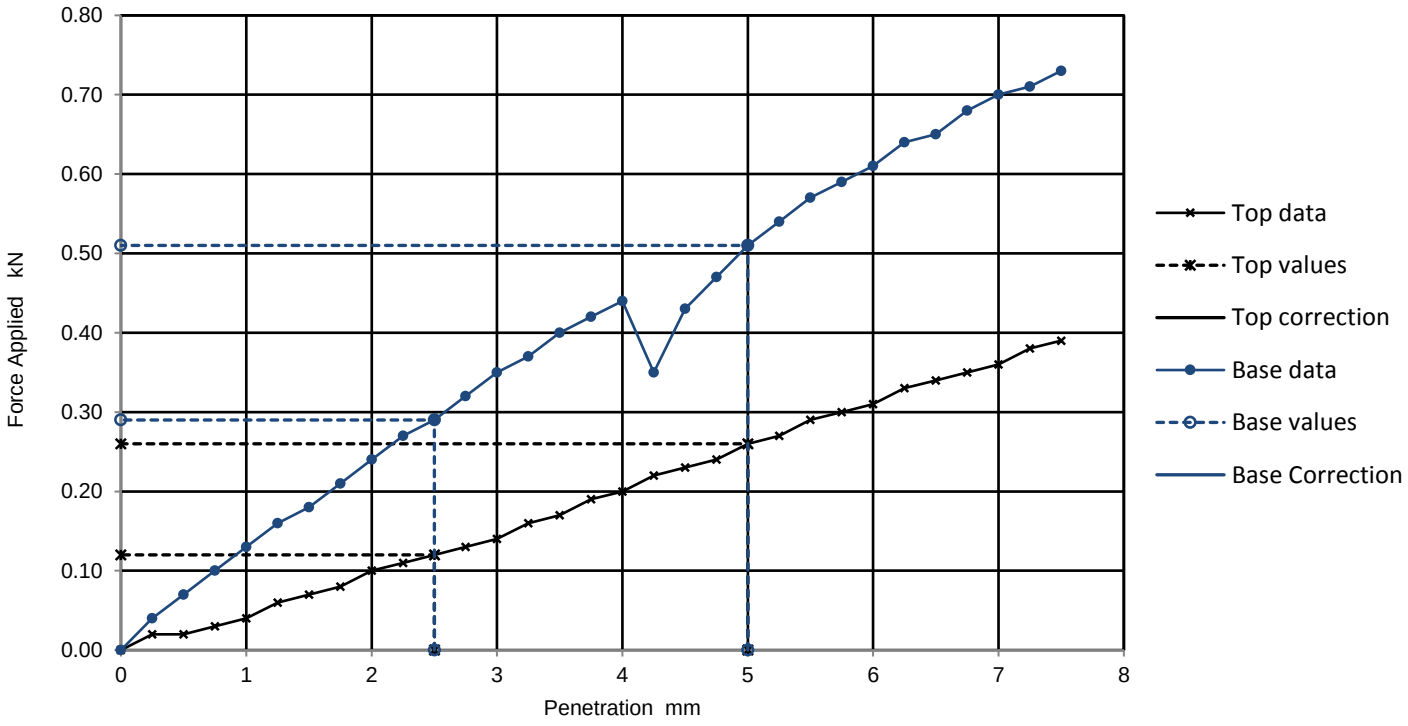
Laboratory Reference:	1112640	Depth Top [m]:	0.50
Hole No.:	TP616	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Brown slightly gravelly CLAY		

Specimen Preparation:

Condition	Remoulded	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 4.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	3 %	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	2.28	Mg/m3	Surcharge applied	8	kg
	Dry density	2.05	Mg/m3		4.9	kPa
	Moisture content	11	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	0.9	1.3	1.3		12
BASE	No	2.2	2.6	2.6		11

Remarks:

Test/ Specimen specific remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 108.10

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of California Bearing Ratio

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

4041

Tested in Accordance with: BS 1377-4: 1990: Clause 7

Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	27/12/2018
Site Name:	Fort Halstead	Sampled By:	Not Given
Site Address:	Not Given		

Test Results:

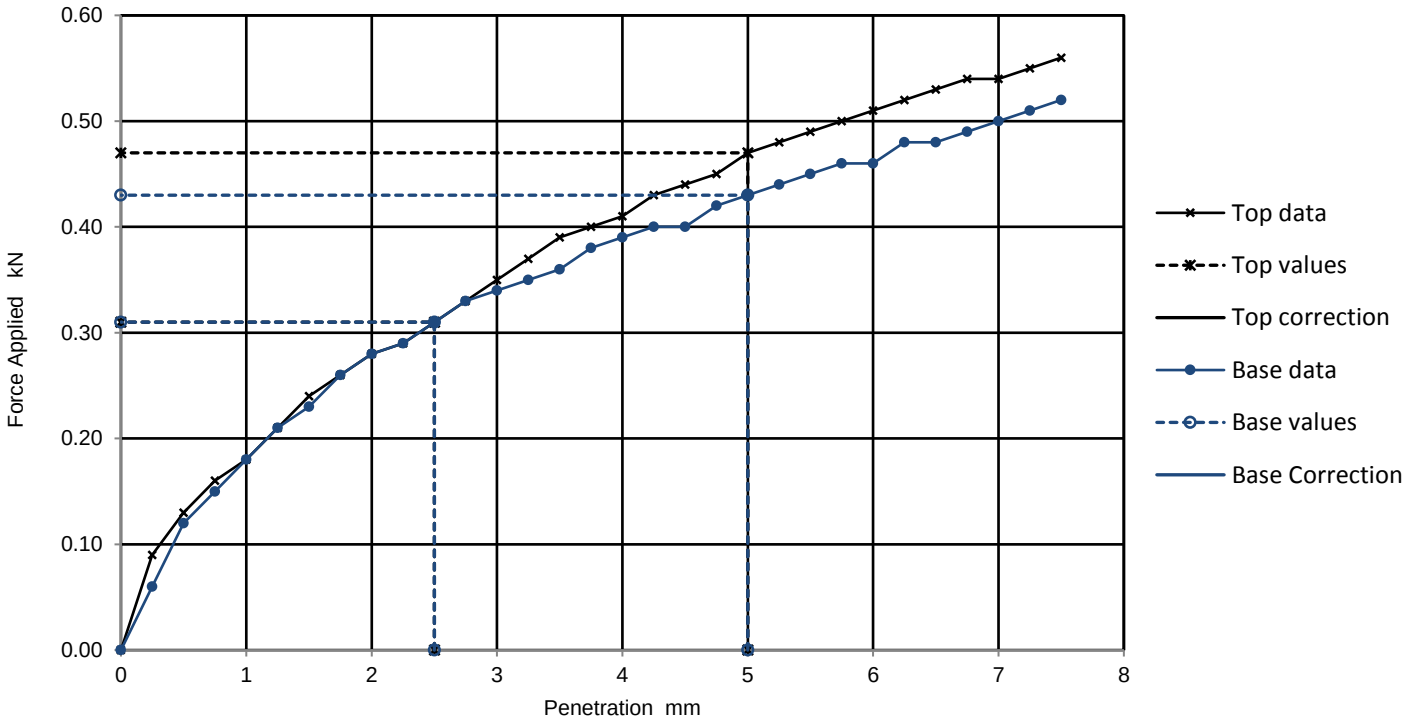
Laboratory Reference:	1112641	Depth Top [m]:	2.00
Hole No.:	TP616	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Yellowish brown slightly gravelly CLAY		

Specimen Preparation:

Condition	Remoulded	Soaking details	Not soaked
Details	Recompacted with specified standard effort using 4.5kg rammer	Period of soaking	days
		Time to surface	days
		Amount of swell recorded	mm
Material retained on 20mm sieve removed	18 %	Dry density after soaking	Mg/m3

Initial Specimen details	Bulk density	1.90	Mg/m3	Surcharge applied	8	kg
	Dry density	1.49	Mg/m3		4.8	kPa
	Moisture content	28	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP	No	2.3	2.4	2.4	2.3	29
BASE	No	2.3	2.2	2.3		29

Remarks:

Test/ Specimen specific remarks:

Approved: Dariusz Piotrowski
PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

Signed: Maria Chandler
Geotechnical Site Manager Northampton

GF 108.10

"Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation.
This report may not be reproduced other than in full without the prior written approval of the issuing laboratory.
The results included within the report are representative of the samples submitted for analysis.
The analysis was carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland."

for and on behalf of i2 Analytical Ltd

Wayne Lewis
Hydrock Consultants Ltd
2-4 Hawthorne Park
Holdenby Road
Spratton
Northamptonshire
NN6 8LD

t: 01604842888
f: 01604842666
e: waynelewis@hydrock.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 : 18-22020

Project / Site name:	Fort Halstead	**Samples received on:**	23/11/2018
Your job number:	C-10730-C	**Samples instructed on:**	11/12/2018
Your order number:	POP026005	**Analysis completed by:**	28/12/2018
Report Issue Number:	1	**Report issued on:**	28/12/2018
Samples Analysed:	18 soil samples		

Signed _____

Jordan Hill
Reporting Manager
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.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 18-22020

Project / Site name: Fort Halstead
Your Order No: POP026005

Lab Sample Number				1112541	1112542	1112543	1112544	1112545
Sample Reference				BH602	BH602	BH602	BH602	BH602
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.10	1.50	4.40	7.40	11.90
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	7.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	14	14	19	18	16
Total mass of sample received	kg	0.001	NONE	2.0	2.0	1.6	1.6	1.5

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.0	8.1	8.5	8.6	8.7
Total Sulphate as SO_4	mg/kg	50	MCERTS	280	200	490	520	750
Total Sulphate as SO_4	%	0.005	MCERTS	0.028	0.020	0.049	0.052	0.075
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.016	0.021	0.027	0.034	0.069
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	15.9	20.7	26.8	33.7	69.4
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	3.4	2.8	3.3	3.5	4.6
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	1.7	1.4	1.6	1.8	2.3
Total Sulphur	mg/kg	50	MCERTS	98	71	210	210	270
Total Sulphur	%	0.005	MCERTS	0.010	0.007	0.021	0.021	0.027
Ammonium as NH_4	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ammonium as NH_4 (leachate equivalent)	mg/l	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Water Soluble Nitrate (2:1) as NO_3	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Heavy Metals / Metalloids

Magnesium (water soluble)	mg/kg	5	NONE	6.1	5.0	7.1	7.8	11
Magnesium (leachate equivalent)	mg/l	2.5	NONE	3.0	2.5	3.6	3.9	5.7

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 18-22020

Project / Site name: Fort Halstead
Your Order No: POP026005

Lab Sample Number				1112546	1112547	1112548	1112549	1112550
Sample Reference				BH603	BH603	BH603	BH603	BH603
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	1.50	3.40	7.00	9.40
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	31	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	14	17	13	14	20
Total mass of sample received	kg	0.001	NONE	1.9	1.6	1.8	1.9	1.9

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	6.8	7.8	7.6	8.4	8.5
Total Sulphate as SO_4	mg/kg	50	MCERTS	310	170	150	620	560
Total Sulphate as SO_4	%	0.005	MCERTS	0.031	0.017	0.015	0.062	0.056
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.019	0.040	0.016	0.014	0.033
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	19.3	40.4	15.7	13.8	32.9
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	11	95	33	89	38
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	5.6	48	16	45	19
Total Sulphur	mg/kg	50	MCERTS	120	67	70	210	210
Total Sulphur	%	0.005	MCERTS	0.012	0.007	0.007	0.021	0.021
Ammonium as NH_4	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ammonium as NH_4 (leachate equivalent)	mg/l	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Water Soluble Nitrate (2:1) as NO_3	mg/kg	2	NONE	2.4	< 2.0	< 2.0	< 2.0	< 2.0
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Heavy Metals / Metalloids

Magnesium (water soluble)	mg/kg	5	NONE	< 5.0	7.0	6.5	8.8	11
Magnesium (leachate equivalent)	mg/l	2.5	NONE	< 2.5	3.5	3.3	4.4	5.3

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 18-22020

Project / Site name: Fort Halstead
Your Order No: POP026005

Lab Sample Number				1112551	1112552	1112553	1112554	1112555
Sample Reference				BH603	BH603	BH606	BH606	BH606
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				12.40	14.40	0.25	1.50	4.40
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	< 0.1	< 0.1	11	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	22	17	16	19	30
Total mass of sample received	kg	0.001	NONE	2.0	2.0	1.8	1.9	1.8

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.5	9.4	7.9	7.9	7.2
Total Sulphate as SO_4	mg/kg	50	MCERTS	530	510	560	150	280
Total Sulphate as SO_4	%	0.005	MCERTS	0.053	0.051	0.056	0.015	0.028
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.048	0.042	0.013	0.023	0.0085
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	47.7	41.8	12.8	22.5	8.5
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	55	58	2.9	2.6	4.4
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	28	29	1.5	1.3	2.2
Total Sulphur	mg/kg	50	MCERTS	240	180	310	74	100
Total Sulphur	%	0.005	MCERTS	0.024	0.018	0.031	0.007	0.010
Ammonium as NH_4	mg/kg	0.5	MCERTS	1.1	0.6	< 0.5	0.6	< 0.5
Ammonium as NH_4 (leachate equivalent)	mg/l	0.05	MCERTS	0.11	0.06	< 0.05	0.06	< 0.05
Water Soluble Nitrate (2:1) as NO_3	mg/kg	2	NONE	< 2.0	< 2.0	4.4	< 2.0	5.9
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

Heavy Metals / Metalloids

Magnesium (water soluble)	mg/kg	5	NONE	14	11	8.8	9.0	< 5.0
Magnesium (leachate equivalent)	mg/l	2.5	NONE	6.8	5.7	4.4	4.5	< 2.5

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 18-22020

Project / Site name: Fort Halstead
Your Order No: POP026005

Lab Sample Number				1112556	1112557	1112558		
Sample Reference				BH606	BH606	BH606		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				8.40	11.40	14.40		
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	< 0.1	< 0.1		
Moisture Content	%	N/A	NONE	21	22	22		
Total mass of sample received	kg	0.001	NONE	2.0	2.0	2.0		

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.5	8.5	8.5		
Total Sulphate as SO_4	mg/kg	50	MCERTS	480	630	520		
Total Sulphate as SO_4	%	0.005	MCERTS	0.048	0.063	0.052		
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.014	0.013	0.014		
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	14.4	13.3	14.1		
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	3.4	2.0	2.5		
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	1.7	1.0	1.3		
Total Sulphur	mg/kg	50	MCERTS	160	220	220		
Total Sulphur	%	0.005	MCERTS	0.016	0.022	0.022		
Ammonium as NH_4	mg/kg	0.5	MCERTS	< 0.5	< 0.5	0.5		
Ammonium as NH_4 (leachate equivalent)	mg/l	0.05	MCERTS	< 0.05	< 0.05	0.05		
Water Soluble Nitrate (2:1) as NO_3	mg/kg	2	NONE	5.4	2.7	< 2.0		
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0	< 5.0		

Heavy Metals / Metalloids

Magnesium (water soluble)	mg/kg	5	NONE	7.7	6.8	6.8		
Magnesium (leachate equivalent)	mg/l	2.5	NONE	3.8	3.4	3.4		

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 18-22020

Project / Site name: Fort Halstead

* 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 topsoil/loam 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 *
1112541	BH602	None Supplied	1.10	Light brown clay and sand with gravel and stones.
1112542	BH602	None Supplied	1.50	Brown clay and sand with gravel.
1112543	BH602	None Supplied	4.40	White chalk. **
1112544	BH602	None Supplied	7.40	White chalk. **
1112545	BH602	None Supplied	11.90	White chalk. **
1112546	BH603	None Supplied	0.40	Brown loam and clay with stones and vegetation.
1112547	BH603	None Supplied	1.50	Light brown sandy clay.
1112548	BH603	None Supplied	3.40	Light brown sandy clay.
1112549	BH603	None Supplied	7.00	Beige chalk. **
1112550	BH603	None Supplied	9.40	White chalk. **
1112551	BH603	None Supplied	12.40	White chalk. **
1112552	BH603	None Supplied	14.40	White chalk. **
1112553	BH606	None Supplied	0.25	Brown loam and clay with gravel and stones.
1112554	BH606	None Supplied	1.50	Light brown clay.
1112555	BH606	None Supplied	4.40	Brown clay and sand.
1112556	BH606	None Supplied	8.40	White chalk. **
1112557	BH606	None Supplied	11.40	White chalk. **
1112558	BH606	None Supplied	14.40	White chalk. **

** Non MCERTS matrix.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 18-22020

Project / Site name: Fort Halstead

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammonium as NH4 in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests. 2:1 extraction.	L082-PL	D	MCERTS
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES.	In-house method based on TRL 447	L038-PL	D	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 2, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Nitrate, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	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
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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	MCERTS
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L038	D	MCERTS
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, and MEWAM 2006 Methods for the Determination of Metals in Soil	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.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH602		S	18-22020	1112541	a			
BH602		S	18-22020	1112542	a			
BH602		S	18-22020	1112543	a			
BH602		S	18-22020	1112544	a			
BH602		S	18-22020	1112545	a			
BH603		S	18-22020	1112546	a			
BH603		S	18-22020	1112547	a			
BH603		S	18-22020	1112548	a			
BH603		S	18-22020	1112549	a			
BH603		S	18-22020	1112550	a			
BH603		S	18-22020	1112551	a			
BH603		S	18-22020	1112552	a			
BH606		S	18-22020	1112553	a			
BH606		S	18-22020	1112554	a			
BH606		S	18-22020	1112555	a			
BH606		S	18-22020	1112556	a			
BH606		S	18-22020	1112557	a			
BH606		S	18-22020	1112558	a			

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature

Hydrock

Client	Location or material to which this assessment applies
Merseyside Pension Fund	Made Ground
Project	
Fort Halstead	
Job number	
C-10730	

Concrete in aggressive ground

After BRE Special Digest 1, 2005

Soil data

	(Adjusted) water soluble sulfate (mg/l)	Total potential sulfate (%)	Water soluble magnesium (mg/l)
Number of tests	12	12	10
No. tests in 20% data set	2	2	2
No. tests with suspected pyrite		1	
Maximum value	1927.85	3.6	13
Mean of highest two values	1823	2	10
Mean of highest 20%	1800	2	10
Characteristic Value	**1800**	**2.1**	**9.5**
			Mg not required
	[no pyrite]	**[pyrite suspected]**	
DS Class	**DS-3**	**DS-4**	

If pyrite suspected, DS Class limited to **DS-4**

Is pyrite assumed to be present? **No** **Adopted DS Class =** **DS-3**

Water data

	(Adjusted) soluble sulfate (mg/l)	Soluble magnesium (mg/l)
Characteristic Value (Maximum Level)	0	0
		Mg not required
DS Class		

pH data

	Soil	Water
Number of tests	12	2
No. tests in 20% data set	2	0
Lowest pH	6.8	12.0
Mean of lowest 20%	7.1	
Characteristic value	**7.1**	**12.0**
Design value	**7.1**	
Number of soil pH results less than 5.5	0	

DS Class design value

Based on higher of soil and water data **DS-3**

ACEC Class design value

Brownfield

Static groundwater **AC-2s**

Hydrock

Client	Location or material to which this assessment applies
Merseyside Pension Fund	Clay with Flints
Project	
Fort Halstead	
Job number	
C-10730	

Concrete in aggressive ground

After BRE Special Digest 1, 2005

Soil data

	(Adjusted) water soluble sulfate (mg/l)	Total potential sulfate (%)	Water soluble magnesium (mg/l)
Number of tests	37	37	0
No. tests in 20% data set	7	7	
No. tests with suspected pyrite		0	
Maximum value	1880	0.1	
Mean of highest two values	1121	0	
Mean of highest 20%	400	0	
Characteristic Value	**400**	**0.1**	

	[no pyrite]	**[pyrite suspected]**
DS Class	**DS-1**	**DS-1**

If pyrite suspected, DS Class limited to **DS-1**

Is pyrite assumed to be present? **No** **Adopted DS Class =** **DS-1**

Water data

	(Adjusted) soluble sulfate (mg/l)	Soluble magnesium (mg/l)
Characteristic Value **(Maximum Level)**	0	0
DS Class		

pH data

	Soil	Water
Number of tests	37	2
No. tests in 20% data set	7	0
Lowest pH	4.7	12.0
Mean of lowest 20%	5.4	
Characteristic value	**5.4**	**12.0**
Design value	**5.4**	
Number of soil pH results less than 5.5	4	

DS Class design value

Based on higher of soil and water data **DS-1**

ACEC Class design value

Natural ground

Mobile groundwater **AC-2z**

Hydrock

Client	Location or material to which this assessment applies
Merseyside Pension Fund	Chalk Formation
Project	
Fort Halstead	
Job number	
C-10730	

Concrete in aggressive ground

After BRE Special Digest 1, 2005

Soil data

	(Adjusted) water soluble sulfate (mg/l)	Total potential sulfate (%)	Water soluble magnesium (mg/l)
Number of tests	11	11	0
No. tests in 20% data set	2	2	
No. tests with suspected pyrite		0	
Maximum value	98	0.1	
Mean of highest two values	84	0	
Mean of highest 20%	84	0	
Characteristic Value	**84**	**0.1**	

	[no pyrite]	**[pyrite suspected]**
DS Class	**DS-1**	**DS-1**

If pyrite suspected, DS Class limited to **DS-1**

Is pyrite assumed to be present? **No** **Adopted DS Class =** **DS-1**

Water data

	(Adjusted) soluble sulfate (mg/l)	Soluble magnesium (mg/l)
Characteristic Value **(Maximum Level)**	0	0
DS Class		

pH data

	Soil	Water
Number of tests	11	2
No. tests in 20% data set	2	0
Lowest pH	8.2	12.0
Mean of lowest 20%	8.4	
Characteristic value	**8.4**	**12.0**
Design value	**8.4**	

Number of soil pH results less than 5.5 0

DS Class design value

Based on higher of soil and water data **DS-1**

ACEC Class design value

Natural ground

Mobile groundwater **AC-1 ***

* increase to AC-2z in flowing water (pure or with >15mg/l carbon dioxide)

1 DAY INFILTRATION ASSESSMENT - WORKSHEET

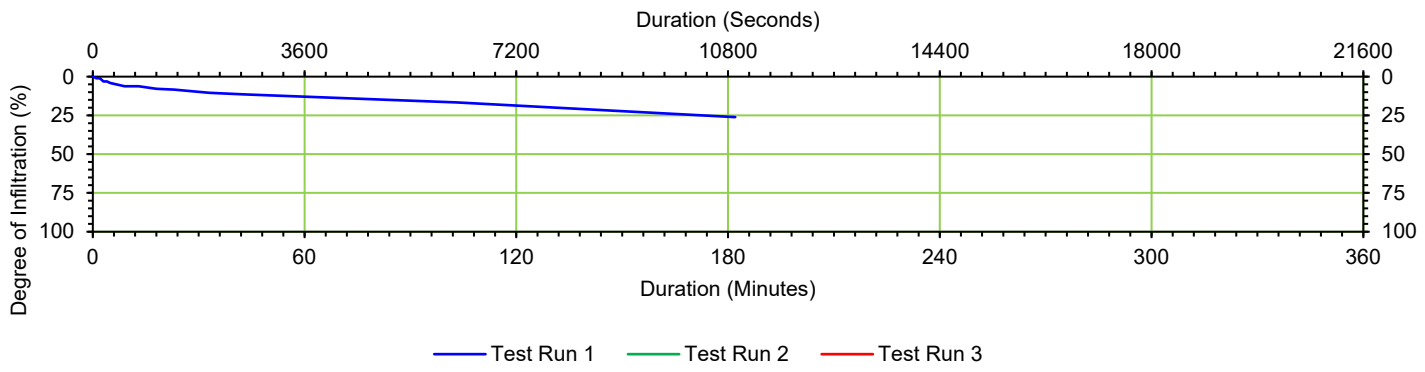
Site: Fort Halstead, Kent
Client: Merseyside Pension Fund
Test Location TP601 **Date of start** 26/11/2018 **Date at end** 26/11/2018

Test Run 1		Test Run 2		Test Run 3	
Pit Dimensions (m)		**Pit Dimensions (m)**		**Pit Dimensions (m)**	
Trial Pit Length (L)	2.500m	Trial Pit Length (L)		Trial Pit Length (L)	
Trial Pit Breadth / Width (B)	0.550m	Trial Pit Breadth / Width (B)		Trial Pit Breadth / Width (B)	
Effective Depth (D)	2.500m	Effective Depth (D)		Effective Depth (D)	
Time at Start of Filling	11.08	Time at Start of Filling		Time at Start of Filling	
Time at End of Filling	11.12	Time at End of Filling		Time at End of Filling	
Depth from Surface to Water (D_{TW})	1.540m	Depth below Surface to Water (D_{TW})		Depth below Surface to Water (D_{TW})	
Water Depth (W_D)	0.960m	Water Depth (W_D)	-	Water Depth (W_D)	-
Maximum Fill Volume (V_W)	1.320m³	Maximum Fill Volume (V_W)	-	Maximum Fill Volume (V_W)	-
Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No	Gravel used to backfill Test Pit	No
Porosity of Gravel Backfill (P_t)		Porosity of Gravel Backfill (P_t)		Porosity of Gravel Backfill (P_t)	
Corrected Water Volume (V_{WC})	1.320m³	Corrected Water Volume (V_{WC})	-	Corrected Water Volume (V_{WC})	-

Time to soakaway

Test Run 1 Time Day	Time	Depth to water (m bgl)	Duration Seconds	Test Run 2 Time Day	Time	Depth to water (m bgl)	Duration Seconds	Test Run 3 Time Day	Time	Depth to water (m bgl)	Duration Seconds
1	11.120	1.540	0								
1	11.130	1.550	60								
1	11.140	1.550	120								
1	11.150	1.570	180								
1	11.160	1.570	240								
1	11.170	1.580	300								
1	11.190	1.590	420								
1	11.210	1.600	540								
1	11.230	1.600	660								
1	11.250	1.600	780								
1	11.300	1.615	1080								
1	11.350	1.620	1380								
1	11.400	1.630	1680								
1	11.450	1.640	1980								
1	11.550	1.650	2580								
1	12.550	1.700	6180								
1	14.140	1.790	10920								
			10920								
			10920								
			10920								
			10920								
			10920								
			10920								

25% water loss (75% full)	1.780m	**25% water loss (75% full)**	-	**25% water loss (75% full)**	-
50% water loss (50% full)	2.020m	**50% water loss (50% full)**	-	**50% water loss (50% full)**	-
75% water loss (25% full)	2.260m	**75% water loss (25% full)**	-	**75% water loss (25% full)**	-
25% time (seconds)	10393 sec	**25% time (seconds)**	-	**25% time (seconds)**	-
75% time (seconds)	-	**75% time (seconds)**	-	**75% time (seconds)**	-
Vp 75-25	0.660m³	**Vp 75-25**	-	**Vp 75-25**	-
ap 50 (Actual area from test)	4.303m³	**ap 50 (Actual area from test)**	-	**ap 50 (Actual area from test)**	-
tp 75 - 25		**tp 75 - 25**		**tp 75 - 25**	
Soil Infiltration Rate	-	**Soil Infiltration Rate**	-	**Soil Infiltration Rate**	-



Appendix F

Site Monitoring Data

Hydrock

Site: Fort Halstead
Job number: C161227
Client: Armstrong (Kent) LLP

Gas analyser: GA5000
Equipment check OK: Y
Service in date: Y
Calibration check OK: Y
Name of person monitoring: Wayne Lewis

Notes on site conditions:
13/09/16 - Sunny and hot

Notes: LEL = lower explosive limit = 5%v/v. * where the flow is less than the limit of detection of the instrument, the detection limit is reported. GSVs are rounded to 3 places.

Monitoring round		Borehole details						Pressure and flow					Gas concentrations									GSV		Local conditions
Date	Time	Borehole	Single or dual gas tap	Response zone depth (m)	Depth to water or depth of hole if dry (m)	D denotes dry hole	Volume of headspace in BH (well pipie & filter pack) (m^3)	Atmospheric pressure (hPa)	Atm pressure falling / rising / steady	Relative BH pressure (hPa)	Gas flow* (l/hr)	Gas flow* (absolute value) (l/hr)	VOC (as ppm using PID)	CH_4 (%v/v) Initial	CH_4 (%v/v) Steady	CH_4 (%LEL) Initial	CH_4 (%LEL) Steady	CO_2 (%v/v) Initial	CO_2 (%v/v) Steady	O_2 (%v/v) Initial	O_2 (%v/v) Steady	Gas Screening Value (CH_4) (l/hr)	Gas Screening Value (CO_2) (l/hr)	Notes on condition of borehole and surrounding ground
								Max. individual values:				**0.3**			**0.0**		**0.0**		**10.2**		**20.2**	**0**	**0.0306**	**Summary statistics for this monitoring period.**
								Min. individual values:				0.3			0.0		0.0		0.1		8.6	0	0.0003	
								Worst-case GSVs based on max. individual flow and max. individual conc. over the duration of this table:														**0**	**0.0306**	
13/09/16		BH524	S	1-4	4	D	0.02199	987	F	0	0.3	0.3		0	0	0	0	3.3	3.3	16	16	0	0.0099	Headworks in good condition.
13/09/16		BH526	S	0.5-2	2	D	0.00864	987	F	0	0.3	0.3		0	0	0	0	1.7	1.7	18.1	18.1	0	0.0051	Headworks in good condition.
13/09/16		BH521	S	1-5	5	D	0.02867	987	F	0	0.3	0.3		0	0	0	0	0.8	0.8	20	20	0	0.0024	Headworks in good condition.
13/09/16		BH544	S	1-4	4	D	0.02199	987	F	0	0.3	0.3		0	0	0	0	1.3	1.3	19.5	19.5	0	0.0039	Headworks in good condition.
13/09/16		BH550	S	1-4	4	D	0.02199	987	F	0	0.3	0.3		0	0	0	0	2.1	2.1	19.1	19.1	0	0.0063	Headworks in good condition.
13/09/16		BH541	S	0.5-2	2	D	0.00864	987	F	0	0.3	0.3		0	0	0	0	1.6	1.6	19.5	19.5	0	0.0048	Headworks in good condition.
13/09/16		BH531	S	1-5	5	D	0.02867	987	F	0	0.3	0.3		0	0	0	0	1.1	1.1	19.7	19.7	0	0.0033	Headworks in good condition.
13/09/16		BH507	S	1-4	4	D	0.02199	987	F	0	0.3	0.3		0	0	0	0	1.5	1.5	19.3	19.3	0	0.0045	Headworks in good condition.
13/09/16		BH503A	S	1-5	5	D	0.02867	987	F	0	0.3	0.3		0	0	0	0	0.1	0.1	20	20	0	0.0003	Headworks in good condition.
13/09/16		BH530	S	0.5-3	3	D	0.01532	987	F	0	0.3	0.3		0	0	0	0	1.2	1.2	19.4	19.4	0	0.0036	Headworks in good condition.
13/09/16		BH534	S	0.5-3	3	D	0.01532	987	F	0	0.3	0.3		0	0	0	0	1.3	1.3	18.5	18.5	0	0.0039	Headworks in good condition.
13/09/16		BH523	S	1-4	4	D	0.02199	987	F	0	0.3	0.3		0	0	0	0	1.5	1.5	18.7	18.7	0	0.0045	Headworks in good condition.
13/09/16		BH536	S	1-5	5	D	0.02867	987	F	0	0.3	0.3		0	0	0	0	1.7	1.7	19.2	19.2	0	0.0051	Headworks in good condition.
13/09/16		BH537	S	1-5	5	D	0.02867	987	F	0	0.3	0.3		0	0	0	0	0.9	0.9	18.3	18.3	0	0.0027	Headworks in good condition.
13/09/16		BH539	S	0.5-1.5	1.5	D	0.00530	987	F	0	0.3	0.3		0	0	0	0	10.2	10.2	8.6	8.6	0	0.0306	Headworks in good condition.
13/09/16		BH509	S	1-4	4	D	0.02199	987	F	0	0.3	0.3		0	0	0	0	3	3	19.2	19.2	0	0.009	Headworks in good condition.
13/09/16		BH514	S	0.5-3	3	D	0.01532	987	F	0	0.3	0.3		0	0	0	0	0.1	0.1	20.2	20.2	0	0.0003	Headworks in good condition.
13/09/16		BH528	S	1-5	5	D	0.02867	987	F	0	0.3	0.3		0	0	0	0	5.5	5.5	13.8	13.8	0	0.0165	Headworks in good condition.
13/09/16		BH513	S	1-3	3	D	0.01532	987	F	0	0.3	0.3		0	0	0	0	1.7	1.7	19.5	19.5	0	0.0051	Headworks in good condition.

Hydrock

Site: Fort Halstead
Job number: C-10730
Client: Merseyside PF

Gas analyser: G505312
Equipment check OK: Y
Service in date: Y
Calibration check OK: Y
Name of person monitoring: Enitial

Notes on site conditions:

Notes: LEL = lower explosive limit = 5%v/v. * where the flow is less than the limit of detection of the instrument, the detection limit is reported. GSVs are rounded to 3 places

Monitoring round		Borehole details					Pressure and flow				Gas concentrations									GSV		Local conditions
Date	Time	Borehole	Single or dual gas tap	Depth to water or depth of hole if dry (m)	D denotes dry hole	Volume of headspace in BH (well pipe & filter pack) (m^3)	Atmospheric pressure (hPa)	Atm pressure falling / rising / steady	Relative BH pressure (hPa)	Gas flow* (l/hr)	VOC (as ppm using PID)	CH_4 (%v/v)		CH_4 (%LEL)		CO_2 (%v/v)		O_2 (%v/v)		Gas Screening Value (CH_4) (l/hr)	Gas Screening Value (CO_2) (l/hr)	Notes on condition of borehole and surrounding ground
												Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady			
							Max. individual values:						**0.0**		**0.0**		**4.8**		**20.8**	**0**	**0.0015**	**Summary statistics for this monitoring period.**
							Min. individual values:						0.0		0.0		0.2		10.2	0	0	
							Worst-case GSVs based on max. individual flow and max. individual conc. over the duration of this table:													**0**	**0**	
17/12/18	16:01	BH503A__		5.1	D	0.02900	997		-1.1	0.0	0	0.0	0.0	0	0	1.9	1.9	19.8	19.8	0	0	
17/12/18	13:24	BH507___		2.9		0.01451	996		-1.8	0.0	0	0.1	0.0	2	0	2.5	2.0	19.8	19.8	0	0	
17/12/18	12:44	BH509___		3.5		0.01892	995		0.0	0.0	0.4	0.0	0.0	0	0	3.0	2.9	18.9	18.9	0	0	
17/12/18	15:44	BH513___		3.0	D	0.02907	995		-0.7	0.0	0	0.0	0.0	0	0	0.9	0.9	20.0	20.0	0	0	
17/12/18	15:11	BH517___		5.1	D	0.02907	995		0.3	0.0	0	0.0	0.0	0	0	1.4	1.4	19.2	19.2	0	0	
17/12/18	14:36	BH521___		5.0	D	0.02893	995		-0.3	0.0	0	0.0	0.0	0	0	0.8	0.8	20.6	20.6	0	0	
17/12/18	12:16	BH523___		0.9		0.00183	995		-0.7	0.0	0.4	0.0	0.0	0	0	0.2	0.2	20.8	20.8	0	0	
17/12/18	14:21	BH524___		4.1	D	0.02232	996		-0.3	0.0	0.1	0.0	0.0	0	0	1.9	1.9	20.0	20.0	0	0	
17/12/18	14:29	BH526___		2.0	D	0.00871	996		-2.0	0.0	0	0.0	0.0	0	0	1.0	1.0	20.4	20.4	0	0	
17/12/18	15:21	BH528___		5.0	D	0.02893	995		-1.2	0.0	0	0.0	0.0	0	0	2.0	2.0	19.3	19.3	0	0	
17/12/18	13:56	BH530___		3.0	D	0.01552	996		-0.7	0.0	0	0.0	0.0	0	0	2.9	2.9	17.0	17.0	0	0	
17/12/18	13:44	BH531___		5.1	D	0.02900	997		-31.6	0.0	0	0.1	0.0	2	0	4.8	4.8	10.2	10.2	0	0	
17/12/18	12:25	BH536___		5.0	D	0.02887	995		-2.3	0.0	0.2	0.0	0.0	0	0	1.0	1.0	20.1	20.1	0	0	
17/12/18	14:50	BH544___		0.9		0.00167	995		0.1	0.0	0	0.0	0.0	0	0	1.2	1.2	19.9	19.9	0	0	
18/12/18	10:33	BH549___		4.1	D	0.02239	988		0.1	0.0	0	0.0	0.0	0	0	1.8	1.8	19.4	19.4	0	0	
18/12/18	14:54	BH551___		4.1	D	0.02246	983		0.1	0.0	0	0.1	0.0	2	0	2.2	2.2	18.9	18.9	0	0	
18/12/18	14:45	BH553___		5.0	D	0.02887	982		-0.1	0.0	0.1	0.1	0.0	2	0	0.8	0.8	20.1	20.1	0	0	
18/12/18	11:53	BH601___		14.7	D	0.09362	986		0.0	0.0	0	0.1	0.0	2	0	3.3	3.0	19.6	19.7	0	0	
17/12/18	15:35	BH602___		15.0	D	0.09529	995		0.0	0.0	0	0.0	0.0	0	0	1.3	1.3	18.6	18.6	0	0	
17/12/18	10:09	BH603___		14.6	D	0.09289	994		0.1	0.0	0.5	0.0	0.0	0	0	3.6	3.6	14.3	14.3	0	0	
18/12/18	12:32	BH604___		15.4		0.09790	986		0.3	0.0	0	0.0	0.0	0	0	0.3	0.3	19.5	19.5	0	0	
17/12/18	12:57	BH605___		15.0	D	0.09556	996		0.1	0.0	0.6	0.0	0.0	0	0	1.4	1.4	18.3	18.3	0	0	

Monitoring round		Borehole details					Pressure and flow				Gas concentrations									GSV		Local conditions
Date	Time	Borehole	Single or dual gas tap	Depth to water or depth of hole if dry (m)	D denotes dry hole	Volume of headspace in BH (well pipie & filter pack) (m^3)	Atmospheric pressure (hPa)	Atm pressure falling / rising / steady	Relative BH pressure (hPa)	Gas flow* (l/hr)	VOC (as ppm using PID)	CH_4 (%v/v)		CH_4 (%LEL)		CO_2 (%v/v)		O_2 (%v/v)		Gas Screening Value (CH_4) (l/hr)	Gas Screening Value (CO_2) (l/hr)	Notes on condition of borehole and surrounding ground
												Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady			
17/12/18	00:00	BH606___																				No access permitted during visit.
18/12/18	10:17	WS601___		5.0	D	0.02860	989		0.1	0.0	0.1	0.0	0.0	0	0	2.2	2.2	18.7	18.7	0	0	
18/12/18	10:11	WS602___		5.0	D	0.02873	988		0.1	0.1	0.1	0.0	0.0	0	0	1.5	1.5	19.1	19.1	0	0.0015	
17/12/18	11:07	WS603___		5.0	D	0.02867	994		0	0.0	0.1	0.0	0.0	0	0	0.8	0.8	20.3	20.3	0	0	
17/12/18	11:41	WS604___		5.0	D	0.02880	995		0	0.0	1.8	0.0	0.0	0	0	3.4	3.4	17.8	17.8	0	0	
17/12/18	10:39	WS605___		1.2		0.00323	994		1	0.0	0.8	0.0	0.0	0	0	0.6	0.6	19.3	19.3	0	0	
17/12/18	10:22	WS606___		3.5		0.01845	994		0	0.0	0.5	0.0	0.0	0	0	2.8	2.8	15.0	15.0	0	0	
17/12/18	11:22	WS607___		5.0	D	0.02887	995		0	0.0	0	0.0	0.0	0	0	4.0	2.4	18.7	19.5	0	0	
17/12/18	15:03	WS608___		5.1	D	0.02920	995		0	0.0	0	0.0	0.0	0	0	0.3	0.3	20.2	20.2	0	0	
18/12/18	15:23	WS609___		2.0		0.00837	986		0	0.0	0.1	0.1	0.0	2	0	0.6	0.6	20.1	20.1	0	0	

Hydrock

Site: Fort Halstead
Job number: C-10730
Client: Merseyside PF

Gas analyser: G505312
Equipment check OK: Y
Service in date: Y
Calibration check OK: Y
Name of person monitoring: Enitial

Notes on site conditions:

Notes: LEL = lower explosive limit = 5%v/v. * where the flow is less than the limit of detection of the instrument, the detection limit is reported. GSVs are rounded to 3 places

Monitoring round		Borehole details					Pressure and flow				Gas concentrations									GSV		Local conditions
Date	Time	Borehole	Single or dual gas tap	Depth to water or depth of hole if dry (m)	D denotes dry hole	Volume of headspace in BH (well pipe & filter pack) (m^3)	Atmospheric pressure (hPa)	Atm pressure falling / rising / steady	Relative BH pressure (hPa)	Gas flow* (l/hr)	VOC (as ppm using PID)	CH_4 (%v/v)		CH_4 (%LEL)		CO_2 (%v/v)		O_2 (%v/v)		Gas Screening Value (CH_4) (l/hr)	Gas Screening Value (CO_2) (l/hr)	Notes on condition of borehole and surrounding ground
												Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady			
							Max. individual values:						**0.0**		**0.0**		**4.5**		**20.8**	**0**	**0.0135**	**Summary statistics for this monitoring period.**
							Min. individual values:						0.0		0.0		0.2		10.8	0	0	
							Worst-case GSVs based on max. individual flow and max. individual conc. over the duration of this table:													**0**	**0**	
03/01/19	11:54	BH503A__		5.1	D	0.02900	1019		0.1	0.0	0	0.0	0.0	0	0	3.0	3.0	18.1	18.1	0	0	
02/01/19	14:54	BH507___		3.3		0.01745	1019		-0.2	0.0	0	0.0	0.0	0	0	1.2	1.0	20.6	20.7	0	0	
02/01/19	13:38	BH509___		3.6		0.01919	1018		0.0	0.0	0.1	0.0	0.0	0	0	3.1	3.1	18.1	18.1	0	0	
03/01/19	10:48	BH513___		3.0	D	0.02072	1018		0.1	0.0	0	0.0	0.0	0	0	0.8	0.8	20.2	20.2	0	0	
03/01/19	10:06	BH517___		3.8		0.02072	1018		0.0	0.0	0	0.0	0.0	0	0	1.6	1.6	18.1	18.1	0	0	
03/01/19	09:15	BH521___		5.0	D	0.02893	1019		0.1	0.0	0	0.0	0.0	0	0	0.7	0.7	20.7	20.8	0	0	
03/01/19	11:21	BH523___		4.0	D	0.02219	1018		-0.1	0.0	0	0.0	0.0	0	0	0.3	0.3	20.4	20.4	0	0	
03/01/19	09:05	BH524___		4.1	D	0.02232	1019		3.0	0.1	0	0.0	0.0	0	0	1.9	1.9	19.7	19.7	0	0.0019	
03/01/19	09:31	BH526___		2.0	D	0.00871	1018		0.2	0.0	0	0.0	0.0	0	0	0.9	0.9	20.6	20.6	0	0	
03/01/19	10:37	BH528___		5.0	D	0.02893	1018		-0.2	0.0	0.1	0.0	0.0	0	0	2.0	2.0	19.2	19.2	0	0	
03/01/19	10:11	BH530___		3.0	D	0.01552	1019		0.3	0.0	0	0.0	0.0	0	0	1.9	1.9	18.5	18.5	0	0	
02/01/19	14:28	BH531___		5.1	D	0.02900	1020		-32.2	0.3	0	0.0	0.0	0	0	4.5	4.5	10.8	10.8	0	0.0135	
03/01/19	11:10	BH536___		5.0	D	0.02887	1018		-0.1	0.0	0	0.0	0.0	0	0	1.4	1.4	18.7	18.7	0	0	
03/01/19	09:36	BH544___		3.8		0.02072	1018		0.0	0.0	0	0.0	0.0	0	0	1.7	1.6	19.7	19.7	0	0	
02/01/19	11:58	BH549___		4.1	D	0.02239	1017		0.0	0.0	0	0.0	0.0	0	0	1.1	1.1	20.2	20.2	0	0	
02/01/19	12:37	BH551___		4.1	D	0.02246	1018		-0.1	0.0	0.1	0.0	0.0	0	0	1.9	1.9	19.6	19.6	0	0	
02/01/19	12:26	BH553___		5.0	D	0.02887	1018		0.2	0.0	0.1	0.0	0.0	0	0	0.8	0.8	20.4	20.4	0	0	
02/01/19	14:03	BH601___		14.7	D	0.09362	1017		-0.1	0.0	0.1	0.0	0.0	0	0	3.1	3.1	18.3	18.3	0	0	
03/01/19	10:27	BH602___		14.9		0.09462	1018		-0.1	0.0	0	0.0	0.0	0	0	1.2	1.2	18.9	18.9	0	0	
02/01/19	11:09	BH603___		14.6	D	0.09289	1017		-1.6	0.0	0.2	0.0	0.0	0	0	3.6	3.6	17.0	17.0	0	0	
02/01/19	13:30	BH604___		15.5	D	0.09856	1018		-0.2	0.0	0.1	0.0	0.0	0	0	0.2	0.2	20.3	20.3	0	0	
02/01/19	14:38	BH605___		15.0	D	0.09556	1020		0.0	0.0	2.2	0.0	0.0	0	0	2.6	2.6	17.9	17.9	0	0	

Monitoring round		Borehole details					Pressure and flow				Gas concentrations									GSV		Local conditions
Date	Time	Borehole	Single or dual gas tap	Depth to water or depth of hole if dry (m)	D denotes dry hole	Volume of headspace in BH (well pipie & filter pack) (m^3)	Atmospheric pressure (hPa)	Atm pressure falling / rising / steady	Relative BH pressure (hPa)	Gas flow* (l/hr)	VOC (as ppm using PID)	CH_4 (%v/v)		CH_4 (%LEL)		CO_2 (%v/v)		O_2 (%v/v)		Gas Screening Value (CH_4) (l/hr)	Gas Screening Value (CO_2) (l/hr)	Notes on condition of borehole and surrounding ground
												Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady			
02/01/19	10:31	BH606___		14.9	D	0.09442	1020		0.0	0.0	0.5	0.0	0.0	0	0	2.1	2.1	19.0	19.0	0	0	
02/01/19	12:08	WS601___		5.0	D	0.02860	1017		0.0	0.0	0.3	0.0	0.0	0	0	1.8	1.8	19.6	19.6	0	0	
02/01/19	11:49	WS602___		5.0	D	0.02873	1017		0.0	0.0	0	0.0	0.0	0	0	1.8	1.8	19.2	19.2	0	0	
03/01/19	11:36	WS603___		5.0	D	0.02867	1017		0	0.0	0.2	0.0	0.0	0	0	0.6	0.6	20.2	20.2	0	0	
03/01/19	11:00	WS604___		5.0	D	0.02880	1017		0	0.0	0	0.1	0.0	2	0	4.0	4.0	17.4	17.4	0	0	
03/01/19	11:40	WS605___																				No access permitted to M area.
02/01/19	11:19	WS606___		3.9	D	0.02099	1017		0	0.0	0	0.0	0.0	0	0	3.2	3.2	15.5	15.5	0	0	
02/01/19	13:13	WS607___		5.0	D	0.02887	1017		0	0.0	0	0.0	0.0	0	0	5.0	4.2	17.9	18.1	0	0	
03/01/19	09:57	WS608___		3.8		0.02072	1018		0	0.0	0	0.0	0.0	0	0	0.3	0.3	20.6	20.6	0	0	
03/01/19	12:03	WS609___		3.6		0.01912	1021		0	0.0	0	0.1	0.0	2	0	0.7	0.7	19.6	19.7	0	0	

Hydrock

Site: Fort Halstead
Job number: C-10730
Client: Merseyside PF

Gas analyser: G505312
Equipment check OK: Y
Service in date: Y
Calibration check OK: Y
Name of person monitoring: Enitial

Notes on site conditions:

Notes: LEL = lower explosive limit = 5%v/v. * where the flow is less than the limit of detection of the instrument, the detection limit is reported. GSVs are rounded to 3 places

Monitoring round		Borehole details					Pressure and flow				Gas concentrations										GSV		Local conditions
Date	Time	Borehole	Single or dual gas tap	Depth to water or depth of hole if dry (m)	D denotes dry hole	Volume of headspace in BH (well pipe & filter pack) (m^3)	Atmospheric pressure (hPa)	Atm pressure falling / rising / steady	Relative BH pressure (hPa)	Gas flow* (l/hr)	VOC (as ppm using PID)	CH_4 (%v/v)		CH_4 (%LEL)		CO_2 (%v/v)		O_2 (%v/v)		Gas Screening Value (CH_4) (l/hr)	Gas Screening Value (CO_2) (l/hr)	Notes on condition of borehole and surrounding ground
												Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady			
							Max. individual values:						**0.0**		**0.0**		**4.4**		**21.0**	**0**	**0.002**	**Summary statistics for this monitoring period.**
							Min. individual values:						0.0		0.0		0.1		11.6	0	0	
							Worst-case GSVs based on max. individual flow and max. individual conc. over the duration of this table:													**0**	**0**	
14/01/19	14:26	BH503A__		5.1	D	0.02900	998		0.09	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.6	19.7	19.7	0	0	
14/01/19	13:01	BH507___		3.8		0.02059	999		-0.19	0.1	0.0	0.0	0.0	0.0	0.0	0.7	0.5	20.5	20.5	0	0.0005	
14/01/19	13:12	BH509___		4.0	D	0.02199	998		-0.29	0.0	0.0	0.0	0.0	0.0	0.0	2.9	2.9	18.9	18.9	0	0	
15/01/19	11:15	BH513___		3.0	D	0.02907	997		0.12	0.0	0.1	0.0	0.0	0.0	0.0	0.9	0.9	19.9	19.9	0	0	
15/01/19	10:25	BH517___		5.1	D	0.02907	997		0.02	0.0	0.0	0.0	0.0	0.0	0.0	2.1	2.1	17.7	17.7	0	0	
15/01/19	09:44	BH521___		5.0	D	0.02893	997		-0.41	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.7	20.8	20.8	0	0	
14/01/19	12:14	BH523___		4.0		0.02166	997		0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	20.9	20.9	0	0	
15/01/19	09:15	BH524___		4.1	D	0.02232	997		-0.19	0.0	0.0	0.0	0.0	0.0	0.0	1.5	1.5	20.4	20.5	0	0	
15/01/19	09:25	BH526___		2.0	D	0.00871	997		-0.19	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8	20.5	20.6	0	0	
15/01/19	11:04	BH528___		5.0	D	0.02893	997		-0.22	0.0	0.0	0.0	0.0	0.0	0.0	1.6	1.6	19.5	19.5	0	0	
15/01/19	10:39	BH530___		3.0	D	0.01552	998		-0.19	0.0	0.0	0.0	0.0	0.0	0.0	2.7	2.7	17.3	17.3	0	0	
14/01/19	12:37	BH531___		5.1	D	0.02900	1000		0.67	0.0	0.0	0.0	0.0	0.0	0.0	4.2	4.2	11.6	11.6	0	0	
14/01/19	12:03	BH536___		5.0	D	0.02887	997		0.28	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	21.0	21.0	0	0	
15/01/19	10:00	BH544___		3.8		0.02086	997		-0.22	0.1	0.0	0.0	0.0	0.0	0.0	1.7	1.7	19.3	19.3	0	0.0017	
14/01/19	11:04	BH549___		4.1	D	0.02239	996		-0.21	0.1	0.0	0.0	0.0	0.0	0.0	2.1	2.0	19.1	19.2	0	0.002	
14/01/19	11:26	BH550___		4.0	D	0.02166	997		-2.26	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2	20.4	20.4	0	0	
14/01/19	11:43	BH551___		4.1	D	0.02246	997		-0.16	0.0	0.0	0.0	0.0	0.0	0.0	1.8	1.8	20.0	20.1	0	0	
14/01/19	11:37	BH553___		5.0	D	0.02887	997		-0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	20.9	20.9	0	0	
14/01/19	10:28	BH601___		14.7	D	0.09362	996		-0.10	0.0	0.0	0.0	0.0	0.0	0.0	2.6	2.6	19.7	19.7	0	0	
15/01/19	10:53	BH602___		14.9		0.09476	997		0.72	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.2	18.9	18.9	0	0	
14/01/19	09:58	BH603___		14.6	D	0.09289	996		-0.21	0.0	0.2	0.0	0.0	0.0	0.0	4.3	4.3	16.3	16.3	0	0	
14/01/19	13:23	BH604___		15.4		0.09796	998		-0.26	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	20.7	20.8	0	0	

Monitoring round		Borehole details					Pressure and flow				Gas concentrations									GSV		Local conditions
Date	Time	Borehole	Single or dual gas tap	Depth to water or depth of hole if dry (m)	D denotes dry hole	Volume of headspace in BH (well pipie & filter pack) (m^3)	Atmospheric pressure (hPa)	Atm pressure falling / rising / steady	Relative BH pressure (hPa)	Gas flow* (l/hr)	VOC (as ppm using PID)	CH_4 (%v/v)		CH_4 (%LEL)		CO_2 (%v/v)		O_2 (%v/v)		Gas Screening Value (CH_4) (l/hr)	Gas Screening Value (CO_2) (l/hr)	Notes on condition of borehole and surrounding ground
												Initial	Steady	Initial	Steady	Initial	Steady	Initial	Steady			
14/01/19	12:48	BH605___		15.0	D	0.09556	999		-0.14	0.0	0.5	0.0	0.0	0.0	0.0	0.8	0.8	19.9	19.9	0	0	
14/01/19	14:17	BH606___		14.9	D	0.09442	999		-0.29	0.0	0.2	0.0	0.0	0.0	0.0	2.0	2.0	19.3	19.3	0	0	
14/01/19	11:11	WS601___		5.0	D	0.02860	996		-0.07	0.0	0.4	0.0	0.0	0.0	0.0	1.7	1.7	19.9	20.0	0	0	
14/01/19	10:59	WS602___		5.0	D	0.02873	996		-0.14	0.1	0.0	0.0	0.0	0.0	0.0	1.9	1.9	19.2	19.3	0	0.0019	
14/01/19	13:45	WS603___		5.0		0.02867	997		-0.24	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	20.4	20.4	0	0	
14/01/19	11:53	WS604___		5.0	D	0.02880	997		-0.12	0.0	0.8	0.0	0.0	0.0	0.0	3.7	3.7	18.2	18.2	0	0	
14/01/19	09:48	WS605___		1.5		0.00497	995		0.02	0.0	0.1	0.0	0.0	0.0	0.0	1.9	1.5	16.6	17.5	0	0	
14/01/19	10:08	WS606___		3.9	D	0.02099	996		-0.19	0.0	0.0	0.0	0.0	0.0	0.0	3.6	3.6	13.9	13.9	0	0	
14/01/19	13:38	WS607___		5.0		0.02887	997		-0.17	0.0	0.0	0.0	0.0	0.0	0.0	4.8	4.4	17.2	17.3	0	0	
15/01/19	10:17	WS608___		5.1	D	0.02920	997		-0.24	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	20.7	20.7	0	0	
14/01/19	14:35	WS609___		4.3		0.02366	1001		-0.17	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.7	19.4	19.8	0	0	

Appendix G

Contamination Test Results and Statistical Analyses

Wayne Lewis
Hydrock Consultants Ltd
2-4 Hawthorne Park
Holdenby Road
Spratton
Northamptonshire
NN6 8LD

t: 01604842888
f: 01604842666
e: waynelewis@hydrock.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 : 16-20872

Replaces Analytical Report Number : 16-20872, issue no. 1

Project / Site name:	Fort Halstead	**Samples received on:**	20/06/2016
Your job number:	C161227	**Samples instructed on:**	22/06/2016
Your order number:		**Analysis completed by:**	07/07/2016
Report Issue Number:	2	**Report issued on:**	07/07/2016
Samples Analysed:	7 soil samples		

Signed:

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Signed:

Emma Winter
Assistant Reporting Manager
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.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-20872

Project / Site name: Fort Halstead

Lab Sample Number				591764	591765	591766	591767	591768
Sample Reference				BH515	BH515	BH516	BH516	BH529
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.50	0.10	0.40	0.20
Date Sampled				16/06/2016	16/06/2016	16/06/2016	16/06/2016	16/06/2016
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	11	12	25	15	21
Total mass of sample received	kg	0.001	NONE	1.2	1.4	1.1	1.5	0.61
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile, Crocidolite	-	Chrysotile	Chrysotile	Chrysotile, Amosite
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Not-detected	Detected	Detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	0.015	-	< 0.001	0.001	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	0.015	-	< 0.001	0.001	< 0.001
General Inorganics								
pH	pH Units	N/A	MCERTS	10.1	8.3	6.6	7.0	9.9
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.44	0.30	0.051	0.013	0.26
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	437	298	51.2	13.0	256
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.0053	0.0029	0.019	0.0084	0.0060
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	1.3
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	0.20	< 0.10	< 0.10	0.85	1.6
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	0.15	0.31
Fluoranthene	mg/kg	0.1	MCERTS	0.49	< 0.10	< 0.10	1.4	4.6
Pyrene	mg/kg	0.1	MCERTS	0.45	< 0.10	< 0.10	1.2	4.3
Benzo(a)anthracene	mg/kg	0.1	MCERTS	0.21	< 0.10	< 0.10	0.66	1.9
Chrysene	mg/kg	0.05	MCERTS	0.31	< 0.05	< 0.05	0.90	2.3
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	0.37	1.8
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	0.36	1.3
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	0.46	1.7
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	0.55
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	1.0
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Total WAC-17 PAHs	mg/kg	1.6	NONE	1.7	< 1.6	< 1.6	6.3	21
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.6	9.6	8.6	10	11
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.48	0.87	1.6	0.80	1.6
Boron (water soluble)	mg/kg	0.2	MCERTS	1.3	1.9	0.3	< 0.2	1.1
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	21	33	29	27	23
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	21	33	29	27	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	19	16	41	21	33
Lead (aqua regia extractable)	mg/kg	1	MCERTS	76	16	26	48	78
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.6	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	15	21	44	22	27
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	1.2	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	30	51	80	48	47
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	170	48	54	86	120

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-20872

Project / Site name: Fort Halstead

Lab Sample Number				591764	591765	591766	591767	591768
Sample Reference				BH515	BH515	BH516	BH516	BH529
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.50	0.10	0.40	0.20
Date Sampled				16/06/2016	16/06/2016	16/06/2016	16/06/2016	16/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/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	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	< 1.0	< 1.0	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	< 2.0	< 2.0	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	< 8.0	< 8.0	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	< 8.0	< 8.0	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	NONE	-	-	< 10	< 10	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	< 8.4	< 8.4	-

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	< 1.0	< 1.0	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	< 2.0	< 2.0	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	< 10	< 10	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	< 10	11	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	< 8.4	< 8.4	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-20872

Project / Site name: Fort Halstead

Lab Sample Number				591769	591770			
Sample Reference				BH560	BH560			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.40	0.60			
Date Sampled				16/06/2016	16/06/2016			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1			
Moisture Content	%	N/A	NONE	15	13			
Total mass of sample received	kg	0.001	NONE	0.48	0.60			
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-			
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected			
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-			
Asbestos Quantification Total	%	0.001	ISO 17025	-	-			
General Inorganics								
pH	pH Units	N/A	MCERTS	10.4	8.1			
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1			
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.16	0.15			
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	155	146			
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.0093	0.013			
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0			
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Phenanthrene	mg/kg	0.1	MCERTS	1.2	2.2			
Anthracene	mg/kg	0.1	MCERTS	0.26	0.52			
Fluoranthene	mg/kg	0.1	MCERTS	2.7	7.0			
Pyrene	mg/kg	0.1	MCERTS	2.3	5.9			
Benzo(a)anthracene	mg/kg	0.1	MCERTS	0.96	2.5			
Chrysene	mg/kg	0.05	MCERTS	1.5	2.8			
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	0.75	1.6			
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	0.84	1.9			
Benzo(a)pyrene	mg/kg	0.1	MCERTS	0.93	2.4			
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	0.25	0.73			
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.47	1.1			
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05			
Total PAH								
Total WAC-17 PAHs	mg/kg	1.6	NONE	12	29			
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	8.9			
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.6	1.0			
Boron (water soluble)	mg/kg	0.2	MCERTS	1.1	0.9			
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2			
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2			
Chromium (III)	mg/kg	1	NONE	20	22			
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	20	22			
Copper (aqua regia extractable)	mg/kg	1	MCERTS	46	23			
Lead (aqua regia extractable)	mg/kg	1	MCERTS	150	37			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3			
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	39	20			
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.3	1.0			
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	55	38			
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	78	55			

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-20872

Project / Site name: Fort Halstead

Lab Sample Number				591769	591770			
Sample Reference				BH560	BH560			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.40	0.60			
Date Sampled				16/06/2016	16/06/2016			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/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	mg/kg	0.1	MCERTS	< 0.1	-			
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	-			
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	-			
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-			
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	-			
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	-			
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	-			
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	NONE	< 10	-			
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	-			

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	-			
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	-			
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	-			
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-			
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	-			
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	15	-			
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	28	-			
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	-			

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: **16-20872**
Project / Site name: **Fort Halstead**
Your Order No:

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 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
591764	BH515	0.30	136	Insulation lagging, Loose fibres	**Chrysotile, Crocidolite**	0.015	**0.015**
591766	BH516	0.10	109	Loose fibres	**Chrysotile**	< 0.001	**< 0.001**
591767	BH516	0.40	121	Insulation lagging	**Chrysotile**	0.001	**0.001**
591768	BH529	0.20	129	Loose fibres	**Chrysotile, Amosite**	< 0.001	**< 0.001**

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 16-20872

Project / Site name: Fort Halstead

* 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 topsoil/loam 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 *
591764	BH515	None Supplied	0.30	Brown clay and sand with gravel.
591765	BH515	None Supplied	0.50	Light brown clay with gravel.
591766	BH516	None Supplied	0.10	Brown loam and clay with rubble and vegetation.
591767	BH516	None Supplied	0.40	Light brown loam and clay with rubble.
591768	BH529	None Supplied	0.20	Brown clay and sand with rubble.
591769	BH560	None Supplied	0.40	Brown clay and sand with rubble.
591770	BH560	None Supplied	0.60	Brown clay and sand with rubble.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 16-20872

Project / Site name: Fort Halstead

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Asbestos Quantification - Gravimetric	The analysis was carried out using documented in-house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
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
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Fraction of Organic Carbon in soil	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L023-PL	D	NONE
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	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
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Speciated WAC-17 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	NONE
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
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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
TPH Chromatogram	TPH Chromatogram.	In-house method	L064-PL	D	NONE
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	NONE

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 16-20872

Project / Site name: Fort Halstead

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-PL	W	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.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Wayne Lewis
Hydrock Consultants Ltd
Over Court Barns
Over Lane
Bristol
BS32 4DF

t: 01454 619533
f: 01454 614125
e: waynelewis@hydrock.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 : 16-21752

Project / Site name:	Fort Halstead	**Samples received on:**	23/06/2016
Your job number:	C161227	**Samples instructed on:**	03/07/2016
Your order number:		**Analysis completed by:**	20/07/2016
Report Issue Number:	1	**Report issued on:**	20/07/2016
Samples Analysed:	1 bulk sample - 22 soil samples		

Signed:

Dr Irma Doyle
Senior Account Manager
For & on behalf of i2 Analytical Ltd.

Signed:

Emma Winter
Assistant Reporting Manager
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.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-21752

Project / Site name: Fort Halstead

Lab Sample Number				596659	596660	596661	596662	596663
Sample Reference				HP507	BH505	BH505	BH506	BH506
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.20	0.60	0.50	1.00
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	18	14	9.4	17	15
Total mass of sample received	kg	0.001	NONE	0.48	1.1	0.97	1.2	1.1
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	Chrysotile- Loose fibres	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-
General Inorganics								
pH	pH Units	N/A	MCERTS	6.6	6.9	5.1	5.6	4.5
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0058	0.011	0.019	0.098	0.032
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	5.8	10.7	18.8	97.9	31.8
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.0069	0.0065	0.0025	0.010	0.0046
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	1.0	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	0.26	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	1.9	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	1.6	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	0.82	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	0.60	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	0.75	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	0.48	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	0.53	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	0.23	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.42	< 0.05	< 0.05	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	8.56	< 1.60	< 1.60	< 1.60	< 1.60
Total WAC-17 PAHs	mg/kg	1.6	NONE	8.6	< 1.6	< 1.6	< 1.6	< 1.6
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	17	11	9.9	14	17
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.0	0.62	0.48	0.90	1.3
Boron (water soluble)	mg/kg	0.2	MCERTS	0.6	0.6	0.8	0.4	1.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.3	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	39	44	36	40	53
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	39	44	36	40	53
Copper (aqua regia extractable)	mg/kg	1	MCERTS	22	32	19	20	20
Lead (aqua regia extractable)	mg/kg	1	MCERTS	35	310	40	28	18
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.4	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	21	30	23	20	21
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	1.4	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	69	47	47	70	84
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	65	140	39	39	41

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-21752

Project / Site name: Fort Halstead

Lab Sample Number				596659	596660	596661	596662	596663
Sample Reference				HP507	BH505	BH505	BH506	BH506
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.20	0.60	0.50	1.00
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								
Benzene	ug/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0	< 2.0	17	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	< 8.0	< 8.0	37	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	< 8.0	< 8.0	32	< 8.0
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	NONE	-	< 10	< 10	69	< 10
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	< 8.4	< 8.4	< 8.4	< 8.4
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0	< 2.0	3.3	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	< 10	< 10	14	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	< 10	< 10	14	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	< 8.4	< 8.4	< 8.4	< 8.4

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-21752

Project / Site name: Fort Halstead

Lab Sample Number				596659	596660	596661	596662	596663
Sample Reference				HP507	BH505	BH505	BH506	BH506
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.20	0.60	0.50	1.00
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**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Chloroethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Bromomethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
Benzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Styrene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	< 1.0	< 1.0

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-21752

Project / Site name: Fort Halstead

Lab Sample Number				596659	596660	596661	596662	596663
Sample Reference				HP507	BH505	BH505	BH506	BH506
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.20	0.60	0.50	1.00
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**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	< 0.1	< 0.1	< 0.1	< 0.1
Phenol	mg/kg	0.2	ISO 17025	-	< 0.2	< 0.2	< 0.2	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	< 0.05	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	-	< 0.2	< 0.2	< 0.2	< 0.2
Isophorone	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	< 0.05	< 0.05
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	-	< 0.1	< 0.1	< 0.1	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	< 0.1	< 0.1	< 0.1	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	-	< 0.1	< 0.1	< 0.1	< 0.1
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	< 0.10	< 0.10
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	< 0.2
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	< 0.3	< 0.3	< 0.3	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	< 0.2
Fluorene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	< 0.10	< 0.10
Azobenzene	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	< 0.3
Phenanthrene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	< 0.10	< 0.10
Carbazole	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	< 0.3
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	< 0.2	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	< 0.3	< 0.3
Fluoranthene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	< 0.10	< 0.10
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	< 0.3	< 0.3	< 0.3	< 0.3
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	< 0.05	< 0.05

Subcontracted Analysis

Explosives	Type	N/A	NONE	See Attached	See Attached	See Attached	See Attached	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-21752

Project / Site name: Fort Halstead

Lab Sample Number				596664	596665	596666	596667	596668
Sample Reference				BH506	BH507	BH507	BH508	BH513
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.00	0.30	0.80	0.40	0.30
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	18	13	20	15	7.6
Total mass of sample received	kg	0.001	NONE	0.97	1.3	0.97	1.2	0.43
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	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-
General Inorganics								
pH	pH Units	N/A	MCERTS	4.9	7.6	4.8	7.4	8.8
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.031	0.049	0.025	0.013	0.022
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	31.0	49.0	24.8	13.2	21.8
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	< 0.0010	0.0042	0.0012	0.0087	0.0024
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	0.63	< 0.10	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	0.62	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	0.24	< 0.10	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.28	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	0.29	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	0.20	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	0.23	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	2.49	< 1.60	< 1.60	< 1.60
Total WAC-17 PAHs	mg/kg	1.6	NONE	< 1.6	2.5	< 1.6	< 1.6	< 1.6
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	10	19	9.0	4.5
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.1	0.55	1.2	1.0	0.17
Boron (water soluble)	mg/kg	0.2	MCERTS	1.0	0.4	1.3	1.2	0.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	0.5
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	46	28	56	42	12
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	46	28	56	42	12
Copper (aqua regia extractable)	mg/kg	1	MCERTS	28	22	26	19	15
Lead (aqua regia extractable)	mg/kg	1	MCERTS	14	24	21	11	51
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	36	19	19	14	10
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.3	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	83	42	99	60	15
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	53	160	38	25	40

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-21752

Project / Site name: Fort Halstead

Lab Sample Number				596664	596665	596666	596667	596668
Sample Reference				BH506	BH507	BH507	BH508	BH513
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.00	0.30	0.80	0.40	0.30
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								
Benzene	ug/kg	1	MCERTS	< 1.0	-	-	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	-	-	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	-	-	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	-	-	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	-	< 1.0	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	-	-	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	-	-	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	-	-	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	-	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	-	-	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	-	-	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	-	-	23	< 8.0
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	NONE	< 10	-	-	23	< 10
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	-	-	< 8.4	< 8.4
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	-	-	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	-	-	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	-	-	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	-	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	-	-	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	-	-	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	-	-	23	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	-	-	14	< 8.4

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-21752

Project / Site name: Fort Halstead

Lab Sample Number				596664	596665	596666	596667	596668
Sample Reference				BH506	BH507	BH507	BH508	BH513
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.00	0.30	0.80	0.40	0.30
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**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Chloroethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Bromomethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Vinyl Chloride	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Trichlorofluoromethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
1,1-dichloroethene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,1-dichloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
2,2-Dichloropropane	µg/kg	1	NONE	< 1.0	-	-	-	-
Trichloromethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,2-dichloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,1-Dichloropropene	µg/kg	1	NONE	< 1.0	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	-	-	-	-
Benzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,2-dichloropropane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Trichloroethene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Dibromomethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Bromodichloromethane	µg/kg	1	NONE	< 1.0	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Toluene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Tetrachloroethene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	< 1.0	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
p & m-xylene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Styrene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Tribromomethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
o-xylene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Isopropylbenzene	µg/kg	1	NONE	< 1.0	-	-	-	-
Bromobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
N-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
2-Chlorotoluene	µg/kg	1	NONE	< 1.0	-	-	-	-
4-Chlorotoluene	µg/kg	1	NONE	< 1.0	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Tert-Butylbenzene	µg/kg	1	NONE	< 1.0	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Sec-Butylbenzene	µg/kg	1	NONE	< 1.0	-	-	-	-
1,3-dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
P-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
1,2-dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,4-dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Butylbenzene	µg/kg	1	NONE	< 1.0	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Hexachlorobutadiene	µg/kg	1	NONE	< 1.0	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	< 1.0	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-21752

Project / Site name: Fort Halstead

Lab Sample Number				596664	596665	596666	596667	596668
Sample Reference				BH506	BH507	BH507	BH508	BH513
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.00	0.30	0.80	0.40	0.30
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**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	-	-	-	-
Phenol	mg/kg	0.2	ISO 17025	< 0.2	-	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	-	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	-	-	-	-
Isophorone	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	-	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	-	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	-	-	-	-
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	-	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	-	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
Fluorene	mg/kg	0.1	MCERTS	< 0.10	-	-	-	-
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	-	-	-	-
Anthracene	mg/kg	0.1	MCERTS	< 0.10	-	-	-	-
Carbazole	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	-	-	-	-
Pyrene	mg/kg	0.1	MCERTS	< 0.10	-	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	-	-	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	< 0.05	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	-	-	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	-	-	-	-

Subcontracted Analysis

Explosives	Type	N/A	NONE	-	See Attached	See Attached	See Attached	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-21752

Project / Site name: Fort Halstead

Lab Sample Number				596669	596670	596671	596672	596673
Sample Reference				BH513	BH520	BH520	BH527	BH528
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00	0.40	1.00	0.40	0.40
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	14	8.8	14	21	18
Total mass of sample received	kg	0.001	NONE	0.50	0.39	0.40	0.38	0.45
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	Chrysotile & Amosite
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	0.012
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	0.012
General Inorganics								
pH	pH Units	N/A	MCERTS	8.3	8.0	5.6	5.9	8.7
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.022	0.022	0.055	0.068	0.11
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	22.1	22.4	54.6	67.7	105
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	< 0.0010	< 0.0010	< 0.0010	0.0035	0.014
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	1.0
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	0.43
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	0.33
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	4.7
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	0.96
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	0.42	7.1
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	0.37	6.1
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	0.26	4.1
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.23	3.1
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	5.8
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	1.5
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	3.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	1.2
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	0.26
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	1.3
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	< 1.60	< 1.60	41.1
Total WAC-17 PAHs	mg/kg	1.6	NONE	< 1.6	< 1.6	< 1.6	< 1.6	41
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	10	13	20	14
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.1	3.0	1.5	4.9	1.8
Boron (water soluble)	mg/kg	0.2	MCERTS	2.1	1.2	0.7	1.7	2.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.3	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	47	47	48	63	32
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	47	47	48	63	32
Copper (aqua regia extractable)	mg/kg	1	MCERTS	18	33	28	36	100
Lead (aqua regia extractable)	mg/kg	1	MCERTS	14	21	14	31	71
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	20	59	19	61	56
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.3	2.1	< 1.0	1.1	2.2
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	60	52	65	120	86
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	40	78	40	110	220

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-21752

Project / Site name: Fort Halstead

Lab Sample Number				596669	596670	596671	596672	596673
Sample Reference				BH513	BH520	BH520	BH527	BH528
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00	0.40	1.00	0.40	0.40
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								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	-	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	-	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	-	17
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	NONE	< 10	< 10	< 10	-	17
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	-	< 8.4
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	1.3
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	-	2.1
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	-	28
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	-	62
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	-	< 8.4

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-21752

Project / Site name: Fort Halstead

Lab Sample Number				596669	596670	596671	596672	596673
Sample Reference				BH513	BH520	BH520	BH527	BH528
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00	0.40	1.00	0.40	0.40
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**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Chloroethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Bromomethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Vinyl Chloride	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Trichlorofluoromethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
1,1-dichloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,1-dichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
2,2-Dichloropropane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0
Trichloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,2-dichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,1-Dichloropropene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0
Benzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,2-dichloropropane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Trichloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Dibromomethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Bromodichloromethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Toluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Tetrachloroethene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Styrene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Tribromomethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
o-xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Isopropylbenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0
Bromobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
N-Propylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
2-Chlorotoluene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0
4-Chlorotoluene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Tert-Butylbenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
Sec-Butylbenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0
1,3-dichlorobenzene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
P-Isopropyltoluene	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
1,2-dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
1,4-dichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Butylbenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	< 1.0	< 1.0	-	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	-	< 1.0
Hexachlorobutadiene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	< 1.0	< 1.0	-	< 1.0

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-21752

Project / Site name: Fort Halstead

Lab Sample Number				596669	596670	596671	596672	596673
Sample Reference				BH513	BH520	BH520	BH527	BH528
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00	0.40	1.00	0.40	0.40
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**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	< 0.1	< 0.1	-	< 0.1
Phenol	mg/kg	0.2	ISO 17025	-	< 0.2	< 0.2	-	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	-	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	-	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	-	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	-	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	-	< 0.2	< 0.2	-	< 0.2
Isophorone	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	-	1.0
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	-	< 0.1	< 0.1	-	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	-	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	< 0.1	< 0.1	-	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	-	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	-	< 0.1	< 0.1	-	0.7
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	-	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	-	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	-	< 0.1
Acenaphthylene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	-	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	-	0.43
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	0.4
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	< 0.3	< 0.3	-	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
Fluorene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	-	0.33
Azobenzene	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
Phenanthrene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	-	4.7
Anthracene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	-	0.96
Carbazole	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	0.8
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2	< 0.2	-	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	-	< 0.3
Fluoranthene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	-	7.1
Pyrene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	-	6.1
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	< 0.3	< 0.3	-	< 0.3
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	-	4.1
Chrysene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	-	3.1
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	-	5.8
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	-	1.5
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	-	3.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	-	1.2
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	-	0.26
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	-	1.3

Subcontracted Analysis

Explosives	Type	N/A	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-21752

Project / Site name: Fort Halstead

Lab Sample Number				596674	596675	596676	596677	596678
Sample Reference				BH528	BH538A	BH538A	BH538A	BH539
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00	0.20	0.80	2.00	0.20
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	21	13	18	16	16
Total mass of sample received	kg	0.001	NONE	0.41	0.43	0.39	0.46	0.43
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	Chrysotile & Amosite	Crocidolite- Loose fibres	-	Chrysotile & Amosite
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Detected	Detected	Not-detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	0.009	-	-	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	-	0.009	-	-	< 0.001
General Inorganics								
pH	pH Units	N/A	MCERTS	6.9	8.4	7.0	7.0	9.2
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.20	0.29	0.43	0.020	0.17
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	202	289	434	20.4	174
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.0060	0.023	0.0029	0.014	0.013
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.47	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	0.63	0.20	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	0.89	0.26	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	1.2	0.20	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	9.0	4.1	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	3.9	1.8	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	23	14	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	20	13	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	12	8.0	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	8.8	8.4	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	13	7.6	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	7.2	2.4	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	10	3.7	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	6.4	2.1	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	1.2	0.40	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	7.1	2.3	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	125	68.3	< 1.60	< 1.60
Total WAC-17 PAHs	mg/kg	1.6	NONE	< 1.6	130	68	< 1.6	< 1.6
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	20	43	18	11	11
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.3	1.1	1.4	1.1	2.6
Boron (water soluble)	mg/kg	0.2	MCERTS	1.0	17	1.0	1.1	0.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	12	< 0.2	< 0.2	1.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	71	260	54	45	33
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	71	260	54	45	33
Copper (aqua regia extractable)	mg/kg	1	MCERTS	24	2400	37	21	110
Lead (aqua regia extractable)	mg/kg	1	MCERTS	17	640	22	12	110
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	1.0	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	24	290	33	15	65
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	2.8	3.3	1.0	< 1.0	1.9
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	110	61	84	56	96
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	47	5500	73	29	290

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-21752

Project / Site name: Fort Halstead

Lab Sample Number				596674	596675	596676	596677	596678
Sample Reference				BH528	BH538A	BH538A	BH538A	BH539
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00	0.20	0.80	2.00	0.20
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								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	8.4	< 1.0	< 1.0	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	70	< 2.0	< 2.0	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	310	< 8.0	< 8.0	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	1200	16	< 8.0	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	NONE	< 10	1500	16	< 10	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	300	< 8.4	< 8.4	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	1.1	< 1.0	< 1.0	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	16	4.5	< 2.0	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	170	40	< 10	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	900	75	< 10	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	110	< 8.4	< 8.4	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-21752

Project / Site name: Fort Halstead

Lab Sample Number				596674	596675	596676	596677	596678
Sample Reference				BH528	BH538A	BH538A	BH538A	BH539
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00	0.20	0.80	2.00	0.20
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**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Chloroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Vinyl Chloride	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Trichlorofluoromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
1,1-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
1,1-dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
2,2-Dichloropropane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	-
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
1,2-dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
1,1-Dichloropropene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	-
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
1,2-dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Bromodichloromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Tetrachloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Tribromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Isopropylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	-
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
N-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
2-Chlorotoluene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	-
4-Chlorotoluene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Tert-Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
Sec-Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	-
1,3-dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
P-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
1,2-dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
1,4-dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	< 1.0	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Hexachlorobutadiene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-21752

Project / Site name: Fort Halstead

Lab Sample Number				596674	596675	596676	596677	596678
Sample Reference				BH528	BH538A	BH538A	BH538A	BH539
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00	0.20	0.80	2.00	0.20
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**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	-
Phenol	mg/kg	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	< 0.2	-
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	-
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	-
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	-
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	-
Isophorone	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	-
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	-
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.47	< 0.05	< 0.05	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	-
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	-
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	0.7	< 0.1	< 0.1	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	0.63	0.20	< 0.10	-
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	0.89	0.26	< 0.10	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	-
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	0.5	< 0.2	< 0.2	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	< 0.3	< 0.3	-
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	-
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	-
Fluorene	mg/kg	0.1	MCERTS	< 0.10	1.2	0.20	< 0.10	-
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	-
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	9.0	4.1	< 0.10	-
Anthracene	mg/kg	0.1	MCERTS	< 0.10	3.9	1.8	< 0.10	-
Carbazole	mg/kg	0.3	MCERTS	< 0.3	0.6	< 0.3	< 0.3	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	0.4	< 0.2	< 0.2	-
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	< 0.3	0.4	< 0.3	-
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	23	14	< 0.10	-
Pyrene	mg/kg	0.1	MCERTS	< 0.10	20	13	< 0.10	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	< 0.3	< 0.3	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	12	8.0	< 0.10	-
Chrysene	mg/kg	0.05	MCERTS	< 0.05	8.8	8.4	< 0.05	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	13	7.6	< 0.10	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	7.2	2.4	< 0.10	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	10	3.7	< 0.10	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	6.4	2.1	< 0.10	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	1.2	0.40	< 0.10	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	7.1	2.3	< 0.05	-

Subcontracted Analysis

Explosives	Type	N/A	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-21752

Project / Site name: Fort Halstead

Lab Sample Number				596679	596680			
Sample Reference				BH561	BH561			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.50	1.50			
Date Sampled				Deviating	Deviating			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1			
Moisture Content	%	N/A	NONE	16	17			
Total mass of sample received	kg	0.001	NONE	0.37	0.40			
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-			
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected			
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-			
Asbestos Quantification Total	%	0.001	ISO 17025	-	-			
General Inorganics								
pH	pH Units	N/A	MCERTS	8.1	7.9			
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1			
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.089	0.46			
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	88.9	459			
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.0021	0.012			
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0			
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05			
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60			
Total WAC-17 PAHs	mg/kg	1.6	NONE	< 1.6	< 1.6			
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	18	32			
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	3.0	6.9			
Boron (water soluble)	mg/kg	0.2	MCERTS	2.5	1.6			
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2			
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2			
Chromium (III)	mg/kg	1	NONE	49	60			
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	49	60			
Copper (aqua regia extractable)	mg/kg	1	MCERTS	26	51			
Lead (aqua regia extractable)	mg/kg	1	MCERTS	24	37			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3			
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	42	51			
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.8	< 1.0			
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	92	110			
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	71	110			

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-21752

Project / Site name: Fort Halstead

Lab Sample Number				596679	596680			
Sample Reference				BH561	BH561			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.50	1.50			
Date Sampled				Deviating	Deviating			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	-	-			
Toluene	µg/kg	1	MCERTS	-	-			
Ethylbenzene	µg/kg	1	MCERTS	-	-			
p & m-xylene	µg/kg	1	MCERTS	-	-			
o-xylene	µg/kg	1	MCERTS	-	-			
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-			
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	-	-			
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	-	-			
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-			
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-			
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-			
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-			
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-			
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	NONE	-	-			
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	-			
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	-	-			
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	-	-			
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-			
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-			
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-			
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-			
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-			
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	-			

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-21752

Project / Site name: Fort Halstead

Lab Sample Number				596679	596680			
Sample Reference				BH561	BH561			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.50	1.50			
Date Sampled				Deviating	Deviating			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0			
Chloroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0			
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0			
Vinyl Chloride	µg/kg	1	ISO 17025	< 1.0	< 1.0			
Trichlorofluoromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0			
1,1-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0			
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0			
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,1-dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0			
2,2-Dichloropropane	µg/kg	1	NONE	< 1.0	< 1.0			
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,2-dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,1-Dichloropropene	µg/kg	1	NONE	< 1.0	< 1.0			
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0			
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,2-dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0			
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0			
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0			
Bromodichloromethane	µg/kg	1	NONE	< 1.0	< 1.0			
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0			
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0			
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0			
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0			
Tetrachloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0			
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	< 1.0	< 1.0			
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0			
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0			
Tribromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0			
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0			
Isopropylbenzene	µg/kg	1	NONE	< 1.0	< 1.0			
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
N-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0			
2-Chlorotoluene	µg/kg	1	NONE	< 1.0	< 1.0			
4-Chlorotoluene	µg/kg	1	NONE	< 1.0	< 1.0			
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0			
Tert-Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0			
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0			
Sec-Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0			
1,3-dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0			
P-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0			
1,2-dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
1,4-dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0			
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0			
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0			
Hexachlorobutadiene	µg/kg	1	NONE	< 1.0	< 1.0			
1,2,3-Trichlorobenzene	µg/kg	1	NONE	< 1.0	< 1.0			

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-21752

Project / Site name: Fort Halstead

Lab Sample Number				596679	596680			
Sample Reference				BH561	BH561			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.50	1.50			
Date Sampled				Deviating	Deviating			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	< 0.1			
Phenol	mg/kg	0.2	ISO 17025	< 0.2	< 0.2			
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1			
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2			
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2			
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	< 0.1			
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2			
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	< 0.1			
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3			
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3			
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2			
Isophorone	mg/kg	0.2	MCERTS	< 0.2	< 0.2			
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3			
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3			
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	< 0.3			
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3			
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3			
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	< 0.1			
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	< 0.1			
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	< 0.1			
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1			
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	< 0.2			
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	< 0.1			
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	< 0.1			
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	< 0.1			
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	< 0.1			
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	< 0.2			
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	< 0.2			
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	< 0.3			
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2			
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	< 0.2			
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3			
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2			
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3			
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Carbazole	mg/kg	0.3	MCERTS	< 0.3	< 0.3			
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2			
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	< 0.3			
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	< 0.3			
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			

Subcontracted Analysis

Explosives	Type	N/A	NONE	-	-			

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: **16-21752**
Project / Site name: **Fort Halstead**
Your Order No:

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 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
596673	BH528	0.40	111	Hard/Cement Type Material & Loose Fibres	**Chrysotile & Amosite**	0.012	**0.012**
596675	BH538A	0.20	110	Loose Fibres	**Chrysotile & Amosite**	0.009	**0.009**
596678	BH539	0.20	111	Insulation Lagging & Loose Fibres	**Chrysotile & Amosite**	< 0.001	**< 0.001**

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-21752

Project / Site name: Fort Halstead

Lab Sample Number				596681				
Sample Reference				BH538				
Sample Number				None Supplied				
Depth (m)				0.20				
Date Sampled				None Supplied				
Time Taken				None Supplied				
Analytical Parameter (Bulk Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Asbestos Identification Name	Type	N/A	ISO 17025	Chrysotile-Hard/cement type material				

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 16-21752

Project / Site name: Fort Halstead

* 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 topsoil/loam 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 *
596659	HP507	None Supplied	0.30	Brown loam and clay with gravel and vegetation.
596660	BH505	None Supplied	0.20	Brown loam and clay with gravel.
596661	BH505	None Supplied	0.60	Light brown loam and clay with gravel.
596662	BH506	None Supplied	0.50	Brown loam and clay with gravel.
596663	BH506	None Supplied	1.00	Light brown clay and sand with gravel.
596664	BH506	None Supplied	2.00	Light brown clay and sand with gravel.
596665	BH507	None Supplied	0.30	Brown loam and clay with gravel.
596666	BH507	None Supplied	0.80	Brown loam and clay with gravel and vegetation.
596667	BH508	None Supplied	0.40	Brown loam and clay with gravel and vegetation.
596668	BH513	None Supplied	0.30	Brown clay and loam with gravel and brick.
596669	BH513	None Supplied	1.00	Light brown clay and loam.
596670	BH520	None Supplied	0.40	Light brown clay and loam with gravel.
596671	BH520	None Supplied	1.00	Light brown clay and sand.
596672	BH527	None Supplied	0.40	Light brown clay and loam with gravel.
596673	BH528	None Supplied	0.40	Brown loam and clay with gravel.
596674	BH528	None Supplied	1.00	Light brown clay and loam with gravel.
596675	BH538A	None Supplied	0.20	Brown loam and sand with gravel.
596676	BH538A	None Supplied	0.80	Light brown clay and loam with gravel.
596677	BH538A	None Supplied	2.00	Light brown clay and sand with gravel.
596678	BH539	None Supplied	0.20	Brown loam and sand with gravel.
596679	BH561	None Supplied	0.50	Light brown clay and loam with gravel.
596680	BH561	None Supplied	1.50	Light brown clay and loam with gravel.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 16-21752

Project / Site name: Fort Halstead

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Bulks	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	W	ISO 17025
Asbestos Quantification - Gravimetric	The analysis was carried out using documented in-house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
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
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Explosives to BAE in Soil	Explosives analysis in Soil - Subcontracted to BAE Systems.	Subcontracted Analysis - See Attached Subcon Report.		W	NONE
Fraction of Organic Carbon in soil	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L023-PL	D	NONE
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	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
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
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
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
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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 16-21752

Project / Site name: Fort Halstead

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TPH Chromatogram	TPH Chromatogram.	In-house method	L064-PL	D	NONE
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	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.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH505		S	16-21752	596660	a			
BH505		S	16-21752	596661	a			
BH506		S	16-21752	596662	a			
BH506		S	16-21752	596663	a			
BH506		S	16-21752	596664	a			
BH507		S	16-21752	596665	a			
BH507		S	16-21752	596666	a			
BH508		S	16-21752	596667	a			
BH513		S	16-21752	596668	a			
BH513		S	16-21752	596669	a			
BH520		S	16-21752	596670	a			
BH520		S	16-21752	596671	a			
BH527		S	16-21752	596672	a			
BH528		S	16-21752	596673	a			
BH528		S	16-21752	596674	a			
BH538A		S	16-21752	596675	a			
BH538A		S	16-21752	596676	a			
BH538A		S	16-21752	596677	a			
BH539		S	16-21752	596678	a			
BH561		S	16-21752	596679	a			
BH561		S	16-21752	596680	a			
HP507		S	16-21752	596659	a			

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature

Wayne Lewis
Hydrock Consultants Ltd
2-4 Hawthorne Park
Holdenby Road
Spratton
Northamptonshire
NN6 8LD

t: 01604842888
f: 01604842666
e: waynelewis@hydrock.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 : 16-22402

Replaces Analytical Report Number : 16-22402, issue no. 1

Project / Site name:	Fort Halstead	**Samples received on:**	08/07/2016
Your job number:	C161227	**Samples instructed on:**	11/07/2016
Your order number:		**Analysis completed by:**	03/08/2016
Report Issue Number:	2	**Report issued on:**	03/08/2016
Samples Analysed:	40 soil samples		

Signed:

Dr Irma Doyle
Senior Account Manager
For & on behalf of i2 Analytical Ltd.

Signed:

Emma Winter
Assistant Reporting Manager
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.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599955	599956	599957	599958	599959
Sample Reference				BH500	BH500	BH501	BH502	BH502
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.30	0.20	0.40	0.60
Date Sampled				30/06/2016	30/06/2016	23/06/2016	23/06/2016	23/06/2016
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	13	15	18	18	13
Total mass of sample received	kg	0.001	NONE	0.39	0.53	0.93	1.1	1.0
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	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-
General Inorganics								
pH	pH Units	N/A	MCERTS	6.7	8.2	7.6	9.0	7.1
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.043	0.064	0.0042	0.84	0.33
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	42.9	63.9	4.2	838	333
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.060	0.0032	0.0053	0.0068	< 0.0010
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	1.1	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.29	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	1.1	1.2	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.19	0.37	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	1.6	2.1	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	1.4	1.9	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.64	0.86	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.83	1.0	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.73	0.79	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.41	0.87	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.51	0.86	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	0.39	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.64	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	7.34	11.3	< 1.60
Total WAC-17 PAHs	mg/kg	1.6	NONE	< 1.6	< 1.6	7.3	11	< 1.6
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	8.8	15	19	10
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.72	0.44	1.2	0.96	0.67
Boron (water soluble)	mg/kg	0.2	MCERTS	1.8	0.4	1.4	3.7	0.6
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5	< 0.2	1.1	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	30	25	43	35	37
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	30	25	43	35	37
Copper (aqua regia extractable)	mg/kg	1	MCERTS	39	12	38	50	14
Lead (aqua regia extractable)	mg/kg	1	MCERTS	36	26	84	330	14
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	0.6	0.7	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	27	18	23	30	20
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	1.6	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	52	37	75	66	53
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	37	120	100	35

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599955	599956	599957	599958	599959
Sample Reference				BH500	BH500	BH501	BH502	BH502
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.30	0.20	0.40	0.60
Date Sampled				30/06/2016	30/06/2016	23/06/2016	23/06/2016	23/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	-	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	-	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	-	43	< 8.0
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	NONE	< 10	< 10	-	43	< 10
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	-	12	< 8.4

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	-	5.9	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	-	31	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	-	110	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	-	22	< 8.4

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599955	599956	599957	599958	599959
Sample Reference				BH500	BH500	BH501	BH502	BH502
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.30	0.20	0.40	0.60
Date Sampled				30/06/2016	30/06/2016	23/06/2016	23/06/2016	23/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Chloroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Vinyl Chloride	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Trichlorofluoromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1-dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
2,2-Dichloropropane	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2-dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1-Dichloropropene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2-dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Bromodichloromethane	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Tetrachloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Tribromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Isopropylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
N-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
2-Chlorotoluene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
4-Chlorotoluene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Tert-Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
Sec-Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
1,3-dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
P-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2-dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
1,4-dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Hexachlorobutadiene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	< 1.0

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599955	599956	599957	599958	599959
Sample Reference				BH500	BH500	BH501	BH502	BH502
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.30	0.20	0.40	0.60
Date Sampled				30/06/2016	30/06/2016	23/06/2016	23/06/2016	23/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	< 0.1	-	< 0.1	< 0.1
Phenol	mg/kg	0.2	ISO 17025	< 0.2	< 0.2	-	< 0.2	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2	-	< 0.2	< 0.2
Isophorone	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	0.29	< 0.05
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	< 0.1	-	< 0.1	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	< 0.1	-	< 0.1	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	< 0.1	-	< 0.1	< 0.1
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	< 0.1
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	< 0.10
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	< 0.2
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	-	< 0.3	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	< 0.2
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	< 0.10
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	< 0.3
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	1.2	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	0.37	< 0.10
Carbazole	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	< 0.3
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	< 0.3
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	2.1	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	1.9	< 0.10
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	-	< 0.3	< 0.3
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	0.86	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	1.0	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	0.79	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	0.87	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	0.86	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	0.39	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	0.64	< 0.05

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599955	599956	599957	599958	599959
Sample Reference				BH500	BH500	BH501	BH502	BH502
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.30	0.20	0.40	0.60
Date Sampled				30/06/2016	30/06/2016	23/06/2016	23/06/2016	23/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 52	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 101	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 118	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 138	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 153	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 180	mg/kg	0.001	MCERTS	-	-	-	-	-
Total PCBs	mg/kg	0.007	MCERTS	-	-	-	-	-

Subcontracted Analysis

Explosives	Type	N/A	NONE	-	-	See Attached	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599960	599961	599962	599963	599964
Sample Reference				BH512	BH512	BH522	BH522	BH522
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.40	0.10	0.30	0.80
Date Sampled				01/07/2016	01/07/2016	01/07/2016	01/07/2016	01/07/2016
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	23	21	15	11	18
Total mass of sample received	kg	0.001	NONE	0.92	1.0	1.4	1.5	1.2
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	Chrysotile & Amosite & Crocidolite	Chrysotile & Amosite	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Detected	Detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	< 0.001	0.001	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	< 0.001	0.001	-
General Inorganics								
pH	pH Units	N/A	MCERTS	6.4	5.0	8.0	8.3	7.7
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.034	0.023	0.032	0.016	0.017
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	33.5	23.4	32.1	16.4	17.0
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.022	0.0013	0.016	< 0.0010	0.0013
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	0.18	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	0.19	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	1.2	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	0.24	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	1.6	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	1.2	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	0.87	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	1.1	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	0.72	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	0.81	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	0.86	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	0.38	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.53	< 0.05	< 0.05	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	9.86	< 1.60	< 1.60	< 1.60	< 1.60
Total WAC-17 PAHs	mg/kg	1.6	NONE	9.9	< 1.6	< 1.6	< 1.6	< 1.6
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	20	22	13	9.6	17
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.8	4.4	1.2	0.66	1.6
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5	1.3	0.5	0.5	1.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	28	58	30	28	47
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	28	58	30	28	47
Copper (aqua regia extractable)	mg/kg	1	MCERTS	60	51	190	70	25
Lead (aqua regia extractable)	mg/kg	1	MCERTS	38	32	170	22	28
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	48	72	170	30	33
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	1.7	1.1	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	87	110	92	66	86
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	150	200	3900	210	66

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599960	599961	599962	599963	599964
Sample Reference				BH512	BH512	BH522	BH522	BH522
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.40	0.10	0.30	0.80
Date Sampled				01/07/2016	01/07/2016	01/07/2016	01/07/2016	01/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	1.9	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	8.2	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	21	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	64	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	14	< 8.4	< 8.4	< 8.4	< 8.4

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599960	599961	599962	599963	599964
Sample Reference				BH512	BH512	BH522	BH522	BH522
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.40	0.10	0.30	0.80
Date Sampled				01/07/2016	01/07/2016	01/07/2016	01/07/2016	01/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
Chloroethane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
Bromomethane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/kg	1	NONE	-	-	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
1,2-dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	< 1.0
Benzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/kg	1	NONE	-	-	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	-	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Styrene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	< 1.0

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599960	599961	599962	599963	599964
Sample Reference				BH512	BH512	BH522	BH522	BH522
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.40	0.10	0.30	0.80
Date Sampled				01/07/2016	01/07/2016	01/07/2016	01/07/2016	01/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	< 0.1	< 0.1	< 0.1
Phenol	mg/kg	0.2	ISO 17025	-	-	< 0.2	< 0.2	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	< 0.05	< 0.05	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	-	-	< 0.2	< 0.2	< 0.2
Isophorone	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	-	-	< 0.05	< 0.05	< 0.05
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	-	-	< 0.1	< 0.1	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	< 0.1	< 0.1	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	< 0.1	< 0.1	< 0.1
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	-	-	< 0.10	< 0.10	< 0.10
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	< 0.2
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	< 0.3	< 0.3	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	< 0.2
Fluorene	mg/kg	0.1	MCERTS	-	-	< 0.10	< 0.10	< 0.10
Azobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	< 0.3
Phenanthrene	mg/kg	0.1	MCERTS	-	-	< 0.10	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	-	-	< 0.10	< 0.10	< 0.10
Carbazole	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	< 0.3
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	< 0.3
Fluoranthene	mg/kg	0.1	MCERTS	-	-	< 0.10	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	-	-	< 0.10	< 0.10	< 0.10
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	< 0.3	< 0.3	< 0.3
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	< 0.10	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	-	-	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	< 0.05	< 0.05	< 0.05

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599960	599961	599962	599963	599964
Sample Reference				BH512	BH512	BH522	BH522	BH522
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.40	0.10	0.30	0.80
Date Sampled				01/07/2016	01/07/2016	01/07/2016	01/07/2016	01/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 52	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 101	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 118	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 138	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 153	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 180	mg/kg	0.001	MCERTS	-	-	-	-	-
Total PCBs	mg/kg	0.007	MCERTS	-	-	-	-	-

Subcontracted Analysis

Explosives	Type	N/A	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599965	599966	599967	599968	599969
Sample Reference				BH530	BH530	BH530	BH531	BH531
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.40	1.40	0.35	0.60
Date Sampled				23/06/2016	23/06/2016	23/06/2016	30/06/2016	30/06/2016
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	20	21	20	16	16
Total mass of sample received	kg	0.001	NONE	0.95	0.97	1.1	1.3	0.90

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile & Amosite	Chrysotile	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Detected	Not-detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	< 0.001	0.236	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	< 0.001	0.236	-	-	-

General Inorganics

pH	pH Units	N/A	MCERTS	10.0	8.7	8.6	9.6	6.7
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.18	0.046	0.050	0.018	0.35
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	175	45.5	50.1	17.9	352
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.0086	0.0059	< 0.0010	< 0.0010	0.0019

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.18	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	0.33	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	0.31	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	3.3	0.65	< 0.10	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	0.99	0.19	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	6.4	1.0	< 0.10	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	5.8	0.86	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	2.9	0.40	< 0.10	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	3.3	0.48	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	2.5	0.24	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	2.6	0.32	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	3.4	0.28	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	1.3	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	0.24	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.1	< 0.05	< 0.05	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	35.7	4.42	< 1.60	< 1.60	< 1.60
Total WAC-17 PAHs	mg/kg	1.6	NONE	36	4.4	< 1.6	< 1.6	< 1.6

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	28	28	1.4	10	18
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.4	1.8	< 0.06	0.53	1.2
Boron (water soluble)	mg/kg	0.2	MCERTS	1.0	1.1	< 0.2	0.3	0.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.5	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	30	28	5.2	23	51
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	30	28	5.2	23	51
Copper (aqua regia extractable)	mg/kg	1	MCERTS	82	61	5.4	13	29
Lead (aqua regia extractable)	mg/kg	1	MCERTS	470	390	2.6	9.5	22
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.9	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	53	54	14	32	27
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.3	2.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	76	80	5.6	31	90
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	68	89	60	26	41

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599965	599966	599967	599968	599969
Sample Reference				BH530	BH530	BH530	BH531	BH531
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.40	1.40	0.35	0.60
Date Sampled				23/06/2016	23/06/2016	23/06/2016	30/06/2016	30/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/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	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	11	33	-	-	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	NONE	11	33	-	-	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	-	-	-

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	1.3	< 1.0	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	12	< 2.0	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	70	< 10	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	160	14	-	-	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	23	< 8.4	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599965	599966	599967	599968	599969
Sample Reference				BH530	BH530	BH530	BH531	BH531
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.40	1.40	0.35	0.60
Date Sampled				23/06/2016	23/06/2016	23/06/2016	30/06/2016	30/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
Chloroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
Vinyl Chloride	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
Trichlorofluoromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
1,1-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
1,1-dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
2,2-Dichloropropane	µg/kg	1	NONE	< 1.0	< 1.0	-	-	-
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
1,2-dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
1,1-Dichloropropene	µg/kg	1	NONE	< 1.0	< 1.0	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	-	-	-
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
1,2-dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
Bromodichloromethane	µg/kg	1	NONE	< 1.0	< 1.0	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
Tetrachloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	< 1.0	< 1.0	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
Tribromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
Isopropylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-	-	-
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
N-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
2-Chlorotoluene	µg/kg	1	NONE	< 1.0	< 1.0	-	-	-
4-Chlorotoluene	µg/kg	1	NONE	< 1.0	< 1.0	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
Tert-Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
Sec-Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-	-	-
1,3-dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
P-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
1,2-dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
1,4-dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
Hexachlorobutadiene	µg/kg	1	NONE	< 1.0	< 1.0	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	< 1.0	< 1.0	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599965	599966	599967	599968	599969
Sample Reference				BH530	BH530	BH530	BH531	BH531
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.40	1.40	0.35	0.60
Date Sampled				23/06/2016	23/06/2016	23/06/2016	30/06/2016	30/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	< 0.1	-	-	-
Phenol	mg/kg	0.2	ISO 17025	< 0.2	< 0.2	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2	-	-	-
Isophorone	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	0.18	< 0.05	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	< 0.1	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	< 0.1	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	< 0.1	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	-	-
Acenaphthene	mg/kg	0.1	MCERTS	0.33	< 0.10	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	-	-
Fluorene	mg/kg	0.1	MCERTS	0.31	< 0.10	-	-	-
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	-
Phenanthrene	mg/kg	0.1	MCERTS	3.3	0.65	-	-	-
Anthracene	mg/kg	0.1	MCERTS	0.99	0.19	-	-	-
Carbazole	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	-	-
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	-
Fluoranthene	mg/kg	0.1	MCERTS	6.4	1.0	-	-	-
Pyrene	mg/kg	0.1	MCERTS	5.8	0.86	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	-	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	2.9	0.40	-	-	-
Chrysene	mg/kg	0.05	MCERTS	3.3	0.48	-	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	2.5	0.24	-	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	2.6	0.32	-	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	3.4	0.28	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	1.3	< 0.10	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	0.24	< 0.10	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.1	< 0.05	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599965	599966	599967	599968	599969
Sample Reference				BH530	BH530	BH530	BH531	BH531
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.40	1.40	0.35	0.60
Date Sampled				23/06/2016	23/06/2016	23/06/2016	30/06/2016	30/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	-
PCB Congener 52	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	-
PCB Congener 101	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	-
PCB Congener 118	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	-
PCB Congener 138	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	-
PCB Congener 153	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	-
PCB Congener 180	mg/kg	0.001	MCERTS	< 0.001	< 0.001	-	-	-
Total PCBs	mg/kg	0.007	MCERTS	< 0.007	< 0.007	-	-	-

Subcontracted Analysis

Explosives	Type	N/A	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599970	599971	599972	599973	599974
Sample Reference				BH541	BH542	BH542	BH545	BH546
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.25	0.60	0.50	0.30
Date Sampled				29/06/2016	29/06/2016	29/06/2016	27/06/2016	24/06/2016
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	11	9.8	20	24	16
Total mass of sample received	kg	0.001	NONE	0.35	0.98	0.89	0.90	0.90
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	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-
General Inorganics								
pH	pH Units	N/A	MCERTS	7.9	10.8	5.1	7.0	7.8
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.019	0.19	0.090	0.11	0.0043
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	18.5	189	90.4	114	4.3
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.0042	0.0059	0.0018	< 0.0010	0.014
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	0.81
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	0.13
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	0.65	< 0.10	< 0.10	2.2
Pyrene	mg/kg	0.1	MCERTS	< 0.10	0.61	< 0.10	< 0.10	1.9
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	0.28	< 0.10	< 0.10	1.1
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.34	< 0.05	< 0.05	1.1
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	0.37	< 0.10	< 0.10	1.2
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	0.23	< 0.10	< 0.10	0.67
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	0.30	< 0.10	< 0.10	0.91
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	0.35
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.51
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	2.78	< 1.60	< 1.60	10.9
Total WAC-17 PAHs	mg/kg	1.6	NONE	< 1.6	2.8	< 1.6	< 1.6	11
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	34	9.7	21	20	13
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	16	0.66	1.6	2.7	1.0
Boron (water soluble)	mg/kg	0.2	MCERTS	2.0	1.5	1.2	1.2	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.3	< 0.2	< 0.2	< 0.2	0.4
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	73	23	62	56	31
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	73	23	62	56	31
Copper (aqua regia extractable)	mg/kg	1	MCERTS	43	19	22	32	75
Lead (aqua regia extractable)	mg/kg	1	MCERTS	30	12	18	22	160
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	0.6
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	130	22	29	47	21
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.1	< 1.0	1.6	< 1.0	1.1
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	130	38	99	110	44
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	150	35	51	79	140

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599970	599971	599972	599973	599974
Sample Reference				BH541	BH542	BH542	BH545	BH546
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.25	0.60	0.50	0.30
Date Sampled				29/06/2016	29/06/2016	29/06/2016	27/06/2016	24/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	8.3	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	NONE	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	20
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	< 8.4

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599970	599971	599972	599973	599974
Sample Reference				BH541	BH542	BH542	BH545	BH546
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.25	0.60	0.50	0.30
Date Sampled				29/06/2016	29/06/2016	29/06/2016	27/06/2016	24/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
Chloroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
Vinyl Chloride	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
Trichlorofluoromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
1,1-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
1,1-dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
2,2-Dichloropropane	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	-
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
1,2-dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
1,1-Dichloropropene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	-
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
1,2-dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Bromodichloromethane	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
Tetrachloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Tribromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Isopropylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	-
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
N-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
2-Chlorotoluene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	-
4-Chlorotoluene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
Tert-Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
Sec-Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	-
1,3-dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
P-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
1,2-dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
1,4-dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	< 1.0	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Hexachlorobutadiene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	< 1.0	< 1.0	-	< 1.0	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599970	599971	599972	599973	599974
Sample Reference				BH541	BH542	BH542	BH545	BH546
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.25	0.60	0.50	0.30
Date Sampled				29/06/2016	29/06/2016	29/06/2016	27/06/2016	24/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	< 0.1	-	< 0.1	-
Phenol	mg/kg	0.2	ISO 17025	< 0.2	< 0.2	-	< 0.2	-
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	-
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	-
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	-
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	-
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2	-	< 0.2	-
Isophorone	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	-
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	-
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	-
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	< 0.1	-	< 0.1	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	< 0.1	-	< 0.1	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	-
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	< 0.1	-	< 0.1	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	-
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	< 0.1	-
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	-
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	-
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	-	< 0.3	-
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	-
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	-
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	-
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	-
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	-
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	-
Carbazole	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	-
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	-
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	0.65	-	< 0.10	-
Pyrene	mg/kg	0.1	MCERTS	< 0.10	0.61	-	< 0.10	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	-	< 0.3	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	0.28	-	< 0.10	-
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.34	-	< 0.05	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	0.37	-	< 0.10	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	0.23	-	< 0.10	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	0.30	-	< 0.10	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599970	599971	599972	599973	599974
Sample Reference				BH541	BH542	BH542	BH545	BH546
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.25	0.60	0.50	0.30
Date Sampled				29/06/2016	29/06/2016	29/06/2016	27/06/2016	24/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	-	-	-	-	0.002
PCB Congener 52	mg/kg	0.001	MCERTS	-	-	-	-	0.002
PCB Congener 101	mg/kg	0.001	MCERTS	-	-	-	-	0.002
PCB Congener 118	mg/kg	0.001	MCERTS	-	-	-	-	0.002
PCB Congener 138	mg/kg	0.001	MCERTS	-	-	-	-	0.003
PCB Congener 153	mg/kg	0.001	MCERTS	-	-	-	-	0.004
PCB Congener 180	mg/kg	0.001	MCERTS	-	-	-	-	0.002
Total PCBs	mg/kg	0.007	MCERTS	-	-	-	-	0.019

Subcontracted Analysis

Explosives	Type	N/A	NONE	-	-	-	-	See Attached

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599975	599976	599977	599978	599979
Sample Reference				BH546	BH547	BH547	BH547	BH548
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.20	0.50	1.00	0.30
Date Sampled				24/06/2016	27/06/2016	27/06/2016	27/06/2016	27/06/2016
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	< 0.1	< 0.1	-	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	19	13	-	13	15
Total mass of sample received	kg	0.001	NONE	0.87	1.0	-	0.87	1.2
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	Amosite
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	-	Not-detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	< 0.001
General Inorganics								
pH	pH Units	N/A	MCERTS	7.8	7.8	-	6.1	7.8
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	-	< 1	< 1
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0099	0.010	-	0.066	0.027
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	9.9	10.0	-	66.2	27.4
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.0023	0.015	-	0.0015	0.015
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	0.28	-	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	0.62	-	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	0.47	-	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	0.23	-	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	0.22	-	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	0.20	-	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	2.02	-	< 1.60	< 1.60
Total WAC-17 PAHs	mg/kg	1.6	NONE	< 1.6	2.0	-	< 1.6	< 1.6
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	18	9.5	-	11	11
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.4	0.81	-	1.3	0.67
Boron (water soluble)	mg/kg	0.2	MCERTS	1.4	0.3	-	0.9	1.0
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.8	-	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	-	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	49	24	-	32	22
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	49	24	-	32	22
Copper (aqua regia extractable)	mg/kg	1	MCERTS	22	31	-	18	17
Lead (aqua regia extractable)	mg/kg	1	MCERTS	20	110	-	21	56
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.3	-	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	38	20	-	21	16
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.5	< 1.0	-	1.2	1.1
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	100	36	-	65	44
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	69	81	-	45	49

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599975	599976	599977	599978	599979
Sample Reference				BH546	BH547	BH547	BH547	BH548
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.20	0.50	1.00	0.30
Date Sampled				24/06/2016	27/06/2016	27/06/2016	27/06/2016	27/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/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	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	-	-	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	NONE	< 10	< 10	-	-	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	-	-	-

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	-	-	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599975	599976	599977	599978	599979
Sample Reference				BH546	BH547	BH547	BH547	BH548
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.20	0.50	1.00	0.30
Date Sampled				24/06/2016	27/06/2016	27/06/2016	27/06/2016	27/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Chloroethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Bromomethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Vinyl Chloride	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Trichlorofluoromethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
1,1-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1-dichloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
2,2-Dichloropropane	µg/kg	1	NONE	-	-	-	-	< 1.0
Trichloromethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,2-dichloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1-Dichloropropene	µg/kg	1	NONE	-	-	-	-	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-	< 1.0
Benzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,2-dichloropropane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Trichloroethene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Dibromomethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Bromodichloromethane	µg/kg	1	NONE	-	-	-	-	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Toluene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Tetrachloroethene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	-	-	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Styrene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Tribromomethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
o-xylene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Isopropylbenzene	µg/kg	1	NONE	-	-	-	-	< 1.0
Bromobenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
N-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
2-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	< 1.0
4-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Tert-Butylbenzene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Sec-Butylbenzene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,3-dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
P-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
1,2-dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,4-dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Butylbenzene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Hexachlorobutadiene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	-	-	-	< 1.0

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599975	599976	599977	599978	599979
Sample Reference				BH546	BH547	BH547	BH547	BH548
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.20	0.50	1.00	0.30
Date Sampled				24/06/2016	27/06/2016	27/06/2016	27/06/2016	27/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	-	-	< 0.1
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	< 0.2
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	< 0.1
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	-	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Fluorene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Phenanthrene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Anthracene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Pyrene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	-	< 0.3
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599975	599976	599977	599978	599979
Sample Reference				BH546	BH547	BH547	BH547	BH548
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.20	0.50	1.00	0.30
Date Sampled				24/06/2016	27/06/2016	27/06/2016	27/06/2016	27/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 52	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 101	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 118	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 138	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 153	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 180	mg/kg	0.001	MCERTS	-	-	-	-	-
Total PCBs	mg/kg	0.007	MCERTS	-	-	-	-	-

Subcontracted Analysis

Explosives	Type	N/A	NONE	-	See Attached	See Attached	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599980	599981	599982	599983	599984
Sample Reference				BH548	BH549	BH549	BH550	BH550
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80	0.20	0.70	0.20	0.50
Date Sampled				27/06/2016	27/06/2016	27/06/2016	28/06/2016	28/06/2016
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	< 0.1	-	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	19	-	20	23	21
Total mass of sample received	kg	0.001	NONE	0.99	-	0.83	0.98	1.1
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	Chrysotile
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	Not-detected	Not-detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	< 0.001
General Inorganics								
pH	pH Units	N/A	MCERTS	4.9	-	7.3	7.4	7.6
Free Cyanide	mg/kg	1	MCERTS	< 1	-	< 1	< 1	< 1
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.040	-	0.042	0.0060	0.028
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	39.9	-	42.0	6.0	27.6
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.0025	-	< 0.0010	0.024	0.011
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	0.35	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	1.0	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	0.87	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	0.46	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	0.57	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	0.53	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	0.25	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	0.38	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	-	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	-	< 1.60	4.42	< 1.60
Total WAC-17 PAHs	mg/kg	1.6	NONE	< 1.6	-	< 1.6	4.4	< 1.6
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	19	-	15	19	17
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.8	-	1.2	1.3	0.85
Boron (water soluble)	mg/kg	0.2	MCERTS	1.4	-	3.1	1.2	1.0
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	0.6	0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	-	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	58	-	46	31	28
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	58	-	46	31	28
Copper (aqua regia extractable)	mg/kg	1	MCERTS	26	-	18	39	50
Lead (aqua regia extractable)	mg/kg	1	MCERTS	18	-	17	200	84
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	0.9	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	32	-	24	27	16
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	-	< 1.0	1.9	1.5
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	110	-	90	60	53
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	61	-	46	160	47

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599980	599981	599982	599983	599984
Sample Reference				BH548	BH549	BH549	BH550	BH550
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80	0.20	0.70	0.20	0.50
Date Sampled				27/06/2016	27/06/2016	27/06/2016	28/06/2016	28/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/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	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	< 1.0	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	< 2.0	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	< 8.0	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	< 8.0	-	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	NONE	-	-	< 10	-	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	< 8.4	-	-

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	< 1.0	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	< 2.0	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	< 10	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	< 10	-	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	< 8.4	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599980	599981	599982	599983	599984
Sample Reference				BH548	BH549	BH549	BH550	BH550
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80	0.20	0.70	0.20	0.50
Date Sampled				27/06/2016	27/06/2016	27/06/2016	28/06/2016	28/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Chloroethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Bromomethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Vinyl Chloride	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Trichlorofluoromethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
1,1-dichloroethene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,1-dichloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
2,2-Dichloropropane	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-
Trichloromethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,2-dichloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,1-Dichloropropene	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-
Benzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,2-dichloropropane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Trichloroethene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Dibromomethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Bromodichloromethane	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Toluene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Tetrachloroethene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
p & m-xylene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Styrene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Tribromomethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
o-xylene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Isopropylbenzene	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-
Bromobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
N-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
2-Chlorotoluene	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-
4-Chlorotoluene	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Tert-Butylbenzene	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
Sec-Butylbenzene	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-
1,3-dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
P-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
1,2-dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
1,4-dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Butylbenzene	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	-	< 1.0	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Hexachlorobutadiene	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	< 1.0	-	< 1.0	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599980	599981	599982	599983	599984
Sample Reference				BH548	BH549	BH549	BH550	BH550
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80	0.20	0.70	0.20	0.50
Date Sampled				27/06/2016	27/06/2016	27/06/2016	28/06/2016	28/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	-	< 0.1	-	-
Phenol	mg/kg	0.2	ISO 17025	< 0.2	-	< 0.2	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	-
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	-	< 0.2	-	-
Isophorone	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	-
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	-
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	-	< 0.1	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	-	< 0.1	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	-	< 0.1	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	-	-
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	-	< 0.3	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	-
Fluorene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	-	-
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	-
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	-	-
Anthracene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	-	-
Carbazole	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-	< 0.2	-	-
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	-	< 0.3	-	-
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	-	-
Pyrene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	-	< 0.3	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	-	-
Chrysene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	-	< 0.10	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	-	< 0.05	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599980	599981	599982	599983	599984
Sample Reference				BH548	BH549	BH549	BH550	BH550
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.80	0.20	0.70	0.20	0.50
Date Sampled				27/06/2016	27/06/2016	27/06/2016	28/06/2016	28/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 52	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 101	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 118	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 138	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 153	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 180	mg/kg	0.001	MCERTS	-	-	-	-	-
Total PCBs	mg/kg	0.007	MCERTS	-	-	-	-	-

Subcontracted Analysis

Explosives	Type	N/A	NONE	-	See Attached	-	See Attached	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599985	599986	599987	599988	599989
Sample Reference				BH554	BH555	BH557	BH557	BH563
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.30	0.50	0.80	0.30
Date Sampled				28/06/2016	29/06/2016	28/06/2016	28/06/2016	28/06/2016
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	6.4	18	17	27	11
Total mass of sample received	kg	0.001	NONE	1.1	0.40	0.15	0.15	1.1
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	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-
General Inorganics								
pH	pH Units	N/A	MCERTS	9.1	7.6	6.4	5.5	7.7
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.20	0.051	0.0052	0.022	0.052
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	195	50.7	5.2	22.1	51.9
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.0041	0.036	< 0.0010	0.0026	0.013
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	0.48	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	2.7	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	2.2	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	29	< 0.10	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	7.4	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	0.49	57	< 0.10	< 0.10	0.58
Pyrene	mg/kg	0.1	MCERTS	0.39	49	< 0.10	< 0.10	0.54
Benzo(a)anthracene	mg/kg	0.1	MCERTS	0.20	23	< 0.10	< 0.10	0.28
Chrysene	mg/kg	0.05	MCERTS	0.26	18	< 0.05	< 0.05	0.46
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	0.22	23	< 0.10	< 0.10	0.34
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	0.17	11	< 0.10	< 0.10	0.27
Benzo(a)pyrene	mg/kg	0.1	MCERTS	0.24	17	< 0.10	< 0.10	0.28
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	7.9	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	2.1	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	10	< 0.05	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	1.97	259	< 1.60	< 1.60	2.75
Total WAC-17 PAHs	mg/kg	1.6	NONE	2.0	260	< 1.6	< 1.6	2.8
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	9.9	15	17	16
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.87	3.6	2.5	2.6	0.73
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9	2.5	0.8	< 0.2	1.0
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	1.3	< 0.2	< 0.2	0.8
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	23	27	58	60	23
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	27	58	60	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	26	33	36	40	41
Lead (aqua regia extractable)	mg/kg	1	MCERTS	33	47	21	42	140
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	0.4	0.3	0.7
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	17	53	37	51	18
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	1.7	1.2	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	40	53	95	120	36
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	51	100	72	95	75

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599985	599986	599987	599988	599989
Sample Reference				BH554	BH555	BH557	BH557	BH563
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.30	0.50	0.80	0.30
Date Sampled				28/06/2016	29/06/2016	28/06/2016	28/06/2016	28/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/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	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	< 2.0	-	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	< 8.0	-	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	< 8.0	-	< 8.0
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	NONE	-	-	< 10	-	< 10
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	< 8.4	-	< 8.4

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	< 2.0	-	2.2
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	< 10	-	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	< 10	-	17
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	< 8.4	-	< 8.4

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599985	599986	599987	599988	599989
Sample Reference				BH554	BH555	BH557	BH557	BH563
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.30	0.50	0.80	0.30
Date Sampled				28/06/2016	29/06/2016	28/06/2016	28/06/2016	28/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Chloroethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Bromomethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Vinyl Chloride	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Trichlorofluoromethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
1,1-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1-dichloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
2,2-Dichloropropane	µg/kg	1	NONE	-	-	-	-	< 1.0
Trichloromethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,2-dichloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1-Dichloropropene	µg/kg	1	NONE	-	-	-	-	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-	< 1.0
Benzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,2-dichloropropane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Trichloroethene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Dibromomethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Bromodichloromethane	µg/kg	1	NONE	-	-	-	-	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Toluene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Tetrachloroethene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	-	-	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Styrene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Tribromomethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
o-xylene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Isopropylbenzene	µg/kg	1	NONE	-	-	-	-	< 1.0
Bromobenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
N-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
2-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	< 1.0
4-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Tert-Butylbenzene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Sec-Butylbenzene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,3-dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
P-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
1,2-dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,4-dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Butylbenzene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Hexachlorobutadiene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	-	-	-	< 1.0

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599985	599986	599987	599988	599989
Sample Reference				BH554	BH555	BH557	BH557	BH563
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.30	0.50	0.80	0.30
Date Sampled				28/06/2016	29/06/2016	28/06/2016	28/06/2016	28/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	-	-	< 0.1
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	< 0.2
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	< 0.1
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	-	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Fluorene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Phenanthrene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Anthracene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	0.58
Pyrene	mg/kg	0.1	MCERTS	-	-	-	-	0.54
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	-	< 0.3
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	0.28
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	0.46
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	0.34
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	0.27
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	0.28
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599985	599986	599987	599988	599989
Sample Reference				BH554	BH555	BH557	BH557	BH563
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.30	0.50	0.80	0.30
Date Sampled				28/06/2016	29/06/2016	28/06/2016	28/06/2016	28/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 52	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 101	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 118	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 138	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 153	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 180	mg/kg	0.001	MCERTS	-	-	-	-	-
Total PCBs	mg/kg	0.007	MCERTS	-	-	-	-	-

Subcontracted Analysis

Explosives	Type	N/A	NONE	-	-	See Attached	See Attached	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599990	599991	599992	599994	599995
Sample Reference				BH563	BH556	BH556	HP501	HP502
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	0.10	0.40	0.40	0.40
Date Sampled				28/06/2016	29/06/2016	29/06/2016	26/06/2016	26/06/2016
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	13	21	17	24	11
Total mass of sample received	kg	0.001	NONE	1.2	1.2	1.2	0.15	0.15
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	Chrysotile	Chrysotile	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Detected	Detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	< 0.001	< 0.001	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	< 0.001	< 0.001	-	-
General Inorganics								
pH	pH Units	N/A	MCERTS	8.0	7.9	7.6	8.1	8.0
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.017	0.0064	0.16	0.0037	0.0031
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	17.4	6.4	157	3.7	3.1
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.0055	0.010	0.0075	0.0064	0.0046
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.53	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	4.4	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.76	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	4.8	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	1.1	77	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	0.44	16	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	2.6	150	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	2.1	120	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	1.3	59	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.99	49	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	1.2	57	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	0.51	27	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	0.98	49	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	0.42	22	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	7.4	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.53	26	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	6.3	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	12.2	668	< 1.60	< 1.60
Total WAC-17 PAHs	mg/kg	1.6	NONE	< 1.6	12	670	< 1.6	< 1.6
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8.5	13	8.4	9.4	10
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.51	1.6	0.78	2.2	1.5
Boron (water soluble)	mg/kg	0.2	MCERTS	0.8	0.8	< 0.2	0.3	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	0.2	< 0.2	0.5	0.5
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	31	42	26	35	31
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	31	42	27	35	31
Copper (aqua regia extractable)	mg/kg	1	MCERTS	13	32	14	23	25
Lead (aqua regia extractable)	mg/kg	1	MCERTS	31	45	41	33	37
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.4	0.4	0.4	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	19	29	12	33	31
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	2.0	1.0	< 1.0	1.9	1.2
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	39	65	35	58	45
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	44	84	38	70	57

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599990	599991	599992	599994	599995
Sample Reference				BH563	BH556	BH556	HP501	HP502
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	0.10	0.40	0.40	0.40
Date Sampled				28/06/2016	29/06/2016	29/06/2016	26/06/2016	26/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	ug/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	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	NONE	< 10	-	-	-	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	-	-	-	-

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	-	-	-	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599990	599991	599992	599994	599995
Sample Reference				BH563	BH556	BH556	HP501	HP502
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	0.10	0.40	0.40	0.40
Date Sampled				28/06/2016	29/06/2016	29/06/2016	26/06/2016	26/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	-	-	-
Chloroethane	µg/kg	1	ISO 17025	-	-	-	-	-
Bromomethane	µg/kg	1	ISO 17025	-	-	-	-	-
Vinyl Chloride	µg/kg	1	ISO 17025	-	-	-	-	-
Trichlorofluoromethane	µg/kg	1	ISO 17025	-	-	-	-	-
1,1-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-
1,1-dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
2,2-Dichloropropane	µg/kg	1	NONE	-	-	-	-	-
Trichloromethane	µg/kg	1	MCERTS	-	-	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,2-dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,1-Dichloropropene	µg/kg	1	NONE	-	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-	-
Benzene	µg/kg	1	MCERTS	-	-	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	-	-
1,2-dichloropropane	µg/kg	1	MCERTS	-	-	-	-	-
Trichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
Dibromomethane	µg/kg	1	MCERTS	-	-	-	-	-
Bromodichloromethane	µg/kg	1	NONE	-	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	-	-
Tetrachloroethene	µg/kg	1	MCERTS	-	-	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
p & m-xylene	µg/kg	1	MCERTS	-	-	-	-	-
Styrene	µg/kg	1	MCERTS	-	-	-	-	-
Tribromomethane	µg/kg	1	MCERTS	-	-	-	-	-
o-xylene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	-
Isopropylbenzene	µg/kg	1	NONE	-	-	-	-	-
Bromobenzene	µg/kg	1	MCERTS	-	-	-	-	-
N-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
2-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	-
4-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
Tert-Butylbenzene	µg/kg	1	NONE	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
Sec-Butylbenzene	µg/kg	1	NONE	-	-	-	-	-
1,3-dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	-
P-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	-	-
1,2-dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,4-dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
Butylbenzene	µg/kg	1	NONE	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
Hexachlorobutadiene	µg/kg	1	NONE	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599990	599991	599992	599994	599995
Sample Reference				BH563	BH556	BH556	HP501	HP502
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	0.10	0.40	0.40	0.40
Date Sampled				28/06/2016	29/06/2016	29/06/2016	26/06/2016	26/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	-	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	-	-	-
Acenaphthene	mg/kg	0.1	MCERTS	-	-	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	-	-
Fluorene	mg/kg	0.1	MCERTS	-	-	-	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Phenanthrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	-	-
Fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22402

Project / Site name: Fort Halstead

Lab Sample Number				599990	599991	599992	599994	599995
Sample Reference				BH563	BH556	BH556	HP501	HP502
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	0.10	0.40	0.40	0.40
Date Sampled				28/06/2016	29/06/2016	29/06/2016	26/06/2016	26/06/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
PCBs by GC-MS								
PCB Congener 28	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 52	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 101	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 118	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 138	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 153	mg/kg	0.001	MCERTS	-	-	-	-	-
PCB Congener 180	mg/kg	0.001	MCERTS	-	-	-	-	-
Total PCBs	mg/kg	0.007	MCERTS	-	-	-	-	-

Subcontracted Analysis

Explosives	Type	N/A	NONE	-	See Attached	See Attached	See Attached	See Attached

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: **16-22402**
Project / Site name: **Fort Halstead**
Your Order No:

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 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
599962	BH522	0.10	120	Loose Fibres	**Chrysotile & Amosite & Crocidolite**	< 0.001	**< 0.001**
599963	BH522	0.30	137	Loose Fibres	**Chrysotile & Amosite**	0.001	**0.001**
599965	BH530	0.20	114	Loose Fibres	**Chrysotile & Amosite**	< 0.001	**< 0.001**
599966	BH530	0.40	136	Hard/Cement Type Material	**Chrysotile**	0.236	**0.236**
599979	BH548	0.30	129	Loose Fibres	**Amosite**	< 0.001	**< 0.001**
599984	BH550	0.50	104	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**
599991	BH556	0.10	121	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**
599992	BH556	0.40	123	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 16-22402

Project / Site name: Fort Halstead

* 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 topsoil/loam 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 *
599955	BH500	None Supplied	0.10	Brown loam and clay with gravel and vegetation.
599956	BH500	None Supplied	0.30	Brown clay and sand.
599957	BH501	None Supplied	0.20	Brown clay and loam with vegetation.
599958	BH502	None Supplied	0.40	Brown loam and clay with gravel.
599959	BH502	None Supplied	0.60	Brown loam and clay with gravel.
599960	BH512	None Supplied	0.10	Brown clay and loam with gravel.
599961	BH512	None Supplied	0.40	Brown loam and clay with gravel.
599962	BH522	None Supplied	0.10	Brown loam and sand with gravel.
599963	BH522	None Supplied	0.30	Brown loam and sand with gravel.
599964	BH522	None Supplied	0.80	Brown clay and sand.
599965	BH530	None Supplied	0.20	Brown loam and sand with gravel.
599966	BH530	None Supplied	0.40	Brown loam and sand with gravel.
599967	BH530	None Supplied	1.40	Brown chalk.**
599968	BH531	None Supplied	0.35	Brown clay and sand with gravel.
599969	BH531	None Supplied	0.60	Brown clay and sand with gravel.
599970	BH541	None Supplied	0.30	Brown clay and sand with gravel.
599971	BH542	None Supplied	0.25	Brown clay and sand with gravel and rubble.
599972	BH542	None Supplied	0.60	Brown clay and sand with gravel.
599973	BH545	None Supplied	0.50	Brown clay and sand with gravel.
599974	BH546	None Supplied	0.30	Brown loam and clay with gravel and vegetation.
599975	BH546	None Supplied	0.50	Brown clay and sand with gravel.
599976	BH547	None Supplied	0.20	Brown loam and clay with gravel.
599977	BH547	None Supplied	0.50	-
599978	BH547	None Supplied	1.00	Brown clay and loam with gravel.
599979	BH548	None Supplied	0.30	Brown clay and loam with gravel.
599980	BH548	None Supplied	0.80	Brown clay and sand.
599981	BH549	None Supplied	0.20	-
599982	BH549	None Supplied	0.70	Brown clay and sand.
599983	BH550	None Supplied	0.20	Brown loam and clay with gravel and vegetation.
599984	BH550	None Supplied	0.50	Brown clay and loam with gravel and brick.
599985	BH554	None Supplied	0.40	Brown loam and clay with gravel.
599986	BH555	None Supplied	0.30	Brown loam and clay with gravel.
599987	BH557	None Supplied	0.50	Light brown clay and sand.
599988	BH557	None Supplied	0.80	Light brown clay and sand with gravel.
599989	BH563	None Supplied	0.30	Brown loam and sand with gravel.
599990	BH563	None Supplied	0.90	Brown clay and sand.
599991	BH556	None Supplied	0.10	Brown clay and loam with gravel and vegetation.
599992	BH556	None Supplied	0.40	Brown clay and loam with gravel and vegetation.
599994	HP501	None Supplied	0.40	Brown clay and sand with gravel and vegetation.
599995	HP502	None Supplied	0.40	Brown clay and sand with gravel and vegetation.

**Non MCerts matrix

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 16-22402

Project / Site name: Fort Halstead

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Asbestos Quantification - Gravimetric	The analysis was carried out using documented in-house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
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
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Explosives to BAE in Soil	Explosives analysis in Soil - Subcontracted to BAE Systems.	Subcontracted Analysis - See Attached Subcon Report.		W	NONE
Fraction of Organic Carbon in soil	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L023-PL	D	NONE
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	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
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
PCB's By GC-MS in soil	Determination of PCB by extraction with acetone and hexane followed by GC-MS.	In-house method based on USEPA 8082	L027-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
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
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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 16-22402

Project / Site name: Fort Halstead

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
TPH Chromatogram	TPH Chromatogram.	In-house method	L064-PL	D	NONE
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	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.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH501		S	16-22402	599957	c	Free cyanide in soil	L080-PL	c
BH501		S	16-22402	599957	c	Organic matter in soil	L023-PL	c
BH502		S	16-22402	599958	c	Free cyanide in soil	L080-PL	c
BH502		S	16-22402	599958	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
BH502		S	16-22402	599958	c	Organic matter in soil	L023-PL	c
BH502		S	16-22402	599958	c	Volatile organic compounds in soil	L073B-PL	c
BH502		S	16-22402	599959	c	Free cyanide in soil	L080-PL	c
BH502		S	16-22402	599959	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
BH502		S	16-22402	599959	c	Organic matter in soil	L023-PL	c
BH502		S	16-22402	599959	c	Volatile organic compounds in soil	L073B-PL	c
BH530		S	16-22402	599965	c	Free cyanide in soil	L080-PL	c
BH530		S	16-22402	599965	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
BH530		S	16-22402	599965	c	Organic matter in soil	L023-PL	c
BH530		S	16-22402	599965	c	Volatile organic compounds in soil	L073B-PL	c
BH530		S	16-22402	599966	c	Free cyanide in soil	L080-PL	c
BH530		S	16-22402	599966	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
BH530		S	16-22402	599966	c	Organic matter in soil	L023-PL	c
BH530		S	16-22402	599966	c	Volatile organic compounds in soil	L073B-PL	c
BH530		S	16-22402	599967	c	Free cyanide in soil	L080-PL	c
BH530		S	16-22402	599967	c	Organic matter in soil	L023-PL	c
BH545		S	16-22402	599973	c	Free cyanide in soil	L080-PL	c
BH545		S	16-22402	599973	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
BH545		S	16-22402	599973	c	Organic matter in soil	L023-PL	c
BH545		S	16-22402	599973	c	Volatile organic compounds in soil	L073B-PL	c
BH546		S	16-22402	599974	c	Free cyanide in soil	L080-PL	c
BH546		S	16-22402	599974	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
BH546		S	16-22402	599974	c	Organic matter in soil	L023-PL	c
BH546		S	16-22402	599975	c	Free cyanide in soil	L080-PL	c
BH546		S	16-22402	599975	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
BH546		S	16-22402	599975	c	Organic matter in soil	L023-PL	c
BH547		S	16-22402	599976	c	Free cyanide in soil	L080-PL	c
BH547		S	16-22402	599976	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
BH547		S	16-22402	599976	c	Organic matter in soil	L023-PL	c
BH547		S	16-22402	599978	c	Free cyanide in soil	L080-PL	c
BH547		S	16-22402	599978	c	Organic matter in soil	L023-PL	c
BH548		S	16-22402	599979	c	Free cyanide in soil	L080-PL	c
BH548		S	16-22402	599979	c	Organic matter in soil	L023-PL	c
BH548		S	16-22402	599979	c	Volatile organic compounds in soil	L073B-PL	c
BH548		S	16-22402	599980	c	Free cyanide in soil	L080-PL	c
BH548		S	16-22402	599980	c	Organic matter in soil	L023-PL	c
BH548		S	16-22402	599980	c	Volatile organic compounds in soil	L073B-PL	c
BH549		S	16-22402	599982	c	Free cyanide in soil	L080-PL	c
BH549		S	16-22402	599982	c	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	c
BH549		S	16-22402	599982	c	Organic matter in soil	L023-PL	c
BH549		S	16-22402	599982	c	Volatile organic compounds in soil	L073B-PL	c
HP501		S	16-22402	599994	c	Free cyanide in soil	L080-PL	c
HP501		S	16-22402	599994	c	Organic matter in soil	L023-PL	c
HP502		S	16-22402	599995	c	Free cyanide in soil	L080-PL	c
HP502		S	16-22402	599995	c	Organic matter in soil	L023-PL	c

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Wayne Lewis
Hydrock Consultants Ltd
Over Court Barns
Over Lane
Bristol
BS32 4DF

t: 01454 619533
f: 01454 614125
e: waynelewis@hydrock.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 : 16-22854

Replaces Analytical Report Number : 16-22854, issue no. 1

Project / Site name:	Fort Halstead	**Samples received on:**	08/07/2016
Your job number:	C161227	**Samples instructed on:**	17/07/2016
Your order number:		**Analysis completed by:**	04/08/2016
Report Issue Number:	2	**Report issued on:**	04/08/2016
Samples Analysed:	25 soil samples		

Signed: CCStone

Dr Claire Stone
Quality Manager
For & on behalf of i2 Analytical Ltd.

Signed:

Emma Winter
Assistant Reporting Manager
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.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22854

Project / Site name: Fort Halstead

Lab Sample Number				602429	602430	602431	602432	602433
Sample Reference				BH509	BH509	BH509	BH511	BH511
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.40	0.70	0.40	0.80
Date Sampled				04/07/2016	04/07/2016	04/07/2016	04/07/2016	04/07/2016
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	18	13	17	19	12
Total mass of sample received	kg	0.001	NONE	0.96	0.90	1.0	0.98	1.1

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	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-

General Inorganics

pH	pH Units	N/A	MCERTS	7.1	7.7	7.6	6.9	7.6
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.012	0.012	0.018	0.019	0.12
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	12.4	12.3	18.3	18.6	121
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.026	0.0064	< 0.0010	0.0030	0.0027

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.45	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	1.2	0.25	< 0.10	0.21	< 0.10
Anthracene	mg/kg	0.1	MCERTS	0.24	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	3.6	0.67	< 0.10	0.68	< 0.10
Pyrene	mg/kg	0.1	MCERTS	3.1	0.57	< 0.10	0.60	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	1.6	0.31	< 0.10	0.36	< 0.10
Chrysene	mg/kg	0.05	MCERTS	1.5	0.37	< 0.05	0.36	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	1.7	0.49	< 0.10	0.38	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	0.96	0.20	< 0.10	0.21	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	1.4	0.31	< 0.10	0.31	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	0.61	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.2	< 0.05	< 0.05	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	17.5	3.17	< 1.60	3.11	< 1.60
Total WAC-17 PAHs	mg/kg	1.6	NONE	18	3.2	< 1.6	3.1	< 1.6

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22854

Project / Site name: Fort Halstead

Lab Sample Number				602429	602430	602431	602432	602433
Sample Reference				BH509	BH509	BH509	BH511	BH511
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.40	0.70	0.40	0.80
Date Sampled				04/07/2016	04/07/2016	04/07/2016	04/07/2016	04/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	19	12	13	15	6.7
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.6	1.3	0.92	2.8	0.71
Boron (water soluble)	mg/kg	0.2	MCERTS	0.9	0.6	0.7	0.8	0.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5	< 0.2	1.6	0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	30	30	27	44	19
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	30	31	27	44	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	69	33	27	43	14
Lead (aqua regia extractable)	mg/kg	1	MCERTS	230	65	60	33	17
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1.1	< 0.3	0.5	0.5	0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	34	29	29	49	19
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.3	1.4	< 1.0	1.0	1.3
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	76	59	46	78	31
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	140	180	5100	100	49
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	3.7	< 2.0	< 2.0	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	8.4	< 8.0	< 8.0	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	34	< 8.0	57	-	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	NONE	43	< 10	57	-	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	64	-	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	30	< 10	110	-	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	120	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22854

Project / Site name: Fort Halstead

Lab Sample Number				602429	602430	602431	602432	602433
Sample Reference				BH509	BH509	BH509	BH511	BH511
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.40	0.70	0.40	0.80
Date Sampled				04/07/2016	04/07/2016	04/07/2016	04/07/2016	04/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
Chloroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
Vinyl Chloride	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
Trichlorofluoromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
1,1-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,1-dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
2,2-Dichloropropane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	-
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,2-dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,1-Dichloropropene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	-
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,2-dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Bromodichloromethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
Tetrachloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Tribromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Isopropylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	-
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
N-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
2-Chlorotoluene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	-
4-Chlorotoluene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
Tert-Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
Sec-Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	-
1,3-dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
P-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
1,2-dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
1,4-dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Hexachlorobutadiene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	< 1.0	< 1.0	< 1.0	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22854

Project / Site name: Fort Halstead

Lab Sample Number				602429	602430	602431	602432	602433
Sample Reference				BH509	BH509	BH509	BH511	BH511
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.40	0.70	0.40	0.80
Date Sampled				04/07/2016	04/07/2016	04/07/2016	04/07/2016	04/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	-	-
Phenol	mg/kg	0.2	ISO 17025	< 0.2	< 0.2	< 0.2	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	-	-
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2	< 0.2	-	-
Isophorone	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	-	-
Naphthalene	mg/kg	0.05	MCERTS	0.45	< 0.05	< 0.05	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	-	-
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	-	-
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	< 0.3	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	-	-
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	-	-
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	-	-
Phenanthrene	mg/kg	0.1	MCERTS	1.2	0.25	< 0.10	-	-
Anthracene	mg/kg	0.1	MCERTS	0.24	< 0.10	< 0.10	-	-
Carbazole	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	-	-
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	-	-
Fluoranthene	mg/kg	0.1	MCERTS	3.6	0.67	< 0.10	-	-
Pyrene	mg/kg	0.1	MCERTS	3.1	0.57	< 0.10	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	< 0.3	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	1.6	0.31	< 0.10	-	-
Chrysene	mg/kg	0.05	MCERTS	1.5	0.37	< 0.05	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	1.7	0.49	< 0.10	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	0.96	0.20	< 0.10	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	1.4	0.31	< 0.10	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	0.61	< 0.10	< 0.10	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.2	< 0.05	< 0.05	-	-

Subcontracted Analysis

Explosives	Type	N/A	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22854

Project / Site name: Fort Halstead

Lab Sample Number				602434	602435	602436	602437	602438
Sample Reference				BH514	BH514	BH523	BH523	BH533
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	3.00	0.30	0.80	0.10
Date Sampled				04/07/2016	04/07/2016	05/07/2016	05/07/2016	07/07/2016
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	8.8	14	8.9	23	14
Total mass of sample received	kg	0.001	NONE	0.43	0.49	0.46	0.41	0.85

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Chrysotile- Loose fibres	Chrysotile & Amosite &	-	-	Chrysotile
Asbestos in Soil	Type	N/A	ISO 17025	Detected	Detected	Not-detected	Not-detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	0.001	-	-	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	-	0.001	-	-	< 0.001

General Inorganics

pH	pH Units	N/A	MCERTS	8.1	8.0	10.8	8.9	7.6
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.040	1.4	0.13	0.013	0.017
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	40.3	1380	128	12.6	17.3
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.0065	0.011	0.0048	0.0014	0.017

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	0.39	0.75	0.76	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	0.25	0.75	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	0.35	0.92	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	1.7	3.1	7.6	< 0.10	0.93
Anthracene	mg/kg	0.1	MCERTS	0.49	1.1	3.7	< 0.10	0.21
Fluoranthene	mg/kg	0.1	MCERTS	6.4	7.3	26	< 0.10	1.8
Pyrene	mg/kg	0.1	MCERTS	5.6	6.1	23	< 0.10	1.5
Benzo(a)anthracene	mg/kg	0.1	MCERTS	3.4	3.9	10	< 0.10	0.79
Chrysene	mg/kg	0.05	MCERTS	3.9	3.1	8.3	< 0.05	0.98
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	3.2	3.8	9.0	< 0.10	1.1
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	4.2	2.2	3.9	< 0.10	0.54
Benzo(a)pyrene	mg/kg	0.1	MCERTS	4.6	3.6	8.2	< 0.10	0.75
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	2.2	1.8	3.6	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	0.40	1.2	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	2.6	2.2	4.1	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	38.7	40.0	111	< 1.60	8.50
Total WAC-17 PAHs	mg/kg	1.6	NONE	39	40	110	< 1.6	8.5

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22854

Project / Site name: Fort Halstead

Lab Sample Number				602434	602435	602436	602437	602438
Sample Reference				BH514	BH514	BH523	BH523	BH533
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	3.00	0.30	0.80	0.10
Date Sampled				04/07/2016	04/07/2016	05/07/2016	05/07/2016	07/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	14	13	< 1.0	12
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.71	0.79	0.86	0.06	1.4
Boron (water soluble)	mg/kg	0.2	MCERTS	5.4	2.1	6.2	< 0.2	0.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	0.5	< 0.2	< 0.2	0.8
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	23	33	26	3.2	30
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	33	26	3.2	30
Copper (aqua regia extractable)	mg/kg	1	MCERTS	28	46	60	6.5	75
Lead (aqua regia extractable)	mg/kg	1	MCERTS	120	140	16	3.8	70
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.4	0.6	< 0.3	< 0.3	0.5
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	16	21	23	5.2	33
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	1.2	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	37	41	35	4.5	69
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120	300	49	22	400

Monoaromatics

Benzene	ug/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	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	-	< 2.0	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	-	< 8.0	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	16	-	58	-	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	NONE	16	-	58	-	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	16	-	27	-	-

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	-	14	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	24	-	130	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	140	-	370	-	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	140	-	230	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22854

Project / Site name: Fort Halstead

Lab Sample Number				602434	602435	602436	602437	602438
Sample Reference				BH514	BH514	BH523	BH523	BH533
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	3.00	0.30	0.80	0.10
Date Sampled				04/07/2016	04/07/2016	05/07/2016	05/07/2016	07/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Chloroethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Bromomethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Vinyl Chloride	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Trichlorofluoromethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
1,1-dichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1-dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
2,2-Dichloropropane	µg/kg	1	NONE	-	-	< 1.0	-	-
Trichloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,2-dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1-Dichloropropene	µg/kg	1	NONE	-	-	< 1.0	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	< 1.0	-	-
Benzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,2-dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Trichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Dibromomethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Bromodichloromethane	µg/kg	1	NONE	-	-	< 1.0	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Toluene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Tetrachloroethene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	-	< 1.0	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
p & m-xylene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Styrene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Tribromomethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
o-xylene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Isopropylbenzene	µg/kg	1	NONE	-	-	< 1.0	-	-
Bromobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
N-Propylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
2-Chlorotoluene	µg/kg	1	NONE	-	-	< 1.0	-	-
4-Chlorotoluene	µg/kg	1	NONE	-	-	< 1.0	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Tert-Butylbenzene	µg/kg	1	NONE	-	-	< 1.0	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Sec-Butylbenzene	µg/kg	1	NONE	-	-	< 1.0	-	-
1,3-dichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
P-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
1,2-dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,4-dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Butylbenzene	µg/kg	1	NONE	-	-	< 1.0	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Hexachlorobutadiene	µg/kg	1	NONE	-	-	< 1.0	-	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22854

Project / Site name: Fort Halstead

Lab Sample Number				602434	602435	602436	602437	602438
Sample Reference				BH514	BH514	BH523	BH523	BH533
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.40	3.00	0.30	0.80	0.10
Date Sampled				04/07/2016	04/07/2016	05/07/2016	05/07/2016	07/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	< 0.1	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	< 0.2	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	< 0.05	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	< 0.2	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	< 0.1	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	< 0.1	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	< 0.1	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	0.76	-	-
Acenaphthene	mg/kg	0.1	MCERTS	-	-	0.75	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	0.3	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	< 0.3	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Fluorene	mg/kg	0.1	MCERTS	-	-	0.92	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Phenanthrene	mg/kg	0.1	MCERTS	-	-	7.6	-	-
Anthracene	mg/kg	0.1	MCERTS	-	-	3.7	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	0.5	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	1.0	-	-
Fluoranthene	mg/kg	0.1	MCERTS	-	-	26	-	-
Pyrene	mg/kg	0.1	MCERTS	-	-	23	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	< 0.3	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	10	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	8.3	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	9.0	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	3.9	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	8.2	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	3.6	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	1.2	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	4.1	-	-

Subcontracted Analysis

Explosives	Type	N/A	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22854

Project / Site name: Fort Halstead

Lab Sample Number				602439	602440	602441	602442	602443
Sample Reference				BH533	BH534	BH536	BH536	BH536
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.20	1.00	0.30	0.50	1.50
Date Sampled				07/07/2016	07/07/2016	07/07/2016	07/07/2016	07/07/2016
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	22	17	13	13	12
Total mass of sample received	kg	0.001	NONE	0.80	0.37	0.43	0.48	0.42

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	Chrysotile & Crocidolite	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Detected	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	0.002	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	0.002	-	-

General Inorganics

pH	pH Units	N/A	MCERTS	6.8	8.4	9.5	8.2	8.2
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.092	0.0039	0.16	0.0049	0.0091
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	91.7	3.9	164	4.9	9.1
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.0029	< 0.0010	0.0031	< 0.0010	< 0.0010

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	2.8	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.68	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	4.9	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	4.2	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	32	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	8.5	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	39	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	33	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	18	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	13	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	17	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	7.5	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	15	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	6.8	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	2.1	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	7.5	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	213	< 1.60	< 1.60
Total WAC-17 PAHs	mg/kg	1.6	NONE	< 1.6	< 1.6	210	< 1.6	< 1.6

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22854

Project / Site name: Fort Halstead

Lab Sample Number				602439	602440	602441	602442	602443
Sample Reference				BH533	BH534	BH536	BH536	BH536
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.20	1.00	0.30	0.50	1.50
Date Sampled				07/07/2016	07/07/2016	07/07/2016	07/07/2016	07/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	16	< 1.0	11	6.8	7.4
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.5	< 0.06	0.95	1.2	1.5
Boron (water soluble)	mg/kg	0.2	MCERTS	0.6	0.9	2.5	2.3	1.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.9	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	42	< 1.0	20	43	38
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	42	< 1.0	20	43	38
Copper (aqua regia extractable)	mg/kg	1	MCERTS	27	6.9	47	14	18
Lead (aqua regia extractable)	mg/kg	1	MCERTS	25	2.1	37	4.6	5.1
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	27	4.0	38	8.6	9.7
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	100	3.6	44	50	58
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	75	18	86	21	25

Monoaromatics

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

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	1.5	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	42	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	370	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	940	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	NONE	-	-	1300	< 10	< 10
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	15	< 8.4	< 8.4

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	3.2	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	28	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	240	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	620	< 10	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	110	< 8.4	< 8.4

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22854

Project / Site name: Fort Halstead

Lab Sample Number				602439	602440	602441	602442	602443
Sample Reference				BH533	BH534	BH536	BH536	BH536
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.20	1.00	0.30	0.50	1.50
Date Sampled				07/07/2016	07/07/2016	07/07/2016	07/07/2016	07/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
Chloroethane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
Bromomethane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
Vinyl Chloride	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
Trichlorofluoromethane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
1,1-dichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
1,1-dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
2,2-Dichloropropane	µg/kg	1	NONE	-	-	< 1.0	< 1.0	< 1.0
Trichloromethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
1,2-dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
1,1-Dichloropropene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	< 1.0
Benzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
1,2-dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Trichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Dibromomethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Bromodichloromethane	µg/kg	1	NONE	-	-	< 1.0	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
Tetrachloroethene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	-	< 1.0	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Styrene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Tribromomethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Isopropylbenzene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	< 1.0
Bromobenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
N-Propylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
2-Chlorotoluene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	< 1.0
4-Chlorotoluene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
Tert-Butylbenzene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
Sec-Butylbenzene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	< 1.0
1,3-dichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
P-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
1,2-dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
1,4-dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Butylbenzene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	< 1.0	< 1.0
Hexachlorobutadiene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	-	< 1.0	< 1.0	< 1.0

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22854

Project / Site name: Fort Halstead

Lab Sample Number				602439	602440	602441	602442	602443
Sample Reference				BH533	BH534	BH536	BH536	BH536
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.20	1.00	0.30	0.50	1.50
Date Sampled				07/07/2016	07/07/2016	07/07/2016	07/07/2016	07/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	< 0.1	< 0.1	< 0.1
Phenol	mg/kg	0.2	ISO 17025	-	-	< 0.2	< 0.2	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	< 0.05	< 0.05	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	-	-	< 0.2	< 0.2	< 0.2
Isophorone	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	-	-	2.8	< 0.05	< 0.05
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	-	-	< 0.1	< 0.1	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	< 0.1	< 0.1	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	0.9	< 0.1	< 0.1
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	0.68	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	-	-	4.9	< 0.10	< 0.10
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	2.4	< 0.2	< 0.2
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	< 0.3	< 0.3	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	< 0.2
Fluorene	mg/kg	0.1	MCERTS	-	-	4.2	< 0.10	< 0.10
Azobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	< 0.3	< 0.3
Phenanthrene	mg/kg	0.1	MCERTS	-	-	32	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	-	-	8.5	< 0.10	< 0.10
Carbazole	mg/kg	0.3	MCERTS	-	-	4.6	< 0.3	< 0.3
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	< 0.2	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	-	-	2.4	< 0.3	< 0.3
Fluoranthene	mg/kg	0.1	MCERTS	-	-	39	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	-	-	33	< 0.10	< 0.10
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	< 0.3	< 0.3	< 0.3
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	18	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	-	-	13	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	17	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	7.5	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	15	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	6.8	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	2.1	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	7.5	< 0.05	< 0.05

Subcontracted Analysis

Explosives	Type	N/A	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22854

Project / Site name: Fort Halstead

Lab Sample Number				602444	602445	602446	602447	602448
Sample Reference				BH536	BH537	BH537	BH537	BH551
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.60	0.40	0.70	1.10	0.30
Date Sampled				07/07/2016	05/07/2016	05/07/2016	05/07/2016	06/07/2016
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	15	18	13	17	15
Total mass of sample received	kg	0.001	NONE	0.34	1.2	1.1	1.0	0.43

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

General Inorganics

pH	pH Units	N/A	MCERTS	7.1	9.7	8.4	6.0	8.0
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.092	0.044	0.085	0.25	0.067
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	91.6	43.9	85.2	249	67.0
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	< 0.0010	0.0072	0.0051	0.0034	0.0069

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	0.12	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	0.85	< 0.10	< 0.10	0.30
Anthracene	mg/kg	0.1	MCERTS	< 0.10	0.25	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	3.0	< 0.10	< 0.10	0.44
Pyrene	mg/kg	0.1	MCERTS	< 0.10	3.0	< 0.10	< 0.10	0.39
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	1.6	< 0.10	< 0.10	0.23
Chrysene	mg/kg	0.05	MCERTS	< 0.05	2.0	< 0.05	< 0.05	0.20
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	3.6	< 0.10	< 0.10	0.21
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	1.1	< 0.10	< 0.10	0.21
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	2.3	< 0.10	< 0.10	0.17
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	1.5	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	0.47	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	2.1	< 0.05	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	22.0	< 1.60	< 1.60	2.15
Total WAC-17 PAHs	mg/kg	1.6	NONE	< 1.6	22	< 1.6	< 1.6	2.2

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22854

Project / Site name: Fort Halstead

Lab Sample Number				602444	602445	602446	602447	602448
Sample Reference				BH536	BH537	BH537	BH537	BH551
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.60	0.40	0.70	1.10	0.30
Date Sampled				07/07/2016	05/07/2016	05/07/2016	05/07/2016	06/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	12	7.9	18	17
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	3.8	1.1	0.67	1.4	2.5
Boron (water soluble)	mg/kg	0.2	MCERTS	3.1	0.3	0.5	0.4	1.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	0.4	< 0.2	< 0.2	0.6
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	18	18	23	56	37
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	18	18	23	56	37
Copper (aqua regia extractable)	mg/kg	1	MCERTS	99	66	23	25	32
Lead (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	200	72	19	84
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	0.3	0.6	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	790	33	17	28	47
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	1.5
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	46	40	36	95	66
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	220	140	66	58	86

Monoaromatics

Benzene	ug/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	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	27	-	-	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	NONE	< 10	27	-	-	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	21	-	-	-

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	2.3	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	18	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	110	-	-	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	53	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22854

Project / Site name: Fort Halstead

Lab Sample Number				602444	602445	602446	602447	602448
Sample Reference				BH536	BH537	BH537	BH537	BH551
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.60	0.40	0.70	1.10	0.30
Date Sampled				07/07/2016	05/07/2016	05/07/2016	05/07/2016	06/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	-	-	-
Chloroethane	µg/kg	1	ISO 17025	-	-	-	-	-
Bromomethane	µg/kg	1	ISO 17025	-	-	-	-	-
Vinyl Chloride	µg/kg	1	ISO 17025	-	-	-	-	-
Trichlorofluoromethane	µg/kg	1	ISO 17025	-	-	-	-	-
1,1-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-
1,1-dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
2,2-Dichloropropane	µg/kg	1	NONE	-	-	-	-	-
Trichloromethane	µg/kg	1	MCERTS	-	-	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,2-dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,1-Dichloropropene	µg/kg	1	NONE	-	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-	-
Benzene	µg/kg	1	MCERTS	-	-	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	-	-
1,2-dichloropropane	µg/kg	1	MCERTS	-	-	-	-	-
Trichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
Dibromomethane	µg/kg	1	MCERTS	-	-	-	-	-
Bromodichloromethane	µg/kg	1	NONE	-	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	-	-
Tetrachloroethene	µg/kg	1	MCERTS	-	-	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
p & m-xylene	µg/kg	1	MCERTS	-	-	-	-	-
Styrene	µg/kg	1	MCERTS	-	-	-	-	-
Tribromomethane	µg/kg	1	MCERTS	-	-	-	-	-
o-xylene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	-
Isopropylbenzene	µg/kg	1	NONE	-	-	-	-	-
Bromobenzene	µg/kg	1	MCERTS	-	-	-	-	-
N-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
2-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	-
4-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
Tert-Butylbenzene	µg/kg	1	NONE	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
Sec-Butylbenzene	µg/kg	1	NONE	-	-	-	-	-
1,3-dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	-
P-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	-	-
1,2-dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,4-dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
Butylbenzene	µg/kg	1	NONE	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
Hexachlorobutadiene	µg/kg	1	NONE	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22854

Project / Site name: Fort Halstead

Lab Sample Number				602444	602445	602446	602447	602448
Sample Reference				BH536	BH537	BH537	BH537	BH551
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				2.60	0.40	0.70	1.10	0.30
Date Sampled				07/07/2016	05/07/2016	05/07/2016	05/07/2016	06/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	-	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	-	-	-
Acenaphthene	mg/kg	0.1	MCERTS	-	-	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	-	-
Fluorene	mg/kg	0.1	MCERTS	-	-	-	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Phenanthrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	-	-
Fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-

Subcontracted Analysis

Explosives	Type	N/A	NONE	-	-	-	-	See Attached

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22854

Project / Site name: Fort Halstead

Lab Sample Number				602449	602450	602451	602452	602453
Sample Reference				BH551	BH552	BH553	BH553	BH553
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.50	0.20	0.60	1.00
Date Sampled				06/07/2016	06/07/2016	06/07/2016	06/07/2016	06/07/2016
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	14	17	16	20	21
Total mass of sample received	kg	0.001	NONE	0.38	0.39	1.1	0.89	1.1

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	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-

General Inorganics

pH	pH Units	N/A	MCERTS	8.1	7.6	9.4	7.8	8.7
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.035	0.86	0.12	1.3	0.047
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	35.4	862	120	1300	47.2
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.0041	0.0049	0.0066	0.010	0.0025

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	0.18	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	0.51	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	0.51	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	0.32	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	0.26	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	1.78	< 1.60	< 1.60	< 1.60	< 1.60
Total WAC-17 PAHs	mg/kg	1.6	NONE	1.8	< 1.6	< 1.6	< 1.6	< 1.6

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22854

Project / Site name: Fort Halstead

Lab Sample Number				602449	602450	602451	602452	602453
Sample Reference				BH551	BH552	BH553	BH553	BH553
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.50	0.20	0.60	1.00
Date Sampled				06/07/2016	06/07/2016	06/07/2016	06/07/2016	06/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	20	10	15	< 1.0
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	2.3	14	0.97	9.7	0.18
Boron (water soluble)	mg/kg	0.2	MCERTS	2.6	3.5	0.4	2.8	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5	0.6	< 0.2	1.2	0.3
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	40	55	15	43	6.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	40	55	15	43	6.2
Copper (aqua regia extractable)	mg/kg	1	MCERTS	32	46	25	36	7.6
Lead (aqua regia extractable)	mg/kg	1	MCERTS	26	47	77	46	4.5
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.3	< 0.3	0.4	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	48	67	16	75	7.9
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	2.1	1.3	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	77	110	35	73	6.6
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	78	160	74	140	27

Monoaromatics

Benzene	ug/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	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	< 1.0	< 1.0	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	4.2	< 2.0	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	12	< 8.0	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	65	< 8.0	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	NONE	-	-	77	< 10	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	66	< 8.4	-

TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	< 0.1	< 0.1	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	< 1.0	< 1.0	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	< 2.0	< 2.0	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	12	< 10	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	130	< 10	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	150	< 8.4	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22854

Project / Site name: Fort Halstead

Lab Sample Number				602449	602450	602451	602452	602453
Sample Reference				BH551	BH552	BH553	BH553	BH553
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.50	0.20	0.60	1.00
Date Sampled				06/07/2016	06/07/2016	06/07/2016	06/07/2016	06/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Chloroethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Bromomethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Vinyl Chloride	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Trichlorofluoromethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
1,1-dichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1-dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
2,2-Dichloropropane	µg/kg	1	NONE	-	-	< 1.0	-	-
Trichloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,2-dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1-Dichloropropene	µg/kg	1	NONE	-	-	< 1.0	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	< 1.0	-	-
Benzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,2-dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Trichloroethene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Dibromomethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Bromodichloromethane	µg/kg	1	NONE	-	-	< 1.0	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Toluene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Tetrachloroethene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	-	< 1.0	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
p & m-xylene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Styrene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Tribromomethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
o-xylene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Isopropylbenzene	µg/kg	1	NONE	-	-	< 1.0	-	-
Bromobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
N-Propylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
2-Chlorotoluene	µg/kg	1	NONE	-	-	< 1.0	-	-
4-Chlorotoluene	µg/kg	1	NONE	-	-	< 1.0	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Tert-Butylbenzene	µg/kg	1	NONE	-	-	< 1.0	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
Sec-Butylbenzene	µg/kg	1	NONE	-	-	< 1.0	-	-
1,3-dichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
P-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
1,2-dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
1,4-dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Butylbenzene	µg/kg	1	NONE	-	-	< 1.0	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	< 1.0	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	-
Hexachlorobutadiene	µg/kg	1	NONE	-	-	< 1.0	-	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	-	< 1.0	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22854

Project / Site name: Fort Halstead

Lab Sample Number				602449	602450	602451	602452	602453
Sample Reference				BH551	BH552	BH553	BH553	BH553
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.50	0.20	0.60	1.00
Date Sampled				06/07/2016	06/07/2016	06/07/2016	06/07/2016	06/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	< 0.1	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	< 0.2	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	< 0.05	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	< 0.2	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	< 0.1	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	< 0.1	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	< 0.1	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	< 0.1	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Acenaphthene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	< 0.3	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Fluorene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Phenanthrene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Anthracene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	< 0.3	-	-
Fluoranthene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Pyrene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	< 0.3	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	< 0.10	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	< 0.05	-	-

Subcontracted Analysis

Explosives	Type	N/A	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-22854
Project / Site name: Fort Halstead
Your Order No:

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 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
602435	BH514	3.00	129	Loose Fibres	**Chrysotile & Amosite & Crocidolite**	0.001	**0.001**
602438	BH533	0.10	123	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**
602441	BH536	0.30	109	Loose Fibres & Insulation Lagging	**Chrysotile & Crocidolite**	0.002	**0.002**
602445	BH537	0.40	110	Loose Fibres	**Chrysotile**	0.001	**0.001**

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 16-22854

Project / Site name: Fort Halstead

* 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 topsoil/loam 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 *
602429	BH509	None Supplied	0.20	Brown clay and loam with gravel.
602430	BH509	None Supplied	0.40	Brown clay and loam with gravel.
602431	BH509	None Supplied	0.70	Brown loam and clay with gravel.
602432	BH511	None Supplied	0.40	Brown clay and sand with gravel.
602433	BH511	None Supplied	0.80	Brown clay and sand with gravel.
602434	BH514	None Supplied	0.40	Brown loam and sand with gravel.
602435	BH514	None Supplied	3.00	Brown clay and loam with gravel.
602436	BH523	None Supplied	0.30	Brown gravel. **
602437	BH523	None Supplied	0.80	White chalk. **
602438	BH533	None Supplied	0.10	Brown clay and loam with gravel.
602439	BH533	None Supplied	1.20	Brown clay and loam with gravel.
602440	BH534	None Supplied	1.00	White chalk. **
602441	BH536	None Supplied	0.30	Brown clay and sand.
602442	BH536	None Supplied	0.50	Brown sandy clay.
602443	BH536	None Supplied	1.50	Brown clay and sand.
602444	BH536	None Supplied	2.60	Brown clay and sand.
602445	BH537	None Supplied	0.40	Brown loam and sand with gravel.
602446	BH537	None Supplied	0.70	Brown clay and sand.
602447	BH537	None Supplied	1.10	Brown clay and sand.
602448	BH551	None Supplied	0.30	Brown loam and clay with gravel and vegetation.
602449	BH551	None Supplied	0.50	Brown clay and sand.
602450	BH552	None Supplied	0.50	Brown clay and sand.
602451	BH553	None Supplied	0.20	Brown loam and sand with gravel and brick.
602452	BH553	None Supplied	0.60	Brown clay and sand.
602453	BH553	None Supplied	1.00	White chalk. **

** Non MCERTS matrix.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 16-22854

Project / Site name: Fort Halstead

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Asbestos Quantification - Gravimetric	The analysis was carried out using documented in-house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
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
Cr (III) in soil	In-house method by calculation from total Cr and Cr VI.	In-house method by calculation	L080-PL	W	NONE
Explosives to BAE in Soil	Explosives analysis in Soil - Subcontracted to BAE Systems.	Subcontracted Analysis - See Attached Subcon Report.		W	NONE
Fraction of Organic Carbon in soil	Determination of fraction of organic carbon in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L023-PL	D	NONE
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	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
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
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
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
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 based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number : 16-22854

Project / Site name: Fort Halstead

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TPH Chromatogram	TPH Chromatogram.	In-house method	L064-PL	D	NONE
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	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.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Wayne Lewis
Hydrock Consultants Ltd
Over Court Barns
Over Lane
Bristol
BS32 4DF

t: 01454 619533
f: 01454 614125
e: waynelewis@hydrock.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 : 16-23231

Replaces Analytical Report Number : 16-23231, issue no. 1

Project / Site name:	Fort Halstead	**Samples received on:**	18/07/2016
Your job number:	C161227	**Samples instructed on:**	20/07/2016
Your order number:		**Analysis completed by:**	31/08/2016
Report Issue Number:	2	**Report issued on:**	31/08/2016
Samples Analysed:	41 soil samples		

Signed:

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Signed:

Emma Winter
Assistant Reporting Manager
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.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-23231

Project / Site name: Fort Halstead

Lab Sample Number				604586	604587	604588	604589	604590
Sample Reference				TP506	TP506	TP518	TP518	TP518
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	1.00	0.30	0.60	1.50
Date Sampled				15/07/2016	15/07/2016	14/07/2016	14/07/2016	14/07/2016
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	< 0.1	20	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	16	15	19	7.2	21
Total mass of sample received	kg	0.001	NONE	1.0	1.0	0.43	0.36	0.36

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

General Inorganics

pH (Automated)	pH Units	N/A	MCERTS	4.5	4.8	7.9	6.4	5.6
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	-
Total Sulphate as SO_4	mg/kg	50	MCERTS	-	-	500	670	1000
Total Sulphate as SO_4	%	0.005	MCERTS	-	-	0.050	0.067	0.100
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.044	0.034	0.027	0.14	0.083
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	43.7	34.3	26.7	136	82.6
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	-	-	6.7	16	12
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	-	-	3.3	8.0	6.2
Total Sulphur	mg/kg	50	NONE	-	-	210	310	410
Total Sulphur	%	0.005	NONE	-	-	0.021	0.031	0.041
Ammonium as NH_4	mg/kg	0.5	MCERTS	-	-	< 0.5	1.2	< 0.5
Ammonium as NH_4 (leachate equivalent)	mg/l	0.05	MCERTS	-	-	< 0.1	0.6	0.2
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.0012	0.0017	0.013	0.0022	-
Water Soluble Nitrate (2:1) as NO_3	mg/kg	2	NONE	-	-	8.4	< 2.0	< 2.0
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent	mg/l	5	NONE	-	-	< 5.0	< 5.0	< 5.0

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	-
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	-
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	-
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	-
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.60	< 0.10	-
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.12	< 0.10	-
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	1.3	< 0.10	-
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	1.1	< 0.10	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.61	< 0.10	-
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.65	< 0.05	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.78	< 0.10	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.53	< 0.10	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.56	< 0.10	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.26	< 0.10	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.33	< 0.05	-
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	6.81	< 1.60	-
Total WAC-17 PAHs	mg/kg	1.6	NONE	< 1.6	< 1.6	6.8	< 1.6	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-23231

Project / Site name: Fort Halstead

Lab Sample Number				604586	604587	604588	604589	604590
Sample Reference				TP506	TP506	TP518	TP518	TP518
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	1.00	0.30	0.60	1.50
Date Sampled				15/07/2016	15/07/2016	14/07/2016	14/07/2016	14/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	15	14	14	27	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.64	0.92	1.4	6.1	-
Boron (water soluble)	mg/kg	0.2	MCERTS	0.8	1.1	2.2	1.3	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	1.0	-
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	-
Chromium (III)	mg/kg	1	NONE	36	42	27	48	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	36	42	27	48	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	22	25	35	40	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	12	19	100	33	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.7	0.6	0.6	< 0.3	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	14	19	29	74	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	61	57	56	84	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	33	37	210	120	-
Magnesium (water soluble)	mg/kg	5	NONE	-	-	< 5.0	16	13
Magnesium (leachate equivalent)	mg/l	2.5	NONE	-	-	< 2.5	8.0	6.6
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	ISO 17025	< 10	< 10	< 10	< 10	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-23231

Project / Site name: Fort Halstead

Lab Sample Number				604586	604587	604588	604589	604590
Sample Reference				TP506	TP506	TP518	TP518	TP518
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	1.00	0.30	0.60	1.50
Date Sampled				15/07/2016	15/07/2016	14/07/2016	14/07/2016	14/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	-	-	-
Chloroethane	µg/kg	1	ISO 17025	-	-	-	-	-
Bromomethane	µg/kg	1	ISO 17025	-	-	-	-	-
Vinyl Chloride	µg/kg	1	ISO 17025	-	-	-	-	-
Trichlorofluoromethane	µg/kg	1	ISO 17025	-	-	-	-	-
1,1-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-
1,1-dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
2,2-Dichloropropane	µg/kg	1	NONE	-	-	-	-	-
Trichloromethane	µg/kg	1	MCERTS	-	-	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,2-dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,1-Dichloropropene	µg/kg	1	NONE	-	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-	-
Benzene	µg/kg	1	MCERTS	-	-	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	-	-
1,2-dichloropropane	µg/kg	1	MCERTS	-	-	-	-	-
Trichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
Dibromomethane	µg/kg	1	MCERTS	-	-	-	-	-
Bromodichloromethane	µg/kg	1	NONE	-	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	-	-
Tetrachloroethene	µg/kg	1	MCERTS	-	-	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
p & m-xylene	µg/kg	1	MCERTS	-	-	-	-	-
Styrene	µg/kg	1	MCERTS	-	-	-	-	-
Tribromomethane	µg/kg	1	MCERTS	-	-	-	-	-
o-xylene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	-
Isopropylbenzene	µg/kg	1	NONE	-	-	-	-	-
Bromobenzene	µg/kg	1	MCERTS	-	-	-	-	-
N-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
2-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	-
4-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
Tert-Butylbenzene	µg/kg	1	NONE	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
Sec-Butylbenzene	µg/kg	1	NONE	-	-	-	-	-
1,3-dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	-
P-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	-	-
1,2-dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,4-dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
Butylbenzene	µg/kg	1	NONE	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
Hexachlorobutadiene	µg/kg	1	NONE	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-23231

Project / Site name: Fort Halstead

Lab Sample Number				604586	604587	604588	604589	604590
Sample Reference				TP506	TP506	TP518	TP518	TP518
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	1.00	0.30	0.60	1.50
Date Sampled				15/07/2016	15/07/2016	14/07/2016	14/07/2016	14/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	-	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	-	-	-
Acenaphthene	mg/kg	0.1	MCERTS	-	-	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	-	-
Fluorene	mg/kg	0.1	MCERTS	-	-	-	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Phenanthrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	-	-
Fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-

Subcontracted Analysis

Explosives	Type	N/A	NONE	See Attached	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-23231

Project / Site name: Fort Halstead

Lab Sample Number				604591	604592	604593	604594	604595
Sample Reference				TP519	TP519	TP557	TP558	TP558
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.40	0.10	0.20	0.50
Date Sampled				14/07/2016	14/07/2016	14/07/2016	14/07/2016	14/07/2016
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	9.3	22	16	14	21
Total mass of sample received	kg	0.001	NONE	0.40	0.38	0.17	0.16	0.16

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

General Inorganics

pH (Automated)	pH Units	N/A	MCERTS	9.1	5.9	7.7	7.8	8.5
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO_4	mg/kg	50	MCERTS	-	-	-	-	-
Total Sulphate as SO_4	%	0.005	MCERTS	-	-	-	-	-
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.31	0.097	0.016	0.020	0.0075
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	313	96.5	15.7	20.4	7.5
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	-	-	-	-	-
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	-	-	-	-	-
Total Sulphur	mg/kg	50	NONE	-	-	-	-	-
Total Sulphur	%	0.005	NONE	-	-	-	-	-
Ammonium as NH_4	mg/kg	0.5	MCERTS	-	-	-	-	-
Ammonium as NH_4 (leachate equivalent)	mg/l	0.05	MCERTS	-	-	-	-	-
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.013	< 0.0010	0.024	0.021	< 0.0010
Water Soluble Nitrate (2:1) as NO_3	mg/kg	2	NONE	-	-	-	-	-
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent	mg/l	5	NONE	-	-	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.35	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	0.62	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	1.2	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	1.1	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	12	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	3.0	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	17	< 0.10	< 0.10	< 0.10	< 0.10
Pyrene	mg/kg	0.1	MCERTS	14	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	7.0	< 0.10	< 0.10	< 0.10	< 0.10
Chrysene	mg/kg	0.05	MCERTS	6.7	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	8.9	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	5.1	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	6.3	< 0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	3.4	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	0.79	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.4	< 0.05	< 0.05	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	0.94	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	90.1	< 1.60	< 1.60	< 1.60	< 1.60
Total WAC-17 PAHs	mg/kg	1.6	NONE	91	< 1.6	< 1.6	< 1.6	< 1.6

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-23231

Project / Site name: Fort Halstead

Lab Sample Number				604591	604592	604593	604594	604595
Sample Reference				TP519	TP519	TP557	TP558	TP558
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.40	0.10	0.20	0.50
Date Sampled				14/07/2016	14/07/2016	14/07/2016	14/07/2016	14/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	17	19	7.8	8.2	< 1.0
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.6	2.5	2.4	2.8	< 0.06
Boron (water soluble)	mg/kg	0.2	MCERTS	2.5	1.5	1.7	2.4	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	< 0.2	1.0	1.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	25	61	24	28	1.6
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	25	61	24	28	1.6
Copper (aqua regia extractable)	mg/kg	1	MCERTS	67	36	22	26	5.8
Lead (aqua regia extractable)	mg/kg	1	MCERTS	270	24	26	32	2.6
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.7	0.5	0.6	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	31	42	43	62	4.3
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	1.1	< 1.0	2.2	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	55	130	47	57	3.4
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	180	97	100	170	21
Magnesium (water soluble)	mg/kg	5	NONE	-	-	-	-	-
Magnesium (leachate equivalent)	mg/l	2.5	NONE	-	-	-	-	-
Monoaromatics								
Benzene	ug/kg	1	MCERTS	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
p & m-xylene	µg/kg	1	MCERTS	-	-	-	-	-
o-xylene	µg/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	ISO 17025	-	-	-	-	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	-	-	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-23231

Project / Site name: Fort Halstead

Lab Sample Number				604591	604592	604593	604594	604595
Sample Reference				TP519	TP519	TP557	TP558	TP558
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.40	0.10	0.20	0.50
Date Sampled				14/07/2016	14/07/2016	14/07/2016	14/07/2016	14/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	-	-	-
Chloroethane	µg/kg	1	ISO 17025	-	-	-	-	-
Bromomethane	µg/kg	1	ISO 17025	-	-	-	-	-
Vinyl Chloride	µg/kg	1	ISO 17025	-	-	-	-	-
Trichlorofluoromethane	µg/kg	1	ISO 17025	-	-	-	-	-
1,1-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-
1,1-dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
2,2-Dichloropropane	µg/kg	1	NONE	-	-	-	-	-
Trichloromethane	µg/kg	1	MCERTS	-	-	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,2-dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,1-Dichloropropene	µg/kg	1	NONE	-	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-	-
Benzene	µg/kg	1	MCERTS	-	-	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	-	-
1,2-dichloropropane	µg/kg	1	MCERTS	-	-	-	-	-
Trichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
Dibromomethane	µg/kg	1	MCERTS	-	-	-	-	-
Bromodichloromethane	µg/kg	1	NONE	-	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	-	-
Tetrachloroethene	µg/kg	1	MCERTS	-	-	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
p & m-xylene	µg/kg	1	MCERTS	-	-	-	-	-
Styrene	µg/kg	1	MCERTS	-	-	-	-	-
Tribromomethane	µg/kg	1	MCERTS	-	-	-	-	-
o-xylene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	-
Isopropylbenzene	µg/kg	1	NONE	-	-	-	-	-
Bromobenzene	µg/kg	1	MCERTS	-	-	-	-	-
N-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
2-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	-
4-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
Tert-Butylbenzene	µg/kg	1	NONE	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
Sec-Butylbenzene	µg/kg	1	NONE	-	-	-	-	-
1,3-dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	-
P-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	-	-
1,2-dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,4-dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
Butylbenzene	µg/kg	1	NONE	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
Hexachlorobutadiene	µg/kg	1	NONE	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-23231

Project / Site name: Fort Halstead

Lab Sample Number				604591	604592	604593	604594	604595
Sample Reference				TP519	TP519	TP557	TP558	TP558
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.40	0.10	0.20	0.50
Date Sampled				14/07/2016	14/07/2016	14/07/2016	14/07/2016	14/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	-	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	-	-	-
Acenaphthene	mg/kg	0.1	MCERTS	-	-	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	-	-
Fluorene	mg/kg	0.1	MCERTS	-	-	-	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Phenanthrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	-	-
Fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-

Subcontracted Analysis

Explosives	Type	N/A	NONE	-	-	See Attached	See Attached	See Attached

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-23231

Project / Site name: Fort Halstead

Lab Sample Number				604596	604597	604598	604599	604600
Sample Reference				TP559	TP559	TP560	TP560	TP561
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.40	0.20	0.50	0.20
Date Sampled				14/07/2016	14/07/2016	14/07/2016	14/07/2016	14/07/2016
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	15	23	10	17	14
Total mass of sample received	kg	0.001	NONE	0.15	0.41	0.43	0.39	0.42

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

General Inorganics

pH (Automated)	pH Units	N/A	MCERTS	I/S	8.6	7.6	7.2	7.6
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO_4	mg/kg	50	MCERTS	-	-	-	-	-
Total Sulphate as SO_4	%	0.005	MCERTS	-	-	-	-	-
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.039	0.0033	0.0074	0.039	0.011
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	39.3	3.3	7.4	39.2	11.3
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	-	-	-	-	-
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	-	-	-	-	-
Total Sulphur	mg/kg	50	NONE	-	-	-	-	-
Total Sulphur	%	0.005	NONE	-	-	-	-	-
Ammonium as NH_4	mg/kg	0.5	MCERTS	-	-	-	-	-
Ammonium as NH_4 (leachate equivalent)	mg/l	0.05	MCERTS	-	-	-	-	-
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.0081	< 0.0010	0.017	0.0036	0.015
Water Soluble Nitrate (2:1) as NO_3	mg/kg	2	NONE	-	-	-	-	-
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent	mg/l	5	NONE	-	-	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	0.19
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	0.57
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	0.48
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	0.33
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.29
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	0.40
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	0.19
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	0.21
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	< 1.60	< 1.60	2.66
Total WAC-17 PAHs	mg/kg	1.6	NONE	< 1.6	< 1.6	< 1.6	< 1.6	2.7

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-23231

Project / Site name: Fort Halstead

Lab Sample Number				604596	604597	604598	604599	604600
Sample Reference				TP559	TP559	TP560	TP560	TP561
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.40	0.20	0.50	0.20
Date Sampled				14/07/2016	14/07/2016	14/07/2016	14/07/2016	14/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.6	2.2	12	19	9.3
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	3.2	< 0.06	0.93	2.0	0.72
Boron (water soluble)	mg/kg	0.2	MCERTS	0.7	1.2	2.0	0.7	1.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.9	< 0.2	0.5	< 0.2	0.5
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	35	6.2	21	49	20
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	35	6.2	21	49	20
Copper (aqua regia extractable)	mg/kg	1	MCERTS	18	4.8	42	27	31
Lead (aqua regia extractable)	mg/kg	1	MCERTS	18	2.5	180	26	120
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	0.8	0.4	0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	44	6.4	20	43	19
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	1.1	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	56	3.8	36	100	40
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	95	17	78	79	82
Magnesium (water soluble)	mg/kg	5	NONE	-	-	-	-	-
Magnesium (leachate equivalent)	mg/l	2.5	NONE	-	-	-	-	-
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	ISO 17025	< 10	< 10	< 10	< 10	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-23231

Project / Site name: Fort Halstead

Lab Sample Number				604596	604597	604598	604599	604600
Sample Reference				TP559	TP559	TP560	TP560	TP561
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.40	0.20	0.50	0.20
Date Sampled				14/07/2016	14/07/2016	14/07/2016	14/07/2016	14/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
Chloroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
Bromomethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
Vinyl Chloride	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
Trichlorofluoromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
1,1-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
1,1-dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
2,2-Dichloropropane	µg/kg	1	NONE	< 1.0	< 1.0	-	-	-
Trichloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
1,2-dichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
1,1-Dichloropropene	µg/kg	1	NONE	< 1.0	< 1.0	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	< 1.0	-	-	-
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
1,2-dichloropropane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
Trichloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
Dibromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
Bromodichloromethane	µg/kg	1	NONE	< 1.0	< 1.0	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
Tetrachloroethene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	< 1.0	< 1.0	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
Styrene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
Tribromomethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
Isopropylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-	-	-
Bromobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
N-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
2-Chlorotoluene	µg/kg	1	NONE	< 1.0	< 1.0	-	-	-
4-Chlorotoluene	µg/kg	1	NONE	< 1.0	< 1.0	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
Tert-Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
Sec-Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-	-	-
1,3-dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
P-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
1,2-dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
1,4-dichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
Butylbenzene	µg/kg	1	NONE	< 1.0	< 1.0	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	< 1.0	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	-	-	-
Hexachlorobutadiene	µg/kg	1	NONE	< 1.0	< 1.0	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	< 1.0	< 1.0	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-23231

Project / Site name: Fort Halstead

Lab Sample Number				604596	604597	604598	604599	604600
Sample Reference				TP559	TP559	TP560	TP560	TP561
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.20	0.40	0.20	0.50	0.20
Date Sampled				14/07/2016	14/07/2016	14/07/2016	14/07/2016	14/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	< 0.1	-	-	-
Phenol	mg/kg	0.2	ISO 17025	< 0.2	< 0.2	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	< 0.2	-	-	-
Isophorone	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	< 0.1	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	< 0.1	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	< 0.1	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	< 0.1	-	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	-	-
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	-	-
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	-	-
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	-
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	-	-
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	-	-
Carbazole	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	-	-
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	-	-
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	-	-
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	< 0.3	-	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	-	-
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	-

Subcontracted Analysis

Explosives	Type	N/A	NONE	See Attached	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-23231

Project / Site name: Fort Halstead

Lab Sample Number				604601	604602	604603	604604	604605
Sample Reference				TP561	BH503	BH503A	BH503A	BH513
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.40	0.20	0.50	0.30
Date Sampled				14/07/2016	08/07/2016	08/07/2016	08/07/2016	08/07/2016
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	23	13	14	11	22
Total mass of sample received	kg	0.001	NONE	0.36	0.44	0.37	0.41	0.90
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	Not-detected	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	-	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	-	-
General Inorganics								
pH (Automated)	pH Units	N/A	MCERTS	6.0	9.2	6.4	6.8	8.2
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO_4	mg/kg	50	MCERTS	-	-	-	-	500
Total Sulphate as SO_4	%	0.005	MCERTS	-	-	-	-	0.050
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.26	0.025	0.021	0.028	0.049
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	263	25.1	21.2	27.5	48.9
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	-	-	-	-	15
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	-	-	-	-	7.4
Total Sulphur	mg/kg	50	NONE	-	-	-	-	170
Total Sulphur	%	0.005	NONE	-	-	-	-	0.017
Ammonium as NH_4	mg/kg	0.5	MCERTS	-	-	-	-	< 0.5
Ammonium as NH_4 (leachate equivalent)	mg/l	0.05	MCERTS	-	-	-	-	< 0.1
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.0019	< 0.0010	0.020	0.016	0.0026
Water Soluble Nitrate (2:1) as NO_3	mg/kg	2	NONE	-	-	-	-	< 2.0
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent	mg/l	5	NONE	-	-	-	-	< 5.0
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	0.30	< 0.10
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	0.25	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	0.12	< 0.10
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.21	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	0.22	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	0.16	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	0.18	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	< 1.60	< 1.60	< 1.60
Total WAC-17 PAHs	mg/kg	1.6	NONE	< 1.6	< 1.6	< 1.6	< 1.6	< 1.6

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-23231

Project / Site name: Fort Halstead

Lab Sample Number				604601	604602	604603	604604	604605
Sample Reference				TP561	BH503	BH503A	BH503A	BH513
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.40	0.20	0.50	0.30
Date Sampled				14/07/2016	08/07/2016	08/07/2016	08/07/2016	08/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	16	7.4	9.1	7.5	10
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.9	0.52	0.71	0.63	3.6
Boron (water soluble)	mg/kg	0.2	MCERTS	1.9	0.9	< 0.2	1.6	2.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.6	0.3	0.8
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	52	17	29	20	29
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	52	17	29	20	29
Copper (aqua regia extractable)	mg/kg	1	MCERTS	33	11	35	19	28
Lead (aqua regia extractable)	mg/kg	1	MCERTS	28	9.9	130	42	18
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	0.4	0.5	0.4
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	40	32	19	17	57
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	110	26	43	36	56
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	84	29	64	43	100
Magnesium (water soluble)	mg/kg	5	NONE	-	-	-	-	6.9
Magnesium (leachate equivalent)	mg/l	2.5	NONE	-	-	-	-	3.4
Monoaromatics								
Benzene	ug/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	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	-	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0	-	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	< 8.0	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	< 8.0	-	-	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	ISO 17025	-	< 10	-	-	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	< 8.4	-	-	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	< 0.1	-	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	-	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	3.1	-	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	< 10	-	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	30	-	-	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	< 8.4	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-23231

Project / Site name: Fort Halstead

Lab Sample Number				604601	604602	604603	604604	604605
Sample Reference				TP561	BH503	BH503A	BH503A	BH513
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.40	0.20	0.50	0.30
Date Sampled				14/07/2016	08/07/2016	08/07/2016	08/07/2016	08/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	-	-	-
Chloroethane	µg/kg	1	ISO 17025	-	-	-	-	-
Bromomethane	µg/kg	1	ISO 17025	-	-	-	-	-
Vinyl Chloride	µg/kg	1	ISO 17025	-	-	-	-	-
Trichlorofluoromethane	µg/kg	1	ISO 17025	-	-	-	-	-
1,1-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	-
1,1-dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
2,2-Dichloropropane	µg/kg	1	NONE	-	-	-	-	-
Trichloromethane	µg/kg	1	MCERTS	-	-	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,2-dichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,1-Dichloropropene	µg/kg	1	NONE	-	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-	-
Benzene	µg/kg	1	MCERTS	-	-	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	-	-
1,2-dichloropropane	µg/kg	1	MCERTS	-	-	-	-	-
Trichloroethene	µg/kg	1	MCERTS	-	-	-	-	-
Dibromomethane	µg/kg	1	MCERTS	-	-	-	-	-
Bromodichloromethane	µg/kg	1	NONE	-	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	-
Toluene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	-	-
Tetrachloroethene	µg/kg	1	MCERTS	-	-	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	-
p & m-xylene	µg/kg	1	MCERTS	-	-	-	-	-
Styrene	µg/kg	1	MCERTS	-	-	-	-	-
Tribromomethane	µg/kg	1	MCERTS	-	-	-	-	-
o-xylene	µg/kg	1	MCERTS	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	-
Isopropylbenzene	µg/kg	1	NONE	-	-	-	-	-
Bromobenzene	µg/kg	1	MCERTS	-	-	-	-	-
N-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
2-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	-
4-Chlorotoluene	µg/kg	1	NONE	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
Tert-Butylbenzene	µg/kg	1	NONE	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	-
Sec-Butylbenzene	µg/kg	1	NONE	-	-	-	-	-
1,3-dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	-
P-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	-	-
1,2-dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
1,4-dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
Butylbenzene	µg/kg	1	NONE	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	-
Hexachlorobutadiene	µg/kg	1	NONE	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-23231

Project / Site name: Fort Halstead

Lab Sample Number				604601	604602	604603	604604	604605
Sample Reference				TP561	BH503	BH503A	BH503A	BH513
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	0.40	0.20	0.50	0.30
Date Sampled				14/07/2016	08/07/2016	08/07/2016	08/07/2016	08/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	-	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	-	-	-
Acenaphthene	mg/kg	0.1	MCERTS	-	-	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	-	-
Fluorene	mg/kg	0.1	MCERTS	-	-	-	-	-
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Phenanthrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	-	-
Fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-

Subcontracted Analysis

Explosives	Type	N/A	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-23231

Project / Site name: Fort Halstead

Lab Sample Number				604606	604607	604608	604609	604610
Sample Reference				BH513	BH513	BH513	BH521	BH521
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00	2.00	3.00	0.40	0.50
Date Sampled				08/07/2016	08/07/2016	08/07/2016	12/07/2016	12/07/2016
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	22	20	17	18	10
Total mass of sample received	kg	0.001	NONE	1.0	0.42	0.39	0.84	0.39

Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	Chrysotile	Chrysotile & Anthophyllite
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	-	Detected	Detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	0.004	< 0.001
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	0.004	< 0.001

General Inorganics

pH (Automated)	pH Units	N/A	MCERTS	8.3	8.5	8.6	8.5	9.6
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	-	< 1	< 1
Total Sulphate as SO_4	mg/kg	50	MCERTS	640	770	870	-	-
Total Sulphate as SO_4	%	0.005	MCERTS	0.064	0.077	0.087	-	-
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.012	0.0077	0.0088	0.47	0.15
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	11.6	7.7	8.8	472	152
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	4.7	4.4	13	-	-
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	2.4	2.2	6.4	-	-
Total Sulphur	mg/kg	50	NONE	220	290	300	-	-
Total Sulphur	%	0.005	NONE	0.022	0.029	0.030	-	-
Ammonium as NH_4	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	-	-
Ammonium as NH_4 (leachate equivalent)	mg/l	0.05	MCERTS	< 0.1	< 0.1	< 0.1	-	-
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	< 0.0010	< 0.0010	-	0.0055	0.0087
Water Soluble Nitrate (2:1) as NO_3	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0	-	-
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent	mg/l	5	NONE	< 5.0	< 5.0	< 5.0	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	0.58	0.57
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	0.13	0.18
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	0.68	1.2
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	0.69	1.2
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	0.61	1.1
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	0.64	0.89
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	1.0	1.5
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	0.51	0.69
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	0.83	1.4
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	0.54	1.3
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	-	< 0.10	0.25
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	0.72	1.5
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	-	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	-	6.95	11.9
Total WAC-17 PAHs	mg/kg	1.6	NONE	< 1.6	< 1.6	-	7.0	12

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-23231

Project / Site name: Fort Halstead

Lab Sample Number				604606	604607	604608	604609	604610
Sample Reference				BH513	BH513	BH513	BH521	BH521
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00	2.00	3.00	0.40	0.50
Date Sampled				08/07/2016	08/07/2016	08/07/2016	12/07/2016	12/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	3.7	2.0	-	14	14
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.65	0.20	-	2.9	1.2
Boron (water soluble)	mg/kg	0.2	MCERTS	0.6	0.5	-	1.7	1.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5	0.3	-	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	-	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	9.3	9.5	-	39	23
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	9.3	9.5	-	40	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	7.9	4.8	-	120	60
Lead (aqua regia extractable)	mg/kg	1	MCERTS	2.8	2.6	-	73	52
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	-	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	17	10	-	63	32
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	1.4
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	11	8.1	-	74	57
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	66	47	-	61	63
Magnesium (water soluble)	mg/kg	5	NONE	< 5.0	< 5.0	< 5.0	-	-
Magnesium (leachate equivalent)	mg/l	2.5	NONE	< 2.5	< 2.5	< 2.5	-	-
Monoaromatics								
Benzene	ug/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	mg/kg	0.1	MCERTS	-	-	-	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	-	-	-	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	-	< 0.1	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	-	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	-	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	ISO 17025	-	-	-	< 10	< 10
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	-	< 8.4	< 8.4
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	-	-	-	< 0.1	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	-	-	-	< 0.1	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	-	< 0.1	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	-	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	-	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	-	< 10	42
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	-	-	< 8.4	42

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-23231

Project / Site name: Fort Halstead

Lab Sample Number				604606	604607	604608	604609	604610
Sample Reference				BH513	BH513	BH513	BH521	BH521
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00	2.00	3.00	0.40	0.50
Date Sampled				08/07/2016	08/07/2016	08/07/2016	12/07/2016	12/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	-	< 1.0	< 1.0
Chloroethane	µg/kg	1	ISO 17025	-	-	-	< 1.0	< 1.0
Bromomethane	µg/kg	1	ISO 17025	-	-	-	< 1.0	< 1.0
Vinyl Chloride	µg/kg	1	ISO 17025	-	-	-	< 1.0	< 1.0
Trichlorofluoromethane	µg/kg	1	ISO 17025	-	-	-	< 1.0	< 1.0
1,1-dichloroethene	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	< 1.0	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
1,1-dichloroethane	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
2,2-Dichloropropane	µg/kg	1	NONE	-	-	-	< 1.0	< 1.0
Trichloromethane	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
1,2-dichloroethane	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
1,1-Dichloropropene	µg/kg	1	NONE	-	-	-	< 1.0	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	< 1.0	< 1.0
Benzene	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
1,2-dichloropropane	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
Trichloroethene	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
Dibromomethane	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
Bromodichloromethane	µg/kg	1	NONE	-	-	-	< 1.0	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	< 1.0	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	< 1.0	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	< 1.0	< 1.0
Tetrachloroethene	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	< 1.0	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	-	-	-	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
Styrene	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
Tribromomethane	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
Isopropylbenzene	µg/kg	1	NONE	-	-	-	< 1.0	< 1.0
Bromobenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
N-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	< 1.0	< 1.0
2-Chlorotoluene	µg/kg	1	NONE	-	-	-	< 1.0	< 1.0
4-Chlorotoluene	µg/kg	1	NONE	-	-	-	< 1.0	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	< 1.0	< 1.0
Tert-Butylbenzene	µg/kg	1	NONE	-	-	-	< 1.0	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	< 1.0	< 1.0
Sec-Butylbenzene	µg/kg	1	NONE	-	-	-	< 1.0	< 1.0
1,3-dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	< 1.0	< 1.0
P-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	< 1.0	< 1.0
1,2-dichlorobenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
1,4-dichlorobenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
Butylbenzene	µg/kg	1	NONE	-	-	-	< 1.0	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	< 1.0	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	< 1.0	< 1.0
Hexachlorobutadiene	µg/kg	1	NONE	-	-	-	< 1.0	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	NONE	-	-	-	< 1.0	< 1.0

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-23231

Project / Site name: Fort Halstead

Lab Sample Number				604606	604607	604608	604609	604610
Sample Reference				BH513	BH513	BH513	BH521	BH521
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.00	2.00	3.00	0.40	0.50
Date Sampled				08/07/2016	08/07/2016	08/07/2016	12/07/2016	12/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	-	< 0.1	< 0.1
Phenol	mg/kg	0.2	ISO 17025	-	-	-	< 0.2	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	< 0.1	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	< 0.1	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	< 0.1	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	< 0.05	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	< 0.2	< 0.2
Isophorone	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	< 0.05	< 0.05
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	< 0.1	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	< 0.1	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	< 0.1	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	< 0.1	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	< 0.1	< 0.1
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	< 0.1	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	< 0.1	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	< 0.1	< 0.1
Acenaphthylene	mg/kg	0.1	MCERTS	-	-	-	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	-	-	-	< 0.10	< 0.10
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	< 0.3	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
Fluorene	mg/kg	0.1	MCERTS	-	-	-	< 0.10	< 0.10
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
Phenanthrene	mg/kg	0.1	MCERTS	-	-	-	0.58	0.57
Anthracene	mg/kg	0.1	MCERTS	-	-	-	0.13	0.18
Carbazole	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	< 0.2	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	< 0.3	< 0.3
Fluoranthene	mg/kg	0.1	MCERTS	-	-	-	0.68	1.2
Pyrene	mg/kg	0.1	MCERTS	-	-	-	0.69	1.2
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	< 0.3	< 0.3
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	-	-	0.61	1.1
Chrysene	mg/kg	0.05	MCERTS	-	-	-	0.64	0.89
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	1.0	1.5
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	-	-	0.51	0.69
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	-	-	0.83	1.4
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	-	-	0.54	1.3
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	-	-	< 0.10	0.25
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	0.72	1.5

Subcontracted Analysis

Explosives	Type	N/A	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-23231

Project / Site name: Fort Halstead

Lab Sample Number				604611	604612	604613	604614	604615
Sample Reference				BH521	BH524	BH524	BH524	BH524
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	0.20	0.40	0.50	0.90
Date Sampled				12/07/2016	11/07/2016	11/07/2016	11/07/2016	11/07/2016
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	< 0.1	< 0.1	26	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	15	5.4	16	18	19
Total mass of sample received	kg	0.001	NONE	0.39	0.53	0.97	0.40	1.1
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	-	-	-	-	-
General Inorganics								
pH (Automated)	pH Units	N/A	MCERTS	6.5	8.8	8.0	8.3	7.8
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	-	-
Total Sulphate as SO_4	mg/kg	50	MCERTS	-	480	670	820	930
Total Sulphate as SO_4	%	0.005	MCERTS	-	0.048	0.067	0.082	0.093
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.70	0.025	0.17	0.26	0.36
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	697	25.1	169	256	361
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	-	110	2500	1400	370
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	-	55	1300	690	180
Total Sulphur	mg/kg	50	NONE	-	240	730	430	430
Total Sulphur	%	0.005	NONE	-	0.024	0.073	0.043	0.043
Ammonium as NH_4	mg/kg	0.5	MCERTS	-	< 0.5	< 0.5	1.4	< 0.5
Ammonium as NH_4 (leachate equivalent)	mg/l	0.05	MCERTS	-	< 0.1	0.1	0.7	0.1
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.0040	< 0.0010	0.022	-	-
Water Soluble Nitrate (2:1) as NO_3	mg/kg	2	NONE	-	< 2.0	< 2.0	< 2.0	73
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent	mg/l	5	NONE	-	< 5.0	< 5.0	< 5.0	36
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	-	-
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.39	-	-
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.25	-	-
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	3.9	-	-
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	1.0	-	-
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	10	-	-
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	8.9	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	4.0	-	-
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	3.7	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	3.0	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	2.8	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	3.2	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	1.4	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.18	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.5	-	-
Coronene	mg/kg	0.05	NONE	< 0.05	< 0.05	< 0.05	-	-
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	44.5	-	-
Total WAC-17 PAHs	mg/kg	1.6	NONE	< 1.6	< 1.6	45	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-23231

Project / Site name: Fort Halstead

Lab Sample Number				604611	604612	604613	604614	604615
Sample Reference				BH521	BH524	BH524	BH524	BH524
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	0.20	0.40	0.50	0.90
Date Sampled				12/07/2016	11/07/2016	11/07/2016	11/07/2016	11/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	16	4.3	6.2	-	-
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	2.9	< 0.06	2.7	-	-
Boron (water soluble)	mg/kg	0.2	MCERTS	1.3	1.7	1.7	-	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.2	0.9	< 0.2	-	-
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	-	-
Chromium (III)	mg/kg	1	NONE	52	4.2	23	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	52	4.2	23	-	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	26	11	91	-	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	21	46	33	-	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.5	< 0.3	< 0.3	-	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	43	5.8	89	-	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	90	8.6	91	-	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	68	63	66	-	-
Magnesium (water soluble)	mg/kg	5	NONE	-	< 5.0	10	12	27
Magnesium (leachate equivalent)	mg/l	2.5	NONE	-	< 2.5	5.1	6.2	13
Monoaromatics								
Benzene	ug/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	2.9	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	21	-	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	ISO 17025	< 10	< 10	21	-	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	-	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	1.5	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	9.0	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	52	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	110	-	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-23231

Project / Site name: Fort Halstead

Lab Sample Number				604611	604612	604613	604614	604615
Sample Reference				BH521	BH524	BH524	BH524	BH524
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	0.20	0.40	0.50	0.90
Date Sampled				12/07/2016	11/07/2016	11/07/2016	11/07/2016	11/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Chloroethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Bromomethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Vinyl Chloride	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Trichlorofluoromethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
1,1-dichloroethene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,1-dichloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
2,2-Dichloropropane	µg/kg	1	NONE	< 1.0	-	-	-	-
Trichloromethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,2-dichloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,1-Dichloropropene	µg/kg	1	NONE	< 1.0	-	-	-	-
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	-	-	-	-
Benzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,2-dichloropropane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Trichloroethene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Dibromomethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Bromodichloromethane	µg/kg	1	NONE	< 1.0	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Toluene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Tetrachloroethene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	1	NONE	< 1.0	-	-	-	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
p & m-xylene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Styrene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Tribromomethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
o-xylene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Isopropylbenzene	µg/kg	1	NONE	< 1.0	-	-	-	-
Bromobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
N-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
2-Chlorotoluene	µg/kg	1	NONE	< 1.0	-	-	-	-
4-Chlorotoluene	µg/kg	1	NONE	< 1.0	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Tert-Butylbenzene	µg/kg	1	NONE	< 1.0	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
Sec-Butylbenzene	µg/kg	1	NONE	< 1.0	-	-	-	-
1,3-dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
P-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
1,2-dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
1,4-dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Butylbenzene	µg/kg	1	NONE	< 1.0	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	-
Hexachlorobutadiene	µg/kg	1	NONE	< 1.0	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	1	NONE	< 1.0	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-23231

Project / Site name: Fort Halstead

Lab Sample Number				604611	604612	604613	604614	604615
Sample Reference				BH521	BH524	BH524	BH524	BH524
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.90	0.20	0.40	0.50	0.90
Date Sampled				12/07/2016	11/07/2016	11/07/2016	11/07/2016	11/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	< 0.1	-	-	-	-
Phenol	mg/kg	0.2	ISO 17025	< 0.2	-	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	-	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	-	-	-	-
Isophorone	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	-	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	-	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	-	-	-	-
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	-	-	-	-
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	-	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	-	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
Fluorene	mg/kg	0.1	MCERTS	< 0.10	-	-	-	-
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	-	-	-	-
Anthracene	mg/kg	0.1	MCERTS	< 0.10	-	-	-	-
Carbazole	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-	-	-	-
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	-	-	-	-
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	-	-	-	-
Pyrene	mg/kg	0.1	MCERTS	< 0.10	-	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	-	-	-	-
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	< 0.05	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	-	-	-	-
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	-	-	-	-

Subcontracted Analysis

Explosives	Type	N/A	NONE	-	-	-	-	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-23231

Project / Site name: Fort Halstead

Lab Sample Number				604616	604617	604618	604619	604620
Sample Reference				BH524	BH525	BH525	BH525	BH526
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				4.00	0.40	0.70	1.90	0.30
Date Sampled				11/07/2016	12/07/2016	12/07/2016	12/07/2016	11/07/2016
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	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	18	14	19	21	8.7
Total mass of sample received	kg	0.001	NONE	0.41	1.1	1.1	0.95	0.47

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

General Inorganics

pH (Automated)	pH Units	N/A	MCERTS	8.2	8.1	7.8	7.9	10.5
Free Cyanide	mg/kg	1	MCERTS	-	< 1	< 1	< 1	< 1
Total Sulphate as SO_4	mg/kg	50	MCERTS	860	-	-	-	-
Total Sulphate as SO_4	%	0.005	MCERTS	0.086	-	-	-	-
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.098	0.097	0.20	0.17	1.1
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	98.0	97.4	201	174	1090
Water Soluble Chloride (2:1)	mg/kg	1	MCERTS	54	-	-	-	-
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	27	-	-	-	-
Total Sulphur	mg/kg	50	NONE	370	-	-	-	-
Total Sulphur	%	0.005	NONE	0.037	-	-	-	-
Ammonium as NH_4	mg/kg	0.5	MCERTS	< 0.5	-	-	-	-
Ammonium as NH_4 (leachate equivalent)	mg/l	0.05	MCERTS	< 0.1	-	-	-	-
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	-	0.0092	0.0058	0.0054	0.0015
Water Soluble Nitrate (2:1) as NO_3	mg/kg	2	NONE	97	-	-	-	-
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent	mg/l	5	NONE	49	-	-	-	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-	< 0.05	0.18	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	-	0.47	0.47	< 0.10	1.7
Anthracene	mg/kg	0.1	MCERTS	-	0.35	0.12	< 0.10	0.53
Fluoranthene	mg/kg	0.1	MCERTS	-	2.5	0.50	< 0.10	4.9
Pyrene	mg/kg	0.1	MCERTS	-	2.0	0.45	< 0.10	4.3
Benzo(a)anthracene	mg/kg	0.1	MCERTS	-	0.73	0.15	< 0.10	2.7
Chrysene	mg/kg	0.05	MCERTS	-	0.79	0.25	< 0.05	1.8
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	-	0.74	0.20	< 0.10	2.7
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	-	0.44	0.13	< 0.10	1.3
Benzo(a)pyrene	mg/kg	0.1	MCERTS	-	0.60	0.14	< 0.10	2.5
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	-	0.29	< 0.10	< 0.10	1.3
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	-	< 0.10	< 0.10	< 0.10	0.34
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	0.42	< 0.05	< 0.05	1.7
Coronene	mg/kg	0.05	NONE	-	< 0.05	< 0.05	< 0.05	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	-	9.27	2.59	< 1.60	25.8
Total WAC-17 PAHs	mg/kg	1.6	NONE	-	9.3	2.6	< 1.6	26

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 16-23231

Project / Site name: Fort Halstead

Lab Sample Number				604616	604617	604618	604619	604620
Sample Reference				BH524	BH525	BH525	BH525	BH526
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				4.00	0.40	0.70	1.90	0.30
Date Sampled				11/07/2016	12/07/2016	12/07/2016	12/07/2016	11/07/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-	13	9.9	11	5.4
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	-	2.7	1.8	3.1	0.40
Boron (water soluble)	mg/kg	0.2	MCERTS	-	1.5	3.5	1.6	0.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-	0.3	< 0.2	0.6	0.9
Chromium (hexavalent)	mg/kg	1.2	MCERTS	-	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	-	22	32	23	16
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-	22	32	23	16
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-	69	29	16	24
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-	38	20	23	66
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-	< 0.3	< 0.3	0.4	0.5
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-	56	36	38	11
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	-	76	59	55	22
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-	82	44	57	66
Magnesium (water soluble)	mg/kg	5	NONE	18	-	-	-	-
Magnesium (leachate equivalent)	mg/l	2.5	NONE	8.9	-	-	-	-
Monoaromatics								
Benzene	ug/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	-
Toluene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	-
Ethylbenzene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	-
p & m-xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	-
o-xylene	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	-
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0	3.1	< 2.0	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	< 8.0	< 8.0	< 8.0	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	< 8.0	9.9	< 8.0	-
TPH-CWG - Aliphatic >EC16 - EC35	mg/kg	10	ISO 17025	-	< 10	< 10	< 10	-
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	-	< 8.4	< 8.4	< 8.4	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	< 0.1	< 0.1	< 0.1	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	< 1.0	< 1.0	< 1.0	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	< 2.0	6.0	< 2.0	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	< 10	< 10	< 10	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	19	33	< 10	-
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	-	< 8.4	< 8.4	< 8.4	-

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report are representative of the samples submitted for analysis.