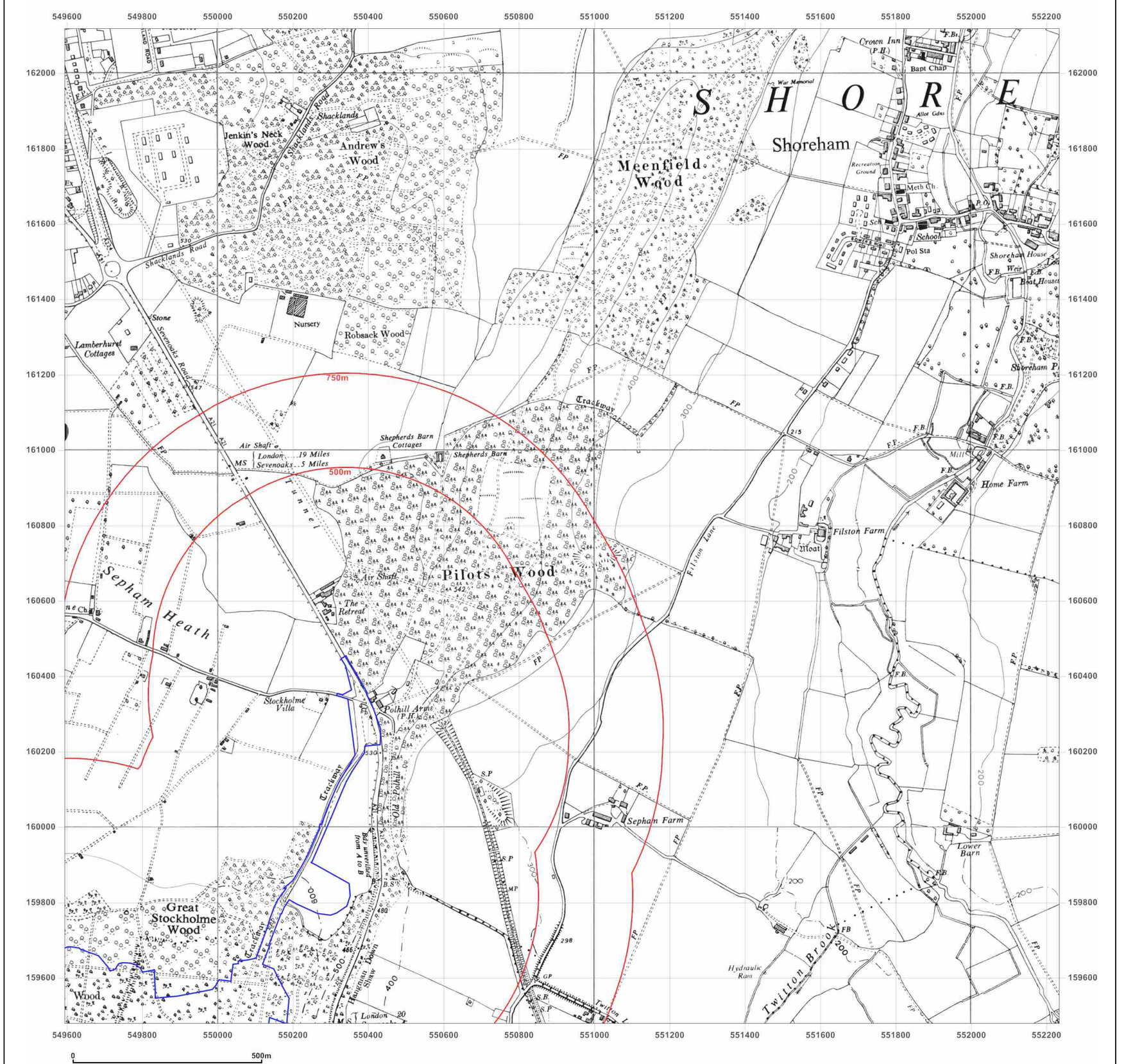

Groundsure INSIGHTS

Site Details:

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

Client Ref: C-10730-C_Fort_Halstead_PO_P028025
Report Ref: GS-5746913_SS_2_2
Grid Ref: 550913, 160798

Map Name: Provisional

Map date: **1961**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1955
Revised 1955
Edition N/A
Copyright 1961
Levelled N/A

Surveyed 1955
Revised 1959
Edition N/A
Copyright 1961
Levelled N/A

Surveyed 1955
Revised 1955
Edition N/A
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Surveyed 1955
Revised 1959
Edition N/A
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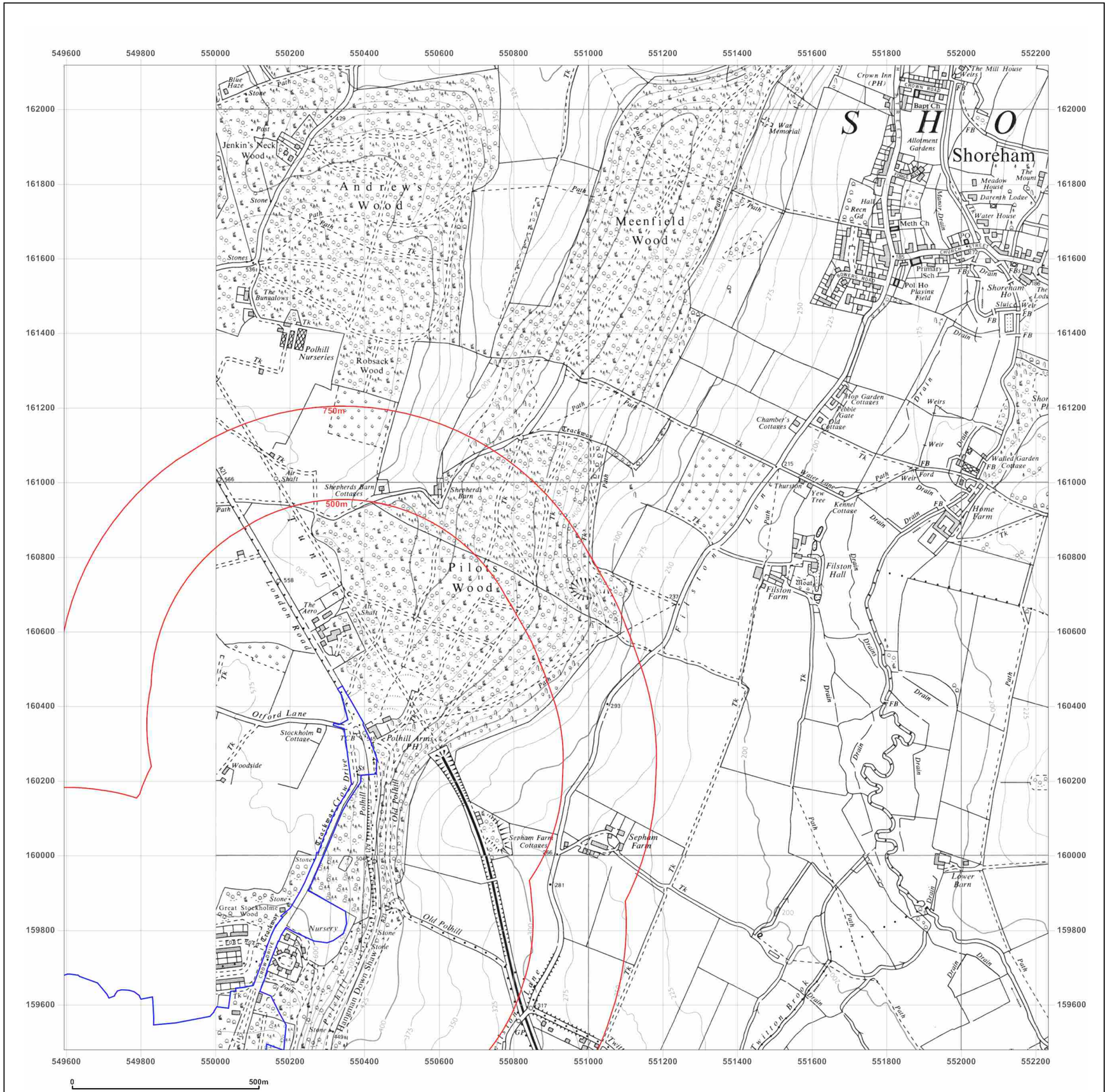
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

Production date: 14 January 2019

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Site Details:

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

Client Ref: C-10730-C_Fort_Halstead_PO_P028025
Report Ref: GS-5746913_SS_2_2
Grid Ref: 550913, 160798

Map Name: Provisional

Map date: **1967-1968**

Scale: 1:10,560

Printed at: 1:10,560

N
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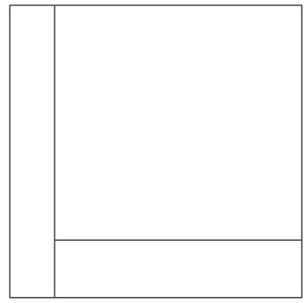
Surveyed 1967
Revised 1967
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1968
Revised 1968
Edition N/A
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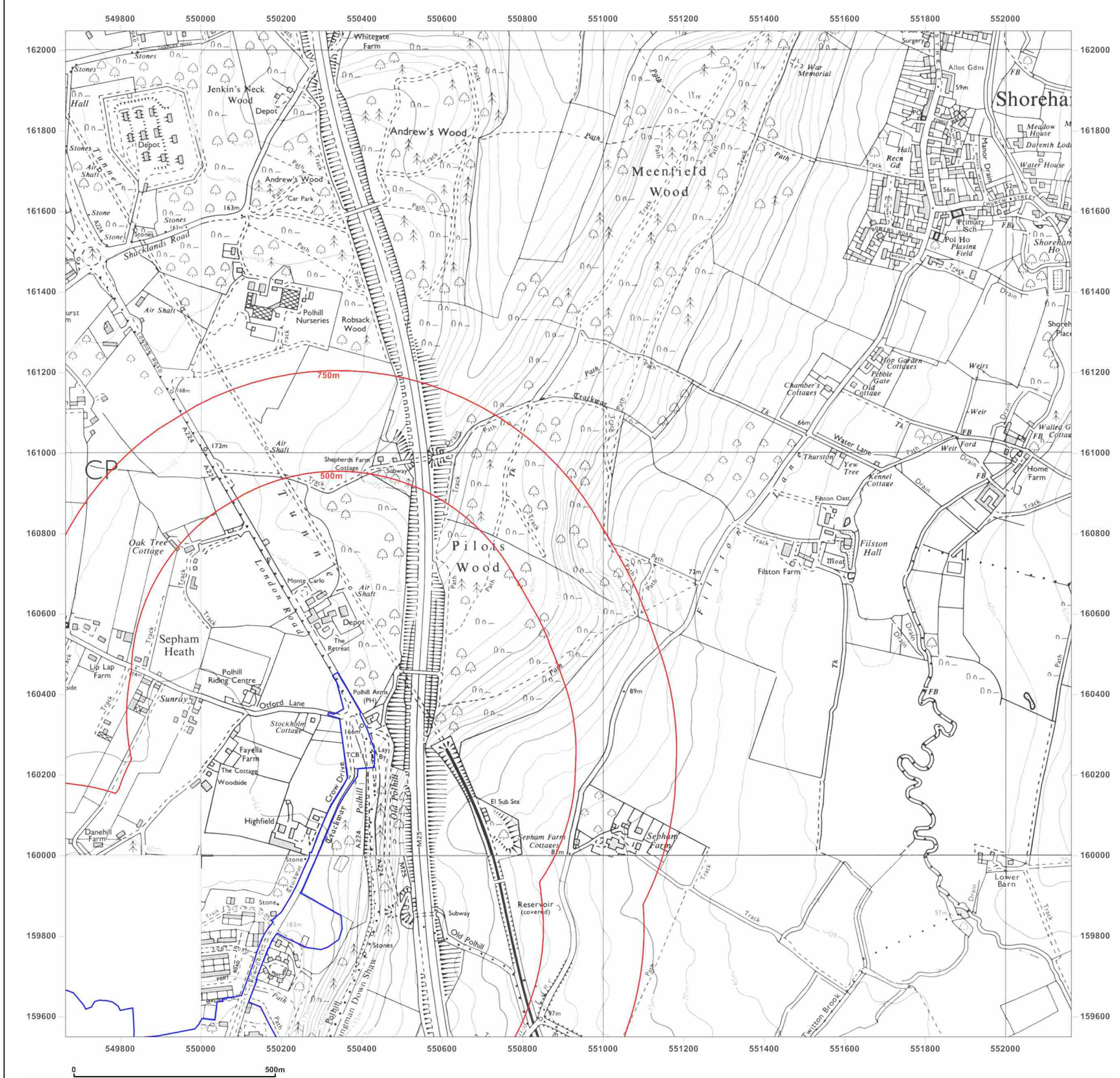

Groundsure INSIGHTS

Site Details:

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

Client Ref: C-10730-C_Fort_Halstead_PO_P028025
Report Ref: GS-5746913_SS_2_2
Grid Ref: 550913, 160798

Map Name: National Grid

Map date: **1987-1990**

Scale: 1:10,000

Printed at: 1:10,000

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Surveyed 1984
Revised 1990
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1983
Revised 1988
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1982
Revised 1987
Edition N/A
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Map legend available at:
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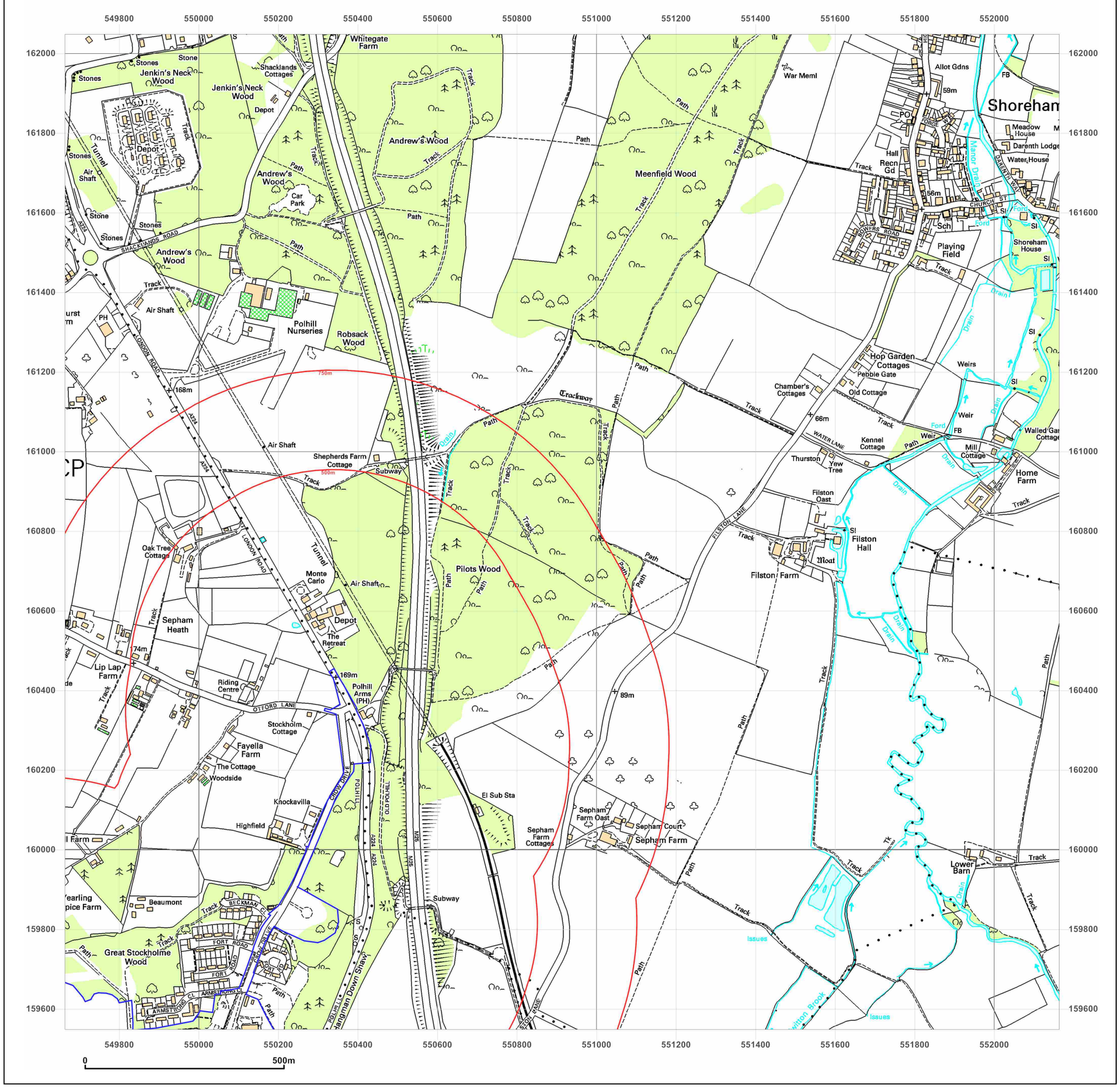

Groundsure INSIGHTS

Site Details:

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

Client Ref: C-10730-C_Fort_Halstead_PO_P028025
Report Ref: GS-5746913_SS_2_2
Grid Ref: 550913, 160798

Map Name: 1:10,000 Raster

Map date: **2002**

Scale: 1:10,000

Printed at: 1:10,000

N W E S

2002

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Production date: 14 January 2019

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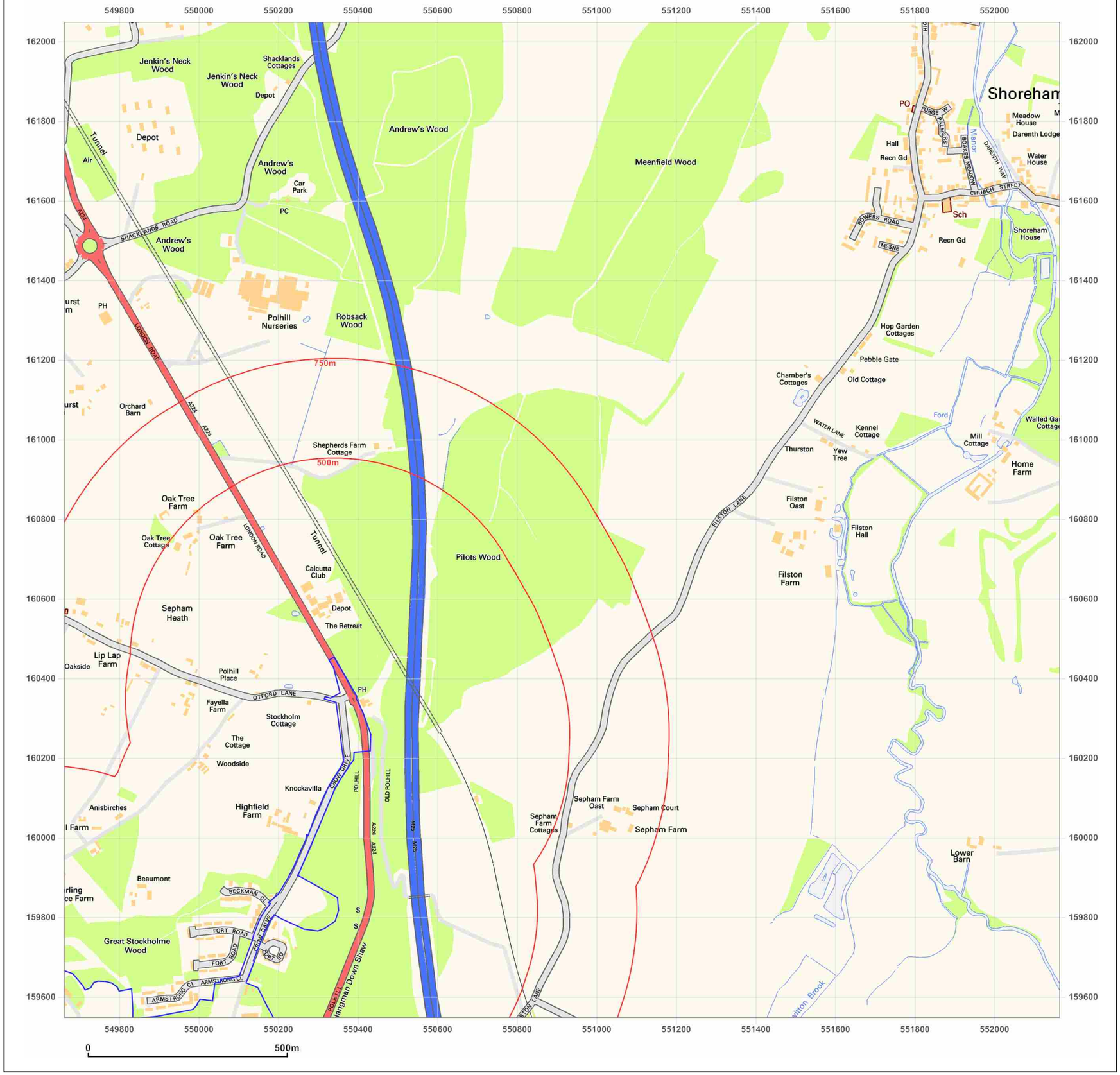

Groundsure INSIGHTS

Site Details:

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

Client Ref: C-10730-C_Fort_Halstead_PO_P028025
Report Ref: GS-5746913_SS_2_2
Grid Ref: 550913, 160798

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

N
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2010

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Production date: 14 January 2019

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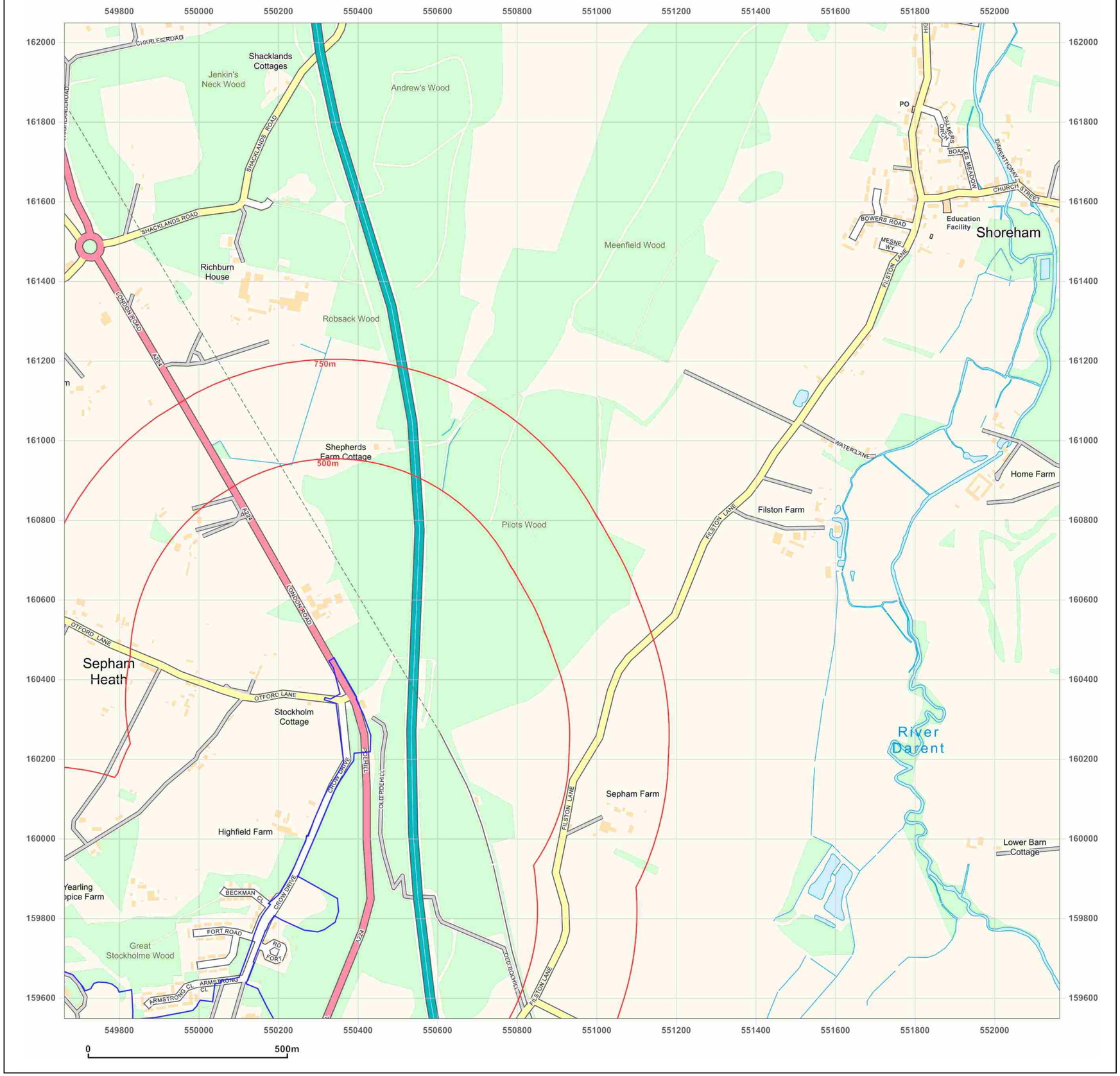

Groundsure INSIGHTS

Site Details:

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

Client Ref: C-10730-C_Fort_Halstead_PO_P028025
Report Ref: GS-5746913_SS_2_2
Grid Ref: 550913, 160798

Map Name: National Grid
Map date: **2014**
Scale: 1:10,000
Printed at: 1:10,000

N
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2014

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Production date: 14 January 2019

Map legend available at:
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Appendix D

Desk Study Research Information

Groundsure
LOCATION INTELLIGENCE

Hydrock Consultants Ltd

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

Groundsure Reference:	GS-5746911
Your Reference:	C-10730-C_Fort_Halstead_PO_P028025
Report Date	14 Jan 2019
Report Delivery Method:	Email - pdf

Enviro 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 Enviro 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 Enviroinsight

Enviro Insight

Address:	**LAND WEST OF 41, FORT ROAD, HALSTEAD, SEVENOAKS, TN14 7BS**
Date:	**14 Jan 2019**
Reference:	**GS-5746911**
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

Report Reference: GS-5746911
Client Reference: C-10730-C_Fort_Halstead_PO_P028025

Contents Page

Overview of Findings

For further details on each dataset, please refer to each individual section in the main 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: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	8	1	84	62
1.2 Additional Information – Historical Tank Database	1	2	2	5
1.3 Additional Information – Historical Energy Features Database	2	4	4	1
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	3	0
1.6 Historical military sites	1	0	0	0
1.7 Potentially Infilled Land	5	5	79	55

Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	0
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	0	3
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	5	0	0	0
2.1.8 Records of Licensed Discharge Consents	1	1	3	4
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	1	5	3
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	0	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	0	0	0	0	0	1
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	0
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	6	0	0

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	6	2	7	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	0	0
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	1	1

Section 5: Geology	
5.1 Records of Artificial Ground and Made Ground present beneath the study site	None identified
5.2 Records of Superficial Ground and Drift Geology present beneath the study site	Identified
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 6: Hydrogeology and Hydrology	0-500m
6.1 Records of Strata Classification in the Superficial Geology within 500m of the study site	Identified
6.2 Records of Strata Classification in the Bedrock Geology within 500m of the study site	Identified

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	2
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	2
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	1
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	5	0	#250GWV#	#500GWV#	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

	0-500m					
	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site	No	No	No	No	No	No
6.10 Ordnance Survey MasterMap Water Network entries within 500m of the site	0	0	0	4	Not searched	Not searched
6.11 Surface water features within 250m of the study site	No	No	No	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 Enviroment Agency Zone 2 floodplains within 250m of the study site	None identified
7.2 Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site	None identified
7.3 Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site	Very Low
7.4 Flood Defences within 250m of the study site	None identified
7.5 Areas benefiting from Flood Defences within 250m of the study site	None identified
7.6 Areas used for Flood Storage within 250m of the study site	None identified
7.7 Maximum BGS Groundwater Flooding susceptibility within 50m of the study site	Limited potential
7.8 BGS confidence rating for the Groundwater Flooding susceptibility areas	High

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	0
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	18	3	10	2	11	29
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	3	0	1	0	1	0
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	0	0	0	0	0	0
8.14 Records of Green Belt land	3	0	1	0	0	0

Section 9: Natural Hazards

9.1 Maximum risk of natural ground subsidence	Moderate
9.1.1 Maximum Shrink-Swell hazard rating identified on the study site	Low
9.1.2 Maximum Landslides hazard rating identified on the study site	Moderate
9.1.3 Maximum Soluble Rocks hazard rating identified on the study site	Moderate
9.1.4 Maximum Compressible Ground hazard rating identified on the study site	Negligible
9.1.5 Maximum Collapsible Rocks hazard rating identified on the study site	Very Low
9.1.6 Maximum Running Sand hazard rating identified on the study site	Negligible
9.2 Radon	
9.2.1 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 site is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
9.2.2 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.

Section 10: Mining

10.1 Coal mining areas within 75m of the study site	None identified
10.2 Non-Coal Mining areas within 50m of the study site boundary	Identified
10.3 Brine affected areas within 75m of the study site	None identified

Using this report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between Groundsure and the Client. The document contains the following sections:

1. Historical Industrial Sites

Provides information on past land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. Potentially Infilled Land features are also included. This search is conducted using radii of up to 500m.

2. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

3. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

4. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure gas pipelines and underground electricity transmission lines.

5. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

6. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licences, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

7. Flooding

Provides information on river and coastal flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

8. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

9. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence and radon..

10. Mining

Provides information on areas of coal and non-coal mining and brine affected areas.

11. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, Groundsure provide a free Technical Helpline (08444 159000) for further information and guidance.

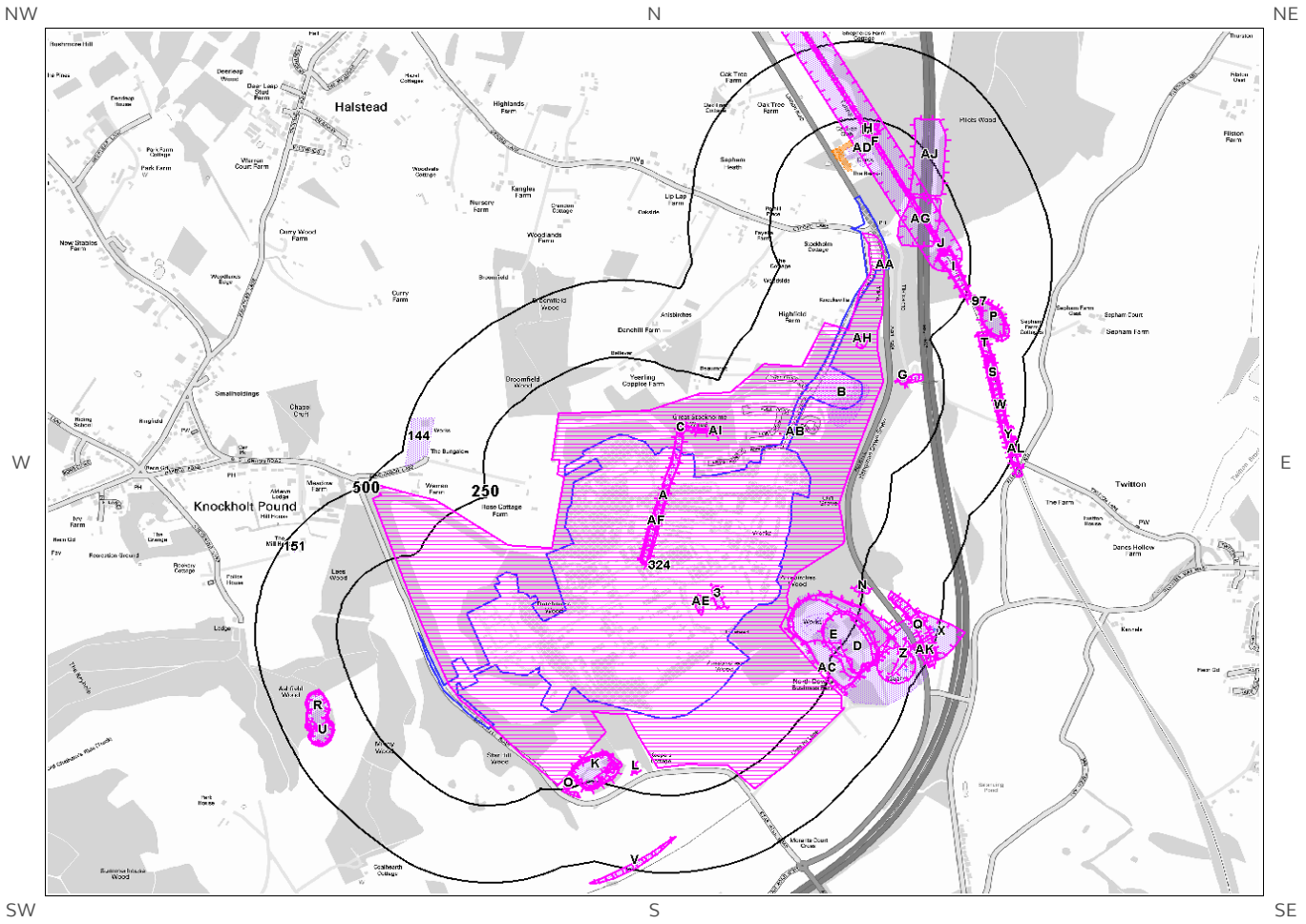
Note: Maps

Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier “A” on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as “Not Shown”.

All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.

1. Historical Land Use



Site Outline

250
500
Search Buffers (m)

Historical 1:10,000 and 1:10,560 scale mapping

Industrial Land Use

Potentially Infilled Land

Historical 1:2,500, 1:1,250 and 1:500 scale mapping

Energy Features

Petrol Stations

Historical military sites

Tanks

Garages

1. Historical Industrial Sites

1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping

The systematic analysis of data extracted from standard 1:10,560 and 1:10,000 scale historical maps provides the following information:

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 155

ID	Distance [m]	Direction	Use	Date
1B	0	On Site	Nursery	1973
2AE	0	On Site	Unspecified Heap	1981
3	0	On Site	Unspecified Heap	1981
4AF	0	On Site	Unspecified Heap	1981
5A	0	On Site	Unspecified Heap	1907
6A	0	On Site	Unspecified Heap	1961
7B	0	On Site	Nursery	1968
8AA	0	On Site	Unspecified Tank	1907
9AG	47	E	Cuttings	1988
10C	52	N	Unspecified Heap	1907
11C	52	N	Unspecified Heap	1932
12C	52	N	Unspecified Heap	1940
13C	52	N	Unspecified Heap	1895
14E	54	SE	Unspecified Works	1961
15D	56	SE	Unspecified Works	1968
16D	56	SE	Unspecified Works	1973
17E	56	SE	Unspecified Quarry	1973
18E	56	SE	Unspecified Quarry	1968
19E	62	SE	Unspecified Works	1983
20E	62	SE	Unspecified Works	1987
21E	62	SE	Unspecified Quarry	1983
22E	62	SE	Unspecified Quarry	1987
23C	66	N	Unspecified Heap	1940
24C	66	N	Unspecified Heap	1932
25C	66	N	Unspecified Heap	1907
26E	68	SE	Unspecified Quarry	1961
27F	72	NE	Tunnel	1961
28F	72	NE	Tunnel	1967
29F	72	NE	Tunnel	1988
30E	74	SE	Lime Works	1936
31AI	81	NE	Unspecified Heap	1907
32AD	94	N	Unspecified Depot	1988
33E	107	SE	Lime Works	1907
34G	108	E	Unspecified Pit	1973

35G	108	E	Unspecified Pit	1983
36G	108	E	Unspecified Pit	1987
37G	108	E	Unspecified Pit	1968
38G	108	E	Unspecified Pit	1961
39G	111	E	Unspecified Pit	1938
40G	111	E	Unspecified Pit	1938
41G	112	E	Unspecified Pit	1907
42G	112	E	Old Chalk Pit	1895
43G	112	E	Unspecified Quarry	1869
44G	112	E	Unspecified Pit	1932
45G	112	E	Unspecified Pit	1940
46H	126	NE	Tunnel	1938
47H	127	NE	Tunnel	1907
48H	127	NE	Tunnel	1932
49H	127	NE	Tunnel	1895
50H	127	NE	Tunnel	1940
51H	127	NE	Tunnel	1869
52E	128	SE	Railway Sidings	1961
53AJ	138	NE	Cuttings	1988
54E	141	SE	Railway Sidings	1936
55G	146	E	Cuttings	1987
56I	147	E	Cuttings	1988
57I	147	E	Cuttings	1961
58I	147	E	Cuttings	1967
59I	148	E	Cuttings	1938
60K	148	S	Unspecified Old Quarry	1895
61I	149	E	Cuttings	1895
62I	149	E	Cuttings	1907
63I	149	E	Cuttings	1936
64J	152	E	Tunnel	1938
65J	152	E	Tunnel	1907
66J	152	E	Tunnel	1936
67I	153	E	Cuttings	1868
68K	154	S	Unspecified Pit	1961
69K	154	S	Unspecified Pit	1981
70K	156	S	Unspecified Old Quarry	1907
71K	158	S	Unspecified Pit	1936
72K	159	S	Unspecified Quarry	1869
73E	163	SE	Railway Sidings	1936
74D	164	SE	Lime Works	1895
75D	164	SE	Unspecified Quarry	1895
76D	166	SE	Unspecified Quarry	1869
77L	167	S	Unspecified Ground Workings	1907
78L	168	S	Unspecified Ground Workings	1869

79E	175	SE	Kilns	1907
80M	192	N	Unspecified Heap	1932
81M	193	N	Unspecified Heap	1907
82M	193	N	Unspecified Heap	1938
83M	193	N	Unspecified Heap	1938
84M	194	N	Unspecified Pit	1869
85M	194	N	Unspecified Heap	1940
86M	194	N	Unspecified Ground Workings	1961
87M	195	N	Unspecified Heaps	1895
88K	210	SE	Unspecified Tank	1981
89E	215	SE	Lime Kilns	1869
90N	225	E	Unspecified Heap	1983
91N	225	E	Unspecified Heap	1987
92N	225	E	Unspecified Heap	1973
93O	237	S	Unspecified Pit	1895
94O	253	S	Unspecified Pit	1869
95P	274	E	Unspecified Heap	1868
96P	283	SE	Railway Building	1936
97	284	E	Electricity Substation	1988
98P	302	E	Unspecified Heap	1961
99P	302	E	Unspecified Heap	1988
100P	302	E	Unspecified Heap	1967
101P	306	E	Unspecified Heap	1907
102P	306	E	Unspecified Heap	1895
103P	306	E	Unspecified Heap	1936
104P	307	E	Unspecified Heap	1938
105P	307	E	Unspecified Heap	1938
106Q	328	E	Cuttings	1936
107Q	328	E	Cuttings	1895
108Q	328	E	Cuttings	1869
109Q	333	E	Cuttings	1907
110R	335	W	Unspecified Pit	1961
111R	335	W	Unspecified Pit	1981
112R	336	W	Unspecified Ground Workings	1936
113R	336	W	Unspecified Ground Workings	1869
114R	336	W	Unspecified Ground Workings	1895
115R	337	W	Unspecified Ground Workings	1907
116Q	341	E	Cuttings	1961
117S	342	SE	Cuttings	1895
118S	342	SE	Cuttings	1936
119S	342	SE	Cuttings	1907
120S	346	SE	Cuttings	1938

121Q	349	E	Cuttings	1983
122Q	349	E	Cuttings	1973
123Q	349	E	Cuttings	1987
124T	351	SE	Cuttings	1973
125T	351	SE	Cuttings	1961
126T	351	SE	Cuttings	1987
127T	351	SE	Cuttings	1968
128T	351	SE	Cuttings	1983
129U	352	SW	Unspecified Heap	1981
130U	352	SW	Unspecified Heap	1961
131T	353	SE	Cuttings	1868
132V	380	S	Unspecified Ground Workings	1961
133V	380	S	Unspecified Ground Workings	1981
134W	382	E	Cuttings	1961
135W	387	E	Cuttings	1868
136S	390	E	Cuttings	1973
137S	390	E	Cuttings	1987
138S	390	E	Cuttings	1983
139S	390	E	Cuttings	1968
140Q	407	E	Cuttings	1968
141Z	416	E	Unspecified Ground Workings	1968
142X	417	E	Burial Ground	1973
143X	417	E	Burial Ground	1968
144	423	W	Unspecified Works	1981
145Y	435	E	Cuttings	1895
146Y	436	E	Cuttings	1907
147Y	436	E	Cuttings	1938
148Y	436	E	Cuttings	1948
149Z	449	SE	Unspecified Tank	1973
150AK	454	E	Unspecified Quarry	1968
151	458	NW	Corn Windmill	1869
152X	475	E	Unspecified Tank	1987
153X	475	E	Unspecified Tank	1983
154X	475	E	Unspecified Tank	1973
155AL	499	E	Brick Kiln	1868

1.2 Additional Information – Historical Tank Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical tanks within 500m of the search boundary: 10

ID	Distance (m)	Direction	Use	Date
156AA	0	On Site	Unspecified Tank	1909
157AB	3	E	Unspecified Tank	1961
158AB	3	E	Unspecified Tank	1981
159L	171	S	Tank or Trough	1869
160O	248	S	Tank or Trough	1869
161Z	456	SE	Unspecified Tank	1968
162X	484	E	Unspecified Tank	1988
163X	484	E	Unspecified Tank	1989
164X	487	E	Unspecified Tank	1997
165X	488	E	Unspecified Tank	1981

1.3 Additional Information – Historical Energy Features Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical energy features within 500m of the search boundary: 11

ID	Distance (m)	Direction	Use	Date
166AA	0	On Site	Electricity Substation	1984
167AA	0	On Site	Electricity Substation	1997
168AB	11	W	Electricity Substation	1981
169AB	12	W	Electricity Substation	1997
170AB	13	W	Electricity Substation	1988
171AB	13	W	Electricity Substation	1989
172AC	238	E	Electricity Substation	1988
173AC	238	E	Electricity Substation	1989
174AC	239	E	Electricity Substation	1968
175AC	240	E	Electricity Substation	1992
176P	286	SE	Electricity Substation	1997

1.4 Additional Information – Historical Petrol and Fuel Site Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical petrol stations and fuel sites within 500m of the search boundary: 0

Database searched and no data found.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 3

ID	Distance (m)	Direction	Use	Date
177AD	86	N	Garage	1961
178AD	138	NW	Garage	1997
179AD	146	NW	Garage	1984

1.6 Historical military sites

Certain military installations were not noted on historic mapping for security reasons. Whilst not all military land is necessarily of concern, Groundsure has researched and digitised a number of Ordnance Factories and other military industrial features (e.g. Ordnance Depots, Munitions Testing Grounds) which may be of contaminative concern. This research was drawn from a number of different sources, and should not be regarded as a definitive or exhaustive database of potentially contaminative military installations. The boundaries of sites within this database have been estimated from the best evidence available to Groundsure at the time of compilation.

Records of historical military sites within 500m of the search boundary: 1

ID	Distance (m)	Direction	Site Name	Date of operation	Activities
324	0	On Site	Fort Halstead - Defence Science and Technology Laboratory	1915 – present day	Atomic bomb trigger mechanism developments between 1940s and 1950s, nuclear weapons development - -

1.7 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 144

The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

ID	Distance(m)	Direction	Use	Date
180AE	0	On Site	Unspecified Heap	1981
181AE	0	On Site	Unspecified Heap	1981
182AF	0	On Site	Unspecified Heap	1981
183A	0	On Site	Unspecified Heap	1907
184A	0	On Site	Unspecified Heap	1961
185AG	47	E	Cuttings	1988
186AH	47	SE	Pond	1968
187AH	47	SE	Pond	1983

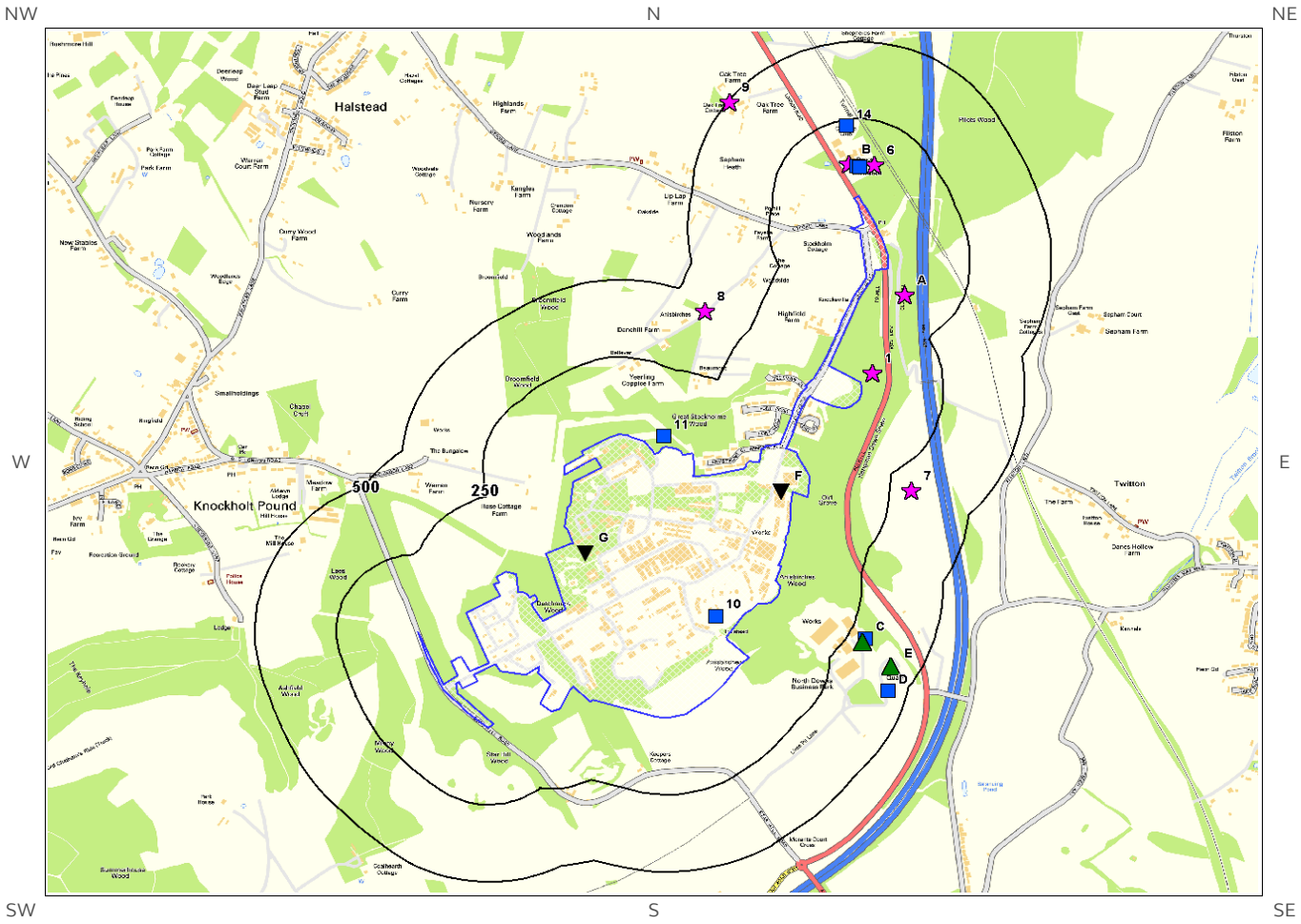
188AH	47	SE	Pond	1973
189AH	47	SE	Pond	1987
190C	52	N	Unspecified Heap	1932
191C	52	N	Unspecified Heap	1907
192C	52	N	Unspecified Heap	1940
193AI	52	N	Unspecified Heap	1895
194E	56	SE	Unspecified Quarry	1973
195E	56	SE	Unspecified Quarry	1968
196E	62	SE	Unspecified Quarry	1983
197E	62	SE	Unspecified Quarry	1987
198AI	66	N	Unspecified Heap	1932
199AI	66	N	Unspecified Heap	1940
200AI	66	N	Unspecified Heap	1907
201E	68	SE	Unspecified Quarry	1961
202F	72	NE	Tunnel	1988
203F	72	NE	Tunnel	1961
204F	72	NE	Tunnel	1967
205AI	81	NE	Unspecified Heap	1907
206G	108	E	Unspecified Pit	1987
207G	108	E	Unspecified Pit	1968
208G	108	E	Unspecified Pit	1973
209G	108	E	Unspecified Pit	1983
210G	108	E	Unspecified Pit	1961
211G	111	E	Unspecified Pit	1938
212G	111	E	Unspecified Pit	1938
213G	112	E	Unspecified Pit	1907
214G	112	E	Unspecified Pit	1932
215G	112	E	Unspecified Quarry	1869
216G	112	E	Unspecified Pit	1940
217G	112	E	Old Chalk Pit	1895
218H	126	NE	Tunnel	1938
219H	127	NE	Tunnel	1932
220H	127	NE	Tunnel	1907
221H	127	NE	Tunnel	1895
222H	127	NE	Tunnel	1940
223H	127	NE	Tunnel	1869
224AJ	138	NE	Cuttings	1988
225G	146	E	Cuttings	1987
226I	147	E	Cuttings	1988
227I	147	E	Cuttings	1961
228I	147	E	Cuttings	1967
229I	148	E	Cuttings	1938
230K	148	S	Unspecified Old Quarry	1895
231I	149	E	Cuttings	1907
232I	149	E	Cuttings	1936
233I	149	E	Cuttings	1895

234J	152	E	Tunnel	1938
235J	152	E	Tunnel	1907
236J	152	E	Tunnel	1936
237I	153	E	Cuttings	1868
238K	154	S	Unspecified Pit	1981
239K	154	S	Unspecified Pit	1961
240K	156	S	Unspecified Old Quarry	1907
241K	158	S	Unspecified Pit	1936
242K	159	S	Unspecified Quarry	1869
243E	164	SE	Unspecified Quarry	1895
244E	166	SE	Unspecified Quarry	1869
245L	167	S	Unspecified Ground Workings	1907
246L	168	S	Unspecified Ground Workings	1869
247K	175	S	Pond	1961
248M	192	N	Unspecified Heap	1932
249M	193	N	Unspecified Heap	1907
250M	193	N	Unspecified Heap	1938
251M	193	N	Unspecified Heap	1938
252M	194	N	Unspecified Pit	1869
253M	194	N	Unspecified Heap	1940
254M	194	N	Unspecified Ground Workings	1961
255M	195	N	Unspecified Heaps	1895
256M	203	N	Air Shaft	1988
257M	203	N	Air Shaft	1967
258M	205	N	Air Shaft	1869
259M	206	N	Air Shaft	1938
260M	206	N	Air Shaft	1940
261M	206	N	Air Shaft	1907
262M	206	N	Air Shaft	1932
263M	206	N	Air Shaft	1895
264M	207	N	Air Shaft	1961
265N	225	E	Unspecified Heap	1973
266N	225	E	Unspecified Heap	1987
267N	225	E	Unspecified Heap	1983
268O	237	S	Unspecified Pit	1895
269O	253	S	Unspecified Pit	1869
270P	274	E	Unspecified Heap	1868
271P	302	E	Unspecified Heap	1967
272P	302	E	Unspecified Heap	1961
273P	302	E	Unspecified Heap	1988
274P	306	E	Unspecified Heap	1895
275P	306	E	Unspecified Heap	1936
276P	306	E	Unspecified Heap	1907
277P	307	E	Unspecified Heap	1938

278P	307	E	Unspecified Heap	1938
279Q	328	E	Cuttings	1869
280Q	328	E	Cuttings	1895
281Q	328	E	Cuttings	1936
282Q	333	E	Cuttings	1907
283R	335	W	Unspecified Pit	1961
284R	335	W	Unspecified Pit	1981
285R	336	W	Unspecified Ground Workings	1936
286R	336	W	Unspecified Ground Workings	1895
287R	336	W	Unspecified Ground Workings	1869
288R	337	W	Unspecified Ground Workings	1907
289Q	341	E	Cuttings	1961
290S	342	SE	Cuttings	1936
291S	342	SE	Cuttings	1907
292S	342	SE	Cuttings	1895
293S	346	SE	Cuttings	1938
294Q	349	E	Cuttings	1973
295Q	349	E	Cuttings	1987
296Q	349	E	Cuttings	1983
297T	351	SE	Cuttings	1968
298T	351	SE	Cuttings	1973
299T	351	SE	Cuttings	1983
300T	351	SE	Cuttings	1987
301T	351	SE	Cuttings	1961
302U	352	SW	Unspecified Heap	1961
303U	352	SW	Unspecified Heap	1981
304T	353	SE	Cuttings	1868
305Z	368	SE	Reservoir	1907
306V	380	S	Unspecified Ground Workings	1981
307V	380	S	Unspecified Ground Workings	1961
308W	382	E	Cuttings	1961
309W	387	E	Cuttings	1868
310S	390	E	Cuttings	1973
311S	390	E	Cuttings	1968
312S	390	E	Cuttings	1987
313S	390	E	Cuttings	1983
314X	407	E	Cuttings	1968
315Z	416	E	Unspecified Ground Workings	1968
316X	417	E	Burial Ground	1973
317X	417	E	Burial Ground	1968
318Y	435	E	Cuttings	1895

319Y	436	E	Cuttings	1907
320Y	436	E	Cuttings	1938
321Y	436	E	Cuttings	1948
322AK	454	E	Unspecified Quarry	1968
323AL	499	E	Brick Kiln	1868

2. Environmental Permits, Incidents and Registers Map



Site Outline

250
500
Search Buffers (m)

Recorded Pollution Incident

Dangerous Substances (List 1)

Dangerous Substances (List 2)

Water Industry Referrals

Licenced Discharge Consents

Red List Discharge Consents

RAS 3 & 4 Authorisations

Part A(1) Authorised Processes and Historic IPC Authorisations

Part A(2) and Part B Authorised Processes

COMAH / NIHHS Sites

Sites Determined as Contaminated Land

Hazardous Substance Consents and Enforcements

2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency/Natural Resources Wales and Local Authorities reveal the following information:

2.1.1 Records of historic IPC Authorisations within 500m of the study site:

0

Database searched and no data found.

2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:

0

Database searched and no data found.

2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:

0

Database searched and no data found.

2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site:

3

The following Part A(2) and Part B Activities are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
19C	303	SE	550352 159004	Address: Lancaster Plc, Lime Pit Lane, Dunton Green, Sevenoaks, Kent, TN13 2TL Process: Respraying of Road Vehicles Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified
20E	419	SE	550439 158925	Address: Hanson Concrete Batching, Lower Quarry, Limepit Lane, Dunton Green, Sevenoaks, Kent, TN13 2TL Process: Use of Bulk Cement Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified
21E	419	SE	550439 158925	Address: Hanson Readymix Concrete, Pilgrims Way, Sevenoaks, TN13 2TL Process: Use of Bulk Cement Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of Enforcement: No Enforcement Notified Comment: No Enforcement Notified

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

5

The following RAS Licence (3 or 4) records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Address	Operator	Type	Permission Number	Dates	Status
27F	0	On Site	550100 159500	Ministry Of Defence, Defence Research Agency, Fort Halstead, Sevenoaks, Kent, TN14 7BP	Ministry Of Defence	Disposal Of Radioactive Waste (was Rsa60 Section 6).	BB3786	Date of Approval:25/6/1998 Effective from:25/6/1998 Last date of update:2015-01-01	Superseded By Variation
28F	0	On Site	550100 159500	Ministry Of Defence, Defence Research Agency, Fort Halstead, Sevenoaks, Kent, TN14 7BP	Ministry Of Defence	Disposal Of Radioactive Waste (was Rsa60 Section 6).	AY5701	Date of Approval:6/8/1997 Effective from:6/8/1997 Last date of update:2015-01-01	Superseded By Variation

ID	Distance (m)	Direction	NGR	Address	Operator	Type	Permission Number	Dates	Status
29F	0	On Site	550100 159500	Ministry Of Defence, Defence Research Agency, Fort Halstead, Sevenoaks, Kent, TN14 7BP	Ministry Of Defence	Disposal Of Radioactive Waste (was Rsa60 Section 6).	AM5785	Date of Approval:13/5/1994 Effective from:10/6/1994 Last date of update:2015-01-01	Superseded By Variation
30F	0	On Site	550100 159500	Ministry Of Defence, Dra Fort Halstead (rarde),fort Halstead, Sevenoaks, Kent, TN14 7BP	Ministry Of Defence	Keeping And Use Of Radioactive Materials (was Rsa60 Section 1).	AY1480	Date of Approval:21/5/1997 Effective from:21/5/1997 Last date of update:2015-01-01	Effective
31G	0	On Site	549500 159300	Qinetiq Ltd, Dstl Fort Halstead, Sevenoaks, Kent, TN14 7BP	Qinetiq Ltd	Disposal Of Radioactive Waste (was Rsa60 Section 6).	CA0417	Date of Approval:13/2/2006 Effective from:13/2/2006 Last date of update:2015-01-01	Effective

2.1.8 Records of Licensed Discharge Consents within 500m of the study site:

9

The following Licensed Discharge Consents records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
10	0	On Site	549899 159092	Address: DSTL FORT HALSTEAD, SEVENOAKS, KENT, TN14 7BP Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: NPSWQD006490 Permit Version: 1	Receiving Water: GROUND WATERS VIA SOAKAWAY Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 10/02/2009 Effective Date: 10-Feb-2009 Revocation Date: -
11	35	N	549739 159675	Address: DEFENCE SCIENCE AND TECHNOLOGY, DEFENCE SCIENCE AND TECHNOLOGY, FORT HALSTEAD, SEVEN OAKS, KENT, TN14 7BP Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: NPSWQD006491 Permit Version: 1	Receiving Water: GROUNDWATERS VIA SOAKAWAY Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 02/02/2009 Effective Date: 02-Feb-2009 Revocation Date: -
12B	94	N	550341 160549	Address: 7 HOTEL DINER, LONDON ROAD, POLHILL, SEVENOAKS, KENT, TN14 7AA Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: EPRBP3520XW Permit Version: 1	Receiving Water: LAND VIA BOREHOLES Status: NEW ISSUED UNDER EPR 2010 Issue date: 12/05/2010 Effective Date: 11-May-2010 Revocation Date: -

ID	Distance (m)	Direction	NGR	Details	
13B	96	N	550333 160551	Address: 7 HOTEL DINER, LONDON ROAD, POLHILL, SEVENOAKS, KENT, TN14 7AA Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: EPRBP3520XW Permit Version: 1	Receiving Water: LAND VIA BOREHOLES Status: NEW ISSUED UNDER EPR 2010 Issue date: 12/05/2010 Effective Date: 11-May-2010 Revocation Date: -
14	230	N	550302 160682	Address: CALCUTTA CLUB, LONDON ROAD, POLHILL, SEVENOAKS, KENT, TN14 7AA Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: EPRHP3022XW Permit Version: 1	Receiving Water: GROUNDWATER Status: REVOKED - UNSPECIFIED Issue date: 08/03/2011 Effective Date: 08-Mar-2011 Revocation Date: 30/12/2014
15C	302	SE	550360 159020	Address: JESSUPS LIME LOWER QUARRY, JESSUPS LIME LOWER QUARRY, PILGRIMS WAY, DUNTON GREEN, SEVENOAKS KENT, TN13 2TL Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: P10011 Permit Version: 2	Receiving Water: INTO LAND Status: VARIED UNDER EPR 2010 Issue date: 21/12/2012 Effective Date: 21-Dec-2012 Revocation Date: -
16C	302	SE	550360 159020	Address: JESSUPS LIME LOWER QUARRY, JESSUPS LIME LOWER QUARRY, PILGRIMS WAY, DUNTON GREEN, SEVENOAKS KENT, TN13 2TL Effluent Type: SEWAGE DISCHARGES - UNSPECIFIED - NOT WATER COMPANY Permit Number: P10011 Permit Version: 1	Receiving Water: INTO LAND Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 15/01/1990 Effective Date: 15-Jan-1990 Revocation Date: 20/12/2012
17D	441	E	550430 158850	Address: PREMIX PLANT, PILGRIMS WAY, PREMIX PLANT, PILGRIMS WAY, DUNTON GREEN, SEVENOAKS, KENT Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: P04594 Permit Version: 1	Receiving Water: INTO LAND Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 31/03/1993 Effective Date: 31-Mar-1993 Revocation Date: 20/12/2012
18D	441	E	550430 158850	Address: PREMIX PLANT, PILGRIMS WAY, PREMIX PLANT, PILGRIMS WAY, DUNTON GREEN, SEVENOAKS, KENT Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: P04594 Permit Version: 2	Receiving Water: INTO LAND Status: VARIED UNDER EPR 2010 Issue date: 21/12/2012 Effective Date: 21-Dec-2012 Revocation Date: -

2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:

0

Database searched and no data found.

2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site:

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site: 0

Database searched and no data found.

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:

9

The following NIRS List 2 records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details	
1	43	NE	550380 159880	Incident Date: 16-Jul-2003 Incident Identification: 174202 Pollutant: Specific Waste Materials Pollutant Description: Tyres	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
2A	99	SE	550480 160134	Incident Date: 15-Apr-2002 Incident Identification: 71881 Pollutant: General Biodegradable Materials and Wastes Pollutant Description: Other General Biodegradable Material or Waste	Water Impact: Category 3 (Minor) Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)
3A	99	SE	550480 160134	Incident Date: 15-Apr-2002 Incident Identification: 71881 Pollutant: General Biodegradable Materials and Wastes Pollutant Description: Other General Biodegradable Material or Waste	Water Impact: Category 3 (Minor) Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)
4B	109	N	550308 160559	Incident Date: 16-Mar-2003 Incident Identification: 143411 Pollutant: Specific Waste Materials Pollutant Description: Tyres	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
5B	109	N	550308 160559	Incident Date: 16-Mar-2003 Incident Identification: 143411 Pollutant: Specific Waste Materials Pollutant Description: Tyres	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
6	111	NE	550386 160556	Incident Date: 13-Dec-2002 Incident Identification: 126007 Pollutant: Specific Waste Materials Pollutant Description: Tyres	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
7	314	E	550500 159500	Incident Date: 21-Mar-2003 Incident Identification: 144957 Pollutant: Inert Materials and Wastes Pollutant Description: Construction and	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)

ID	Distance (m)	Direction	NGR	Details	
				Demolition Materials and Wastes	
8	394	NW	549864 160082	Incident Date: 04-Oct-2001 Incident Identification: 34592 Pollutant: Specific Waste Materials Pollutant Description: Asbestos	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
9	496	NW	549941 160759	Incident Date: 24-Jul-2003 Incident Identification: 177589 Pollutant: Specific Waste Materials Pollutant Description: Tyres	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)

2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:

0

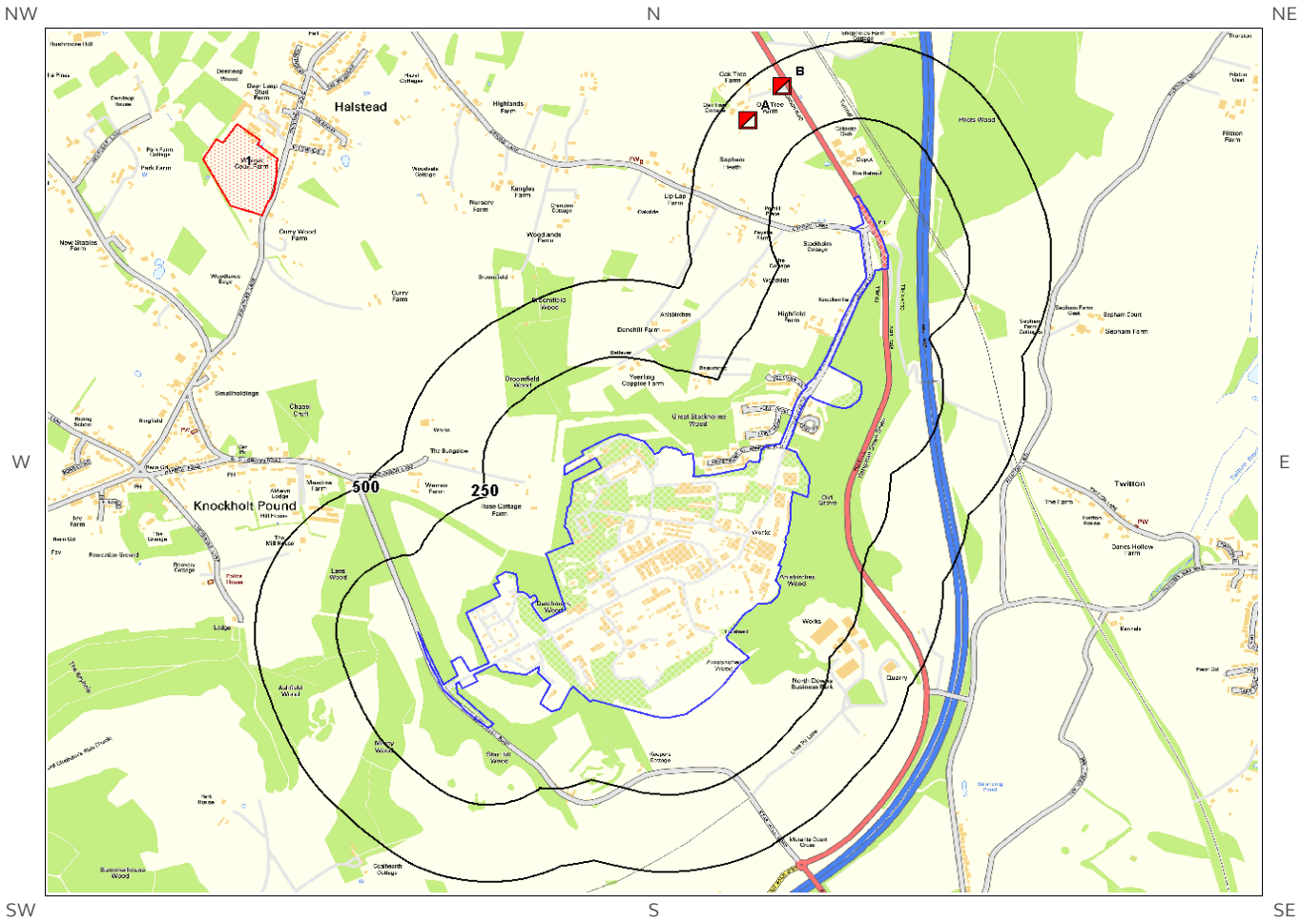
Database searched and no data found.

2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

Records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site 0

Database searched and no data found.

3. Landfill and Other Waste Sites Map



Site Outline

250
500
Search Buffers (m)

EA/NRW Active Landfill

EA/NRW Historic Landfill

BGS / DoE Survey Landfill

Historic and Planned Waste Sites

EA/NRW Licensed Waste Site

Local Authority/Historical Mapping Landfill Records

3. Landfill and Other Waste Sites

3.1 Landfill Sites

3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site:

0

Database searched and no data found.

3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site:

1

The following landfill records are represented as either points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
1	1232	NW		Site Address: Warren Court Farm, Knockholt Road, Halstead, Sevenoaks, Kent Waste Licence: Yes Site Reference: SE27, P/09/05, 2200/7333 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: -	Licence Issue: 01-Jan-1976 Licence Surrendered: Licence Holder Address: - Operator: - Licence Holder: J Butler First Recorded: 31-Dec-1978 Last Recorded: -

3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:

0

Database searched and no data found.

3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:

0

Database searched and no data found.

3.2 Other Waste Sites

3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site:

0

Database searched and no data found.

3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

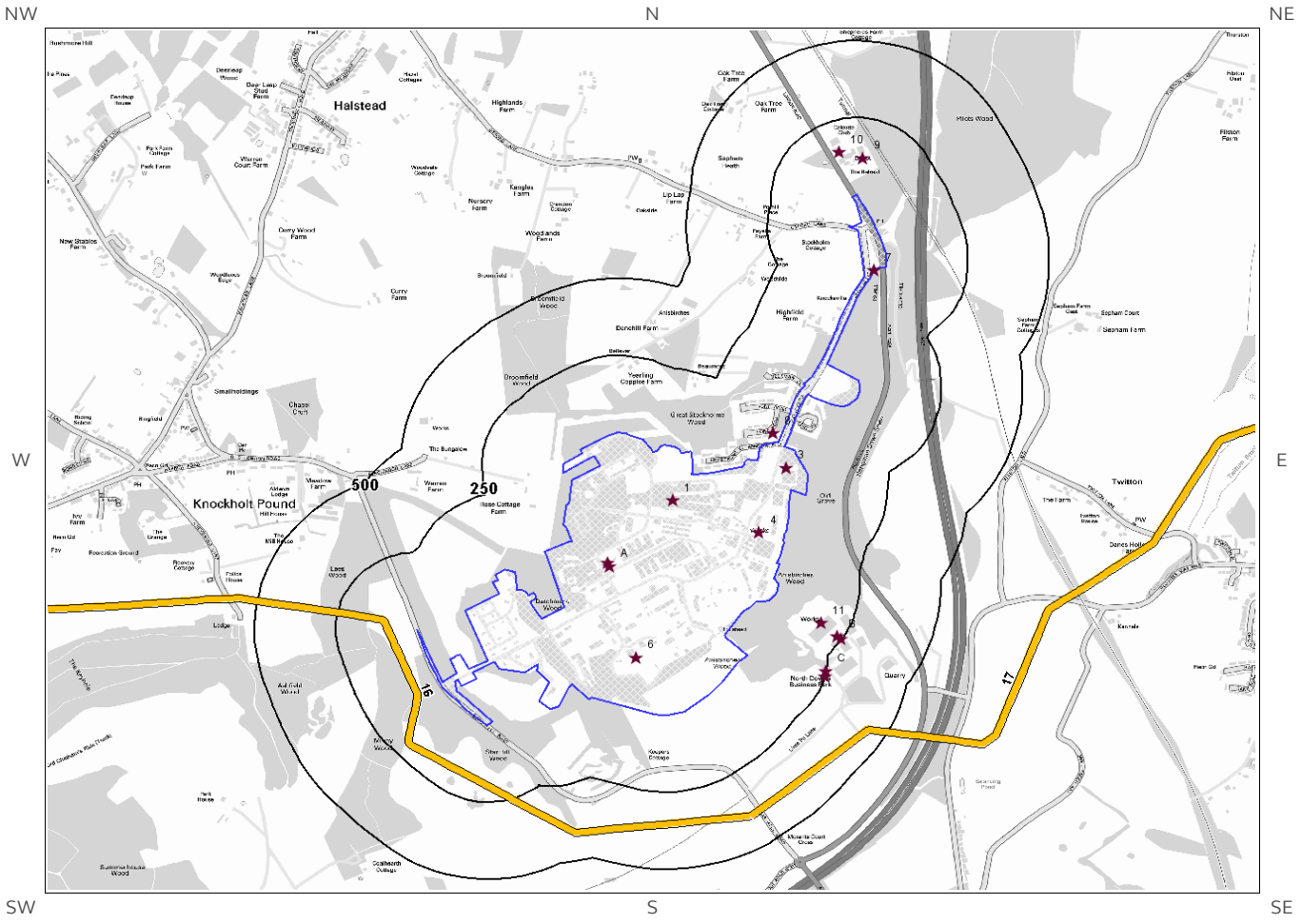
6

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details	
2A	413	NW	550000 160700	Site Address: Oak Tree Farm Yard, London Road, Polhill, Halstead, Kent, TN14 7AB Type: Household, Commercial & Industrial Waste T Stn Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: JBT004 EPR reference: EA/EPR/ZP3998EU/A001 Operator: J B Trading (U K) Ltd Waste Management licence No: 100421 Annual Tonnage: 74999.0	Issue Date: 28/07/2008 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: J B Waste Management & B K Skips Correspondence Address: -
3A	413	NW	550000 160700	Site Address: Oak Tree Farm Yard, London Road, Polhill, Halstead, Kent, TN14 7AB Type: Household, Commercial & Industrial Waste T Stn Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: JBT004 EPR reference: - Operator: J B Trading (U K) Ltd Waste Management licence No: 100421 Annual Tonnage: 0.0	Issue Date: 7/28/2008 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: J B Waste Management & B K Skips Correspondence Address: Oak Tree Farm Yard, London Road, Polhill, Halstead, Kent, TN14 7AB
4B	426	NW	550105 160811	Site Address: Oak Tree Farm, London Road, Polhill, Halstead, Kent, TN14 7AB Type: Household, Commercial & Industrial Waste T Stn Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: JBW001 EPR reference: EA/EPR/MB3839RR/V002 Operator: J B Waste Management, B K Skips, Recycled Crushed Materials, R C M (Halstead) L Waste Management licence No: 100421 Annual Tonnage: 75000.0	Issue Date: 28/07/2008 Effective Date: 26/02/2013 Modified: 09/10/2014 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Modified Site Name: Polhill Waste Transfer Station Correspondence Address: -
5B	426	NW	550105 160811	Site Address: Oak Tree Farm, London Road, Polhill, Halstead, Kent, TN14 7AB Type: Household, Commercial & Industrial Waste T Stn Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: JBW001	Issue Date: 28/07/2008 Effective Date: 27/07/2017 Modified: 09/10/2014 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred

ID	Distance (m)	Direction	NGR	Details	
				EPR reference: EA/EPR/FB3206XY/T001 Operator: B S P (Knockholt) Limited Waste Management licence No: 100421 Annual Tonnage: 75000.0	Site Name: Oak Tree Farm Correspondence Address: -
6B	426	NW	550105 160811	Site Address: Oak Tree Farm, London Road, Polhill, Halstead, Kent, TN14 7AB Type: Household, Commercial & Industrial Waste T Stn Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: JBW001 EPR reference: EA/EPR/FB3206XY/T001 Operator: B S P (knockholt) Limited Waste Management licence No: 100421 Annual Tonnage: 75000.0	Issue Date: 28/07/2008 Effective Date: 27/07/2017 Modified: 09/10/2014 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: Oak Tree Farm Correspondence Address: -
7B	426	NW	550105 160811	Site Address: Oak Tree Farm, London Road, Polhill, Halstead, Kent, TN14 7AB Type: Household, Commercial & Industrial Waste T Stn Size: >= 25000 tonnes < 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: JBW001 EPR reference: EA/EPR/FB3206XY/T001 Operator: J B Waste Management, B K Skips, R C M (Halstead) Ltd, B S P (Knockholt) Ltd Waste Management licence No: 100421 Annual Tonnage: 75000.0	Issue Date: 28/07/2008 Effective Date: 27/07/2017 Modified: 09/10/2014 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: Polhill Waste Transfer Station Correspondence Address: -

4. Current Land Use Map



4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 15

The following records are represented as points on the Current Land Uses map.

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	0	On Site	Works	549773 159463	Kent, TN14	Unspecified Works Or Factories	Industrial Features
2A	0	On Site	Chimney	549578 159249	Kent, TN14	Chimneys	Industrial Features
3	0	On Site	Tank	550120 159570	Kent, TN14	Tanks (Generic)	Industrial Features
4	0	On Site	Works	550037 159359	Kent, TN13	Unspecified Works Or Factories	Industrial Features
5A	0	On Site	Chimney	549572 159260	Kent, TN14	Chimneys	Industrial Features
6	0	On Site	Works	549659 158953	Kent, TN14	Unspecified Works Or Factories	Industrial Features
7	1	E	Electricity Sub Station	550391 160211	Kent, TN14	Electrical Features	Infrastructure and Facilities
8	27	W	Electricity Sub Station	550082 159681	Kent, TN14	Electrical Features	Infrastructure and Facilities
9	122	N	Depot	550358 160576	Kent, TN14	Container and Storage	Transport, Storage and Delivery
10	150	N	P J's Rent a Car	550284 160594	Polhill, Halstead, Sevenoaks, Kent, TN14 7AA	Vehicle Hire and Rental	Hire Services
11	167	SE	Works	550229 159065	Kent, TN13	Unspecified Works Or Factories	Industrial Features
12B	232	SE	Hanson UK	550278 159021	North Downs Business Park, Limepit Lane, Dunton Green, Sevenoaks, Kent, TN13 2TL	Concrete Products	Industrial Products
13C	245	E	Electricity Sub Station	550242 158910	Kent, TN13	Electrical Features	Infrastructure and Facilities
14B	245	SE	Farnborough Blinds	550289 159014	Unit 7 North Downs Business Park, Limepit Lane, Dunton Green, Sevenoaks, Kent, TN13 2TL	Curtains and Blinds	Consumer Products
15C	247	E	North Downs Business Park	550240 158890	Kent, TN13	Business Parks and Industrial Estates	Industrial Features

4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: 0

Database searched and no data found.

4.3 National Grid High Voltage Underground Electricity Transmission Cables

This dataset identifies the high voltage electricity transmission lines running between generating power plants and electricity substations. The dataset does not include the electricity distribution network (smaller, lower voltage cables distributing power from substations to the local user network). This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site: 0

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

This dataset identifies high-pressure, large diameter pipelines which carry gas between gas terminals, power stations, compressors and storage facilities. The dataset does not include the Local Transmission System (LTS) which supplies gas directly into homes and businesses. This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high pressure gas transmission pipelines within 500m of the study site: 2

The following National Grid high pressure gas transmission pipelines records are represented as linear features on the Current Land Use map:

ID	Distance (m)	Direction	Details	
16	76	SW	Pipe Name: FM05 - Star Hill Rd I/J to Tatsfield Pipe Number: Feeder 5 Pipeline Safety Regulations Number: - Ownership: National Grid	Maximum Operating Pressure (Bar): - Pipeline Diameter (mm): 750mm Wall Thickness (mm): -mm Year of commission: - Abandonment Status: Not Abandoned
17	388	SE	Pipe Name: FM05 - Farningham to Star Hill Rd I/J Pipe Number: Feeder 5 Pipeline Safety Regulations Number: - Ownership: National Grid	Maximum Operating Pressure (Bar): - Pipeline Diameter (mm): 750mm Wall Thickness (mm): -mm Year of commission: - Abandonment Status: Not Abandoned

5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

5.2 Superficial Ground and Drift Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
CWF-XCZSV	CLAY-WITH-FLINTS FORMATION	CLAY, SILT, SAND AND GRAVEL

5.3 Bedrock and Solid Geology

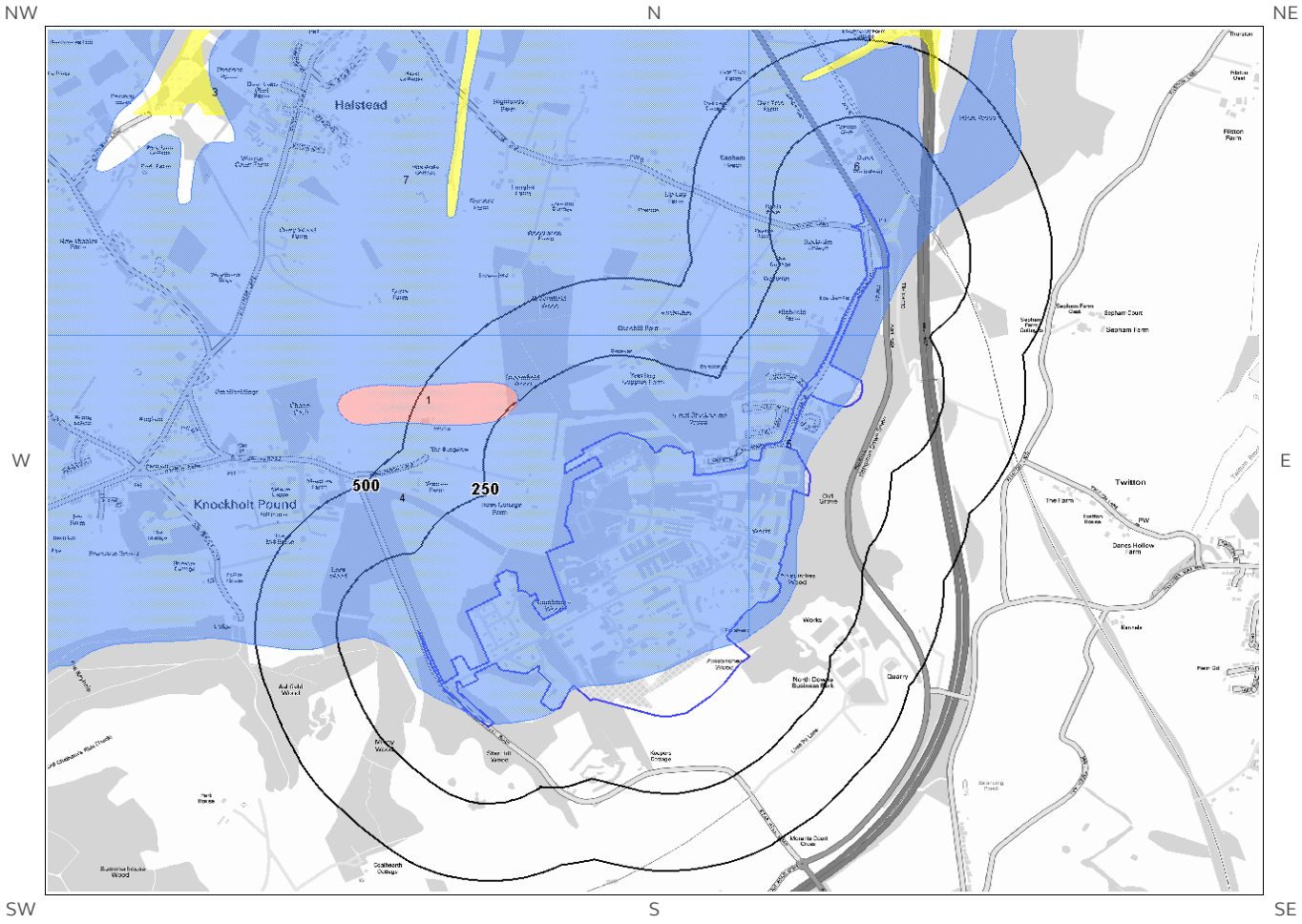
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
LECH-CHLK	LEWES NODULAR CHALK FORMATION	CHALK
LSNCK-CHLK	LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION AND NEWHAVEN CHALK FORMATION (UNDIFFERENTIATED)	CHALK
HNCK-CHLK	HOLYWELL NODULAR CHALK FORMATION AND NEW PIT CHALK FORMATION (UNDIFFERENTIATED)	CHALK

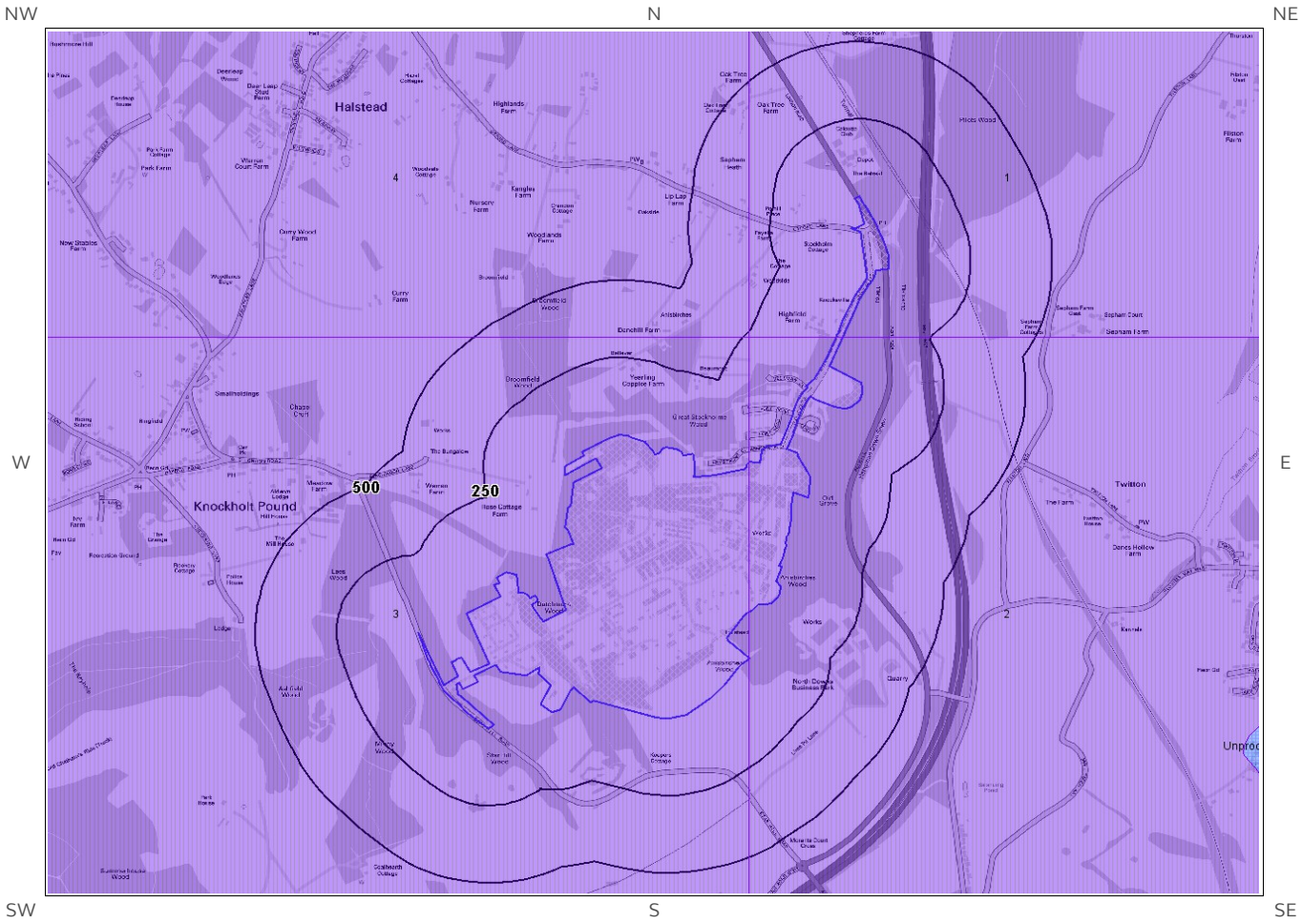
(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

6 Hydrogeology and Hydrology

6a. Aquifer Within Superficial Geology



6b. Aquifer Within Bedrock Geology and Abstraction Licences



Site Outline

250

500

Search Buffers (m)

Principal Aquifer

Secondary (A) Aquifer - Permeable Layers

Secondary (B) Aquifer - Lower Permeability Layers

Groundwater Abstraction Licence

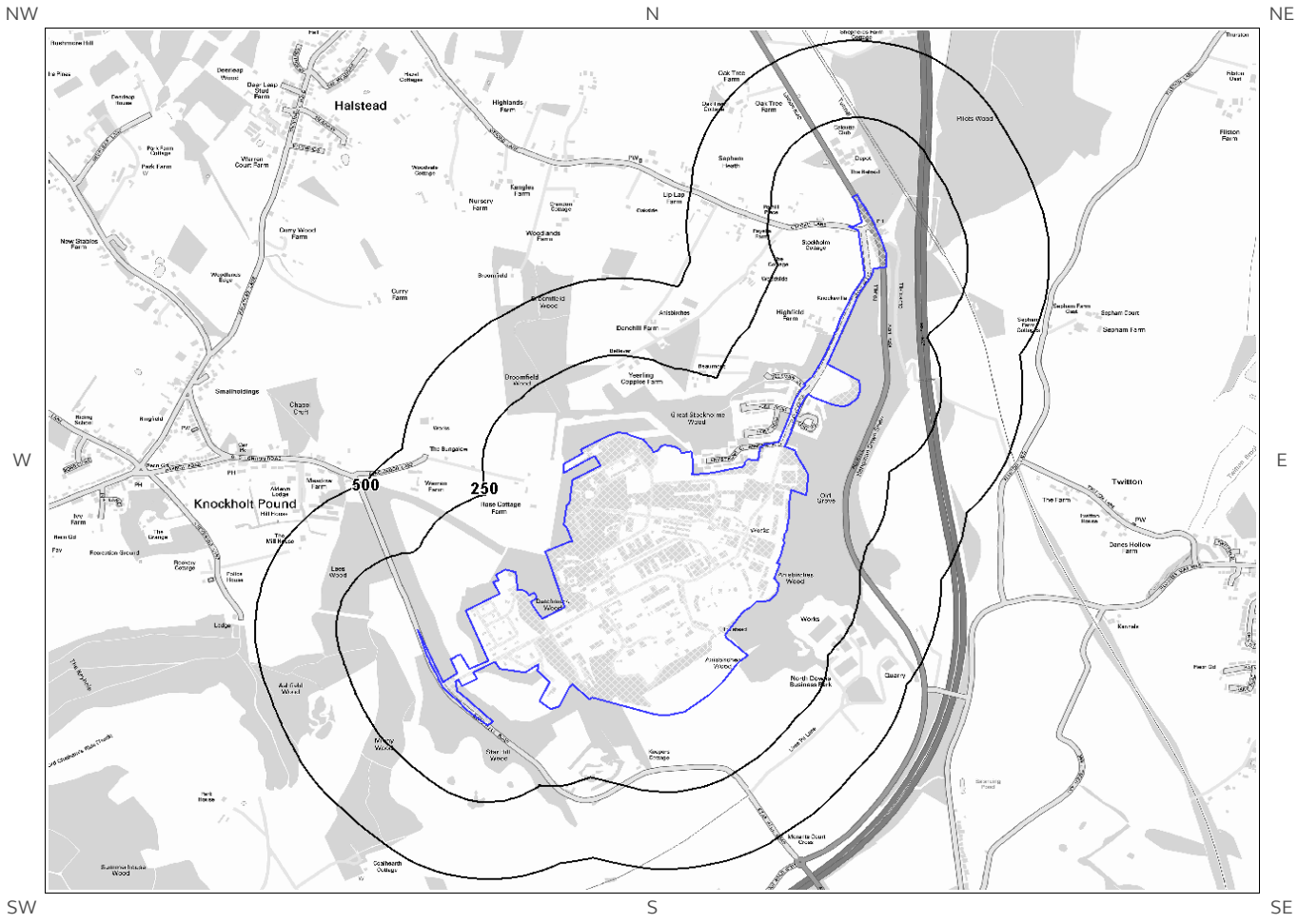
Secondary Aquifer - Undifferentiated Layers

Unproductive

Unknown (lakes and landslip)

Surface Water Abstraction Licence

6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences



Site Outline

250
500
Search Buffers (m)

Source Protection Zone 1 - Inner Catchment

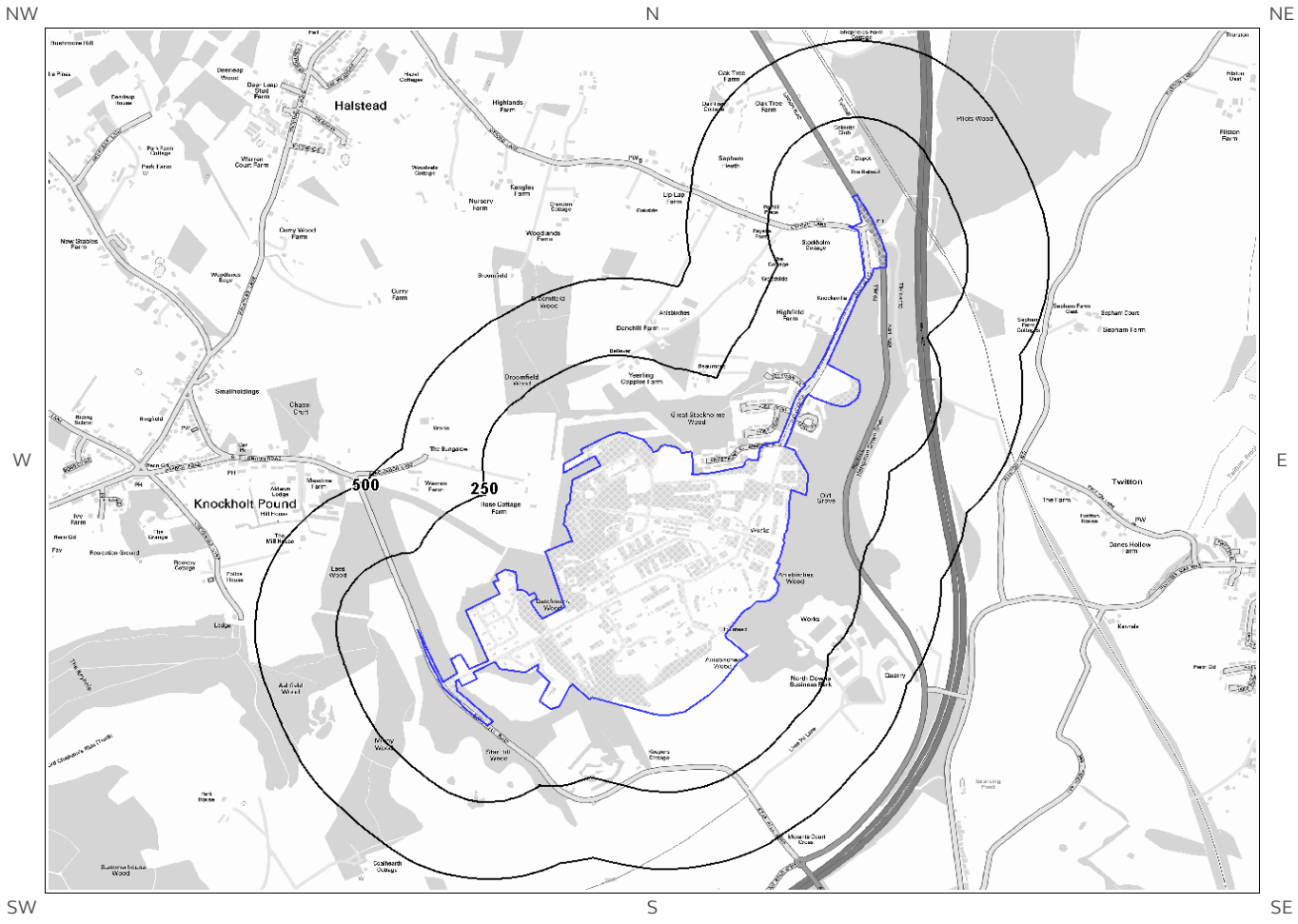
Source Protection Zone 2 - Outer Catchment

Source Protection Zone 3 - Total Catchment

Source Protection Zone 4 - Zone of Special Interest

Potable Water Abstraction Licence

6d. Hydrogeology – Source Protection Zones within confined aquifer



Site Outline

250
500
Search Buffers (m)

Source Protection Zone 1 - Inner Catchment

Source Protection Zone 2C - Outer Catchment within Confined Aquifer

Source Protection Zone 3C - Total Catchment within Confined Aquifer

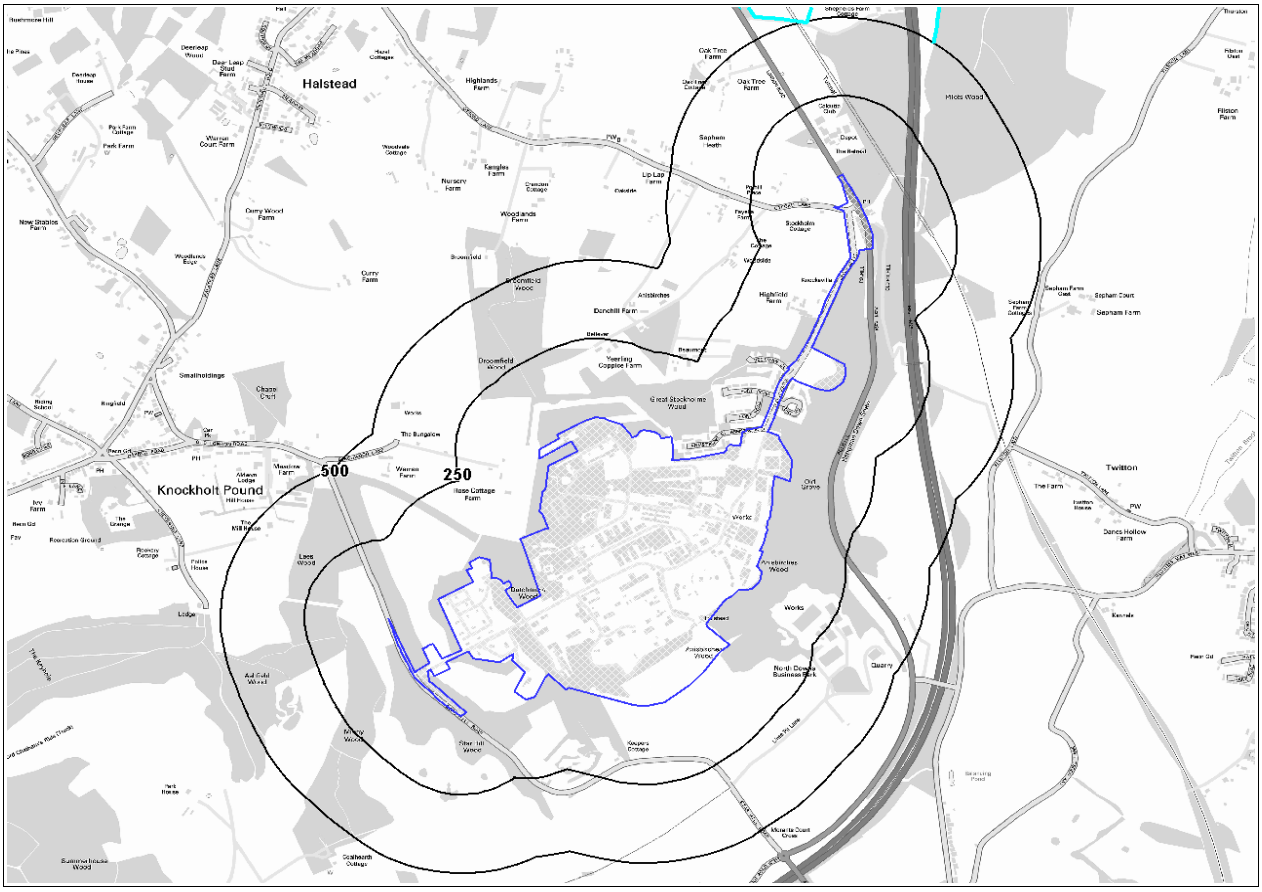
Potable Water Abstraction Licence

6e. Hydrology – Watercourse Network and River Quality

NW N NE

W E

SW S SE



Site Outline

250
500
Search Buffers (m)

Tidal River
Inland River
Underground or Elevated Tidal River
Underground or Elevated Inland River
Foreshore
General Quality Assessment: Chemistry

Canal
Underground or Elevated Canal
Lock or Flight of Locks
Lake, Reservoir, or Marsh
Drain or Transfer
General Quality Assessment: Biology

6.Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Records of strata classification within the superficial geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (6a):

ID	Distance (m)	Direction	Designation	Description
4	0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
5	0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
6	0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
1	238	NW	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
7	238	NW	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
2	397	N	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type

6.2 Aquifer within Bedrock Deposits

Records of strata classification within the bedrock geology at or in proximity to the property Yes

From 1 April 2010, the Environment Agency/Natural Resources Wales's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
2	0	On Site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
3	0	On Site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
4	238	NW	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high

ID	Distance (m)	Direction	Designation	Description
				level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers

6.3 Groundwater Abstraction Licences

Groundwater Abstraction Licences within 2000m of the study site — Identified

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details	
Not shown	1103	SW	548680 157760	Status: Active Licence No: 9/40/01/0170/G Details: General Farming & Domestic Direct Source: Southern Region Groundwater Point: TWO CATCHPITS AT CHEVENING ESTATE, SEVENOAKS Data Type: Point Name: Trustees of the Chevening Estate	Annual Volume (m^3): 11819.8 Max Daily Volume (m^3): 152.8 Original Application No: - Original Start Date: 02/05/1967 Expiry Date: - Issue No: 100 Version Start Date: 27/02/2017 Version End Date:
Not shown	1103	SW	548680 157760	Status: Active Licence No: 9/40/01/0170/G Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Household Direct Source: Southern Region Groundwater Point: TWO CATCHPITS AT CHEVENING ESTATE, SEVENOAKS Data Type: Point Name: Trustees of the Chevening Estate	Annual Volume (m^3): 11819.8 Max Daily Volume (m^3): 152.8 Original Application No: - Original Start Date: 02/05/1967 Expiry Date: - Issue No: 100 Version Start Date: 27/02/2017 Version End Date:

6.4 Surface Water Abstraction Licences

Surface Water Abstraction Licences within 2000m of the study site — Identified

The following Surface Water Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details	
Not shown	1393	E	551800 160520	Status: Historical Licence No: 9/40/01/0052/SR Details: Spray Irrigation - Direct Direct Source: Southern Region Surface Waters Point: RIVER DARENT AT PARK FARM, OTFORD Data Type: Line Name: Lhermette	Annual Volume (m^3): 15911 Max Daily Volume (m^3): 309.1 Application No: - Original Start Date: 21/02/1967 Expiry Date: - Issue No: 101 Version Start Date: 27/02/2017 Version End Date:
Not shown	1409	E	551820 160500	Status: Active Licence No: 9/40/01/0213 Details: Spray Irrigation - Storage Direct Source: Southern Region Surface Waters Point: RIVER DARENT AT SHOREHAM, KENT Data Type: Point Name: The Darenth Valley Golf Course Ltd	Annual Volume (m^3): 2273 Max Daily Volume (m^3): 164 Application No: - Original Start Date: 12/10/1980 Expiry Date: - Issue No: 100 Version Start Date: 27/02/2017 Version End Date:

6.5 Potable Water Abstraction Licences

Potable Water Abstraction Licences within 2000m of the study site — Identified

The following Potable Water Abstraction Licences records are represented as points, lines and regions on the SPZ and Potable Water Abstraction Licences Map (6c):

ID	Distance (m)	Direction	NGR	Details	
Not shown	1103	SW	548680 157760	Status: Active Licence No: 9/40/01/0170/G Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Household Direct Source: Southern Region Groundwater Point: TWO CATCHPITS AT CHEVENING ESTATE, SEVENOAKS Data Type: Point Name: Trustees of the Chevening Estate	Annual Volume (m^3): 11819.8 Max Daily Volume (m^3): 152.8 Original Application No: - Original Start Date: 02/05/1967 Expiry Date: - Issue No: 100 Version Start Date: Version End Date:

6.6 Source Protection Zones

Source Protection Zones within 500m of the study site — None identified

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

Source Protection Zones within the Confined Aquifer within 500m of the study site — None identified

Historically, Source Protection Zone maps have been focused on regulation of activities which occur at or near the ground surface, such as prevention of point source pollution and bacterial contamination of water supplies. Sources in confined aquifers were often considered to be protected from these surface pressures due to the presence of a low permeability confining layer (e.g. glacial till, clay). The increased interest in subsurface activities such as onshore oil and gas exploration, ground source heating and cooling requires protection zones for confined sources to be marked on SPZ maps where this has not already been done.

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Environment Agency/Natural Resources Wales information on groundwater vulnerability and soil leaching potential within 500m of the study site — Identified

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Major Aquifer/Intermediate Leaching Potential	I1	Soils which can possibly transmit a wide range of pollutants.
0	On Site	Major Aquifer/High Leaching Potential	H1	Soils which readily transmit liquid discharges because they are shallow or susceptible to rapid flow directly to rock, gravel or groundwater.
0	On Site	Major Aquifer/Intermediate Leaching Potential	I1	Soils which can possibly transmit a wide range of pollutants.
0	On Site	Major Aquifer/High Leaching Potential	H1	Soils which readily transmit liquid discharges because they are shallow or susceptible to rapid flow directly to rock, gravel or groundwater.
0	On Site	Major Aquifer/Intermediate Leaching Potential	I1	Soils which can possibly transmit a wide range of pollutants.
204	SE	Major Aquifer/High Leaching Potential	H1	Soils which readily transmit liquid discharges because they are shallow or susceptible to rapid flow directly to rock, gravel or groundwater.
230	SE	Major Aquifer/Intermediate Leaching Potential	I1	Soils which can possibly transmit a wide range of pollutants.
233	SE	Major Aquifer/Intermediate Leaching Potential	I1	Soils which can possibly transmit a wide range of pollutants.
238	NW	Major Aquifer/Intermediate Leaching Potential	I1	Soils which can possibly transmit a wide range of pollutants.
496	SE	Major Aquifer/Intermediate Leaching Potential	I1	Soils which can possibly transmit a wide range of pollutants.

6.9 River Quality

Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site — None identified

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Database searched and no data found.

6.10 Ordnance Survey MasterMap Water Network

Ordnance Survey MasterMap Water Network entries within 500m of the study site

This watercourse information is provided by Ordnance Survey MasterMap Water Network. The data provides a detailed centre line following the curve of the waterway precisely, so all distances provided in the report should be understood as measurements to the centreline rather than a measurement to the nearest point of the watercourse. Underground watercourses are inferred from entry and exit points so caution is advised in using these to indicate precise locations of underground watercourses when planning site investigation and development.

The following Ordnance Survey MasterMap Water Network records are represented on the Hydrology Map (6e):

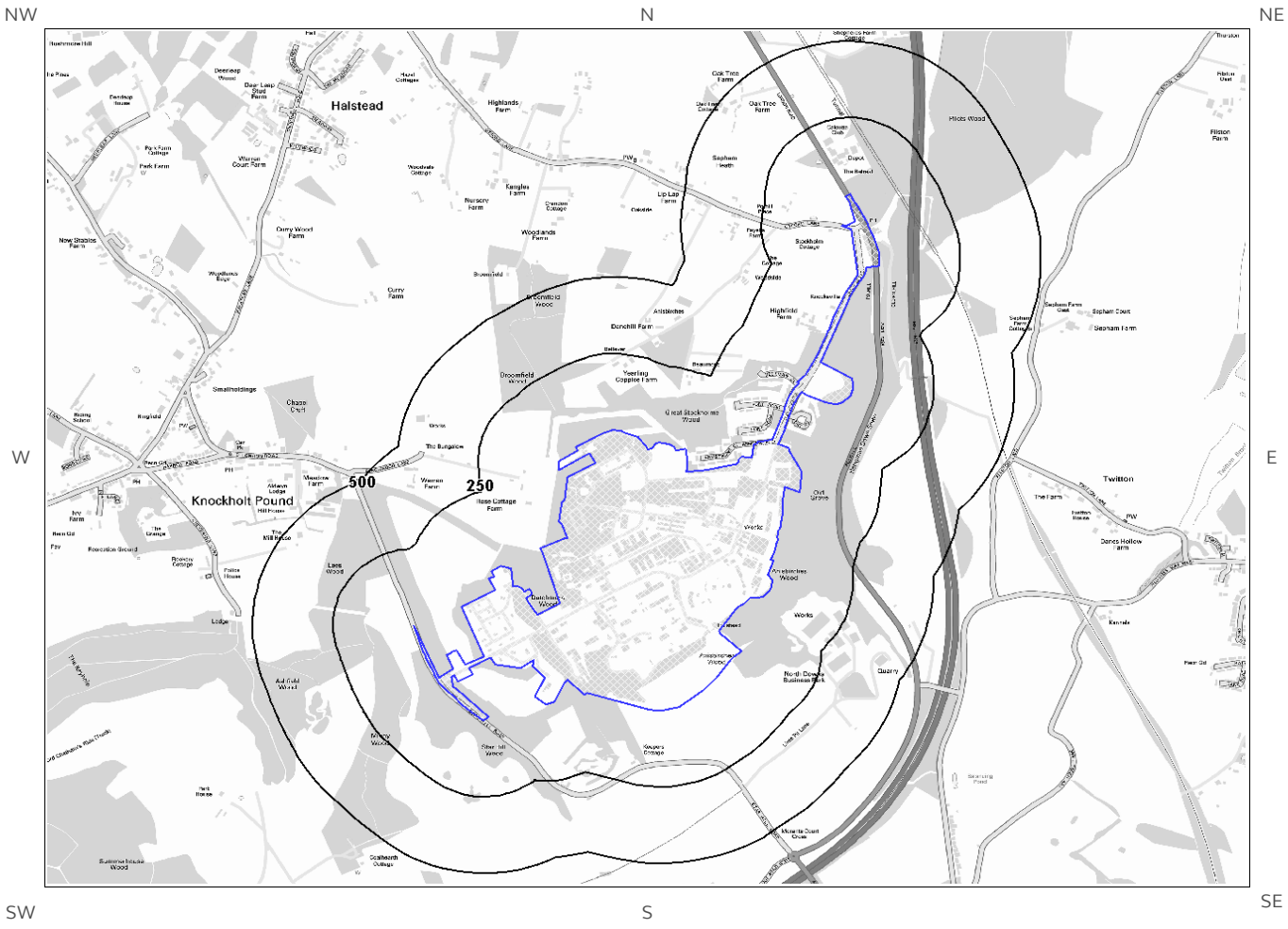
ID	Distance/ Direction	Name	Type of Watercourse	Additional Details
1	495 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	495 N	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
2	497 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided
Not shown	497 NE	Not Specified	Inland river not influenced by normal tidal action.	Catchment Area: Thames Relationship to Ground Level: On ground surface Permanence: Watercourse contains water year round (in normal conditions) Average Width in Watercourse Section (m): Not Provided

6.11 Surface Water Features

Surface water features within 250m of the study site — None identified

Database searched and no data found.

7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



Site Outline

100
250
Search Buffers (m)

Zone 2 Floodplain

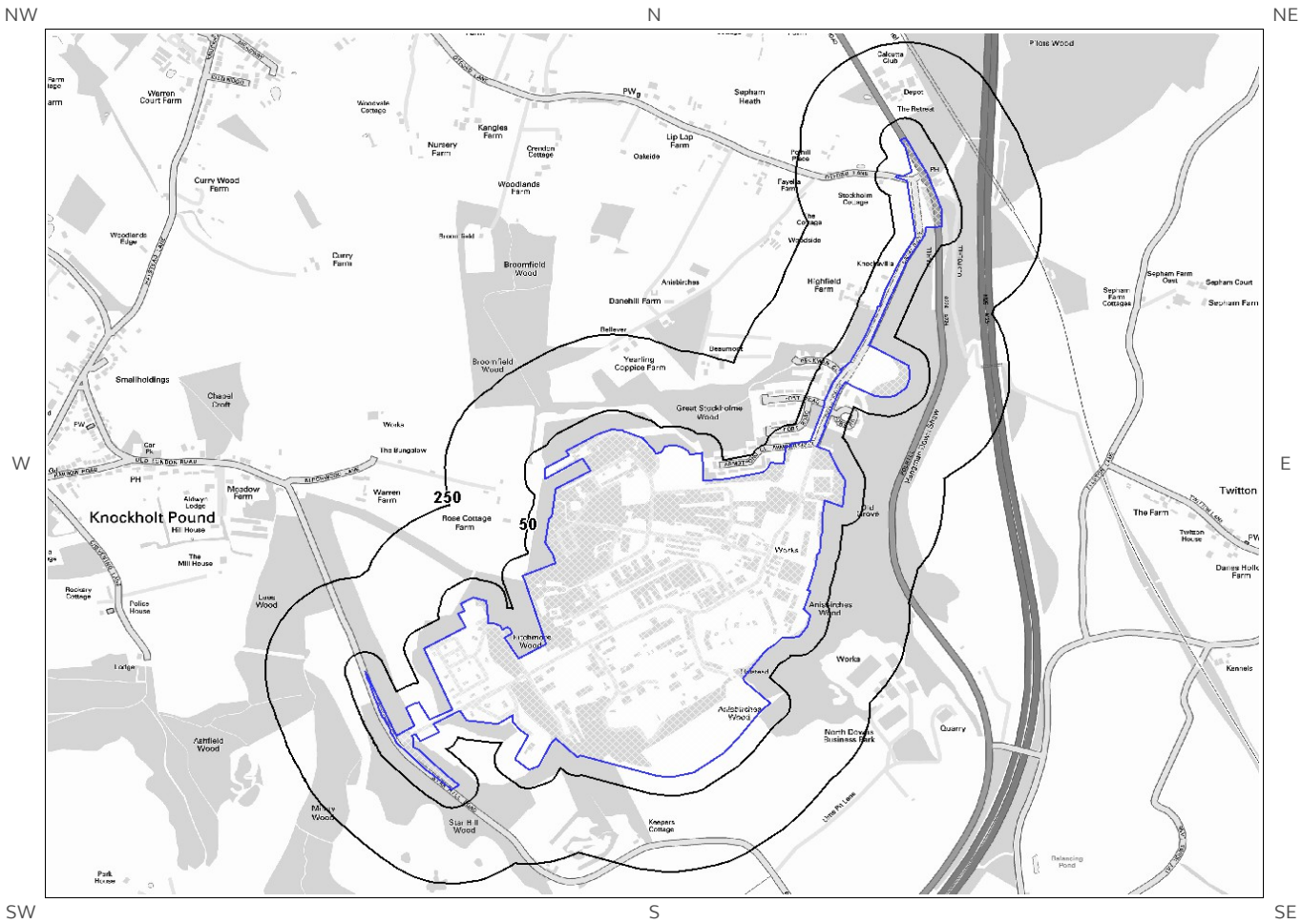
Zone 3 Floodplain

Flood Defences

Area used for Flood Storage

Area Benefiting from Flood Defences

7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



7 Flooding

7.1 River and Coastal Zone 2 Flooding

Environment Agency/Natural Resources Wales Zone 2 floodplain within 250m — None identified

Environment Agency/Natural Resources Wales Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 7a – Flood Map for Planning:

Database searched and no data found.

7.2 River and Coastal Zone 3 Flooding

Environment Agency/Natural Resources Wales Zone 3 floodplain within 250m — None identified

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 7a – Flood Map for Planning.

Database searched and no data found.

7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating

Highest risk of flooding onsite — Very Low

The Environment Agency/Natural Resources Wales RoFRaS database provides an indication of river and coastal flood risk at a national level on a 50m grid with the flood rating at the centre of the grid calculated and given above. The data considers the probability that the flood defences will overtop or breach by considering their location, type, condition and standard of protection.

RoFRaS data for the study site indicates the property is in an area with a Very Low (less than 1 in 1000) chance of flooding in any given year.

7.4 Flood Defences

Flood Defences within 250m of the study site — None identified

Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Areas benefiting from Flood Defences within 250m of the study site — None identified

7.6 Areas benefiting from Flood Storage

Areas used for Flood Storage within 250m of the study site	None identified

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site	Identified
Clearwater Flooding or Superficial Deposits Flooding	Clearwater Flooding

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

7.7.2 Highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions

Limited potential

Where limited potential for groundwater flooding to occur is indicated, this means that although given the geological conditions there may be a groundwater flooding hazard, unless other relevant information, e.g. records of previous flooding, suggests groundwater flooding has occurred before in this area, you need take no further action in relation to groundwater flooding hazard.

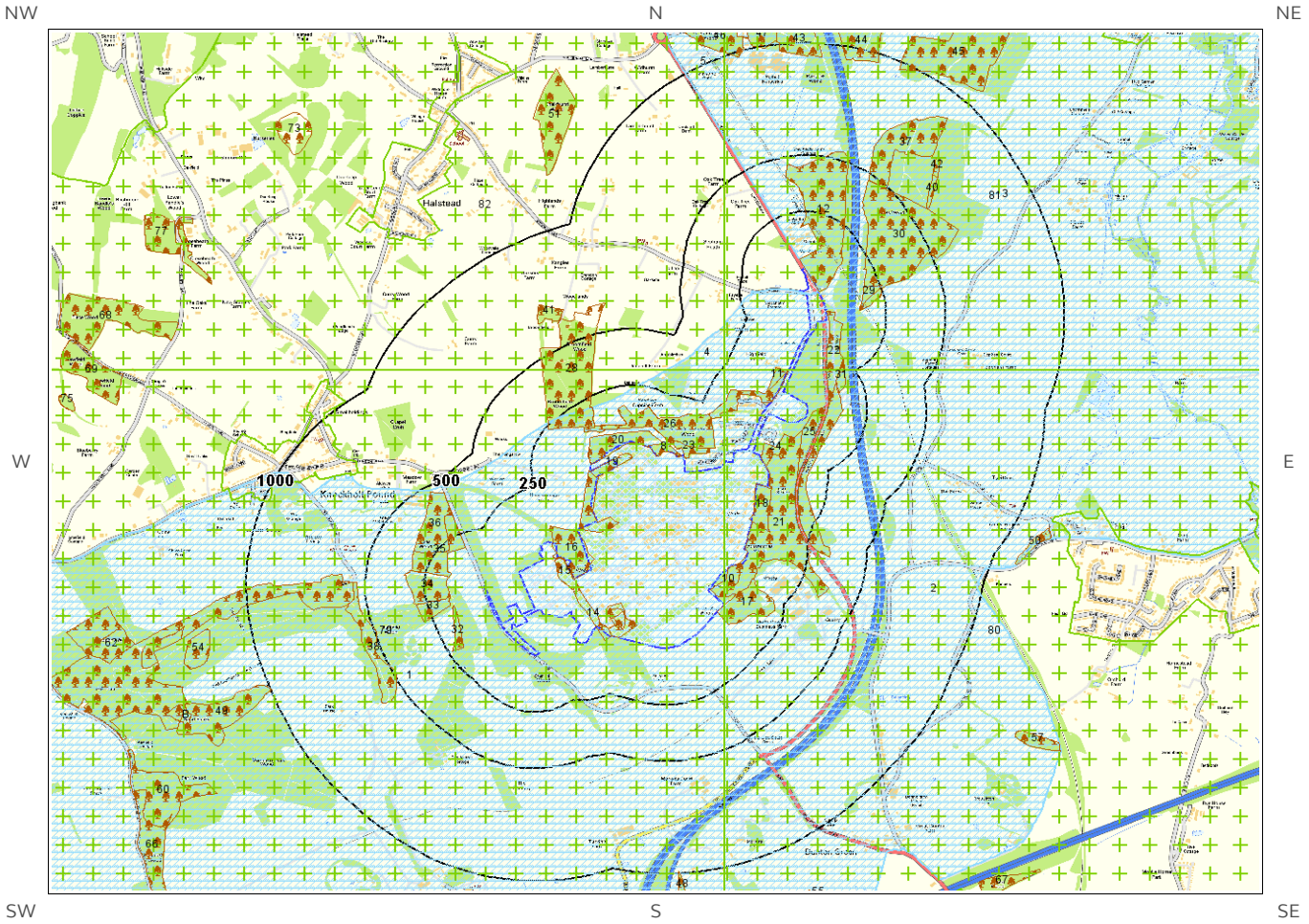
7.8 Groundwater Flooding Confidence Areas

British Geological Survey confidence rating in this result	High

Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.

8. Designated Environmentally Sensitive Sites Map



Site Outline

100
250
Search Buffers (m)

AONB

National Park

SSSI

Special Protection Areas

Nitrate Vulnerable Zones

Green Belt

Environmentally Sensitive Areas

Special Areas of Conservation

World Heritage Sites

Nitrate Sensitive Areas

Ancient Woodland

National Nature Reserve

Local Nature Reserves

Ramsar Sites

8. Designated Environmentally Sensitive Sites

Designated Environmentally Sensitive Sites within 2000m of the study site	Identified

8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:

0

Database searched and no data found.

8.2 Records of National Nature Reserves (NNR) within 2000m of the study site:

0

Database searched and no data found.

8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:

0

Database searched and no data found.

8.4 Records of Special Protection Areas (SPA) within 2000m of the study site:

0

Database searched and no data found.

8.5 Records of Ramsar sites within 2000m of the study site:

0

Database searched and no data found.

8.6 Records of Ancient Woodland within 2000m of the study site:

73

The following records of Designated Ancient Woodland provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
6	0	On Site	UNKNOWN	Ancient and Semi-Natural Woodland
7	0	On Site	UNKNOWN	Ancient and Semi-Natural Woodland
8	0	On Site	UNKNOWN	Ancient and Semi-Natural Woodland
9	0	On Site	UNKNOWN	Ancient and Semi-Natural Woodland
10	0	On Site	UNKNOWN	Ancient and Semi-Natural Woodland
11	0	On Site	UNKNOWN	Ancient and Semi-Natural Woodland
12	0	On Site	UNKNOWN	Ancient and Semi-Natural Woodland
13	0	On Site	UNKNOWN	Ancient and Semi-Natural Woodland
14	0	On Site	UNKNOWN	Ancient and Semi-Natural Woodland
15	0	On Site	UNKNOWN	Ancient and Semi-Natural Woodland
16	0	On Site	UNKNOWN	Ancient and Semi-Natural Woodland
17	0	On Site	GOLDEN GROVE/BROADHAMS/RUSSETS/BROADHAM FIR PLANTATION/ANIS	Ancient Replanted Woodland
18	0	On Site	GOLDEN GROVE/BROADHAMS/RUSSETS/BROADHAM FIR PLANTATION/ANIS	Ancient Replanted Woodland
19	0	On Site	UNKNOWN	Ancient Replanted Woodland
20	0	On Site	UNKNOWN	Ancient Replanted Woodland
21	0	On Site	GOLDEN GROVE/BROADHAMS/RUSSETS/BROADHAM FIR PLANTATION/ANIS	Ancient and Semi-Natural Woodland
22	0	E	UNKNOWN	Ancient and Semi-Natural Woodland
23	0	E	UNKNOWN	Ancient and Semi-Natural Woodland
24	1	NE	UNKNOWN	Ancient and Semi-Natural Woodland
25	14	SE	GOLDEN GROVE/BROADHAMS/RUSSETS/BROADHAM FIR PLANTATION/ANIS	Ancient and Semi-Natural Woodland
26	46	N	UNKNOWN	Ancient Replanted Woodland
27	77	E	UNKNOWN	Ancient and Semi-Natural Woodland
28	125	NW	UNKNOWN	Ancient and Semi-Natural Woodland
29	138	E	UNKNOWN	Ancient and Semi-Natural Woodland
30	139	E	UNKNOWN	Ancient and Semi-Natural Woodland
31	143	E	UNKNOWN	Ancient and Semi-Natural Woodland
32	146	W	UNKNOWN	Ancient and Semi-Natural Woodland
33	147	W	UNKNOWN	Ancient and Semi-Natural Woodland

ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
34	147	W	UNKNOWN	Ancient Replanted Woodland
35	149	W	UNKNOWN	Ancient and Semi-Natural Woodland
36	217	NW	LEES/ASHFIELD/MINNY WOOD	Ancient Replanted Woodland
37	473	NE	UNKNOWN	Ancient Replanted Woodland
38	490	SW	UNKNOWN	Ancient and Semi-Natural Woodland
39A	548	W	ASH PLATT/SUNDRIDGE HILL WOODS	Ancient and Semi-Natural Woodland
40	575	NE	UNKNOWN	Ancient and Semi-Natural Woodland
41	611	NW	UNKNOWN	Ancient and Semi-Natural Woodland
42	679	NE	UNKNOWN	Ancient Replanted Woodland
43	939	N	UNKNOWN	Ancient Replanted Woodland
44	942	N	ANDREWS WOOD	Ancient Replanted Woodland
45	966	NE	MEENFIELD WOOD	Ancient Replanted Woodland
46	976	N	UNKNOWN	Ancient and Semi-Natural Woodland
47	990	N	UNKNOWN	Ancient and Semi-Natural Woodland
48	991	S	UNKNOWN	Ancient and Semi-Natural Woodland
49	996	W	UNKNOWN	Ancient and Semi-Natural Woodland
50	1088	SE	UNKNOWN	Ancient and Semi-Natural Woodland
51	1142	NW	CHALKHURST WOOD	Ancient and Semi-Natural Woodland
Not shown	1167	N	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1167	N	UNKNOWN	Ancient Replanted Woodland
54	1174	W	ASH PLATT/SUNDRIDGE HILL WOODS	Ancient and Semi-Natural Woodland
55	1212	SE	UNKNOWN	Ancient and Semi-Natural Woodland
56A	1277	W	ASH PLATT/SUNDRIDGE HILL WOODS	Ancient Replanted Woodland
57	1351	SE	DARNETS SPRING	Ancient and Semi-Natural Woodland
58B	1353	W	UNKNOWN	Ancient Replanted Woodland
59B	1366	W	ASH PLATT/SUNDRIDGE HILL WOODS	Ancient Replanted Woodland
60	1408	SW	ASH PLATT/SUNDRIDGE HILL WOODS	Ancient and Semi-Natural Woodland
Not shown	1453	S	UNKNOWN	Ancient and Semi-Natural Woodland
62	1494	W	ASH PLATT/SUNDRIDGE HILL WOODS	Ancient Replanted Woodland
Not shown	1513	S	CHEVENING WOOD	Ancient and Semi-Natural Woodland
Not shown	1531	S	UNKNOWN	Ancient and Semi-Natural Woodland

ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
Not shown	1587	S	RAKEFIELD WOOD	Ancient and Semi-Natural Woodland
66	1619	SW	ASH PLATT/SUNDRIDGE HILL WOODS	Ancient Replanted Woodland
67	1620	SE	UNKNOWN	Ancient and Semi-Natural Woodland
68	1711	NW	LATTICE COPPICE	Ancient and Semi-Natural Woodland
69	1743	NW	LATTICE COPPICE	Ancient and Semi-Natural Woodland
70	1764	NW	CLOSE HEATH WOOD	Ancient and Semi-Natural Woodland
Not shown	1818	S	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1841	N	UNKNOWN	Ancient Replanted Woodland
73	1852	NW	DEEERLEAP WOOD-NORTH	Ancient and Semi-Natural Woodland
Not shown	1859	N	UNKNOWN	Ancient and Semi-Natural Woodland
75	1892	NW	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1920	NE	UNKNOWN	Ancient and Semi-Natural Woodland
77	1952	NW	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1998	N	CONEYEARTH/PASCALLS/HOLLOWS WOODS	Ancient and Semi-Natural Woodland

8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:

0

Database searched and no data found.

8.8 Records of World Heritage Sites within 2000m of the study site:

0

Database searched and no data found.

8.9 Records of Environmentally Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:

5

The following Area of Outstanding Natural Beauty (AONB) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	AONB/NSA Name	Data Source
1	0	On Site	Kent Downs	Natural England
2	0	On Site	Kent Downs	Natural England
3	0	On Site	Kent Downs	Natural England
4	238	NW	Kent Downs	Natural England
5	674	NW	Kent Downs	Natural England

8.11 Records of National Parks (NP) within 2000m of the study site:

0

Database searched and no data found.

8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:

0

Database searched and no data found.

8.14 Records of Green Belt land within 2000m of the study site:

4

Green Belt data contains Ordnance Survey data © Crown copyright and database right [2015].

ID	Distance	Direction	Green Belt Name	Local Authority Name
79	0	On Site	London Area Greenbelt	Sevenoaks
80	0	On Site	London Area Greenbelt	Sevenoaks
81	0	On Site	London Area Greenbelt	Sevenoaks
82	238	NW	London Area Greenbelt	Sevenoaks

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a Groundsure Geo Insight, available from our website. The following information has been found:

9.1.1 Shrink Swell

Maximum Shrink-Swell* hazard rating identified on the study site — Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
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.

9.1.2 Landslides

Maximum Landslide* hazard rating identified on the study site — Moderate

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
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.

9.1.3 Soluble Rocks

Maximum Soluble Rocks* hazard rating identified on the study site — Moderate

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
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

* This indicates an automatically generated 50m buffer and site.

Hazard
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.

9.1.4 Compressible Ground

Maximum Compressible Ground* hazard rating identified on the study site — Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
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.

9.1.5 Collapsible Rocks

Maximum Collapsible Rocks* hazard rating identified on the study site — Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
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.

9.1.6 Running Sand

Maximum Running Sand** hazard rating identified on the study site — Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
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.

* This indicates an automatically generated 50m buffer and site.

9.2 Radon

9.2.1 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 site 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.

9.2.2 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.

10. Mining

10.1 Coal Mining

Coal mining areas within 75m of the study site — None identified

Database searched and no data found.

10.2 Non-Coal Mining

Non-Coal Mining areas within 50m of the study site boundary — Identified

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

Distance (m)	Direction	Name	Commodity	Assessment of likelihood
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
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
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

Past underground mine workings are uncommon, localised and of limited area. The rock types present in this area are such that minor mineral veins may be present within them on which it is possible that there have been attempts to work these by underground methods and/or it is possible that small scale underground extraction of other materials may have occurred. All such occurrences are likely to be restricted in size and infrequent. It should be noted, however, that there is always the possibility of the existence of other sub-surface excavations, such as wells, cess pits, follies, air raid shelters/bunkers and other military structures etc. that could affect surface ground stability but which are outside the scope of this dataset. However, if in a coalfield area you should still consider a Coal Authority mining search for the area of interest.

10.3 Brine Affected Areas

Brine affected areas within 75m of the study site Guidance: No Guidance Required.	None identified

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:
Web:**www.bgs.ac.uk**
BGS Geological Hazards Reports and general geological enquiries:
enquiries@bgs.ac.uk

Environment Agency
National Customer Contact Centre, PO Box 544
Rotherham, S60 1BY
Tel: 03708 506 506
Web: **www.environment-agency.gov.uk**
Email: enquiries@environment-agency.gov.uk

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

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

Ordnance Survey
Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505

Local Authority
Authority: Sevenoaks District Council
Phone: 01732 227 000
Web: http://www.sevenoaks.gov.uk/
Address: Council Offices, Argyle Road, Sevenoaks, Kent, TN13 1HG

Gemapping PLC
Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444

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

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

Groundsure
LOCATION INTELLIGENCE

Contents Page

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

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

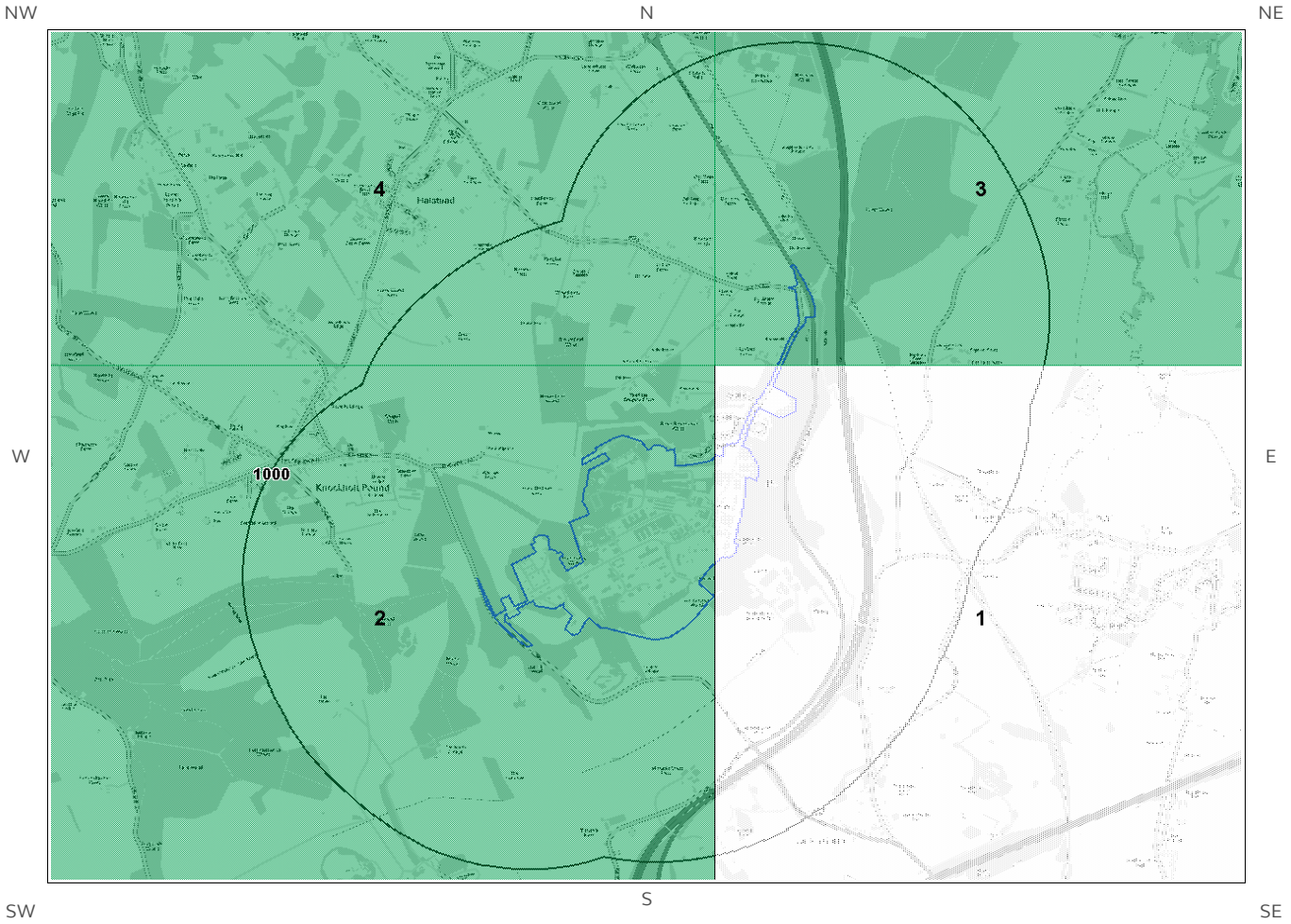
Section 6: Natural Ground Subsidence	On-site
6.1 Shrink-Swell Clay	Low
6.2 Landslides	Moderate
6.3 Ground Dissolution of Soluble Rocks	Moderate
6.4 Compressible Deposits	Negligible
6.5 Collapsible Deposits	Very Low
6.5 Running Sand	Negligible

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

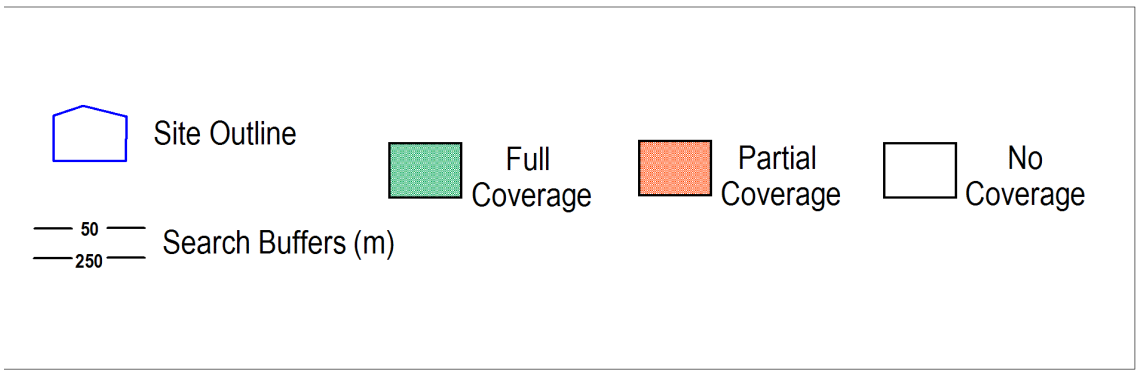
Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250
8 Records of Background Soil Chemistry	24	9	0

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



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

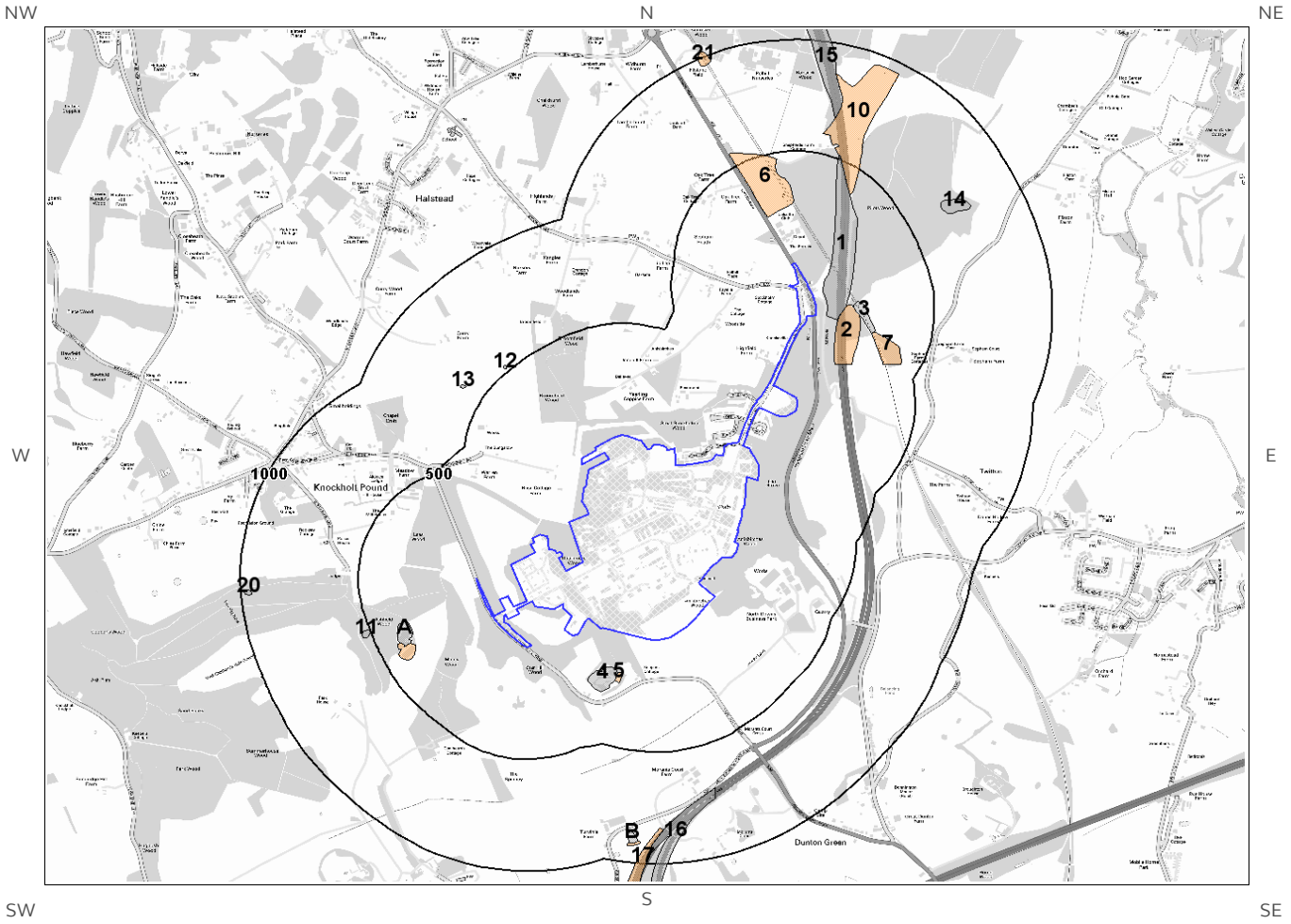
Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not 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

Site Outline

500
1000
Search Buffers (m)

Made Ground (undivided)

Worked Ground (undivided)

Infilled Ground

Disturbed Ground (undivided)

Landscaped Ground (undivided)

Reclaimed Ground

1. Geology 1:10,000 scale

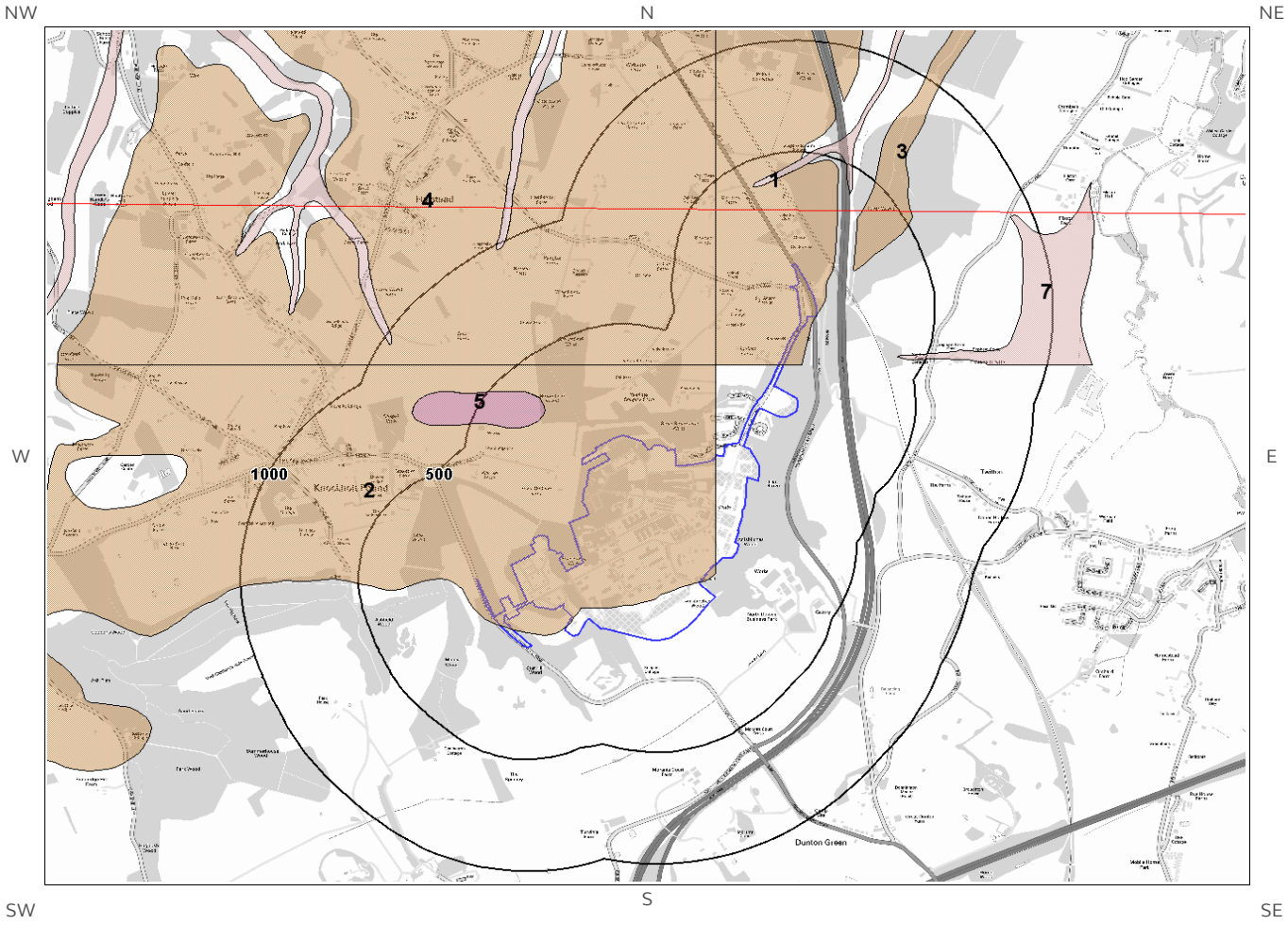
1.1 Artificial Ground

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

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?

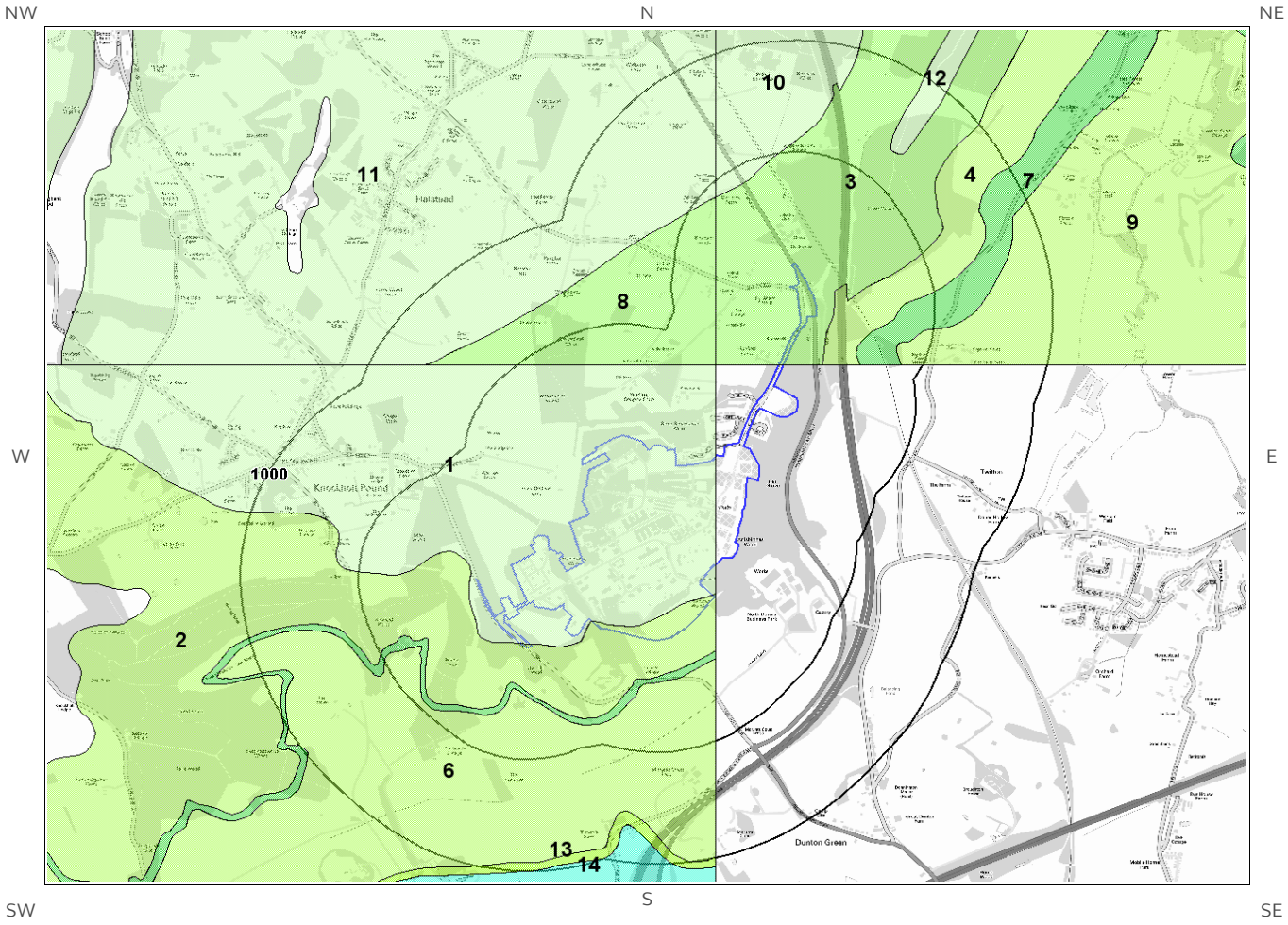
No

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

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

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

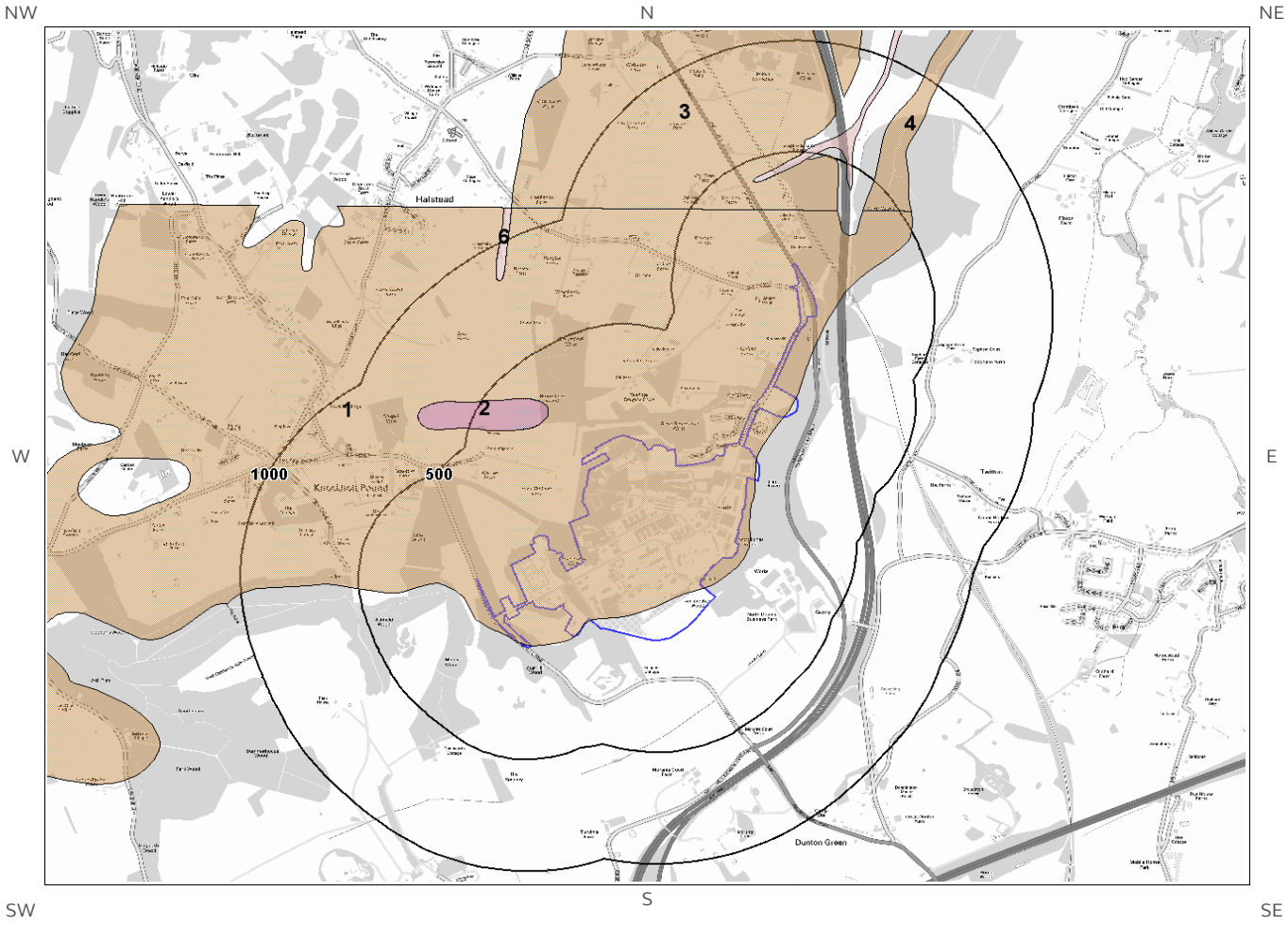
ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	246.0	N	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
2	294.0	NE	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID
3	400.0	NE	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

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)



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.

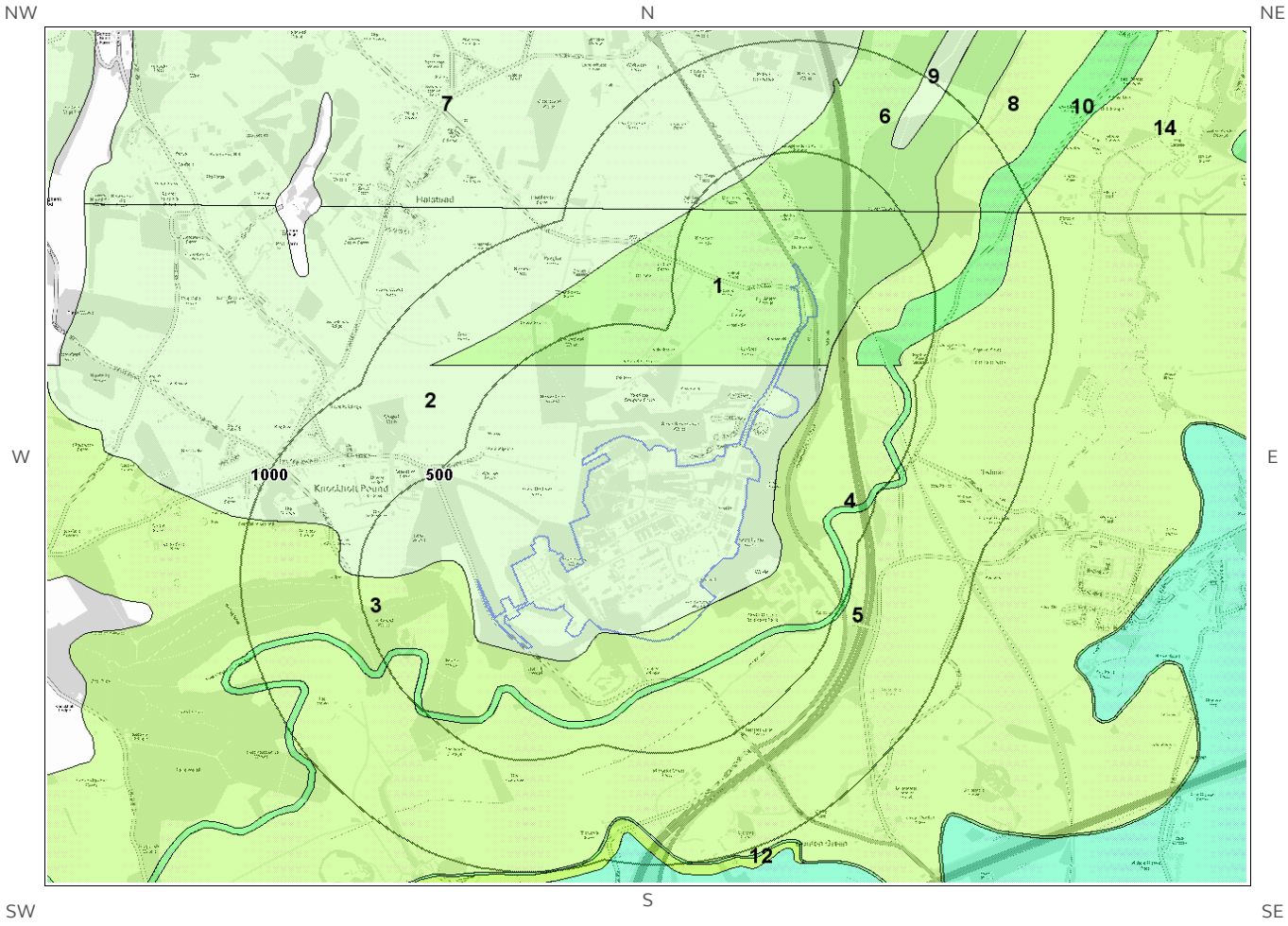
This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

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)



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.

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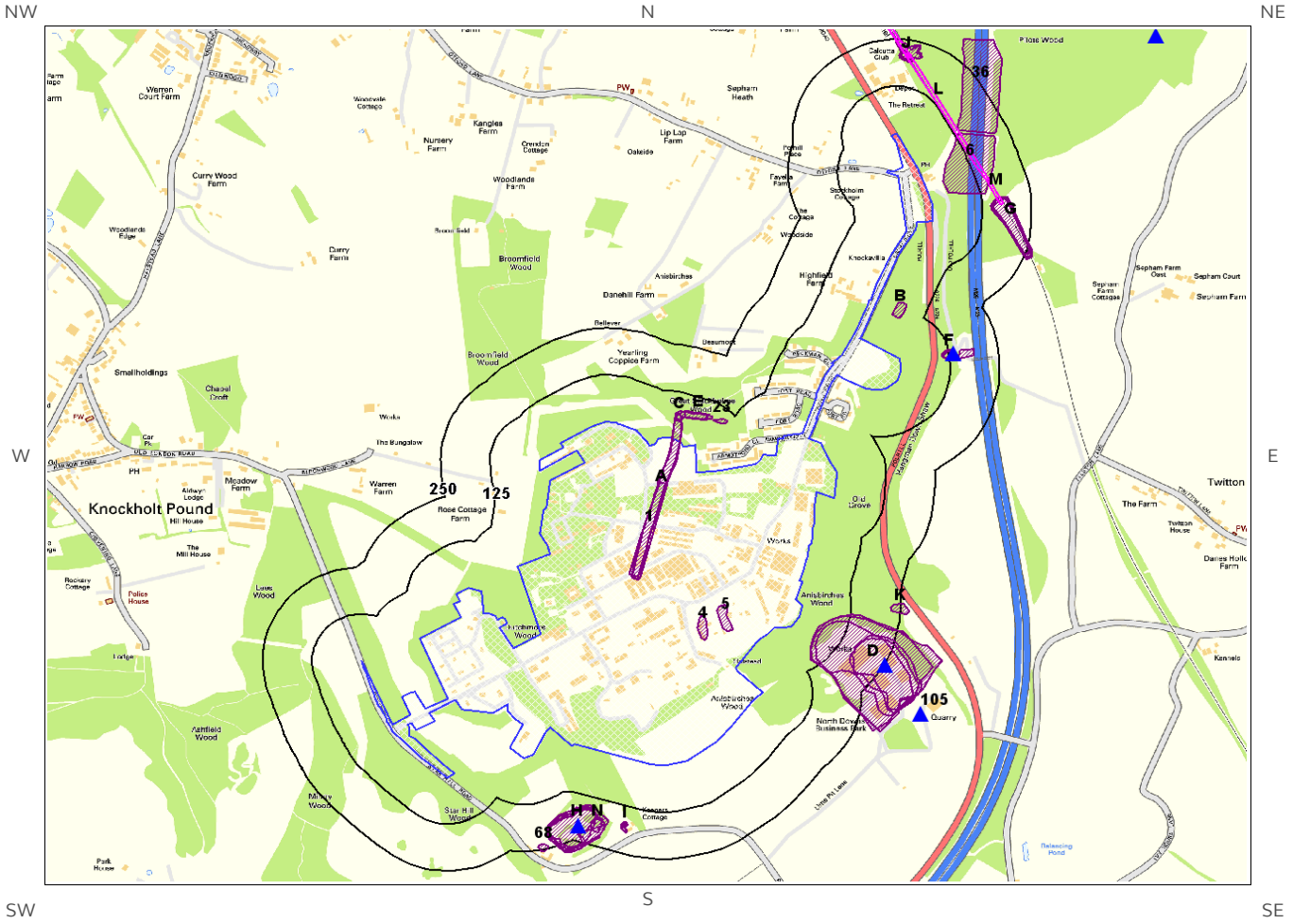
4 Ground Workings map



Ground Workings Legend

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

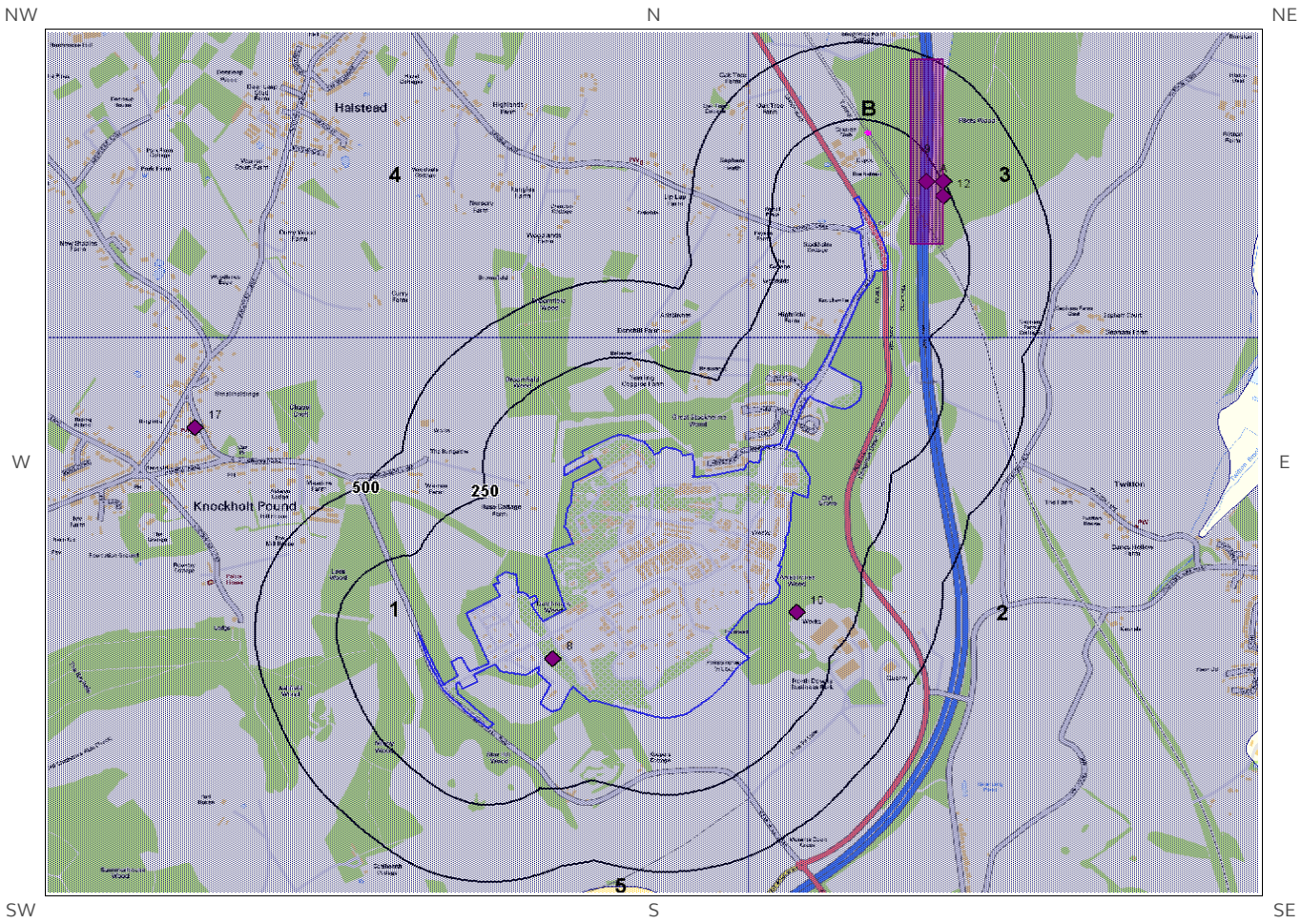
This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

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

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

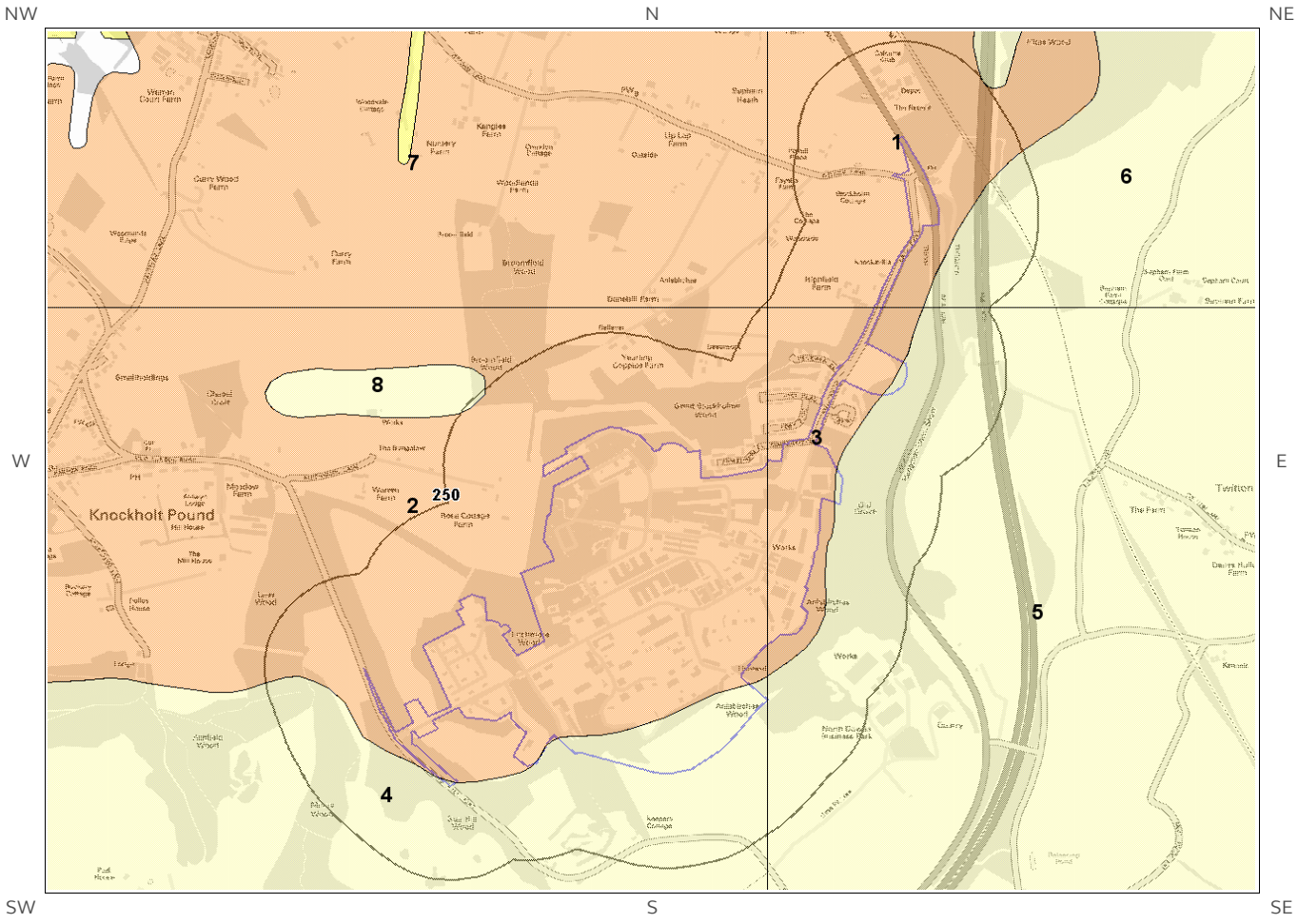
This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

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

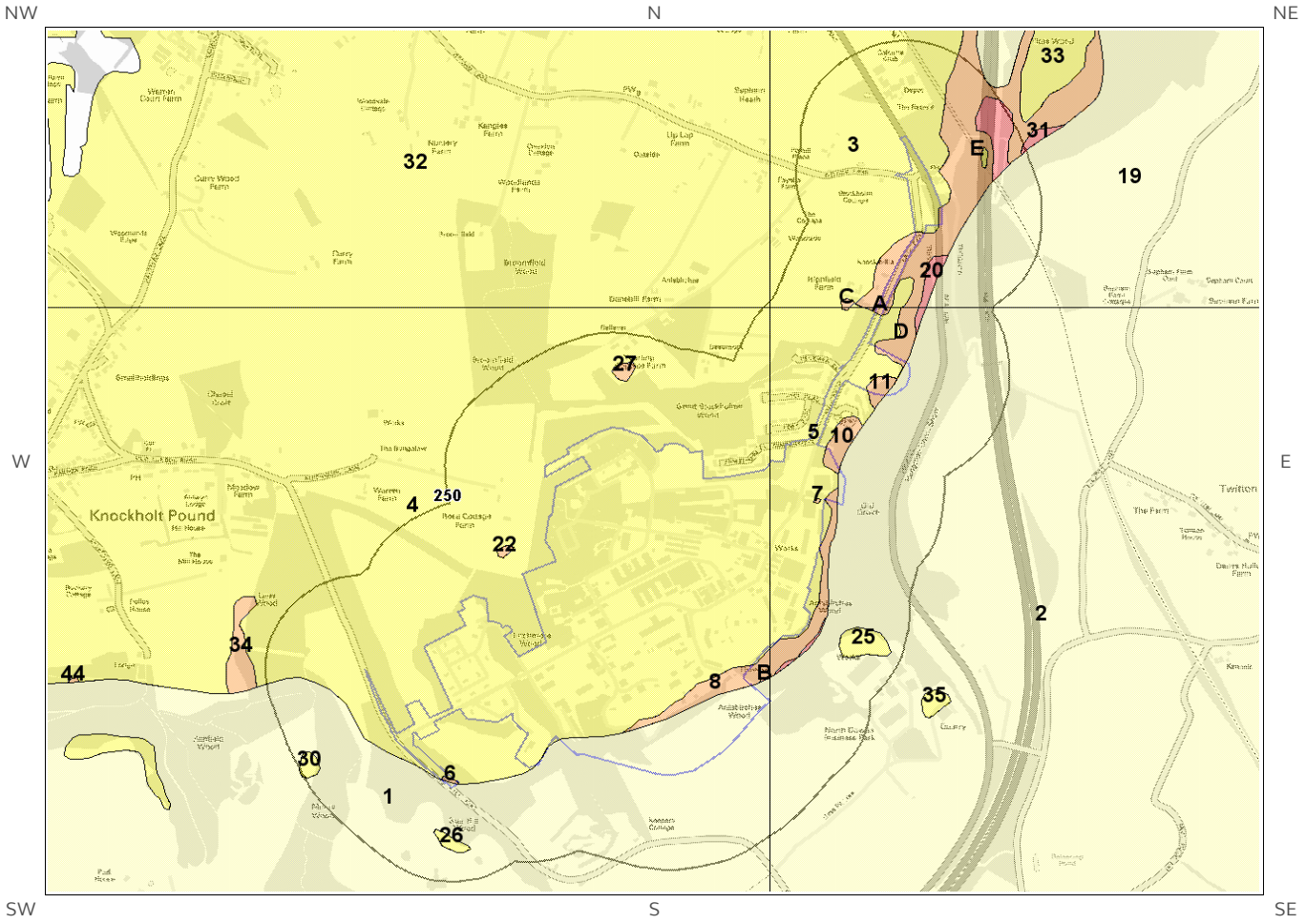
Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

Low
Moderate
High

6.2 Landslides map



Landslides Legend

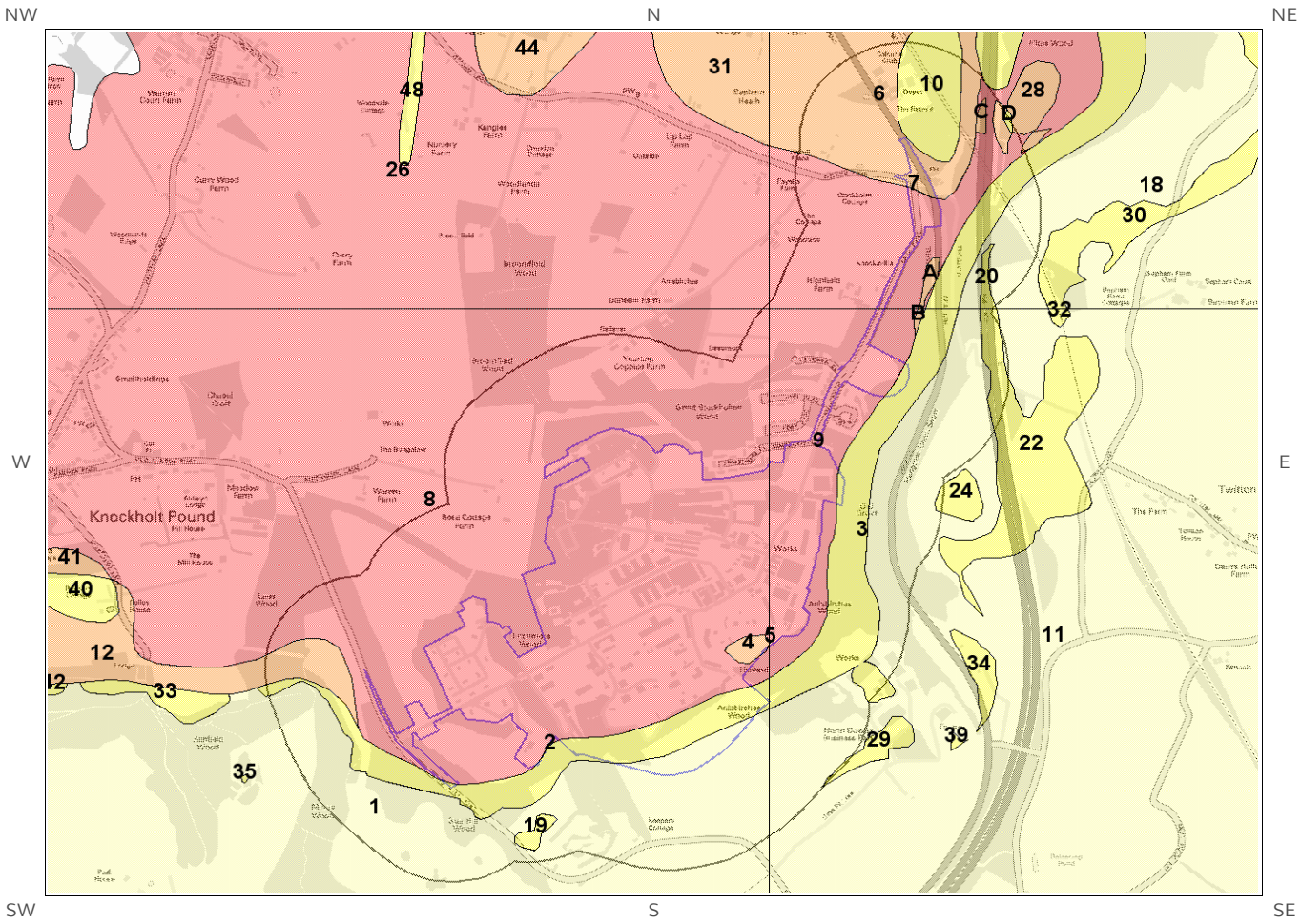
Site Outline

125
250
Search Buffers (m)

No Data / Null
Negligible
Very Low

Low
Moderate
High

6.3 Ground Dissolution of Soluble Rocks map



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Ground Dissolution Soluble Rocks Legend

Site Outline

125
250
Search Buffers (m)

No Data / Null

Negligible

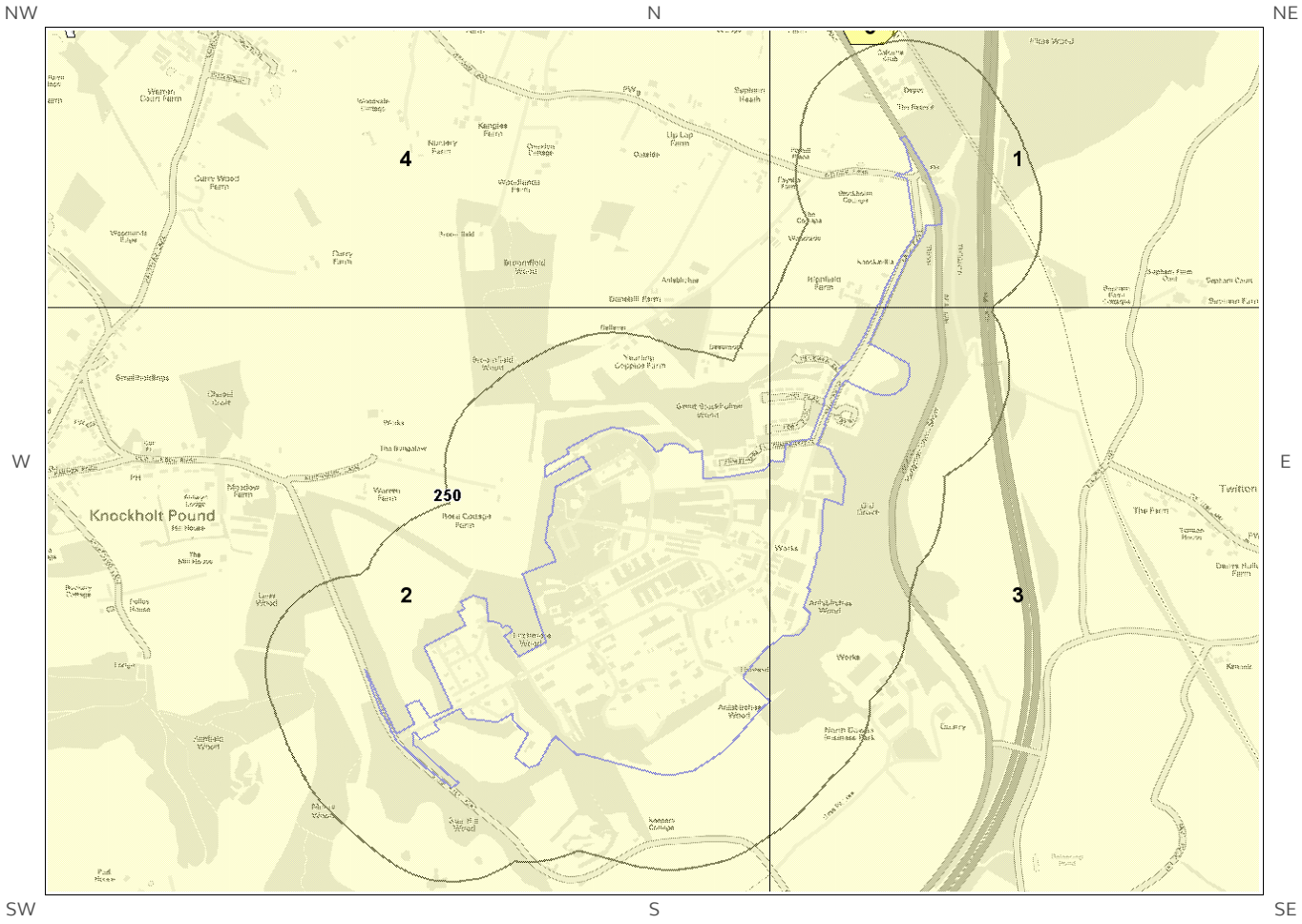
Very Low

Low

Moderate

High

6.4 Compressible Deposits map



Compressible Deposits Legend

Site Outline

125
250
Search Buffers (m)

No Data / Null

Negligible

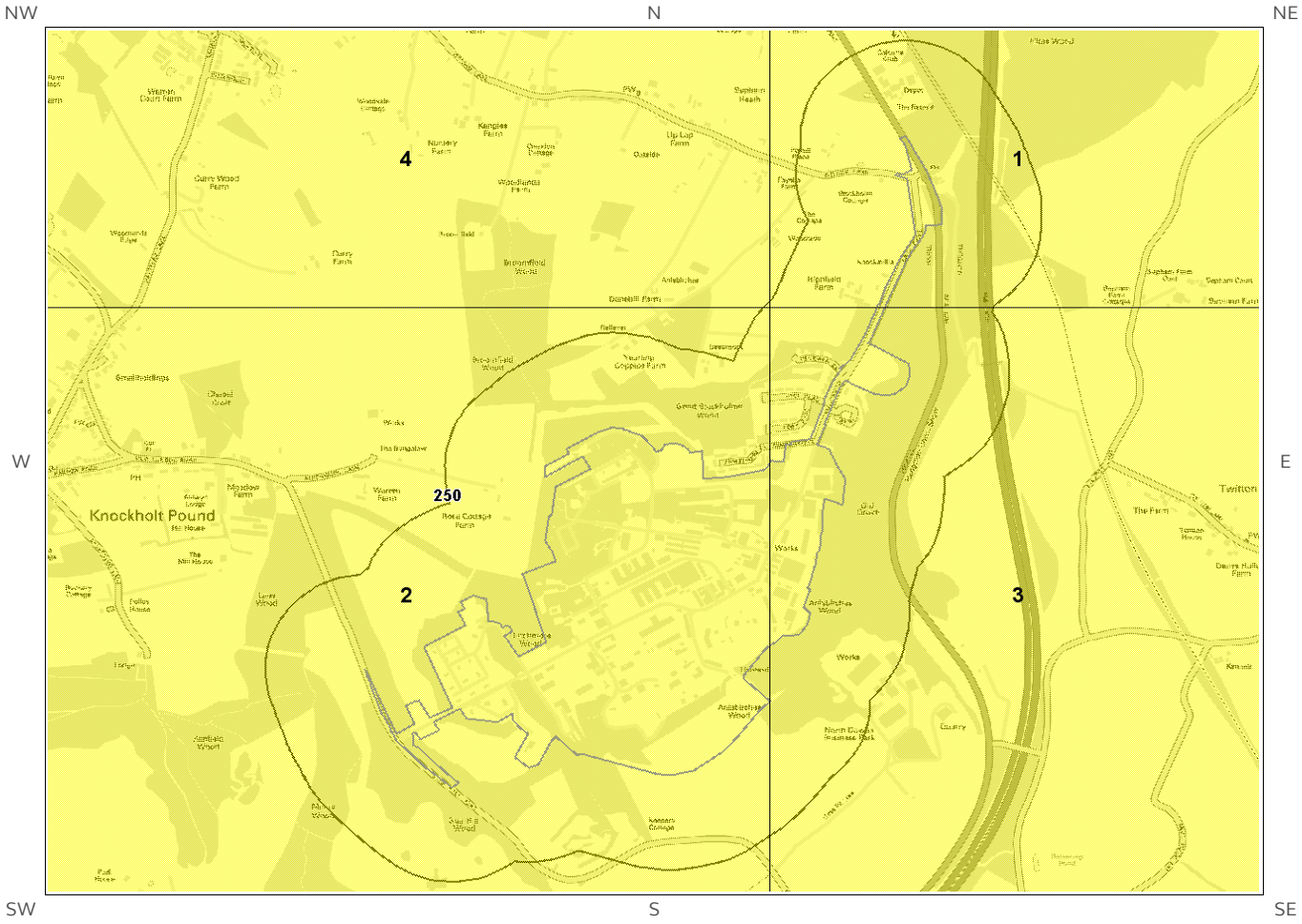
Very Low

Low

Moderate

High

6.5 Collapsible Deposits map



Collapsible Deposits Legend

Site Outline

125
250
Search Buffers (m)

No Data / Null

Negligible

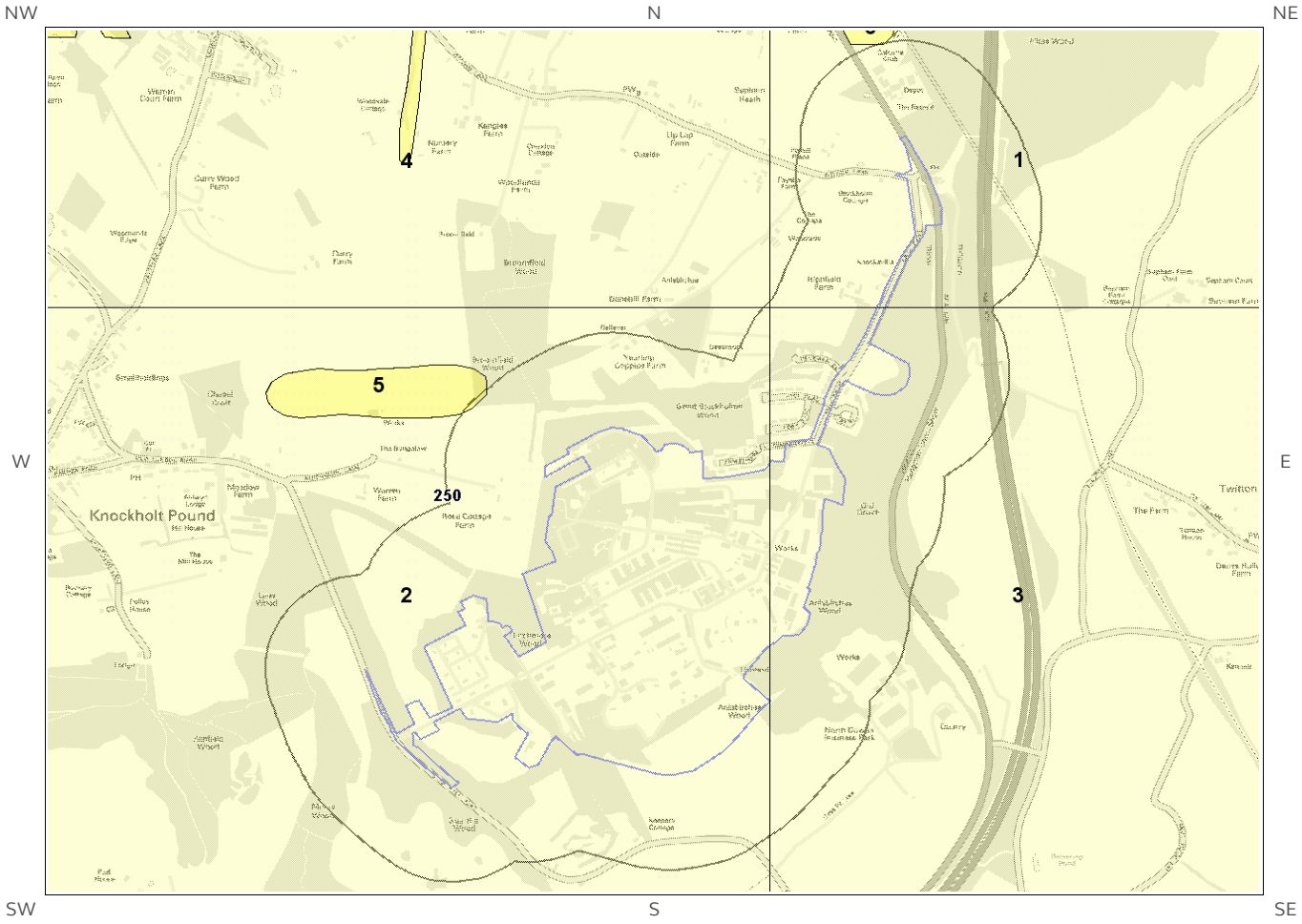
Very Low

Low

Moderate

High

6.6 Running Sand map



Running Sand Legend

Site Outline

125
250
Search Buffers (m)

No Data / Null

Negligible

Very Low

Low

Moderate

High

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:

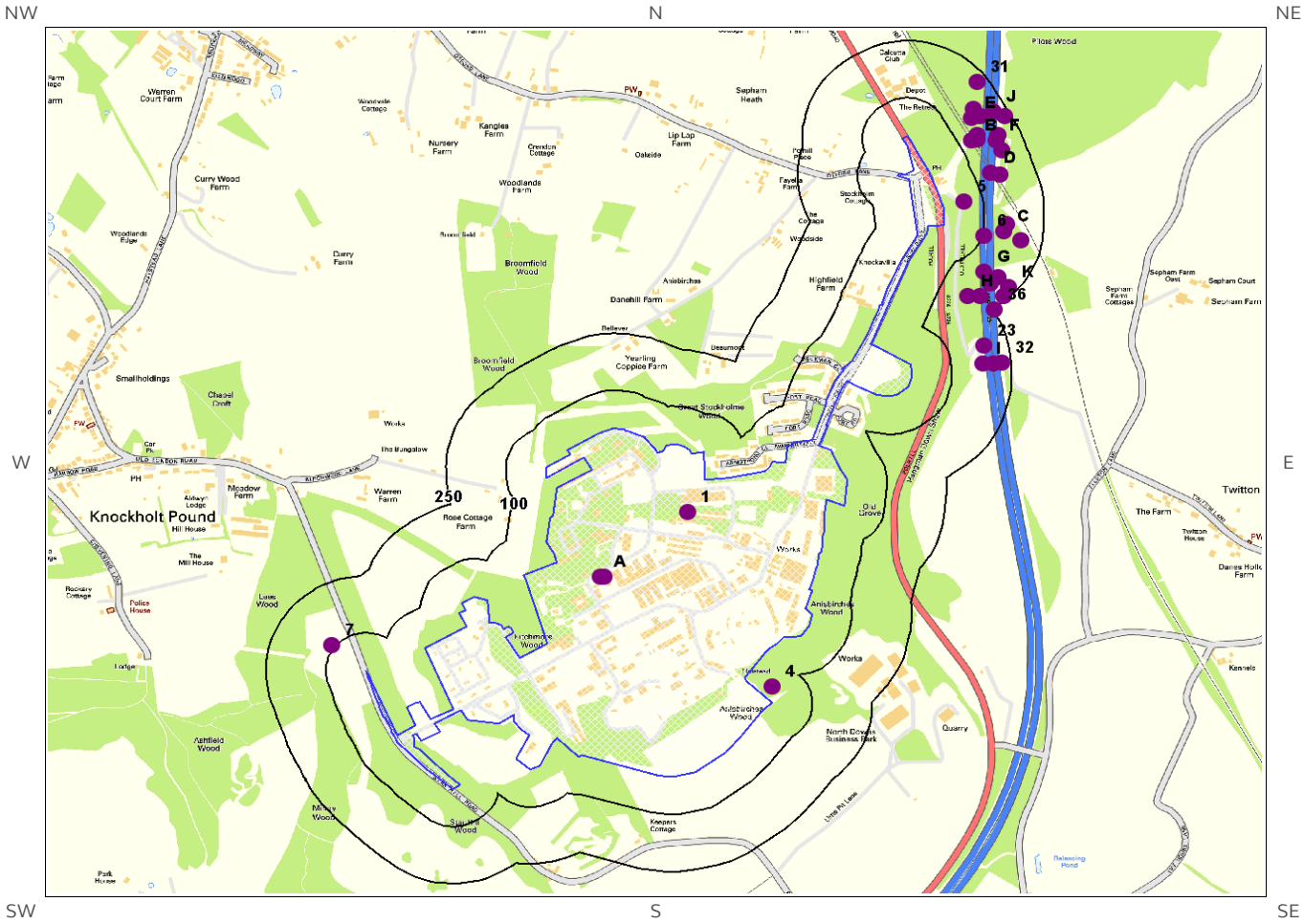
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible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



Borehole Records Legend

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

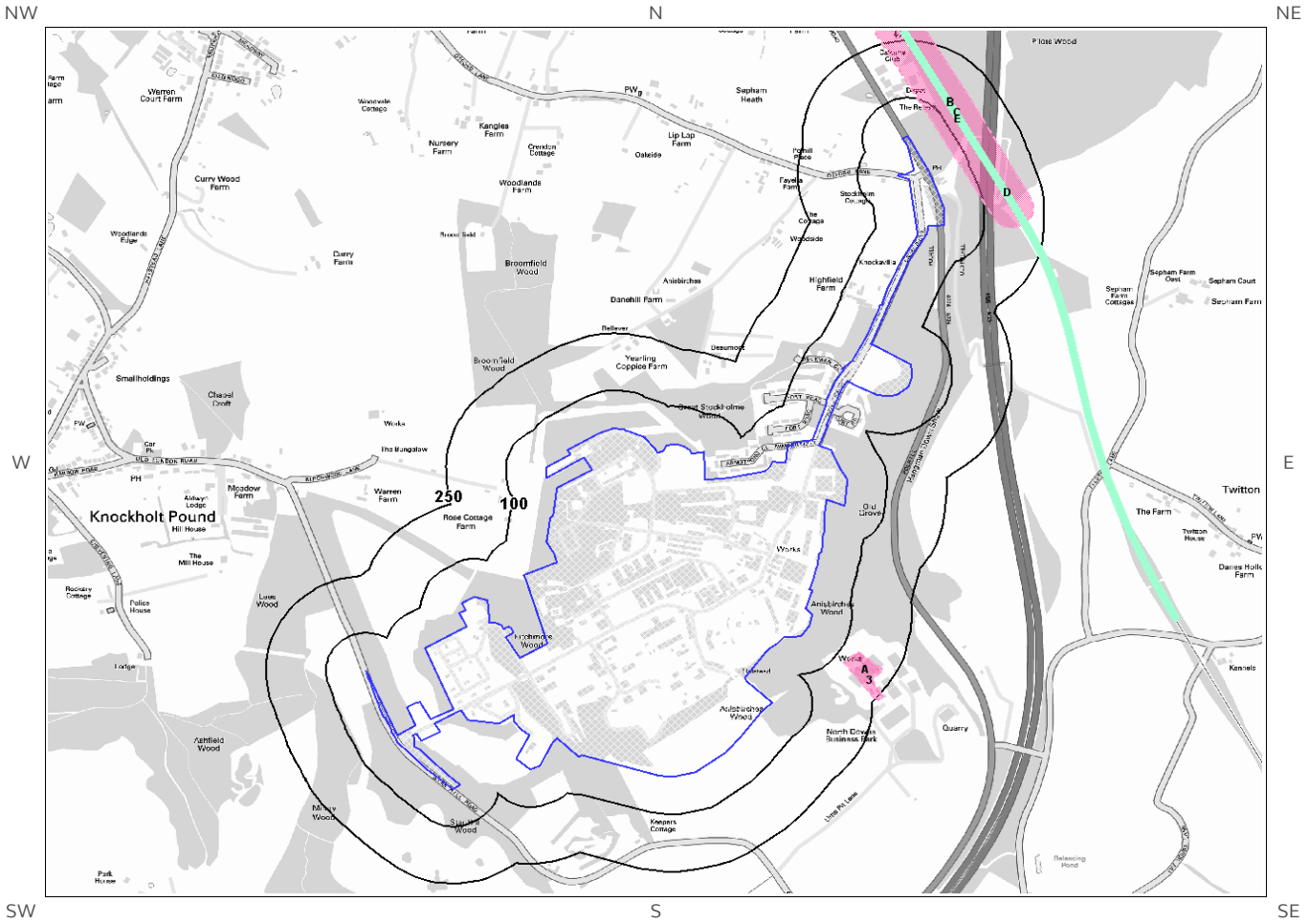
Records of background estimated soil chemistry within 250m of the study site boundary: 33

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

- Site Outline
- Search Buffers (m) — 250 / 500
- 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**

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

TEST CERTIFICATE

Liquid and Plastic Limits

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

4041

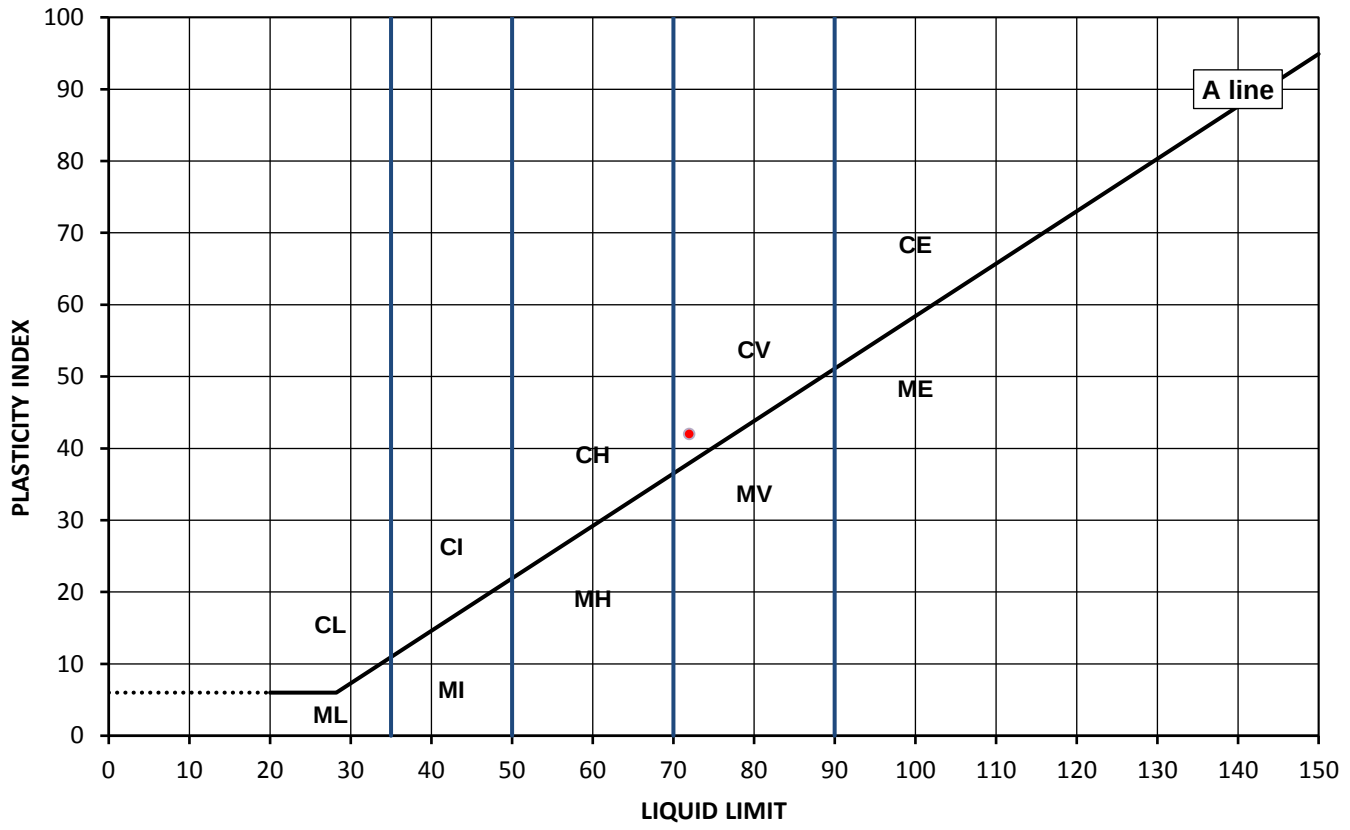
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

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

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

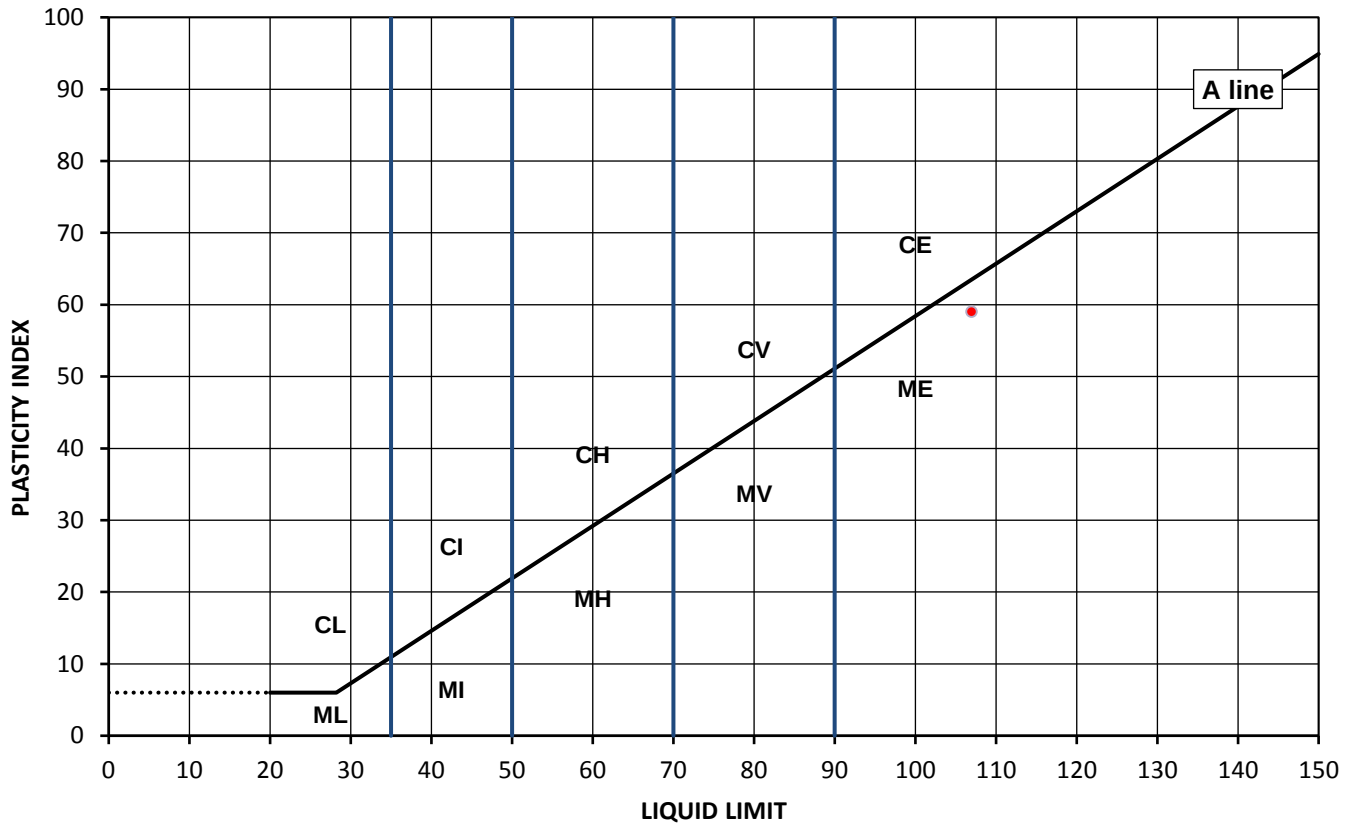
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

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

for and on behalf of i2 Analytical Ltd

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4041

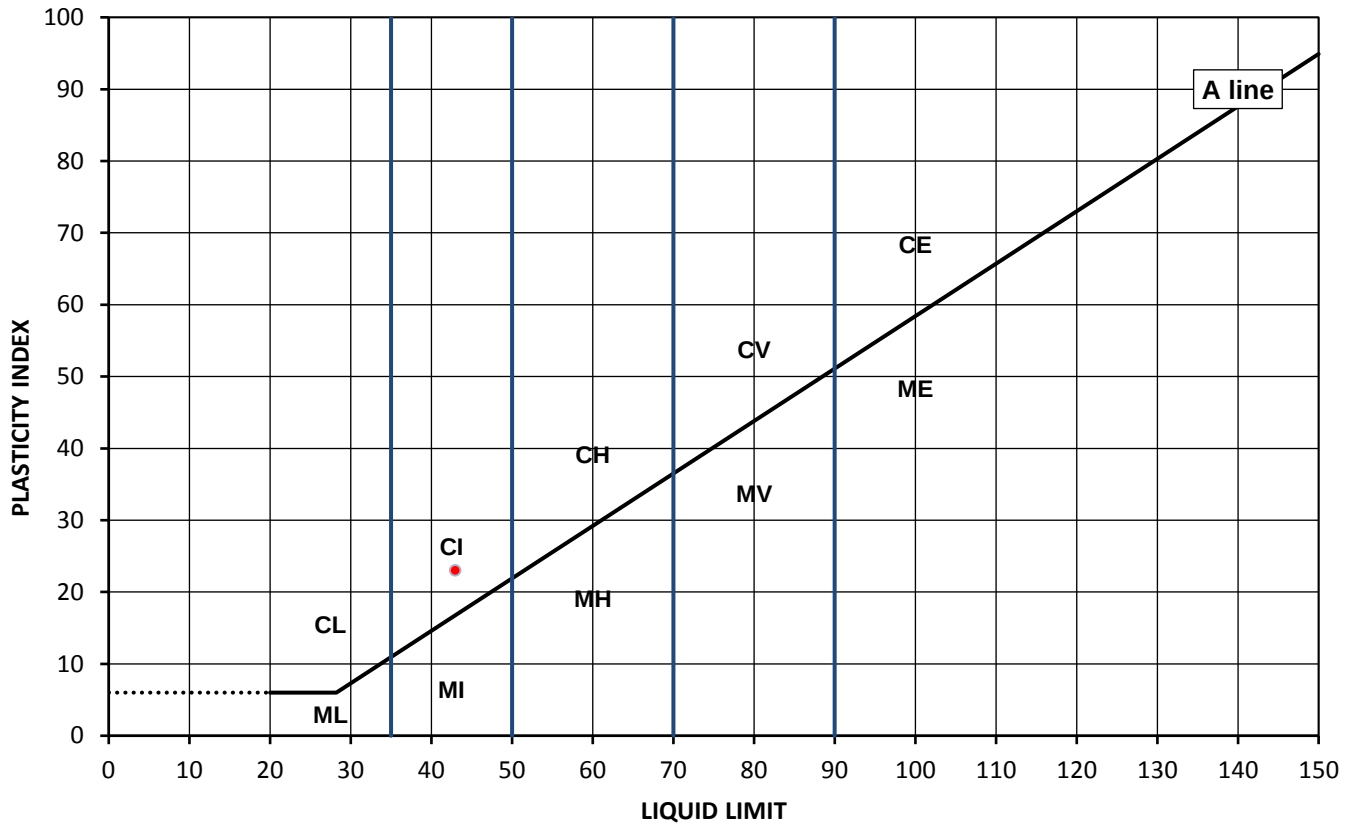
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

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

for and on behalf of i2 Analytical Ltd

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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

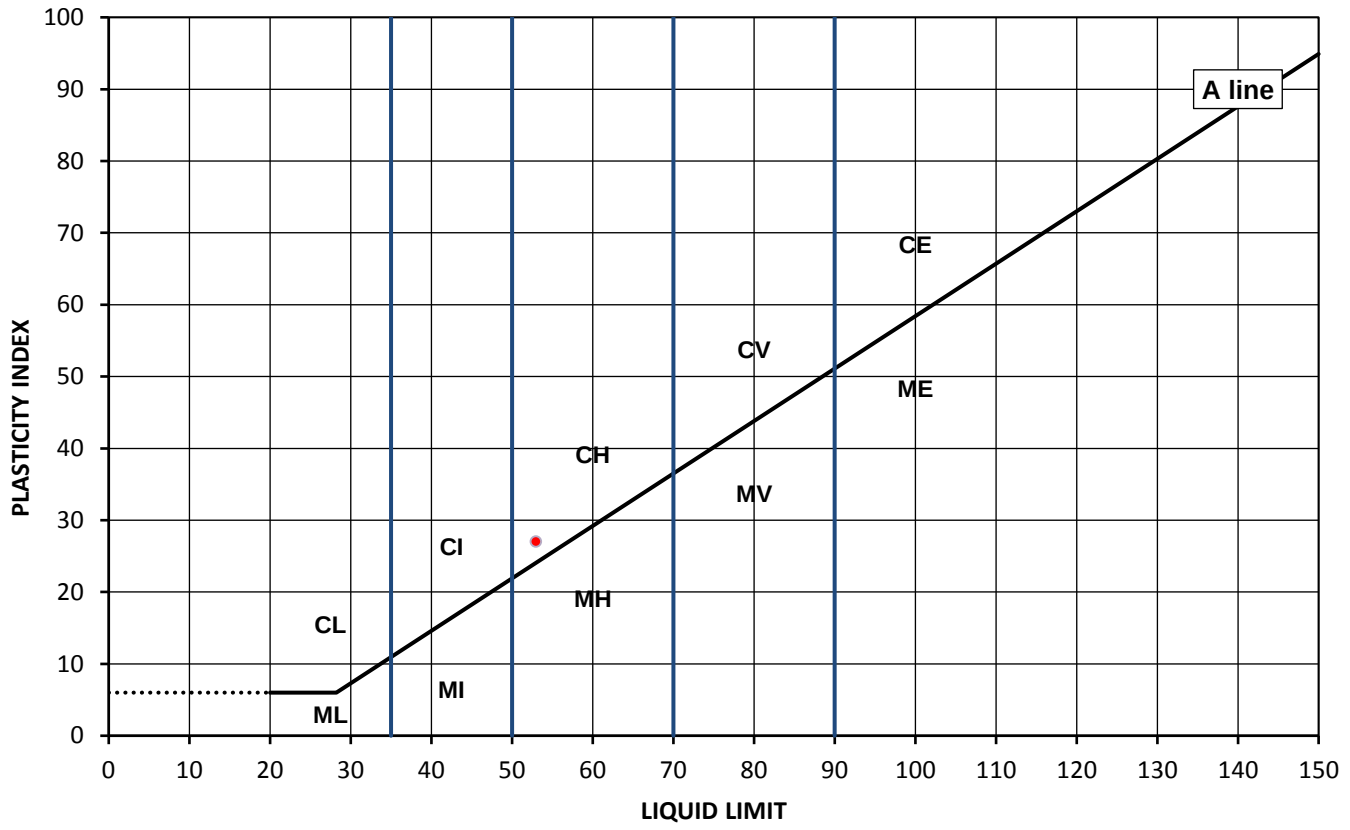
Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By: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

for and on behalf of i2 Analytical Ltd

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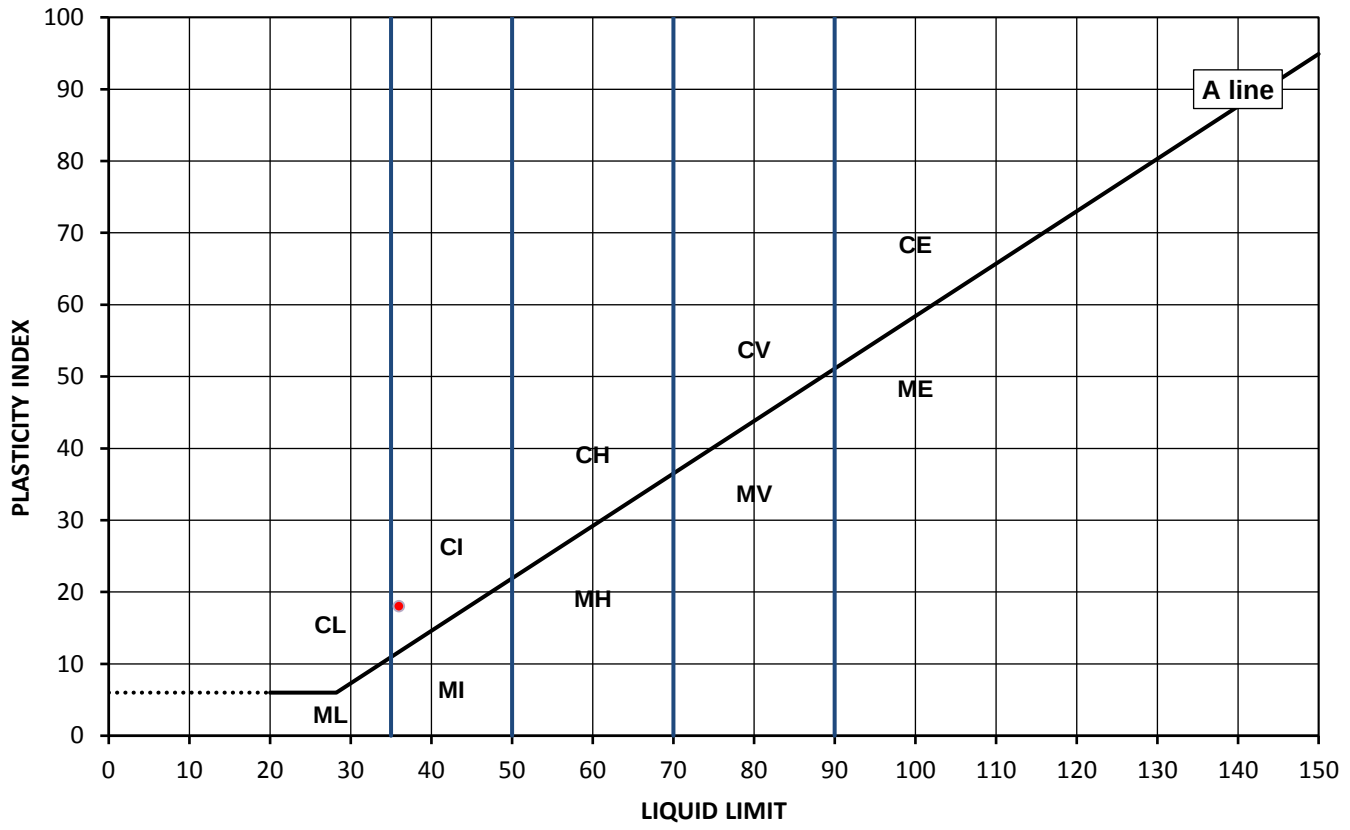
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

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

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

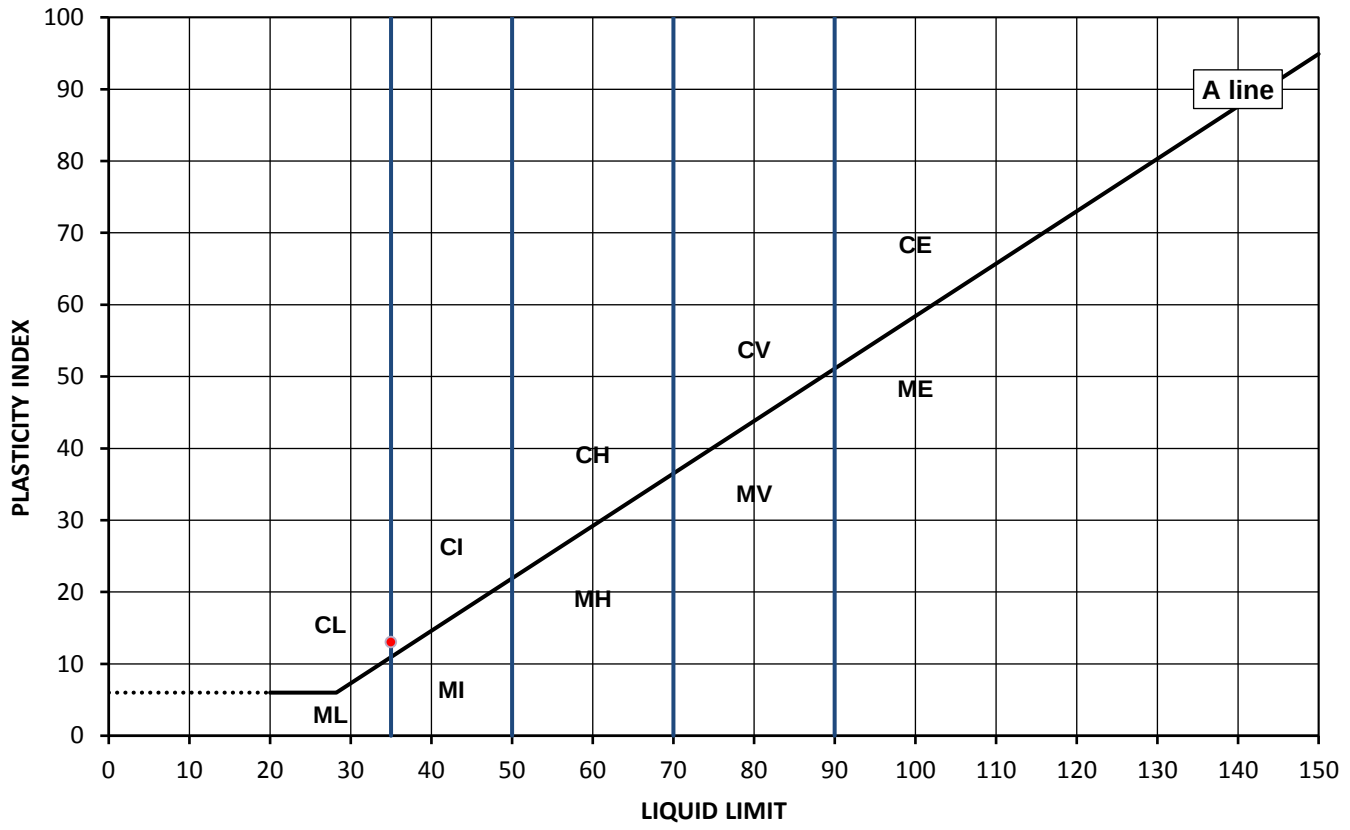
Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By: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

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for and on behalf of i2 Analytical Ltd

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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

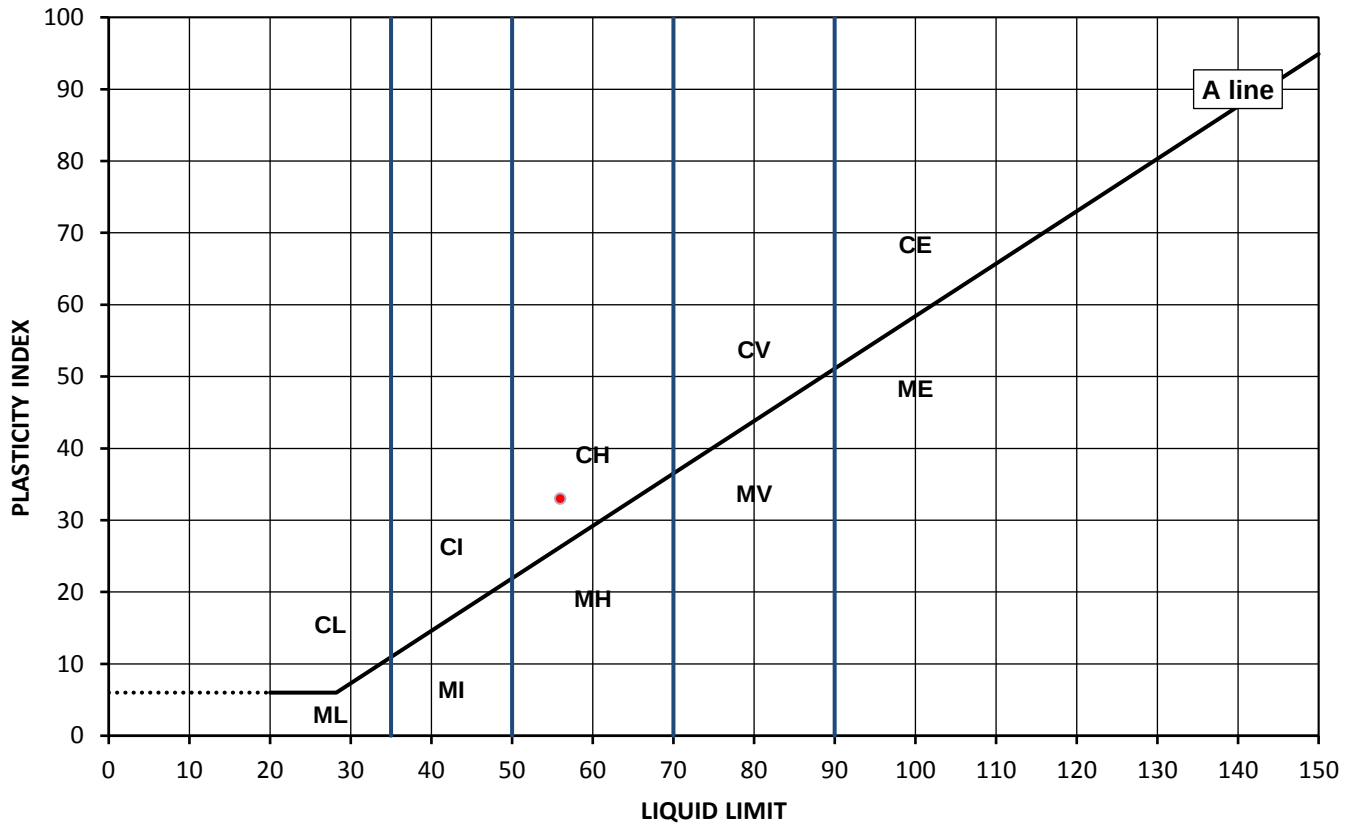
Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By: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

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Croxley Green Business Park
Watford Herts WD18 8YS

4041

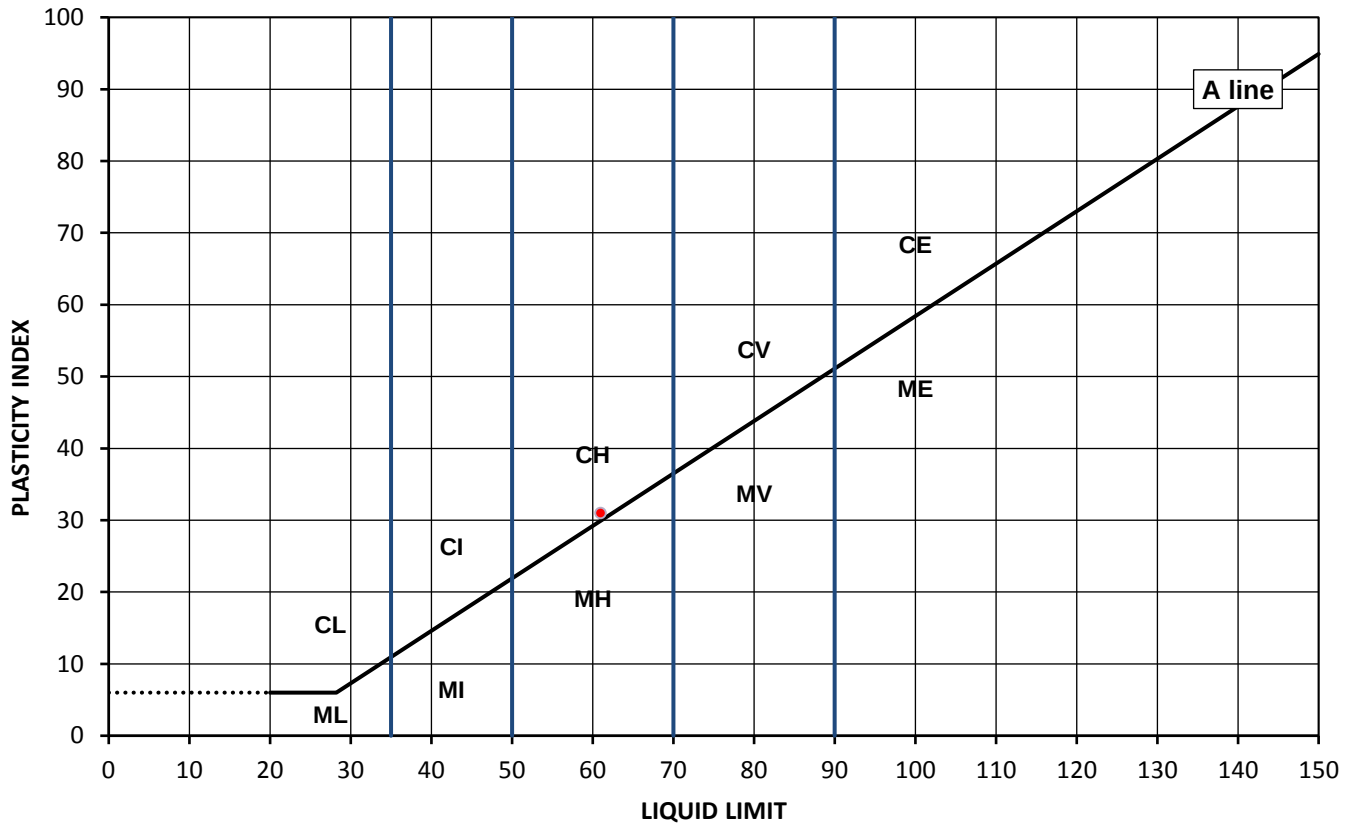
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

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

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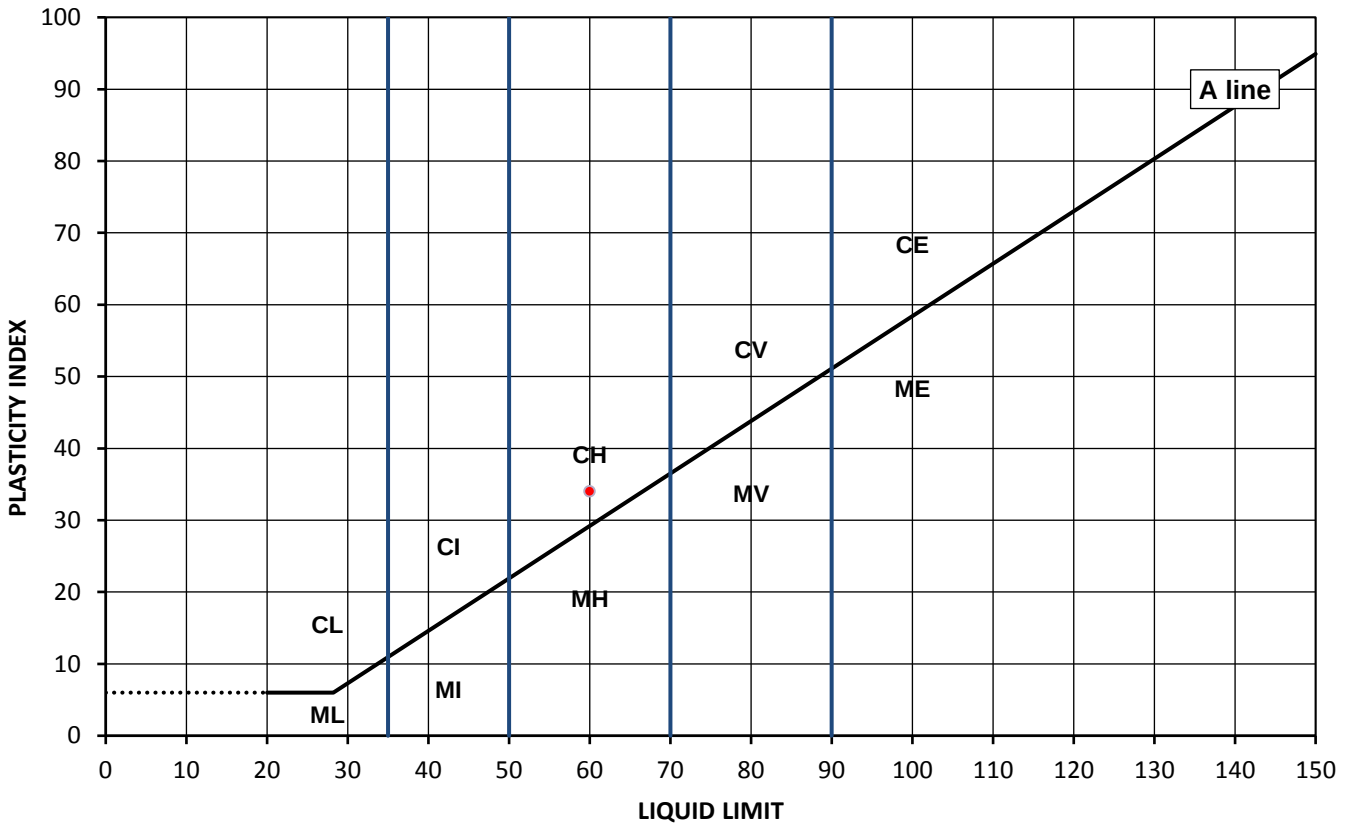
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

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

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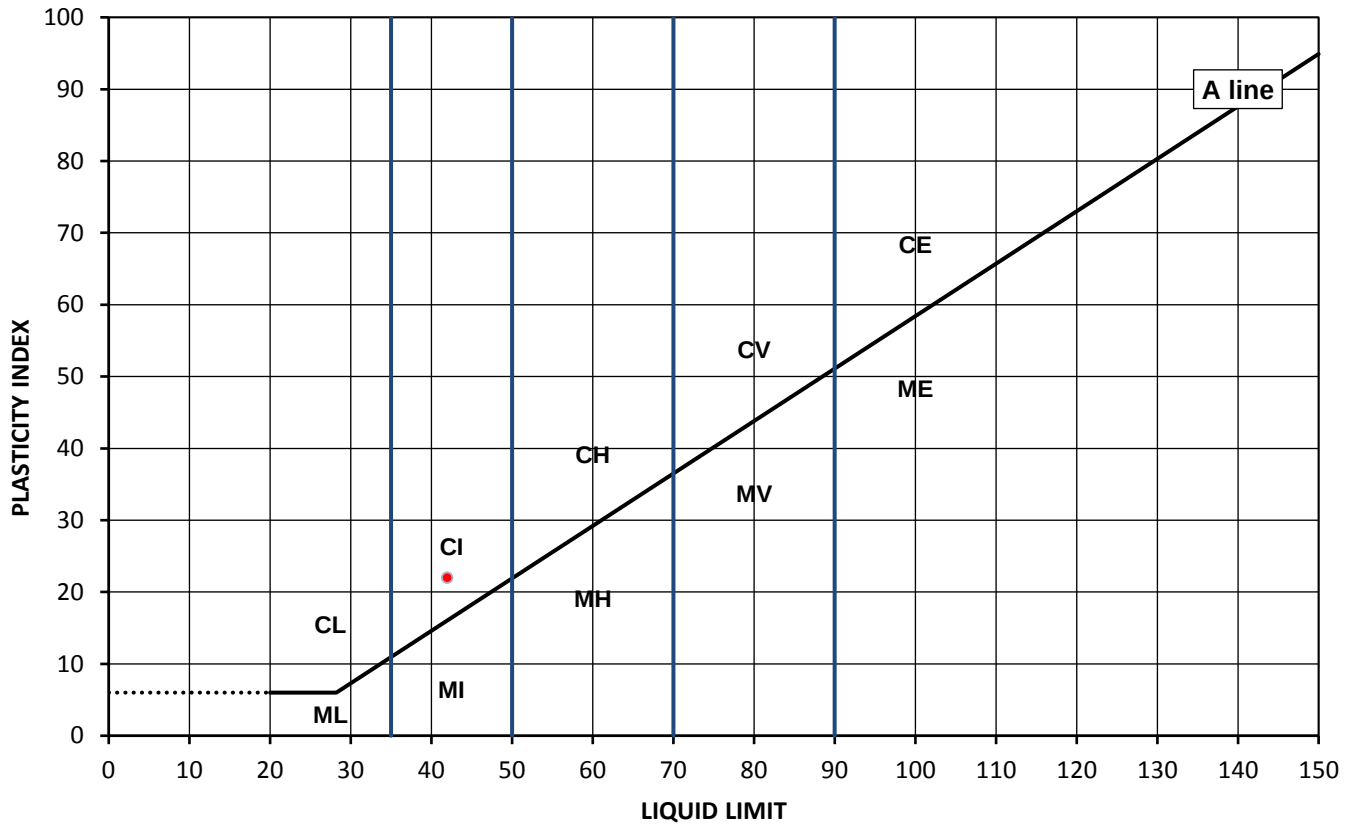
Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By: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

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for and on behalf of i2 Analytical Ltd

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

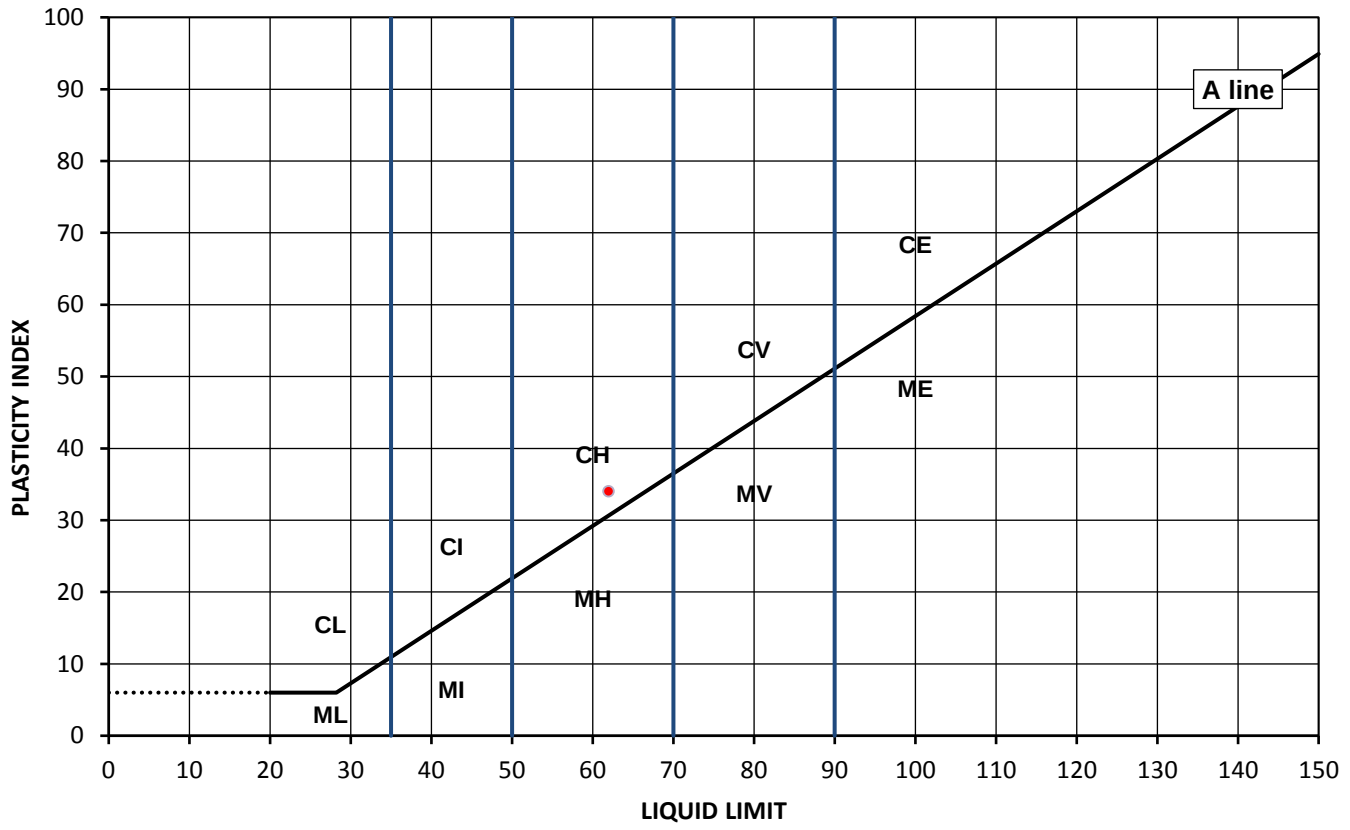
Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By: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

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

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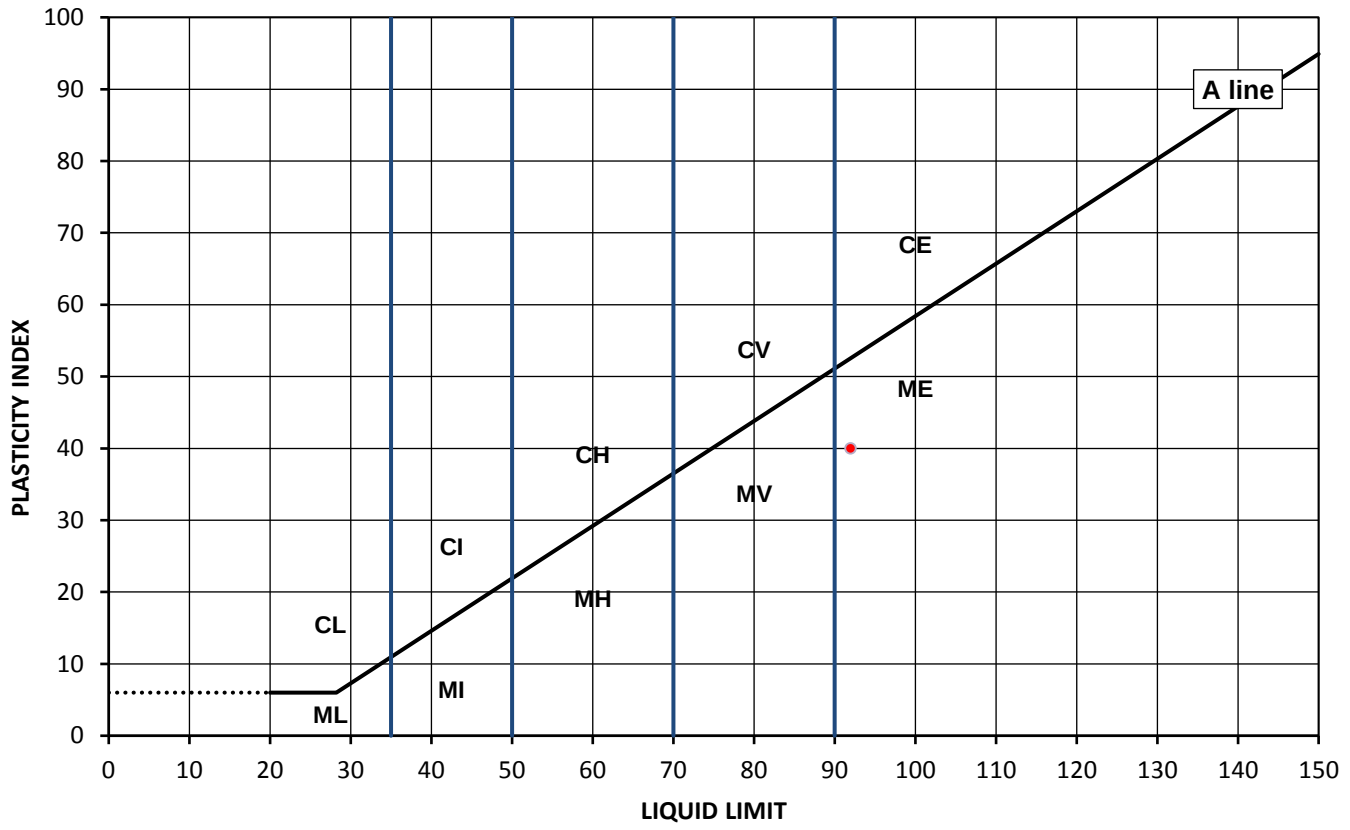
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

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

for and on behalf of i2 Analytical Ltd

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Liquid and Plastic Limits

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

4041

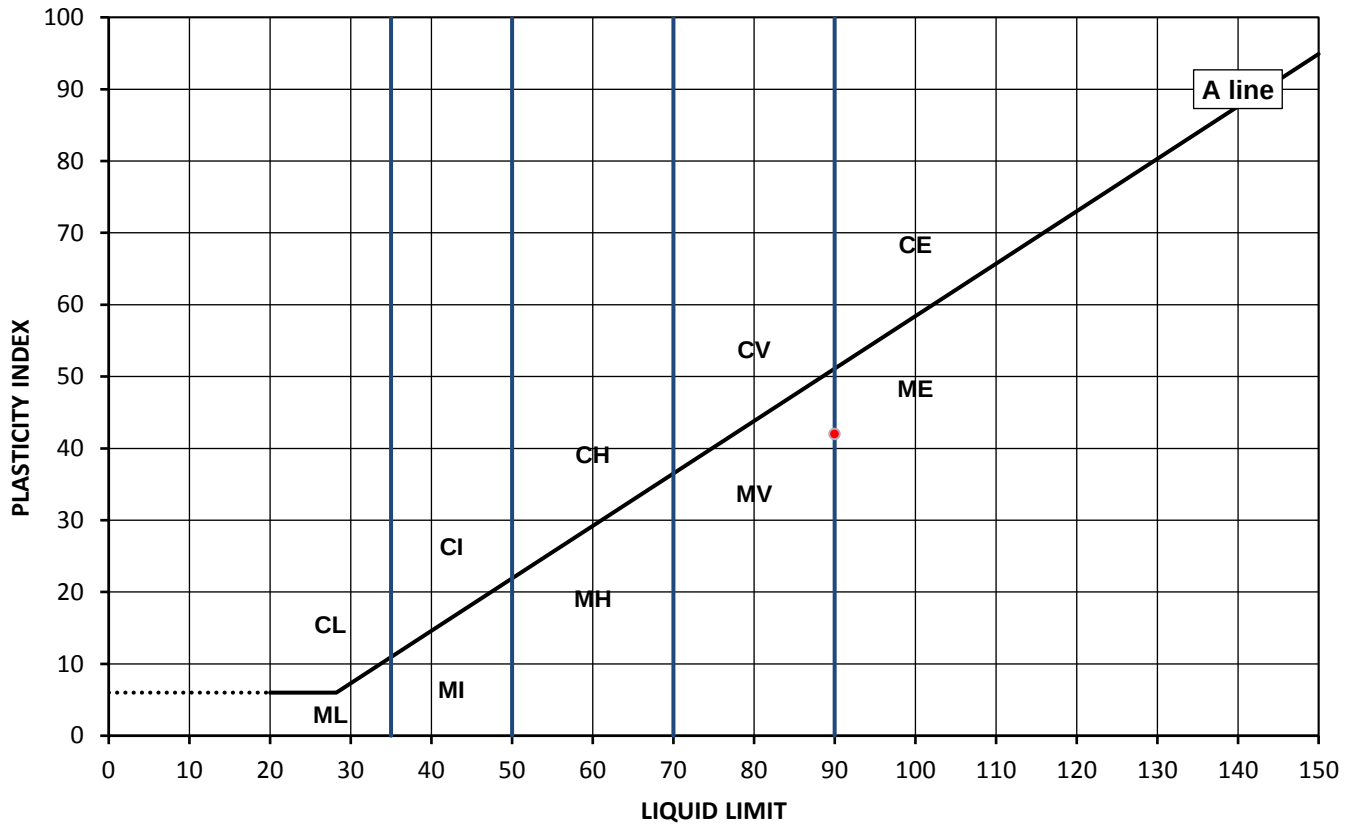
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

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

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for and on behalf of i2 Analytical Ltd

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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

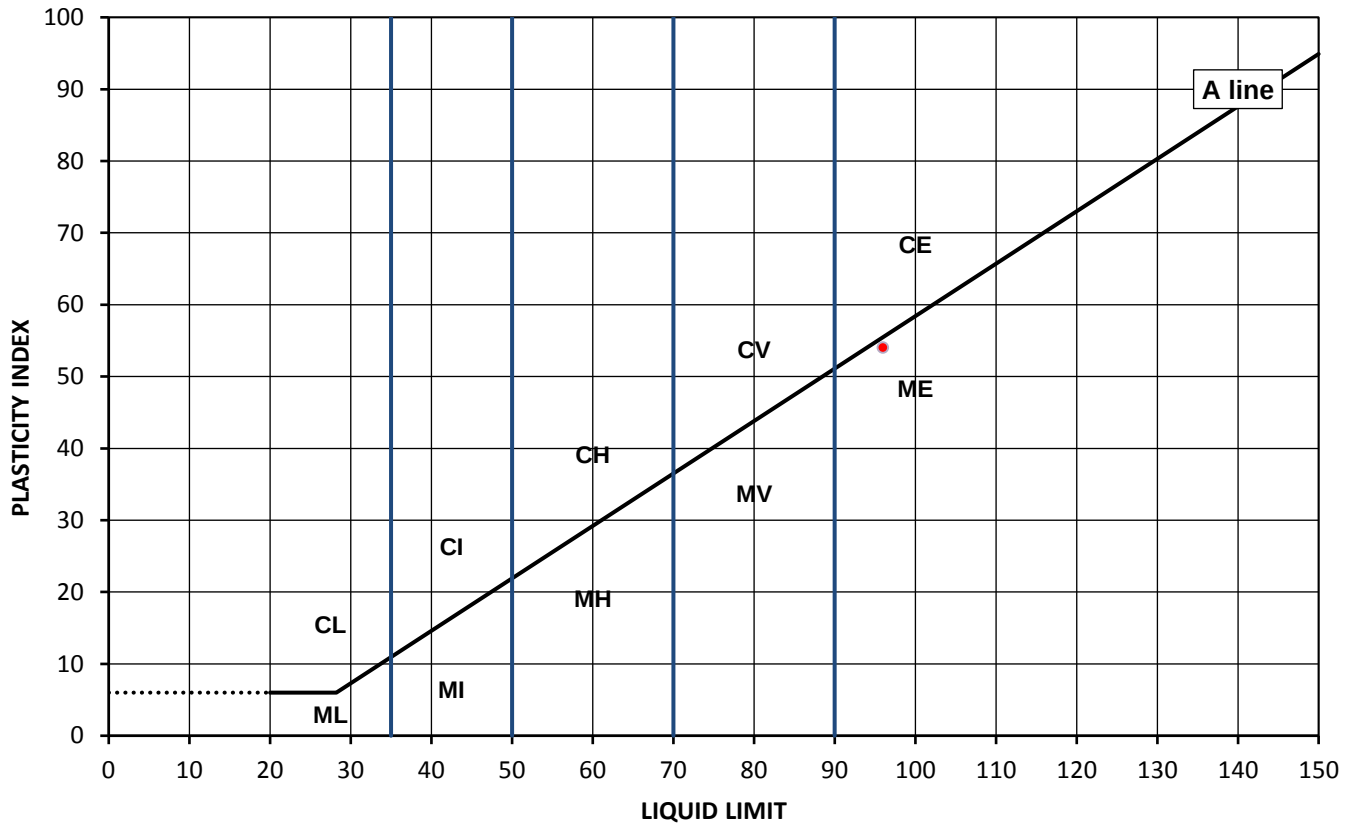
Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By: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

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for and on behalf of i2 Analytical Ltd

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

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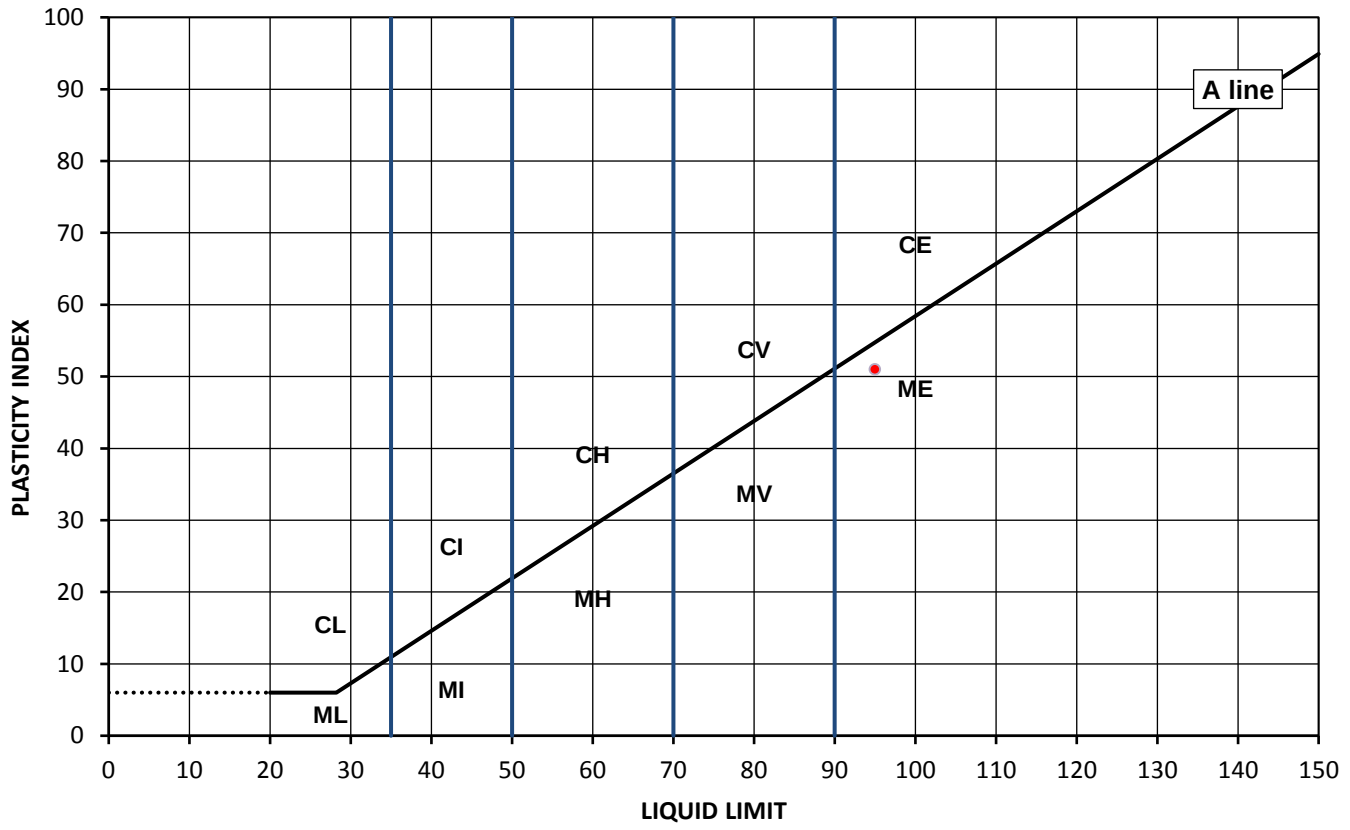
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

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

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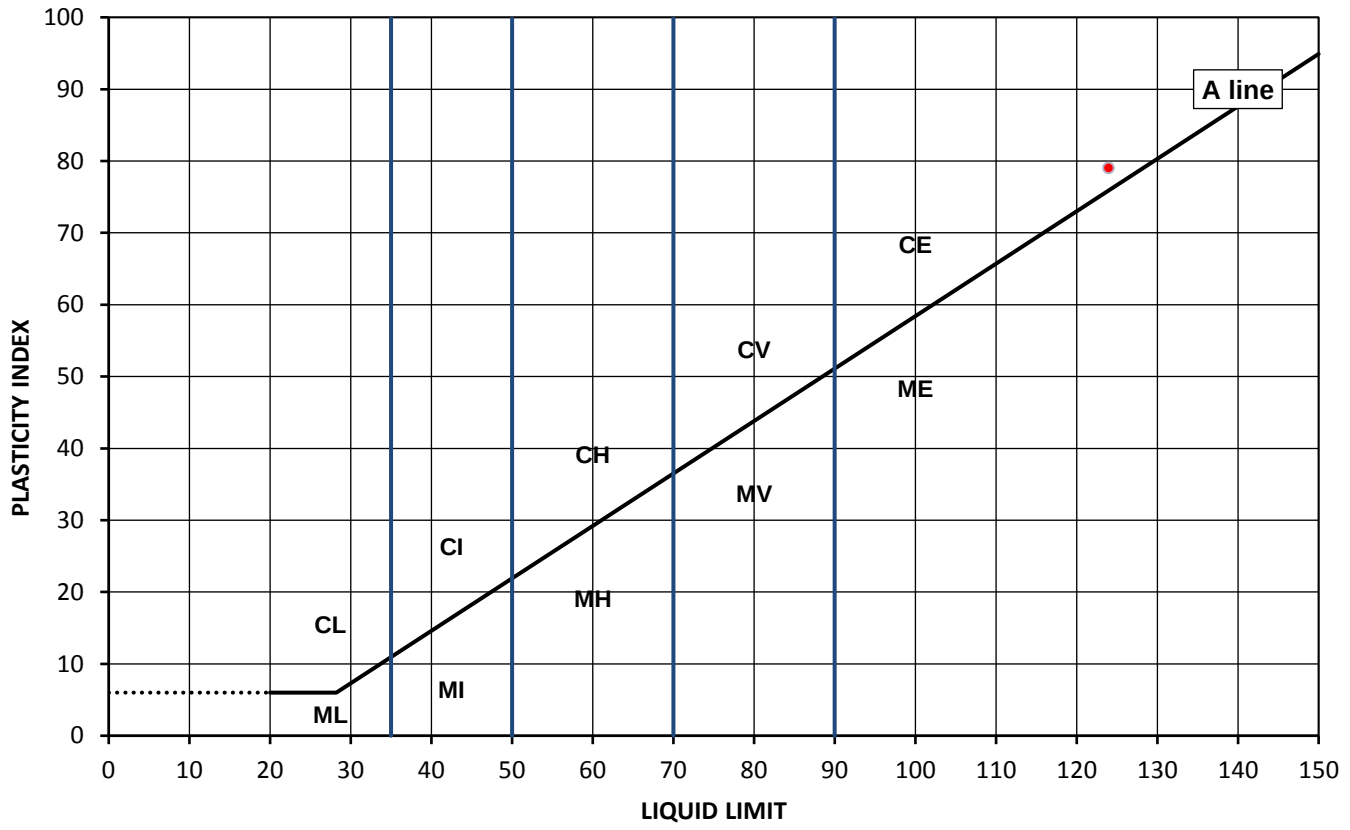
Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By: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

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PL Geotechnical Laboratory Manager
Date Reported: 07/01/2019

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Geotechnical Site Manager Northampton

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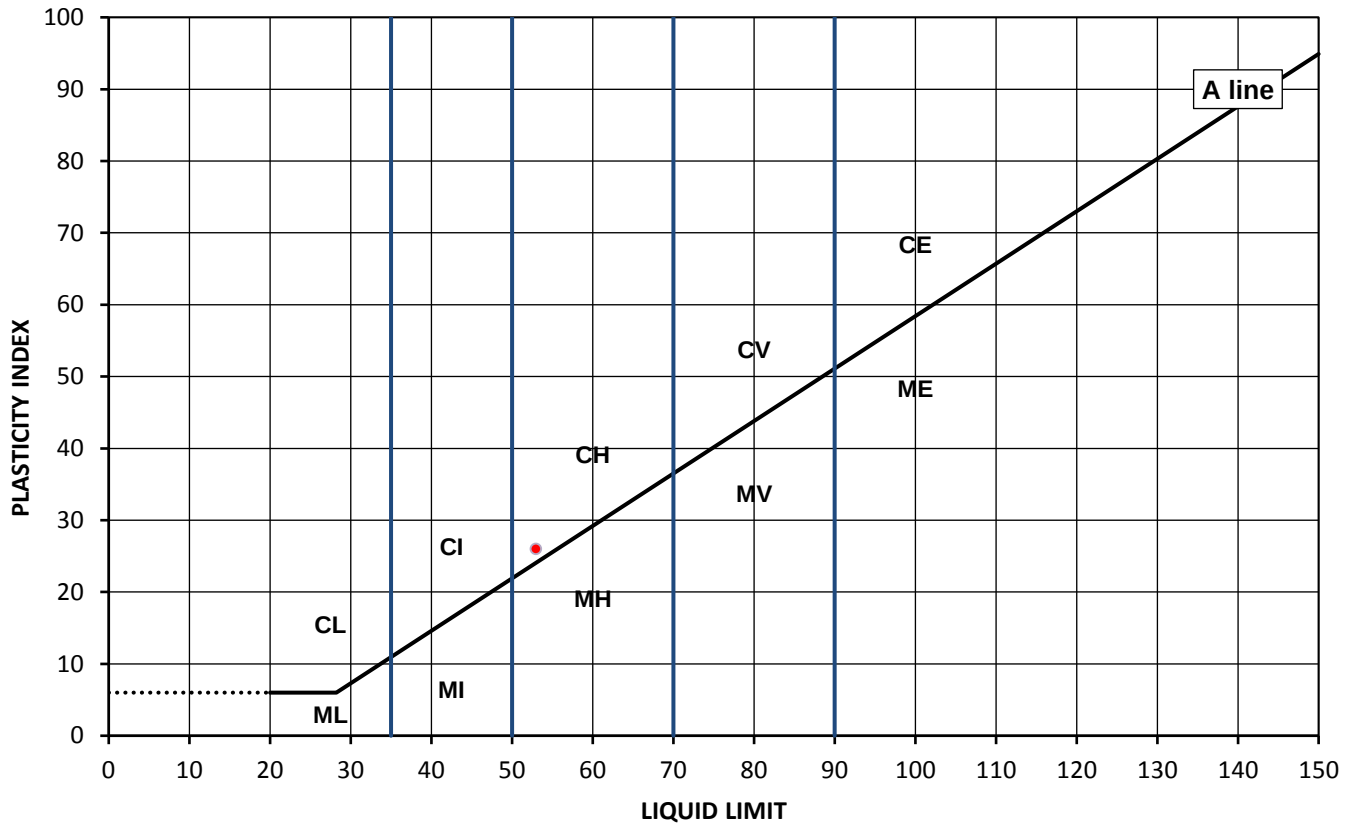
Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By: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

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

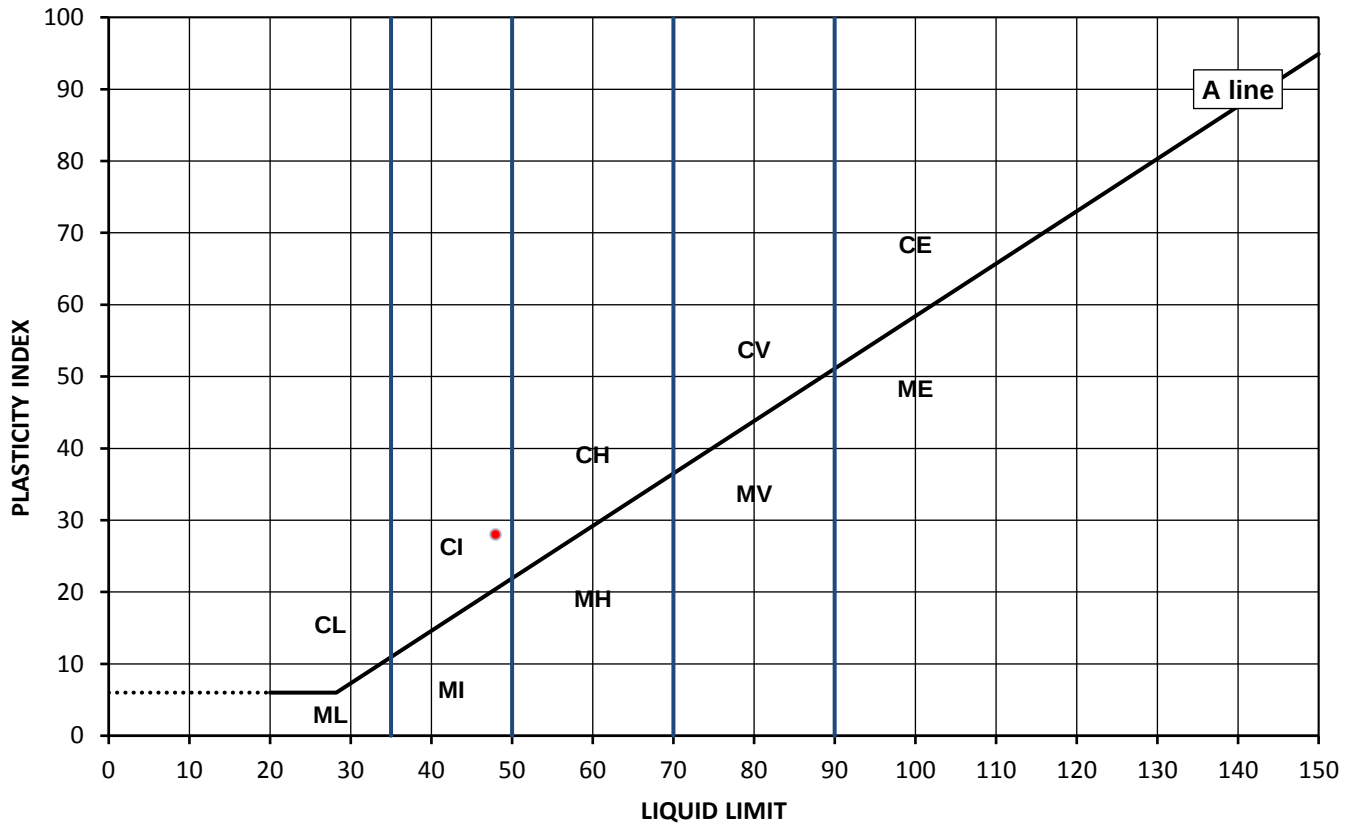
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

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

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

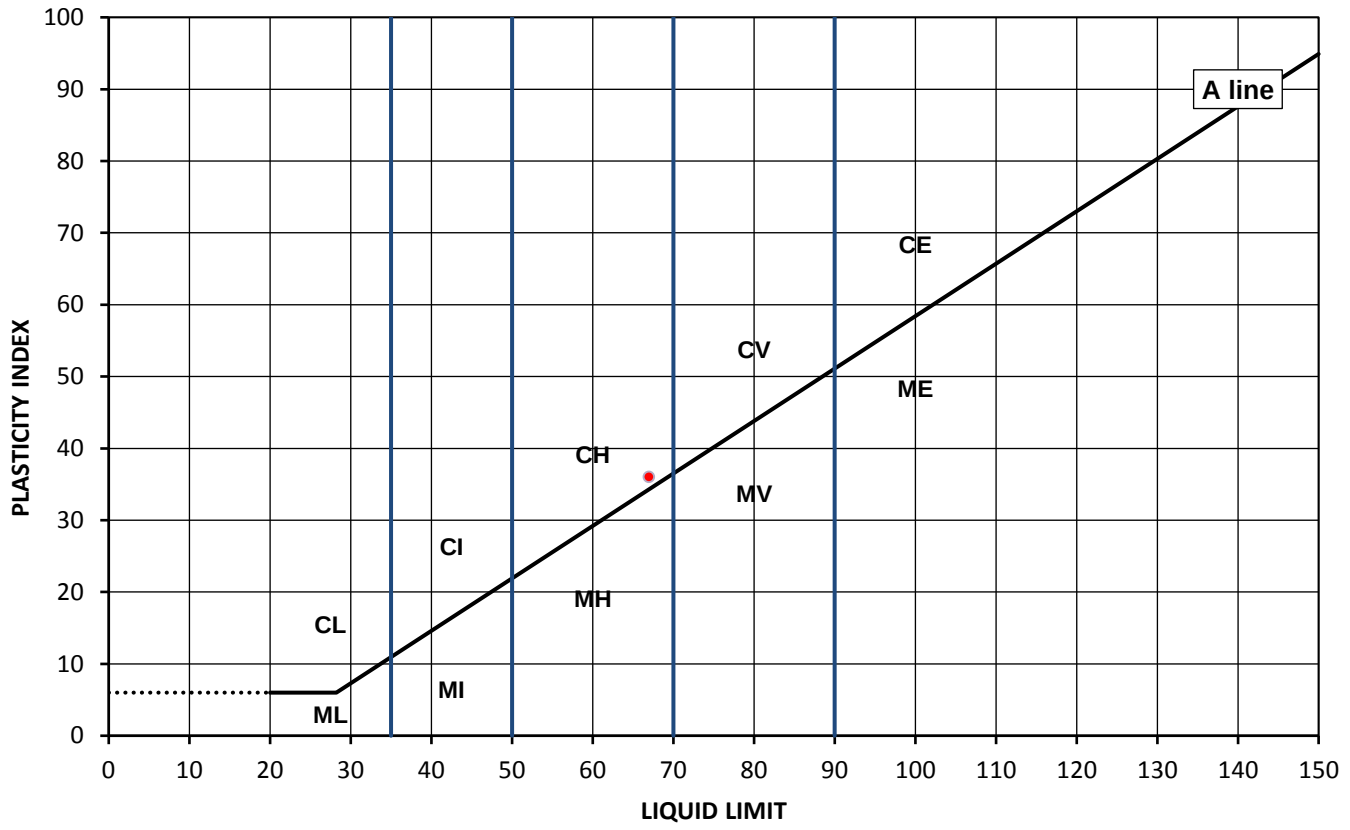
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

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

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

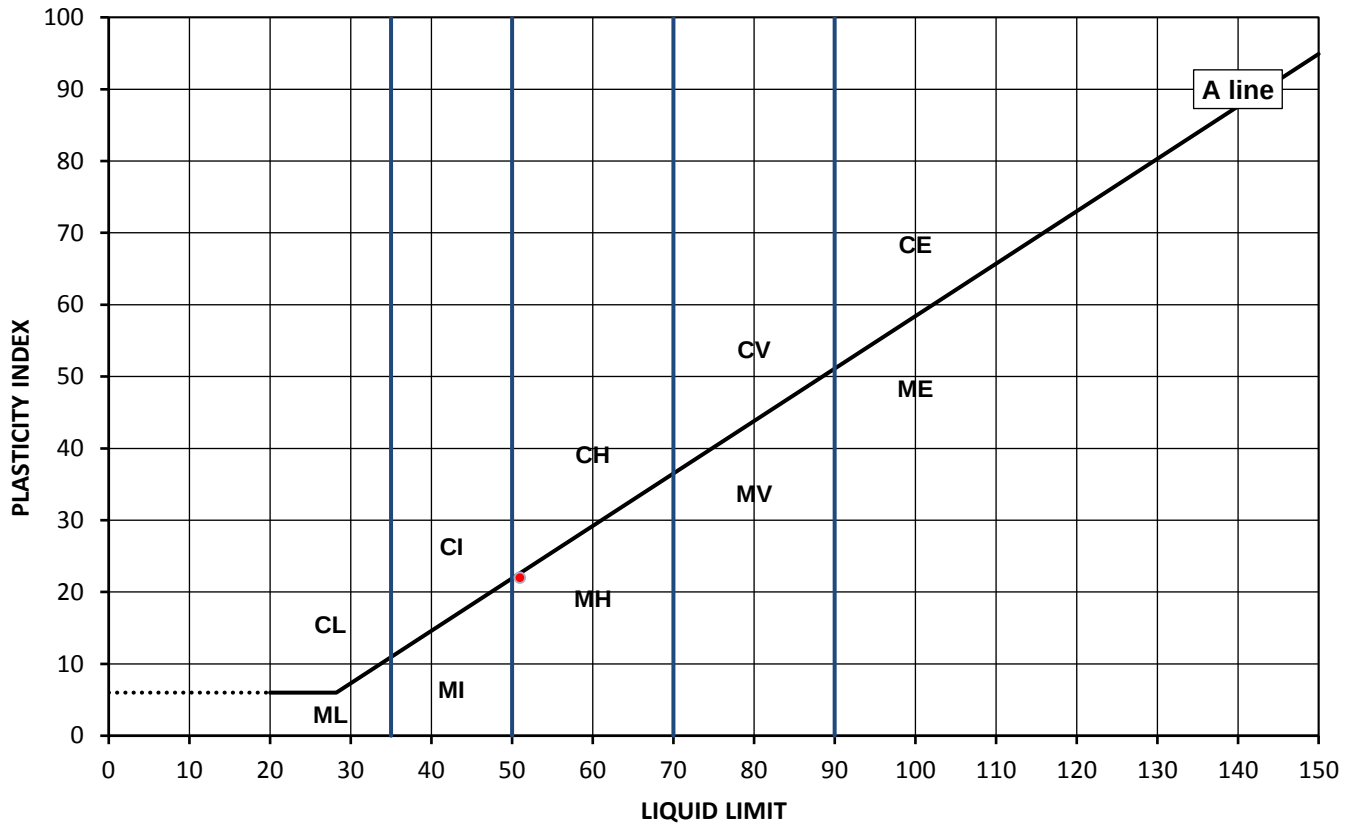
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

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

for and on behalf of i2 Analytical Ltd

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Liquid and Plastic Limits

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

4041

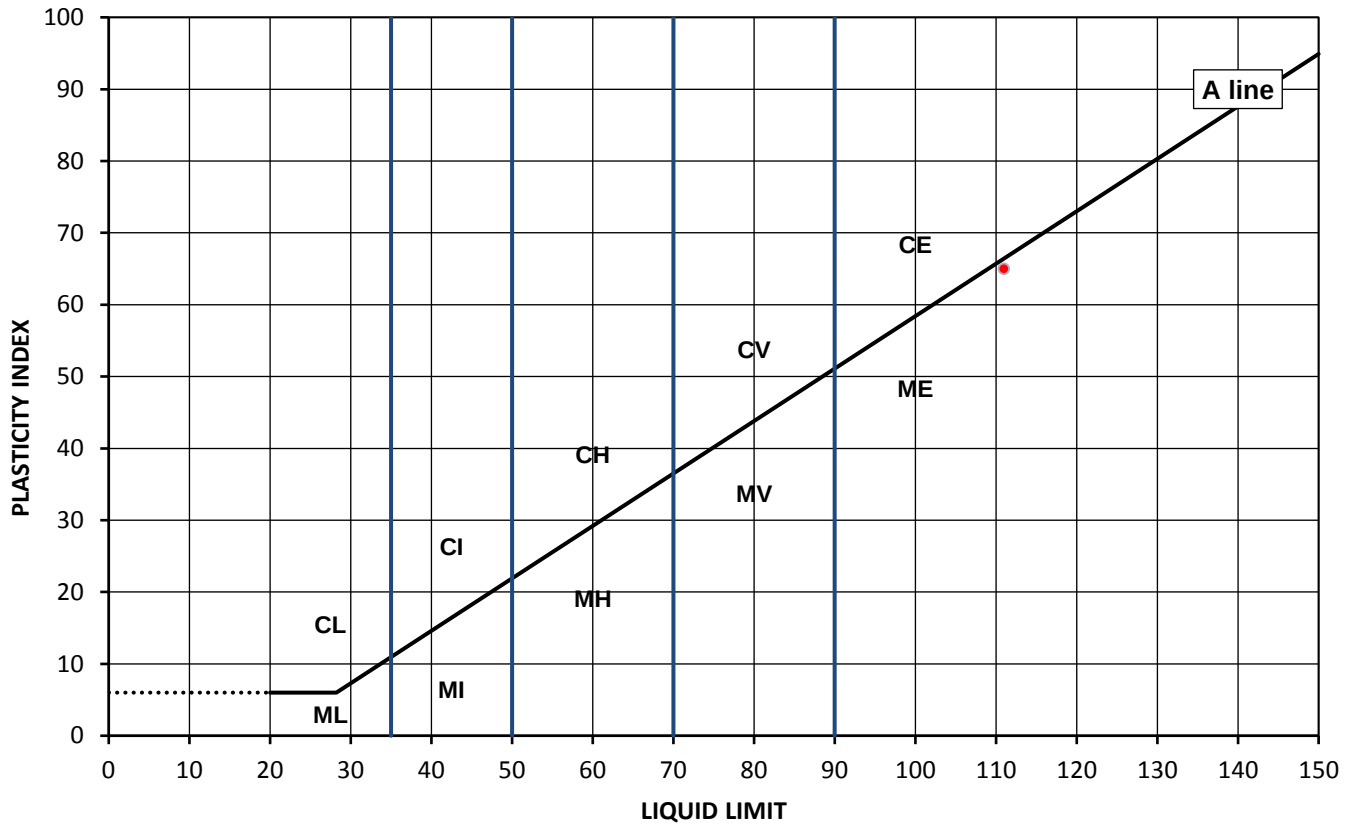
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

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

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Croxley Green Business Park
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4041

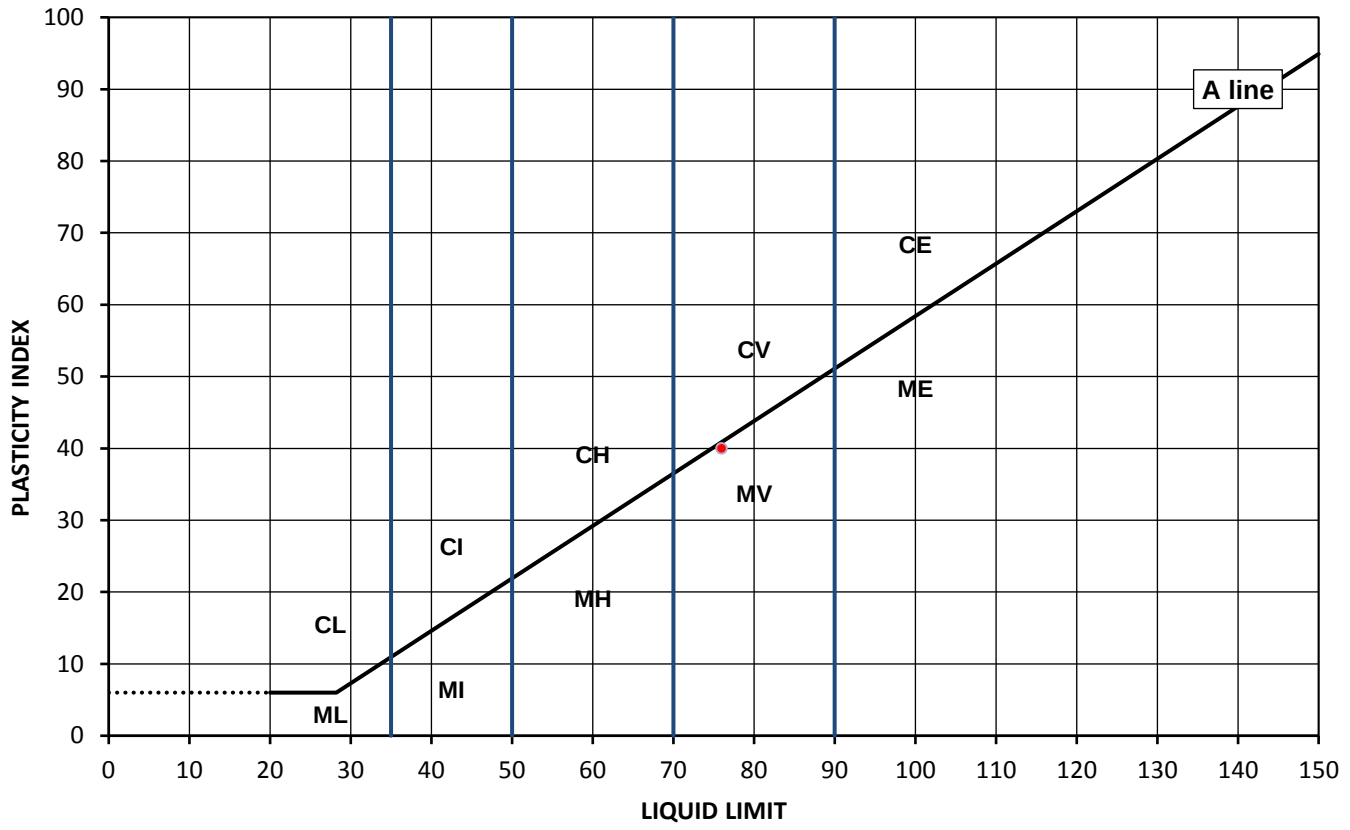
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

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

for and on behalf of i2 Analytical Ltd

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

4041

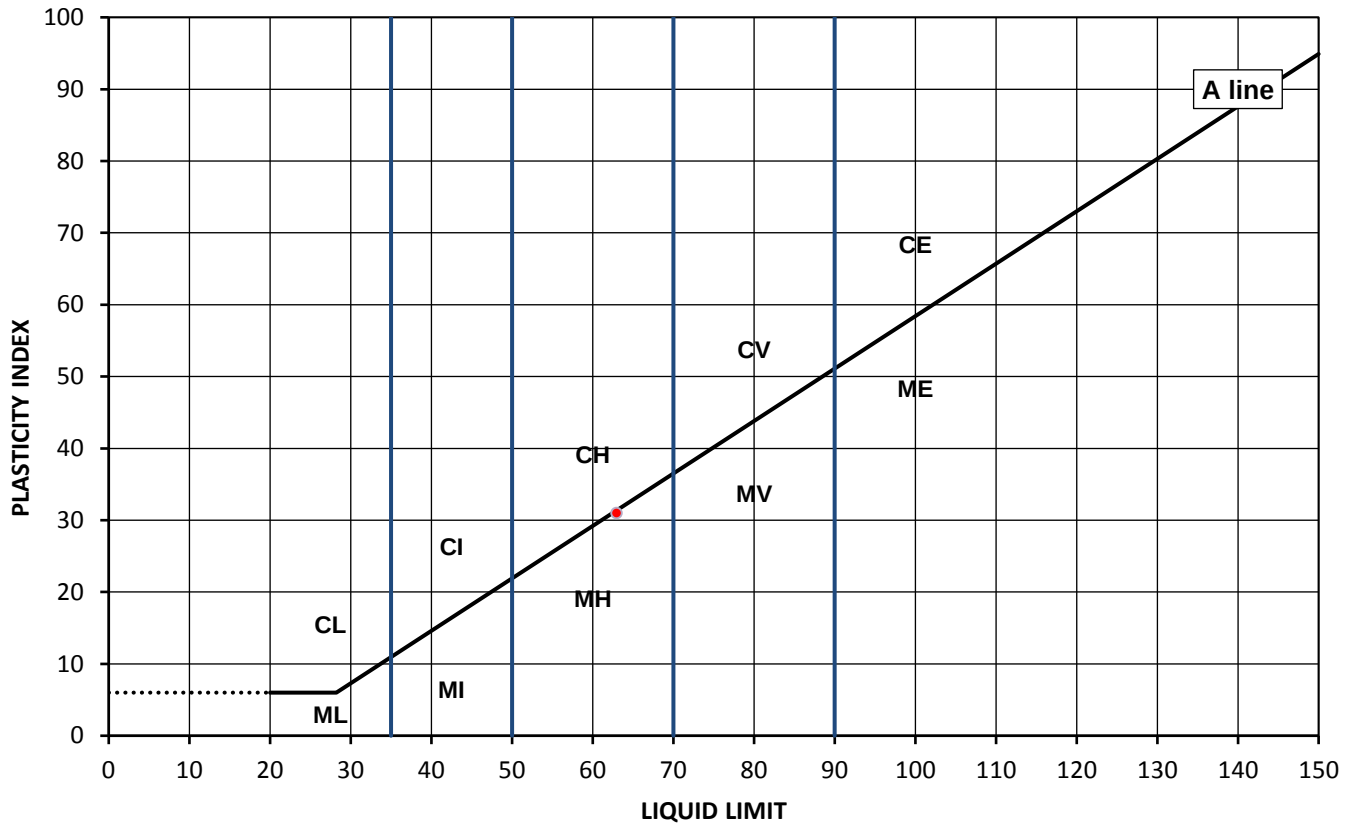
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

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

for and on behalf of i2 Analytical Ltd

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Liquid and Plastic Limits

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

4041

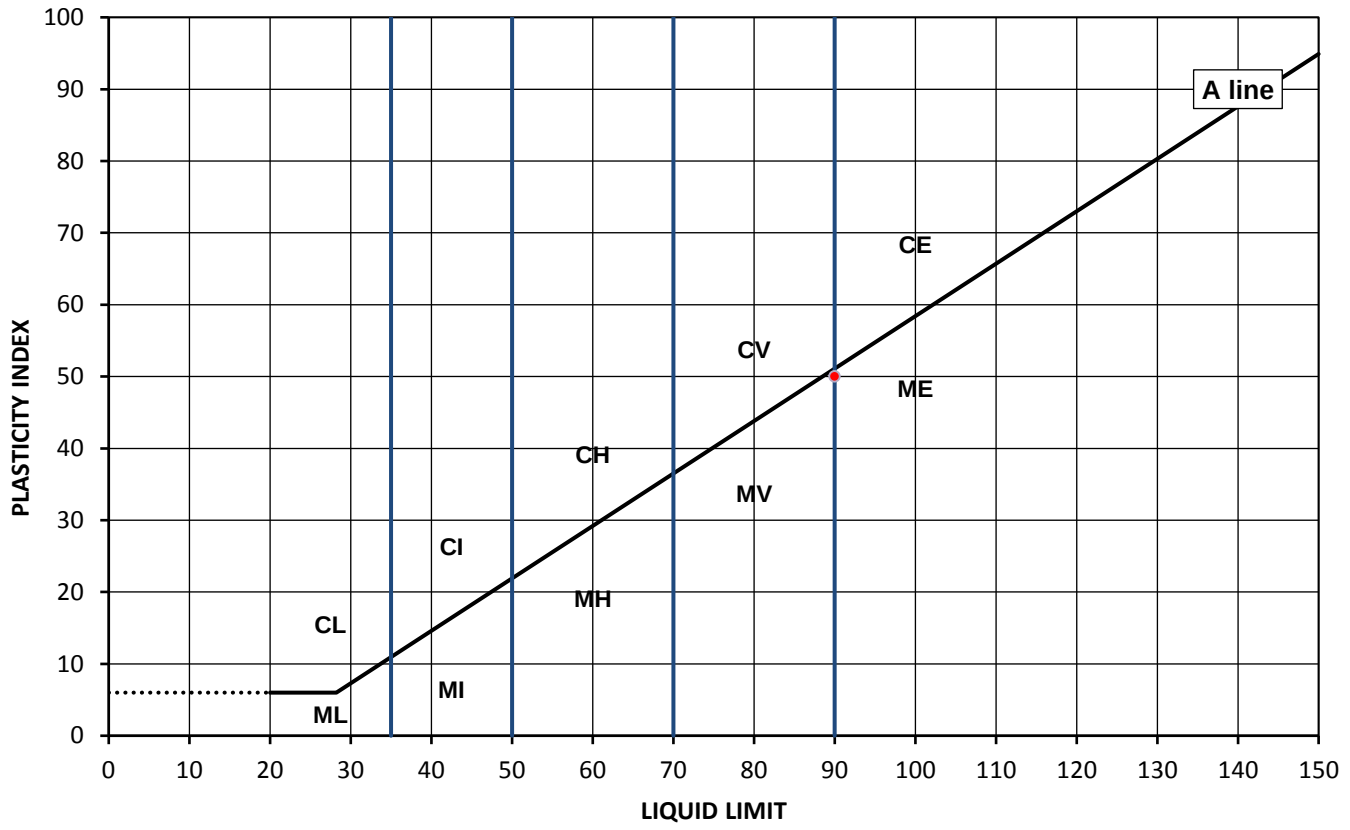
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

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

for and on behalf of i2 Analytical Ltd

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Liquid and Plastic Limits

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

4041

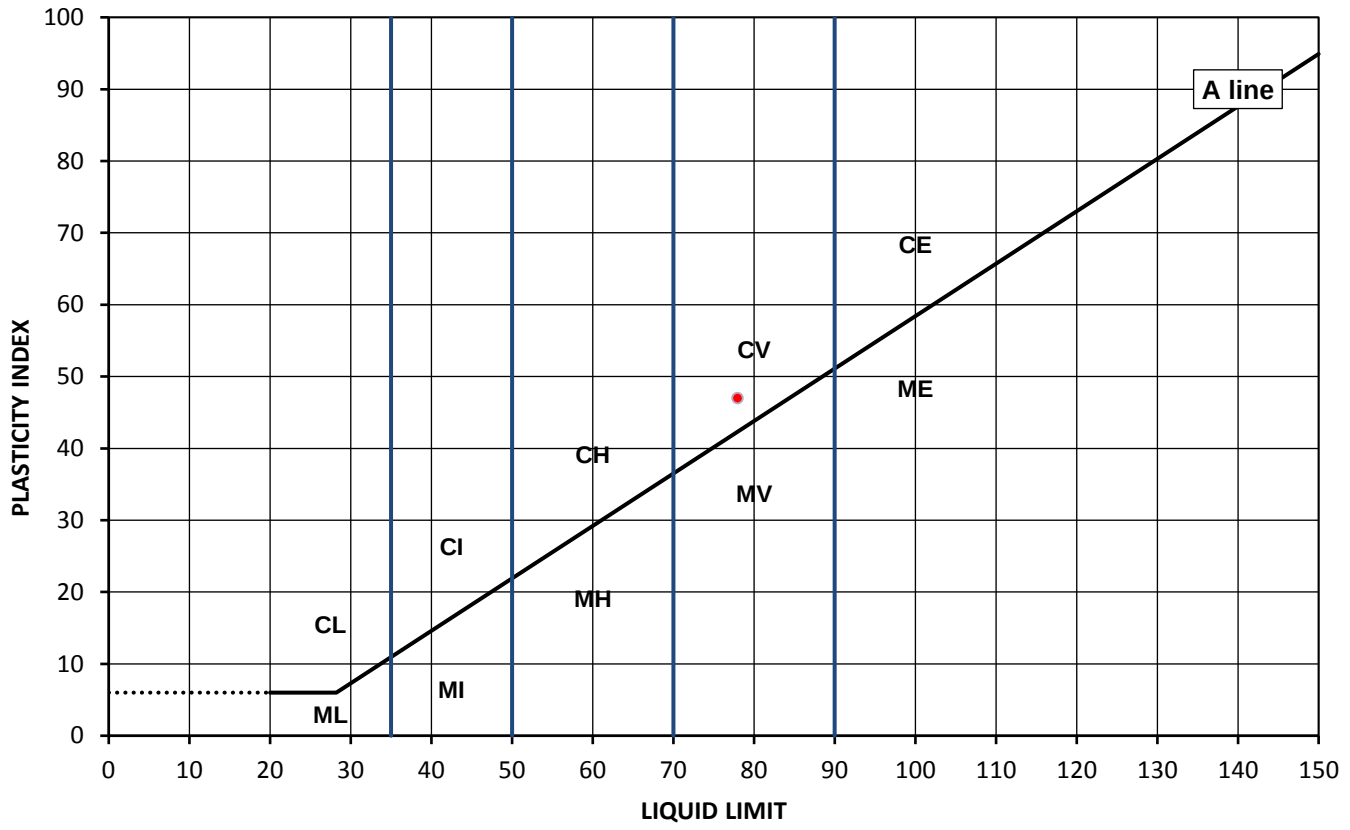
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

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

for and on behalf of i2 Analytical Ltd

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

4041

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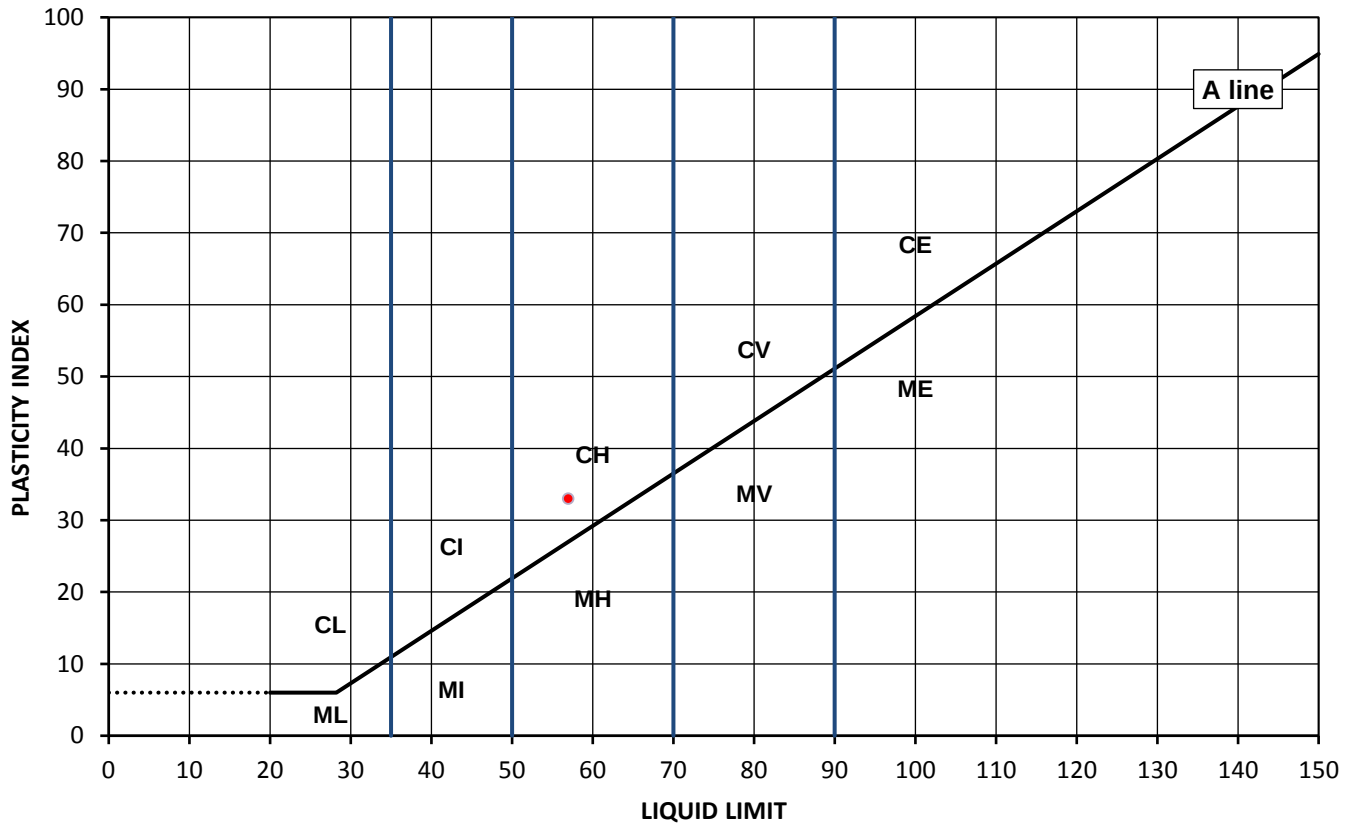
Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By: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

for and on behalf of i2 Analytical Ltd

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

4041

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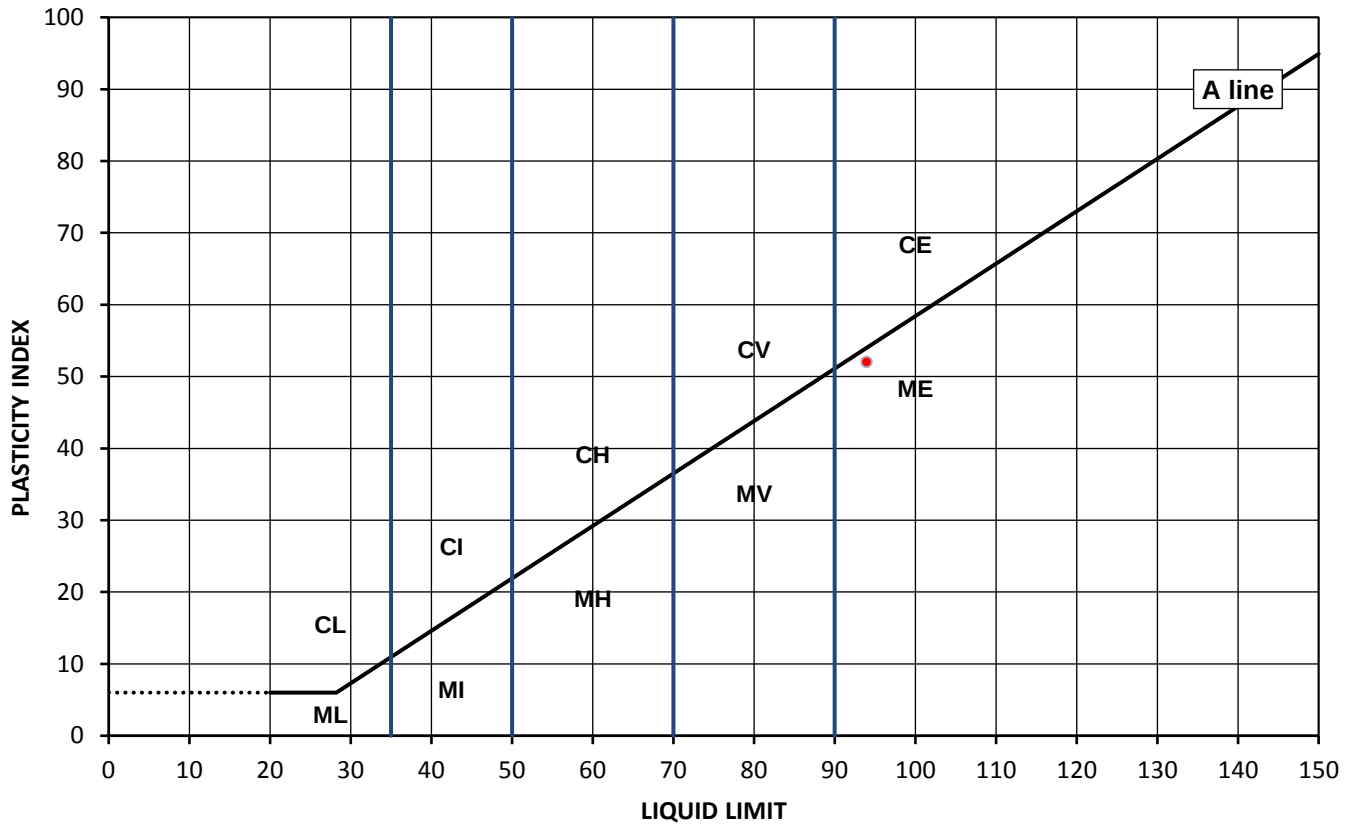
Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By: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

for and on behalf of i2 Analytical Ltd

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

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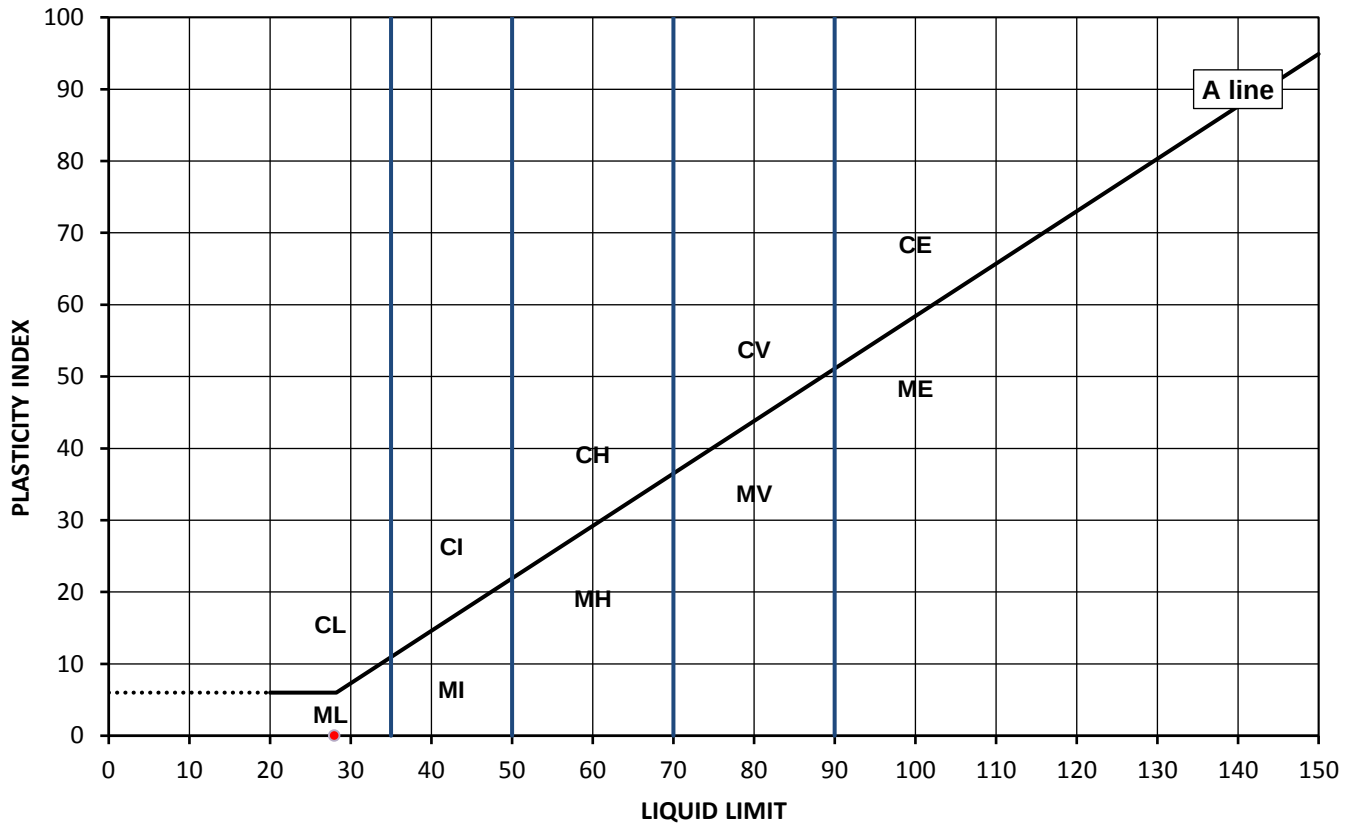
Client:	Hydrock Consultants Ltd	Client Reference:	C-10730-C
Client Address:	2-4 Hawthorne Park, Holdenby Road, Spratton, Northamptonshire, NN6 8LD	Job Number:	18-22027
		Date Sampled:	Not Given
		Date Received:	23/11/2018
Contact:	Wayne Lewis	Date Tested:	17/12/2018
Site Name:	Fort Halstead	Sampled By: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

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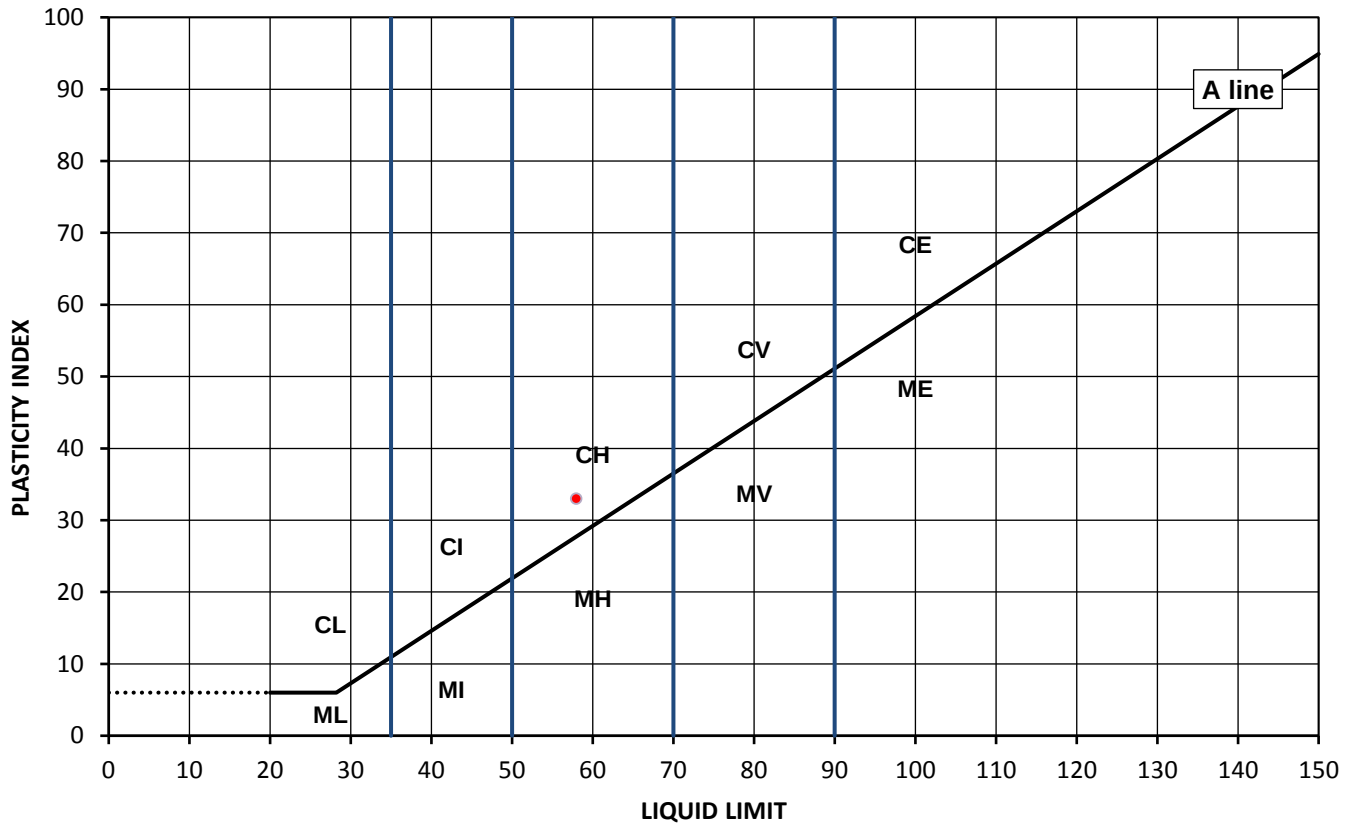
Tested in Accordance with: BS 1377-2: 1990: Clause 4.4 and 5

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

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

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 m	Depth Base m	Type			%	% Passing 425um %	LL %	PL %	PI %	bulk Mg/m3	PD 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

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

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

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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 m	Depth Base m	Type			%	% Passing 425um %	LL %	PL %	PI %	bulk Mg/m3	PD 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

for and on behalf of i2 Analytical Ltd

SUMMARY REPORT

Summary of Classification Test Results

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

4041

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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 m	Depth Base m	Type			%	% Passing 425um %	LL %	PL %	PI %	bulk Mg/m3	PD 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

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

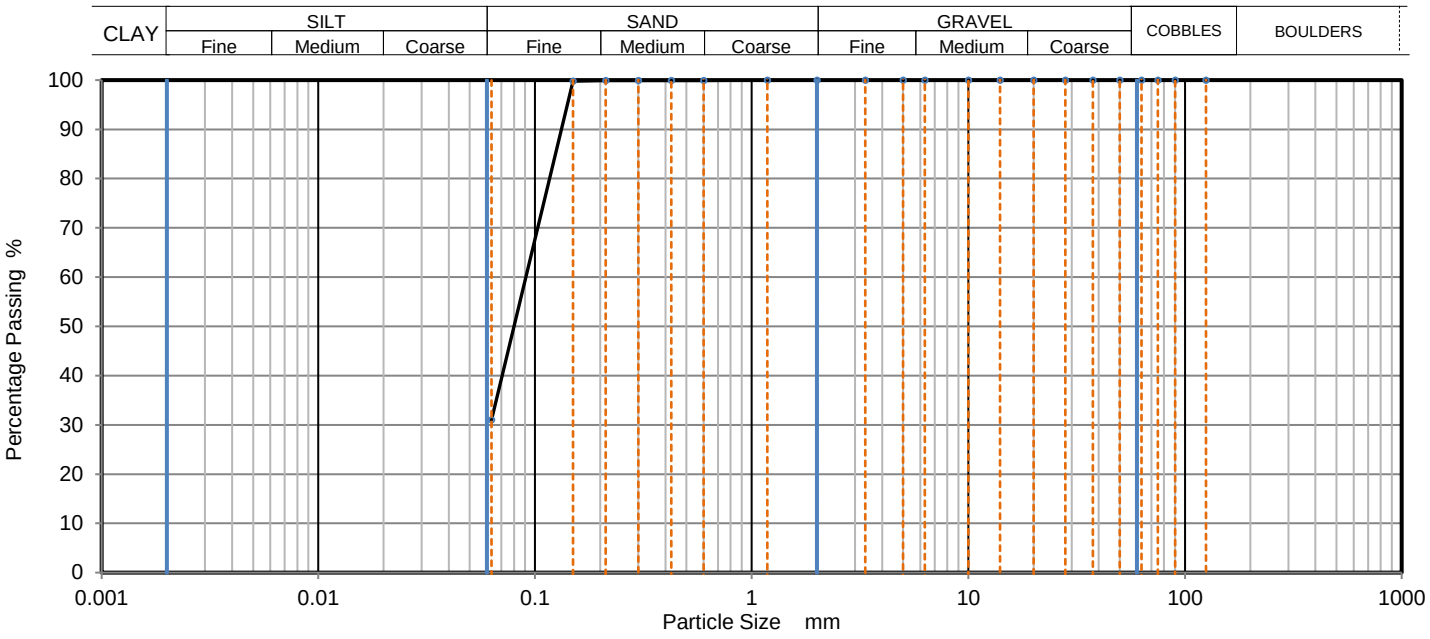
i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

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

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

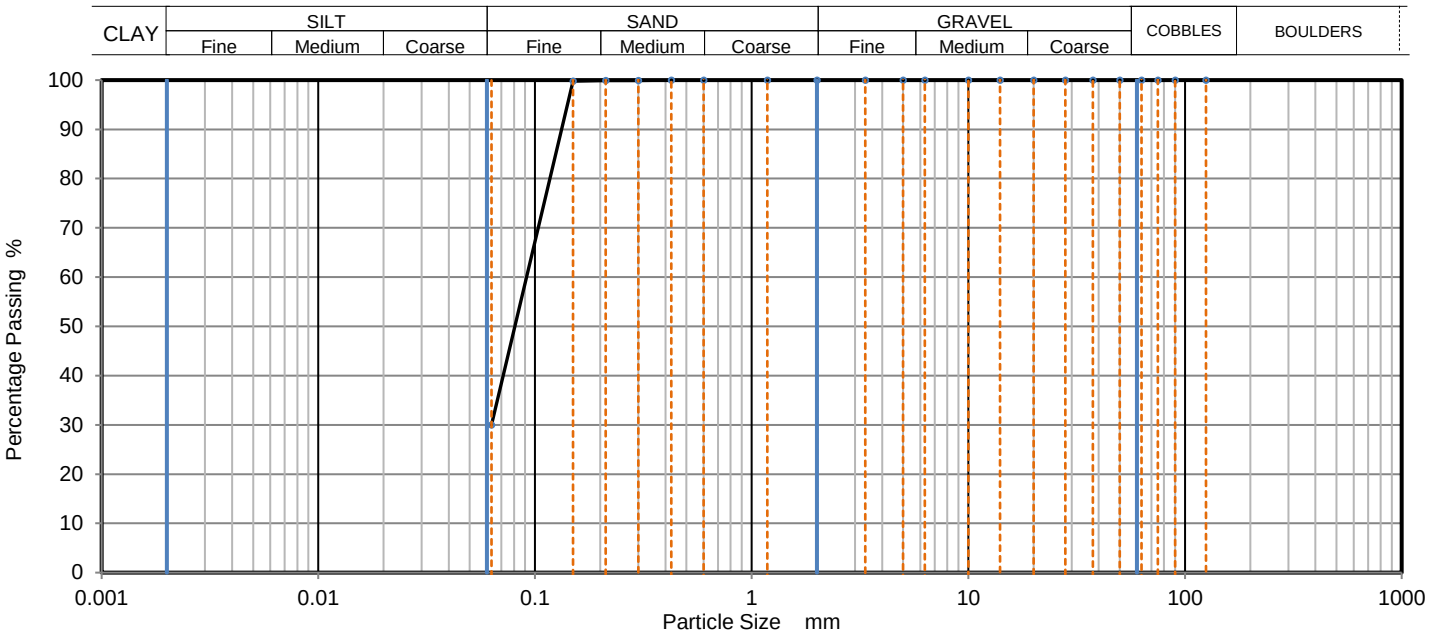
i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

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

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

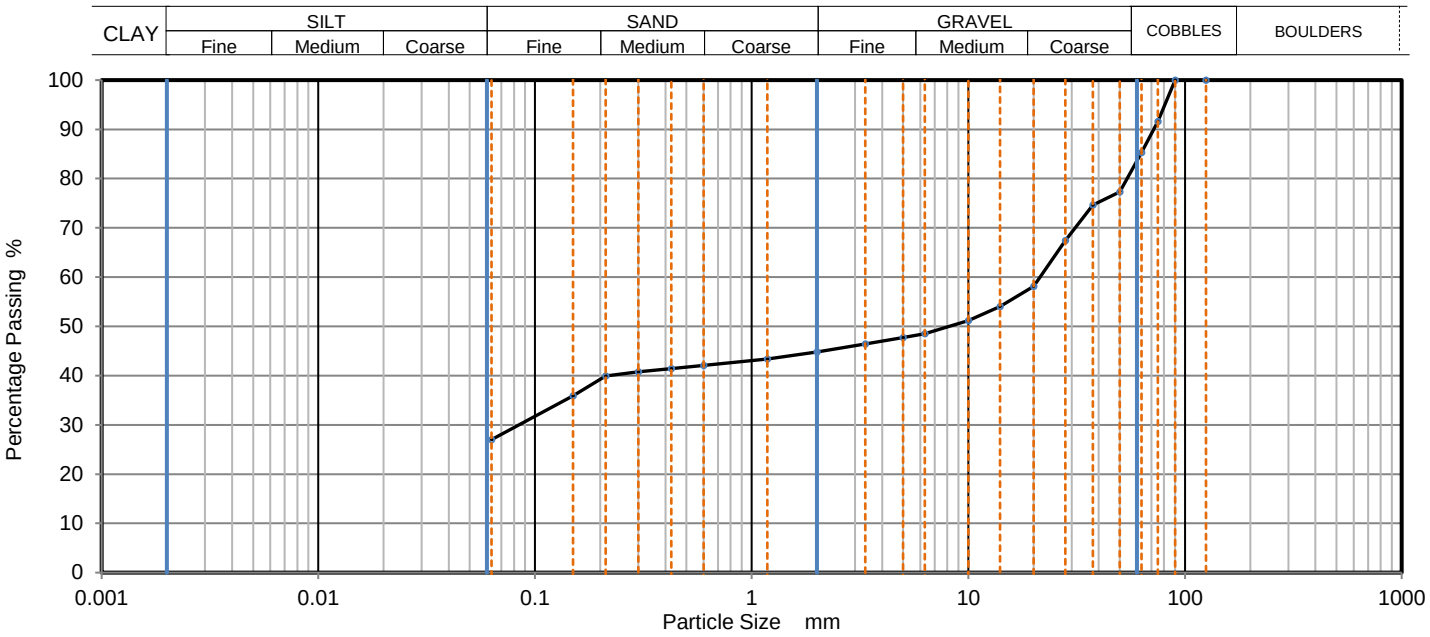
i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

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

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

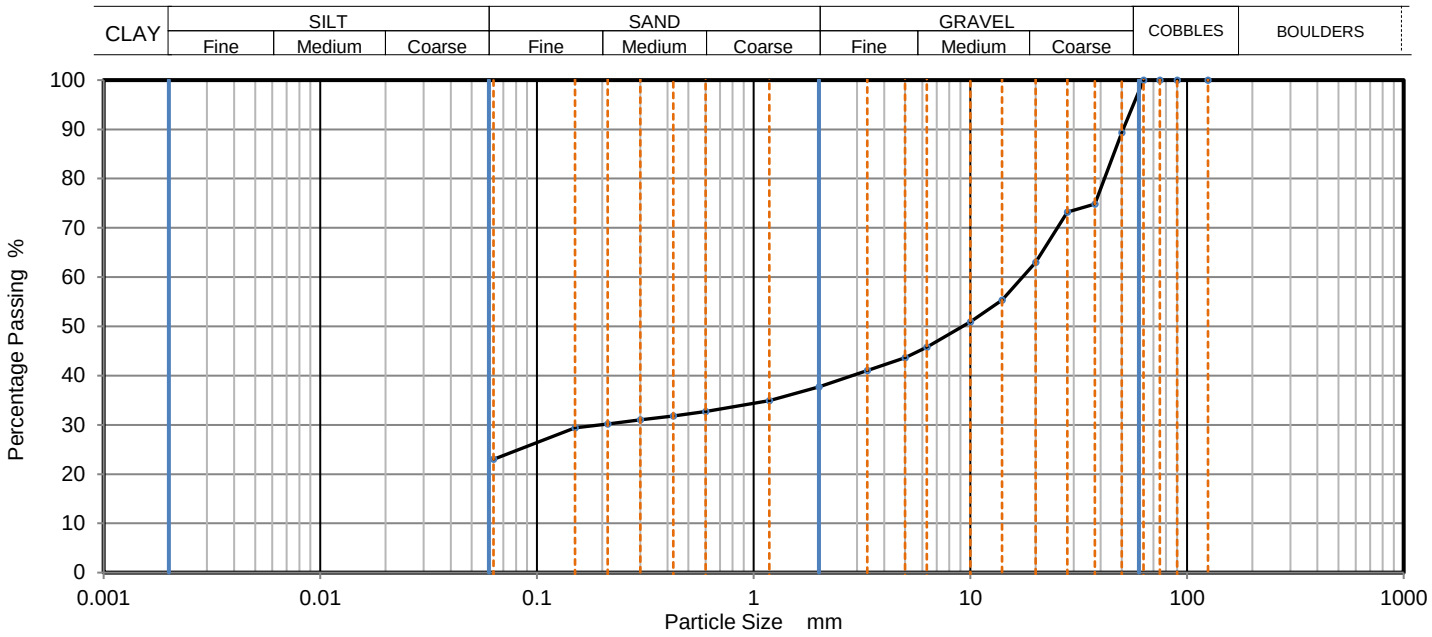
i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

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:	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

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

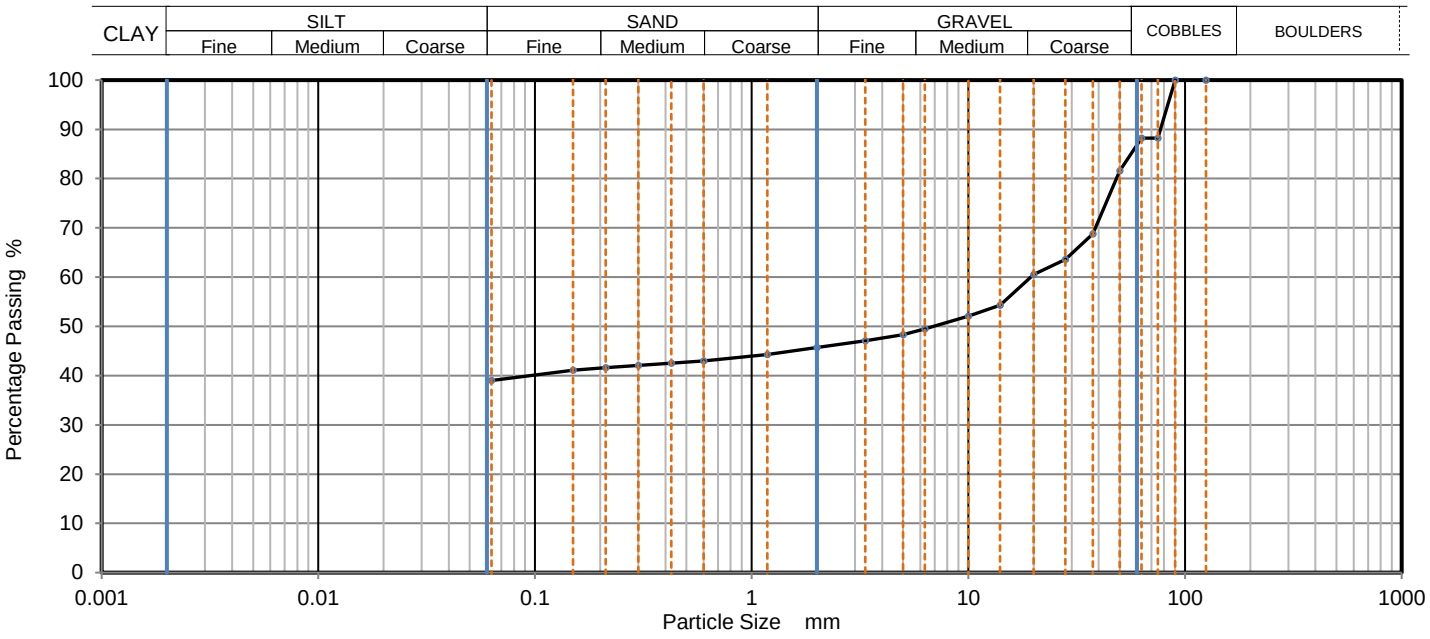
i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

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

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
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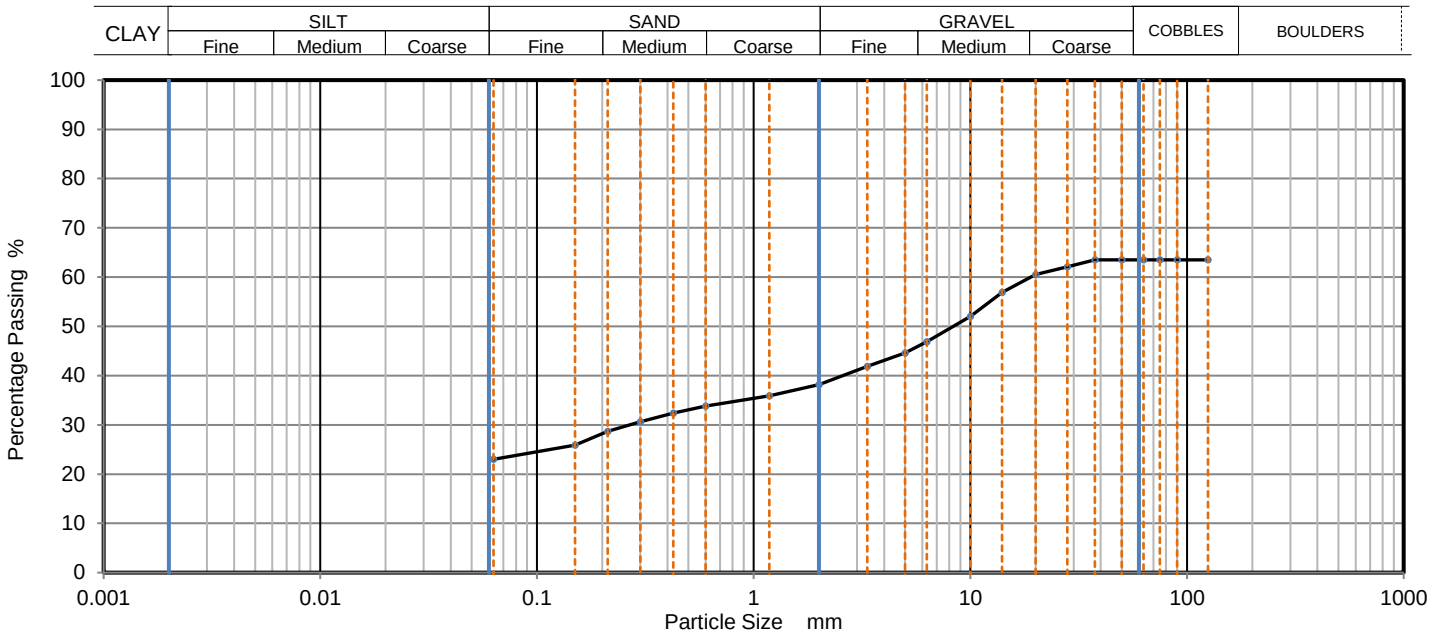
4041

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

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

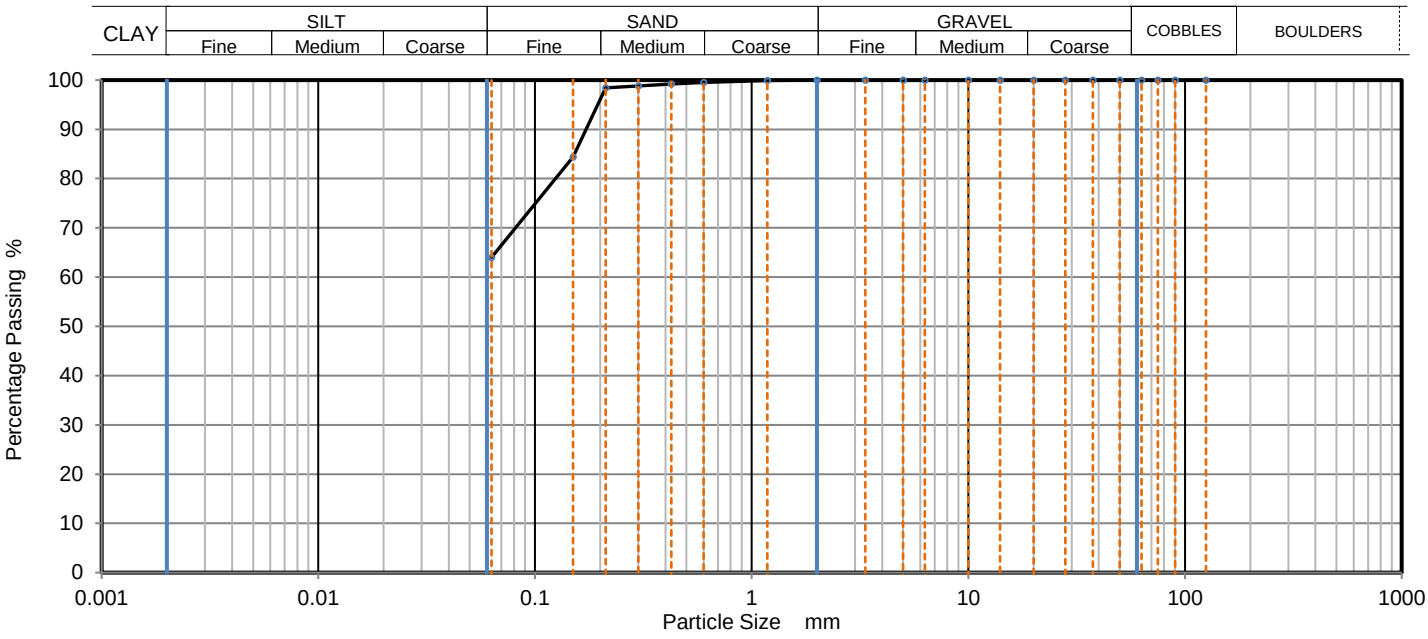
i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

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

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

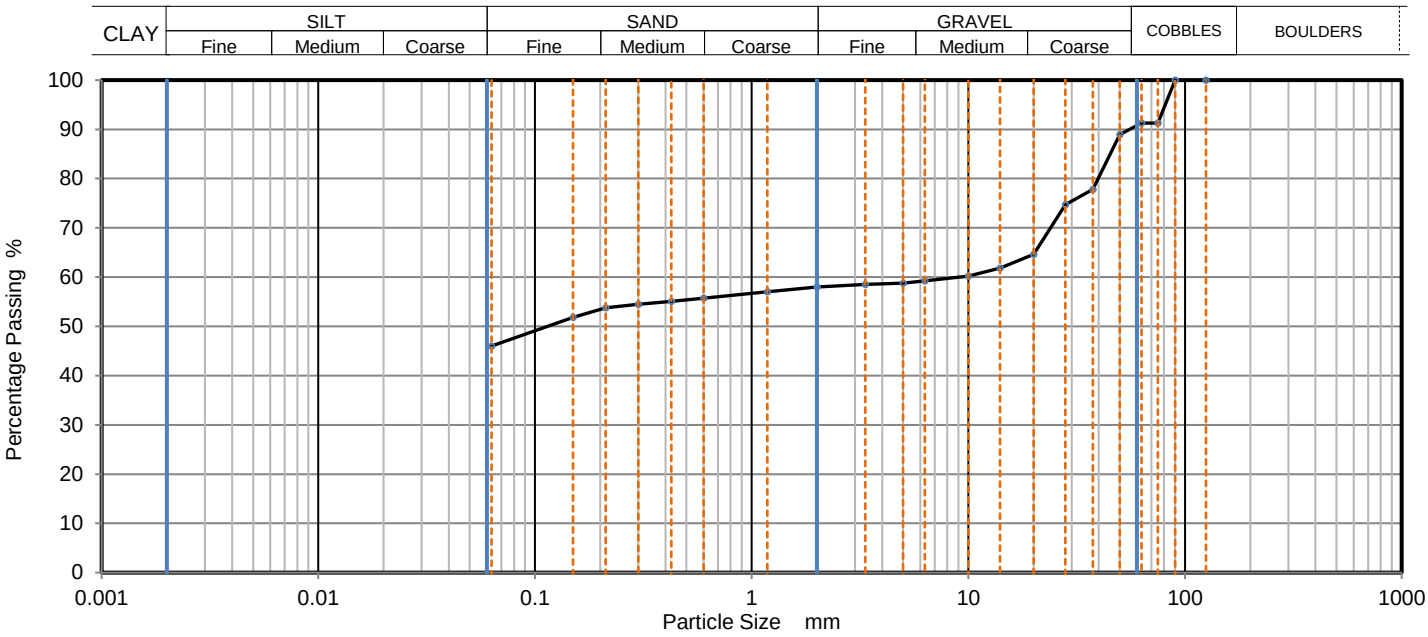
i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

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:	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

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

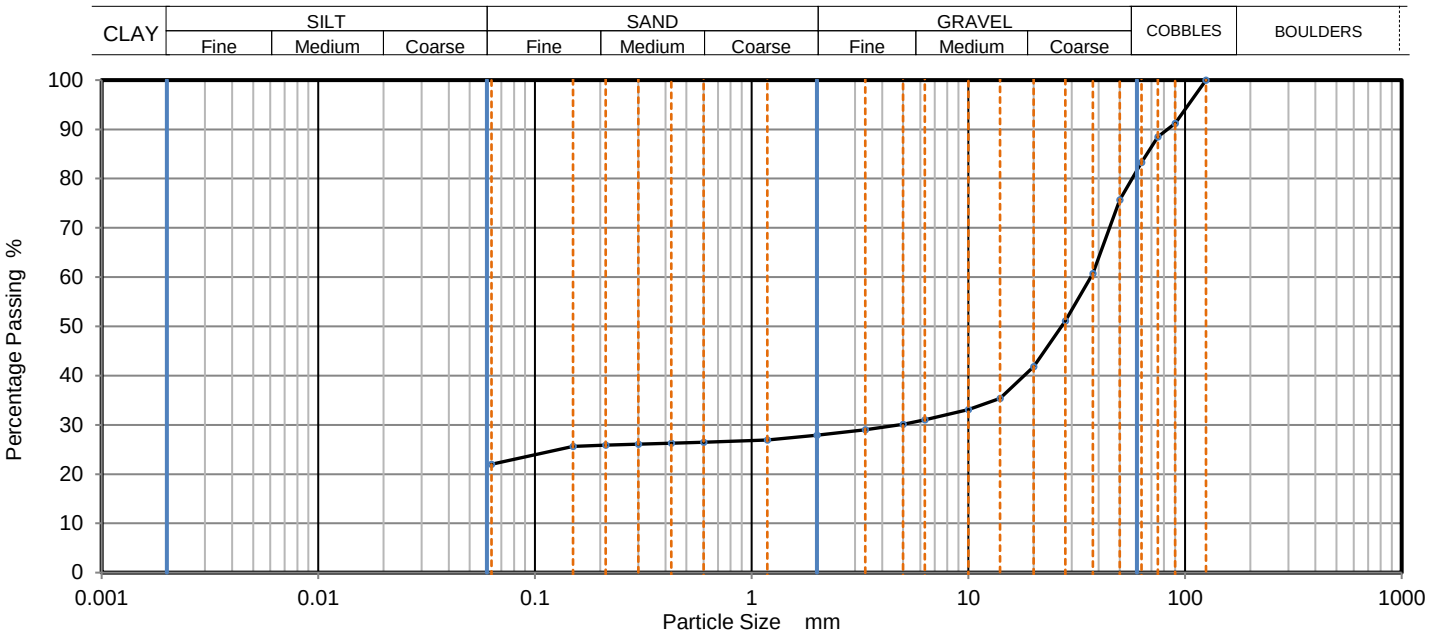
i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

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:	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

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for and on behalf of i2 Analytical Ltd

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Particle Size Distribution

Tested in Accordance with: BS 1377-2: 1990

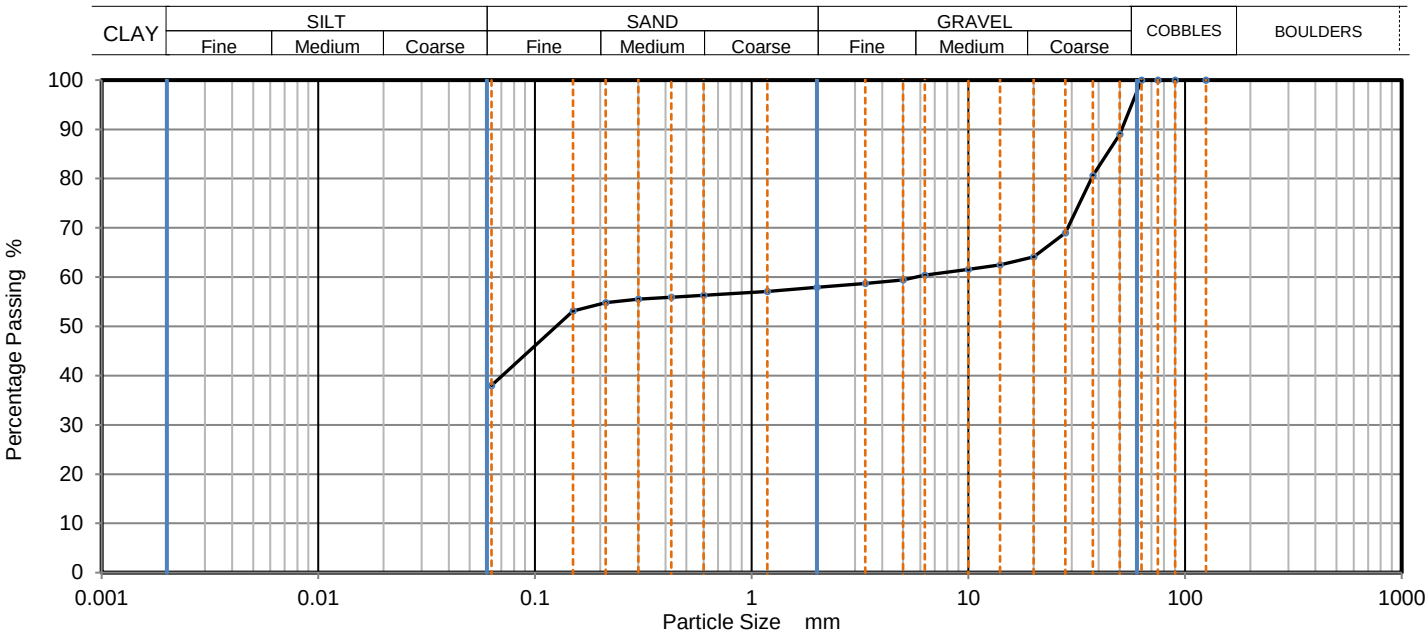
i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

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

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:

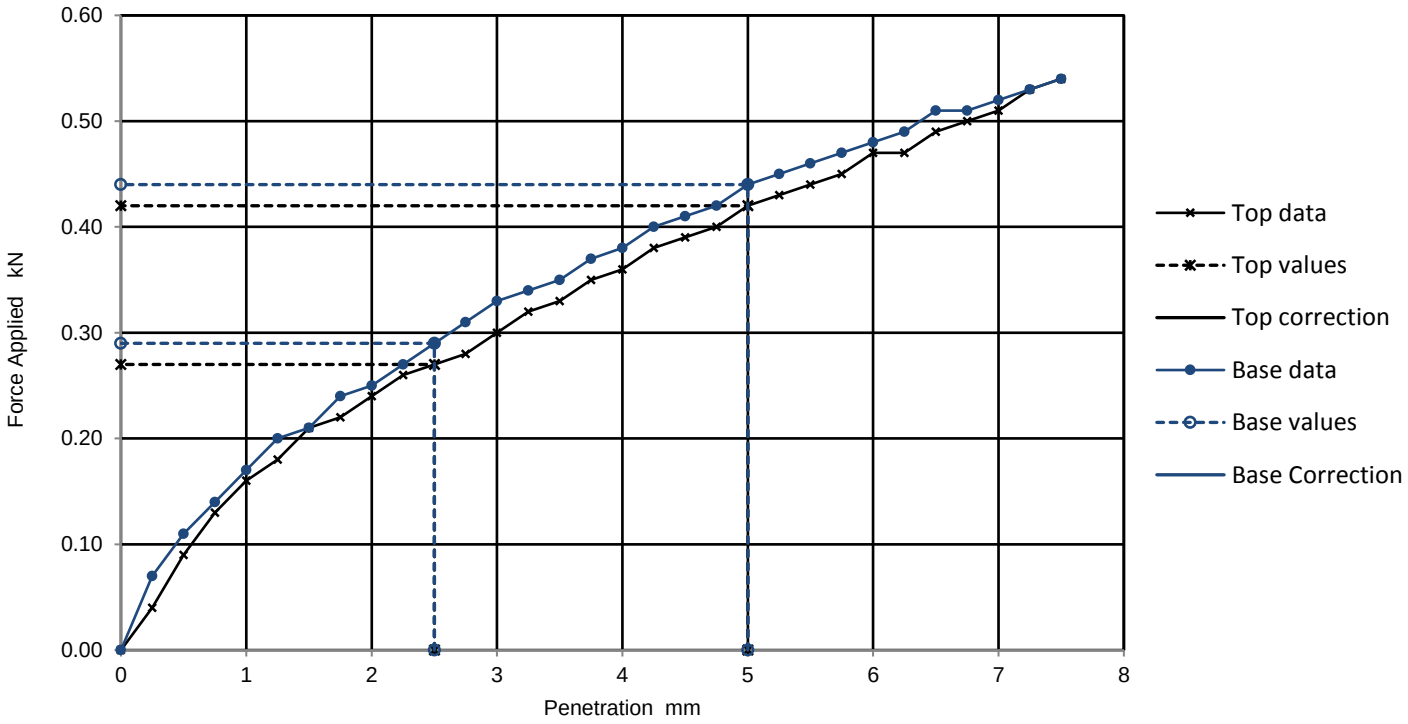
Laboratory Reference:	1112618	Depth Top [m]:	0.55
Hole No.:	TP601	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Yellowish brown slightly gravelly CLAY		

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

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:

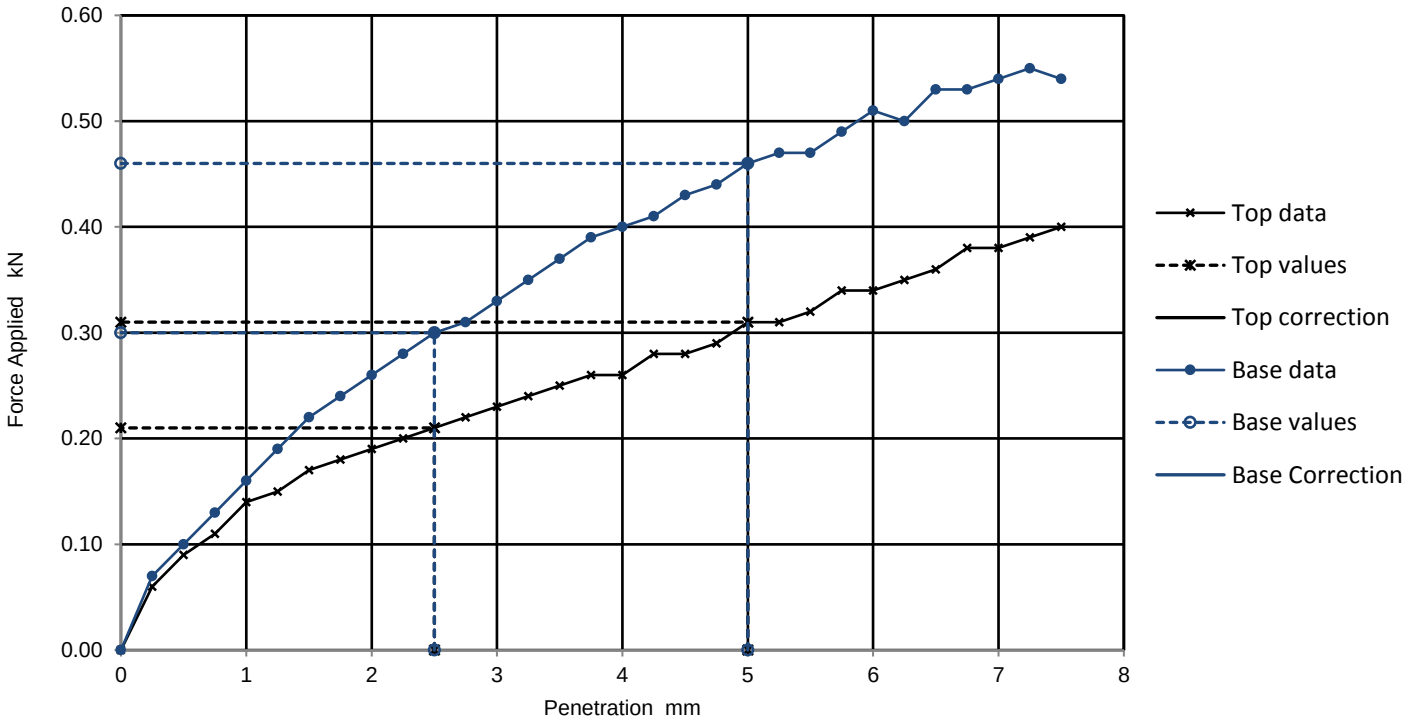
Laboratory Reference:	1112619	Depth Top [m]:	0.80
Hole No.:	TP601	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Yellowish brown slightly gravelly CLAY		

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

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:

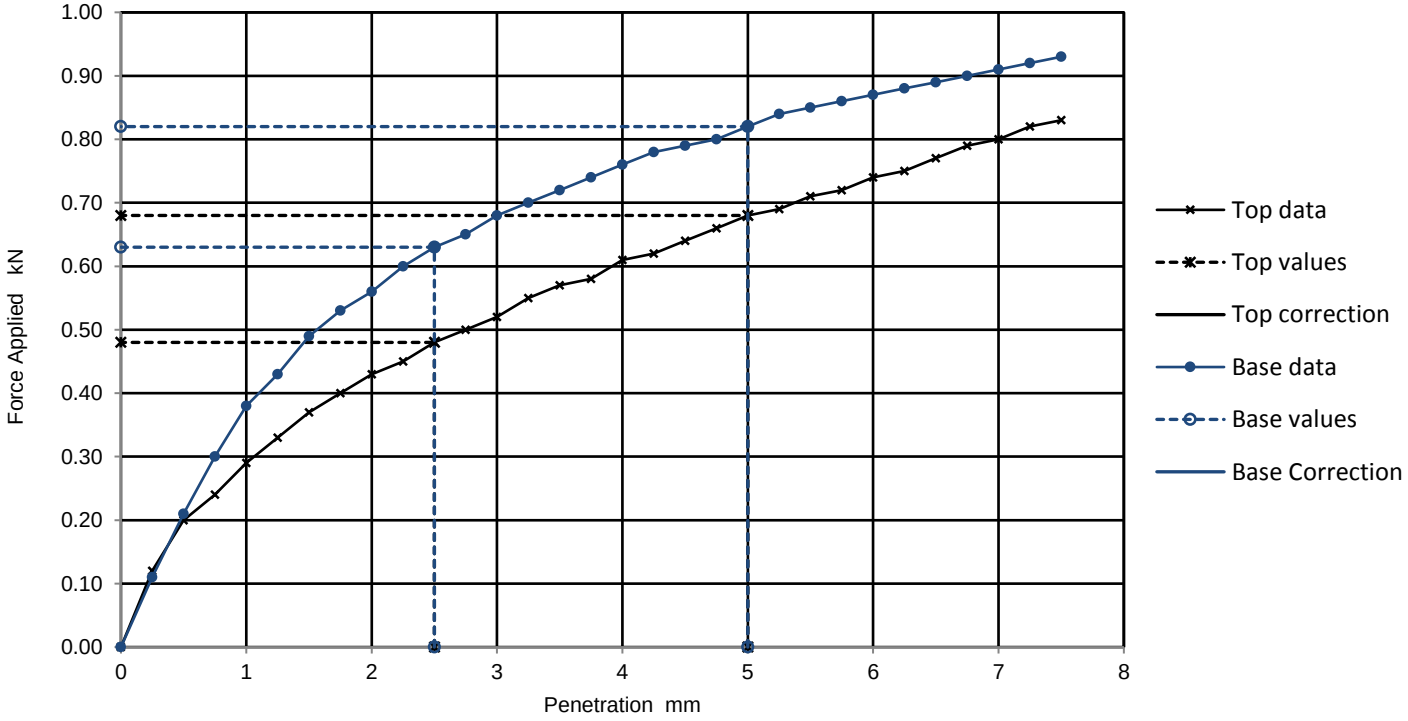
Laboratory Reference:	1112620	Depth Top [m]:	1.20
Hole No.:	TP602	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Orangish brown gravelly CLAY		

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

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for and on behalf of i2 Analytical Ltd

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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:

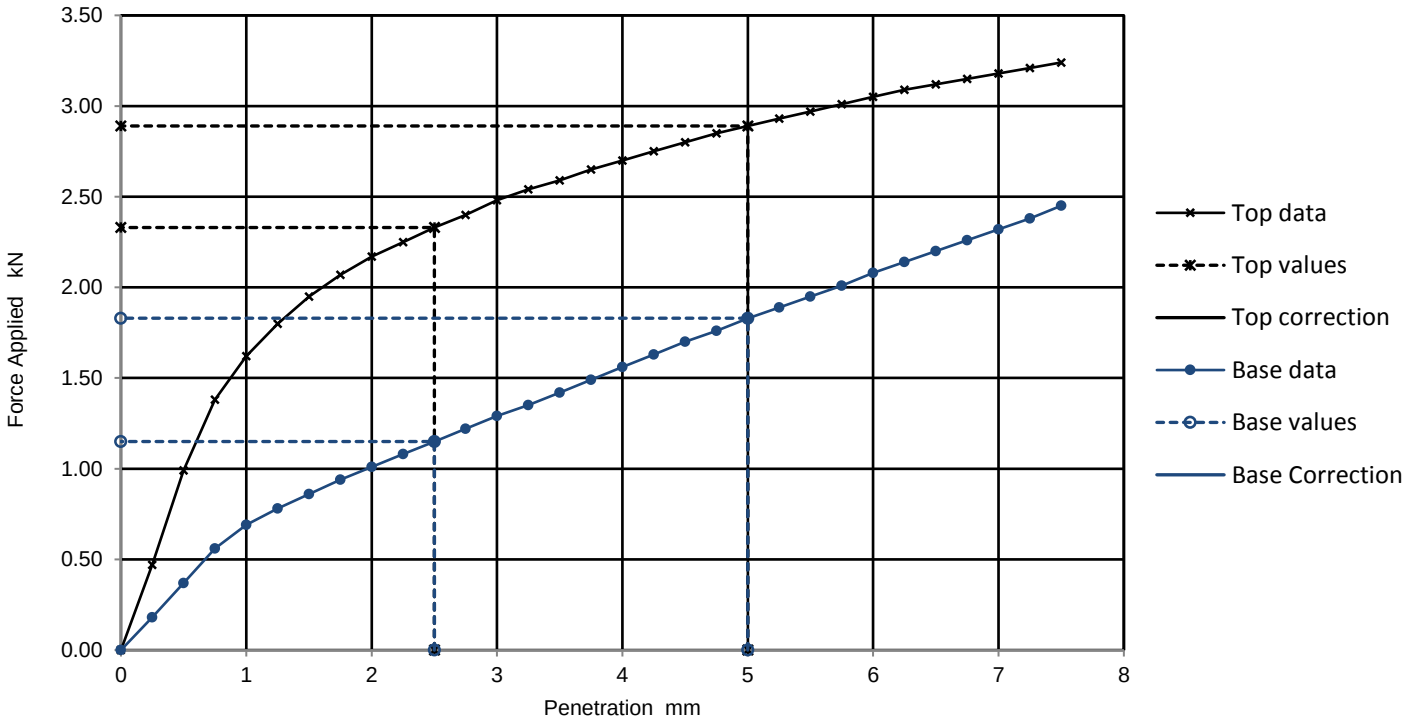
Laboratory Reference:	1112621	Depth Top [m]:	2.30
Hole No.:	TP602	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Orangish brown slightly sandy gravelly CLAY		

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

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Determination of California Bearing Ratio

i2 Analytical Ltd
7 Woodshots Meadow
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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:

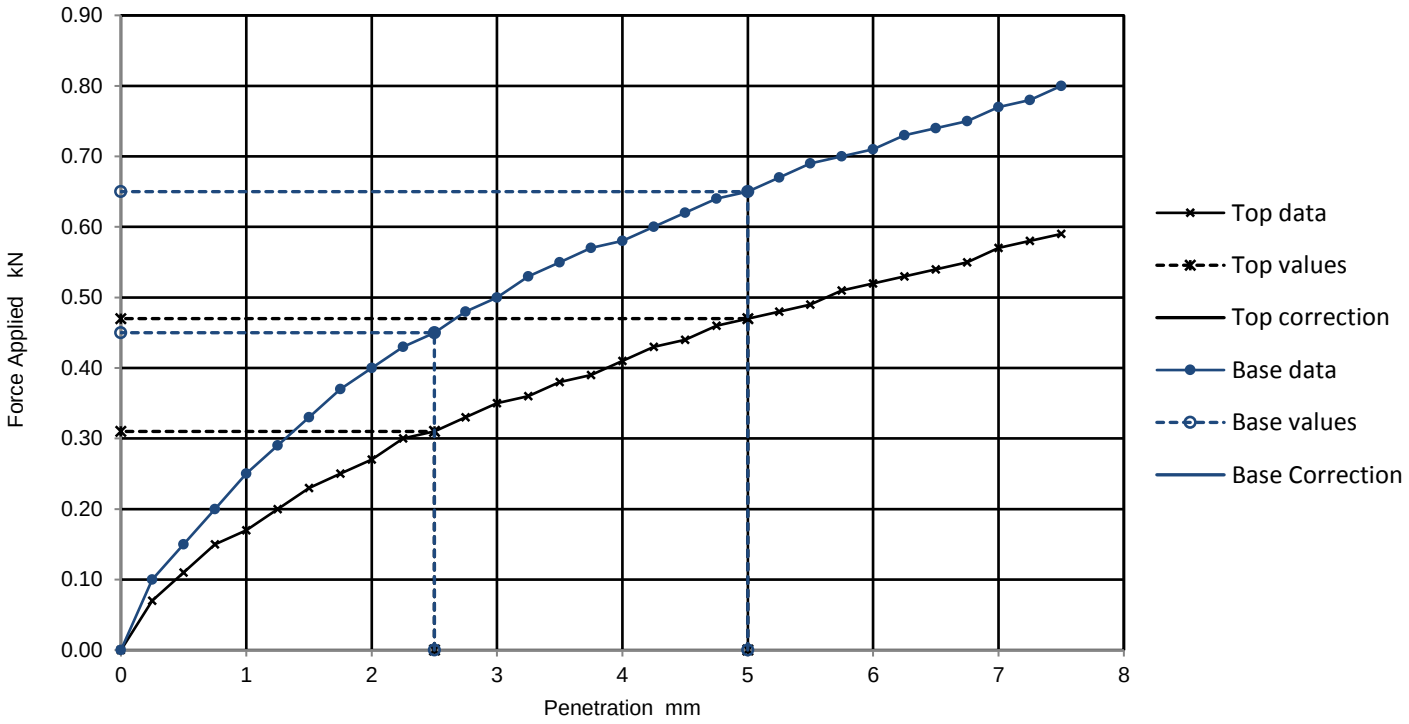
Laboratory Reference:	1112624	Depth Top [m]:	1.50
Hole No.:	TP605	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Yellowish brown slightly sandy CLAY		

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

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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

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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:

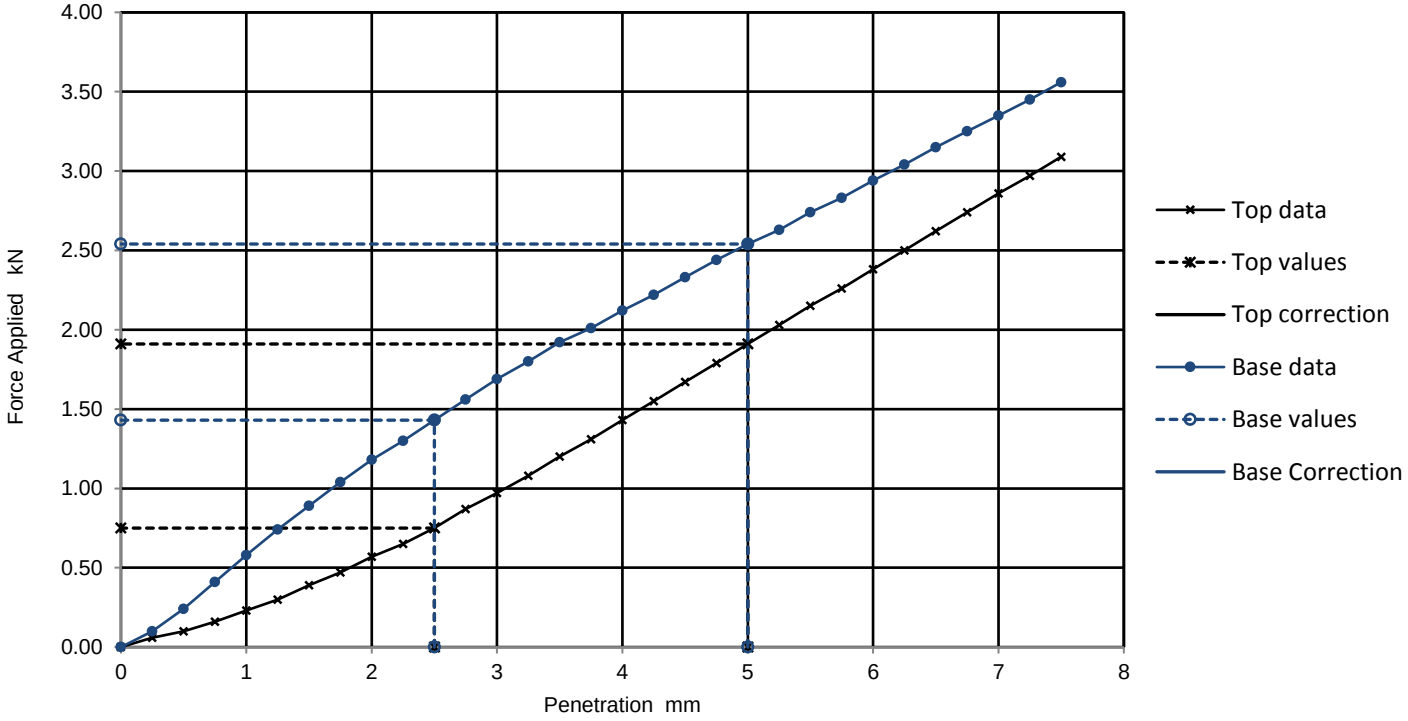
Laboratory Reference:	1112625	Depth Top [m]:	1.00
Hole No.:	TP606	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	White gravelly CHALK		

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, % 2.5mm	5mm	Highest	Average	Moisture Content %
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

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Determination of California Bearing Ratio

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

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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:

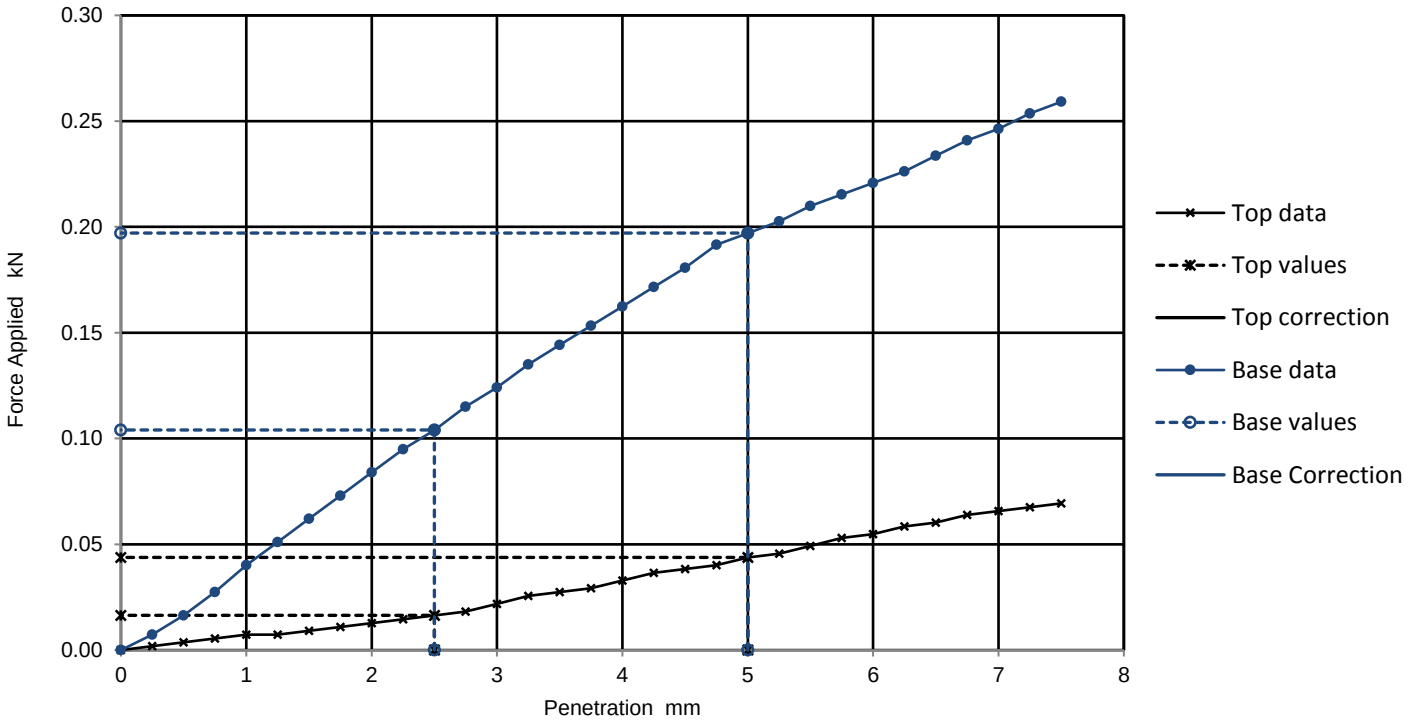
Laboratory Reference:	1112627	Depth Top [m]:	1.50
Hole No.:	TP607	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Cream color clayey gravelly CHALK		

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

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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:

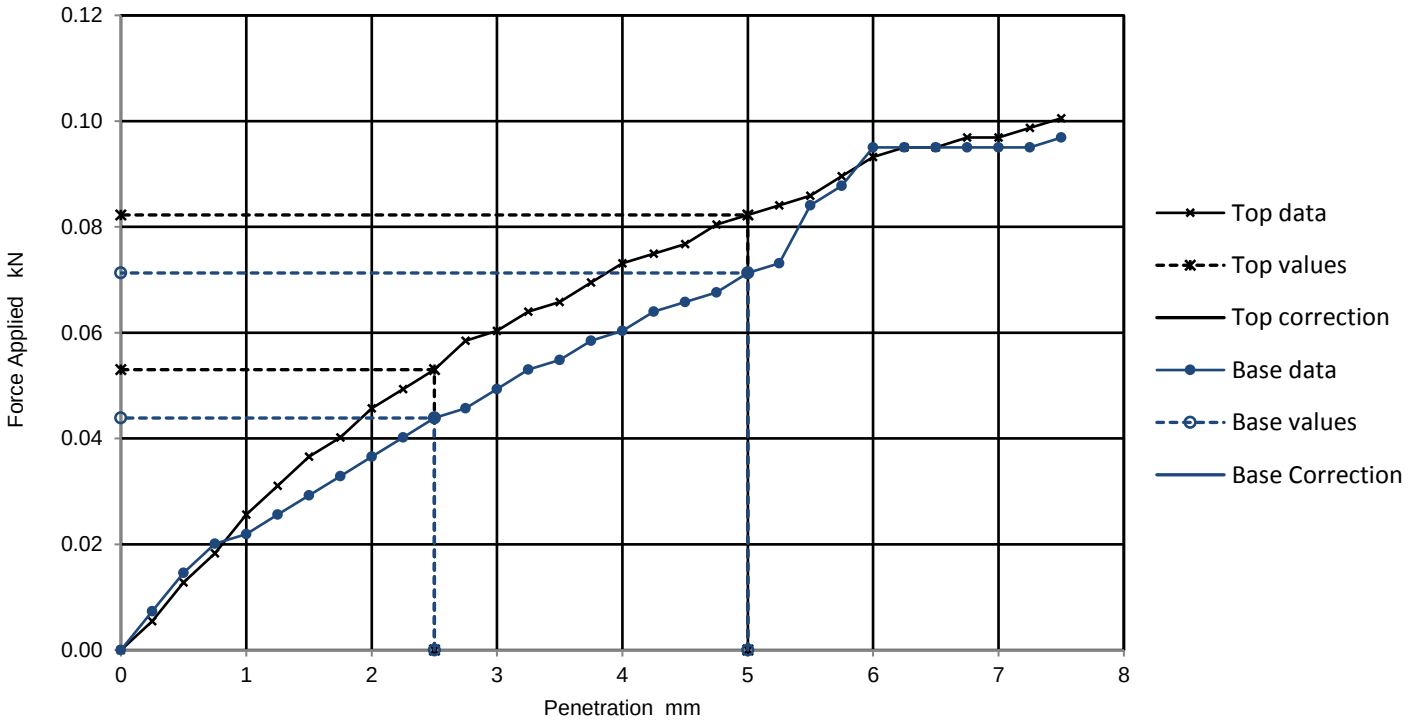
Laboratory Reference:	1112630	Depth Top [m]:	0.60
Hole No.:	TP609	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Brown gravelly CLAY		

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

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TEST CERTIFICATE

Determination of California Bearing Ratio

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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:

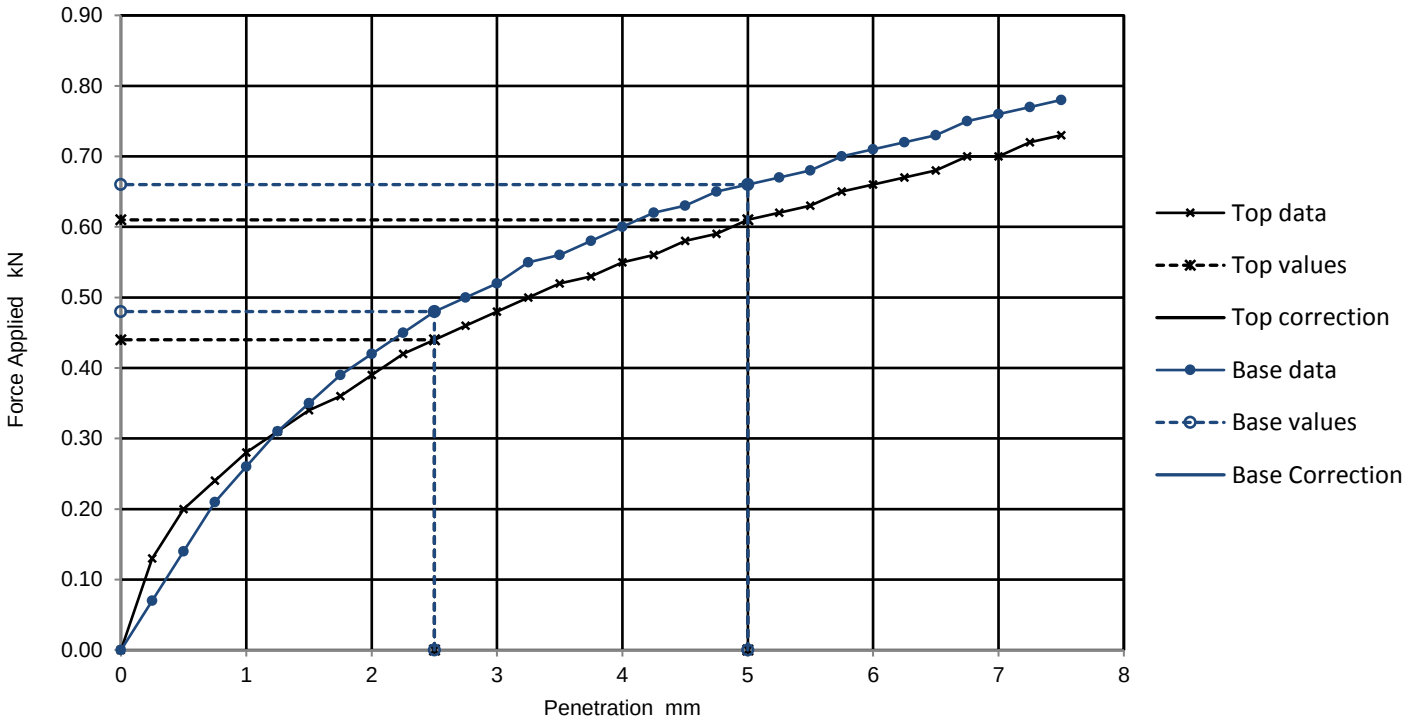
Laboratory Reference:	1112631	Depth Top [m]:	0.90
Hole No.:	TP610	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Yellowish brown slightly gravelly CLAY		

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

for and on behalf of i2 Analytical Ltd

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Determination of California Bearing Ratio

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

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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:

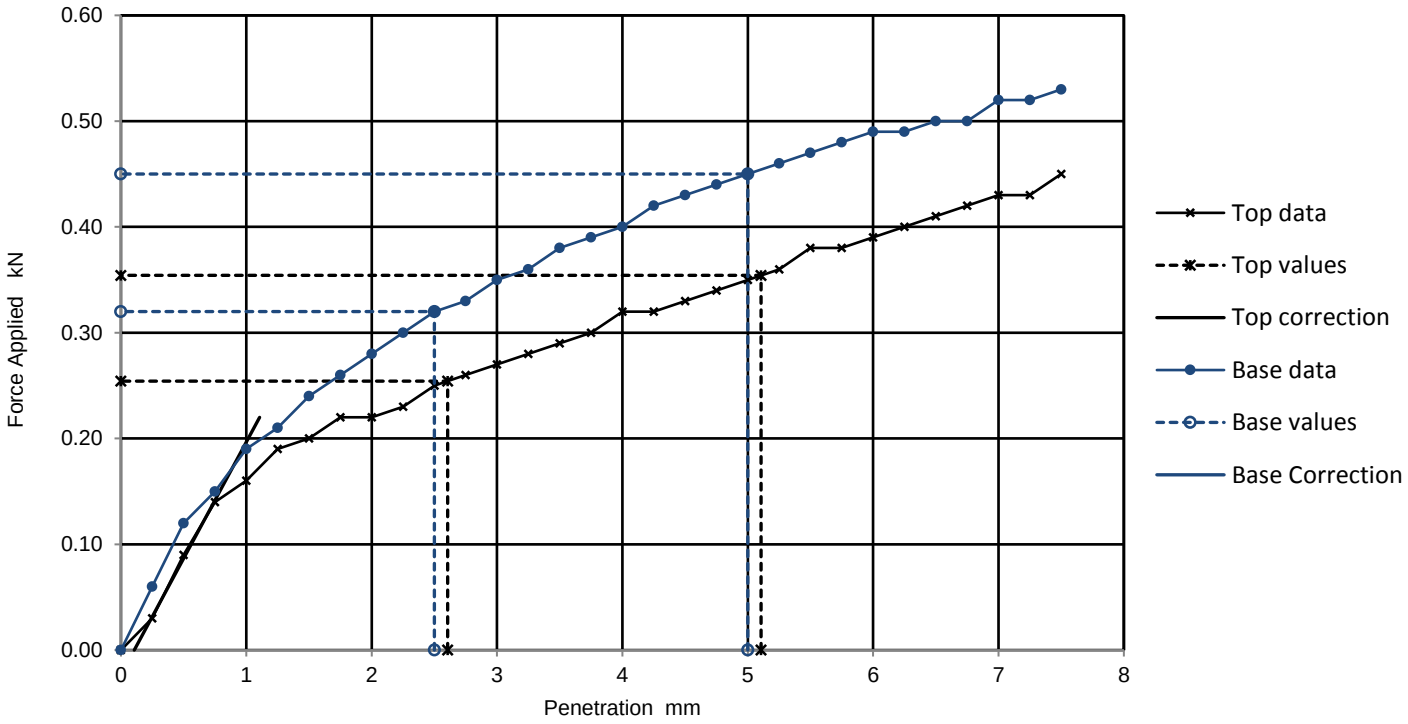
Laboratory Reference:	1112632	Depth Top [m]:	2.30
Hole No.:	TP610	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Orangish brown slightly gravelly CLAY		

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

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:

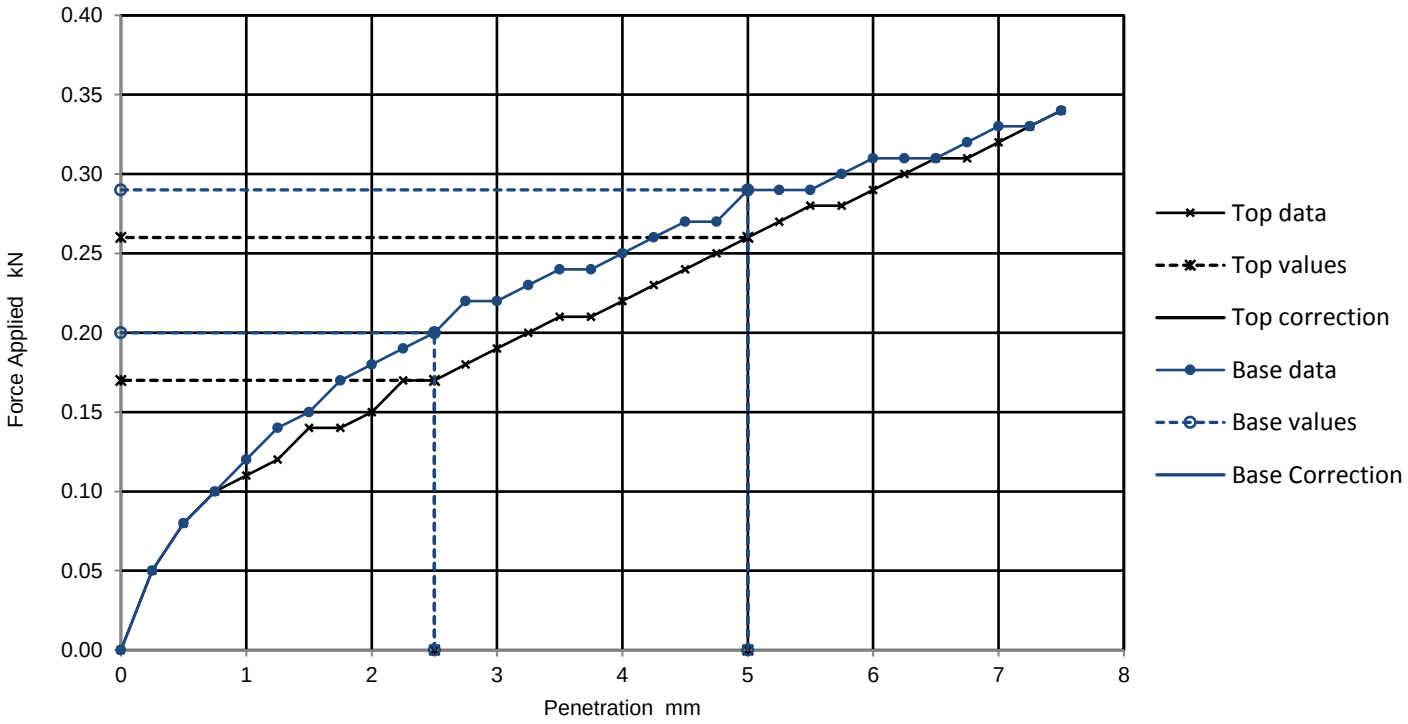
Laboratory Reference:	1112634	Depth Top [m]:	1.40
Hole No.:	TP612	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Orange slightly gravelly CLAY		

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

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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		

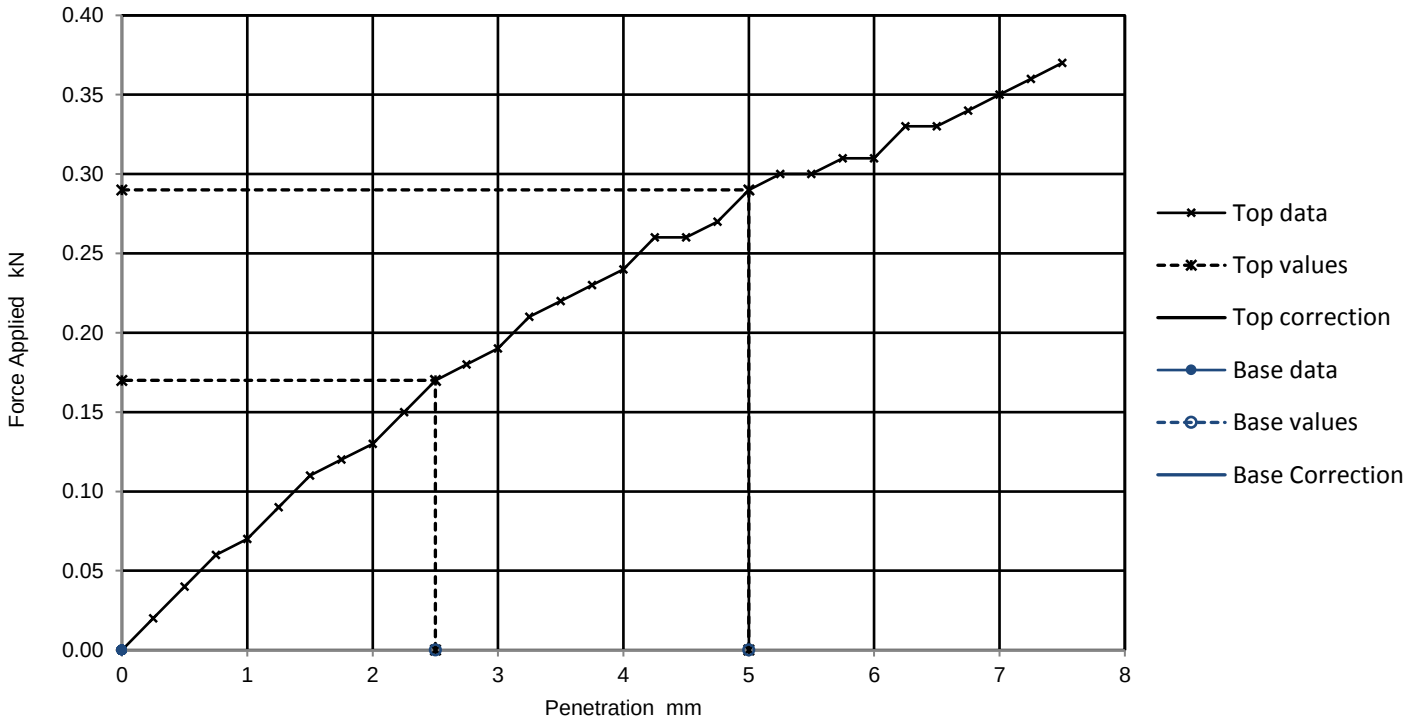
Test Results:

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, % 2.5mm	5mm	Highest	Average	Moisture Content %
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

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Determination of California Bearing Ratio

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7 Woodshots Meadow
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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		

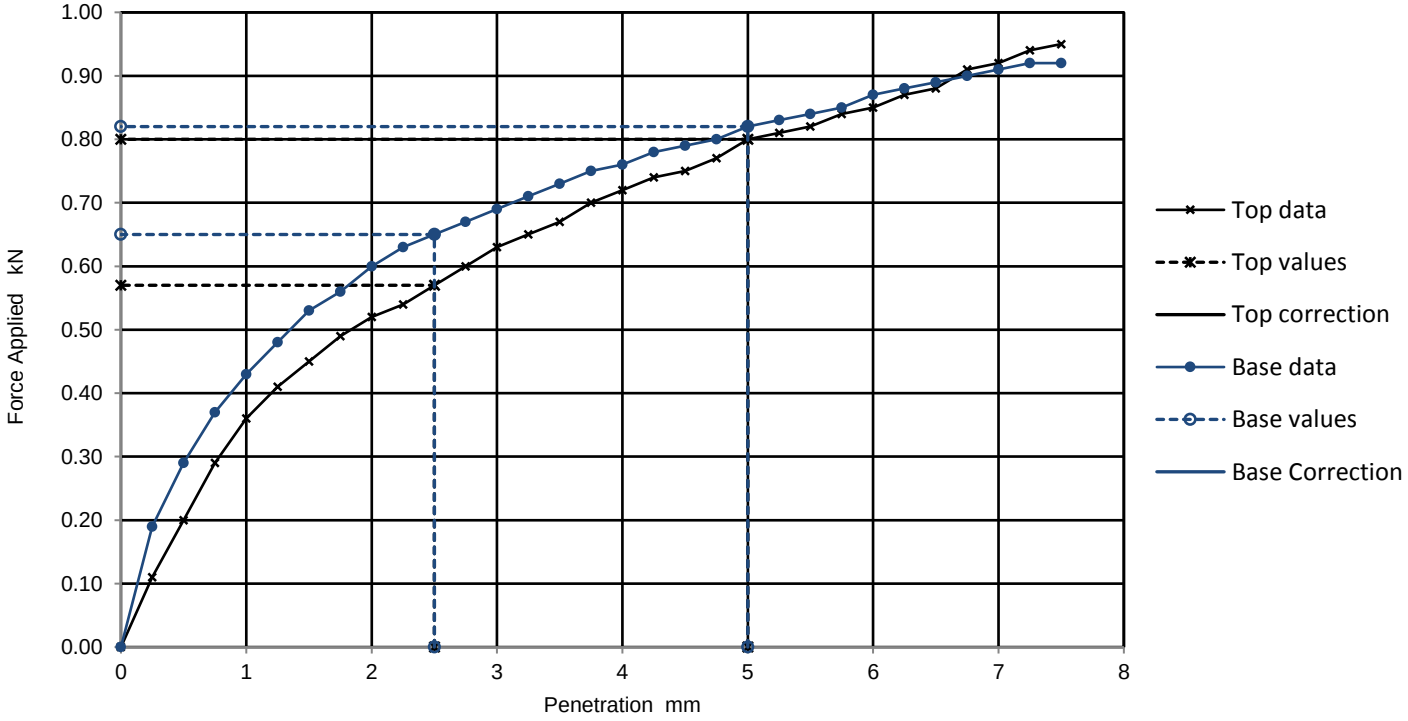
Test Results:

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

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:

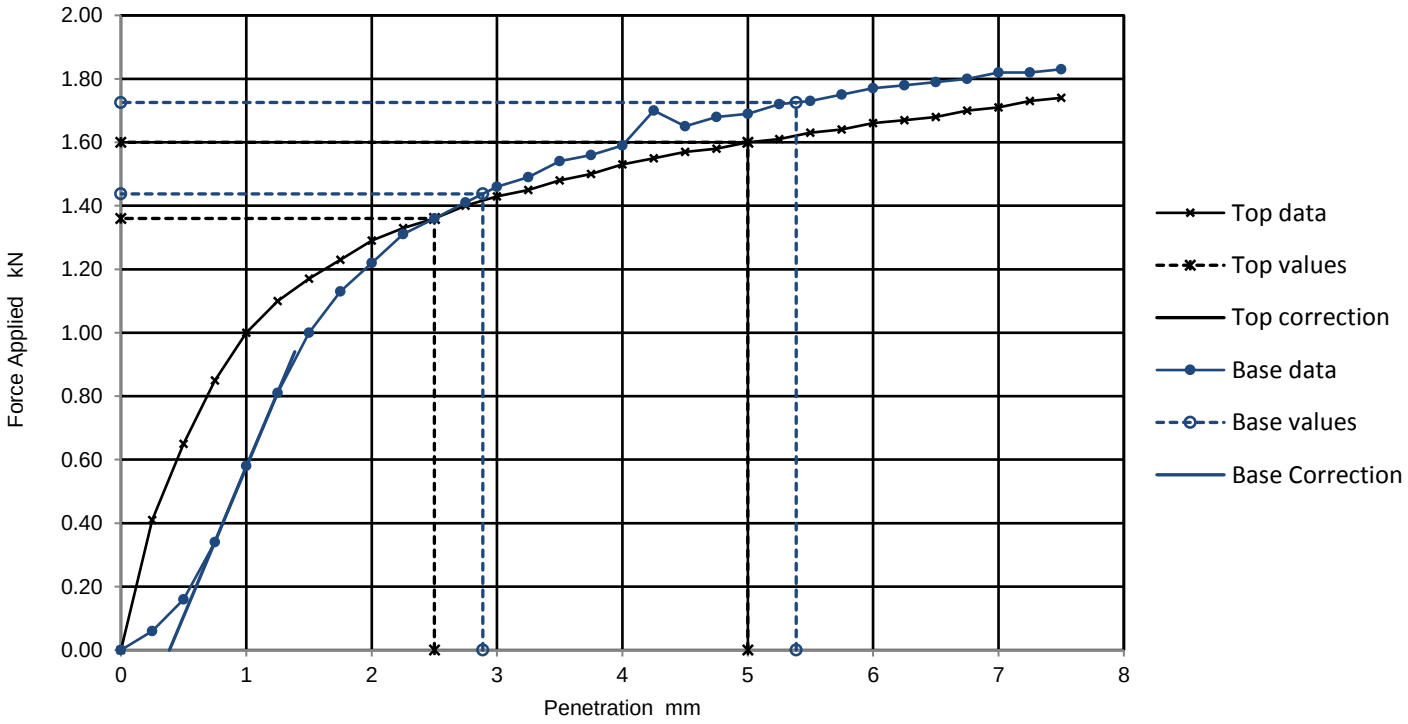
Laboratory Reference:	1112639	Depth Top [m]:	2.00
Hole No.:	TP615	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Orangish brown slightly gravelly CLAY		

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

for and on behalf of i2 Analytical Ltd

TEST CERTIFICATE

Determination of California Bearing Ratio

i2 Analytical Ltd
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Croxley Green Business Park
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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:

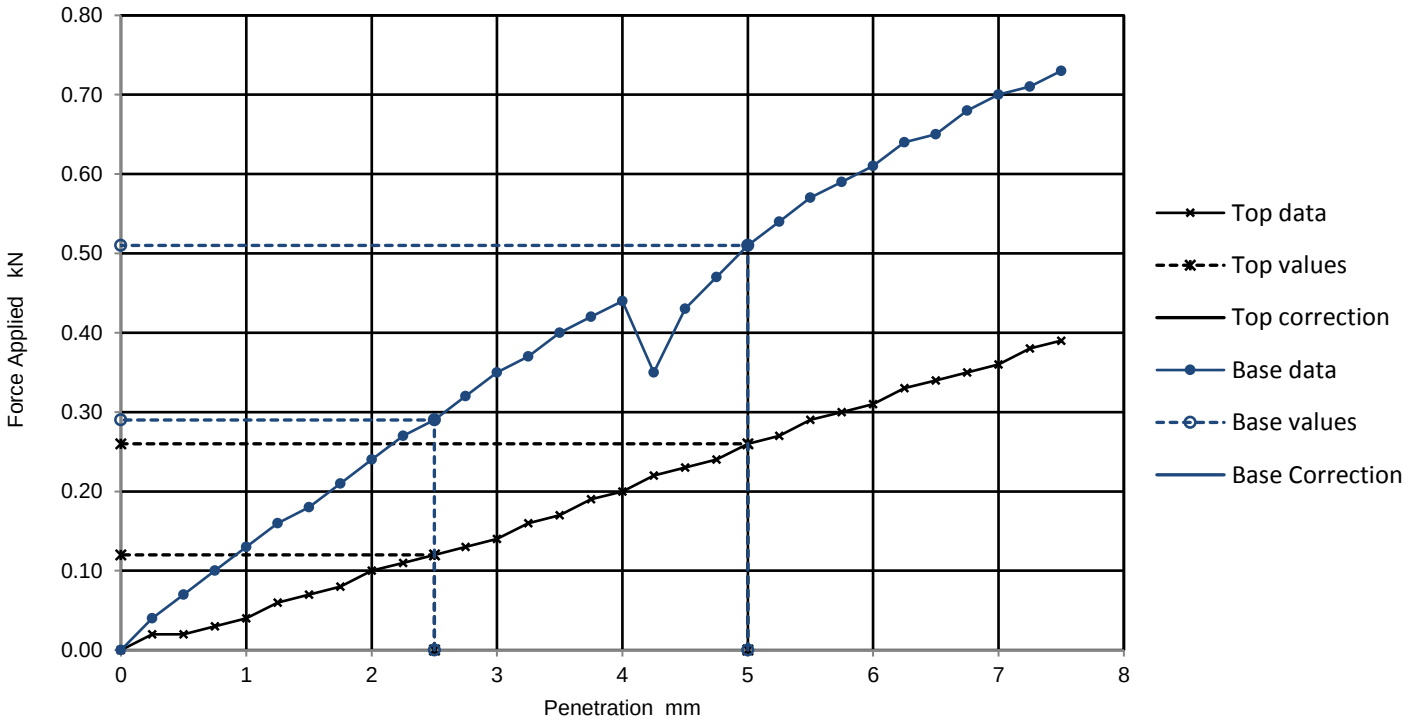
Laboratory Reference:	1112640	Depth Top [m]:	0.50
Hole No.:	TP616	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Brown slightly gravelly CLAY		

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

for and on behalf of i2 Analytical Ltd

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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:

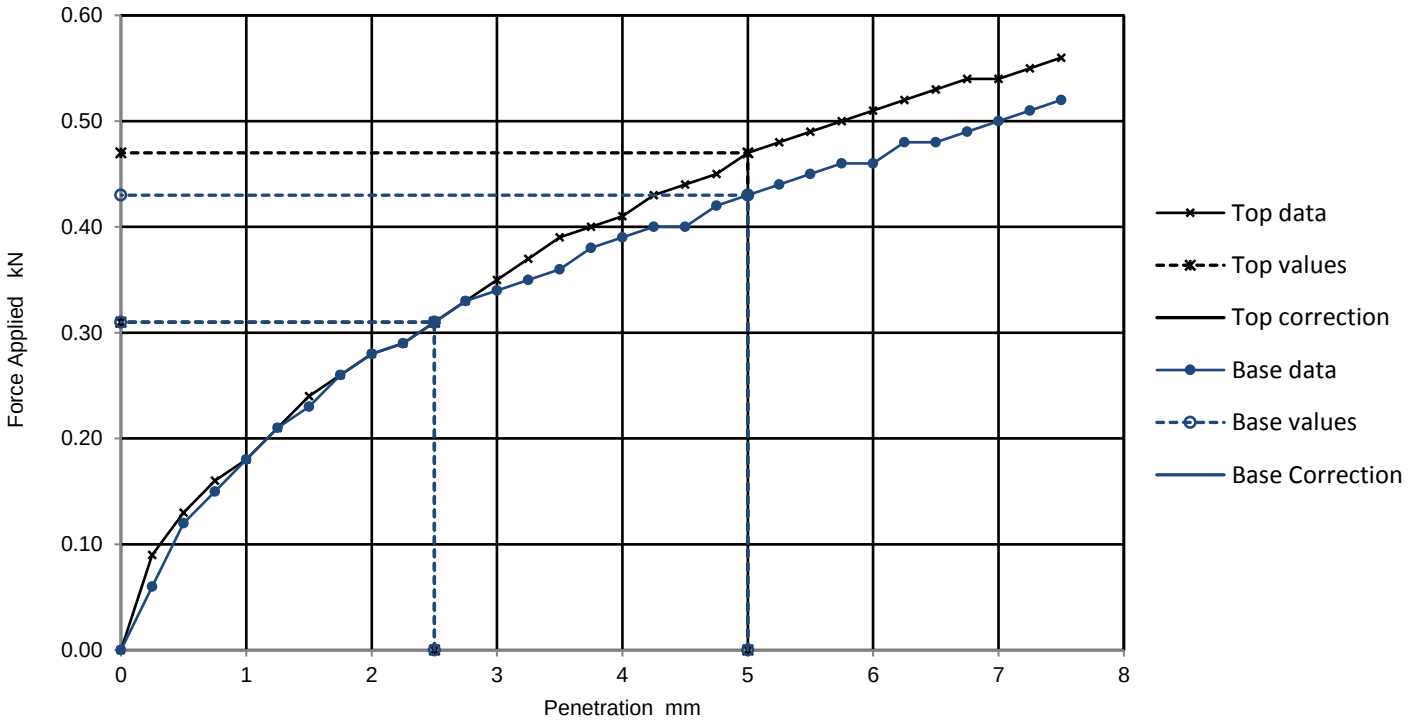
Laboratory Reference:	1112641	Depth Top [m]:	2.00
Hole No.:	TP616	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	B
Sample Description:	Yellowish brown slightly gravelly CLAY		

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

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

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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

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

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

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		

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.

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.

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)

Appendix F

Site Monitoring Data

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**	
							Min. individual values:						0.0		0.0		0.2		10.2	0	0	**Summary statistics for this monitoring period.**
							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	

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**	
							Min. individual values:						0.0		0.0		0.2		10.8	0	0	**Summary statistics for this monitoring period.**
							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	

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**	
							Min. individual values:						0.0		0.0		0.1		11.6	0	0	**Summary statistics for this monitoring period.**
							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
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Northamptonshire
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Analytical Report Number : 18-20594

Replaces Analytical Report Number : 18-20594, issue no. 1

Project / Site name:	Fort Halstead	**Samples received on:**	23/11/2018
Your job number:	C-10730-C	**Samples instructed on:**	30/11/2018
Your order number:		**Analysis completed by:**	14/12/2018
Report Issue Number:	2	**Report issued on:**	14/12/2018
Samples Analysed:	7 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

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Analytical Report Number: 18-20594

Project / Site name: Fort Halstead

Lab Sample Number				1104260	1104261	1104262	1104263	1104264
Sample Reference				BH601	BH603	BH604	WS603	WS605
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70	0.70	0.55	0.80	0.70
Date Sampled				19/11/2018	21/11/2018	22/11/2018	22/11/2018	22/11/2018
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	26	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	6.4	15	20	15	20
Total mass of sample received	kg	0.001	NONE	0.49	0.47	0.86	0.50	0.47
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	Not-detected
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-	-	0.004	-
Asbestos Quantification Total	%	0.001	ISO 17025	-	-	-	0.004	-
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.7	6.0	8.5	9.0	7.7
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.028	0.026	0.19	1.8	0.037
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.0021	0.0035	< 0.0010	0.0075	0.0031
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	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.40	1.1	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.44	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.78	4.4	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.76	4.4	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.42	2.7	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.39	1.9	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.62	3.2	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.20	1.2	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.47	2.6	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.25	1.5	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.35	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.37	1.8	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	4.66	25.5	< 0.80
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	4.9	11	4.6	8.0	18
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.44	0.72	0.20	0.89	11
Boron (water soluble)	mg/kg	0.2	MCERTS	< 0.2	0.7	1.3	2.6	1.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.3	0.8	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	15	24	6.8	24	53
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	15	25	6.9	24	53
Copper (aqua regia extractable)	mg/kg	1	MCERTS	13	18	11	45	38
Lead (aqua regia extractable)	mg/kg	1	MCERTS	16	19	93	100	30
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	17	19	4.9	22	60
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	18	46	11	40	98
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	26	74	37	100	110

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Project / Site name: Fort Halstead

Lab Sample Number				1104260	1104261	1104262	1104263	1104264
Sample Reference				BH601	BH603	BH604	WS603	WS605
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70	0.70	0.55	0.80	0.70
Date Sampled				19/11/2018	21/11/2018	22/11/2018	22/11/2018	22/11/2018
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	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
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	37	< 8.0
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	20	< 8.4
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
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	44	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	120	< 10
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	16	< 8.4

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Project / Site name: Fort Halstead

Lab Sample Number				1104265	1104266			
Sample Reference				WS606	WS607			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.30	0.30			
Date Sampled				22/11/2018	22/11/2018			
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	12	22			
Total mass of sample received	kg	0.001	NONE	0.51	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			
Asbestos Quantification (Stage 2)	%	0.001	ISO 17025	-	-			
Asbestos Quantification Total	%	0.001	ISO 17025	-	-			
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	6.2	7.2			
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1			
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.027	0.019			
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.013	0.0041			
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	0.05	MCERTS	< 0.05	< 0.05			
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Fluoranthene	mg/kg	0.05	MCERTS	0.43	< 0.05			
Pyrene	mg/kg	0.05	MCERTS	0.43	< 0.05			
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.23	< 0.05			
Chrysene	mg/kg	0.05	MCERTS	0.19	< 0.05			
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.38	< 0.05			
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.11	< 0.05			
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.22	< 0.05			
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	1.99	< 0.80			
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	11	16			
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.1	1.6			
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5	1.5			
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	23	52			
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	53			
Copper (aqua regia extractable)	mg/kg	1	MCERTS	23	35			
Lead (aqua regia extractable)	mg/kg	1	MCERTS	80	26			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3			
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	19	28			
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0			
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	38	91			
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	71	71			

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Project / Site name: Fort Halstead

Lab Sample Number				1104265	1104266			
Sample Reference				WS606	WS607			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.30	0.30			
Date Sampled				22/11/2018	22/11/2018			
Time Taken				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	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
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 > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4			
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001			
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			

Analytical Report Number: 18-20594
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
1104263	WS603	0.80	116	Loose Fibres	**Chrysotile**	0.004	**0.004**

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

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* 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 *
1104260	BH601	None Supplied	0.70	Brown clay with gravel and stones.
1104261	BH603	None Supplied	0.70	Brown clay with gravel.
1104262	BH604	None Supplied	0.55	Beige clay and sand with gravel and chalk.
1104263	WS603	None Supplied	0.80	Brown clay and sand with gravel.
1104264	WS605	None Supplied	0.70	Brown clay with gravel.
1104265	WS606	None Supplied	0.30	Brown loam and clay with gravel and vegetation.
1104266	WS607	None Supplied	0.30	Brown clay with gravel.

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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
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	Asbestos quantification by gravimetric method - in house method based on references.	HSE Report No: 83/1996, HSG 248, HSG 264 & SCA Blue Book (draft).	A006-PL	D	ISO 17025
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	L009-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 2, 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 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 (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
TPH Chromatogram in Soil	TPH Chromatogram in Soil.	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 and silica gel split/cleanup.	L076-PL	D	NONE

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Project / Site name: Fort Halstead

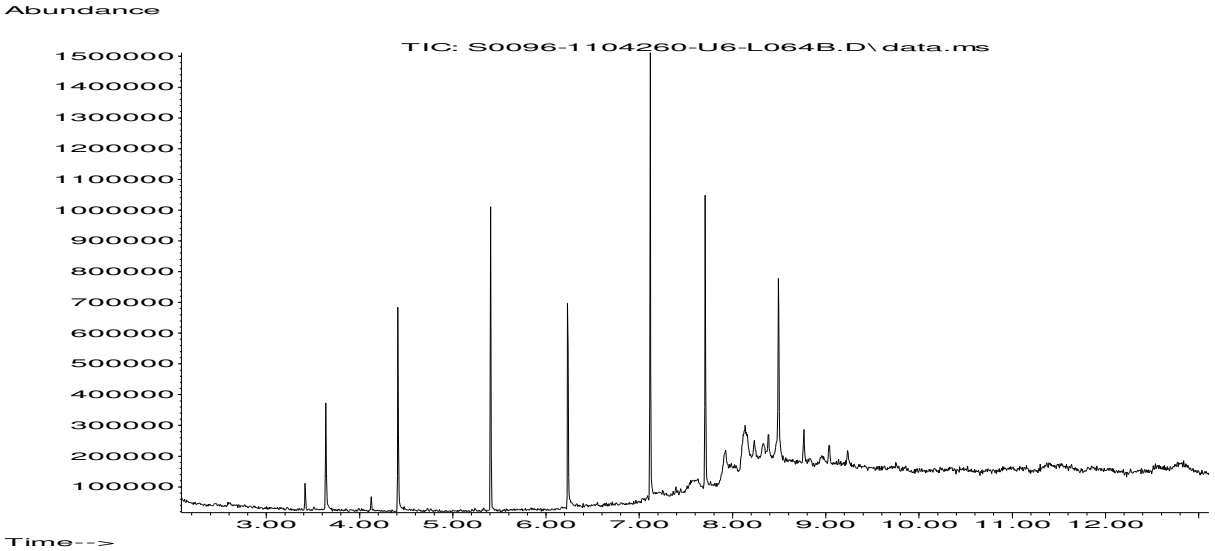
Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS

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.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH601		S	18-20594	1104260	c	Free cyanide in soil	L080-PL	c
BH603		S	18-20594	1104261	c	Free cyanide in soil	L080-PL	c
BH604		S	18-20594	1104262	bc	Free cyanide in soil	L080-PL	c
BH604		S	18-20594	1104262	bc	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
BH604		S	18-20594	1104262	bc	TPHCWG (Soil)	L088/76-PL	b
WS603		S	18-20594	1104263	c	Free cyanide in soil	L080-PL	c
WS605		S	18-20594	1104264	c	Free cyanide in soil	L080-PL	c
WS606		S	18-20594	1104265	c	Free cyanide in soil	L080-PL	c
WS607		S	18-20594	1104266	c	Free cyanide in soil	L080-PL	c

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature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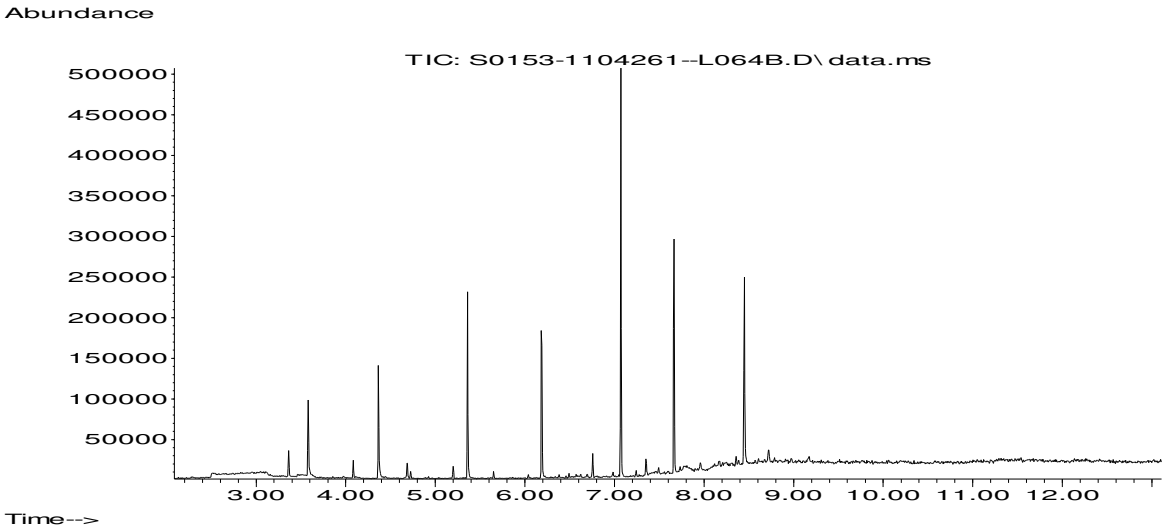
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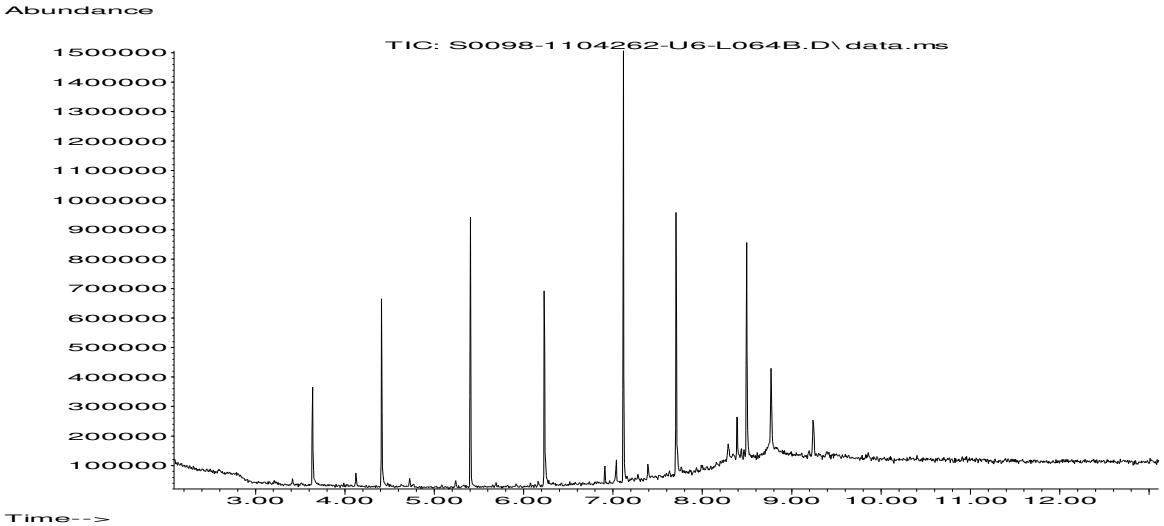
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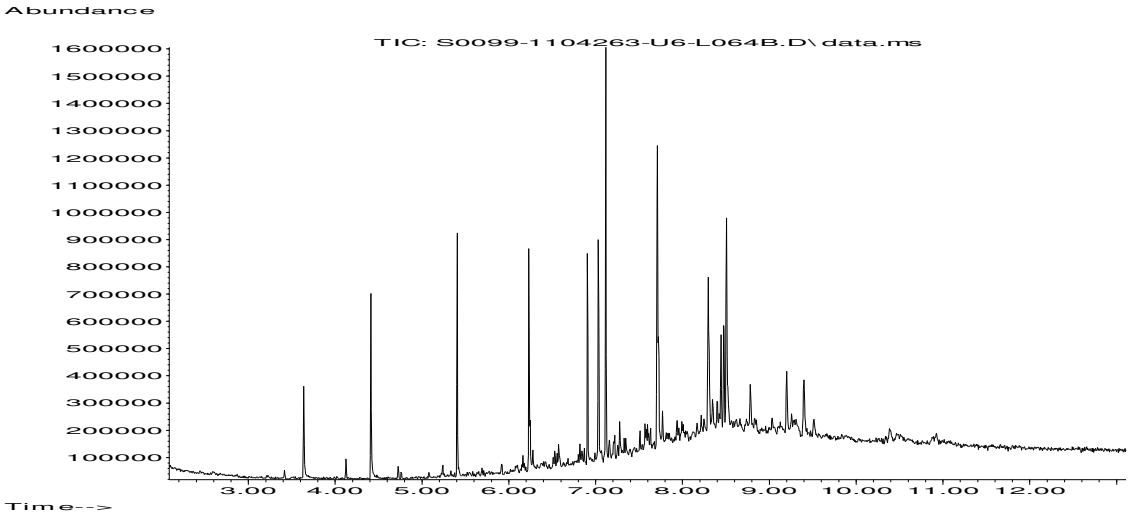
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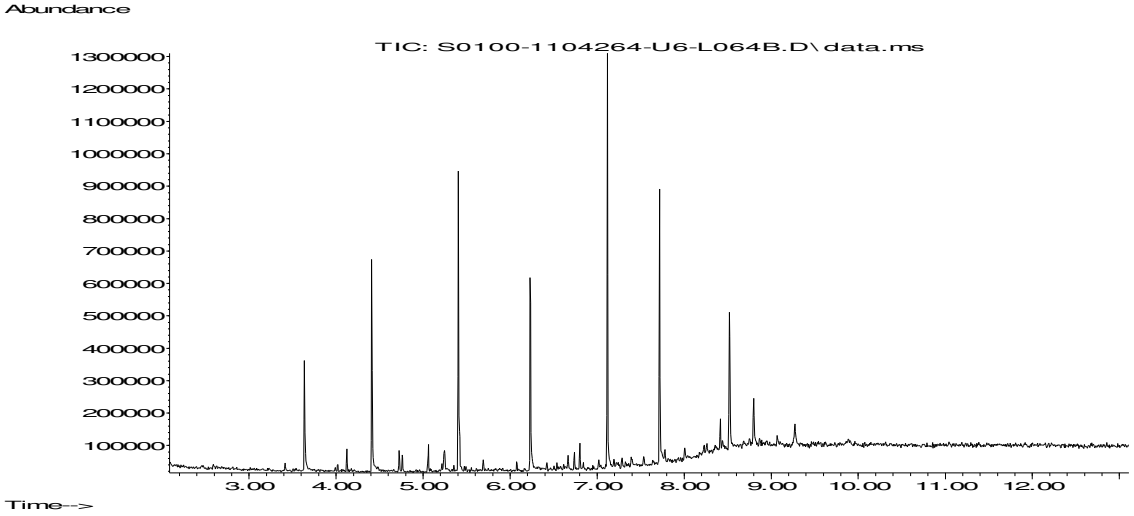
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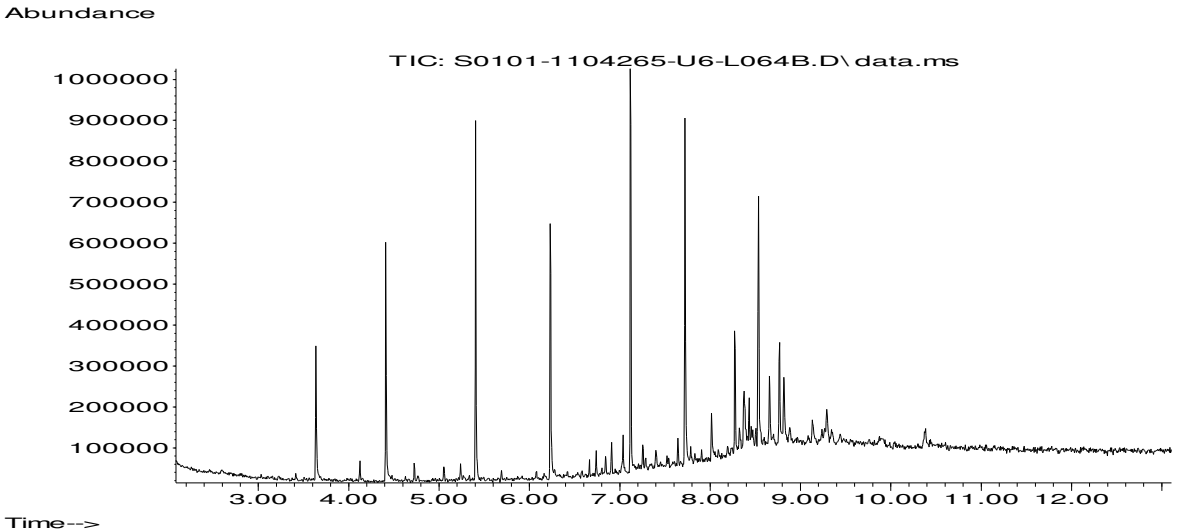
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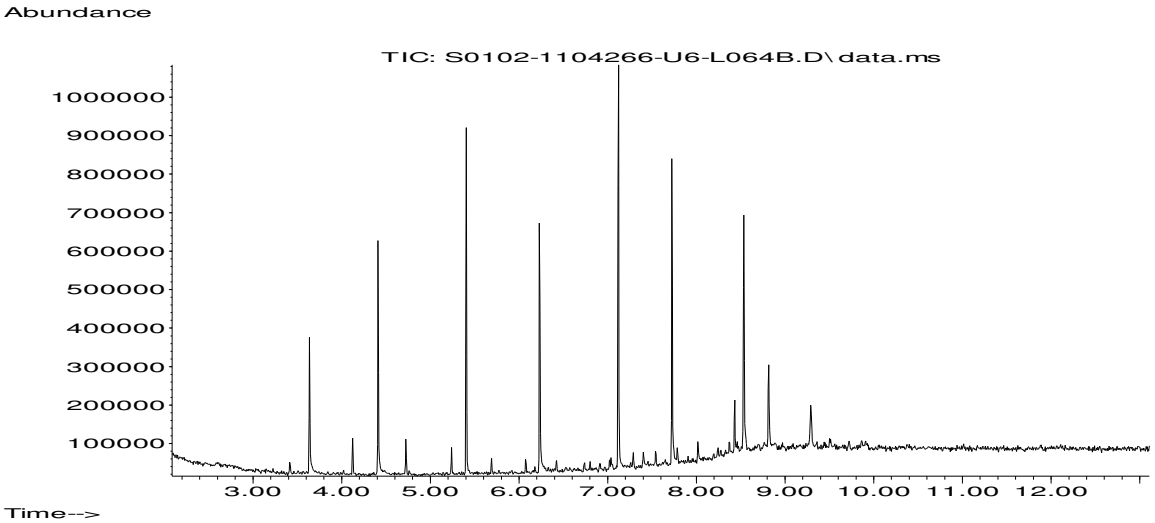
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Time-->

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Analytical Report Number : 18-21351

Project / Site name:	Fort Halstead	**Samples received on:**	05/12/2018
Your job number:	C-10730-C	**Samples instructed on:**	05/12/2018
Your order number:	POP025911	**Analysis completed by:**	12/12/2018
Report Issue Number:	1	**Report issued on:**	12/12/2018
Samples Analysed:	24 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

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Analytical Report Number: 18-21351

Project / Site name: Fort Halstead
Your Order No: POP025911

Lab Sample Number				1108824	1108825	1108826	1108827	1108828
Sample Reference				TP601	TP602	TP603	TP603	TP603
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.20	0.10	0.40	1.20
Date Sampled				26/11/2018	26/11/2018	26/11/2018	26/11/2018	26/11/2018
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	14	15	18	19
Total mass of sample received	kg	0.001	NONE	0.54	0.56	0.71	1.2	1.2
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.2	8.1	8.4	8.8	8.3
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.014	0.018	0.35	0.035	0.066
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.017	0.019	0.019	0.0017	0.0045
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	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	1.1	0.31	0.99	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	0.19	< 0.05	0.30	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	2.4	0.78	2.5	0.30	0.31
Pyrene	mg/kg	0.05	MCERTS	2.1	0.69	2.2	0.28	0.29
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.5	0.53	1.7	0.19	< 0.05
Chrysene	mg/kg	0.05	MCERTS	1.1	0.42	1.1	0.22	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	2.3	0.71	2.0	0.31	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.56	0.32	0.78	0.16	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.7	0.55	1.7	0.26	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.89	0.36	0.87	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.28	< 0.05	0.26	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.1	0.42	1.0	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	15.2	5.09	15.5	1.72	< 0.80

Analytical Report Number: 18-21351

Project / Site name: Fort Halstead
Your Order No: POP025911

Lab Sample Number				1108824	1108825	1108826	1108827	1108828
Sample Reference				TP601	TP602	TP603	TP603	TP603
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.20	0.10	0.40	1.20
Date Sampled				26/11/2018	26/11/2018	26/11/2018	26/11/2018	26/11/2018
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	10	10	8.6	< 1.0	2.2
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.87	0.78	0.63	0.06	0.21
Boron (water soluble)	mg/kg	0.2	MCERTS	1.1	1.1	1.4	0.6	0.8
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4	0.6	0.3	0.3	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	24	22	4.5	6.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	29	24	22	4.2	6.6
Copper (aqua regia extractable)	mg/kg	1	MCERTS	48	33	35	7.7	14
Lead (aqua regia extractable)	mg/kg	1	MCERTS	110	100	140	15	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	21	20	17	2.9	5.0
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	43	45	33	5.5	10
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	83	110	17	32
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	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	3.0	< 1.0	1.6	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	12	< 2.0	7.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	9.9	< 8.0	16	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	28	< 8.0	70	< 8.0	< 8.0
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	25	< 8.4	31	< 8.4	< 8.4
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	1.9	4.4	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	5.1	6.5	11	2.3	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	14	12	49	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	40	22	180	19	22
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	59	15	100	< 8.4	< 8.4

Analytical Report Number: 18-21351

Project / Site name: Fort Halstead
Your Order No: POP025911

Lab Sample Number				1108829	1108830	1108831	1108832	1108833
Sample Reference				TP606	TP606	TP607	TP607	TP608
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.60	0.20	0.80	0.30
Date Sampled				26/11/2018	26/11/2018	26/11/2018	26/11/2018	26/11/2018
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	22	17	26	11
Total mass of sample received	kg	0.001	NONE	0.39	0.42	0.39	0.41	0.42
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.9	8.8	7.8	8.0	7.8
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.075	0.0097	0.089	0.018	0.16
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.036	0.0020	0.024	0.0049	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	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.40	< 0.05	2.2
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.45
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.94	< 0.05	4.9
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.82	< 0.05	4.4
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.55	< 0.05	2.5
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.49	< 0.05	2.5
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.71	< 0.05	3.7
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.31	< 0.05	1.5
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.56	< 0.05	3.2
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.27	< 0.05	1.7
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	0.47
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.40	< 0.05	1.9
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	5.45	< 0.80	29.3

Analytical Report Number: 18-21351

Project / Site name: Fort Halstead
Your Order No: POP025911

Lab Sample Number				1108829	1108830	1108831	1108832	1108833
Sample Reference				TP606	TP606	TP607	TP607	TP608
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.60	0.20	0.80	0.30
Date Sampled				26/11/2018	26/11/2018	26/11/2018	26/11/2018	26/11/2018
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	9.5	< 1.0	15	23	10
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	2.9	0.09	1.7	14	0.72
Boron (water soluble)	mg/kg	0.2	MCERTS	4.1	0.7	2.0	2.5	1.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.1	< 0.2	0.5	0.5	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	30	4.5	32	73	19
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	31	4.2	33	73	19
Copper (aqua regia extractable)	mg/kg	1	MCERTS	22	3.5	140	47	45
Lead (aqua regia extractable)	mg/kg	1	MCERTS	31	1.9	180	25	130
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	40	3.9	29	99	15
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	49	2.9	49	110	35
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	84	8.6	150	140	290
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	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
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	38
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	23
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
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	29
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	18	< 10	13	< 10	88
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	< 8.4	74

Analytical Report Number: 18-21351

Project / Site name: Fort Halstead
Your Order No: POP025911

Lab Sample Number				1108834	1108835	1108836	1108837	1108838
Sample Reference				TP608	TP609	TP609	TP610	TP611
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.20	0.20	0.50	0.35	0.10
Date Sampled				26/11/2018	26/11/2018	26/11/2018	26/11/2018	26/11/2018
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	19	12	13	14	27
Total mass of sample received	kg	0.001	NONE	0.45	1.3	1.2	0.45	1.3
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.7	6.9	7.4	7.5	7.0
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.076	0.052	0.016	0.019	0.017
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.0038	0.022	0.0095	0.011	0.033
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	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	0.29	< 0.05	0.62	2.2
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.15	0.61
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.81	< 0.05	2.2	4.3
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.71	< 0.05	2.0	3.8
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.48	< 0.05	1.3	2.2
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.44	< 0.05	1.2	2.0
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.71	< 0.05	1.8	2.8
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.26	< 0.05	0.73	0.95
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.54	< 0.05	1.3	2.2
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.33	< 0.05	0.72	1.0
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.22	0.30
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.41	< 0.05	0.88	1.2
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	4.98	< 0.80	13.0	23.7

Analytical Report Number: 18-21351

Project / Site name: Fort Halstead
Your Order No: POP025911

Lab Sample Number				1108834	1108835	1108836	1108837	1108838
Sample Reference				TP608	TP609	TP609	TP610	TP611
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				1.20	0.20	0.50	0.35	0.10
Date Sampled				26/11/2018	26/11/2018	26/11/2018	26/11/2018	26/11/2018
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	9.5	8.7	6.9	8.9	12
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	2.3	2.8	1.0	1.0	0.75
Boron (water soluble)	mg/kg	0.2	MCERTS	1.2	1.8	2.1	1.9	2.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.5	1.0	0.5	< 0.2	2.1
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (III)	mg/kg	1	NONE	37	25	27	35	41
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	37	26	27	35	41
Copper (aqua regia extractable)	mg/kg	1	MCERTS	26	22	20	41	55
Lead (aqua regia extractable)	mg/kg	1	MCERTS	18	31	41	48	76
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	39	38	22	25	20
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	1.7	< 1.0	< 1.0	2.5
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	60	50	46	54	46
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	67	80	54	190	120
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	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	1.9	< 1.0	1.7
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	6.6	4.1	6.1
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	17	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	230	62
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	< 8.4	< 8.4	30	< 8.4
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
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	2.3	4.0	2.0	4.5
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	10	< 10	< 10	45
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	40	23	48	130
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	14	< 8.4	< 8.4	23

Analytical Report Number: 18-21351

Project / Site name: Fort Halstead
Your Order No: POP025911

Lab Sample Number				1108839	1108840	1108841	1108842	1108843
Sample Reference				TP611	TP612	TP612	TP613	TP614
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	0.20	0.60	0.30	0.20
Date Sampled				26/11/2018	26/11/2018	26/11/2018	26/11/2018	26/11/2018
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	17	15	13	16	17
Total mass of sample received	kg	0.001	NONE	1.2	1.3	1.3	1.3	0.45
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.8	9.3	8.0	6.9	8.3
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.029	0.32	0.057	0.040	0.089
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.013	0.013	0.0050	0.0040	0.011
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	0.36	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	2.5	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.9	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.77	0.88	22	< 0.05	1.3
Anthracene	mg/kg	0.05	MCERTS	0.26	0.25	6.0	< 0.05	0.30
Fluoranthene	mg/kg	0.05	MCERTS	2.0	2.1	25	< 0.05	2.8
Pyrene	mg/kg	0.05	MCERTS	1.8	2.1	21	< 0.05	2.4
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.2	1.4	12	< 0.05	1.4
Chrysene	mg/kg	0.05	MCERTS	1.2	1.1	9.4	< 0.05	1.4
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	1.5	1.8	14	< 0.05	2.2
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.65	0.85	3.5	< 0.05	0.73
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.2	1.6	11	< 0.05	1.6
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.57	0.86	4.7	< 0.05	0.89
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.21	0.27	1.4	< 0.05	0.23
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.68	1.0	5.4	< 0.05	1.1
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	12.1	14.2	141	< 0.80	16.3

Analytical Report Number: 18-21351

Project / Site name: Fort Halstead
Your Order No: POP025911

Lab Sample Number				1108839	1108840	1108841	1108842	1108843
Sample Reference				TP611	TP612	TP612	TP613	TP614
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	0.20	0.60	0.30	0.20
Date Sampled				26/11/2018	26/11/2018	26/11/2018	26/11/2018	26/11/2018
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	14	11	9.2	9.2
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.4	1.1	0.50	0.41	0.78
Boron (water soluble)	mg/kg	0.2	MCERTS	1.8	3.7	2.3	0.5	2.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.3	< 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	26	31	28	20	24
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	26	31	28	20	25
Copper (aqua regia extractable)	mg/kg	1	MCERTS	45	28	16	7.7	38
Lead (aqua regia extractable)	mg/kg	1	MCERTS	52	56	16	12	110
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	32	19	15	12	17
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	67	54	39	30	40
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	68	110	38	30	97
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	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
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	2.6	< 2.0	7.3	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	12	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	36	52	30	< 8.0	46
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	13	25	< 8.4	< 8.4	12
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	1.1	3.2	1.7	< 1.0	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	2.4	6.9	31	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	26	200	< 10	12
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	29	82	220	< 10	54
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	< 8.4	35	27	< 8.4	21

Analytical Report Number: 18-21351

Project / Site name: Fort Halstead
Your Order No: POP025911

Lab Sample Number				1108844	1108845	1108846	1108847	
Sample Reference				TP615	TP615	TP616	TP616	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.20	0.90	0.20	0.40	
Date Sampled				26/11/2018	26/11/2018	26/11/2018	26/11/2018	
Time Taken				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	15	15	31	17	
Total mass of sample received	kg	0.001	NONE	0.33	0.42	1.2	1.1	
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	8.1	7.8	7.1	7.7	
Free Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.025	0.018	0.022	0.011	
Fraction Organic Carbon (FOC)	N/A	0.001	NONE	0.0087	0.0080	0.049	< 0.0010	
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	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Acenaphthene	mg/kg	0.05	MCERTS	0.28	< 0.05	< 0.05	< 0.05	
Fluorene	mg/kg	0.05	MCERTS	0.27	< 0.05	< 0.05	< 0.05	
Phenanthrene	mg/kg	0.05	MCERTS	3.7	< 0.05	0.28	< 0.05	
Anthracene	mg/kg	0.05	MCERTS	0.87	< 0.05	< 0.05	< 0.05	
Fluoranthene	mg/kg	0.05	MCERTS	10	0.50	0.63	< 0.05	
Pyrene	mg/kg	0.05	MCERTS	8.8	0.46	0.56	< 0.05	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	4.0	0.19	0.36	< 0.05	
Chrysene	mg/kg	0.05	MCERTS	4.3	0.20	0.38	< 0.05	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	5.6	0.24	0.55	< 0.05	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	2.0	0.18	0.23	< 0.05	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	4.9	0.27	0.39	< 0.05	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	2.9	< 0.05	0.23	< 0.05	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.63	< 0.05	< 0.05	< 0.05	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	3.4	< 0.05	0.27	< 0.05	
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	52.1	2.04	3.88	< 0.80	

Analytical Report Number: 18-21351

Project / Site name: Fort Halstead
Your Order No: POP025911

Lab Sample Number				1108844	1108845	1108846	1108847	
Sample Reference				TP615	TP615	TP616	TP616	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.20	0.90	0.20	0.40	
Date Sampled				26/11/2018	26/11/2018	26/11/2018	26/11/2018	
Time Taken				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	2.8	15	5.9	
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.90	0.44	0.93	0.84	
Boron (water soluble)	mg/kg	0.2	MCERTS	1.5	1.2	1.5	0.7	
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.7	< 0.2	
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	
Chromium (III)	mg/kg	1	NONE	33	14	59	40	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	33	14	59	40	
Copper (aqua regia extractable)	mg/kg	1	MCERTS	24	12	81	12	
Lead (aqua regia extractable)	mg/kg	1	MCERTS	45	42	120	11	
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	22	10	21	6.7	
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	59	24	45	60	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	66	39	190	12	
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	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	6.7	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	9.6	< 2.0	4.9	< 2.0	
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	14	< 8.0	< 8.0	< 8.0	
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	50	< 8.0	< 8.0	< 8.0	
TPH-CWG - Aliphatic > EC35 - EC44	mg/kg	8.4	NONE	20	< 8.4	< 8.4	< 8.4	
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
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	7.5	3.3	< 2.0	< 2.0	
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	62	< 10	< 10	< 10	
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	120	23	< 10	< 10	
TPH-CWG - Aromatic > EC35 - EC44	mg/kg	8.4	NONE	30	13	< 8.4	< 8.4	

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* 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 *
1108824	TP601	None Supplied	0.10	Brown loam and sand with gravel and vegetation.
1108825	TP602	None Supplied	0.20	Brown loam and sand with gravel and vegetation.
1108826	TP603	None Supplied	0.10	Brown loam and sand with gravel and vegetation.
1108827	TP603	None Supplied	0.40	Beige clay with chalk and gravel.
1108828	TP603	None Supplied	1.20	Beige clay with chalk and gravel.
1108829	TP606	None Supplied	0.10	Brown loam and clay with gravel and vegetation.
1108830	TP606	None Supplied	0.60	Beige clay with chalk.
1108831	TP607	None Supplied	0.20	Brown loam and sand with gravel and vegetation.
1108832	TP607	None Supplied	0.80	Brown clay with gravel.
1108833	TP608	None Supplied	0.30	Brown loam and sand with gravel.
1108834	TP608	None Supplied	1.20	Brown clay with gravel.
1108835	TP609	None Supplied	0.20	Brown loam and sand with gravel and vegetation.
1108836	TP609	None Supplied	0.50	Brown clay and loam with gravel and vegetation.
1108837	TP610	None Supplied	0.35	Brown clay and loam with gravel and vegetation.
1108838	TP611	None Supplied	0.10	Brown loam and clay with gravel and vegetation.
1108839	TP611	None Supplied	0.60	Brown clay and sand with gravel.
1108840	TP612	None Supplied	0.20	Brown clay and loam with gravel and vegetation.
1108841	TP612	None Supplied	0.60	Brown clay and loam with gravel and vegetation.
1108842	TP613	None Supplied	0.30	Brown clay and loam with gravel and vegetation.
1108843	TP614	None Supplied	0.20	Brown sandy loam with gravel and vegetation.
1108844	TP615	None Supplied	0.20	Brown clay and loam with gravel and vegetation.
1108845	TP615	None Supplied	0.90	Brown clay and loam with gravel and vegetation.
1108846	TP616	None Supplied	0.20	Black loam and sand with gravel and vegetation.
1108847	TP616	None Supplied	0.40	Brown clay and sand.

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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
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
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	L009-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 2, 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 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

Analytical Report Number : 18-21351

Project / Site name: Fort Halstead

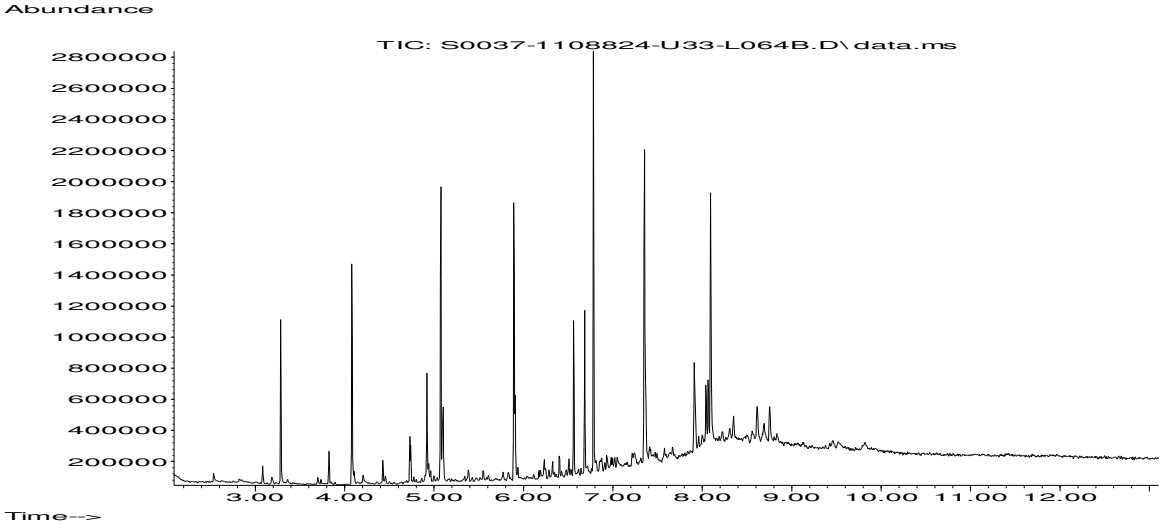
Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
TPH Chromatogram in Soil	TPH Chromatogram in Soil.	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 and silica gel split/cleanup.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS

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.

Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
TP601		S	18-21351	1108824	c	Free cyanide in soil	L080-PL	c
TP602		S	18-21351	1108825	c	Free cyanide in soil	L080-PL	c
TP603		S	18-21351	1108826	bc	Free cyanide in soil	L080-PL	c
TP603		S	18-21351	1108826	bc	BTEX and MTBE in soil (Monoaromatics)	L073B-PL	b
TP603		S	18-21351	1108826	bc	Monohydric phenols in soil	L080-PL	b
TP603		S	18-21351	1108826	bc	Speciated EPA-16 PAHs in soil	L064-PL	b
TP603		S	18-21351	1108826	bc	TPH Chromatogram in Soil	L064-PL	b
TP603		S	18-21351	1108826	bc	TPH in (Soil)	L076-PL	b
TP603		S	18-21351	1108826	bc	TPHCWG (Soil)	L088/76-PL	b
TP603		S	18-21351	1108827	c	Free cyanide in soil	L080-PL	c
TP603		S	18-21351	1108828	c	Free cyanide in soil	L080-PL	c
TP606		S	18-21351	1108829	c	Free cyanide in soil	L080-PL	c
TP606		S	18-21351	1108830	c	Free cyanide in soil	L080-PL	c
TP607		S	18-21351	1108831	c	Free cyanide in soil	L080-PL	c
TP607		S	18-21351	1108832	c	Free cyanide in soil	L080-PL	c
TP608		S	18-21351	1108833	c	Free cyanide in soil	L080-PL	c
TP608		S	18-21351	1108834	c	Free cyanide in soil	L080-PL	c
TP609		S	18-21351	1108835	c	Free cyanide in soil	L080-PL	c
TP609		S	18-21351	1108836	c	Free cyanide in soil	L080-PL	c
TP610		S	18-21351	1108837	c	Free cyanide in soil	L080-PL	c
TP611		S	18-21351	1108838	c	Free cyanide in soil	L080-PL	c
TP611		S	18-21351	1108839	c	Free cyanide in soil	L080-PL	c
TP612		S	18-21351	1108840	c	Free cyanide in soil	L080-PL	c
TP612		S	18-21351	1108841	c	Free cyanide in soil	L080-PL	c
TP613		S	18-21351	1108842	c	Free cyanide in soil	L080-PL	c
TP614		S	18-21351	1108843	c	Free cyanide in soil	L080-PL	c
TP615		S	18-21351	1108844	c	Free cyanide in soil	L080-PL	c
TP615		S	18-21351	1108845	c	Free cyanide in soil	L080-PL	c
TP616		S	18-21351	1108846	c	Free cyanide in soil	L080-PL	c
TP616		S	18-21351	1108847	c	Free cyanide in soil	L080-PL	c

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature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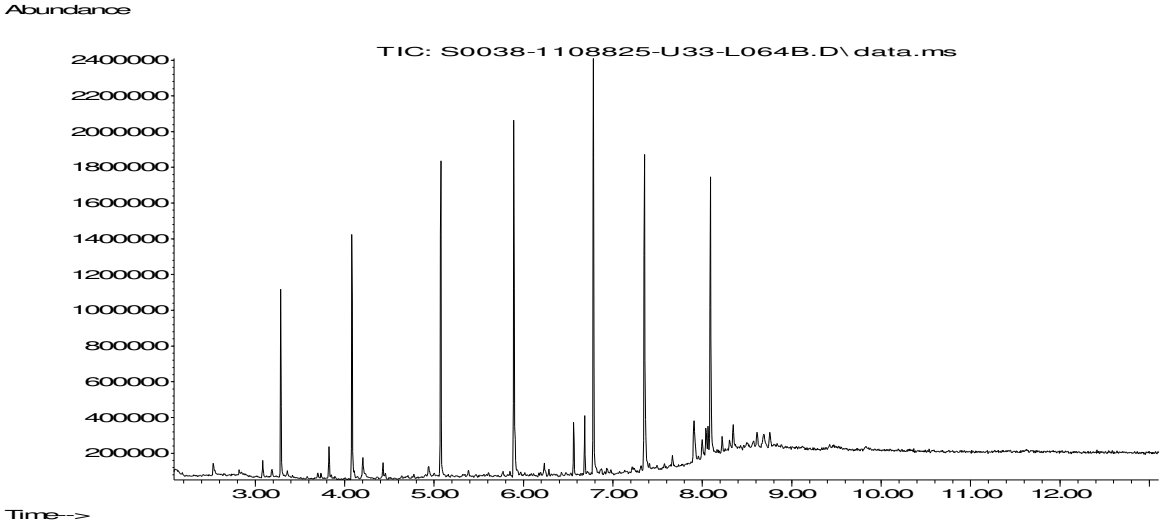
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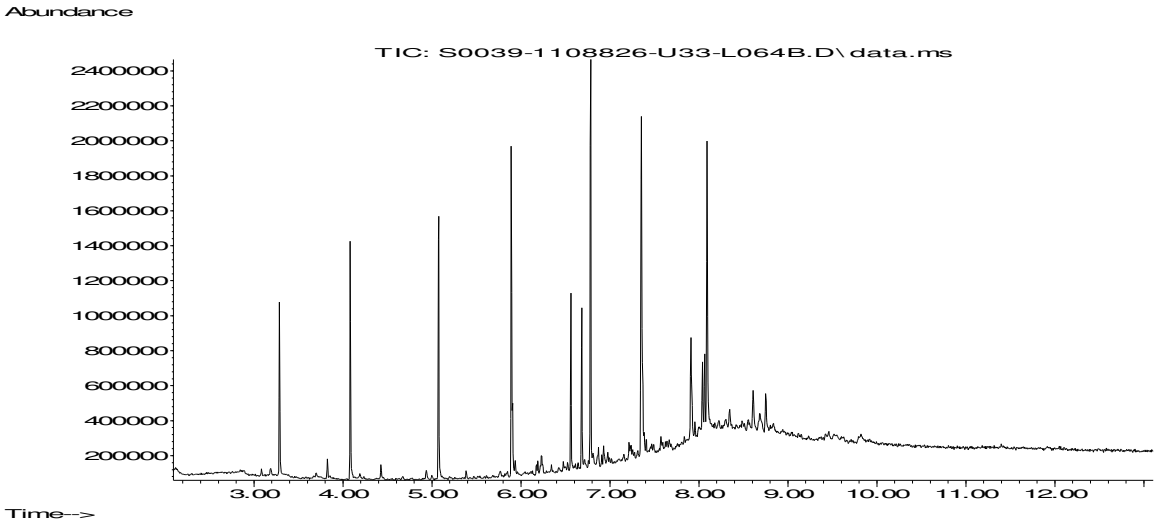
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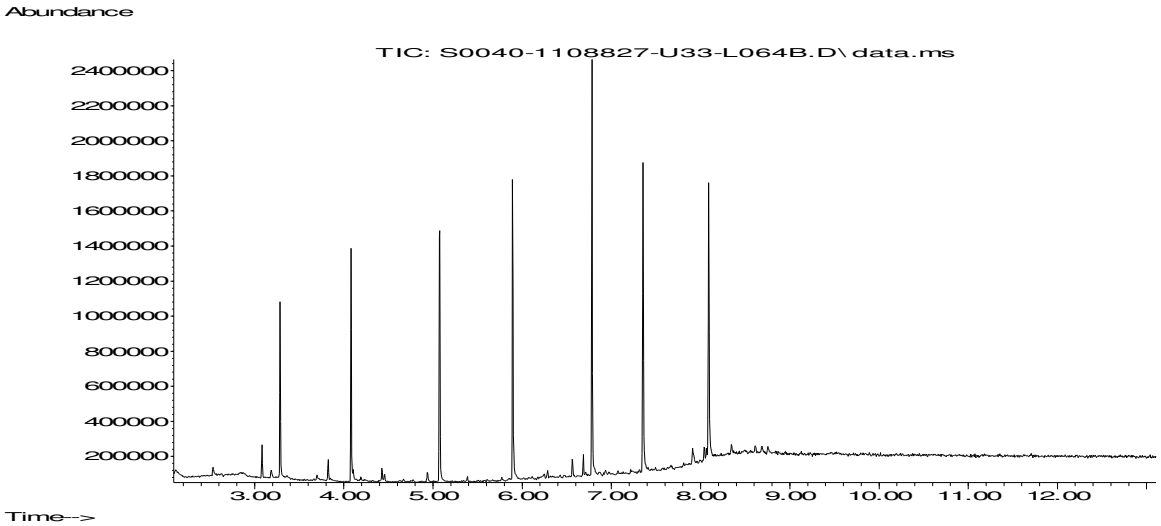
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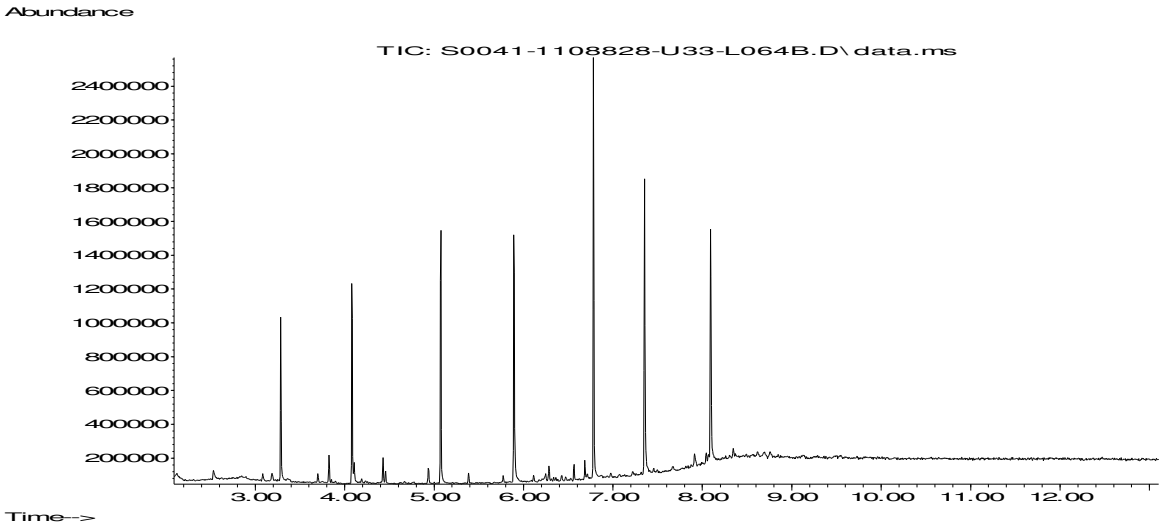
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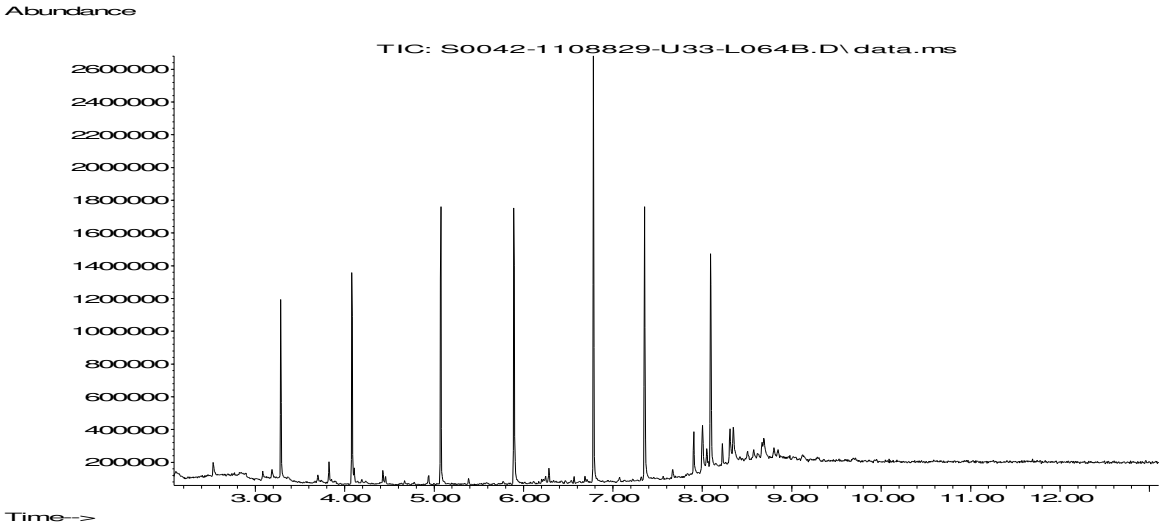
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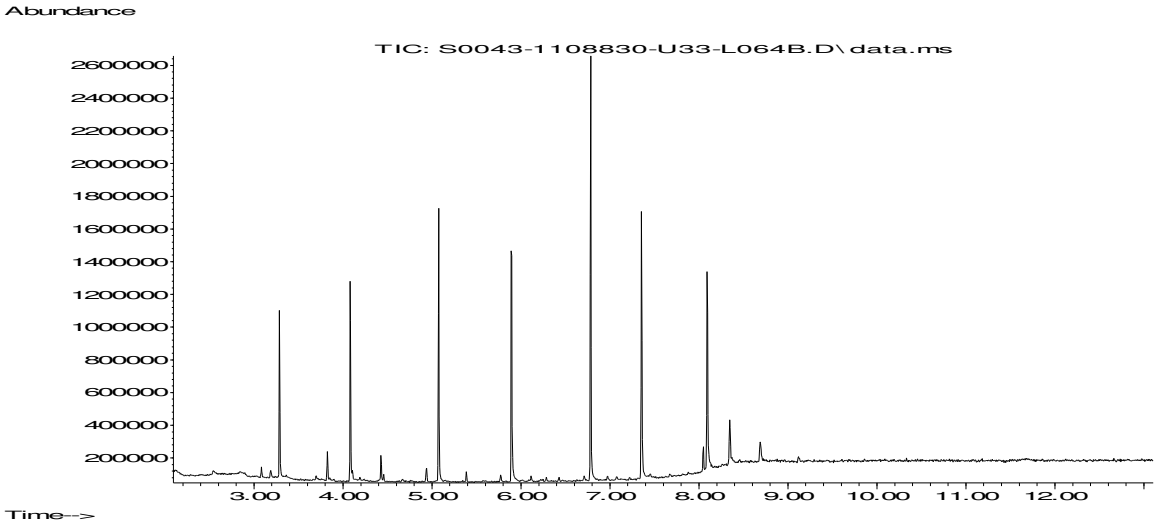
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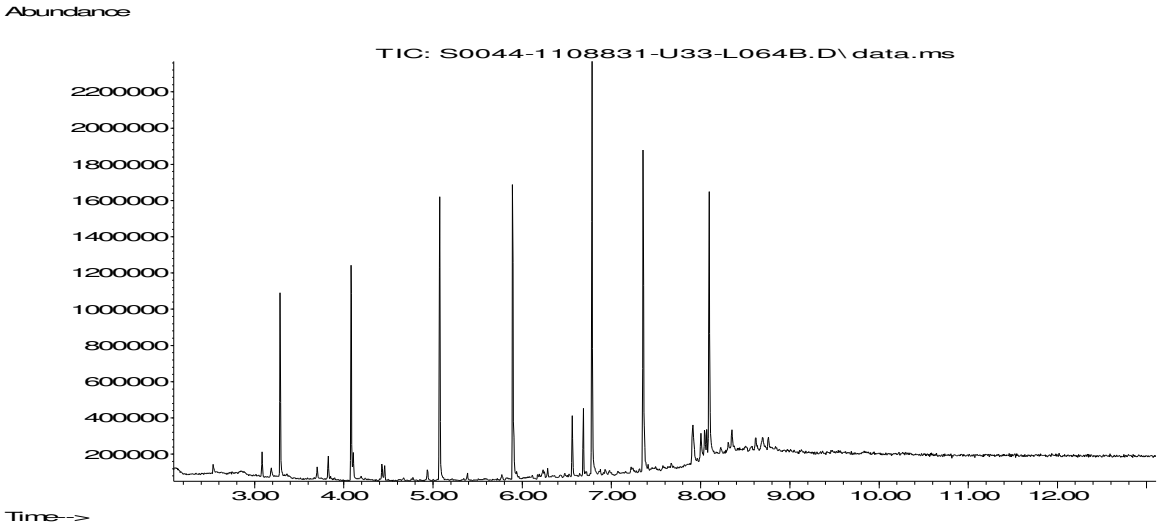
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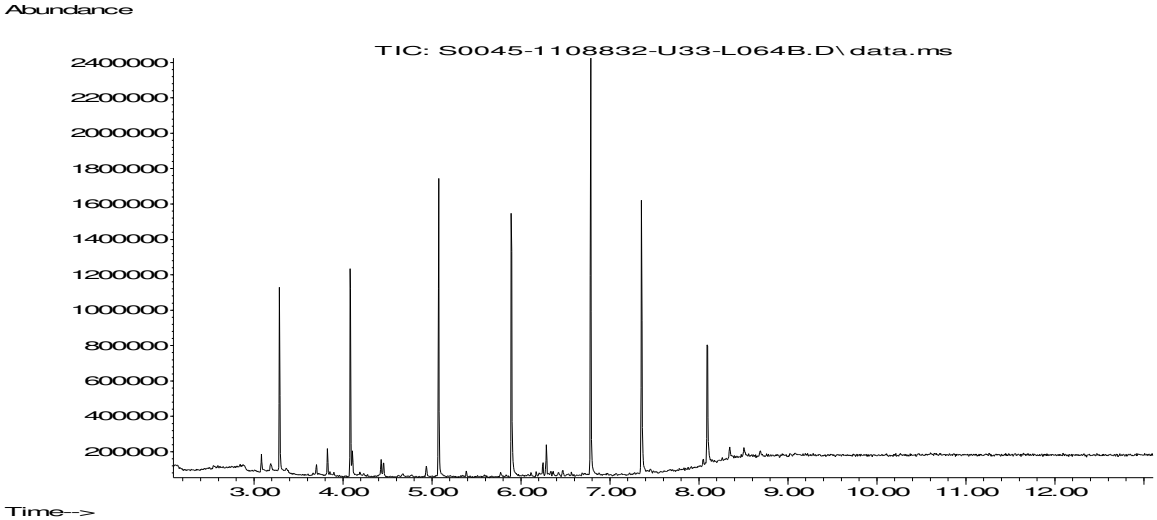
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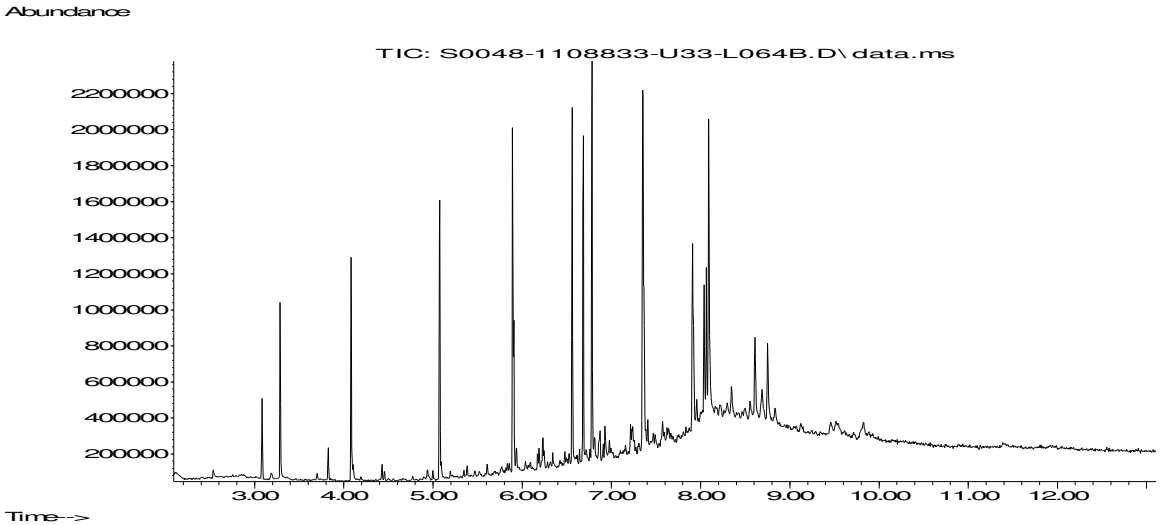
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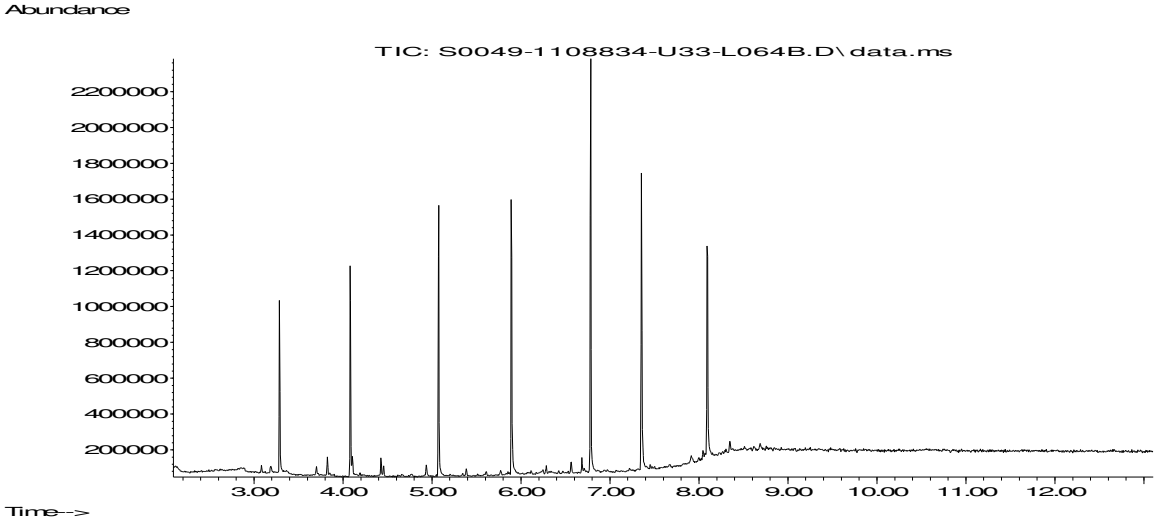
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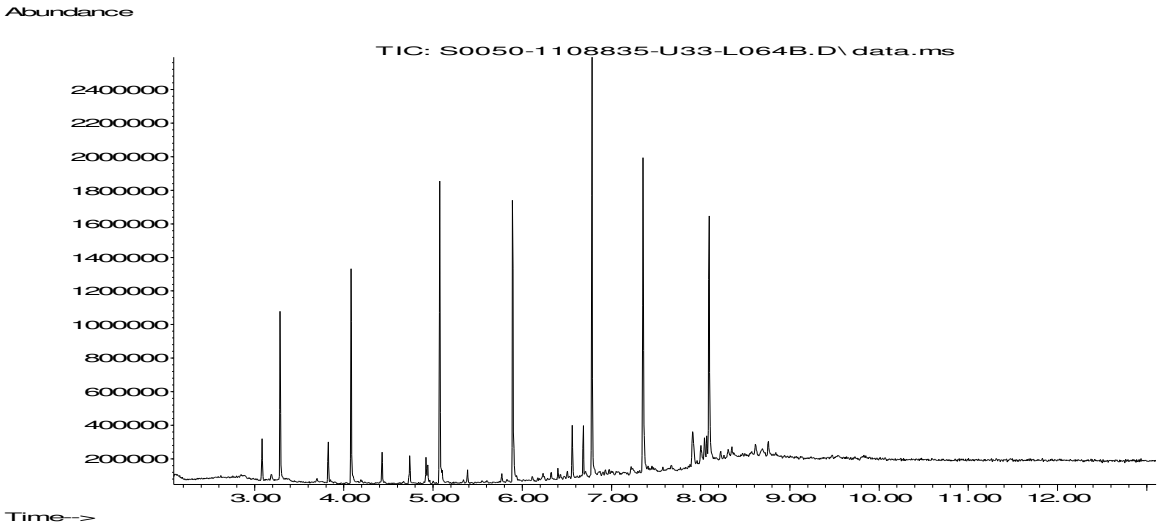
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